ORIGINAL

ILLINOIS POLLUTION CONTROL BOARD

CONOCOPHILLIPS COMPANY,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 12-101
	)	(Permit Appeal - NPDES)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

TRANSCRIPT OF PROCEEDINGS

October 3, 2012

Reporter: John Arndt, CSR, CCR, RPR
License No. 084-004605

IT IS HEREBY stipulated and agreed that the aforementioned proceedings were taken in steno-type by John Arndt, a Certified Shorthand Reporter and a Notary Public within and for the County of St. Clair, State of Illinois, at the Madison County Administration Building, 157 North Main Street, in the Village of Edwardsville, State of Illinois. The steno-type was then transcribed into type-writing and is now returned.

A P P E A R A N C E S

Hearing Officer Carol Webb

Much Shelist By: David Rieser, Esq.	For Petitioner
Phillips 66 By: Donna Carvalho, Atty.	For Petitioner
Office of the Attorney General, State of Illinois By: Rachel Medina, Atty.	For Respondent
Illinois Environmental Protection Agency, Division of Legal Counsel By: Deborah Williams, Atty. Chad Kruse, Esq.	For Respondent

INDEX OF INTERROGATION

INDEX OF EXHIBITS

HEARING OFFICER: Okay. We'll begin. Good morning. My name is Carol Webb. This is the hearing for PCB 12-101, ConocoPhillips Company versus IEPA. It is October 3rd, 2012, and we are beginning at 10:00 AM. I'll note for the record that there are one or two members of the public present. Members of the public are allowed to provide public comment if they so choose. At issue in this case is the revised NPDES permit for petitioner's petroleum refinery in Roxana, Madison County.

The decision deadline in this case is February 21st, 2013. The Pollution Control Board members will make the final decision in this case. My purpose is to conduct the hearing in a neutral and orderly manner so that we have a clear record of the proceedings.

This hearing was noticed pursuant to the Act and the Board's rules and will be conducted pursuant to Sections 101.600 through 101.632 of the Board's procedural rules. At this time I will ask the parties to please make their appearances on the record.

MR. RIESER: Good morning, Madam Hearing Officer. This is David Reiser from the law firm of

Much -- M-U-C-H -- Shelist -- S-H-E-L-L-I-S-T -- and I'm here for the petitioner, currently called ConocoPhillips, although we'll talk about that.

MS. MEDINA: Rachel Medina here from the Illinois Attorney General's Office representing the Illinois Environmental Protection Agency, the respondent in this matter.

HEARING OFFICER: Thank you. Are there any preliminary matters to discuss on the record?

MR. RIESER: Yes, briefly. The petition addressed four separate items, and we have been able through our discussions to resolve three of those items so that the hearing today and the Board's decision will only be focused on the issue of mercury, but the issues relating to dissolved oxygen, Smith Lake, and fecal coliform have been resolved. We have language within a agreed motion and stipulation that addresses the resolution for Smith Lake dissolved oxygen in terms of what the revised permit will state, and we don't have that language yet for fecal coliform, but we will provide it shortly -- within a week or so.

The other matter that I have as preliminary is a -- an agreed motion to change the

name of the petitioner in the caption. When this was originally filed, the company was known as ConocoPhillips Company. Since then there's been a corporate reorganization, so now the operator and the permit-holder of this particular permit is known as Phillips 66 Company, so we need the caption revised to reflect that change, and I've discussed that with Ms. Medina, and she has no objection to that modification. So I have an agreed motion and stipulation, which I'm going to hand to you now.

HEARING OFFICER: Okay. Thank you. Are there any other preliminary matters to discuss before we begin? Okay. Mr. Rieser, would you like to make an opening statement?

MR. RIESER: Yes, just a very brief one. As I said, my name is David Rieser with the law firm of Much Shelist, and I represent Phillips 66 in this matter. As I indicated per stipulation, this was originally filed by ConocoPhillips, and so the record is designed around a company or discusses a company called ConocoPhillips. The witnesses talk about an organization called ConocoPhillips or Phillips or the Wood River refinery, so I just want the record to be clear that all of that refers to the same entity for

our purposes here, which is the Phillips 66 Company, so to the extent there's any confusion, there shouldn't be. It's all -- for our purposes, it's all the same entity.

As I also said, the petition was originally filed to address four separate items -- mercury discharges to Smith Lake, dissolved oxygen, and fecal coliform. Three of those issues have been resolved, so the focus of the hearing today will be solely on the issue of the mercury. And the point of this hearing is to provide testimony as to why Phillips believes that the Agency's determination was contrary to the law, arbitrary, and capricious, and it's a condition not necessary to accomplish the purposes of the Illinois Environmental Protection Act. So we will present the following witnesses.

Jay Churchill, who is the plant manager, is going to testify about the economic impact of the operation, their recent expansion, some of their environmental compliance efforts, and the importance to the company of changing the Agency's decision here.

Ron Green, who's the manager of the wastewater part of the facility, will describe the wastewater treatment plant process, and we'll use an

exhibit walking through a schematic of that process.

Mike Bechtol, who's the head of the environmental health and safety for the plant, will describe the permitting background, because it's not the usual clear-cut, "Here's a permit. Now we're going to appeal." There's some history to that, so he's going to describe that history.

Jeff Allen of the firm of Brown -- engineering firm of Brown and Caldwell will describe the work that they did to evaluate the treatment options that Phillips had (inaudible) for treating mercury and the cost of those options and whether those options would at the end of the day actually achieve the levels that are called for in the permit.

And finally, Jim Huff will testify as a long-time expert in the industrial permitting area in Illinois as to why the Agency's decision here is a departure from the Agency's past practices and procedures and what some of the issues are with respect to the decision itself, and that will conclude our presentation. I'll have the witnesses available after the State concludes to bring back for any additional rebuttal.

HEARING OFFICER: Okay. Ms. Medina,

would you like to make an opening statement?

MS. MEDINA: I'll reserve my statement for our portion of the case.

HEARING OFFICER: Okay. Mr. Rieser, you may call your first witness.

MR. RIESER: Okay. My first witness will be Jay Churchill.

MR. CHURCHILL: Right here?

HEARING OFFICER: Yes.

[Mr. Churchill duly sworn by the court reporter.]

QUESTIONS BY MR. RIESER:

Q. Jay, could you proceed with your testimony?

A. Yes. Good morning. My name is Jay Churchill, and I am the plant manager of the Wood River refinery. I have been in this position since February 2011. Previously, I held refinery manager positions at Phillips 66 refineries in Los Angeles, California, and Billings, Montana, and I have been a proud employee of this company and its predecessors for my entire career.

I'd likely -- to briefly describe our company and the economic importance of this refinery

to the area. Phillips 66 is one of the largest refiners in the United States, with crude oil processing capacity of 1.8 million barrels per day and 2.2 million barrels per day globally. It also has a large marketing network, with more than 8,300 marketer-owned outlets in the United States and 1,700 in Europe.

Phillips 66 was formed as a result of a reorganization of the ConocoPhillips Company into two separate publicly-traded companies, one focused on exploration and production, and the other, Phillips 66, focused on refining and marketing of petroleum and chemical products. As a result, Phillips 66 now operates the Wood River refinery which is the subject of this hearing.

The refinery is one of the largest economic engines in Madison County. We employee approximately 800 full-time employees, including about 500 union-represented employees. Several years ago, we decided to invest nearly $4 billion in this facility by embarking on an expansion project to increase our capability to process heavy crude oils from Canada. An economic study documented that this expansion should increase regional income by $48

million.

In November of 2011, we commissioned the new refinery delayed coking unit, the centerpiece of the expansion project, and we are looking forward to being able to utilize the larger and broader capacity of the facility to improve the economic condition of the area.

Over the last decade, we have spent over a billion dollars on projects which have directly reduced emissions both from the Wood River refinery and for the vehicles in the region. As a result, in Madison County, our facility nitrous oxide emissions have been reduced by 36 percent, some 1,700 tons per year reduction, and our sulfur dioxide emissions have been reduced by 86 percent, an 11,000 ton per year reduction over the last 10 years.

We take our commitment to protect the environment extremely seriously. As such, we have demonstrated that we are committed to spending our fair share of investment to meet regulations to reduce our environmental footprint in the region; however, we believe that it is in the best interest of the Wood River refinery, the local community, and our country that we spend this capital on projects which have a

justified and meaningful impact on improving the environment.

And that brings us to the topic of this hearing. We strongly urge the Illinois Pollution Control Board to consider, in addition to the legal issues, the economic and social cost of upholding the Agency's unsupported decision to establish unprecedented and unrealistic effluent standards in our most recent NPDES permit.

As other witnesses will discuss, no other refinery in the country has been required to meet such standards, and there is very little proof that these standards can actually be achieved consistently. Not even BP's refining in Whiting, Indiana, has been subject to such standards, despite the high level of scrutiny and controversy surrounding its permit to discharge into Lake Michigan.

These standards must be applied fairly to all sources such that we are allowed a level playing field with our competitors. We urge the Board to require the EPA to follow the Board's regulations in adopting discharge standards and to evaluate properly the known science regarding treatment technologies. As always, we appreciate the opportunity to present

this information. I want to thank the Board in advance for its attention to this matter and its consideration of our testimony here today.

HEARING OFFICER: We have nothing -- okay.

MR. RIESER: With his testimony, I have nothing further.

QUESTIONS BY MS. MEDINA:

Q. Mr. Churchill, you stated that in November of 2011, you commissioned a new refinery delayed coking unit. Are you aware of how much this increased mercury levels in your effluent?

MR. RIESER: If at all?

A. I am not.

Q. (By Ms. Medina) Are you aware of how much mercury levels will increase at the completion of the expansion project?

A. I am not.

Q. Are you -- you stated that BP's refinery in Whiting, Indiana, has been subject to -- has not been subject to such standards. What standards are you referring to?

A. I guess I would like to defer to our testimony on those questions, or our experts.

Q. So you're not aware of whether BP Whiting has a mixing zone for mercury?

A. I'm not personally, no.

MS. MEDINA: Okay. Thank you. That's all.

MR. RIESER: I don't have anything.

HEARING OFFICER: Okay. Thank you.

MR. RIESER: All right. Our next witness is going to be Ron Green.

Mr. Green has brought with him a demonstrative exhibit that is a schematic. I guess we should have this marked as Exhibit One.

HEARING OFFICER: Yes.

[Petitioner's Exhibit One marked for identification.]

MR. RIESER: Thank you. Ron, before you get started, I want to show you what's been marked as Petitioner's Exhibit One and ask you --

HEARING OFFICER: Can we swear in the witness first?

MR. RIESER: Oh, I'm sorry.

[Mr. Green duly sworn by the court reporter.]

QUESTIONS BY MR. RIESER:

Q. Mr. Green, before we get started with you your testimony -- you've brought a diagram that's been marked as Petitioner's Exhibit One. Can you describe what this is?

A. This is just the overall layout of the current wastewater treatment plan at the Phillips 66 Wood River refinery.

Q. So it's laid out in schematic fashion rather than overview or something like that?

A. That is correct.

Q. And this accurately reflects the scheme of the wastewater treatment system?

A. Yes, it does.

Q. Okay. Proceed with your testimony, please.

A. Thank you. Good morning. My name is Ron Green, and I'm an environmental engineer with Phillips 66 Wood River refinery. My responsibilities include wastewater and spill prevention control and countermeasure compliance. I started with the Wood River refinery in January of 2012.

Prior to coming to Wood River, I was with the Village of Sauget wastewater treatment plant and the American Bottoms regional wastewater treatment

plant facility for 15 years. Both facilities are located in Sauget, Illinois. My responsibilities included project management, operation and maintenance management, and compliance assurance. I received my Bachelor's degree in civil engineering from the University of Missouri Columbia in 1994, and I also became a Class One wastewater operator in the State of Illinois in 2006.

I am testifying to educate you on the wastewater treatment plant at the Wood River refinery. The refinery is located in Madison, Illinois and is a fully-integrated petroleum refinery. The refinery processes a mix of both light, low-sulfur and heavy, high-sulfur crude oil. It receives domestic and foreign crude oil by various pipelines and produces a product including petrochemical feedstocks and asphalt.

The refinery generates an average of 8.5 million gallons per day that must be treated in the wastewater treatment plant before discharging to the Mississippi River. Our NPDES permit IL 0000205 covers these discharges. The wastewater treatment facility consists of a main lift station followed by bar screens, a two-stage neutralization basin, eight

corrugated plate interceptors, otherwise known as a CPI, oil-water separators, two dissolved nitrogen flotation units, an equalization tank, which is referred to as A-149, two scrubber solids clarifier systems, an activated sludge unit, Pond Two, three flocculating secondary clarification units and biosolid recirculation. Flow --

Q. Mr. Green, I hate to interrupt you. Can you go through that sentence again --

A. Okay.

Q. -- pointing to -- on your diagram, Exhibit One --

A. Yes.

Q. -- where each of those items are, describing them so that somebody reading the transcript can visualize what you're doing?

A. Okay.

Q. Thanks.

A. All right. The wastewater treatment plant consists of a main lift station, which is located to the left -- far left of Drawing B-35427 -- Two, a two-stage neutralization basin, which is adjacent to the right of the main lift station and the bar screen, and eight corrugated plate interceptor

oil-water separators, which are located just to the right of the neutralization basin on the drawing.

Q. So that's the thing that the box is marked "CPI oil separators"?

A. "Oil sep" -- that is correct.

Q. Okay.

A. Two -- or two dissolved nitrogen flotation units, which is adjacent to the CPI oil-water -- oil separators on the drawing. Tank A-149, which is located to the right of the dissolved nitrogen flotation units, two scrubber solid clarifier systems, which is located at the middle bottom of the drawing, an activated sludge unit, which is located right of the Tank A-149 on the drawing, Pond Two, which is located to the right of the activated sludge unit, three flocculating secondary clarification units, which follow -- or to the right of Pond Two, and biosolid recirculation, which is indicated by the RAS line on the Drawing B-35427.

Flows from the principal effluent treating units are discharged through the Rand Avenue lift station, which is at -- which is right of the secondary clarifiers, M-57, M-58, and M-74, to the final effluent polishing lagoons and out to the

Mississippi River. Drawing B-35427 is attached to show the treatment steps.

Q. And that drawing is the same thing that you've got here as Petitioner's Exhibit One; is that correct?

A. That is correct.

Q. Okay. Go ahead.

A. As Jeff Allen will testify later, the wastewater treatment plant is designed to meet or exceed all requirements of the 40 CFR 419 dash Petroleum Refining Point Source Category, and the Wood River refinery is subject to Subpart B, Cracking Subcategory, and is considered the best available technology economically achievable.

The wastewater treatment plant units at the wastewater treatment have the following functions: The main lift station receives wastewater from the refinery's main process sewer and pumps the wastewater to the treatment process. Bar screens serve to remove debris from the wastewater. The two-stage neutralization basin is for pH control. Desalter brines also enter the wastewater treatment plant at the neutralization basin. This is -- the neutraliz -- the desalter brines are located -- are the arrows

coming into the neutralization basin on Drawing B-35427.

Q. And that's Petitioner's Exhibit One?

A. Yes.

Q. Okay.

A. Spent caustic can also be added for neutralization. The eight CPI units arranged in two four-bay trains achieve initial free oil and oils -- oily solids removal. Two DNFs operate in parallel and achieve further oil solids removal by providing emulsified oil and solids treatment.

Oil and solids generated from the CPIs and DNFs are dewatered by centrifuges. The centrifuges are located in the bottom left corner of the drawing. The oil that is generated is sent back to the refinery for reuse, and the majority of the solids are reused in the coker operation. The remaining solids are disposed of as a hazardous waste.

Tank A-149 achieves both flow and influent concentration equalization. The SSC systems for pretreatment of the refinery's three wet gas scrubbers purge water for removal of the catalyst fines. The ASU serves as a first-stage aerobic biological treatment unit. The system is designed to

remove organic COD, five-day biochemical oxygen demand, inorganic COD, TKN, and chemical oxidation of sulfite from the SSCs. Spent caustic can also be added at this location for pH control.

Pond Two serves as a secondary -- a second-stage biological treatment and utilizes 14 floating surface mechanical aerators. The system continues aerobic treatment from the ASU, but also has an anaerobic zone for denitrification.

A ferric chloride storage and feed system is used for phosphorus precipitation of the secondary clarifier influent. The three flocculating secondary clarifiers serve to clarifier -- clarify the biological treated effluents and recycle the activated sludge back to the ASU -- the final effluent lagoons that achieve effluent stabilization before discharge to the Mississippi River for polishing.

Competents of the wastewater treatment are covered and vented to a volatile organic compound -- VOC -- emissions recovery systems to comply with the B -- or Benzene Waste Operation -- NESHAP -- 40 CFR, Part 61, Subpart FF. The units controlled by the system are the lift station, bar screens, two neutralization unit, CPI separators, DNF

units, DNF effluent sump, gas disengagement section, spent caustic tank, slop oil tank, and high total organic carbon tanks located inside the wastewater treatment plant. The centrifuge dewatering system also vents to the emission recovery system.

The wastewater treatment plant has recently been upgraded for the coker refinery expansion project, otherwise known as CORE. The components that were added are the SSC clarifiers, the ASU, the denitrification treatment in Pond Two, the ferric chloride addition for phosphorus removal, and the third final clarifier. Approximately $100 million was spent on the CORE upgrades to the wastewater treatment plant.

MR. RIESER: I have nothing further. Thank you very much.

[Discussion off the record.]

QUESTIONS BY MS. MEDINA:

Q. You stated there's final effluent lagoons that achieve effluent stabilization before final discharge to the Mississippi River for polishing. Can you describe the approximate age and condition of the sewer main that that discharge takes place?

A. The sewer main -- we call it the Rand

Avenue sewer, and it is a wood stave sewer. The age of it is un -- I do not know the exact age of it, but it is a very old sewer line.

Q. More than 25 years old?

A. Yes.

Q. More than 50 years old?

A. That I can't answer.

Q. You stated approximately $100 million was spent on the CORE upgrades for the wastewater treatment plant. Are you aware of how much the original estimate for those upgrades was?

A. No, I'm not.

Q. The coker refinery expansion project -- the CORE project -- is that expansion fully implemented and online?

A. Yes, it is.

Q. Approximately when was the implementation -- full implementation date?

A. Late in 2008.

Q. Have you documented any increase in mercury levels as a result of the expansion?

A. We have not.

Q. Have you measured your influent and effluent of mercury on a regular basis since the

implementation in late 2008?

A. No, we have not.

MS. MEDINA: Thank you. That's all.

QUESTIONS BY MR. RIESER:

Q. Mr. Green, just --

HEARING OFFICER: Okay.

Q. (By Mr. Rieser) -- just a question for clarification. You were asked a question about whether the CORE project was completed, and you said that -- I believe you said that it was. Is there a difference between the CORE project and the wastewater treatment plant project that was associated with the CORE project?

A. Yes. I was referring to the wastewater treatment plant project -- section of that project.

Q. So the CORE project which refers to the entire upgrade of the facility -- that has not yet been completed?

A. That is correct.

MR. RIESER: Okay. Thank you.

HEARING OFFICER: Thank you.

MR. RIESER: Thanks very much. Next witness is -- leave that up there, Mr. Green. Next witness is Mike Bechtol.

HEARING OFFICER: Would the court reporter swear in the witness, please?

[Mr. Bechtol duly sworn by the court reporter.]

MR. RIESER: Mike, before you be -- Mr. Bechtol, before you begin with your testimony, let me walk through some of the exhibits which you've attached to it. And I don't know how we want to identify these. I guess Two -- they are identified as Exhibit One, Two, and Three in his testimony, but if we mark them separately, they'll then become Exhibit Two, Three, and Four. Or we can call them Bechtol Exhibit One, Two, and Three.

HEARING OFFICER: Why don't we call them Two, Three, and Four, if that's all right with you?

MR. RIESER: That's fine.

HEARING OFFICER: Okay.

MR. RIESER: Okay. So yes. Mike will correct his testimony accordingly as he reads it, but let me walk through each of the exhibits, and we'll have them marked. Have for marking Petitioner's Exhibit Two, which is identified as the ConocoPhillips Wood River refinery mercury compliance, and it is dated November 13th, 2008. So that's Petitioner's

Exhibit Two.

[Petitioner's Exhibit Two marked for identification.]

MR. RIESER: Okay. We might as well mark all of these at the same time. Petitioner's Exhibit Three is a document dated July 20th, 2011. It's a letter to Mr. Sanjay Sofat -- S-O-F-A-T -- manager, Division of Water Pollution Control, IEPA, from myself. So let's mark that as Petitioner's Exhibit Three, please.

[Petitioner's Exhibit Three marked for identification.]

MR. RIESER: And then Petitioner's Exhibit Four is another letter from --

MR. BECHTOL: Should be April 29th letter.

MR. RIESER: Is --

MR. BECHTOL: Three is the April 29th letter.

MR. RIESER: I'm sorry. The exhibit that you marked as Exhibit Three should be Exhibit Four. If we can make that change.

[Petitioner's Exhibit Three re-marked for identification as Petitioner's Exhibit

Four.]

MR. RIESER: Thank you. And so Petitioner Exhibit Three will be a letter dated April 29th, 2011, to Mr. Sanjay Sofat from myself.

[Petitioner's Exhibit Three marked for identification.]

QUESTIONS BY MR. RIESER:

Q. All right. Mr. Bechtol, I'm going to show you what have been marked as Petitioner's Exhibit Three -- Two, Three, and Four, and ask you to identify each of them in turn.

A. Identify them just by saying I recognize these, or --

Q. Just say what each -- Petitioner's Exhibit --

A. Okay. Okay.

Q. What is Petitioner's Exhibit Two?

A. Petitioner's Exhibit Two would be the ConocoPhillips Wood River refinery mercury compliance dated November 13th, 2008.

Q. And the best of your knowledge, this is a document that was submitted to the IEPA around the time, November 2008, and is included in the Agency's record?

A. Yes. To my knowledge, that this document was submitted to the Agency on or around November 13th, 2008, and is included in the record.

Q. And then Exhibit -- I -- Petitioner's Exhibit Three?

A. Uh-huh.

Q. Can you identify what that is?

A. Petitioner's Exhibit Three is a letter dated April 29th, 2011, which was a letter to Sanjay Sofat written by David Rieser, and -- is there anything else?

Q. And it's your understanding that this was also included in the Agency's record?

A. Yes. My understanding -- this was also included in the Agency's record.

Q. And then Exhibit Four --

A. And Petitioner's Exhibit Four is a letter dated July 20 of 2011, also to Sanjay Sofat from David Rieser, and that was -- my understanding was that is also included in the Agency's record.

Q. Okay. Proceed with your testimony, please.

A. Okay. Thank you. Good morning. My name is Mike Bechtol, and I am the environmental director

for the Wood River refinery. I'm responsible for assuring environmental compliance at the facility and oversee a group of six environmental professionals, including Ron Green, who has provided testimony today. I've been in this position since October of 2010 and have been an employee of Phillips 66 and its predecessor companies since March of 1999.

I hold a Bachelor of Science degree in chemical engineering from the University of Washington, hold professional engineering licenses in both Washington State and Colorado, and have 21 years experience in the oil industry. In addition to my current position, I have worked at four different oil refineries throughout the country, with the majority of my experience being in process engineering and operations management.

I am testifying to clarify the unique permitting process which got us to this point. In May 2006, Phillips 66, then ConocoPhillips, submitted an application to the IEPA to revise the NPDES permit which had been issued to Phillips 66 in 2004. The modifications included changes to the wastewater treatment process necessitated by the coker refinery expansion project, otherwise known as CORE, as well as

changes needed to address the higher sulfur content of the wastewater due to the installation of wet gas scrubbers required by a consent decree entered into with the State of Illinois.

On November 3rd, 2006, the Agency issued a draft permit, and held public hearings on May 8th, 2007. The initial draft permit contained no requirement to either monitor or treat mercury, and as the administrative records show, the Agency's initial internal documentation did not identify any mercury requirements. The Agency did not begin discussing mercury limits with us until after the public comment period.

In spring of 2008, the Agency began discussing the insertion into the permit of the mercury water quality standard of 12 nanograms per liter to be met on an annual basis. The Agency stated that it could not grant a mixing zone for mercury, and originally proposed a compliance plan of only two years. Between May and November of 2008, Phillips and the IEPA met three times to discuss the mercury issues.

While we continued to insist that the Agency's position was legally invalid, we also

continued to negotiate the terms of the proposed compliance plan. Since the company needed the NPDES permit to operate its required scrubbers, it tried to find a compromise it could live with on the mercury issue.

The Agency refused to acknowledge the difficult of finding a method to treat mercury until we brought Jeff Allen and his folks to Springfield to meet with the Agency in November of 2008. Jeff explained the issues through a document prepared by Phillips 66 dated November 13th, 2008, which is attached as Exhibit Two. Only after that meeting did the Agency agree to the five-year compliance plan which appeared on the revised permit, which was issued on February 5th, 2009.

This revised permit language, Special Condition 28, set out a phased investigation of treatment options and progress reports to the Agency and required completion of the treatment system and compliance with the standard 60 months after the issuance of the permit, or by February 2014. As an alternative, the permit allowed the company to seek an adjusted standard if it could not identify an appropriate treatment.

The 2009 permit was a modification of the 2004 permit, the latter of which was scheduled to expire in 2010. Because of the upcoming 2010 expiration date, and independent of the permit modification discussions, Phillips 66 submitted a timely application to renew the 2004 permit in September of 2008. The Agency issued a public notice of the draft permit in December of 2010, but received very few public comments.

In early 2011, we determined as a result of the testing, and as Jeff Allen will testify in greater detail, that a filtration system might be able to achieve the stringent effluent limit for mercury. Although there were many uncertainties about this treatment, there was no question that the capital price tag would be extremely high, initially estimated to cost somewhere between $9 and $14 million.

To put the cost/benefit in perspective, the estimated amount of mercury recovered per day by the filter, if installed, is expected to be 0.00078 pounds per day. Over the 25 years that this capital investment would be depreciated, we estimate this project will remove roughly 5.2 pounds of mercury. The simply cost of removal is $2.7 million capital

invested per pound of mercury removed, which is roughly 99 times the current price of gold.

Phillips 66 determined that it would seek an adjusted standard as provided for in the permit, but also determined that it needed to expedite the process. In order to meet the 2014 deadline, the company would need to commit significant resources to planning, design, and construction by no later than spring of 2012.

In order to initiate that process, in a letter dated April 29th, 2011, and attached as Exhibit Three, the company submitted material to the Agency outlining their approach to an adjusted standard and requested the Agency's cooperation in obtaining that relief from the Board. At a meeting on June 29th, 2011, the parties realized that it would be difficult to proceed to an adjusted standard without resolving a legal issue of the Agency's refusal to grant a mixing zone for mercury.

As a result, the Agency agreed to review its mixing zone determination in the context of the permit renewal process. It asked the company to submit additional information, but in a letter dated July 20th, 2014, attached as Exhibit Four, the company

responded that there was already sufficient information in the administrative record of the 2009 permit.

Per the company's request, the Agency agreed to incorporate the portions of the record from the 2009 permit pertaining to the mercury issues, and these portions are reflected in the administrative record filed in this proceeding. The company continued to hope that the Agency would change its approach on the mixing zone, especially in light of the information showing the cost of designing and building treatment and the uncertainties inherent in that treatment. Despite repeated requests, however, the company was not advised of the Agency's position until the 2011 permit was issued and did not learn the basis for that decision until it reviewed the administrative record after filing this appeal. This concludes my prepared testimony.

MR. RIESER: And I have no further questions. Oh, I'm sorry. And at this point -- excuse me -- I'd like to move for the admission of the three exhibits.

HEARING OFFICER: Of just these Two, Three, and Four, or One, Two, Three and Four?

MR. RIESER: Oh, One, Two, Three, and Four. Thank you.

HEARING OFFICER: Ms. Medina --

MS. MEDINA: Yes.

HEARING OFFICER: -- do you have any objection to the -- any of the exhibits being moved?

MS. MEDINA: Exhibits Two, Three, and Four, no.

HEARING OFFICER: And One as well?

MR. BECHTOL: One is this.

MS. MEDINA: No objection.

HEARING OFFICER: Okay. Exhibits One, Two, Three, and Four are admitted.

QUESTIONS BY MS. MEDINA:

Q. So you provided no additional information following the June 29th, 2011, meeting to the Agency?

A. Correct.

Q. Isn't it true that you became aware of additional -- potential additional costs due to design engineering following that date and before the permit was issued?

A. We had done numerous estimates to try to develop the scope of the project, but our original estimates are very rough estimates, so the numbers

that we've submitted are still numbers that are -- that indicate the cost of the project.

Q. So the $9 to $14 million is the most accurate figure you could provide the Agency prior to issuance of the permit?

A. I would say that's probably not the most accurate because that's an initial estimate.

Q. Was your estimate revised at any time between June -- the June 29th meeting and the time the permit was issued?

A. Our estimates -- I would say our -- field zero (ph) estimates still remain the same for that project.

Q. You state that you made repeated requests for the Agency's position. Did you document these requests?

A. I believe they are documented.

MS. MEDINA: I have nothing further.

HEARING OFFICER: Mr. Rieser, anything further from you?

MR. RIESER: I have nothing further.

HEARING OFFICER: Okay. Thank you.

[Petitioner's Exhibit Five marked for identification.]

MR. RIESER: Could the witness be sworn, please?

HEARING OFFICER: Yes.

[Mr. Allen duly sworn by the court reporter.]

QUESTIONS BY MR. RIESER:

Q. Could you state your name and position for the record, please?

A. My name is Jeffrey Allen. I'm a supervising engineer with Brown and Caldwell.

Q. Mr. Allen, I'm going to hand you what's been marked as Petitioner's Exhibit Five, which purports to be a copy of your testimony. Could you tell us what that is?

A. This is a copy of the written testimony I've prepared for this hearing.

Q. And what you've got there is a true and accurate copy of that testimony?

A. Yes.

MR. RIESER: Okay. At this point, I would like to move for the admission of Exhibit Six and have the testimony entered into the record as read.

THE REPORTER: It's actually Five.

MR. RIESER: Five.

HEARING OFFICER: Exhibit Five? Exhibit Five is admitted.

MR. RIESER: Okay. And it will be placed in the record as if it were read here?

HEARING OFFICER: Yes.

MR. RIESER: Okay.

Q. (By Mr. Rieser) Mr. Allen, I'm going to ask -- as soon as I get over there -- a couple of additional questions based on some of the -- pardon me -- yes. I'm sorry. Would you summarize your testimony?

A. Good morning. My name is Jeffrey Allen, and I am an environmental consultant with Brown and Caldwell. I'm a chemical engineer with 22 years of the experience working in the industrial wastewater treatment field. A major portion of my work has been wastewater projects for oil refineries.

I consulted to the Wood River refinery on their Phase One sampling and Phase Two pilot testing mercury studies that were required by their 2009 permit. Based on my knowledge of the industry, I'm not aware of any oil refineries that have implemented treatment technologies at full scale to specifically

reduce the mercury concentration in their discharge.

Mercury is currently not regulated in the petroleum refining point source category by the USPA (ph), nor are there plans to do so. The existing Wood River refinery wastewater treatment plant provides the -- provides end-of-pipe treatment that is equivalent to the best available technology economically achievable as defined by U.S. EPA.

The permit limit of 7.8 times 10 to the minus fourth pounds per day on a mass floating basis equates to 8.5 nanograms per liter on a concentration basis at the 10.97 million gallons per day average daily flow. Because of variations in effluent quality from wastewater treatment plants, design effluent values are selected below the permit values. Following a statistical evaluation, I selected an average design value of five nanograms per liter to maintain reliable compliance with the 8.5 nanograms per liter annual average value.

During the Phase One sampling study, the measured mercury values at the compliance buoy, which is Outfall 001, were consistently greater than the 12 nanograms per liter concentration unit and the 7.8 times 10 to the minus fourth pounds per day mass

permit limits. On average, the measured values were 20 percent greater than the limits.

The sampling data also indicated that 98 percent removal of mercury was achieved across the wastewater treatment plant. From the Phase One study information, it was concluded that the implementation of mercury control and/or treatment measures would be required to reliably comply with the permit limits. Conventional wastewater filtration, which could be granular media filtration or rotating disc filtration in the 11 micron range, was identified as a candidate approach for end-of-pipe tertiary treatment technology. No viable candidates were identified for source control and/or treatment.

Phase Two pilot testing of granular media filtration indicated that this could -- technology could achieve the five nanogram per liter design target. A design concept was developed for full-scale granular media filtration system. The estimated capital cost was $18.5 million as of October 2011.

Successful compliance following the implementation of a full-scale filter system will be subject to certain risks and uncertainties. The first factor is an increase in the soluble mercury and/or

the mercury content of the effluent TSS versus the values observed during the Phase Two pilot testing.

These concentrations could change over time due to changes in the mercury content of the crude, changes in the refining processes, changes in the refining operating conditions, and/or changes in the wastewater operating conditions. We don't know how mercury behaves within the refinery and this wastewater treatment plant, so we cannot predict future conditions.

The second factor is the undefined impacts and/or cost of managing the mercury-containing dirty backwash water that will be generated from the wastewater from the filter system. The last factor is the uniqueness of the granular media filtration solution to the Wood River refinery, although the refineries are proceeding more costly membrane filtration for mercury compliance.

Q. Thank you. I'd like to follow up with a couple of questions based on some of the comments the Agency had regarding its discussion in the -- well, not this discussion, but the discussion that was presented to them that was included in the record. One of those discussions is that the task that

Phillips faced was to bring the level of mercury from 14 nanograms per liter to 12 nanograms per liter. Is 12 nanograms per liter the appropriate target?

A. From a permit compliance standpoint, the mass limit is going to be controlling the fa -- the controlling factor, so when you adjust things -- when you derive a concentration limit based on the mass limit, that's the 8.5 nanogram per liter. So that's the controlling limit, is the mass limit.

Q. That's the mass limit that's in the 2011 permit?

A. Yes.

Q. And would -- given that, would 8.5 be your appropriate target, or would you -- in doing -- performing an engineering evaluation, would you select another target?

A. So for an engineering design, you're not going to design to comply with the average. For conservatism and reliability, you're going to design for something below the actual permit limit, and that's where I -- that's why I drew out the five nanogram per liter as a design type.

Q. The Agency also questions within its notes in the records whether it was feasible to treat

only half of the flow, and I would like to ask you whether it is or if it isn't.

A. It would certainly be feasible to do it. I would not recommend it from an engineering standpoint or a compliance standpoint. It's just too much risk and uncertainty associated with having a portion of your flow not go through your mercury control device, if you will, so you just wouldn't -- the amount that you would not have to treat would change over time, so if -- and I think there would be circumstances where there wouldn't be any eff -- there wouldn't be any of the flow that you could bypass through the filters -- bypass the filter -- so I would not advise my -- I would not advise that that be done, no.

Q. And would treating half the flow significantly reduce the cost that you estimated?

A. So it would not be a one-to-one factor for sure, so if we only treated half the flow, we would not reduce our design cost by 50 percent. It would be something somewhat less than that.

Q. So also part of your design, as I understand it, to construct a main that would -- to discharge material -- excuse me -- in such a way that

it would bypass the existing lagoons. Why is it designed that way?

A. It's designed that way because there again, there's risk and uncertainty if we would allow the treated effluent to pass through the lagoon. If a granular media filter system was installed, that would essentially replace the function of the polishing -- existing polishing lagoon, so those would no longer provide any treatment function.

So to skip past your fully-treated effluent through that pond would just subject it to potential cross-contamination. And especially when we're doing something -- when we're dealing with something like mercury that's so pervasive throughout the environment and we're dealing with such low levels, I wouldn't want to risk that exposure of going through the lagoon.

Q. And following up on your discussion about the sources of risk and uncertainty, the concern -- I think you, well, said this in your summary, but just to follow up -- the potential is not just the increa -- the potential for increase in the amount of mercury in the crude oil coming into the facility; is that correct?

A. It's not the -- the amount of crude -- the amount of mercury coming in the crude could be one factor, but as much as that is going to be the processing conditions within the refinery and the operating conditions within the wastewater treatment plant -- we just don't have a way to predict or model the fate of mercury through the refinery or the wastewater treatment plant or to know what we can expect in the effluent from the biological treatment system.

Q. So you designed the system to address mercury that was attached to particles; correct?

A. Correct. During our sampling and pilot testing, we observed that the majority of the mercury in the effluent was associated with a particulate material. That's what made filtration an obvious choice, so that technology selection is predicated on if you fill out -- if you remove the major portion of the TSS, then that's going to be -- there's going to be -- the soluble mercury will be low enough, and the amount of mercury on the particulates that didn't pass through the filter are low enough that you'll be in compliance.

Q. And it's your concern that the amount of

mercury that attaches to a particle and the amount of mercury that is soluble might change over -- would change over time?

A. Correct. It's the amount of soluble mercury might change over time, the amount of mercury on the particulates, and the amount of particulates that pass through the filter might change over time.

Q. And that would be types of drivers for that type of change?

A. It's really not possible to predict. It's just the mercury is a very complex pollutant to try to target, so we're really just looking at empirical ways of treating it as an end-of-pipe treatment technology.

MR. RIESER: That's all my questions. I'll -- I might ask questions in response to any cross-examination.

HEARING OFFICER: Okay.

QUESTIONS BY MS. MEDINA:

Q. You said it was feasible to treat half the flow. What would the cost be of treating half the flow?

A. I have not developed that cost estimate.

Q. Would it at least be less than the

figures -- the estimates you provided on treating the entire flow?

A. Correct.

Q. In your written testimony, you comment that you reviewed and compiled data for a total of approximately 550 sample results collected at 36 locations. Isn't it true this information was not provided to the Agency for review?

A. I'm not aware of what was provided to the Agency.

Q. Would those sample results have been helpful in determining whether a waste stream -- whether a segregated waste stream could be treated for mercury?

A. I did make that evaluation, and my engineering judgment was that that was not a feasible means of providing reliable compliance.

Q. Did you substantiate your engineering judgment by providing a report on the sampling that you collected at these various locations?

A. I did not.

Q. Isn't it true that your analysis on Page Five in your written testimony concerning the average mercury removals across the wastewater treatment plant

was conducted after the permit was issued?

A. The data existed and the knowledge was understood. I believe that was -- information was developed in response to information that -- in response to questions asked by the Agency.

Q. During settlement negotiations?

A. Recently.

Q. After the permit was issued?

A. Correct.

Q. On Page Six and Seven of your written testimony, you outline detail to support the preliminary design and budgetary cost. Isn't it true this detail was never provided to the Agency?

A. I'm not aware of what was provided to the Agency.

Q. Was this level of detail provided to Phillips 66?

A. It was provided to their capital projects group.

Q. Prior to issuance of the permit -- the renewal permit?

A. Correct.

Q. You conducted further design engineering between August and October of 2011. At what point did

you provide that information concerning that design engineering to Phillips 66?

A. October 2011.

Q. On Page Nine of your written statement, you discuss a backwash water treatment handling system that would potentially result in an additional capital cost. Was that information provided to Phillips 66 prior to the issuance of the renewal permit in December 2011?

A. Could you clarify your question?

Q. Your estimate of a -- your estimate of the cost of an add-on system to handle the filter solids.

A. Uh-huh.

Q. Was that estimate provided to Phillips 66 prior to the issuance of the renewal permit in December 2011?

A. A system to handle -- to further treat the dirty backwash water is not in -- was not included in the engineering scope. It's a contingency or it's a risk and uncertainty, that we don't know whether that will be needed or not. Currently the design assumption was that it will not be needed.

Q. What is the basis for your assumption?

A. Engineering judgment based on my experience. It would be something that could be added at a later date if needed.

Q. But your judgment is that it is not needed?

A. Correct.

Q. Thank you. Did you provide an analysis of the -- of any case studies suggested on Page Nine in your written testimony, such as BP Whiting and Suncor Denver, to Phillips 66 prior to the issuance of the renewal permit in December 2011?

A. Are you referring to the case studies of the other two refineries? Or can you clarify your question?

Q. You refer to case studies of BP Whiting and Suncor Denver. Do you provide any opinion, analysis, or study of these refineries to Phillips 66 prior to the issuance of the permit in December 2011?

A. No.

Q. You said you used the mass limit as a design target in order to meet the 12 nanograms per liter annual average. In the absence of a mass limit, what would you use as a design target?

A. I haven't done that evaluation.

Q. On Page One of your written testimony, you state that you're not aware of any oil refineries that have implemented treatment technologies at full scale to reduce mercury concentration in their effluent discharge. Can you explain your statement?

A. I'm not aware of any refineries that have installed a treatment technology specifically to comply with a mercury limit.

Q. Are you aware of any less-than-full-scale implementation of technologies to treat mercury?

A. I'm aware of studies that have been done by refineries to evaluate technologies.

Q. To treat mercury?

A. Yes.

MS. MEDINA: That's all I have.

MR. RIESER: Just give me a couple of minutes.

QUESTIONS BY MR. RIESER:

Q. Mr. Allen, you were asked a question about treating half of the flow, and you said you hadn't estimated what the cost would be to treat the half flow -- it would be le -- it said it would be less than the estimated cost here. I believe you answered to a question that I raised -- you said it

wouldn't be 50 percent less, half less. So why would any smaller system still cost more than half as much?

A. There are -- a significant portion of the upgrades that would be needed aren't necessarily that sensitive to the hydraulic reading. The filter itself would be, but the cost of piping and other things aren't necessarily -- the cost differential isn't necessarily linear with flow or linear at all.

Q. So there would still be engineering design construction and costs that wouldn't be associated with the fact that it was a half smaller filter system?

A. Certainly all of the engineering and project management and those types of cost would be fixed regardless of the size of the system.

Q. You were asked a question about 550 samples and tying that into the source separation. What samples were they that were discussed?

A. So they were -- during the Phase One testing, they were sampling around the wastewater treatment plant, and it was also what you could categorize as source sampling, with two different objectives -- one to determine how to treat that wastewater, and the second objective to identify

sources that might be able to be controlled.

Q. So in doing that sampling, among the things you were looking for was to find whether there was a specific source of mercury within the various functions of the refinery that -- if that source could be segregated, then it would be easier to treat? Is that correct?

A. The objective would be to do source control or treatment so you wouldn't have to do end-of-pipe treatment.

Q. And your ultimate decision was that source treatment was not appropriate; is that correct?

A. Correct. The decision was end-of-pipe treatment was going to be necessary regardless, so you wouldn't necess -- you wouldn't get necessarily much, if any, advantage of source control or treatment.

Q. And that decision was -- the decision that you just described was based at least in part on the samples that you took?

A. Correct.

Q. In what way?

A. So what we found from the source sampling is a very high variability at different locations, and we found mercury at the majority of locations, so

there wasn't an obvious opportunity to, say, treat one waste stream and that would eliminate enough mercury going to the wastewater treatment plant that you wouldn't have to do an end-of-pipe treatment technology.

Q. You were asked another question about the discussion about the removal across the current system and your conclusion that across the current wastewater treatment system, there's 98 percent removal of mercury; correct?

A. Correct.

Q. When you said that the -- I believe you said that the data was available before the permit was issued -- what data are you referring to?

A. The Phase One sampling study.

Q. The Phase One sampling study that indicated what the amounts of mercury influent into the treatment plant were and then effluent from the treatment plant?

A. Correct.

Q. So the only issue in the reduction that you did was essentially the math of looking at that?

A. Correct.

Q. I believe you state in your testimony

that the BP Whiting facility has been given a mercury variance. Is that correct?

A. That is correct.

Q. Do you know when that variance was issued?

A. I don't know off the top of my head.

Q. Was it within the last year?

A. I believe it was in the last year or two.

MR. RIESER: Okay. Thank you. I have no further questions.

HEARING OFFICER: Anything else?

MS. MEDINA: (Shaking head "no.")

HEARING OFFICER: No? Okay.

MR. RIESER: And his exhibit, Exhibit Five, has been admitted?

HEARING OFFICER: Yes. Yes. We -- you moved to admit -- I think Exhibit Five was admitted. Yes, sir.

MR. RIESER: Just making sure.

HEARING OFFICER: I know.

MR. RIESER: All right. I'll call my next and last witness, which is Jim Huff.

[Discussion off the record.]

HEARING OFFICER: You can swear in our

next witness.

[Mr. Huff duly sworn by the court reporter.]

MR. RIESER: Can we go off the record briefly?

[Discussion off the record.]

HEARING OFFICER: Okay. We're sworn in?

MR. RIESER: We're sworn in.

HEARING OFFICER: Okay. Go ahead.

MR. RIESER: Thank you.

QUESTIONS BY MR. RIESER:

Q. Mr. Huff, you prepared a written testimony to deliver at this hearing; correct?

A. Yes.

Q. And to that testimony you've appended a number of exhibits; is that correct?

A. Yes.

MR. RIESER: And I'd like to run through the exhibits -- and we're having them admitted separately; is that correct? Or do we want just one group exhibit?

HEARING OFFICER: What are they?

MR. RIESER: The exhibits are -- well, Exhibit One is a copy of Mr. Huff's CV. Exhibit Two

is a memo dated June 12, 2008, from Bob Mosher to Jaime "Robins" -- "Raybins" -- excuse me -- R-A-B-I-N-S.

HEARING OFFICER: I mean, I guess we can submit it -- there's a whole stack of -- I mean, there would be a lot to submit separately; correct?

MR. RIESER: Correct.

HEARING OFFICER: Okay. Maybe -- let's do it -- do you have -- Ms. --

MS. MEDINA: We have an objection to Exhibit Number Seven as irrel -- well, I don't know if that's still your Exhibit Seven.

MR. RIESER: That is my Exhibit Seven.

MS. MEDINA: As irrelevant.

HEARING OFFICER: Is that in this group, or is that in this stack?

MR. RIESER: That is -- where is Exhibit Seven?

MR. HUFF: It would be the last one.

MR. RIESER: Yes. Right down here. Oh, it's right here.

HEARING OFFICER: I mean, could we take all of them as a group, except we'll separate the one that's --

MR. RIESER: Yes.

HEARING OFFICER: -- being objected to?

MR. RIESER: That's fine. And I don't have a problem with that. And then we have --

MR. BECHTOL: Is that Eight -- Exhibit Eight? Is that --

MR. RIESER: And then Exhibit Two is this monster.

HEARING OFFICER: Is that the testimony, or is that --

MR. RIESER: No. This is his antidegradation report, which is already in the record.

HEARING OFFICER: Okay. So that's already in the record? We can still mark it as -- we're on? Okay. So that would be eight?

MR. RIESER: No. This is Exhibit Two.

HEARING OFFICER: Oh, this is all --

MR. RIESER: It's just not typed -- it's not stapled in.

HEARING OFFICER: I see. I -- okay.

MR. RIESER: So why don't we admit as Petitioner's Group Exhibit --

THE REPORTER: Six. Six.

MR. RIESER: -- Six --

MS. MEDINA: I think it would be easier just to do them separately, just to keep it clear.

HEARING OFFICER: Okay. I mean, it's -- yes. I mean -- I guess how many pieces would there be if we do them separately?

MR. RIESER: Well, there's -- there are six pieces. Well, seven pieces including the testimony, and then eight including the Exhibit Seven.

HEARING OFFICER: I mean, if it's getting confusing, maybe we should do it separately.

MS. MEDINA: Well, if --

MS. WILLIAMS: Yes.

MS. MEDINA: We haven't been grouping them all along, so doing them separately might make sense.

HEARING OFFICER: No. Yes. Yes, maybe -- it might just be easier to do them separately. That way, if the Board wants to refer to a particular -- they don't --

MS. MEDINA: Have to --

HEARING OFFICER: Yes. They --

MR. HUFF: Except the written testimony references Exhibit One through Seven.

HEARING OFFICER: Well, that's okay, as long as you call it --

MR. HUFF: Well, now they're going to have different exhibit numbers than --

HEARING OFFICER: Well, you can call it by the name of the document.

MR. RIESER: I -- okay. All right. So the decision is we're going to introduce each of them separately?

HEARING OFFICER: If that's okay. I mean, there's only six; right?

MR. RIESER: I'm sorry. Can we go off the record? There isn't really --

HEARING OFFICER: Yes, we can go off the record.

[Discussion off the record.]

HEARING OFFICER: We'll go back on the record. We just had an off-the-record discussion about how we're going to number exhibits, and having decided, Mr. Rieser, go ahead and --

MR. RIESER: Okay. We're going to -- I'm going to hand to the court reporter what needs to be marked as Group -- Petitioner's Group Exhibit --

THE REPORTER: Six.

MR. RIESER: -- Six.

[Petitioner's Exhibit Six marked for identification.]

MR. RIESER: For the record, Petitioner's Group Exhibit Six consists of Mr. Huff's testimony, as well as the exhibits appended to his testimony, which are Exhibits One through Six, and we'll -- and there's also, for the record, an Exhibit Seven that's going to be marked.

[Petitioner's Exhibit Seven marked for identification.]

MR. RIESER: And Exhibit Seven is also an exhibit to Mr. Huff's testimony. We've marked it separately because off the record it's my understanding that there may be an objection to Exhibit Seven, so we've segregated it just in case the Board wants to deal with that objection. The rest -- as I understand it, the admission of the rest of his testimony and the other exhibits is not objectionable, the State does not have any objection to it. Is that correct?

MS. MEDINA: We have a limited objection to his testimony -- that which follows the heading "2007 NPDES Permit Mercury Limits," and which includes

comments on the exhibit which we have objected to as argumentative and improper opinion testimony.

MR. RIESER: I'd like to move the admission of --

Q. (By Mr. Rieser) Well, first of all, Mr. Huff, would you look at what's been marked as Group Exhibit Six and tell me if that's your written testimony and the first six of your exhibits?

A. Yes, it is.

MR. RIESER: At this point, I would move for the admission of Group Exhibit Six.

HEARING OFFICER: And you are objecting to which portion?

MS. MEDINA: Objecting to that portion of his testimony which follows the subheading "2011 NPDES Permit Mercury Limits" and includes a discussion of the exhibit attached to his testimony, which we also objected to.

HEARING OFFICER: Can I see it?

MR. RIESER: And the exhibit -- I'm sorry. The exhibit is Exhibit Seven, so let me go through the --

HEARING OFFICER: Can you find me the page that she's referring to?

A. Yes, ma'am. This section here.

HEARING OFFICER: And your objection is argumentative? Or what are you -- what's the grounds of your objection?

MS. MEDINA: Yes. It's summarizing testimony of other witnesses, which would be more properly done by David in a closing argument or brief, and it also summarizes -- speaks to information on the exhibit which we objected to as being irrelevant.

HEARING OFFICER: And what's your response to that?

MR. RIESER: Well, my first response is to at least have him identify the exhibit which is i -- objection -- to which there is an objection first and then move for the admission of that --

HEARING OFFICER: Okay.

MR. RIESER: -- and then address both of those two things together.

HEARING OFFICER: All right. Let -- if I can -- let me just read these two pages really quick.

MR. RIESER: Yes. But the basic response is this is a Pollution Control Board hearing. Jim Huff has testified -- is a witness who has testified as an expert before the Board many, many, many times.

He has a vast realm of knowledge in this area. The information he is -- to which he is testifying is information which is, as he states within it, information which he -- on which he typically relies as an expert, and certainly the Board is in a position where it can discern when Mr. Huff is being argumentative.

HEARING OFFICER: Okay. So we want -- you want to wait and do it now, or you want to --

MR. RIESER: Well, let me --

HEARING OFFICER: You want to have him testify --

MR. RIESER: -- let me ask him to identify his exhibit.

HEARING OFFICER: Okay. Has he been sworn in?

MR. RIESER: Yes.

HEARING OFFICER: Sorry.

THE REPORTER: A while ago.

HEARING OFFICER: Can't remember. Okay. I'm sorry. Go ahead.

A. Exhibit Seven is entitled "Technologies for Control and Measurement of Mercury Emissions from Coal-Fired Power Plants in the United States -- a 2010

Status Report."

Q. (By Mr. Rieser) And this is also an exhibit which you discuss in your testimony which is part of Group Exhibit Six?

A. Also referenced as Exhibit Seven in my testimony. Correct.

MR. RIESER: Okay. And I admit -- move for the admission of Exhibit Seven.

HEARING OFFICER: Can I see Exhibit Seven?

MS. MEDINA: And we would object that it is irrelevant and not part of the record.

HEARING OFFICER: This is not part of the record?

MR. RIESER: It is admittedly not part of the record. It's introduced for the purpose of Mr. Huff's discussion of comparing the cost of mercury treatment at a wastewater facility with the cost of treatment of mercury emitted from coal-fired power plants, which was the subject of an extended Board rule-making already, so it's something the Board is familiar with. But admittedly, this is not a docu --

HEARING OFFICER: But is it being used to refute something in the record?

MR. RIESER: It is not being used to refute something in the record. It is being used to discuss and put some context to the costs and discussion of whether the costs mean that this treatment system that would be required under the Agency's permit does not -- is not best degree of treatment; that it's economically unreasonable.

MS. MEDINA: So --

MR. RIESER: That's what it goes to.

MS. MEDINA: So the --

HEARING OFFICER: Well -- I'm sorry. Go ahead.

MS. MEDINA: So the argument is that it is refuting the Agency's decision on economic reasonableness. It's offered to refute that.

HEARING OFFICER: Okay.

MS. MEDINA: And this -- we would argue that technologies for treating mercury emissions are not relevant to the cost of treating mercury in wastewater discharge.

HEARING OFFICER: The Board policy has been that documents that existed before the Agency made its determination that are being used to refute something in the record are admissible. That's what

the Board has held in the past. That's why I asked if it was being used to refute something in the record. So you're saying it possibly could be?

MR. RIESER: It certainly goes to the question of whether the technology that would be required to meet the permit is economically reasonable, and the Agency did make a decision that the technology was economically reasonable, so to the extent that it talks about the costs of other mercury removal technologies in other media for the purpose of giving the example of how out of line the costs of this particular treatment are, yes, it does go to that issue.

HEARING OFFICER: I'm going to go ahead and admit it, then. So Petitioner's Exhibit Seven is admitted.

MR. RIESER: Thank you. As well as the portions of Exhibit Six that were --

HEARING OFFICER: The opinion testimony?

MR. RIESER: Yes.

MS. MEDINA: I'm going to admit that as well. It's consistent with other opinion testimony I've seen in the past, so I don't think it's anything terribly unusual, so I will admit that as well.

MR. RIESER: Thank you very much.

Q. (By Mr. Rieser) Mr. Huff, would you briefly summarize your testimony?

A. Yes, I will. Good morning. My name is James Huff. I'm senior vice-president and part-owner of an environmental consulting firm, Huff and Huff, Incorporated, that was founded in 1979. I've practiced full-time in the environmental field since 1971. I have a Bachelor's of Science in chemical engineering from Purdue and a Master's of Science in engineering from the environmental engineering department at Purdue as well.

My work experience includes two years with the Mobil Oil refinery, starting up the Joliet refinery. I spent three years at IIT Research Institute doing advanced wastewater treatment work, including refinery wastewater. I spent four years with Akzo Nobel -- A-K-Z-O -- as manager of environmental affairs responsible for eight plants in the U.S. and one in Canada for all environmental matters.

For the last 32 years at Huff and Huff, Incorporated, I've been involved with environmental impact studies associated with wastewater discharges

on receiving streams, antidegradation treatment, wastewater treatment designs, and NPDES negotiations.

I was retained by ConocoPhillips Company's Wood River refinery in 2006 to prepare the antidegradation analysis for the plant expansion and the associated expansion in the wastewater treatment plant. That expansion included taking the capacity of the refinery from 323,000 barrels per day to 385,000 barrels per day, which is basically a 19 percent increase in production, as well as the installation of three wet gas scrubbers to remove sulfur dioxide. The wastewater treatment facility prior to the expansion had a design average flow of 7.93 million gallons per day, and that -- to handle the expansion, that was to be raised to 10.97 million gallons per day.

I conducted a mixing zone study in addition to the antidegradation assessment, and as part of that mixing zone study, we also did a mussel survey within the existing mixing zone and discovered a mussel bed immediately beneath the Wood River refinery Outfall 001, so we expanded the mussel study and found that the mussels were primarily located closer to shore and recommended that the outfall be extended out into the Mississippi River.

We developed a preliminary design work for that, did the modeling, and -- for extending that outfall line 120 feet from the shoreline and angle it 30 degrees to the vertical to maximize mixing. The cost for that outfall extension exceeded $1 million. The result of the outfall modification resulted in an 86-to-one dilution being achieved within the first 137 feet downstream of the outfall with a small 21-foot lateral spread from the center line.

I also worked with the Wood River refinery to document compliance with the Board's antidegradation assessment, and as part of that efforts, we did a close analysis of the existing treatment plant, the proposed treatment plants, and as part of the antidegradation assessment, the Wood River refinery agreed to no increase in permitted loadings for a number of pollutants, including biochemical oxygen demand, total suspended solids, ammonia, chemical oxygen demand, oil and grease, phenols, total chromium, and sulfite.

In addition, with the application of a phosphorous control, the refinery committed to a reduction a 6,200-pound per year in its discharge of ammonia -- or phosphorous. I'm sorry. And all this

was done with the 19 percent increase in production.

As part of the antidegradation assessment, at the request of the Agency, samples of the effluent were collected using a low-level detection level for mercury, and a total of 14 samples were collected. They had a mean concentration of those samples -- 14 samples of 12.5 nanograms per liter -- and then applying the U.S. EPA statistical protocol, the 95th percent confidence level of the mean was computed as 17.6 nanograms per liter.

And it's interesting -- that statistical approach is appropriate. The work that Jeff Allen referred to -- they collected 23 additional samples on the effluent, and they found a mean concentration of 14.4 nanograms per liter, higher than the mean that we had, but within the statistical range that had been predicted using standard statistical practices.

Based on the incremental flow that's going to be added, which is 2.57 million gallons per day, that equates to adding a point -- 0.11 pounds per day of mercury to the Mississippi River. Based on the upstream Mississippi River mercury concentration, no measurable change in concentration at the edge of the mixing zone was predicted. And then at the request of

the Agency, we went back and evaluated treatment technologies for metals in the antidegradation assessment, and we evaluated the cost for reverse osmosis, activated carbon, and ion exchange, and determined that all of these technologies were technically impracticable.

The 2009 permit limits. The initial antidegradation assessment was submitted in April 25th of 2008, including the results of the 14 effluent samples from mercury. On May 15th, 2008, I had a telephone conversation with Bob Mosher of the planning section at the Illinois EPA, and Mr. Mosher informed me that the Agency management had determined that no mixing zone would be allowed for mercury and that the effluent limit would be set at the water quality human health criteria, which is 12 nanograms per liter, based on an annual average.

The Agency completed its own water quality-based effluent limit analysis on June 12th, 2008, and that's my Exhibit Four, and in that document, the evaluation concluded -- quote -- "no reasonable potential to exceed the mercury standard at the end of pipe," but footnotes -- quote -- "The mercury standard for human health, 0.000012 milligrams

per liter, is not evaluated."

In addition, the Agency included an annual mercury load limit based on an average concentration of the 14 samples, 12.5 nanograms per liter, instead of the statistically-derived 17.6 nanograms per liter, and then they also used a preexpansion flow not of 7.93, but of 7.49 million gallons per day.

The result of that is that the higher flow at the -- post-expansion, the mercury mass limit establishes an equivalent to discharge only 8.5 nanograms per liter of mercury due to the increase in flow from the refinery processes. The mercury effluent limits were established by the Agency without addressing the technical impracticability of these limits.

For the Wood River refinery permit, the Agency refused to consider a mixing zone for mercury, although the Board rules specifically provide for one for discharge outside of the Lake Michigan basin. The Agency also refused to follow its own practices in setting load limit for mercury. The mercury here -- has set the mercury effluent -- a mass limit that effectively limits the annual average mercury

concentration to 8.5 nanograms per liter in a way entirely different than the effluent limit it set for all the other parameters in the 2009 permit.

2011 NPDES permit mercury limits. I had an opportunity to review the record and the 2011 permit. I was not directly involved with that. The review notes by the permit-writer cited the Board's mixing zone rule at Section 304.102 of the Board's regulation, which require best degree of treatment for wastewater consistent with technological feasibility, economic reasonableness, and sound engineering judgment. The permit-writer concluded that the proposed treatment option for mercury, granular media filtration, at a then cost of $9.4 to $14.1 million, is the best degree of treatment for mercury for the removal for -- on the order of 0.2 pounds per year.

This decision conflicts what the U.S. EPA's best available treatment's determination of the categorical treatment standards for refineries, which requires no mercury control. The Agency in this instance has apparently determined the best degree of treatment is more stringent standard than the best available treatment as defined under the Clean Water Act, a position that I have never experienced before.

Jeffrey Allen testified to the Wood River refinery already removing 98 percent of the mercury in its wastewater through its existing treatment facility, and that high degree of removal should have been considered in the best degree of treatment analysis.

Mr. Allen further testified that the updated capital cost is between $18.5 mill -- is $18.5 million in 2011 dollars, and so if you go back and compute that on a cost per pound of mercury it removes, it equates to $6.9 million per pound of mercury removed by a system that's already removing 98 percent of the mercury from the wastewater. Even if treatment technology could be deemed technically feasible, it cannot be deemed economically reasonable.

And so for context and scale, just to put that in a perspective, a typical coal-fired power plant emits two orders of magnitude more mercury into the environment than what the Wood River refinery discharges to the Mississippi River, and for a coal-fired boiler, the cost for removal range from $6,000 to $67,000 per pound, or to two to three orders of magnitude lower than what is being asked of the Wood River refinery. Clearly there are more

cost-effective measures that can be taken to reduce mercury releases into the environment.

In closing, the Illinois EPA issued an NPDES permit for the Wood River refinery in 2009 and again in 2011 that contained mercury limits, both concentration and mass-based, that were inconsistent with the Board's regulation as well as inconsistent with the U.S. EPA's technical support document which is routinely followed when establishing effluent limits.

The Agency applied its best professional judgment that the best degree of treatment for mercury involves a technology not demonstrated and never applied at any refinery in the world and ignores the 98 percent mercury reduction already achieved. The incremental cost for this permit requirement is on the order of $6.9 million per pound of mercury removed, and in my professional judgment, that is not economically reasonable. That concludes my --

MR. RIESER: I have no questions.

MS. MEDINA: Are those extra copies of the antidegradation study there?

MR. RIESER: Yes, they are.

QUESTIONS BY MS. MEDINA:

Q. Turning to the antidegradation analysis, which is part of Petitioner's group exhibit -- is that correct?

HEARING OFFICER: Six.

MR. RIESER: That's correct. It's Exhibit Two to his testimony.

Q. (By Ms. Medina) Showing you Page 69 of your Exhibit Two to your testimony. Can you describe what this analysis is?

A. It's entitled "Predicted Water Quality at the Edge of the Zone of Initial Dilution." The zone of initial dilution is a relatively small area where you are allowed to exceed acute toxicity numbers.

Q. Did you evaluate mercury in this analysis?

A. Yes, I did.

Q. Did you compare mercury -- the concentration that you determined for the zone of initial dilution for mercury -- is it compared against the human health standard in this analysis?

A. It is not, no.

Q. Thank you. Turning to Page 70 of the same Exhibit Two of your written testimony, can you state what the title of this analysis is?

A. So this is entitled "Predicted Water Quality at the Edge of the Mixing Zone." So here we analyzed a predict -- or computed what the predicted concentrations would be at the edge of the completed mixing zone.

Q. Did you evaluate mercury in this analysis?

A. Yes, ma'am.

Q. Did you compare mercury against -- the mercury concentration at the edge of the mixing zone to the human health standard for mercury?

A. No. It was compared to the chronic water quality standards.

Q. Thank you. Showing you Page 43 of your Exhibit Two to your testimony. Can you describe what this document is?

A. Yes. This was the available mercury water quality data in the Mississippi River below Grafton, Illinois, so these are water quality samples.

Q. Looking at the sample which appears to be for December 2002, the first sample result listed -- what is the result?

A. It was non-detect, and the method that was used in 2002 is a less sensitive method than what

is used today. It was less than 0.00002 milligrams per liter.

Q. Is that detection limit more than the human health standard for mercury?

A. So I need to just clarify one point. The human health standard.

Q. Could you --

MS. MEDINA: Objection. Non-responsive.

A. Well, but -- may I finish? It's --

HEARING OFFICER: Well, I don't know what you were saying, so go ahead.

Q. (By Ms. Medina) Is --

A. So the human health standard is an annual average, and you -- just like the last two tables where you looked at the instantaneous or daily samples, this is a daily sample, but the result, if you want it in nanograms per liter, is 20 -- is less than 20 nanograms per liter, versus a human health standard of 12 nanograms per liter.

Q. So the detection limit is greater than the human health standard for mercury?

A. That is correct.

Q. Thank you. Have you ever been involved in consulting on a matter where a mixing zone for

mercury was at issue?

A. No.

MS. MEDINA: Thank you. That's all I have.

QUESTIONS BY MR. RIESER:

Q. With respect to the last question, are you aware of whether the State of Illinois EPA has ever issued a effluent standard for mercury which would require the consideration of a mixing zone?

A. An effluent standard -- the -- I don't believe there's an effluent standard in Illinois under the Board's regs.

Q. Or that they've issued a permit which requires a water quality-based effluent limit from your current (ph) that would require consideration in this case?

A. They have -- the Agency has issued permits that contain a mercury effluent limit in there, yes.

MR. RIESER: I've got nothing further.

HEARING OFFICER: Anything? Anything else?

MS. MEDINA: (Shaking head "no.")

HEARING OFFICER: No? Okay. Thank you

very much. Do you have anything further?

MR. RIESER: I have nothing further. Obviously I reserve the right to recall witnesses in rebuttal, but --

HEARING OFFICER: All right. Well, why don't we take a short break, go off the record?

[A recess was taken.]

HEARING OFFICER: Okay. We are back on the record, and we will begin with -- the Agency may call its first witness.

MS. MEDINA: Okay. I did reserve to make my opening now, so if I could just make a --

HEARING OFFICER: Oh, oh. Yes, yes. Go ahead. Go ahead.

MS. MEDINA: -- just a few brief comments. The Agency will show that they conducted to the best of their ability an analysis as to whether the granular media filtration option for treating mercury at the Phillips 66 Wood River refinery was technically feasible, of sound engineering judgment, and economically reasonable. The Agency will show that this decision was made to the best of their ability given the data that Phillips 66 was willing to provide at the time of the decision, and that their

decision was certainly not arbitrary or capricious.

We have two witnesses, Bob Mosher and Jaime Rabins. Bob Mosher is expected to testify concerning the basis for the original denial of the mixing zone in the modified permit in 2009 and what input he provided concerning the best degree of treatment analysis that was conducted to determine whether a mixing zone would be granted in the most recent renewal permit, which is the subject of this appeal hearing.

He will also comment on whether or not the antidegradation analysis is sufficient to determine whether the human health standard for mercury can be met at the edge of the mixing zone if one were to be granted or what would be the basis of such a decision given the information provided in that antidegradation assessment.

Jaime Rabins will testify concerning his part in establishing the mass limit for mercury. He will also comment on what analysis took place concerning whether the treatment technology proposed by Phillips 66 was the best degree of treatment or not. So we'll start with Bob.

HEARING OFFICER: Would the court

reporter please swear in the witness?

[Mr. Mosher duly sworn by the court reporter.]

MS. MEDINA: I guess before we start, we should just clarify how our exhibits will be handled so that we're clear.

HEARING OFFICER: Okay.

MS. MEDINA: I have marked my exhibits, although I will admit there are a couple that are out of order, so I assume you're going to start with renumbering them with the court reporter?

HEARING OFFICER: We don't have to. I mean, we can -- the -- you mean just the -- in terms of changing the letters to numbers, or in terms of reordering them?

MS. MEDINA: Right. You want to use the numbers I have on my exhibits?

HEARING OFFICER: I think so. I mean, yours are all part of the record; is that correct?

MS. MEDINA: With the exception of A that Bob has prepared.

HEARING OFFICER: I'm inclined to just leave it the way it is unless you --

MS. MEDINA: Okay.

HEARING OFFICER: -- have any problems, concerns.

MR. RIESER: I don't have any -- no, I don't have any objection. We can leave it the way it is.

HEARING OFFICER: Okay. Let's just do that.

MR. RIESER: Yes.

MS. MEDINA: Okay. All right. We'll get started, then.

QUESTIONS BY MS. MEDINA:

Q. Bob, can you state your name for the record?

A. It's Robert Mosher.

Q. And can you provide us some details regarding your educational background?

A. Yes. I have a Master of Science in zoology from Eastern Illinois University.

Q. And can you provide us some details concerning your current position at the Illinois EPA?

A. Yes. I've been with Illinois EPA almost 27 years. Most of that time and currently I am the manager of the Water Quality Standards Section in the Division of Water Pollution Control, Bureau of Water.

Q. With respect to mixing zones for mercury, is this -- is the subject of this appeal hearing, this matter, the first time you've ever dealt with analyzing whether a mixing zone would apply for a facility for mercury?

A. Yes, it is.

Q. To your knowledge, is it the first time the Agency has dealt with such an issue?

A. Yes.

Q. You're familiar with the NPDES permit issued on December 22nd, 2011, which is the subject of this appeal hearing?

A. Yes.

Q. And you're also familiar with the permit that was issued February 5th, 2009, for the Wood River facility?

A. Yes.

Q. To your knowledge, is the -- I'll refer to the 2009 permit as the modified permit and the one issued in 2011 as the renewal permit for purposes of clarity. With respect to the modified permit, to your knowledge, was that the first time mercury was limited or -- a mercury limit was included in an NPDES permit for the Wood River facility?

A. It was the first time, yes.

Q. And were you involved in the Agency's decision to limit mercury in the modified permit?

A. Yes.

Q. I'd like to start with Respondent's Exhibit H. Again, I apologize. These are out of order. Showing you Respondent's Exhibit H, which is Document Number --

MR. KRUSE: 83.

Q. (By Ms. Medina) -- 83 of the record. Do you recognize this document?

A. Yes, I do.

Q. Can you explain what this document is?

A. It's a listing of effluent data collected at Outfall 001 of the facility in November and December -- well, actually, August through December 2007.

Q. And you recall this as information you received for purposes of analyzing mercury at this facility in the context of the modified permit?

A. Yes.

MS. MEDINA: I would move to admit this as Respondent's Exhibit H.

HEARING OFFICER: Respondent's Exhibit H

is admitted.

MR. RIESER: No objection.

MS. MEDINA: Okay.

Q. (By Ms. Medina) Bob, looking at that data, is this the data you were provided pursuant to a request you made to the facility -- the Wood River facility?

A. Yes. We needed mercury data from the effluent using the low-level U.S. EPA 1631 lab method, and I believe we did ask them to do that sampling -- do that monitoring.

Q. I'd like to turn your attention to another document, Respondent's Exhibit A, which is Document 93 of the record. Do you recognize this document?

A. Yes, I do.

Q. Can you describe what this document is?

A. This is a memo I wrote to Jaime Rabins. It's dated June 12th, 2008, and it's my water quality-based effluent limit evaluation for the refinery.

Q. And this was a document that you created to document your water quality analysis?

A. Yes. It's -- the document contains a

reasonable potential analysis for the effluent to exceed a number of chemical parameters -- water quality standards for those chemical parameters.

MS. MEDINA: I would move to admit Doc -- Respondent's Exhibit A.

HEARING OFFICER: Respondent's Exhibit A is admitted.

MR. RIESER: No objection.

Q. (By Ms. Medina) Pursuant to your analysis of the data that you received, can you explain what your conclusion was as to mercury?

A. Yes. I concluded that the acute and chronic water quality standards for mercury, which, of course, deal with aquatic life toxicity, were not going to be exceeded by the effluent at end of pipe, but I also concluded that the human health water quality standard for mercury would not be met at the end of pipe.

Q. Given that analysis, did you recommend to grant a mixing zone for mercury?

A. No, I did not. I in fact recommended the opposite, that no mixing zone would be granted for mercury.

Q. Can you explain why you did not recommend

a mixing zone for mercury for the modified permit?

A. Well, we have at Illinois EPA never then and up to the present granted a mixing zone for mercury, and through some discussion with my supervisors, I was instructed that Illinois EPA would not be granting any mixing zones for mercury.

Q. Turning to the renewal permit -- were you involved in the Agency's decision to limit mercury in the renewal permit that was issued in 2011?

A. Yes.

Q. I'd like to draw your attention to Respondent's Exhibit B. You'll note there's an e-mail and an attachment. Can you describe what this document is?

A. Yes. This is from Deb Williams, an attorney at Illinois EPA, and it's a memo to my supervisor, Sanjay Sofat, and it's a discussion of the mercury mixing zone and whether we had sufficient evidence or basis to grant a mercury mixing zone.

Q. Did you -- were you provided with a copy of this memo?

A. Yes.

Q. And you read it at the time it was provided to you?

A. Yes.

Q. Did you agree with the conclusions that a best degree of treatment analysis would need to be addressed prior to making a decision on whether to grant a mixing zone?

A. Yes.

MS. MEDINA: I'd move to admit Respondent's Exhibit B.

MR. RIESER: No objection.

HEARING OFFICER: Exhibit B is admitted.

MS. MEDINA: Should I be handing these to you?

THE REPORTER: I guess they go to you.

HEARING OFFICER: I'll file them with the clerk. He doesn't need --

MS. MEDINA: Okay.

THE REPORTER: So I guess they go to you; right?

MS. MEDINA: Okay.

HEARING OFFICER: Yes.

Q. (By Ms. Medina) Turning to Respondent's Exhibit C. Could you describe what this document is?

A. This is information regarding the treatability study for mercury at the refinery.

Q. Were you able to review what appears to be a Powerpoint at the time this was provided to the Agency?

A. Yes.

Q. What was your understanding as to the feasibility of the technologies they presented, based on the presentation?

A. That there was one type of treatment that would achieve good results in removing mercury from the effluent.

Q. And what type of treatment was that?

A. The granular media filtration.

Q. Do you recall why they stated that treatment methodology would work?

A. Well, there was a pilot study, and some of the results were significant mercury reduction using that method.

Q. Turning to Respondent's Exhibit D. Can you also describe what this document is here? Let me rephrase that. Do you recognize this as an additional Powerpoint summary provided by Phillips 66 to the Agency?

A. Yes.

Q. Did you review this Powerpoint at the

time it was provided as well?

A. Yes.

Q. On or about the time it was provided?

A. Yes.

Q. Turning to Pa -- the second page of that document. Based on the information they provided, what did you understand their average mercury concentrations were at the end of the pipe at that time?

A. I think that's the third page of the document.

Q. I'm --

A. And this is some additional mercury data from the 001 outfall, and in addition to what we saw from late 2007, and as I understand it, this -- the 001 data was their end-of-pipe mercury concentration during this period of time.

Q. And their -- the average concentration that they stated was?

A. 14.8 nanograms per liter.

Q. So in your opinion, did they -- given their study results, did they still need controls for mercury?

A. Well, it --

MR. RIESER: I'm sorry. Could you read that back, please?

[The pending question was read by the reporter.]

MR. RIESER: Thank you.

A. The average result of 14.8 nanograms per liter is higher than the water quality standard for mercury human health, and therefore they weren't meeting that standard at end of pipe; therefore, in my opinion, they -- since they had not justified a mixing zone, they needed further treatment.

MS. MEDINA: Okay. I'd move to admit Exhibits C and D.

MR. RIESER: No objection.

HEARING OFFICER: Exhibits C and D are admitted.

Q. (By Ms. Medina) I'd like to turn your attention to Exhibit -- Respondent's Exhibit E. It's Document 39 of the record. Could you describe -- and take a moment to review the first and the following pages there -- what this information relates?

A. This appears to be some conclusions from the pilot study of the filtration method of treatment for mercury, and it gives some cost estimates for that

treatment.

Q. And what was the cost estimate that Phillips 66 shared with the Agency in this Powerpoint?

A. Full-scale filtration project cost at $9,400,000, possibly as high as $14,100,000.

Q. At the front of this Powerpoint is a list as in a meeting attendance list at the time this Powerpoint was presented. Do you know that you were at attendance at that meeting on June 29th, 2011?

A. I -- yes, I see my name on the list.

Q. Do you recall requesting any additional information at this meeting, besides this summary total of $9.4 to $14.1 million cost for treating mercury?

A. I do remember -- I believe it was after the meeting in the hallway or in the atrium of the Agency. I remember talking to Jay Rankin and asking him why all the effluent had to be filtered, because it would seem that they would meet compliant concentrations with the water quality standard if they only partially filtered, and I asked him, "Wouldn't that be less expensive? Why can't you do that?"

Q. What was your op -- how much did Phillips 66 have to reduce their effluent by in order to meet

the human health standard?

A. Well, the human health standard is 12 nanograms per liter. They were reporting an average of 14.8, so there was a need to reduce by 2.8 nanograms per liter. There's also an issue -- it's been brought up today -- that load limits for mercury in the permit would have required a lower concentration, which I believe is 8.5 nanograms per liter, but either way, it seemed to me that just filtering part of the effluent at a possibly lower cost would meet either of those limits.

MS. MEDINA: Okay. I would move to admit Exhibit E.

MR. RIESER: No objection.

HEARING OFFICER: Exhibit E is admitted.

Q. (By Ms. Medina) I'd like to call your attention to Respondent's Exhibit F. Do you recognize this e-mail?

A. Yes, I do.

Q. Is this an e-mail you sent?

A. Yes. I sent this to -- on June 29th, 2011, to several co-workers at Illinois EPA.

Q. And this would have been following the meeting with Phillips 66 on that same date?

A. Yes.

Q. Can you describe what information or requests you were sharing with your co-workers concerning that meeting or Phillips 66?

A. Yes. I had one point to make that there is a U.S. EPA guidance document available that allows facilities to do an economic affordability analysis. I mention this because the information we had got giving the cost was not presented in a way to know whether it's affordable or not. It was just a simple dollar amount.

And by using this U.S. EPA guidance document, there is a worksheet and there is a way to know if a given amount is affordable for the discharger. I also brought up my concern that we were being presented with costs for 100 percent effluent filtration and that given that a lesser amount of effluent filtered possibly would bring down the cost and still meet the limits.

Q. And if you turn to the second page of the e-mail, was there any other concerns you relay to your co-workers?

A. Yes -- I wondered about the Phillips assertion that putting filtered effluent into the

current lagoon system would really lead to more mercury being added to the effluent from the atmosphere, and that was -- that comment was made because Phillips said they would have to bore a new outfall pipe opening through the levee, and I was just questioning do they really need to do that to be able to meet the limits after filtration.

Q. Do you recall whether you relayed any of these needs for information to Phillips 66 either during that meeting, immediately after?

A. Well, I mentioned my conversation with Jay Rankin. I don't honestly recall if I mentioned to Phillips about the U.S. EPA guidance for the affordability study.

MS. MEDINA: Okay. Moving to admit Respondent's Exhibit F.

MR. RIESER: No objection.

HEARING OFFICER: Exhibit F is admitted.

Q. (By Ms. Medina) Did you prepare anything to aid you in your testimony today, Bob?

A. Yes, I did.

Q. I'd like to look at Respondent's Exhibit I, I think. You have a copy. You've commented that the reduction in the mercury effluent would have been

from 14.8 to the human health standard of 12 -- that that was the amount to be achieved by compliance with a treatment methodology. Is that amount of mercury in Phillips 66 effluent a significant amount, in your opinion?

MR. RIESER: I object to the use of the word "significant." We don't know what that means in this context.

HEARING OFFICER: Would you care to elaborate?

MS. MEDINA: I would like simply for Bob to describe his opinion as to the impact of that amount.

HEARING OFFICER: Go ahead.

A. Well, there's a reason there's a water quality standard for human health of 12 nanograms per liter, and that is that mercury is extremely bioaccumulative, which means it can go from water into the flesh of organisms, particularly fish. And the standard is set so very low, 12 nanograms per liter, in order to protect fish from accumulating excess body burdens of mercury such that those fish would be harmful to humans when humans consume the fish.

The concentration of mercury in a fish is

set at 0.06 milligrams per kilogram as the first threshold of advisory in Illinois, so when we find fish that exceed that body burden, an advisory against the consumption of the fish is placed on that body of water, and that's an extremely low amount.

So to -- it can't be minimalized that mercury, if discharged into water, will -- some of it at least will leave that water and enter into fish, and when you get down to the -- some of our conversation today has been in pounds -- pounds per day or whatever of mercury -- and the pounds are extremely low, admittedly, but given this quality of mercury to bioaccumulate, we're talking about as little as 20 to 30 micrograms of mercury being able to contaminate a one-pound fish to the point where we would have to issue an advisory against eating too much of that fi -- fish with that concentration.

So again, although the pounds loading of mercury from this effluent seems very low on a daily basis or even a yearly basis, the difference between 14.8 nanograms per liter of mercury in the effluent and 12 nanograms per liter of mercury in that effluent means that there would be several thousand fish -- if all of that mercury went from the water into the fish

in the Mississippi River, several thousand fish per day would be contaminated such that we'd have to advise people to limit their consumption of those fish. So mercury -- the water quality standard in human health for mercury is fairly unique, but that's the reason for it, and that's why we need to look very carefully at mixing zones for mercury.

Q. (By Ms. Medina) Thank you. Are you aware of whether the receiving water for the Wood River refinery was impaired for fish consumption -- mercury --

A. Yes.

Q. -- (inaudible) renewal permit?

A. The Mississippi River is listed in our Illinois Integrated Water Quality Report, also known as the 305(b) and 303(d) list. The use impaired is for fish consumption, and mercury is listed as a cause of that use impairment for fish consumption.

Q. Thank you. I'd like to turn to Respondent's Exhibit G, which is Record Number 101 -- Record Document Number 101, the antidegradation report prepared by Huff and Huff. Do you recall reviewing this document?

A. Yes, I did.

Q. In what context did you review it?

A. In one context, it provided data to do water quality-based effluent limit analysis such as we covered in the memo that I had written and is our Exhibit -- A?

Q. A, I think. Uh-huh.

A. This document also contains analysis for antidegradation.

MS. MEDINA: Okay. I'd move to admit Respondent's Exhibit G.

MR. RIESER: No objection.

HEARING OFFICER: Exhibit G is admitted. If you have one with an original tag, I'd take that one.

Q. (By Ms. Medina) Bob, I'd like you to turn your attention to Pages 69 and 70 of that report. Can you explain your understanding of the analysis that is printed on Page 69?

A. Yes. This is an analysis for several metals as to whether at the edge of a zone of initial dilution, the acute water quality standard applicable in the Mississippi River would be met.

Q. What was the analysis as to the concentration of mercury at the edge of the zone of

initial pollution?

A. Well --

Q. Let me rephrase that. What comparison is done between the predicted concentration of mercury at the edge of the zone of initial dilution and the acute water quality standard?

A. Yes. The acute water quality standard is listed, and that's 0.0026 milligrams per liter, and the predicted concentration of mercury at the edge of a zone of initial dilution is much lower than that concentration, so therefore it's concluded that there is no exceedance of the acute water quality standard for mercury at the edge of the zone of initial dilution.

Q. Turning to Page 70 -- could you describe the analysis that takes place for mercury on that page?

A. Yes. This is the analysis to predict the concentration of mercury at the edge of the mixing zone and then compare that to the chronic water quality standard for mercury.

Q. And what is the conclusion that's made in the report?

A. Well, the chronic water quality standard

for mercury is 0.0013 milligrams per liter, and the conclusion is that at the edge of the mixing zone, mercury will be much less concentration than that, so --

Q. In either Page 69 or 70, does the report provide analysis of the predicted concentrations of mercury against the human health standard?

A. No.

Q. In your opinion, should an analysis have been done of those predicted concentrations of mercury against the human health standard?

A. If someone wanted a mixing zone for the mercury human health standard, yes, I would think that they would want to do some prediction or mass balance analysis of some kind.

Q. If we compare the concentrations -- the predicted concentrations at the edge of the zone of initial dilution and at the edge of the mixing zone that are provided in this report against the human health standard, what would -- what is the result of that analysis?

A. Well, the problem here is that the upstream concentration of mercury, which must be known in this analysis to know if there's any mixing

existing at all for 12 nanograms per liter human health standard -- the mercury values given are not sensitive enough. They -- it already says here that the Mississippi River doesn't meet the 12 nanogram per liter human health water quality standard, so given that, there's nowhere to go with mixing. There's no assimilative capacity if we're to believe the upstream average concentration values given in the table.

Q. So if you could turn to Page 43 of the report. Could you describe for me what information is being provided on that page?

A Okay. This is some water quality data for mercury in the Mississippi River at Grafton. It's showing that most of the results are below detection, and it's obvious to me that the older mercury laboratory method is being used here because the detection limit is not what it should be, not what U.S. EPA Method 1631 would provide, and there's not a whole lot you can do with data like this. We don't look at mercury data from the old method at Illinois EPA anymore because of this and other problems with it.

Q. So is it fair to say that the data for mercury on Page 43 is outdated?

A. Yes. It's not only outdated, but it's insufficient for purposes of trying to evaluate whether the human health water quality standard for mercury is being met or not. You just can't tell.

Q. So is the assessment valid? Is the assessment of whether mercury -- whether there would be an impact -- excuse me. Let me rephrase. From this antidegradation report, can you determine whether the human health standard for mercury would be met at the edge of the mixing zone?

A. No, you can't tell, and the reason you can't tell is you don't really know what the upstream mercury concentration is.

Q. So what information would the Agency need now in order to make a mixing zone determination?

A. We need monitoring data from the Mississippi River upstream of this outfall using U.S. EPA Method 1631, and we would need enough samples to be taken over time to come up with an average with some statistical meaning. In other words, you would want more than just a few mercury samples to be taken.

MS. MEDINA: I'd like to just go back for a moment and determine whether we have all my exhibits thus far admitted. I believe we do, but --

HEARING OFFICER: I don't think we have --

MS. MEDINA: Anything --

HEARING OFFICER: -- G, I, J, and K.

MS. MEDINA: Okay. So at this time, I'd like to move to admit Exhibit G.

MR. RIESER: No objection.

HEARING OFFICER: Exhibit G's admitted.

MS. MEDINA: And I'd like to move to admit Exhibit I.

MR. RIESER: I'd like to voir dire that, if I may --

HEARING OFFICER: Okay.

MR. RIESER: -- before I decide whether I've got an objection.

HEARING OFFICER: Okay.

QUESTIONS BY MR. RIESER:

Q. Mr. Mosher, it's correct that Exhibit I is a document that does not appear in the record? Is that correct?

A. What's Exhibit I?

HEARING OFFICER: Oh.

MS. MEDINA: Your demonstrative exhibit for aiding your testimony.

A. Oh. To my knowledge, I'm unaware if it's in the record or not.

Q. (By Mr. Rieser) Is this a document that you prepared?

A. Yes, it is.

Q. And when did you prepare it?

A. Probably two to four months ago.

Q. And the purpose of preparing it was to gather information for the purpose of your testifying here today?

A. Yes.

Q. Was this information conveyed in any way to ConocoPhillips during the permitting process for either the modified permit or the renewal permit?

A. No, it wasn't.

MR. RIESER: I'd object, because it's not a part of the record.

MS. MEDINA: I'd like to respond to that objection.

HEARING OFFICER: Okay.

MS. MEDINA: The information that this is based on is all information that is in the record. Similar to some other information we've talked about today, this is simply Bob conducting some math on

information that exists in the record.

HEARING OFFICER: I'm going to admit Respondent's Exhibit I.

MR. RIESER: Thank you.

QUESTIONS BY MS. MEDINA:

Q. Okay. Bob, I'd like to just turn your attention back to a discussion we didn't quite finish. On the information that you were providing to your colleagues about additional information that you felt would be beneficial in making a decision on best degree of treatment, your -- the Respondent's Exhibit I, your e-mail -- did you receive for review any additional information beyond what was presented during the June 2011 meeting from Phillips 66?

A. I believe that's Exhibit F. Am I looking at the right one?

Q. Oh, I'm sorry. F. Yes. Excuse me.

A. Okay. I did not receive any of the information that I brought up in this memo from Phillips, no.

Q. Given the information that you did review and that was provided, did you have an opinion or conclusion as to the economic reasonableness of the granular media filtration technology for treating

mercury at the Phillips 66 Wood River facility?

A. Having no information to the contrary -- in other words, no other information of whether it was affordable or not -- I had no reason to assume anything than this was affordable.

Q. And is it your --

MR. RIESER: Excuse me. Excuse me. Can I just hear the answer read back?

[The requested portion of the transcript was read by the reporter.]

MR. RIESER: Thank you.

Q. (By Ms. Medina) In comparing the environmental impact of the mercury that exists in the Phillips 66 effluent to the cost of the granular media filtration treatment, do you have an opinion as to whether that treatment is economically reasonable?

A. Can you read it back to me?

[The pending question was read by the reporter.]

A. Well, that's hard for me to answer. I do believe that since almost all of our waters have fish advisories for mercury, that mercury is an important problem and a problem that we need to address, and this is one way we can reduce mercury in our waters.

I'm still -- it's still hard for me to make a judgment on affordability when I don't have any facts in front of me or our Agency doesn't have facts in front of them on affordability.

Q. So just to be clear, the only information you receive from Phillips 66 concerning the cost of the granular media filtration is what is -- is what was provided in the Powerpoint slides that we've reviewed during your testimony today?

A. That's correct.

MS. MEDINA: Thank you.

HEARING OFFICER: Is --

MS. MEDINA: I believe that's it. We've admitted A through I?

HEARING OFFICER: Yes. Yes.

MS. MEDINA: Okay.

MR. RIESER: Can I take a five-minute break before we start up?

HEARING OFFICER: Sure. Yes.

MR. RIESER: Thank you very much.

[A brief recess was taken.]

HEARING OFFICER: Okay. We'll go back on the record. Mr. Mosher, you are still under oath. We will begin with Mr. Rieser's cross-exam.

QUESTIONS BY MR. RIESER:

Q. Mr. Mosher, my name is David Rieser and I'm here representing Phillips 66. You testified that the Agency has a policy of not granting mixing zones with respect to mercury. Is that policy still in effect?

A. No.

Q. At what point was it not -- was it lifted?

A. We at the Agency proposed a general rule-making almost two years ago, and as part of our stakeholder outreach before we filed that rule-making with the Board, we had meetings with stakeholders, and in that rule-making at the time in the draft proposal that we had as a working document, we had propo -- we were going to propose to the Board to explicitly prohibit mixing for bioaccumulative substances, and that followed the policy that my boss had previously given me, so we decided, "Let's do that in a rule-making for -- before the Board."

We got comments on that issue of no mixing for bioaccumulative substances, and those comments really in our estimation would have possibly derailed the rule-making, which had other things that

we thought were important. We wanted to push that rule-making along and file it with the Board. So we withdrew that part of that rule-making. We never submitted that to the Board, and we stated, "Well, until we are ready to go to the Board with that prohibition, let the Board adopt a regulation that prohibits mixing for bioaccumulative substances." We were going to not have that policy anymore. We would therefore be willing to consider mixing for mercury or other bioaccumulative substances.

Q. The policy that you described as being in place and being advised by your management was in place -- when was that policy instituted?

A. I believe that came into being when we received the mercury effluent data from ConocoPhillips that indicated that they were not able to meet the 12 nanogram per liter human health mercury standard at end of pipe.

Q. Did the Agency communi -- I'm sorry -- strike that. Let me start over. So that would have been the 2007 results that you had among your exhibits?

A. Yes.

Q. Was that policy ever communicated to

ConocoPhillips?

A. Well, yes, I think it was. It appears in my memo.

Q. It appears in your --

A. My memo that's Exhibit A.

Q. So the statement on the bottom of Page Two of Exhibit A -- do you have a copy in front of you?

A. Yes.

Q. The statement that appears at the bottom of Page Two of Exhibit A that -- quote -- "no mixing zone is granted for mercury" -- unquote -- that's the statement of the Agency policy?

A. Yes.

Q. Was the -- what was the date the policy was rescinded? Oh, I'm sorry. Excuse me. Was the policy ever communicated to the public?

A. I've had conversations with the public -- I mean, if you mean in a very broad and general way, I don't believe it was, but certainly I've had conversations when that policy was in effect with different people and relayed that information to them.

Q. So the -- kind of obviously the policy wasn't subject to any notice and comment rule (ph)?

A. That's correct.

Q. At what point -- you testified generally about when the policy was rescinded, but do you have a better -- can you testify to a better date than you have so far?

A. That's very difficult. I know that these stakeholder meetings were being held -- let's see. We filed that rule-making in December 2010. Stakeholder meetings were being held sometime during 2010.

Q. So would it have been before or after the meeting held at the Agency to which you testified June 28th, 2010?

MS. MEDINA: Objection. That misstates facts.

HEARING OFFICER: Pardon me?

MS. MEDINA: The meeting was in 2011.

HEARING OFFICER: The meeting with --

MR. RIESER: 2011. I'm sorry. You're right. Strike that.

Q. (By Mr. Rieser) So it would have been before the meeting in 2011?

A. Yes.

Q. Thank you. And has the Agency communicated its current policy on this issue to the

public?

A. Well, certainly everyone at the stakeholder meeting would have been aware of this change, I believe, at least to the fact that we were withdrawing it from the previous draft of our proposed rule-making, but if you're talking about a general announcement of some type, then I don't think it was on our website or anything like that, no.

Q. You testified regarding the antidegradation study and testified with respect to the mercury data from the Mississippi River that's on Page 43. Who is responsible for doing the sampling?

A. I can give you my best guess at who's responsible for that. I believe this is an Agency water quality monitoring station, so unless it was one of our contractors that did it, Agency personnel would have taken these samples.

Q. So this is Illinois Environmental Protection Agency personnel?

A. Yes.

Q. And as part of your position with the Agency relating to water quality, is that an issue that's under your supervision?

A. No.

Q. Whose supervision is that under?

A. Gregg Good.

Q. Do you know whether the samples are continuing to be taken at this particular station?

A. I do not know.

Q. Do you know whether the methodology for sampling water quality in the Mississippi by the IEPA has been changed?

A. If you are asking do we still collect mercury data, the answer is no.

Q. You don't collect mercury data?

A. Not on a regular basis.

Q. Why not?

A. Our lab can't do the U.S. EPA Method 1631 procedure.

Q. There are other certified labs in the state with whom the IEPA could contract; correct?

A. There's one that I know of, and we have done that on a limited basis, but it is not part of our ambient water quality monitoring network routine.

Q. Tell me your title and job responsibilities again, please.

A. I'm the manager of the Water Quality Standards Section, Division of Water Pollution

Control, Bureau of Water. My responsibilities are to develop updated water quality standards and present those to the Illinois Pollution Control Board for adoption as Illinois regulations. My other main responsibility is to help with the implementation of those water quality standards and NPDES permits and 401 water quality certifications.

Q. And your background, if I'm correct, is in zoology? I think that's what you said you had an MS in.

A. That's my degree. My background's in aquatic ecology.

Q. But you don't have a background in engineering or in the designing of treatment plants; correct?

A. That's correct.

Q. Is it your job within the permitting process that the IEPA has to provide an opinion regarding the efficacy or appropriate cost of treatment?

A. There's a water quality standard titled "Mixing Zones -- Zones of Initial Dilution and Allowed Mixing" or something to that effect where there is a requirement that in order for the Agency to grant

mixing, we have to make a determination whether best degree of treatment is being provided, so in that regard, I am part of a team more or less that would look at the economic reasonableness of treatment.

Q. And does it also look -- is it also your task within that team to provide opinions regarding whether the cost of treatment is appropriate or the type or extent of treatment is appropriate in achieving the standard that's set in the permit?

A. Again, in regard to mixing zones, yes. That's what I have to do. That's why I recommend that people use that U.S. EPA guidance that attempts to get at the affordability or economic reasonableness of treatment.

Q. So following up on that guidance -- that guidance is directed at affordability; correct?

A. That's my understanding, yes.

Q. And is it the Agency's position that affordability is the same thing as economic reasonableness?

A. That is my understanding, yes.

Q. So with a company like Phillips -- say a large company -- any treatment that the Agency sees fit to require is automatically economically

reasonable because they have the ability to afford it?

A. I think that's a case-by-case determination, and in the case of Phillips, we've made -- we've granted mixing for several parameters, so we have agreed that they're meeting all those provisions of mixing zones. The one on mercury, we have not.

Q. And with respect to those other parameters, is there a document which contain -- with respect to those other parameters, did you evaluate the best degree of treatment for each and every one of those parameters?

A. Somebody at the Agency I believe did. Some of those have been in that permit for quite a while. Some were recently added. But in order for us to follow the mixing zone regulation, we must do that.

Q. Is there a document within the record that you're -- with which you are familiar which contains a determination by the Agency with respect to the Conoco -- that Phillips is providing the best degree of treatment for each of these other parameters?

A. Not that I'm aware of.

Q. The determination if there was one with

respect to the best degree of treatment for these other parameters would have been based on the antidegradation report prepared by Mr. Huff which was included in your -- as your Exhibit -- or portions of it were included in your Exhibit G; correct?

A. I'm not sure I caught that. Could you repeat it?

Q. I could. The information which the Agency would have reviewed for making a best degree of treatment was the information that was contained in Jim Huff's August 2008 antidegradation study; correct?

A. For which parameter?

Q. For all of the parameters.

A. Well, since we had granted mixing for some of those parameters long ago, no, I don't think we relied on anything in antide -- the antidegradation document for those.

Q. So the Agency's assessment of best degree of treatment doesn't require any review of the current technology available?

A. Those parameters have been granted mixing zones in the past. I believe the engineers at our Agency have made the analysis what types of treatment constitute best degree of treatment in different

situations. That analysis had never been made for mercury because no one ever asked us for a mixing zone for mercury before.

Q. Did you previously impose a limit for mercury in the facility which could not meet that limit at the end of a pipe -- at end of pipe?

A. Yes.

Q. What facility was that?

A. There are several municipal facilities that have limits for mercury, and the decision to put that limit in their permit is based on the reasonable potential analysis that we do based on their effluent quality. There's one other industrial permit that we have a mercury limit established.

Q. And in each of those permits, was the information provided by the discharger such that it indicated that the 12 nanogram per liter human health standard couldn't be met at the end of the pipe?

A. That's correct.

Q. Are these facilities providing treatment?

A. Specifically for mercury?

Q. Yes.

A. I don't know.

Q. Is the Agency contemplating any

enforcement actions with respect to these facilities if they are not meeting their permit limit and aren't providing treatment for mercury?

MS. MEDINA: I would object to that line of questioning. Bob is not part of the Division of Legal Counsel and will not have information as to the --

HEARING OFFICER: Let --

MR. RIESER: To the extent you know.

HEARING OFFICER: You can answer to the extent that you know.

A. I'm aware that when dischargers don't meet their permit limits that we do issue violation notices, and I don't know why we wouldn't do that for mercury like we do everything else.

Q. (By Mr. Rieser) Let me turn to the impairment issue. The basis for the Agency to make a determination that a stream segment is prepared under -- is impaired under 303(d) is the finding of one fish with mercury greater than -- is it .06 milligrams per liter in the industry --

A. It's a weight, so it would be 0.06 milligrams per kilogram contamination in fish flesh.

Q. So once -- so all you need for each

treatment segment is one fish; correct?

A. I don't know how -- what considerations those folks at the Illinois EPA take to make that decision.

Q. And that -- 303(d) is not a part of your --

A. I look at the 303(d) list. I read it. I note what things are impaired and what segments of rivers.

Q. But you don't know how the IEPA makes a decision as to whether -- as to how streams are determined to be impaired from mercury?

A. Not as specifically as you asked that question. I don't know if it's one fish or if it's more than one. I just know that they have a -- that threshold concentration, and that's what gets segments listed food for fish consumption impairment.

Q. And so you wouldn't know for the reach of the Mississippi on which this facility is located how that determination was made; correct?

A. Correct.

Q. There is a fish advisory statewide for consumption of fish with relation to mercury; correct?

A. I believe you're right.

Q. Do you know whether that's a source in and of itself of impairment? I'm sorry. Do you know if that's a source in and of itself of the Agency determination that a stream segment is impaired?

A. I think you're wanting to know are all stream segments in Illinois listed as impaired for fish consumption due to mercury because of the statewide advisory.

Q. That's a fair way to ask that.

A. And I don't know if that -- that that would be true or not, sir.

Q. The human health standard for mercury of 12 nanograms per liter -- that was adopted by the Board in the mid-1990s; is that correct?

A. That's correct.

Q. And at the -- at one of the hearings at which that was considered, you actually testified in support of the Agency's decision on that; correct?

A. I'm sure I did.

Q. And that testimon -- in that testimony, you state the basis for the 12 nanogram per liter standard was to take account of the possibility of fish consumption?

A. Yes. I mean, the -- it is a human health

standard, and we're protecting fish from accumulating high concentrations that would harm human health.

Q. So if the 12 nanogram per liter water quality standard is met, then that is sufficiently protective of human health; correct?

A. If that value for the standard is actually doing what was thought to be necessary at that time, yes. If all our water's in that 12 nanograms per liter, then we wouldn't have any undue body burden in fish for mercury.

Q. I'm not -- could you explain the first part of that answer? If it -- what I heard was if it was doing what it was supposed to do, and I'm not sure I understand what you're saying.

A. Well, that was almost 20 years ago, and I'm not so convinced that 12 is the right value any longer, given what we've learned in the intervening years. But at the time, yes, it was thought if you maintain that concentration of 12 nanograms per liter in the rivers, then the fish won't bioaccumulate too much mercury.

Q. But the Agency hasn't proposed to the Pollution Control Board that that number should be modified; correct?

A. No.

Q. And in fact, when the Agency proposed to include in refinery regulations its own internal and unannounced policy that mixing zones shouldn't be granted for mercury based on the response it got from the stakeholders with whom it shared that information, it decided not to do that at that time; correct? There's a lot there. Let me rephrase that.

MS. MEDINA: I'm going to object. This is asked and answered.

MR. RIESER: Fair enough.

Q. (By Mr. Rieser) The Agen -- you testified that the Agency proposed to its water quality stakeholders that it adopt its policy of no mixing zones for mercury, but decided -- this response to the reaction from the stakeholders -- that it wouldn't proceed with that proposal?

A. Correct.

Q. And that proposal is what's now before the Board as the most recent triennial water quality review; correct?

A. Correct.

Q. So there's no direct correlation between the impaired -- impairment determination under 303(d)

and whether or not the water quality standard -- human health water quality standard is achieved; correct?

A. That's correct.

Q. Excuse me just a minute. With respect to the discussion on water quality sampling in the Mississippi, were any of these concerns conveyed to ConocoPhillips during any of the discussions regarding either permit?

A. I don't believe they were for mercury.

Q. The two thousand and -- the draft permit -- draft modified permit, as we're calling it -- was issued in 2005; correct? It went out for public notice around then?

A. Correct.

Q. And the draft permit didn't -- did not contain any limit on mercury; right?

MS. MEDINA: I would object to that. That misstates facts.

HEARING OFFICER: Pardon me?

MS. MEDINA: That misstates facts.

HEARING OFFICER: It misstates facts?

MR. RIESER: Then you can say I'm wrong.

MS. MEDINA: Are you aware of the actual date --

A. No.

MS. MEDINA: -- the draft -- on that issue -- that --

HEARING OFFICER: Does that answer your question?

MR. RIESER: I think we're a question behind. Let me start over --

HEARING OFFICER: Okay.

MR. RIESER: -- just so the record's clear.

Q. (By Mr. Rieser) Would you agree that the draft modified permit went out for public notice in 2005?

A. That's the permit we went to hearing on?

Q. Yes.

A. I don't believe there was anything limiting mercury in that permit, no.

Q. What was the basis for requesting mercury data from ConocoPhillips to which you testified in 2007?

A. I'm not sure, but I think there were some questions about mercury at that hearing, if I'm not mistaken, but that's -- my memory on that's a little rough, so --

Q. Was there any additional data available that the Agency received after that hearing which suggested that there were water quality issues with mercury as a result of the Phillips discharge?

A. We came out of that hearing with some reasons to ask what the concentration of mercury was in the effluent, and I believe we conveyed the need for data to Phillips.

Q. You were asked questions regarding the presentation that ConocoPhillips made to the Agency in June of 2011 that's shown in -- presented as exhibits several Powerpoints?

A. Yes.

Q. Yes. And I think you testified it was on the basis of the information provided at those meetings, which included these Powerpoints, that you believed that ConocoPhillips -- Phillips could use the technology to achieve the standard. Correct?

A. Correct.

Q. Those -- what basis did you have for discounting the concerns expressed in those slides regarding whether that treatment could be achieved on a consistent basis?

A. My -- the extent of my review of that was

to see that very low levels of mercury were being produced by that process. I'm not an engineer. I didn't take it any farther than that. I didn't investigate consistency or anything.

MR. RIESER: Thank you. That's it.

HEARING OFFICER: Do you have anything further, Ms. Medina?

MS. MEDINA: I have a few questions.

QUESTIONS BY MS. MEDINA:

Q. Going back to the antidegradation report -- August 2008 report by Huff and Huff that we discussed during your testimony. You talked about the mercury background concentration data as being data collected by the Agency. That data is now outdated; correct?

A. Correct.

Q. Was that data outdated at the time of the issuance of the renewal permit in 2011?

A. That data became outdated as soon as the Agency adopted a human health mercury standard of 12 nanograms per liter. It no longer suited our needs because it has an inadequate detection level. It doesn't help us -- doesn't tell us whether we're going to meet that 12 nanogram per liter standard in the

river.

Q. If the information was outdated, what information -- if the information on mercury on background concentrations was outdated, what information -- alternative information could Phillips 66 have used in conducting their antidegradation assessment?

A. They could have gone to the river, collected samples, had them analyzed using U.S. EPA Method 1631.

Q. Is the impairment for fish consumption of mercury nevertheless a factor in granting -- in determining whether a mixing zone could be granted?

A. Yes, I believe that's something else we'd have to look at, because in the sense that we know the fish are contaminated with mercury -- you asked the question, "Is there assimilative capacity in the river to accept mercury and dilute it?" And I think that's one of the tough questions in this -- I can see how some could argue that you shouldn't have a mixing zone for mercury if fish are contaminated with mercury.

Q. Do you believe additional information from Phillips 66 would have helped make the mixing zone determination and conduct the best degree of

treatment analysis for the renewal permit?

A. Well, I think we've covered three problems or issues with granting a mixing zone for mercury. One is the one we just talked about. The fish are contaminated. Is there assimilative capacity in the river to allow mixing for mercury? That's Number One.

Number Two, in order to grant a mixing zone, we have to know what the concentration of mercury is in the river upstream of the discharge. That's a basic component of the mass balance equation that is always done to know if we are able to grant mixing.

Number Three, we have to answer the question, "Has the applicant provided best degree of treatment according to the mixing zone water quality standard?" So those three issues exist. Any one of them could be a -- constitute a prohibition against a mixing zone for mercury.

MS. MEDINA: Thank you. That's all I have.

QUESTIONS BY MR. RIESER:

Q. Excuse me. You testified that the water quality data from the Mississippi was outdated as soon

as -- I think you said the Agency -- that obviously, it was the Board -- adopted the human health standard; correct?

A. Yes.

Q. So subject to your checking, that was in May 16th, nine -- it was on May 16th, 1996 -- Proceeding 94-1A. Does that sound about right?

A. Sounds right.

Q. So despite your belief that the information was outdated, the Agency continued to sample using the -- what you considered to be an outdated methodology for at least 10 more years; correct?

A. That sounds about right.

Q. And what efforts did you make to get that sampling methodology changed?

A. I went to those involved with the sampling program and the laboratory program and explained many times that what we were doing no longer made sense; there's other problems with the method that was being used besides its inadequate detection limit.

For I think reasons of funding, we -- the Agency wasn't able to take my advice. We eventual --

probably not just myself, but it -- the realization of it eventually came that -- myself and others persuading that, "We're wasting our money doing the old method, so let's not do anything at all." So again, I'll stand by that. It's -- that method wasn't giving any useful information, and I would have liked to have seen it stopped before it was actually stopped.

Q. So the response to the outdated methodology was to actually cease doing any further water quality sampling in the Mississippi River?

A. That's correct.

Q. Is that statewide, or is that just the Mississippi?

A. Statewide.

Q. There were three items that you identified as being additional information that would have made a difference in the mixing zone decision. I'm assuming this is for the renewal permit of 2011, not the 2009 one. And one was the assimilative capacity of the river, and the second was to -- needing to know the upstream mercury concentration. Were either of these two compo -- these two questions conveyed to Phillips?

A. I don't believe we conveyed the concept of the contaminated fish precluding a mercury mixing zone, but Mr. Huff has done mixing calculations, as you've pointed out, for a long time, and I believe he knows that you need to know what the upstream concentration is of the substance you want to have mixing. I don't think that's any revelation that he didn't already know.

Q. The Agency commented several times on Mr. Huff's antidegradation study and several different revisions were submitted to the Agency; correct?

A. I believe so.

Q. In any of those comments for which a revision was submitted, was this issue of needing to know the upstream mercury concentration identified?

A. I can't recall.

MR. RIESER: Okay. That's what I've got. Thank you.

HEARING OFFICER: Ms. Medina, anything further?

MS. MEDINA: Yes, just one question.

QUESTIONS BY MS. MEDINA:

Q. In your opinion, has Phillips 66 demonstrated that they can meet the human health

standard at the edge of the mixing zone?

A. No. As I said, to be able to do that, you need to know what the upstream concentration is in the river.

MS. MEDINA: Thank you.

MR. RIESER: Nothing further.

HEARING OFFICER: Okay. Thank you, Mr. Mosher. You may call your next --

MS. MEDINA: Can we have five?

HEARING OFFICER: Oh, you want to take five minutes?

MS. MEDINA: Five-minute bathroom break?

HEARING OFFICER: Sure.

[A brief recess was taken.]

HEARING OFFICER: Okay. We'll go back on the record. The Agency may call its next witness.

MS. MEDINA: I would like to call Jaime Rabins.

HEARING OFFICER: Okay. The court reporter will swear you in.

[Mr. Rabins duly sworn by the court reporter.]

QUESTIONS BY MS. MEDINA:

Q. Hi, Jaime. Could you state your name for

the record, please?

A. Jaime Rabins.

Q. And could --

THE REPORTER: Could you spell that for me?

A. It's J-A-I-M-E, R-A-B-I-N-S.

THE REPORTER: Thanks.

Q. (By Mr. Rieser) Could you tell us about your education?

A. I have a Bachelor's of Science in electrical engineering from Southern Illinois University and a Master's in Business Administration from the University of Illinois.

Q. Could you tell us what your position is at the Illinois EPA?

A. I am a environmental protection engineer, Level Three.

Q. Do you have any professional registrations or certifications?

A. Yes. I'm a registered professional engineer in the State of Illinois.

Q. And you're familiar with the Phillips 66 NPDES permit which was issued in December of 2011 which is the subject of this appeal hearing?

A. Yes.

Q. And you're also familiar with the permit issued -- the NPDES permit issued in February 2009 --

A. Yes.

Q. -- to the same facility? To your knowledge, was the modified permit, the one issued in 2009, the first time a mercury limit was included in the NPDES permit for this facility?

A. To my knowledge, yes.

Q. Were you involved in the Agency's decision to include a mass limit for mercury in this -- in the modified permit?

A. Yes.

Q. How so?

A. I computed the mass limit for the discharge.

Q. I'd like to show you what's been marked as Respondent's Exhibit J. Do you recognize this document?

A. Yes.

Q. And can you describe what it is?

A. They're my 30-day review notes for the modified permit.

MS. MEDINA: Move to admit Respondent's

Exhibit J.

MR. RIESER: No objection.

HEARING OFFICER: Exhibit J is admitted.

MR. RIESER: No objection.

Q. (By Ms. Medina) Can you explain how you calculated the mass limit for mercury? And feel free to refer to the document I've just provided you if you need that to refresh your recollection.

A. We obtained data from ConocoPhillips indicating that the concentration of mercury in their effluent was 12.5 nanograms per liter. We then converted that to a mass by multiplying it by the flow times the conversion factor.

Q. And where did you obtain the flow figures from? Let me rephrase. Do you recall where you received the flow figures from?

A. It should have been the permitted flow at the -- the permitted flow prior to the CORE project, the DAF, so what would be the permitted flow.

Q. Can you explain why a mass limit was needed?

A. There's a few reasons. Federal regulations require that mass -- that all pollutants be limited in mass, with a few exceptions for pH and

others that don't -- that can't be converted to a mass. State regulations also require that. A third reason was ConocoPhillips agreed to maintain existing levels -- existing discharge levels for all pollutants prior to the CORE expansion in exchange for not having reduced VOD and TSS limits, so by putting -- by using a maximum that we could hold them to those existing levels -- because a concentration limit is not going to limit the pollution; it only limits the mass per volume.

Q. So determine -- so in order to determine what their existing levels of mercury were in their effluent, you used the average concentration provided to you by Phillips 66?

A. It was their data. Correct.

Q. Were you involved in the Agency's -- I'm sorry. Let me back up.

MS. MEDINA: Did -- we already moved to admit this J; right?

HEARING OFFICER: Yes.

MS. MEDINA: Okay.

Q. (By Ms. Medina) Moving on to the renewal permit -- were you involved in the Agency's decision to limit mercury in the renewal permit?

A. Yes.

Q. I'd like to point your attention to Respondent's Exhibit B, which has already been admitted. It's an e-mail with an attached memo. Could you explain what this is and tell me if you recognize it?

A. I do recognize it. It is a e-mail from Deborah Williams at the Agency to me and several other employees.

Q. Do you recall the substance of the memo?

A. Yes. It's her review of the permit and providing suggestions of issues before we were to finalize the permit.

Q. If I could just point your attention to the third page of this document, the paragraph entitled "Best Degree of Treatment Factors." Could you review that paragraph there and tell me if you recall reviewing it at the time you received this memo and if you agree with what's stated there?

A. Yes, I recall reviewing it, and yes, I agreed with what was stated.

Q. So what assessment was needed before the Agency could grant or deny a mixing zone?

A. The Agency needed to determine if the

best degree of treatment was being applied.

Q. I'd like to turn your attention to Respondent's Exhibit E, which has already been admitted. Do you recognize this document?

A. Yes.

Q. Could you describe what it is?

A. On the cover is a attendance sheet for a meeting held on June 29th, 2011, between Phillips 66 representatives and the Agency.

Q. Did you attend that meeting?

A. Yes.

Q. Did you review the Powerpoint information that was provided at that meeting that is part of this exhibit?

A. Yes.

Q. Did you request any additional information from the company at the time of that meeting to help you in your assessment of whether the tech -- proposed technology was the best degree of treatment?

A. I don't recall personally asking, but I recall hearing at the meeting that we asked them for a affordability analysis so that we could determine if the best degree of treatment was applied, and

ConocoPhillips responded that they have sufficient material in the record. They weren't going to give us anything more.

Q. Can you summarize what information you received to review and make a determination as to whether the treatment technology was best degree of treatment?

A. We received pilot testing data that showed that granular media filtration technology would achieve the -- would allow the discharge to meet the 12 nanogram per liter limit, and we received the minimal cost data just showing the overall project cost of $9.4 to $14.1 million.

Q. At any time between the June 29th, 2011, meeting, and the time the permit was issued in December of 2011, did you receive any additional information from Phillips 66 regarding the cost of the granular media filtration technology?

A. No.

Q. Did you receive any detailed line item proposals for implementing such a technology at the Wood River facility?

A. No.

Q. Did you ever receive any sort of

breakdown as to what the $9 to $14 million would include?

A. No.

Q. I'd like to turn your attention to Respondent's Exhibit K. Can you describe what this is?

A. These are my 30-day review notes for the reissue permit.

Q. These are notes that you prepared?

A. Correct.

MS. MEDINA: I'd like to admit this document as Respondent's Exhibit K.

HEARING OFFICER: Exhibit K is admitted.

Q. (By Ms. Medina) Turning your attention to Pages Two and Three, approximately. Can you please, using this to refresh your memory if necessary, summarize how you concluded that the granular media filtration would be best degree of treatment? Let me rephrase that. I'm sorry. Can you please summarize the results of your best degree of treatment analysis?

A. Yes. I note that Section 304.102 requires that discharger provide the best degree of treatment of wastewater consistent with technological

feasibility, economic reasonableness, and sound engineering judgment.

I noted that the discharger studied mercury in the wastewater and concluded that it was bound in solids, that they proposed by removing the solids from the wastewater, mercury concentrations could be reduced to comply with the water quality standards, that they pilot-tested two technologies, granular media filtration and cloth drum filtration, and that in the April 29th, twenty -- 2011 letter to Sanjay, David Reiser at McGuireWoods states that, "To date, one technology, GMF, has produced mercury results that are below the proposed permit limits. GMF has averaged in the two to three nanogram per liter range." Thus the discharger acknowledges that compliance with the mercury water quality standard is technologically feasible.

I then go on to note that ConocoPhillips claims that it's not economically reasonable due to its high capital cost of $9.4 to $14.1 million and annual operation and maintenance costs of $380,000, and was able to determine on -- as of September 6th, 2011, at 12:22 PM Eastern Time, ConocoPhillips had a market capitalization of $89.43 billion, and they

reported on a Form 10-Q on August 21st, 2011, that net income attributable to ConocoPhillips was $6,430,000,000 for the six months ended June 30th, twenty -- June 30th, 2011.

I noted that an interim economic guidance for water quality standards for evaluation is necessary. I noted that they should have explored less-expensive treatment options based on the findings that the $14.1 million treatment will allow compliance. This option treats the entire effluent, removing mercury from 14.8 nanograms per liter to 12 nanograms per liter -- is all that is necessary. For example, what would be the cost of a system that only filtered one half the effluent? They should perform interim economic guidance for water quality standards affordability evaluation on any less-expensive partial filtration options they identify.

ConocoPhillips should support -- should provide support for their assertion that putting filtered effluent into the current lagoon system would possibly lead to acquisition of mercury into the final effluent before discharge. They must justify why it is necessary to bore through the levee to accommodate the filtered effluent discharge pipe, not simply

discharge filtered effluent into the lagoons.

I noted we asked him for that affordability analysis on June 29, 2011, in a meeting, and again, they maintained that the documents submitted thus far adequately demonstrate that it is economically unreasonable to comply with the mercury limits.

Based on what we had since the dischar -- since Conoc -- or Phillips 66 shown that they have a technology that demonstrates that achieving a mercury water quality standard is technologically feasible and the discharger has not submitted an affordability analysis in accordance with the interim economic guidance for water quality standards demonstrating that complying with the mercury limits is economically unreasonable, that the Agency concludes that the discharger is not providing the best degree of treatment of wastewater consistent with technological feasibility, economic reasonableness, and sound engineering judgment, and that the discharger is not eligible for allowed mixing for mercury, and mercury will remain limited in the permit at the water quality standard.

Q. Did Phillips 66 ever provide you with

detailed sampling data and analysis to show whether a waste stream could be segregated at the facility?

A. No.

Q. So you're not aware of -- you were not able to complete an analysis as to whether a lesser treatment option would be available due to such sampling?

A. Correct.

Q. Did Phillips 66 ever provide any estimation of how much mercury might increase in the effluent as a result of their poor refinery expansion?

A. No.

Q. Is there any other information that would have proved helpful in making the best degree of treatment analysis, in your opinion?

A. Yes. We needed additional information to determine if it was economically reasonable, and that information could have been provided by submitting an affordability analysis in accordance with the interim economic guidance for water quality standards. It's EPA 823 B 95002.

Q. Would additional cost data -- would additional detailed cost data as to the system they were proposing be also -- be helpful to you as well?

A. Yes.

MS. MEDINA: That's all I have.

QUESTIONS BY MR. RIESER:

Q. Mr. Rabins, my name is David Rieser from the law firm of Much Shelist. I'm going to ask you some questions about your testimony. First of all, is the purpose of the 30-day notice review note that we've got here as Respondent's Exhibit K -- that this is intended to include all of the comments that the Agency has -- I'm sorry. Let me start over. Is the 30-day notice review note intended to serve as something of a responsiveness summary for the Agency to provide all the information they have in responding to the comments that have been raised by others with respect to a -- permit?

A. Can you rephrase?

Q. I will. What's the purpose of a 30-day notice review note?

A. They are to provide comments prior to final issuance of the permit, so we're going to go over issues raised during public notice and consider them before -- what our consideration was prior to issuing the permit.

Q. And so it's important in doing that that

you put all of the issues raised and all of the Agency's bases for making its decisions within this 30-day notice review note; correct?

A. I can only put in there as to what I know. I can't put in there as to what other people at the Agency might consider.

Q. So this is -- this document, Exhibit K, is personal to the information that you have and the issues that you are raising with respect to a permit; is that correct?

A. Correct.

Q. In discussing the mass limit, you stated that the information came from -- you stated that the information came from the -- this is in Exhibit J? Yes. That this was based on the information provided by Phillips; correct?

A. Correct.

Q. So turning to Page Four of Five, you have the formula you use for deriving a load limit for mercury; correct?

A. Correct.

Q. What was the basis for the use of the 7.49 MGD number for flow?

A. It is my understanding that that was the

permitted flow prior to the CORE expansion.

Q. And when you say that the numbers were provided for mercury -- in terms of mercury values in the effluent -- you were provided with I think 14 separate values reflecting samples taken at different times; correct?

A. Sounds reasonable, but I don't have it in front of me.

Q. So you don't know exactly 14, but you were provided with samples taken at different times; is that correct?

A. Yes.

Q. And you have -- you did the math to average those samples to the 12.5 nanograms per liter value that you used in this equation?

A. I don't believe that I did.

Q. Do you know where that came from?

A. I believe that was from the water quality-based effluent limit analysis memo.

Q. Did you -- were you aware that Phillips had raised the issue of the use of the technical support document with respect to averaging those values?

A. Can you clarify?

Q. Were you aware that Phillips argued that a statistical evaluation needed to be applied to the sampling values that it provided to the Agency to -- rather than an average?

A. Yes.

Q. And in the water quality-based effluent limit that you just referenced, that's actually done? If you look at Respondent's Exhibit A, there's a 95 potential -- 95 potential number?

A. I don't have Respondent's Exhibit A in front of me.

Q. I'm showing you what's been marked as Respondent's Exhibit A.

A. Okay.

Q. In the column that's headed "95 percent," does that represent a statistical evaluation of the value supplied by the discharger that went into making the anal -- this assessment?

A. I'm not sure of your question.

Q. Okay. What does the 95 percent column represent, in your mind?

A. It doesn't represent anything. I don't do the -- this is a memo from Bob Mosher to me.

Q. So you don't know what the 95 percent

means?

A. No, I'm not certain what it means.

Q. Were you involved in the discussion to evaluate Phillips' argument that a statistical factor needed to be applied to the mercury values it supplied rather than averaging them?

A. Yes.

Q. What was the basis for rejecting that argument?

A. Honestly, I don't recall.

Q. Do you know whether the basis for rejecting that argument is in the record that the Agency filed in this proceeding?

A. No, I don't have knowledge if it's in the record.

Q. Is that a decision that you would have been charged with making rather than Bob Mosher?

A. It's not a question of normal because it's an abnormal situation, so I can't say that this would be typically done that way.

Q. Does Bob Mosher -- strike that. What is abnormal about the situation with respect to the calculation of the mass loading limit?

A. We normally don't compute a mass limit

based on what the average concentration is in a discharge of effluent. We would base it on a standard in the rules, so instead of basing it on 12.5, we would normally base it on 12.

Q. Why was the decision made here to base it on 12.5?

A. To establish what the load of mercury was prior to the CORE expansion. ConocoPhillips agreed to maintain existing levels for all pollutants.

Q. So that 12.5 number is intended to represent the amount of mercury being discharged by ConocoPhillips on a constant basis; is that correct?

A. No, that's not correct. It's to represent the concentration discharged by Conoco prior to the expansion.

Q. Thank you. Given a small set of -- I'm sorry. Strike that. Given a 14 -- given 14 sampling events, is it the Agency's practice to average that number to arrive at a determination of the load value rather than apply a statistical assessment to those 14 values?

A. As I said, since this is an atypical approach, I'm not aware of what is the typical Agency policy regarding that.

Q. Is it your belief that the 12.5 number used for calculating the loading was representative of the concentration of mercury from ConocoPhill -- in Phillips' discharge?

A. At the time they were submitted?

Q. At any time.

A. If you took 14 samples within a reasonable amount of time, yes, I believe that would represent the concentration discharge.

Q. That the average of those samples would represent the concentration discharge?

A. It would represent the average of the mercury discharged.

Q. Would it be representative of the amount of mercury in that discharge?

A. No. Concentration is not equal to amount.

Q. It was your testimony that Phillips agreed to maintain the existing limits for all constituents; is that correct?

A. That is correct.

Q. And is that -- how are you aware of that agreement?

A. I was informed by my supervisors

initially.

Q. And after they informed you, did you become aware from seeing a document or discussion at a later point?

A. I do not recall if there's a document out there.

Q. You don't recall?

A. I don't recall.

Q. Was this an issue that was addressed -- is it your understanding that this issue was addressed in the August 2008 Huff antidegradation report?

A. What issue?

Q. The issue of the agreement regarding the existing limits for constituents.

A. I don't recall if he did address any agreement in the antidegradation report -- if that is referenced or not.

Q. So your knowledge as to an agreement regarding the Con -- Phillips' agreement to maintain existing limits for all constituents -- the basis for that statement is what you were told by your supervisors; is that correct?

A. Correct.

Q. And you have no other knowledge of that

agreement other than what you were told; is that correct?

A. That is correct.

Q. Ms. Medina asked a series of questions about other information that Con -- that Phillips could have provided but didn't, including cost data, additional information regarding cost, detailed line items proposals, a breakdown of costs that made up the $9 million to $14 million. Do you remember those questions?

A. Yes.

Q. Did you ask for any of that information?

A. We asked for the economic analysis and told that the record was complete.

Q. But did you ask for the specific information that she asked you about?

A. I didn't ask them item by item, no. Personally did not ask them.

Q. Other than the affordability assessment, do you know whether ConocoPhillips was asked for any other information after the June 2011 meeting?

A. We asked them on numerous occasions where they were upon start-up -- what units were operating and what were not. They refused each and every time

to inform us. We wanted to know what units were operating so we could look at the wastewater data and compare that, but they wouldn't provide it.

Q. Did that -- did those questions relate in any way to the best deter -- EDT (ph) determination for mercury?

A. Yes, they can attest to whether the technology is currently in place or whether they need additional treatment options.

Q. I'm sorry. I don't understand what you mean, "whether the technology is currently in place."

A. Well, if everything's up and running and your mercury's lower, you may not need to install any additional technology, but if you don't know it's operating, you don't know if more mercury will be discharged -- maybe it will need more treatment or less treatment.

Q. Was it your ex -- the equipment that you're talking about is additional refinery process equipment that was part of the CORE project? Is that what you're talking about?

A. Wastewater equipment, or when I asked them if --

Q. When you -- I'm sorry. When you said

that you asked for information regarding whether technology was up and running, what technology are you referring to?

A. We asked were they -- were all the process units running? Were they receiving Canadian crude?

Q. Was it your expectation that as more process units came online, that there would be less mercury?

A. No, that's not an expectation.

Q. So in what way does that information tie into the determination of best degree of treatment for mercury?

A. Because in order to assess the technology, you have to have a reasonable expectation of what the pollutant loading is going to be.

Q. Were those requests documented at all?

A. I documented them in my 30-day review notes.

Q. Can you point in your 30-day review notes to where that's documented? That's Exhibit K.

A. Let me see. I only note in my notes that we asked them for the affordability analysis at the meeting. It's on Page Three, the third paragraph.

Q. And there's nothing in there about requesting information regarding when other technology came online; correct?

A. There's no notes, but several of the people that were present at the meetings are present here.

Q. Did you make an independent -- I'm sorry. You were present at the June 29th, 2011, meeting at which the technology -- the mercury treatment technology was discussed; correct?

A. Correct.

Q. And it would have been your job at the Agency to review the technical information that was presented at that meeting that you've included in your exhibits here; correct?

A. I would have been part of a group to review it, yes.

Q. What basis did you, or to the extent that you know, the group have to discount the concerns and risk factors identified by Phillips with respect to the ability to continue to meet the mercury standard consistently with this technology?

A. We didn't discount any concerns. We considered every concern, and they provided a

treatment system which met the mercury standard. They submitted data to show the GMF would meet the mercury standard.

Q. And that was for a pilot test; correct?

A. Correct.

Q. And within the information presented -- and I'm looking at Exhibit E. Did you have -- do you have that in front of you? Respondent's Exhibit E.

A. Yes.

Q. On the second page, which is the first Powerpoint slide, it says -- describes the many project uncertainties. Do you see that?

A. Yes, I see that.

Q. What basis did you have for determining that these uncertainties were invalid?

A. I don't recall ever making a determination that they were invalid.

Q. What basis did you have to determine that this pilot test meant that the facility would consistently meet the mercury limit when put in full production over time?

A. If the pilot test showed they could meet it, then that's what the data shows. If it's not -- if it's not in a -- if it's not built to full scale,

then it won't be known until it is built, but they did do a pilot test, and that showed that they could meet the limit.

Q. You were here today to hear Jeff Allen's testimony this morning?

A. Yes, I heard his testimony this morning.

Q. And you heard his discussion of the uncertainty with respect to whether the mercury in a soluble state would increase or change over time?

A. Yes, I heard that.

Q. Is it your engineering judgment that that discussion is incorrect and invalid?

A. I haven't had enough time and -- to research that specific topic.

Q. Did you research that topic at the time of the June 29th meeting?

A. Not at the meeting, no.

Q. Did you research it after the meeting before the permit was issued?

A. Not that I can recall.

Q. Did you make an independent judgment that the proposed mercury treatment system did not provide the best degree of treatment?

A. No, I did not make an independent

judgment.

Q. And when you say that, is that because you were a part of a team that made a judgment?

A. Correct.

Q. And who was on that team?

A. Myself, Darin LeCrone, Al Keller, and there's probably a few others which I don't have off the top of my head.

Q. Are you the only registered PE on that team?

A. No.

Q. Who else is a registered PE?

A. Darin LeCrone is. Alan -- Al Keller is.

Q. Did you as a registered PE evaluate whether the treatment system -- strike that. To the extent that you had any concerns regarding the engineering of the treatment system, would that have been reflected in your 30-day review notes?

A. Can you clarify the question?

MR. RIESER: Read it back, please.

[The pending question was read by the reporter.]

MR. RIESER: I'm sorry. What part of that don't you understand?

A. It may have been re -- it may have been reflected. It doesn't mean it necessarily will always be reflected.

Q. (By Mr. Rieser) Are the -- are your -- were your engineering concerns -- I'm sorry. Let me start over. If you had engineering concerns regarding this project, would they have been reflected in Exhib -- I'm sorry -- were they reflected in Exhibit K?

A. Could you please -- what specific engineering concern are you referring to?

Q. If you had concerns that based on the design of the system -- let me -- I'm going to get at this another way. On Page Three of Exhibit K, the first full paragraph, you have a discussion regarding what I assume is the EDT assessment made by the Agency -- the paragraph that begins, "Now ConocoPhillips has argued." You see that?

A. Yes, I see that the paragraph.

Q. And you agree with me that that paragraph is the -- well, that paragraph and the one after it -- I'm sorry. I'm -- strike that. In that paragraph, there is a discussion about what ConocoPhillips should do, that it should explore less-expensive treatment

options, that it should provide support for the assertion that putting filtered effluent in the current lagoon could possibly lead to the acquisition of mercury. Are these comments that you put into this report?

A. Yes, I did strike the keys on the keyboard and enter them into the report.

Q. Were -- did they reflect your engineering judgment?

A. They aren't my original ideas. I don't think I'm the one that originated them. But yes, I agree that other options obviously should be considered.

Q. What other options did you think should be considered?

A. Well, I think they should have considered filtering half the effluent. Again, I don't think they supported the assertion that putting in -- that running the effluent through the lagoons would result in higher mercury levels. I didn't believe they justified why it was necessary to bore through the levee.

Q. Were those questions asked of Phillips?

A. We did ask them -- well, at what time?

Q. At any time.

A. Yes, they were at one -- asked.

Q. When?

A. I don't know when they -- when it was originally asked, but I am certain that we talked about why it was necessary to bore through the levee and about -- where they said -- I don't know if they added any more information, but they did talk about mercury -- if they discharged the filtered effluent through the lagoon, that it might pick up mercury. I remember them restating that, but I don't know if they added anything new. This was a -- I think a presettlement meeting prior to this hearing. I don't recall the date.

Q. So that would have been a meeting after the permit was already issued; correct?

A. It was brought up at that point, yes.

Q. At that meeting after the permit was issued?

A. I didn't say initially, but it was brought up at that point.

Q. When initially was it brought up?

A. I'm not certain.

Q. Is it -- is -- were those questions

reflected at all in the record, other than in your 30-day notice? I'm sorry. Was it reflected in the record that Phillips was asked these questions?

A. I can't say.

MR. RIESER: That's all I have.

QUESTIONS BY MS. MEDINA:

Q. Jaime, you were asked whether or not you conducted your own engineering analysis concerning certain concerns brought up in the Powerpoint slides -- variation of mercury levels, uncertainty of soluble mercury. Were you provided enough information by Phillips 66 in order to conduct such an engineering assessment on these concerns and topics?

A. You're referring to the ones mentioned in Exhibit E?

Q. Yes.

A. No.

Q. Did Phillips 66 ever provide an engineering report -- detailed engineering report for you to review?

A. No, I don't recall ever seeing one.

MR. RIESER: I'm sorry. Detailed engineering report involving what for him to review?

MS. MEDINA: Detailed engineering report

that addresses any of the concerns cited in Exhibit E.

MR. RIESER: Thank you.

A. No. Again, no, I did not see that report or any such report.

MS. MEDINA: That's all I have.

MR. RIESER: That's all.

HEARING OFFICER: Okay.

MR. RIESER: That's all I've got.

HEARING OFFICER: Thank you. Ms. Medina, do you have anything else you'd like to present as part of your case?

MS. MEDINA: No. I'll reserve any comments for our briefs.

HEARING OFFICER: Okay. Mr. Rieser, did you --

MR. RIESER: I need -- I'd like to recall Jim Huff for a brief rebuttal testimony, please.

HEARING OFFICER: Okay. Mr. Huff, I'll remind you you're still under oath.

MR. HUFF: Yes, ma'am.

MR. RIESER: Per the request of the court reporter, I'm going to move over here to --

THE REPORTER: Thank you.

MR. RIESER: -- so that he can hear.

QUESTIONS BY MR. RIESER:

Q. Mr. Huff, you've been present in our hearing room all day, so you've heard the testimony of the Agency that was provided this afternoon?

A. Yes, sir.

Q. With respect to an agreement with res -- regarding the pollutants that ConocoPhillips agreed to limit -- and these were questions that I asked Jaime Rabins -- you have more information on that issue?

A. I think I can bring clarity to that.

Q. Okay. Please.

A. The commitment made by Phillips was formalized in the antidegradation assessment, and it's on Page 19 that -- and 20 as to exactly what parameters -- that Phillips agreed that there would be no increase in the permitted mass.

Q. And what were those parameters?

A. I had these in my testimony. Biochemical oxygen demand, total suspended solids, ammonia, chemical oxygen demand, oil and grease, phenols, total chromium, and sulfide.

Q. And so there wasn't -- so to clarify, there wasn't an agreement to limit all constituents; just the ones that you've identified?

A. That is correct.

Q. You were present in the hearing room to hear the discussion about -- that I had with Mr. Mosher regarding upstream mercury data; correct?

A. Yes.

Q. Do you have other -- more information about discussions that you had with the Agency regarding upstream mercury data?

A. Well, a little clarity, perhaps. The existing data that Mr. Mosher referred to and that was in the antidegradation assessment was more than adequate to address the acute and chronic toxicity and mercury -- the levels were more than sufficiently low for that.

They're -- the Agency on at least two occasions requested the mercury effluent testing. They did -- never asked for upstream mercury testing. We certainly would have done that. The human health standard -- I just assumed that there really wasn't an issue on the Mississippi River with that. I have collected limited data on the Des Plaines River and the Chicago Sanitary and Ship Canal that would lead me to believe, trying to extrapolate that data, that on an annual basis, the Mississippi River meets that 12

nanograms per liter, but I don't have any data on the Mississippi River at this point.

Q. So you've sampled the water quality of other rivers and you've sampled specifically for mercury?

A. Yes.

Q. And what types of levels are you seeing in those samples?

A. Well, highly variable --

MS. MEDINA: Objection. Relevance.

A. -- but an annual average less than the 12 nanograms per liter.

Q. (By Mr. Rieser) Turning again to your antidegradation study -- there was a discussion about your tables that you had that showed the mixing zone and the zone of initial dilution, and there were questions that Ms. Medina put to Mr. Mosher regarding the meaning of those numbers. Do you recall that?

A. Yes, sir.

Q. Can you provide clarity on that as well?

A. Well, I think we're mixing apples and oranges. Again, those were intended for the acute and the chronic standards, which were based on the maximum concentration that we found -- the highest -- and if

one really wanted to go through that exercise, you would use the average annual basis, ideally with the uncertainty and the statistical approach, so it would be the 17-point-whatever nanograms per liter, and in those tables, we used the 88 nanograms per liter, which was the maximum. So you're trying to compare an annual average limit to a maximum daily number, which is inappropriate.

Q. And it's inappropriate because why?

A. Well, because the acute and the chronic you're trying to meet on a not-to-exceed basis, as opposed to an annual average with the human health standard.

Q. So the acute and chronic values for water quality values for mercury are maximum, so you look at the maximum discharge that that facility has?

A. In the case of acute, that's correct. For chronic, it's a four-sample running average -- the highest of those.

Q. But human health average -- the human health value is evaluated differently?

A. Yes. You would take all samples collected over a year -- and I believe there's a minimum of eight samples, as I recall -- and take the

mean of those.

Q. So the -- let me --

A. I think it will be in there -- there's no tables in my version --

Q. What was it? What page was it? Page --

A. Oh, that's in the Agency's exhibit. There's a page missing. There's about five pages missing.

Q. No. What page --

A. Oh.

Q. Yes.

A. Sure.

Q. Please locate the table -- it's Table C-1, C-2?

A. I think I have --

Q. Yes.

A. Table 4-1 is the concentrations at the edge of the zone of initial dilution, and Table 4-2 is at the edge of a mixing zone.

Q. And so -- and this is Page 69 and 70 of the August 2008 antidegradation analysis which was attached as Exhibit Two to your testimony, which was Group Exhibit Six. So the issue with using these tables to address the human health has to do with the

use of the highest concentration, which is the second column in from the left; is that correct?

A. That's correct.

Q. So if you were looking at human health, rather than using the highest concentration, you would use an annual average concentration?

A. And then if you look, Column Three includes the same uncertainty procedure, and so it's not only the highest concentration; it's the uncertainty added to that. And it would be the same for the human health, but instead of taking the maximum value, you'd take the average and apply the uncertainty.

MR. RIESER: Okay. I have nothing further.

HEARING OFFICER: Okay.

QUESTIONS BY MS. MEDINA:

Q. Mr. Huff, can you point to an analysis in your report that it evaluates whether a human health standard can be met at the edge of a mixing zone?

A. No, I can't. As the Agency has testified, this was really the first time that mercury -- this issue of mercury ever came up, and frankly, I didn't -- had never before nor since have I

addressed the human health standard as part of an antidegradation assessment.

MS. MEDINA: That's all I have. Thank you.

QUESTIONS BY MR. RIESER:

Q. Based on your knowledge and what you've described as your mercury sampling in other rivers, do you have a basis to believe whether or not the human health standard would be met at the edge of the mixing zone?

A. Yes, if -- based on the levels that they're discharging with the 86-to-one dilution and the data I've seen on other streams, which I fully recognize is limited data and on different waterways, I would fully expect it would meet the human health standard.

MR. RIESER: Thank you.

QUESTIONS BY MS. MEDINA:

Q. Mr. Huff, given the several uncertainties with which mercury might exist in the crudes (ph) and the expansion project, can you state with certainty that the human health standard will be met at the edge of the mixing zone --

A. What -- not --

Q. -- from expansion?

A. Not with certainty, again for the caveat --

MS. MEDINA: That's all --

A. -- that I answered with respect to Mr. Rieser's question, not so much the uncertainty on what's in the effluent. Even if you take the statistical uncertainty in the database that exists now, they would still meet that human health standard, is my belief, because it's an annual average limit.

MS. MEDINA: That's all I have. Thank you.

MR. RIESER: Nothing further.

HEARING OFFICER: Thank you. Anything further?

MR. RIESER: No.

HEARING OFFICER: Okay. Well --

MR. RIESER: That completes our presentation.

HEARING OFFICER: That completes the presentation for both parties. I'll just read the briefing schedule into the record. The transcript is due by October 15th and will be posted on the Board's website. The public comment deadline is October 16th.

Any public comment must be filed in accordance with Section 101.628 of the Board's procedural rules.

The parties have agreed to the following briefing schedule. First, the deadline for the stipulation on the fecal coliform will be filed by October 17th. The petitioner's brief will be due by November 15th and respondent's brief is due by December 17th. Petitioner's reply will be due by December 28th. Mr. Rieser, would you like to make any closing argument?

MR. RIESER: No. I'll reserve that for the brief.

HEARING OFFICER: Ms. Medina?

MS. MEDINA: Same.

HEARING OFFICER: Okay. We have one member of the public here who has already indicated he does not wish to make any statement on the record, so if there's nothing further, at this time we will conclude the proceedings. Thank you, everyone, for your participation.

MR. RIESER: Thank you very much.

MS. MEDINA: Thank you.

NOTARIAL CERTIFICATE

I, John Arndt, a Notary Public within and for the County of St. Clair, State of Illinois, do certify that pursuant to Notice there came before me at the Madison County Administration Building, 157 North Main Street, in the Village of Edwardsville, State of Illinois,

THE AFOREMENTIONED PARTICIPANTS,

whose words were taken in machine shorthand and later reduced to type-writing; and the transcript is now herewith returned.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 15th day of October A.D., 2012.

My commission expires June 6, 2014.

John Arndt
Notary Public

OFFICIAL SEAL
JOHN ARNDT
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:06/06/14

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