ORIGINAL

ILLINOIS POLLUTION CONTROL BOARD

February 24, 2005

IN THE MATTER OF:	)	
	)	
	)	
CITGO PETROLEUM CORPORATION and	)	
PDV MIDWEST REFINING, L.L.C.,	)	
	)	
Petitioners,	)	
	)	
vs.	)	PCB 05-85
	)	
ILLINOIS ENVIRONMENTAL	)	
PROTECTION AGENCY,	)	
	)	
Respondent	)	

Report of proceedings had at the Illinois Pollution Control Board Hearing, held at 100 West Randolph Street, Chicago, Illinois, on the 24th day of February, A.D., 2005, commencing at the hour of 9:00 a.m.

APPEARANCES:

Mr. Bradley P. Halloran
Mr. Anand Rao
Ms. Alisa Liu, P.E.
(Illinois Pollution Control Board)
100 West Randolph Street
Suite 11-500
Chicago, Illinois 60601
(312) 814-8917

Mr. Jeffrey C. Fort
Ms. Letissa Carver Reid
(Sonnenschein, Nath & Rosenthal, LLP)
233 South Wacker Drive
Suite 8000
Chicago, Illinois 60606
(312) 876-2380

Mr. James A. Day
Mr. Darin E. LeCrone
Mr. Scott A. Twait
(Illinois Environmental Protection Agency)
1021 North Grand Avenue East
Springfield, Illinois 62794
(217) 782-0610

ALSO PRESENT: Ms. Brigitte Postel
Mr. James E. Huff, P.E.
Mr. Claude W. Harmon
Ms. Stacy Ford

I N D E X

E X H I B I T S

MR. HALLORAN: We're on the record. Good morning, everybody. My name is Bradley Halloran. I'm a hearing officer with the Illinois Pollution Control Board, also assigned to this matter. It's entitled -- It's PCB 05-85, CITGO Petroleum Corporation and PDV Midwest Refining, L.L.C., are the petitioners, vs. The Illinois Environmental Protection Agency, the respondent.

Today is February 24th, 2005. It's approximately 9:05. I don't see any members of the public here that are not affiliated with the parties, so we'll move on. I do want to introduce Ms. Alisa Liu and Anand Rao from my technical unit.

MS. FORD: I'm not affiliated with a party.

MR. HALLORAN: And you're from Exxon?

MS. FORD: Mobil.

MR. HALLORAN: Mobil. But you're a member -- Okay. Fine. And your name?

MS. FORD: Stacy Ford.

MR. HALLORAN: F-O-R-D?

Ms. FORD: F-O-R-D.

MR. HALLORAN: Do you wish to make any kind of public comment or statement?

MS. FORD: No.

MR. HALLORAN: Thank you. We're going to run this hearing pursuant to Section 104, Subpart B, and Section 101, Subpart F, of the Board's procedural provisions. I also want to note for the record that this hearing was properly noticed. This hearing is intended to develop a record for the Pollution Control Board. I will not be making the ultimate decision in this case. I'm here to rule on any evidentiary matters and make sure the hearing goes without a hitch.

With that said -- But I do want to note that this hearing has been changed from Room 11-512. We are now in Room 5-85, and it's been properly noticed all through the hallway. And I apologize we had to change rooms; I didn't realize this many people were going to show. This is beyond my expectations from the parties. But in any event, here we are. I apologize for the tight quarters.

But with that said, would the parties like to introduce themselves? Ms. Carver Reid?

MS. CARVER REID: Letissa Carver Reid and Jeffrey Fort of the law firm Sonnenschein, Nath & Rosenthal, 8000 Sears Tower, Chicago 60606, on behalf of the petitioners, CITGO Petroleum Corp. and PDV Midwest Refining, L.L.C.

MR. HALLORAN: Thank you. Mr. Day?

MR. DAY: James Day. I'm from the Illinois Environmental Protection Agency, division of legal counsel, representing the Illinois Environmental Protection Agency. We have here, also on behalf of the Agency, Mr. Darin LeCrone and Mr. Scott Twait.

MR. HALLORAN: Thank you very much. We'll just proceed as a normal hearing in this matter. Mr. Fort has suggested he wants to do an opening, and, Mr. Day, you have the opportunity as well.

Mr. Fort?

MR. FORT: Thank you, Mr. Hearing Officer. CITGO -- Or the petitioners, CITGO

and PDV Midwest, appreciate the opportunity to be before the Board and the Agency and working with both agencies on this project.

The variance that we are seeking is part of a significant project by CITGO for environmental improvement. As the record shows, CITGO has entered into a consent agreement with U.S. EPA in four states, including Illinois. The Lemont Refinery is among three of the refineries covered by this consent decree.

The consent decree calls for significant emission reductions from these sources owned and/or operated by CITGO and related entities. A major part of the substantial reduction in sulfur dioxide and nitrous oxide emissions required in that consent decree will come at the Lemont Refinery. So this project, overall project, has a significant environmental benefit to the people of the State of Illinois, and CITGO is firmly committed to meeting its obligations under that consent decree.

This variance deals with total

dissolved solids in the wastewater and is required only because of additions of total dissolved solids to the Chicago Ship Canal and Illinois River that arise completely separate from and independent of the present or future discharges of TDS by the CITGO Lemont Refinery.

CITGO has included a substantial amount of equipment in its design and adjusted its design to minimize the environmental effects of its wastewater discharges from the wet gas scrubber, which is the principal air emission reduction technology being employed under the consent decree. CITGO has been able to modify the design and to achieve compliance with all other wastewater parameters except for total dissolved solids. And the TDS issue is not caused by CITGO or the consent decree, but by the snowmelt from road deicing activities.

As the Board knows, the test for variance relief is whether or not the burden on the petitioner outweighs the adverse effect on the public. Here we believe the

record will show that there is no adverse effect on the public as a result of grant of this variance, yet there would be a substantial burden on the petitioner if this variance is not granted.

There is no adverse effect from the sulfate or TDS levels that are projected to result from the wet gas scrubber. IEPA, in fact, is evaluating doing a water quality rule change in light of these findings, which we've included as Exhibit 10 to our evidence here.

The relative effect of the TDS discharge here is within the sampling sensitivity of the instrumentation to sample for TDS. We can do a mass balance calculation, and we know that due to snowmelt, there had been elevated levels of TDS in the Illinois River. One cannot model and verify it just because of the variability in the sampling instruments. And Jim Huff's testimony will address that further.

Most importantly, there's no practical alternative to avoid the TDS and

the discharge from the wet gas scrubber. We approached IEPA about doing a deep well injection, and that was rejected. CITGO investigated sewering the discharge either to the MSD, who told us they did not have the capacity to handle the discharge, and the existing wastewater treatment plant at the refinery also does not have the capability of handling this discharge from the wet gas scrubber.

Existing tankage at the refinery is not adequate nor available during the runoff conditions, the very time that there may be an issue in the Illinois River; and that is, in part, due to upgrading of runoff patterns in residential developments. Again, Jim Huff's testimony and Exhibit 5 are going to go to those factors.

CITGO is under a very tight compliance schedule for the Lemont Refinery and subject to stipulated penalties by U.S. EPA in Illinois under the consent decree if we do not make that schedule, and the schedule is included as Exhibit 2. Time is

lacking to do a refiling of the variance petition with all the details requested even though most of those details have been discussed with the air division and the water permitting division of Illinois EPA before we filed this variance.

We requested a hearing in order to expedite the Board ruling on this request and to stay on schedule under the consent decree. And we do appreciate the Agency and the Board working on this tight schedule with us. We've worked closely with IEPA and believe they will issue a favorable recommendation based upon the additional information and additions provided in this record with respect to this variance petition.

All the information that has been provided informally to the Agency is included in our exhibits and testimony today, and I would particularly call your attention to Exhibits 2 through 6. We had several discussions with the Agency about the conditions for this variance. The language in Exhibit 7 was modified from that presented

in a petition to address the Agency comments.

The Board questions anticipated many of the facts that we were going to present. We revised our presentation to be responsive to the specific questions raised by the Board and to the questions raised by the Agency's recommendation. And that comes in the testimony of Mr. Harmon and Mr. Huff.

The revised compliance plan focuses on a continued monitoring and fine-tuning of the extent of TDS issues in the Illinois River. This provides data that is not otherwise routinely collected by IEPA and we believe will enhance the understanding of the snowmelt conditions. We believe this will provide information that the Agency might not otherwise have the funding to undertake and could lead to better understanding of the snowmelt phenomenon and perhaps yield ideas on how to reduce that impact.

During this time, CITGO will be evaluating ways to restrict its discharge during those events. We project being in

compliance, through whatever method becomes necessary, within the five-year period of this variance.

To answer a couple of the questions of the Board, the relief is just for TDS, total dissolved solids, not for sulfates. The refinery address is 135th Street and New Avenue in Lemont. Before the site-specific rule change was adopted, the refinery, then owned by Unical (phonetic), underwent a series of variances relating to ammonia nitrogen. Those variances led to and were resolved by the site-specific effluent standard at 35 Illinois Administrative Code 304.213 for ammonia nitrogen, which were adopted in rule-making proceedings, R84-13, R93-8, and R98-14.

Last of all, we would ask the Agency to confirm that they support the variance and the conditions being presented today based on this record.

MR. HALLORAN: Thank you, Mr. Fort.

Mr. Day?

MR. DAY: I would like to take this

opportunity to clarify some of the procedural history and how that relates to the Agency's current position with respect to the petition. At this point, at the opening of the hearing, I am unable to grant Mr. Fort's request that the Agency state its support for the petition.

As required by the Illinois Environmental Protection Act and the rules promulgated thereunder, our agency did complete a review of this petition, and we found two marked defects that prevented us from recommending that the petition be granted. The first of those, which of course was noted in our recommendation for denial, was that the consent order relied upon for the justifications for seeking this variance did not appear to be final or entered by a court as the petition stood as filed.

Secondly, the compliance plan included in the petition was lacking. That compliance plan appeared at pages 11 and 12 of the original petition.

Based on those two issues, as

Mr. Fort described, we've been in communication with the applicant, the petitioner, for many weeks now; and we have had the opportunity to negotiate and review all of the evidence and testimony which is expected to be provided today.

Assuming that those exhibits meet with our expectations and the testimony follows what we've been led to expect, it is a safe presumption that at the close of today's hearing, our agency will be in support of this petition.

MR. HALLORAN: Okay. Thank you.

And with that said, I do want to add that our technical unit has been feverishly wading through the prefiled testimony that was filed on February 17th, and it may be necessary during the posthearing briefing that they may have additional questions regarding the prefiled testimony or the testimony that's about to take place today. So I just want to let everybody know that.

With that said, Ms. Carver Reid,

do you want to address the prefiled testimony?

MS. CARVER REID: Actually, we'd like to enter the prefiled testimony of Mr. Claude Harmon and Mr. James Huff, have it transcribed into the record as if read here today, so that we can be expeditious in this matter and avoid delay by reading the actual testimony that's already been filed into the record.

MR. HALLORAN: And you'll give the court reporter a copy of that?

MS. CARVER REID: Yes.

MR. HALLORAN: Mr. Day, do you have any objection to that?

MR. DAY: No, I don't.

MR. HALLORAN: Sure. That will be done. We'll give the prefiled testimony to the court reporter, and she can transcribe it into the record as if read.

MS. CARVER REID: Actually, I'd like to swear in the witnesses and just have them verify the content of the testimony.

MR. HALLORAN: Sure.

MS. CARVER REID: Our first witness is going to be Mr. Claude Harmon.

(Witness sworn.)

WHEREUPON:

CLAUDE W. HARMON

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

EXAMINATION

BY MS. CARVER REID:

Q. Mr. Harmon, will you state your name and spell your last name for the record?

A. My name is Claude Harmon, H-A-R-M-O-N.

Q. By whom are you currently employed?

A. CITGO Petroleum Corporation.

Q. Will you please state your business address?

A. 135th Street and New Avenue, Lemont, Illinois.

Q. And the zip code?

A. 60439.

Q. Mr. Harmon, what is your current title at CITGO?

A. I'm the environmental manager at the Lemont Refinery.

Q. And how long have you been in that position?

A. Since '94.

Q. Was your testimony prefiled in this matter on February 17th, 2005?

A. Yes.

Q. Is this that same prefiled testimony?

A. Yes.

Q. Do you verify that your prefiled testimony is true and correct?

A. Yes.

Q. Exhibits marked 1 through 15 were filed in support of your prefiled testimony. Do you verify that the contents of Exhibit 1 through 15 is true and correct?

A. Yes.

MS. CARVER REID: At this time we request that the prefiled testimony of Claude Harmon be transcribed into the record as if read.

MR. HALLORAN: Any objection, Mr. Day?

MR. DAY: No.

MR. HALLORAN: So be it.

TESTIMONY OF CLAUDE HARMON

My name is Claude Harmon. My current position is Environmental Manager for the Lemont Refinery. I have had this responsibility since August 1994. I have been in the environmental field for 30 years including 16 years with the Illinois Central Railroad, two years with Morton International and 12 years at the Lemont Refinery, which was first owned by UNO-VEN when I began and is now operated by CITGO. I received a Bachelor of Science degree in Environmental Biology from Eastern Illinois University. I am affiliated with various environmental committees. I am a member of the National Petroleum Refiners Association. I am a member of the Illinois Association of Environmental Professionals. I am also a Certified Hazardous Materials Manager with the National Registry of Environmental Professionals.

The purpose of my testimony is to describe the current efforts by CITGO and the Lemont Refinery to reduce the Lemont Refinery's air and water emissions. The Illinois Pollution Control Board (the "Board") already is aware of the Lemont Refinery's efforts to achieve the ammonia nitrogen

standard through regulatory proceedings (R84-13, R93-8 and R98-14), which led to the current site-specific limitation for ammonia nitrogen for the Lemont Refinery at 35 IAC 304.213. Last fall, CITGO and PDV Midwest Refining, L.L.C. (collectively referred to as "CITGO") completed negotiations with U.S. EPA and the environmental authorities for Illinois, Georgia, Louisiana, and New Jersey to substantially reduce emissions of SO2 and NOx, by 23,000 and 7,000 tons respectively, from three refineries including the Lemont Refinery and two asphalt plants. For the Lemont Refinery, the estimated SO2 and NOx emission reductions are 15,000 and 1,100 tons respectively. That agreement was embodied in a consent decree that was approved on January 26, 2005; a copy of that signed consent decree is submitted as Exhibit 1.

The consent decree includes an ambitious construction and compliance schedule for the Lemont Refinery. To achieve the necessary reductions, the Lemont Refinery must install a wet gas scrubber in the Fluidized Catalytic Cracking Unit ("FCCU"), as well as substantial support equipment and controls. This requires a major construction project extending

approximately 20 months. Exhibit 2 is a copy of the compliance schedule for the Lemont Refinery to comply with the consent decree. Stipulated penalties and other sanctions may be imposed if CITGO does not meet the consent decree schedule.

As described in our variance petition, to meet the emission requirements of the consent decree, we are installing the wet gas scrubber in the FCCU, as well as other equipment at the Lemont Refinery. (See Exhibit 3 (construction permit drawings depicting the new equipment to be installed and a description of the same.)) The result is to increase the amount of total dissolved solids ("TDS") in the Lemont Refinery treated wastewater. Exhibit 4 is a copy of the Variance Petition filed in this matter on November 8, 2004, which contains further information.

One of the critical path items is to obtain a construction permit from the water division of Illinois Environmental Protection Agency ("IEPA"). Exhibit 5 is a copy of the application for that construction permit. On December 3, 2004, we submitted that construction permit application, consistent with the overall construction schedule.

In preliminary conversations with the water division of IEPA, we learned of two critical issues that pose challenges for the consent decree schedule. First, IEPA will not grant the construction permit without also issuing a modified National Pollutant Discharge Elimination System ("NPDES") permit. Second, because there has been an exceedance of the TDS standard in the past, in association with snowmelt runoff, carrying road salt and similar compounds into the streams, IEPA could not issue a NPDES permit for this project unless CITGO obtained a variance from the Board. Hence, the variance petition was filed soon after the consent decree was announced publicly.

The Board has before it that variance petition. I will not repeat what we already have presented in this record. But I will respond to some of the questions propounded by the Board, as well as confirm certain information that we presented to IEPA since we began this petition process.

DESCRIPTION OF ACTIVITY

(Responses to Board Questions 4a, 4b)

No specific projects are being developed that would increase the production rate, hence there is

no impact on the amount of TDS and sulfates discharged.

The chemical used in the wet gas scrubbing process was described as "Caustic" in the construction permit application submitted to IEPA in December 2004 (Exhibit 5). "Caustic" references a Sodium Hydroxide solution.

PROJECTED WATER QUALITY IMPACTS

(Responses to Board Questions 6a, 6b, 6c, 6d)

TDS tests for the wastewater treatment plant ("WWTP") discharge are run on a weekly basis. Below are monthly averages for year 2004:

Yr 2004	TDS (ppm)
January	2493
February	2644
March	2183
April	2244
May	1977
June	1474
July	1680
August	1504
September	1699
October	2003
November	1948
December	1597

Sulfate is not a parameter that is routinely tested for the WWTP discharge.

The proposed design flow rate was described in the construction permit application submitted to

IEPA in December 2004 (Exhibit 5). The expected concentrations of both TDS and sulfates in the purge water from the wet gas scrubber were described in the construction permit application submitted to IEPA in December 2004 (Exhibit 5). Projected increases in both TDS and sulfates in the discharge after the wet gas scrubber begins operation are described in James Huff's December 2004 report "Impact of CITGO's Proposed Discharge on Water Quality" (Exhibit 6.)

DETAILED COMPLIANCE PLAN

(Responses to Board Questions 9a, 9b)

The proposed wet gas scrubber will impact the TDS and sulfate levels in the refinery's effluent once the unit becomes operational. The expected concentrations of both TDS and sulfates in the discharge are described in James Huff's December 2004 report "Impact of CITGO's Proposed Discharge on Water Quality" (Exhibit 6) and the construction permit application submitted to IEPA in December 2004 (Exhibit 5).

The negotiated compliance plan, completed to the satisfaction of IEPA, has been submitted to the Board as Exhibit 7. The proposed TDS compliance

plan requires that extensive TDS data be taken from the Des Plaines River at the I-55 Bridge during the winter months. Following two seasons of stream testing, the Lemont Refinery will be able to size the required holding tank or basin for the wet gas scrubber discharge during periods of high salinity. The project for the retention system would commence by March 1, 2009. The project would be completed by the winter season beginning December 1, 2009.

OTHER ENVIRONMENTAL IMPACT

(Response to Board Question 10f)

Currently, the only option for a managed release program would entail using the storm water basin ("SWB") for retention. The SWB is used to collect site storm water runoff and drainage from naturally existing waterways. Over the last few years, a pronounced increase in storm water volume has occurred due to residential developments near the northwest facility boundary. The runoff from these developments feeds into the naturally existing waterways that terminate within the Lemont Refinery's boundaries and ultimately end up in the SWB. Due to a special condition in the Groundwater Management Zone Approval Letter, issued by the

Bureau of Water Permit section, the SWB water level must be managed below 12'9" due to the groundwater gradient. Because of the existing difficulties associated with managing the water level below 12'9" with the additional burden created by the increased storm water runoff volume from residential developments, to try to retain the wet gas scrubber effluent during periods of snowmelt and deicing would not be a viable option at this time. However, strategies to divert the residential runoff prior to crossing the Lemont Refinery boundaries are being pursued. If a diversion project is implemented, retention of the wet gas scrubber effluent (due to snowmelt conditions) in the SWB may be feasible.

MS. CARVER REID: We have a second witness that I'd also like to verify, do the same and verify his testimony as well.

MR. HALLORAN: Okay. Do you want to do that now? Or I thought we'd take care of Mr. Harmon first and then -- Let's take care of Mr. Harmon first.

Do you have any direct, such as it is, of Mr. Harmon?

MS. CARVER REID: No, I don't.

MR. HALLORAN: Mr. Day?

MR. DAY: No questions for Mr. Harmon.

MR. HALLORAN: I'm going to turn it over to the technical unit, Mr. Rao or Ms. Liu.

MR. FORT: If I could just make a point here, it may be that some of the questions that are directed at Mr. Harmon, Mr. Huff is going to be also -- or maybe even in a better position to answer, because they worked together on this project.

MR. HALLORAN: Let's swear him in.

(Witness sworn.)

WHEREUPON:

JAMES E. HUFF, P.E.,

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

EXAMINATION

BY MS. CARVER REID:

Q. Mr. Huff, will you please state your name and spell your last name for the record?

A. James E. Huff, H-U-F-F.

Q. By whom are you currently employed?

A. The consulting firm Huff & Huff, Inc.

Q. Will you please state the business address for Huff & Huff, Inc.?

A. 512 West Burlington Avenue, LaGrange, Illinois 60525.

Q. And can you tell us when Huff & Huff, Inc., was founded?

A. 1979.

Q. Mr. Huff, was your prefiled testimony filed in this matter on February 17th, 2005?

A. My understanding, yes.

Q. Is this a copy of that same prefiled testimony?

A. Yes, it is.

Q. Do you verify that your prefiled testimony is true and correct?

A. Yes.

Q. As you are aware, Exhibits 1 through 15 were filed in support of your prefiled testimony. Do you verify that the contents of Exhibits 1 through 15 is true and correct?

A. To the best of my knowledge, yes.

MS. CARVER REID: At this time we request that the prefiled testimony of James E. Huff be transcribed into the record

as if read.

MR. HALLORAN: Mr. Day, any objection?

MR. DAY: No.

TESTIMONY OF JAMES E. HUFF

My name is James E. Huff. I am Vice President and part owner of Huff & Huff, Inc., an environmental consulting firm founded in 1979. I received a Bachelor of Science in Chemical Engineering in 1970 from Purdue University and was awarded a Masters of Science in Engineering from the Environmental Engineering Department at Purdue University in 1971. I am a registered Professional Engineer in Illinois as well as in New Jersey.

I currently serve on the Board of Directors for the American Council of Engineering Companies-IL and served three years as Chair of the Illinois Environmental Protection Agency Liaison Committee for the same organization. I also serve on the Illinois Statewide Nutrient Science Committee, which is charged with proposing state nutrient standards, and am the lead consultant for the Northeastern Illinois Planning Commission ("NIPC") for evaluating Facility Planning Amendment requests for consistency with NIPC's Water Quality Management Plan.

My work experience includes two years with Mobil Oil as an Advanced Environmental Engineer during the construction and start-up of the Joliet Refinery. My responsibilities at the Joliet Refinery included the construction oversight and start-up of the wastewater treatment facilities, technical support for the wastewater treatment including sampling, discharge monitoring reports, and National Pollutant Discharge Elimination System ("NPDES") permit preparation. From this experience, I am familiar with refinery operations and the associated wastewater treatment, as well as the Des Plaines River.

After leaving Mobil in the fall of 1973, I was employed for three years at IIT Research Institute in the Chemical Engineering Department, working on advanced wastewater treatment projects including catalytic oxidation of cyanide in petroleum wastewaters. I also assisted in preparing the Economic Impact/Cost-Benefit Analysis on a proposed total dissolved solids ("TDS") rule change in Illinois. I then spent four years with Armak Company, now called Akzo Nobel Chemicals. I was the Corporate Manager of Environmental Affairs

responsible for regulatory compliance and engineering design of environmental systems at nine manufacturing facilities in the United States and Canada including fatty amines plants in McCook and Morris, Illinois.

For the last 25 years at Huff & Huff, Inc., I have been involved in over 30 environmental impact studies associated with the impact of wastewater discharges on receiving streams throughout the United States. Some of these studies have involved TDS, sulfates, and chlorides. Surveys I have been involved with in Illinois have included the following streams: Chicago Sanitary and Ship Canal, Des Plaines River, Casey Fork Creek, Aux Sable Creek, Flint Creek, Mill Creek, Thorn Creek, Kent Creek, Fox River, Mississippi River, Deer Run Creek, Salt Fork of the Saline River, Cedar Creek, Tyler Creek, Kishwaukee River. These stream surveys have included water quality, fish, macroinvertebrate, mussels and sediment quality. I also have completed mixing zone studies on the large streams listed above.

I have worked with the Lemont Refinery for the past 22 years on various wastewater issues including

two adjusted standards relating to ammonia, a mixing zone study, collection of macroinvertebrates in the Ship Canal, modeling of ammonia from the Lemont Refinery all the way down the Illinois River, preparation of a Storm Water Pollution Prevention Plan for the Lemont Refinery, and preparation of environmental training modules for a variety of subjects.

I have been retained by CITGO Petroleum Corporation's Lemont Refinery to assist in the evaluation of alternatives for the wastewater stream generated by the new FCC wet gas scrubber, identifying water quality impacts, preparing the construction permit and NPDES permit modification applications, and providing technical support on the variance petition. A copy of my resume is presented in Exhibit 8.

Presented herein is a description of the areas I have investigated that are related to the variance petition, which incorporates questions raised by the Illinois Pollution Control Board (the "Board") and Illinois Environmental Protection Agency ("IEPA" or the "Agency") in these same areas.

APPLICABLE REGULATIONS

The requested variance is for TDS in the Chicago Sanitary and Ship Canal and the Des Plaines River. The wet gas scrubber discharge will contain significant sodium sulfate, which essentially is the source of the TDS subject to the variance request. To the I-55 Bridge, the Des Plaines River is classified as a Secondary Contact waterway with a TDS water quality standard of 1,500 mg/L. From the I-55 Bridge downstream, the Des Plaines River is classified as General Use with a TDS water quality standard of 1,000 mg/L.

There are no water quality standards on sodium. The sulfate General Use water quality standard is 500 mg/L. There is no Secondary Contact water quality standard for sulfate. The proposed discharge will not cause or contribute to a sulfate water quality exceedance, and therefore a variance for the sulfate component is not requested.

EXISTING WATER QUALITY DATA

(Responses to Board Questions 7a and 10b; IEPA Recommendation Comments 15 and 19)

The Lemont Refinery has collected TDS samples from the Chicago Sanitary and Ship Canal weekly from

1998 to 2005. Exhibit 9 presents these eight-plus years of data, collected upstream of the Lemont Refinery's wastewater discharge. To date, no TDS water quality exceedances were recorded in 1998, 1999, 2000, 2001, 2003, 2004, and 2005. In 2002, one exceedance occurred on March 8, 2002 when a TDS level of 1,636 mg/L was recorded.

A previously submitted document entitled "Impact of CITGO's Proposed Discharge on Water Quality" (Exhibit 6) contains TDS data collected by the Metropolitan Water Reclamation District of Greater Chicago ("MWRDGC") on the same waterway from 2000 to 2002. At the Lockport Lock & Dam, downstream of the Lemont Refinery outfall, on TDS exceedance (1,595 mg/L) was documented on January 4, 2001. (The Lemont Refinery recorded 1,408 mg/L on January 5, 2001.) At the next station, Jefferson Street in Joliet, one TDS exceedance (1,535 mg/L) was recorded on February 24, 2000. Further downstream at the Empress casino, one exceedance (1,867 mg/L) was recorded also on February 24, 2000. At the I-55 Bridge, where the General Use water quality standard begins, the 1,000 mg/L standard was exceeded on the following dates: 3/16/2000 - 1,902

mg/L, 1/25/2001 - 1,194 mg/L, 2/1/2001 - 1,075 mg/L, 2/8/2001 - 1,139 mg/L. The last three occurred over three consecutive sampling events, implying that the TDS excursion was persistent for at least 15 days.

A review of all the TDS data (Exhibits 6 and 9) reveals that all of the elevated TDS readings occur in the winter, and are attributable to snowmelt runoff carrying salt runoff from highway deicing activities. The Agency's Recommendation Comment 15 states that no information has been provided between the discharge and downstream water quality standard violation. Assuming during snowmelt the streams are at their harmonic mean flow, the flow at the I-55 Bridge would be 3,690 cfs. This is a conservative flow estimate. At 1,000 mg/L TDS, this translates into 20,000,000 pounds per day of TDS passing beneath the I-55 Bridge. The Lemont Refinery wet gas scrubber will contribute an average 215,000 pounds per day, or approximately 11 mg/L, or 1 percent of the total loading under this scenario. According to Standard Methods, the precision of the TDS test method with a known sample TDS concentration of 293 mg/L when tested in 77 samples yielded a standard deviation of 21.20 mg/L. In

essence, the contribution from the Lemont Refinery will be less than the precision of this test when the Des Plaines River exceeds 1,000 mg/L. Note, when the 1,902 mg/L TDS was recorded in the Des Plaines River, this is equivalent to 38,000,000 pounds per day of TDS, and the Lemont Refinery's contribution would be on the order of 0.6 percent of the total loading.

There is a strong correlation between the upstream TDS readings and the downstream TDS readings. This is to be expected as TDS is considered a "conservative" pollutant; that is, there is little or no reduction due to chemical or biological processes. In addition, the preponderance of flow at the I-55 Bridge originates from the Chicago Area, so there is limited dilutional effects until further downstream.

TOXICITY/FUTURE POSSIBLE CHANGES IN WATER QUALITY

Water quality standards historically have been developed based on toxicity. As TDS is composed of a variety of anions and cations, there are no "toxicity" values that can be applied to the generic TDS parameter. Sulfates and chlorides make up the majority of the anions, and these compounds

typically are regulated. In Illinois for General Use waters, TDS, sulfates and chlorides all are regulated.

Several years ago, IEPA began a detailed review of these water quality standards that by early 2004 led the Agency to hold a stakeholders' meeting. The Agency, at this point, believed that technical data supported elimination of the TDS water quality standard and increasing the sulfate General Use limit to approximately 1,800 mg/L. Information provided to the stakeholders by the Agency on this issue is included in Exhibit 10.

U.S. EPA's review of the Agency's work has lead to additional toxicity testing by the State of Illinois, which is ongoing and expected to be completed by September 2005. If the additional toxicity tests are consistent with the previous research, the Agency is expected to propose these changes in water quality standards in the fourth quarter of 2005.

The Agency's efforts are relevant to the Lemont Refinery's petition, as it goes to the environmental impact the proposed discharge will have; that is, sodium sulfate, at the proposed levels discharged,

will not impact the aquatic community in the Chicago Sanitary and Ship Canal or in the Des Plaines River. There is no adverse effect on aquatic life due to TDS and sulfate levels.

PROJECTED EFFLUENT CONTRIBUTION

(Responses to Board Questions 6 and 11

The projected effluent contribution was described in my report, "Impact of CITGO's Proposed Discharge on Water Quality" (Exhibit 6), and will average 215,000 pounds per day of TDS. The loadings were further described in the construction permit application submitted to IEPA in December 2004 (Exhibit 5), and also in the NPDES permit modification application submitted to the Agency in August 2004 (Exhibit 11). Exhibit 12 is a copy of the existing NPDES permit.

PROJECTED WATER QUALITY IMPACTS

(Responses to Board Questions 10b, 10c, 10d, 10e)

The projected incremental increase in both TDS and sulfates in the Chicago Sanitary and Ship Canal and in the Des Plaines River were described in my December 2004 report "Impact of CITGO's Proposed Discharge on Water Quality" (Exhibit 6). This analysis was done based on the 7-day, 10-year low

flow rates in the streams, and relied on the 1992 mixing zone study completed by Huff & Huff, Inc., for the Lemont Refinery. (This mixing zone study was provided to the Board as part of the Lemont Refinery's Ammonia Adjusted Standard request, R93-8.) The effluent design has not changed since that study, and remains valid with the added flow of 274,000 gallons per day from the wet gas scrubber.

ALTERNATIVES

(Responses to IEPA Recommendation Comment 17 and Board Questions 8 and 10f)

Huff & Huff, Inc., considered several alternatives for this 274,000 gallons per day stream. Deep well disposal initially was evaluated along with direct discharge. The Agency determined that the injection of this waste stream would constitute a Class I underground injection well in Illinois. (See Exhibit 13.) Class I wells require injection beneath a cap rock that will prevent migration upwards into higher aquifers. Northeastern Illinois does not have a cap rock above the Mount Simon formation used for disposal wells throughout the Midwest, and therefore this alternative was not viable.

Based on the TDS stakeholders' meeting in early 2004, direct discharge appeared to be the logical alternative to deep well disposal. I had anticipated that the Agency TDS and sulfate rule change would have gone to the Board by mid-2004, which possibly would have made this variance request unnecessary. This did not happen, and the Agency position that the addition of this wastewater stream would contribute to the existing TDS violations that periodically occur due to salt runoff from highway deicing activities leads to this variance request.

The Board has heard numerous requests over the years for variances from the TDS water quality standards and these requests consistently have found evaporation technology cost- and energy-prohibitive. The evaporation costs are described in Exhibit 14. These costs were derived from Rhodia's adjusted standard request, using scale-up factors.

TDS COMPLIANCE PLAN AND SCHEDULE

Exhibit 7 is a proposed TDS compliance commitment, which includes tasks and schedules. The plan calls for extensive TDS data collection from the Des Plaines River at the I-55 Bridge during the winter months. After two seasons of stream testing,

the Lemont Refinery will be in a position to size the necessary holding tank or basin for the wet gas scrubber discharge during periods of high salinity. Physical construction of the holding tank or basin would begin by March 1, 2009, and construction would be complete for the winter season beginning December 1, 2009.

RESPONSES TO BOARD QUESTIONS 5, 7b, 10b, 10e, 12

5. Clarify whether Best Available Technology ("BAT") applies only to ammonia.

In the testimony of Robert Stein of Aware (R98-14), Mr. Stein compared the entire wastewater treatment facilities to the federal BAT requirements. Mr. Stein concluded: "[o]ur analysis of the Lemont Refinery wastewater treatment system indicates that it exceeds the BAT technology for refinery wastewater treatment as presented in the 1982 U.S. EPA Development Document." The BAT determination applied to the total wastewater stream, not just those that applied to ammonia.

7b. Have modeling studies been completed to better define the impact on water quality violations?

As noted earlier, TDS is considered a

conservative pollutant, so modeling after mixing essentially is a mass balance. A mass balance approach was used to predict the incremental change and average TDS and sulfate levels with the addition of the proposed discharge. This was presented in my December 2004 report, "Impact of CITGO's Proposed Discharge on Water Quality" (Exhibit 6). The mixing zone study from 1992 was utilized in this same report.

10b. Please comment on the impact of the sulfate loading.

The sulfate impact is presented in my December 2004 Report "Impact of CITGO's Proposed Discharge on Water Quality" (Exhibit 6), and will amount to an average of 142,000 pounds per day.

10e. Please indicate if the current and amended NPDES permits allow for mixing of Outfall 001.

The mixing zone study was part of the record in the Lemont Refinery's Adjusted Standard request (R93-8), and was incorporated in R98-14. This mixing zone study was an integral part of the ammonia adjusted standard, which was relied upon by the Agency in the issuance of the NPDES permits.

Based on this, the answer is yes, the current and amended NPDES permits allow for mixing.

12. Would you propose interim effluent limits on TDS and sulfates? Would you propose monitoring?

A proposed TDS compliance plan has been submitted as Exhibit 7. This compliance plan includes extensive stream monitoring.

Interim effluent limits are not proposed. First, no water quality violations of the sulfate water quality standard will occur; therefore, there is no basis for sulfate effluent limits.

For TDS, it is clear that the TDS water quality violations are due solely to salt runoff from highway deicing activities. The proposed discharge will not change this fact. Limiting the discharge from the Lemont Refinery, if possible, would not change the number of TDS water quality violations in the Ship Canal or at the I-55 Bridge, as the FCC wet gas scrubber will be contributing on the order of 1 percent of the total salinity loading during these excursions.

The Agency historically has taken the position that the occurrence of water quality exceedances downstream of a discharger of the same pollutant

does not necessarily lead to a more restrictive permit limit or enforcement action. As noted by the Agency in a letter from Dean J. Studer, Supervisor, Southern Municipal Unit, Permit Section of IEPA, to Steven Davis, Galesburg Sanitary District, November 15, 2004: "[t]he intent of the Agency was, and still is, that a District action must be responsible for a violation of the water quality standard before it is considered a permit violation." (See Exhibit 15.) The Lemont Refinery request also would seem similar to the Village of Wauconda's recent NPDES permit, where the Agency, with knowledge of dissolved oxygen violations downstream, concluded that lowering the effluent BOD5 limit was not necessary "since it is believed that this effluent will not cause or contribute to a violation of water quality standards." (Response to Comments, Questions and Concerns regarding the Village of Wauconda's NPDES Permit, at p. 13.) As further noted by the Agency, "[t]his informatin is limited; the extent to which it is representative of normal stream conditions and its relationship to Wauconda discharge is unknown." The Agency included dissolved oxygen monitoring in the NPDES permit for

Wauconda to collect additional data, and the Lemont Refinery's Compliance Plan includes a similar data gathering period.

The Lemont Refinery will have no control over the TDS concentrations, so the only possibility to control the pounds per day discharged is by limiting the discharge rate. This means the Lemont Refinery essentially would have to hold treated effluent. Presumably, if the Des Plaines River TDS is greater than 1,000 mg/L at the I-55 Bridge, the Lemont Refinery would have to cease all discharge. Today, there is no storage capacity at the Lemont Refinery to achieve this concept. As described earlier in my testimony, these violations appear to occur for over 15 consecutive days, but less than 22 days. The Lemont Refinery will have to come up with in excess of 4,000,000 gallons of capacity to isolate the wet gas scrubber during these periods of elevated TDS levels at the I-55 Bridge. Currently, this excess capacity does not exist, and the actual number of days that would require holding wet gas scrubber water currently is poorly understood. The requested compliance time frame is for the collection of the necessary data to properly size this holding

basin/tankage. Providing some interim effluent TDS limit will provide no benefit to the receiving water, based on the Agency-generated information contained in Exhibit 10.

MR. HALLORAN: Any cross?

MR. DAY: No.

MR. HALLORAN: Thank you.

Now I'll turn it over to the technical unit. Mr. Rao or Ms. Liu?

MS. LIU: I don't have anything right now.

MR. RAO: Same here.

MR. HALLORAN: So these are the only two witnesses that are here today?

MS. CARVER REID: Yes, sir.

MR. HALLORAN: Off the record for a minute.

(Discussion off the record.)

MR. HALLORAN: We're back on the record.

Mr. Day, it appears that CITGO has -- petitioners have rested their case in chief.

Is that correct, Ms. Carver Reid?

MS. CARVER REID: I have one more item. I would like to, at this time, enter what has been marked as Exhibits 1 through 15, in support of the prefiled testimony, into the record as evidence in this proceeding today.

MR. HALLORAN: Mr. Day, any objection?

MR. DAY: No.

MR. HALLORAN: The written testimony itself will be transcribed into the transcript. The exhibits will not. They will just be a part of the record. Is that fair enough?

MS. CARVER REID: Yes. Thank you.

MR. HALLORAN: Mr. Day, you're on.

MR. DAY: With the entry of these exhibits and the submission of the testimony of Mr. Harmon and Mr. Huff, the petitioner has met with the expectations that I described earlier of our agency. The defects that we had noted in our initial review of the testimony have been cured, and our agency is prepared to support the petitioner at this point; and we will enter no further testimony

here today.

MR. HALLORAN: Okay. Thank you, Mr. Day. You've rested your case in chief?

MR. DAY: Yes.

MR. HALLORAN: Any rebuttal from the petitioner?

MS. CARVER REID: No.

MR. HALLORAN: Any closings from the petitioner or the respondent?

MS. CARVER REID: No.

MR. HALLORAN: Okay. We can go off the record.

(Discussion off the record.)

BY MR. HALLORAN:

Q. We've been off the record talking about posthearing briefs. And we've agreed that it appears that the technical unit from the Illinois Pollution Control Board will have your questions, if any, submitted to the petitioner on or before March 3rd.

And then we've decided that we're going to be filing simultaneous posthearing briefs or responses, such as they are, on or before March 15th. And there's been an agreement that the

parties will overnight their responses or briefs on March 14th so everybody will have it on March 15th. Basically the no-mailbox rule will apply. March 21st, simultaneous replies, if any, are due then. And I'm going to set public comment; the close for that is -- public comment is due on or before March 4th.

I think that's about it. But I do have to make a credibility determination. And based on my legal expertise, observations, I find that there are no credibility issues with the witnesses that have testified here today.

Have I forgotten anything?

It doesn't look that I have. So in any event, thanks for coming. And this hearing is now concluded. Thank you.

(Which were all the proceedings had in the above-entitled cause.)

STATE OF ILLINOIS)
) SS.
COUNTY OF COOK)

Kathy A. O'Donnell, being first duly sworn, on oath says that she is a Registered Professional Reporter doing business in the City of Chicago, County of Cook and the State of Illinois;

That she reported in shorthand the proceedings had at the foregoing Illinois Pollution Control Board hearing;

And that the foregoing is a true and correct transcript of her shorthand notes so taken as aforesaid and contains all the proceedings had at the said Illinois Pollution Control Board hearing.

Kathy A. O'Donnell

KATHY A. O'DONNELL, RPR

CSR No. 084-004466
SUBSCRIBED AND SWORN TO
before me this 9 day of
March, A.D., 2005.

Kimberly A. Meeks

NOTARY PUBLIC

OFFICIAL SEAL
KIMBERLY A MEEKS
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:12/17/07