

STATE OF NEW MEXICO
ENERGY, MINERAL AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

ORIGINAL

APPLICATION OF THE NEW MEXICO OIL AND GAS
ASSOCIATION FOR AMENDMENT OF CERTAIN PROVISIONS OF
TITLE 19, CHAPTER 15 OF THE NEW MEXICO
ADMINISTRATIVE CODE CONCERNING PITS, CLOSED-LOOP
SYSTEMS, BELOW GRADE TANKS AND SUMPS AND OTHER
ALTERNATIVE METHODS RELATED TO THE FORE GOING
MATTERS, STATE-WIDE.

CASE NO. 14784 AND 14785

VOLUME 10

August 28, 2012
9:00 a.m.
Wendell Chino Building
1220 South St. Francis Drive
Porter Hall, Room 102
Santa Fe, New Mexico

2012 SEP 11 AM 11:22
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THE COMMISSION:

JAMI BAILEY, Chairperson

GREG BLOOM, Commissioner

DR. ROBERT BALCH, Commissioner

MARK SMITH, Esq.

FLORENE DAVIDSON, COMMISSION CLERK

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Paul Baca Court Reporters
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1 (Note: In session at 9:00.)

2 CHAIRPERSON BAILEY: Good morning. This
3 is the meeting of the Oil Conservation Division on
4 Tuesday, August 28th here in Porter Hall in Santa
5 Fe, New Mexico; to my right is Commissioner Greg
6 Bloom, designee of the Commissioner of Public Lands.
7 To my left is Commissioner Bob Balch, who is the
8 designee of the Secretary of Energy, Minerals and
9 Natural Resources; and I am Jami Bailey, director of
10 the Oil Conservation Division.

11 Have the commissioners had a chance to
12 read the Minutes of the previous hearing? I see
13 Mr. Dawson in the audience who was the designee for
14 the meeting that was held on July 18th of 2012 here
15 in Porter Hall.

16 MR. DAWSON: I have.

17 DR. BALCH: I have.

18 CHAIRPERSON BAILEY: Do I hear a motion to
19 adopt the Minutes as presented?

20 DR. BALCH: I will make the motion.

21 MR. DAWSON: I will second.

22 CHAIRPERSON BAILEY: All in favor? (Aye).

23 CHAIRPERSON BAILEY: I will sign on behalf
24 of the Commission. I also see that we have
25 Affidavits for Notice that were published for the

1 June 20th, 2012 and the August 28th meeting today.
2 These are notice requirements of the hearings and
3 they have obviously been published in the newspapers
4 and dockets as necessary, so I will accept those for
5 the record.

6 MR. SMITH: And those will be part of the
7 record?

8 CHAIRPERSON BAILEY: Yes. Today we are
9 calling the continued Consolidated Case 14784 and
10 the bifurcated case, 14785 having to do with
11 provisions of Title 19, Chapter 15 of the New Mexico
12 Administrative Code Concerning Pits, Closed Loop
13 Systems, Below Grade Tanks, Sumps and Other
14 Alternative Methods Related to the Foregoing and
15 Amending Other Rules to Conform With Changes
16 State-wide. Shall I call for appearances again?

17 MR. CARR: May it please the Commission,
18 my name is William F. Carr. I am with the Santa Fe
19 office of Holland & Hart and we represent the New
20 Mexico Oil and Gas Association.

21 MR. HISER: If it please the commission, I
22 am Eric Hiser with the firm of Jordan Bischoff &
23 Hiser in Scottsdale, Arizona. I also represent the
24 New Mexico Oil and Gas Association.

25 MS. FOSTER: Good morning, members of the

1 Commission. My name is Karin Foster. I'm the
2 executive director and attorney for the Independent
3 Petroleum Association of New Mexico.

4 MR. JANTZ: Eric Jantz, Environmental Law
5 Center for OGAP.

6 MS. GERHOLT: Gabriel Gerholt on behalf of
7 the Oil Conservation Division.

8 MR. FORT: I'm Patrick Fort on behalf of
9 Jalapeno Corporation.

10 MR. DANGLER: Madam Chair, Commissioners,
11 Hugh Dangler on behalf of State Land Office. Thank
12 you.

13 CHAIRPERSON BAILEY: Dr. Neeper?

14 MR. NEEPER: I am Don Neeper representing
15 New Mexico Citizens for Clean Air and Water, pro se.

16 CHAIRPERSON BAILEY: As always, we will
17 leave time for public comment for people who sign in
18 at the back of the room. We will allow time before
19 we break for lunch and before we break for the day
20 so it will be somewhere around 11:00, 11:30, and
21 then again somewhere around 4:00 to 5:00 o'clock
22 this afternoon.

23 I believe that we were at the point of
24 Mr. Jantz presenting the witness.

25 MR. JANTZ: Thank you, Madam Chair. I am

1 here with Ms. Kathy Martin and we are going to talk
2 about some of the things that the oil industry
3 witnesses have testified to in rebuttal. Would you
4 please introduce yourself?

5 MS. FOSTER: If I may make a statement at
6 this time. I would like to clarify again for the
7 record on behalf of the Independent Petroleum
8 Association that we would object to the presentation
9 of this witness at this time. We don't believe she
10 is a proper rebuttal witness. The Oil and Gas
11 Accountability Project had the opportunity to
12 present a case. They had notice just like every
13 other party in this case as to what evidence was
14 going to be presented, including modeling evidence.
15 They could have put Ms. Martin on at the time they
16 initially presented their case. We don't believe
17 this is proper testimony.

18 I would point to OGAP's Notice of Intent
19 which was filed where they say Ms. Martin has
20 extensive knowledge in the areas of lining
21 materials, liner construction, waste/liner
22 compatibility as it relates to the efficacy of a
23 closed-loop system. They also point to her
24 experience in wastewater impoundments and
25 environmental issues related to hydraulic fracking.

1 None of these issues are pertinent for
2 rebuttal testimony. If you recall the testimony
3 presented, we did not talk about liners. In Rule
4 17, the liner part of it, we left that alone, and I
5 don't think this witness is an appropriate witness
6 for rebuttal at this time.

7 MR. FORT: Madam Chair, I also join in
8 that motion by IPANM, and to expound a little bit
9 further in terms of looking as to whether or not
10 testimony by a witness is proper rebuttal testimony,
11 they have to meet basically -- it has to be new
12 things that come out in a case-in-chief. It has to
13 be things that could not -- that were admissible in
14 their case-in-chief and, therefore, should have been
15 presented in their case-in-chief. And secondly, it
16 has to bear directly on whether or not the
17 Commission is going to adopt these regulations.

18 If you look at the areas that they propose
19 to have Ms. Martin testify in, one is the multi-well
20 fluid management pits. Those were set forth in the
21 filings, I believe, originally back in October and
22 in November of 2011 as part of the issues before the
23 Commission. They were aware that this was an issue
24 as to whether or not we adopt these.

25 They also bring out they want to talk

1 about leak detection. That was mentioned regarding
2 these multi-well fluid management pits as well.
3 They want to talk about the liners as well. That
4 was all there. It was all laid out. There's been
5 some modifications, I understand, but the gist of it
6 has been there since the end of 2011. They have had
7 adequate time to prepare. They know what the issues
8 are. Again, these are issues that this Commission
9 has to decide, and that's what they should have
10 presented in their direct testimony.

11 We do note that Ms. Martin was not listed
12 in their prehearing statement for their
13 case-in-chief.

14 Second is that they want to look at
15 several leaks from various pits, I assume temporary
16 reserve pits or drilling pits. It doesn't indicate.
17 However, the issue -- they knew from the end of 2011
18 that we were going to ask for increased
19 concentrations that were allowable in the
20 constituents in the pit and that we were going to
21 also ask for on-site closure and we were changing
22 that. That would make them aware they should have
23 presented that again in their direct testimony.

24 They talked about also the liners. The
25 liners, again, wasn't an issue that was brought up,

1 most of that. I think the only thing may have been
2 the slope regarding the design and construction for
3 liners, but otherwise, that's Pit Rule 17 and not
4 only is that inappropriate for rebuttal, because
5 it's an issue that's to be decided by this
6 Commission, it's also not relevant about reserve or
7 temporary or permanent pit liners. That's not an
8 issue before this Commission.

9 I'm trying to think. There was another
10 area that they wanted to bring up and that would
11 have been, I guess, regarding the modeling. Again,
12 that was all taken care of in terms of -- and I
13 think the proposed exhibits are instructive on that
14 point.

15 The exhibits they propose to introduce are
16 all either from the 2007 or the 2009 hearings. That
17 information was readily available. If they knew
18 about the increase or the higher constituent
19 concentrations that were going to be allowable and
20 the on-site closure, if they wanted to present that
21 they should have presented it in their case-in-chief
22 on direct.

23 They chose not to. That's their decision,
24 but they don't get two bites at the apple. That's
25 the problem here. Basically, the applicants get to

1 put on their case-in-chief. And then the defense or
2 the opposition in this case, OGAP, gets to put on
3 its case-in-chief. It gets to bring up things that
4 were brought up in the applicant's case-in-chief and
5 their case-in-chief. If, in fact, OGAP brings up
6 something in their case-in-chief that is new, then
7 the applicants get to do that on rebuttal.

8 Now, on rebuttal, it's only on those the
9 issues that are not new. It's not that you get to
10 relitigate things. Because now what's going to
11 happen is that if, in fact, the applicants put on
12 other witnesses to rebut what Ms. Martin wants to
13 say, we are going to have a motion by OGAP that they
14 want to put on more rebuttal.

15 That's not how this works. You basically
16 get to put on your case-in-chief and you put on
17 everything that's admissible, and secondly, that
18 bears directly on the issues before this Commission.
19 It's only new things that come up that in the
20 defendant's case-in-chief in terms of -- that they
21 brought up that the applicant gets. Then OGAP gets
22 the last word, so to speak, on responding to those
23 new things that the applicants are rebutted.
24 Otherwise, we will have this continuous thing. It
25 has to stop. You only get one direct and one

1 rebuttal, if it's applicable. Then after that,
2 you're done.

3 So all ever this stuff could have been
4 brought up. Even the list of the wells, the dates
5 on the -- apparently the order from the OCD, the
6 last one, the last order issued was in, I believe,
7 April of 2010. Clearly all this information was
8 readily available to OGAP and they should have put
9 this forth in their direct case, their
10 case-in-chief. This isn't proper rebuttal.

11 CHAIRPERSON BAILEY: Mr. Carr?

12 MR. CARR: May it please the Commission, I
13 would just like to note that rebuttal testimony
14 really should not be used as a vehicle to allow a
15 party to sit back and not present a meaningful case
16 and then after the applicant has rested call a new
17 case on undisclosed witnesses that they could have
18 earlier presented. Having said that, one of the
19 reasons our cases go on forever is we procedurally
20 don't go case, response and rebuttal.

21 But I think it's incumbent that anyone
22 comes before you and proposes to present rebuttal
23 testimony can demonstrate, in fact, that what they
24 are doing truly qualifies as rebuttal.

25 CHAIRPERSON BAILEY: Mr. Hiser,

1 Dr. Neeper, Ms. Gerholt? Do you have comments?

2 MR. NEEPER: No comment.

3 MS. GERHOLT: No comment.

4 MR. DANGLER: Nothing, thank you.

5 CHAIRPERSON BAILEY: Mr. Smith?

6 MR. JANTZ: May I respond?

7 CHAIRPERSON BAILEY: Yes.

8 MR. JANTZ: I think there are two problems
9 with the industry's argument. One, it assumes a
10 formal rule-making, formal process, formal
11 judicatory process. We have all been to court about
12 this and the First District Court has ruled that
13 this is an informal rule-making process. Therefore,
14 these judicatory technicalities, rebuttal,
15 surrebuttal, case-in-chief, are not applicable.
16 Those are formal rules of procedures that apply to
17 formal procedures. If the Commission is going to
18 change its procedure in midstream, that's fine. We
19 can deal with that. But the fact of the matter is
20 this is an informal ruling.

21 Second of all, being an informal
22 rule-making, there are only two things the
23 Commission has to take into account. One, whether
24 there's any prejudice to any party; and two, whether
25 the information we are going to present is relevant

1 and useful to the Commission in its decision-making
2 process.

3 In terms of fairness, none of these
4 parties, not a single one, Mr. Fort, Ms. Foster, Mr.
5 Carr, alleged any prejudice to their clients by the
6 way it's been going forward. There's been a parade
7 of speculation about what's going to happen in the
8 never-ending process but the fact of the matter is
9 there are no crystal balls. We are entitled, as a
10 member of the public, to present some rebuttal to
11 what's being testified to at this Commission.

12 Second of all, in terms of fairness, it's
13 worthwhile to note that the NOIs presented by
14 Independent Producers and NMOGA, OGAP got two weeks
15 to see those and study those. They have had an
16 entire month, four times as long, to review and
17 study our NOI from Ms. Martin.

18 So I think it's preposterous for them to
19 argue that they have been slighted and it's unfair,
20 given the fact that they have had four times as long
21 to consider what Ms. Martin is going to say compared
22 to our two weeks to consider what their witnesses
23 were going to say. With that said, I think that the
24 industry's arguments are without merit.

25 CHAIRPERSON BAILEY: Mr. Smith? As

1 commission counsel, do you have a recommendation for
2 this commission concerning a rebuttal witness?

3 MR. SMITH: Of course. I would like to
4 say that I don't think that the procedural issues
5 that have been brought up by NMOGA and IPANM and
6 Jalapeno are mere technicalities. I think they are
7 there to help ensure a fair process. I do thing
8 that it is the case, however, that this is not a
9 trial, and I think some of the points were made by
10 the industry side were particularly good. It is not
11 particularly admissible technique to wait for
12 rebuttal in order to bring up things that could have
13 been brought up in the case-in-chief.

14 I don't know whether this is truly
15 rebuttal or not. You all have gotten sort of
16 metaphysical here on me, but I have looked at some
17 of the case law with respect to surprise witnesses
18 which seems to me to be the real issue here, and as
19 nearly as I can tell, even though it may not be the
20 thing to do to hold off until the end for rebuttal
21 witnesses for something that you could have put in a
22 case-in-chief, trial courts, even in the formal
23 trial setting, appear to me to allow witnesses that
24 would be characterized as surprise witnesses as long
25 as curative measures have been taken in order to

1 ameliorate the prejudice to the other side.

2 I think that this Notice of Intent filed
3 by OGAP was filed two months ago, and I really
4 haven't heard anything that would indicate that any
5 of the industry reps are prejudiced by this. So it
6 would seem to me that given the intent of the
7 rule-making, which is to inform the Commission, that
8 this witness should be allowed to testify. However,
9 I do think that the testimony should be limited to
10 issues that have been previously raised as opposed
11 to raising any new issues right now. And, of
12 course, the other parties will need to be given the
13 opportunity to put on a witness to rebut whatever
14 testimony they hear now.

15 So my recommendation would be allow the
16 testimony, limit the testimony to issues that have
17 thus far been presented by either side.

18 CHAIRPERSON BAILEY: During this hearing?

19 MR. SMITH: In this hearing. Allow
20 cross-examination and allow rebuttal witnesses by
21 NMOGA, IPANM, Jalapeno, OCD, whomever wants to put
22 on a rebuttal witness.

23 CHAIRPERSON BAILEY: Commissioner Bloom,
24 do you agree that we should overrule the objection
25 to hearing Ms. Martin?

1 COMMISSIONER BLOOM: Yes, agreed.

2 CHAIRPERSON BAILEY: Dr. Balch?

3 DR. BALCH: I will go with Mr. Smith's
4 ruling.

5 CHAIRPERSON BAILEY: The objection is
6 overruled as far as objecting to Ms. Martin.

7 MR. SMITH: I would like to say with
8 respect to objections on relevance, that sort of
9 thing, those objections should be brought up during
10 the testimony.

11 CHAIRPERSON BAILEY: Okay. Would you
12 stand to be sworn.

13 KATHY MARTIN
14 after having been first duly sworn under oath,
15 testified as follows:

16 DIRECT EXAMINATION

17 BY MR. JANTZ

18 Q. Thank you, Madam Chair. Please introduce
19 yourself to the Commission.

20 A. My name is Kathy Martin. I live in
21 Norman, Oklahoma.

22 Q. We have your CV as proposed Exhibit 3.
23 Let's talk about it. Let's talk about your
24 education first. Would you explain to the
25 Commission your educational background?

1 A. Sure. I have a Bachelor's Degree in
2 Petroleum Engineering from the University of
3 Oklahoma back in 1987 and then I went straight into
4 Master's Degree in Civil Engineering also at OU
5 where I focused on the wastewater treatment side of
6 civil engineering, environmental engineering.

7 The OU Environmental Engineering Program
8 is heavily focused on groundwater. It's a
9 groundwater school but I also took groundwater
10 seepage, groundwater pollution control, modeling,
11 but it also had some good course work in air
12 pollution control and engineering technologies. I
13 took course work on risk assessment using
14 epidemiological and laboratory tests and then
15 translating them into a risk factor. I took things
16 like corrosion engineering and all at the graduate
17 level from Chem E. Surface colloidal science which
18 is looking at the electromagnetic layer between clay
19 minerals and solutes. Different things dissolve in
20 liquids so looking at the solid/liquid interface,
21 and I also have about 50 hours past my Master's in
22 graduate course work in anticipation of going for a
23 Ph.D.

24 Q. Can you talk a little about your Master's
25 Thesis?

1 A. Yes. While I was a graduate student I
2 worked as an intern for the Water Resources Board
3 where they basically paid me to read about liners
4 and waste liner compatibility, and then I read that
5 paid reading effort to translate into my thesis,
6 which was the removal of polychlorinated biphenyls
7 from topsoil using a non-ionic can surfactant. It
8 was a laboratory experiment taking known
9 contaminated soil and changing the concentration of
10 surfactant and contact time in order to create a
11 recipe for soil-washing to remove what is basically
12 one of the most stubborn pollutants ever created by
13 mankind.

14 Q. Ms. Martin, let's move on to your
15 professional experience. Can you describe for the
16 Commission your professional experience, what you
17 have done once you graduated from school?

18 A. Correct. I was an intern with the
19 Oklahoma Water Resources Board while I was in
20 graduate school and then they hired me directly
21 after I graduated. I worked for the Water Board for
22 three years and the first task was to draft rules
23 and regulations for surface impoundments and lined
24 application. That's basically what they paid me to
25 read so it translated into a year-long effort with a

1 rule committee of academia, industry and
2 environmental people and I was in charge of drafting
3 the rules and going through like a stakeholder
4 review process. Then it was sent to the legislature
5 for approval.

6 During that time I also was assigned to be
7 the project officer of the Tar Creek Superfund site,
8 which I was the third project officer of that site.
9 It's the number one superfund site in the United
10 States. Fifty square miles of acid mine drainage
11 from one of the largest lead and zinc mines in the
12 world.

13 During the time that I worked on that, I
14 worked with the USGS and developed a groundwater
15 recognizance study on the Roubidoux aquifer which
16 was a confined aquifer which had been polluted by
17 the mines, which were actually in the Boone
18 formation at 2- or 300 below surface. The Roubidoux
19 was about 1,000 feet below surface and it was
20 contaminated via abandoned oil wells in Northeastern
21 Oklahoma and we used the USGS to do groundwater
22 sampling and create proof that that had indeed
23 occurred and that the Roubidoux had been compromised
24 by the superfund site.

25 Then the third task, once my rules became

1 official, then I was assigned every permit that
2 could possibly land on my desk while I wasn't
3 looking and I wrote permits for all of the
4 non-discharging facilities in Oklahoma that have had
5 non-hazardous industrial wastewater. And then from
6 those I also was in charge of closure of surface
7 impoundments.

8 Prior to my writing the rules, the State
9 really didn't have a closure process, so once the
10 rule was instigated a lot of companies came forward
11 and wanted to close lagoons out with this procedure.

12 Q. Can you tell us what the STRONGER Board
13 is?

14 A. Right. I didn't go into my -- when I
15 worked at the DEQ.

16 Q. Please explain that.

17 A. When Oklahoma was looking for MPS
18 delegation we had to combine the Water Board and the
19 Health Department to create a new agency called the
20 Department of Environmental Quality and I
21 transferred into that agency into the Customer
22 Assistance Program which was the first of its kind
23 in the United States, non-regulatory part of the
24 agency that could handle permit assistance and
25 compliance assistance without getting anybody in

1 trouble.

2 So we created the Compliance Assistance
3 Program using like a multi-media approach so if
4 somebody like Conoco Refinery came in and wanted to
5 talk about some compliance at their facility we
6 could put together a team of people that understood
7 RCRA, air quality, water quality, et cetera and sit
8 down at the table with them, and we did that with
9 small companies, big companies.

10 Also for new companies that wanted to come
11 to the state, for example, I think when Mikron
12 wanted to come and also the company that made the
13 toolboxes for Sears, then we would sit in a meeting
14 and I would put together all of the various people
15 who had expertise in RCRA, air, and we would develop
16 a timeline of when they would have to submit their
17 permit applications in anticipation of when they
18 wanted to start operation so we would back it up,
19 and that became a standard for the state and for
20 other states as well.

21 From that, because I was involved in
22 multi-media assistance, at some point I also got
23 training in air quality. This was right after the
24 Clean Air Act Amendments of 1990 so I went to UT
25 Arlington and was trained in permitting and

1 hazardous air pollutants, et cetera, and I
2 started -- the first HAP program was under the Small
3 Business Assistance Program under the Clean Air Act
4 Amendments of 1990. It was for dry cleaners, and so
5 I did a state-wide dry cleaning assistance effort
6 which I went all over the state talking to dry
7 cleaners and everything. So I started that program
8 and how that would be implemented from then on. So
9 I have a lot of air quality experience plus some
10 RCRA and water quality.

11 Q. Did this come into play in your capacity
12 as a board member for STRONGER?

13 A. Actually, yes.

14 Q. And can you explain that a little bit
15 more?

16 A. Right. I was recruited to replace Don
17 Neeper when he stepped down as an environmental
18 stakeholder on the STRONGER Board and I represented
19 the Sierra Club on that board. I think I put on my
20 resume up until 2010, is when I stepped down.

21 Q. What did you do as a STRONGER Board
22 member?

23 A. During my tenure, the state guidelines for
24 the review of environmental regulations for oil and
25 gas exploration activities had already been

1 developed through IOGCC, Interstate Oil and Gas
2 Compact Commission, and through STRONGER. But
3 during my tenure we were discussing including new
4 guidelines for stormwater drain construction on well
5 sites and also the hydraulic fracturing guidelines.
6 And also I reviewed -- I was involved in the state
7 review of Oklahoma's oil and gas environmental
8 regulations, Kentucky and Tennessee's.

9 Q. And does any of your experience involve
10 analyzing transport fate?

11 A. In the STRONGER?

12 Q. Any of it?

13 A. Oh, in any of it? Yes. While I was
14 working for the Water Board, as part of the closure
15 requirement, this was all about developing good
16 sampling analysis plans, monitoring plans,
17 determining the extent of contamination and then how
18 to translate that into clean air, and I did that for
19 several years.

20 Q. Okay. Do you have any professional
21 certifications?

22 A. I am a licensed professional engineer in
23 civil engineering in the state of Oklahoma.

24 Q. And have you provided expert testimony in
25 any other hearings?

1 A. Yes.

2 Q. Administrative hearings?

3 A. Yes.

4 Q. Have you provided any expert testimony in
5 court?

6 A. Yes.

7 Q. And were you qualified as an expert in all
8 of those testimonies?

9 A. Yes.

10 Q. At this point I would like you to take a
11 look at Proposed Exhibit 3, Ms. Martin. This is a
12 true and correct copy of your CV?

13 A. Yes.

14 MR. JANTZ: At this point I would like to
15 move Exhibit 3 into the record, please.

16 CHAIRPERSON BAILEY: Objections?

17 MS. FOSTER: I would object.

18 CHAIRPERSON BAILEY: It is admitted.

19 (Note: Exhibit 3 admitted.)

20 MR. JANTZ: At this point by virtue of
21 education and experience I would like to move
22 Ms. Martin in as a qualified expert in petroleum
23 engineering, civil engineering and environmental
24 engineering.

25 CHAIRPERSON BAILEY: Any objections?

1 MR. FORT: Objection.

2 MS. FOSTER: Objection. I would like to
3 voir dire the witness, if possible.

4 CHAIRPERSON BAILEY: Go ahead.

5 VOIR DIRE EXAMINATION

6 BY MS. FOSTER

7 Q. Ms. Martin, did you testify in 2009 in
8 front of the WQCC?

9 A. For the Dairy Rule?

10 Q. Yes.

11 A. Yes.

12 Q. Did you submit a resume at that time?

13 A. Yes.

14 Q. And in your resume did you not say that
15 your experience related to adjacent landowner for
16 swine facilities, not landowner facilities as
17 opposed to what your resume states at this time? In
18 other words, is your resume different now than when
19 it was submitted previously in 2009?

20 A. My expertise in representing adjacent
21 landowners to swine facilities is in the third party
22 engineering evaluation of a wastewater treatment
23 system including the liner design, impoundment
24 design, nutrient management plan, et cetera, which
25 overlaps into what we will be talking about today.

1 Q. The reason I objected to your resume is
2 because the resume that you presented to this Board
3 is different than the one you stated previously. In
4 the resume that you've submitted today you expanded
5 your responsibilities to adjacent landowners for
6 livestock facilities and not swine facilities.

7 A. Well, I have expertise in livestock
8 facilities. It's dairy, poultry and swine and it's
9 been two years since I testified.

10 MS. FOSTER: That was the basis of my
11 objection to the resume. I have two copies of her
12 resume and they are different.

13 CHAIRPERSON BAILEY: We will accept
14 Ms. Martin.

15 MS. FOSTER: If I could voir dire the
16 witness?

17 MR. SMITH: May I just ask --

18 CHAIRPERSON BAILEY: Go ahead.

19 MR. SMITH: -- Ms. Foster a question? Can
20 you point out on the resume where the differences
21 are, please?

22 MS. FOSTER: I have a copy of the resume
23 submitted in the 2009 hearing in front of the WQCC.
24 It was admitted as Exhibit C-1 in that proceeding.
25 I can provide that to the Court if you would like me

1 to do that.

2 MR. SMITH: Well, you just talked about an
3 expansion that you focused on. I thought maybe you
4 could draw the Commission's attention to where the
5 expanded language is.

6 MS. FOSTER: The expanded language is in
7 her resume she states under her experience, the
8 second paragraph, that her experience is related to
9 adjacent landowners for livestock facilities, and in
10 the resume that she submitted in 2009 it states it's
11 adjacent landowners to swine facilities.

12 Q. (By Ms. Foster) Ms. Martin, I see from
13 your CV you are licensed in the state of Oklahoma
14 under License No. 18254; is that correct?

15 A. Yes.

16 Q. When did you obtain that license?

17 A. Over 15 years ago.

18 Q. And your primary discipline is civil
19 engineering; is that correct?

20 A. Correct.

21 Q. And you are currently self-employed by
22 Martin Environmental Services, correct?

23 A. Correct.

24 Q. You are holding yourself out as a
25 professional engineer in this testimony, correct?

1 A. Yes.

2 Q. In your testimony, you are testifying on
3 technical issues?

4 A. Correct.

5 Q. Are you employed by the New Mexico
6 Environmental Law Center?

7 A. Who my client is in this proceeding?

8 Q. Are you employed by them?

9 A. No.

10 Q. So you are a consultant for them in this
11 proceeding?

12 A. Yes.

13 Q. Are you being compensated for your expert
14 testimony here today?

15 A. Yes.

16 Q. You are being compensated for your expert
17 testimony as a professional engineer; is that
18 correct?

19 A. Yes.

20 Q. Are you employed by any other firm holding
21 itself as a corporation, partnership or association
22 that provides engineering services in New Mexico?

23 A. No.

24 Q. Now, would it be fair to say from your
25 resume that you are primarily concentrated on

1 environmental issues relating to large scale animal
2 feeding operations? Is that mostly what your
3 experience is about?

4 A. Right, as it relates to their lagoon and
5 liner system and nutrient management plan.

6 Q. In fact, since 2010 to present you have
7 experience in mobile meat harvesting, correct?

8 A. That's true.

9 Q. And then you were working with adjacent
10 landowners for swine facilities in 1997 to present;
11 is that correct?

12 A. And dairies and poultry facilities, yes.
13 In 21 states for over 15 years.

14 Q. And your three months with the Seward
15 County Commissioners you worked on environmental
16 regulations for CAFOs, which is confined animal
17 feeding operations, correct?

18 A. Correct. That was a bid project so I
19 didn't work for them, I was a contractor.

20 Q. And looking at your technical experience,
21 I believe you stated in the WQCC hearing, at that
22 time you said 12 years of experience in CAFO
23 proceedings; is that correct?

24 A. I believe that would be correct.

25 Q. And mostly with the CAFO proceedings you

1 worked on lagoon liners; is that correct?

2 A. And nutrient management plans and other
3 aspects of the regulations which could be quite
4 varied from state to state. But yes, primarily the
5 waste management system.

6 Q. And you also studied pathogen transport in
7 the CAFOs, right?

8 A. Yes.

9 Q. And pathogens are biological materials?

10 A. Correct.

11 Q. Did you study any migration of chlorides?

12 A. Yes, and nitrates and other salts.

13 Q. Did you actually do any modeling with
14 regard to that transport material?

15 A. More simple, yes, using equations.
16 Absolutely.

17 Q. On the back of a napkin or with a computer
18 program?

19 A. Not on the back of a napkin but serious
20 calculations using Darcy's Law, et cetera, and other
21 types of equations.

22 Q. Hand calculations that you did, not using
23 a computer program, correct?

24 A. Yes.

25 Q. And you are intending to testify in this

1 administrative proceeding as a professional
2 engineer?

3 A. Yes.

4 Q. And did you attempt to become familiar
5 with the professional engineering regulations
6 applicable in the state of New Mexico?

7 A. I did several years ago but not recently.

8 Q. Not for this hearing?

9 A. It was several years ago.

10 Q. And did you attempt to obtain licensure as
11 a professional engineer in the state of New Mexico?

12 A. No.

13 Q. Are you familiar with the New Mexico
14 Engineering and Surveying Practice Act?

15 A. Like I said, I read it several years ago
16 but not -- I wouldn't be able to recite it today.

17 Q. Are you familiar with a roster here in the
18 state of New Mexico concerning professional
19 engineers?

20 A. A roster being a list?

21 Q. A list of certified and licensed
22 professional engineers?

23 A. All states have that. All states have a
24 list of who is licensed in the state.

25 Q. Are you on that list?

1 A. No.

2 Q. So you do not have licensure on the state
3 of New Mexico?

4 A. Nor did I say I did.

5 Q. Are you familiar with Section 6123-2 of
6 the Engineering and Surveying Practice Act?

7 MR. JANTZ: Objection. Ms. Martin is not
8 a lawyer, first; and second of all, how is this
9 relevant? Ms. Martin is being qualified as an
10 expert in petroleum, civil and environmental
11 engineering, not per se a professional engineer.
12 That's her certification and part of the calculus
13 that goes into her expert qualifications but she is
14 not specifically being qualified as a professional
15 engineer. None of the witnesses have been.

16 MS. FOSTER: That is not true.
17 Mr. Mullins was qualified as a professional engineer
18 and in the Notice of Intent OGAP has presented this
19 witness as a professional engineer. She is listed
20 as a PE and she's testifying on technical issues as
21 a professional engineer. She stated that she is
22 familiar with the regulations under the Engineering
23 and Surveying Act of New Mexico which specifically
24 states that any person that is offering to practice
25 engineering in the state of New Mexico is required

1 to submit evidence that he or she is qualified to
2 practice. It also states -- and the next question I
3 was going to ask her was if she was familiar with
4 the definition of engineering in the state of New
5 Mexico under that same act which she is supposed to
6 be familiar with as a professional engineer, and it
7 specifically states for the practice of engineering
8 in the state of New Mexico, that includes expert
9 technical testimony, which is what she is here for
10 today.

11 THE WITNESS: May I respond?

12 MR. SMITH: Let her go forward, I think
13 with the voir dire. Overrule, I think, Mr. Jantz'
14 objection.

15 CHAIRPERSON BAILEY: I will overrule the
16 objection and allow you to go ahead with the voir
17 dire.

18 Q (By Ms. Foster) Ms. Martin, for this
19 hearing did you prepare any reports on your findings
20 and review of other documentation?

21 A. No formal report. I may have provided
22 some summaries of information related to what we are
23 here about.

24 Q. And you created Exhibit 3; is that
25 correct? That is your table that you created?

1 A. I asked somebody at the law center to
2 recreate what I had done, yes. It looks to be about
3 what I had done.

4 Q. You didn't sign off on the document in
5 your professional expertise as a professional
6 engineer, did you?

7 A. My understanding of professional
8 engineering licensing in the 21 states that I have
9 worked in is that I am not required to be licensed
10 in that state if all I am doing is testifying in an
11 administrative proceedings. I may not solicit work.
12 I may not do any engineering work outside of
13 administrative proceedings, but during the
14 proceedings itself, the work related to being an
15 expert has always been allowed and I have never had
16 to have a license in the state that I testified in.
17 And I have been doing this for 15 years.

18 Q. Are you stating that your testimony is
19 relating to environmental issues?

20 A. For what?

21 Q. Your testimony relates to environmental
22 issues; is that not correct?

23 A. Environmental, civil and to a certain
24 extent, petroleum, yes.

25 Q. And your degree or your certification in

1 the state of Oklahoma is related to civil
2 engineering; is that correct?

3 A. Correct.

4 Q. And this issue that you are testifying to
5 today regards safeguarding life, health and
6 property, is that not correct, in the state of New
7 Mexico?

8 A. My testimony today will be correcting some
9 errors that were stated under cross-examination.
10 Whether or not they are heated, possibly there could
11 be some saving of health and environment, but that's
12 not the number one goal. The goal is to highlight
13 errors that were discovered during cross-examination
14 that was not -- I could not have imagined somebody
15 would have said that they did.

16 Q. So what you are saying is that your
17 testimony does not relate to life, health and
18 property?

19 A. Well, with respect to the rules, it
20 relates to that, yes.

21 MS. FOSTER: I have copies here for the
22 Board. I have the definition here from the
23 Engineering and Surveying Practice Act of the state
24 of New Mexico which this witness, as a professional
25 engineer, stated she is familiar with and she is a

1 professional engineer in another state, and I would
2 ask the Board to take administrative notice of this
3 statute for the State of New Mexico which states
4 that for the practice of engineering in the state of
5 New Mexico it does relate to expert technical
6 testimony, either public or private, relating to
7 environmental issues insofar as they involve
8 safeguarding life, health and property in the state
9 of New Mexico, which I believe, again, this witness
10 is here for.

11 It also states that a professional
12 engineer in the state of New Mexico is a person who
13 is licensed by the Board to practice the profession
14 of engineering in the state of New Mexico.

15 Q (By Ms. Foster) Now, are you familiar that
16 under the Engineering and Surveying Practices Act in
17 New Mexico that engaging in the business of a
18 professional engineer without a New Mexico license
19 will subject you to civil penalties and revocation
20 of your license in another jurisdiction?

21 A. As I said, in 21 states where I have
22 testified only in administrative procedure, I have
23 never been subjected to penalties or violations.

24 Q. So you are not testifying under any
25 exception --

1 A. So I would assume the same thing would
2 occur here.

3 Q. You are not testifying under any
4 exceptions to the professional licensing
5 requirements in New Mexico under Section 61-23-22,
6 are you?

7 A. I guess if you would let me look at it I
8 can answer the question.

9 Q. I can help you out. Are you an architect?

10 A. No.

11 Q. Are you testifying on behalf of your
12 employer?

13 A. Well, as a contractor, yes.

14 Q. So you are stating that you do not have a
15 New Mexico license but you have an Oklahoma license?

16 A. Correct.

17 Q. Looking at your Oklahoma license, have you
18 ever been disciplined by the Board?

19 A. No.

20 Q. And when does your Oklahoma license
21 expire?

22 A. Friday.

23 Q. That would be August 31, 2012, so if we
24 were having this hearing next week you would not be
25 qualified as a professional engineer in any

1 jurisdiction; is that correct?

2 A. That would be assuming I didn't renew my
3 license.

4 Q. As of last night had you renewed your
5 license?

6 A. No.

7 MS. FOSTER: I believe I have an exhibit
8 here which I would like to present to the board I
9 printed off the website last night, August 27, 2012
10 at 7:23 p.m. stating that her license is set to
11 expire on Friday, August 31, 2012.

12 Q. Have you renewed it?

13 A. I have until Friday to renew it. No, I
14 did not renew it last night.

15 MS. FOSTER: At this point I would object
16 to the testimony of the witness. I don't believe
17 that she is qualified to testify in the state of New
18 Mexico. She is testifying that she was presented by
19 OGAP as a professional engineer in this instance.
20 In the Notice of Intent, again, she was presented as
21 a professional engineer. She is stating that she is
22 going to be talking about modeling, et cetera, et
23 cetera.

24 I don't believe she is qualified in the
25 state of New Mexico. She could have asked for a

1 license in the state of New Mexico. I believe there
2 is reciprocity between the state of New Mexico and
3 Oklahoma but she has not bothered to do that in this
4 instance and, therefore, she is in violation of the
5 laws of the State of New Mexico and I believe that
6 the Board has to follow the regulations and laws of
7 the state of New Mexico and prevent the witness from
8 testifying. She is not a qualified witness in the
9 state of New Mexico.

10 CHAIRPERSON BAILEY: Mr. Smith?

11 MR. SMITH: I thought we had other
12 objections.

13 MS. FOSTER: Mr. Smith, can I give you the
14 documents that I referred to in my questioning? In
15 other words, a copy of her license in the state of
16 New Mexico? Would you like to have a copy of that
17 for the record?

18 CHAIRPERSON BAILEY: I think that's up to
19 the Commission as to whether they want to accept it
20 as an exhibit and whether there are any objections
21 to it.

22 COMMISSIONER BLOOM: I would be fine
23 accepting it.

24 DR. BALCH: Yes.

25 CHAIRPERSON BAILEY: Let's see what Mr.

1 Smith says.

2 MR. SMITH: I would accept them unless
3 there is a good objection to it.

4 MR. JANTZ: Again, I object on relevancy.
5 We are not offering her as a professional engineer.
6 The Notice of Intent noted she was a professional
7 engineer but that's not the -- we are not offering
8 her as a professional engineer. We are asking her
9 to be qualified as an expert in petroleum, civil and
10 environmental engineering. So irrespective of her
11 certification as a professional engineer -- let's
12 assume that she didn't have that. Her expertise by
13 virtue of education and experience would still be
14 the same. This does not hinge on her certification
15 as a professional engineer.

16 Second of all, in terms of the violations
17 of statutes of New Mexico, it's not entirely clear
18 that she is in violation of the statutes in New
19 Mexico, and in any event, it's not the purpose of
20 the Commission to look after witnesses. Ms. Martin
21 assumes the risk of potential sanctions if she wants
22 to testify.

23 MR. SMITH: Mr. Jantz, I think the issue
24 there was really whether you had a good objection to
25 this exhibit.

1 MR. JANTZ: The point is that entire line
2 of questioning, as well as the exhibit offered in
3 support of it, is irrelevant.

4 CHAIRPERSON BAILEY: Mr. Fort?

5 MR. SMITH: Madam Chair, I think you
6 should accept the exhibit if for no other reason it
7 makes at least some sense to the voir dire. You did
8 allow the voir dire.

9 CHAIRPERSON BAILEY: Then we do accept the
10 exhibit.

11 (Note: IPANM Exhibit A accepted.)

12 CHAIRPERSON BAILEY: Mr. Fort?

13 MR. FORT: Yes, Madam Chair. In terms of
14 her expertise in petroleum engineering, I object.
15 Her testimony and what I can also gather was she
16 said that she was on the STRONGER Board and that
17 what she had done at the time was look at stormwater
18 retention, as I understood, for drilling rigs and I
19 guess drilling processes.

20 She talked about hydraulic fracturing.
21 That's not an issue here. She did review Oklahoma
22 state statutes regarding oil and gas and that she
23 has not done any modeling other than using her
24 equations to calculate things.

25 I would object that she's not qualified

1 based on what she has presented here today, to
2 testify on the issues of multi-well fluid management
3 pits and their involvement in the petroleum
4 industry, various constituents and on-site closure.
5 She may know about liners. That's fine, but that's
6 primarily with confined animal feed operations and
7 even, you know, in looking at what Tom Mullins said,
8 once you have -- I think his testimony was
9 primarily, and this would relate to -- because with
10 animal waste there's a lot of liquid.

11 Mr. Mullins said that the liner primarily
12 is for the liquid. He says once you have it in a
13 solid phase in terms of the constituents in the pit
14 and it's dry, the liner may be a barrier but it's
15 not going to prevent those constituents from moving
16 through it.

17 So what we're talking about is a different
18 type of process where you have a lot of liquids
19 involved. Here we have liquid involved with the
20 drilling mud but we are going to dry it out. We
21 have to remove all the liquids and then we have
22 closure.

23 So it's a very different process that's
24 involved and, therefore, she has very little
25 background in the petroleum industry. I would ask

1 that she not be allowed to be an expert in petroleum
2 engineering.

3 MR. JANTZ: May Ms. Martin have an
4 opportunity to respond to Mr. Fort's questioning and
5 direct him to where she has experience in modeling
6 and petroleum engineering?

7 MR. SMITH: I would suggest this, Madam
8 Chair. I think you have two issues before you:
9 One, her qualifications, and the second is this
10 issue with respect to licensure and her ability to
11 testify in the state. I would suggest to you that
12 that, the licensure business, is a question for the
13 witness to determine, and I would not be distracted
14 by that issue. I suggest that you not be.

15 With respect to the qualifications, I
16 would ask if the commissioners have any voir dire
17 that they would like to ask the witness, see if
18 there is anything that you have heard the witness
19 testify to in terms of her qualifications that cause
20 you to want to hear her testimony and make your
21 decision based on that.

22 MS. FOSTER: Mr. Smith, if I may, they are
23 saying they are not going to qualify her as a
24 professional engineer; however, they are offering
25 her as an expert in petroleum, civil and

1 environmental engineering. I have a few more
2 questions as to really truly where her experience in
3 petroleum engineering is other than her graduate
4 school work in 1989.

5 MR. SMITH: You have further voir dire?

6 MS. FOSTER: I do. I would like to -- I
7 believe I pointed to a few things on her resume
8 concerning her CAFO experience, livestock feeding
9 operations. I don't see anything on here on
10 petroleum engineering and petroleum experience on
11 her resume whatsoever, and the argument that I would
12 make is she is not qualified in the area of
13 petroleum engineering. She might have gotten her
14 degree in 1986 from the University of Oklahoma --
15 sorry, 1987 from the University of Oklahoma in
16 petroleum engineering, but since then it was very
17 clear from her resume, as well as her prior
18 testimony in front of the WQCC, that all she has
19 worked on is livestock operations, she has not
20 worked in petroleum engineering.

21 So I think we are splitting hairs here,
22 and I understand that about the licensure issue.
23 But if she is not being offered as a professional
24 engineer and she does not need to be licensed in New
25 Mexico, then we really do need to look at whether

1 her experience is truly in petroleum engineering.

2 Then the third issue we need to look at,
3 if she is going to be testifying, that her testimony
4 is truly rebuttal testimony in terms of the issues
5 that we are talking about. So, therefore, her
6 experience on hydraulic fracking is irrelevant. Her
7 experience on liners is irrelevant, whether it be
8 for feed stock operations or not or even industrial
9 wastewater projects. That is irrelevant to this
10 hearing at this time. So I think there's three
11 issues.

12 MR. SMITH: I have to say I think your
13 argument would have been better placed after the
14 Commission had their opportunity to voir dire. You
15 kind of short-stopped them, and I would ask you all
16 if you have questions to ask them. If not, if you
17 don't have any questions, then does this witness
18 appear to you to have the expertise to give the
19 testimony she is intending to give? That's a
20 technical issue and it's up to you all.

21 CHAIRPERSON BAILEY: Dr. Balch, do you
22 have any questions?

23 DR. BALCH: Well, I guess I can ask a
24 couple questions. Your bachelor's degree is in
25 petroleum engineering?

1 THE WITNESS: Correct.

2 DR. BALCH: That was at Oklahoma
3 University?

4 THE WITNESS: Yes.

5 DR. BALCH: What was the focus of their
6 program at that time? Were they a drilling school,
7 a reservoir school, a simulation school?

8 THE WITNESS: I took classes in
9 everything. I don't think there was a particular
10 focus.

11 DR. BALCH: Usually professors have a
12 focus --

13 THE WITNESS: When I was at the school
14 they were just building the Natural Gas Institute,
15 to give you a perspective of where we were. Now I
16 think there is a bigger focus on natural gas. But
17 at the time it was equal to reservoir, drilling and
18 water flooding or secondary recovery.

19 DR. BALCH: So in your career as a civil
20 engineer and then also primarily as a consultant in
21 environmental engineering, have you had opportunity
22 to work with any pit design for the petroleum side?

23 THE WITNESS: What I was going to say is
24 the reason I went into petroleum engineering is my
25 family had an oil company in Mississippi. We had a

1 small exploration company for a decade so I was
2 involved with that after school, but there wasn't
3 really good work in 1987. That's when oil went from
4 \$70 a barrel to \$10, and rather than digging myself
5 in a hole I went to civil engineering. But my
6 family still had an oil company during that time and
7 they actually prospered quite well. That would be
8 the experience. I don't put it on my resume. It's
9 just that that what my family did. It's a family
10 business.

11 DR. BALCH: What was the nature of your
12 work with the family business?

13 THE WITNESS: I helped my dad a little bit
14 looking at well logs and just more conversation of
15 how the family business would be and whether or not
16 I would work for him after I got out of school, et
17 cetera.

18 DR. BALCH: So after --

19 THE WITNESS: Not every day, but on a
20 regular basis.

21 DR. BALCH: After school, have you
22 consulted for oil companies or in regards to oil
23 operations?

24 THE WITNESS: After I got out of my
25 bachelor's degree, I basically was just involved

1 like in the Society of Petroleum Engineers in
2 Oklahoma City. I was on the executive committee for
3 several years, so just attended their meetings and
4 professional presentations and conferences.

5 DR. BALCH: Executive committee for your
6 local Chapter or for the national --

7 THE WITNESS: For the Oklahoma City
8 Chapter, which at that time had 2500 members. I
9 think we were the second largest Chapter in the
10 world next to London. I was in charge of the
11 newsletter and was also secretary for a year but I
12 was on the executive board for three or four years
13 and I was involved in the first environmental
14 conference that SPE ever put on which is now an
15 annual event, but I did the first one and it came
16 out of Oklahoma City.

17 DR. BALCH: So I don't know much about
18 professional licensing because I am in science. I
19 don't have to have a license to be a scientist.

20 THE WITNESS: Well, you are employed by
21 the government so you don't have to.

22 DR. BALCH: Right. So you have a primary
23 area of practice of civil engineering.

24 THE WITNESS: Correct.

25 DR. BALCH: Which is pretty broad, covers

1 a lot of different things. And you have a secondary
2 practice of agricultural, petroleum and
3 environmental. The secondary area, is that
4 something you get certified for? Is that just
5 something you list on --

6 THE WITNESS: Are you looking at her
7 exhibit? I haven't seen it. If you could let me
8 look at that. I think this is a search result,
9 right?

10 MS. FOSTER: It is.

11 THE WITNESS: Just to see if I was
12 registered in these other disciplines. The only
13 discipline I have been registered for is civil,
14 although I testify in a lot of agricultural
15 proceedings. The design of lagoons and liners is a
16 civil engineering practice.

17 DR. BALCH: So the secondary practice, is
18 that something you list on your application or
19 something you get certified for?

20 THE WITNESS: I think that was a search
21 result to see if I was registered in those other
22 topics. It's nothing that I have presented myself
23 on my resume as, except those are areas that I have
24 worked in.

25 MS. FOSTER: For clarification, that's not

1 a search result. I just basically put her name in
2 under the Oklahoma Petroleum and Engineering
3 Surveying Board and that is the document that came
4 up.

5 THE WITNESS: Let me look at it again from
6 that perspective.

7 MS. FOSTER: It states what her background
8 is, if there's disciplinary action.

9 THE WITNESS: Oh, this is from the new --
10 sorry about that. I remember that we just had an
11 E-mail maybe in the last year where you filled out a
12 questionnaire to better understand areas you work
13 in, and I think that's where the secondary practice
14 came from. They asked you to check all that apply,
15 so that's where the agricultural, petroleum and
16 environmental comes in. Sorry about that. I
17 thought you were searching for actual PE, the seal
18 number. That was a result --

19 MR. SMITH: Hang on to that in case there
20 are questions.

21 THE WITNESS: That is the result of a
22 questionnaire that was sent by the PE board in
23 Oklahoma, a long series of things like: Are you
24 actively using your license? What are the typical
25 ways you use your license?

1 DR. BALCH: Where the jobs are coming
2 from?

3 THE WITNESS: Yes. I guess they have
4 incorporated the questionnaire into the result.

5 DR. BALCH: You haven't actually had
6 consulting work for the oil industry?

7 THE WITNESS: In petroleum, no.

8 DR. BALCH: I think you have extensive
9 experience in agricultural and environmental. Do
10 you feel qualified to present evidence on petroleum
11 engineering? Do you feel qualified as an expert in
12 petroleum engineering?

13 THE WITNESS: To the extent of what we are
14 going to talk about today, absolutely.

15 CHAIRPERSON BAILEY: Mr. Bloom? Do you
16 have questions?

17 COMMISSIONER BLOOM: Just a couple.
18 Ms. Martin, to get back to the professional
19 engineering, are you presenting yourself as a
20 qualified engineer in New Mexico that's going to
21 give expert testimony or are you an expert witness
22 that has a PE in Oklahoma?

23 THE WITNESS: The way you have to word it,
24 if you do not have the PE license in the state that
25 you are testifying is, as I did, I introduced myself

1 with a professional engineering certificate in
2 Oklahoma and in no way implied that I am certified
3 in the state of New Mexico or any other state, and
4 that's usually a requirement for expert testimony
5 and that's exactly what I did. Like I said, I do
6 that in 21 states and never had trouble until today.

7 COMMISSIONER BLOOM: Can you talk about
8 your modeling experience.

9 THE WITNESS: It would be including from
10 college, of course, in the university setting. I
11 had an entire semester on groundwater modeling in
12 graduate school. I did dam reservoir design in
13 graduate school looking at infiltration impacts on
14 the dam, earthen dams, and then just what I had to
15 do in predicting groundwater pollution from leakage
16 from lagoons. I do that all the time and it's a
17 pretty simple equation using Darcy's Law, et cetera.
18 And that would be it.

19 COMMISSIONER BLOOM: How often does your
20 agricultural work deal with such modeling?

21 THE WITNESS: All the time.

22 COMMISSIONER BLOOM: It's part of your
23 regular practice?

24 THE WITNESS: Yes. I do it.

25 COMMISSIONER BLOOM: You look at liner

1 performance as well?

2 THE WITNESS: Yes.

3 COMMISSIONER BLOOM: Can there be
4 differences in liner performance in agricultural
5 setting to a petroleum setting?

6 THE WITNESS: Well, basically, like I
7 said, my research into my thesis was looking at all
8 kinds of liner systems from earthen, clay, plastic,
9 concrete, steel, composite, sprayed asphalt, et
10 cetera, and looking at waste liner compatibility.
11 So all types of waste, salt waste, hydrocarbons, and
12 that was a broad nine-month reading opportunity, 30
13 hours a week in preparation of writing state rules
14 that would have to encompass all types of industry
15 in Oklahoma, not one type of basis.

16 That's the basis of my understanding of
17 liners was that extensive research effort. From
18 there, my experience of implementing that knowledge
19 into actual regulatory language and then taking that
20 regulatory language and creating permits on it and
21 then going in and actually closing out lagoons. So
22 that's the steps. And that was back in the '90s,
23 from '89 to '96.

24 And then from '96 on I capitalized on that
25 understanding by helping draft rules and regulations

1 for CAFOs, for the surface impoundments in Oklahoma,
2 Kansas, Nebraska, Colorado, of course here in New
3 Mexico, Illinois, Indiana, and trying to share my
4 understanding of how you match the regulatory
5 language to the permit to what's actually happening
6 in real life where you are seeing groundwater
7 contamination and how to back that up and improve
8 the regulations therefor. So that's the type of
9 experience I am coming to you today with. Does that
10 make sense?

11 MR. BLOOM: Yes.

12 DR. BALCH: The regulations that you
13 helped to write in Oklahoma, those were put in place
14 in the late '90s, I guess?

15 THE WITNESS: Correct. They are still --

16 DR. BALCH: Have they been modified or
17 adjusted for new technology in any way since that
18 time?

19 THE WITNESS: They were recently modified.
20 I looked at them and they are basically about the
21 same. It's a risk-based matching of looking at what
22 types of pollution streams are created, like in the
23 industry setting there might be non-contact cooling
24 water, there might be some wash-down water that has
25 grease, there might be some other stormwater runoff,

1 and I created a risk base. So is it a risk to
2 groundwater, surface water or both, and depending on
3 that, is the concentration like BOD, hydraulic
4 loading and nutrient loading, would it require a
5 more and more elaborate liner system? That is still
6 in place.

7 DR. BALCH: Now, I think I might be wrong,
8 but I think in New Mexico they have to deal with
9 agricultural waste separately from oil and gas
10 wastewater and other waste streams. Is it the same
11 thing in Oklahoma or is there one rule that covers
12 it all?

13 THE WITNESS: No, all are different
14 territories, different agencies, et cetera.

15 DR. BALCH: So the area you worked on was
16 more in the agricultural side?

17 THE WITNESS: I did both. When I worked
18 for the Water Resources Board that was state-wide
19 for all industry except agricultural. Then after I
20 left the employment of the State, we had a governor
21 task force and everything to draft regulations for
22 liquid swine manure facilities. It was quite the
23 big deal. So we worked weekly working on language
24 with the agency, and that was specifically for
25 liquid swine mineral wastewater under the Department

1 of Agricultural.

2 DR. BALCH: Nothing further.

3 CHAIRPERSON BAILEY: Do you have expertise
4 in the types of computer modeling that have been
5 presented, the Multimed and the other? Or are those
6 different programs than you had to deal with?

7 THE WITNESS: I'm pretty sure we did the
8 HELP model when I was in graduate school in civil
9 engineering. I have not used it, like when I was
10 working at the Water Resources Board, but I did
11 review all of the manuals, the engineering manual,
12 the regular manual and all of the printouts and I
13 understand it pretty good, and I understand all the
14 underlying equations pretty well, so I feel
15 confident to give you my opinion if we do that
16 today.

17 CHAIRPERSON BAILEY: Then I think it's
18 time for a ruling and I believe that we shall accept
19 you as a witness for OGAP and give your testimony
20 the value that it deserves. You may proceed.

21 DIRECT EXAMINATION CONTINUED

22 BY MR. JANTZ

23 Q. All right, Ms. Martin. Let's start off by
24 clarifying one big issue for the record. You were
25 here for all the testimony for all of the witnesses;

1 is that right?

2 A. All except for the one day I listened on
3 the phone. But yes, I was here every day.

4 Q. You were on the phone?

5 A. That was the last day of testimony of
6 Mr. Mullins and I was on a conference call line,
7 yes.

8 Q. So you did listen in?

9 A. Yes.

10 Q. And you read the transcript of his
11 testimony?

12 A. Yeah. The call wasn't very good so I had
13 to read the transcript as well, yes.

14 Q. Do you recall when Mr. Mullins said at the
15 beginning of his testimony that he had reviewed OCD
16 records for pit contamination?

17 A. Yes.

18 Q. Do you remember him saying specifically
19 that he did not see a single instance of temporary
20 lined temporary pit that had caused groundwater
21 contamination?

22 A. Yes.

23 Q. Do you agree with that statement?

24 A. No.

25 Q. Okay. Did you review those OCD records as

1 well?

2 A. Yes, I did. A portion of them, yes.

3 Q. Could you explain to the Commission --

4 MR. FORT: Objection. This is an area
5 that she has not been qualified to testify in. She
6 has not been qualified to testify about wells, that
7 she has done studies on groundwater contamination or
8 soil contamination from drilling pits or production
9 pits or anything in the oil and gas industry, so I
10 would ask this line of questioning not be allowed.

11 MR. JANTZ: Again, the Commission accepted
12 Ms. Martin as a qualified petroleum, civil and
13 environmental engineer and that includes the
14 qualifications of being able to look at records,
15 identify contaminants and refute the statements that
16 Mr. Mullins said. I don't think she needs to be an
17 expert to look through the records and report what
18 she thinks.

19 CHAIRPERSON BAILEY: Objection overruled.

20 MR. FORT: I just have a problem with the
21 last statement. He said "I don't think she has to
22 be an expert to look through the records and
23 testify." That is incorrect. She is either an
24 expert or she is not. If he is contending that she
25 is not an expert, then it needs to be disallowed.

1 MR. SMITH: The Chair overruled the
2 objection and you made your argument. I think you
3 need to let it stand or we are never going to get
4 out of here.

5 MR. FORT: That's the problem, that we are
6 never going to get out of here. That's the problem,
7 Mr. Smith.

8 MR. SMITH: Madam Chair, you overruled the
9 objection and that's the end of it.

10 CHAIRPERSON BAILEY: It is, and I think we
11 need a ten-minute break.

12 (Note: The hearing stood in recess at
13 10:11 to 10:22.)

14 CHAIRPERSON BAILEY: I would like to clear
15 up one thing that Mr. Jantz misspoke before we had a
16 break. He said he could qualify the witness as an
17 expert in petroleum, civil and environmental
18 engineering. That's not what we said. We said that
19 she would be qualified as your witness for OGAP and
20 we would give her testimony the value that it earns.

21 MR. JANTZ: Thank you for the
22 clarification.

23 CHAIRPERSON BAILEY: Now, if you would
24 continue.

25 MS. FOSTER: If I might clarify a question

1 then, does that mean that she is not qualified to
2 talk about petroleum issues or we are going to delve
3 into how much she actually knows about petroleum
4 issues and then we can question on that?

5 CHAIRPERSON BAILEY: We will give the
6 testimony the value the Commission deems appropriate
7 as a rebuttal witness for the issues that have been
8 brought up in this hearing.

9 MS. FOSTER: If I may, Madam Commissioner,
10 I don't mean to be difficult, but I would intend
11 then if I don't believe that her testimony -- if her
12 testimony veers into the area of engineering
13 principles that she is not qualified as an expert
14 on, then I'm going to have an objection.

15 CHAIRPERSON BAILEY: We will hear your
16 objection at the time.

17 MS. FOSTER: Thank you. Again, I don't
18 mean to be difficult.

19 MR. SMITH: One thing you might do is if
20 it begins to be intrusive in your ability to
21 understand the questions and answers, you can give
22 Ms. Foster a standing objection on that so she
23 doesn't have to raise it at each question.

24 CHAIRPERSON BAILEY: That would be
25 appropriate at the time.

1 MR. JANTZ: Just as a matter of
2 clarification, Madam Chair, or an offer, Ms. Foster
3 is going to have the opportunity obviously to
4 cross-examine Ms. Martin, and on cross-examination
5 she can delve into whatever she wants to with
6 respect to Ms. Martin's expertise or knowledge of a
7 particular subject on which she testifies.

8 CHAIRPERSON BAILEY: Thank you for that
9 clarification. Let's get on with it.

10 Q (By Mr. Jantz) Ms. Martin, we were talking
11 about your disagreement with Mr. Mullins' statement
12 that there had been no instances of lined temporary
13 pits causing groundwater contamination, and you were
14 about to explain the process by which you examined
15 the OCD records that Mr. Mullins reviewed and what
16 you found. Would you please continue.

17 A. Sure. There's a large list of groundwater
18 pollution cases under the OCD, 500, 600 cases. Of
19 those I just picked the ones that were identified as
20 picked and those were 222 cases, and then I took
21 those files and I sorted them by closure date, which
22 is one of the parameters that's in the Excel
23 spreadsheet, and then what I did is looked at the
24 most recent date. I think there were six of them
25 that had no date at all, but from the ones that had

1 dates, from 2010 back to the year September 2000, I
2 went to the internet and I looked at the files that
3 are available online for each of these cases and
4 quickly made note of any type of indication of the
5 year the pit was constructed, what type of pit it
6 was and what type of contamination. It was a
7 quick -- took me probably 20 hours to do that.

8 Then from that list -- that was back into
9 2000. From that list I went and did a more detailed
10 review just from May 2002 to the present, which
11 would be after Rule 50, which was the rule that
12 required some sort of liner that was appropriate to
13 the site and could have been plastic or clay. And
14 from that, then I went and looked at those.

15 There were 65 sites, and of those 65 sites
16 what I did is I went back again to those documents
17 online to make sure I could clearly determine
18 whether or not it was pollution from a drilling
19 activity-related pit versus a production
20 activity-related pit, and of those, from 2002 to
21 2010 that's 35 cases. Of those 35 cases, 16 of them
22 were obviously called drilling pits, blow pits,
23 working pits versus a dehydrator pit or tank battery
24 pit.

25 So of those 16 cases, then I read just

1 about everything I could on those and then I picked
2 seven of those to highlight more in-depth where I
3 spent probably another eight hours looking at those
4 seven cases and looking at everything to find out
5 more about whether -- reading the bore logs, looking
6 at soil sample results, monitoring well results and
7 the chronology of the site trying to understand
8 whether it had been a really old site that was
9 closed recently, whether it was a new pit under the
10 Rule 50, et cetera.

11 Q. Okay. And did you compile a spreadsheet
12 for the results of your search?

13 A. Yes, I did.

14 Q. And do you have that compilation?

15 A. Yes. I believe it's on the screen there
16 and it's an Excel spreadsheet exhibit.

17 Q. And you created this?

18 A. Yes.

19 Q. It accurately reflects -- it's an accurate
20 summary of the records you reviewed?

21 A. Yes.

22 MR. JANTZ: At this point I would like to
23 move this into the record as OGAP Exhibit 4.

24 MS. FOSTER: I would object.

25 MR. FORT: I would object for the same

1 reasons I stated earlier. She is not an expert in
2 this area.

3 MS. FOSTER: I would object on the grounds
4 that Exhibit 5 that was given to us has absolutely
5 no header. I don't know where this information came
6 from, I don't know the efficacy of the information.
7 She claims that she pulled this off the OCD website.
8 I don't know that to be the case.

9 I would also point to the fact that this
10 screen that we are looking at in front of us has
11 additional and different information from the
12 exhibit we were given as Exhibit 5. I have serious
13 reservations about the representations that are made
14 by this exhibit, and if I may, I would like to
15 question her about some of the information on here
16 because I don't think, again, if she is not an
17 engineer and she does not have background in
18 petroleum, then I don't think she is qualified to
19 review OCD files and I don't think that she is
20 qualified to testify about it in the state of New
21 Mexico because again, the practice of engineering
22 and testifying and expert testimony in New Mexico
23 requires licensure.

24 MR. JANTZ: Madam Chair, in terms of
25 Ms. Martin's qualifications, the Commission has

1 already accepted her as our witness. Again, the
2 Commission may give her and the evidence we present
3 the weight due. If Ms. Foster at some point wants
4 to cross-examine Ms. Martin about the information on
5 this and her process, Ms. Martin testified under
6 oath that she got this information from the OCD
7 database, the same database Mr. Mullins did. If
8 Ms. Foster wants to cross-examine her on that, she
9 is entitled to, but in terms of the actual substance
10 of what's in the spreadsheet, Ms. Foster hasn't
11 raised a claim about that.

12 CHAIRPERSON BAILEY: I will accept the
13 exhibit and await cross-examination concerning the
14 exhibit.

15 (Note: Exhibit 5 accepted.)

16 Q (By Mr. Jantz) All right, Ms. Martin. In
17 terms of your search of the OCD database, what
18 exactly did you find? Could you reiterate what you
19 found in terms of the pits that contaminated
20 groundwater?

21 A. Like I said, 16 of the 35 that were from
22 Rule 50 onward were lined with plastic, either 12
23 mil or 20 mil and they did have groundwater
24 contamination of chlorides, some insignificant
25 quantities up to 40,000 parts per million.

1 MS. FOSTER: I object. Again, this
2 witness testified that this is testimony from or
3 cases from Rule 50 onward. We are here today to
4 amend Rule 17, which was passed in 2009, so if she
5 would like to talk about any cases on this list that
6 are after 2009, that might actually be relevant to
7 the issue that we have. However, the OCD has heard
8 testimony in 2007 at length, and again in 2009 at
9 length, concerning cases of alleged groundwater
10 contamination and what the enforcement actions were,
11 and I believe at that time they stated that they did
12 have some cases under review but due to their
13 workload there were cases left on the floor of -- I
14 believe it was Mr. Van Genuchten office or
15 Mr. Price's office that he didn't have time to get
16 to.

17 So again, this witness is testifying about
18 witnesses that are post Rule 50. We are not here
19 for Rule 50 and this witness is concerning rebuttal
20 testimony and this witness really should be talking
21 about cases after the passage of Rule 17, which is
22 in 2009.

23 CHAIRPERSON BAILEY: I will sustain that
24 and ask the witness to confine her testimony to
25 those pits that may have shown contamination after

1 Rule 17 was put in place.

2 MR. JANTZ: If I may respond, Madam Chair,
3 before you make a decision on the objection, or
4 maybe reconsider your decision on the objection,
5 Mr. Mullins testified that he reviewed a database,
6 OCD database and found that there have been no
7 instances -- he did qualify it after no instance
8 after the passage of Rule 17 of groundwater
9 contamination based on from temporary lined pits.
10 Ms. Martin is rebutting that assertion.

11 It seems to me that the instances of these
12 pit contaminations may be relevant to the current
13 rule. We are not passing Rule 17. Rule 17 is in
14 place. We are working on the proposed
15 modifications, proposed reconsideration of Rule 17
16 by the oil and gas industry. Again, I think this
17 information we will find is going to be relevant to
18 some of the issues that this Commission has to
19 grapple with in deciding whether to accept, amend or
20 deny the industry's conditions.

21 CHAIRPERSON BAILEY: You heard my ruling.

22 MR. JANTZ: Thank you, Madam Chair.

23 Q. All right, Ms. Martin, let's move on.

24 Let's talk about multi-well pits. Now, you heard
25 the testimony of Mr. Lane and Mr. Arthur on

1 multi-well pits; is that right?

2 A. Yes.

3 Q. And you heard them testify about the size
4 of the multi-well pits?

5 A. Yes.

6 Q. And their volume?

7 A. Yes.

8 Q. Now, the rule doesn't say anything about
9 their size or volume, does it? In your review of
10 it?

11 A. If it's considered a temporary pit there
12 will be a size restriction of the ten-acre feet.

13 Q. But multi-well pits aren't temporary pits,
14 are they?

15 A. It was being presented as if they were but
16 they are not.

17 Q. Did the size and volume or lack of size
18 and volume limitations on multi-well pits concern
19 you?

20 A. Yes.

21 Q. In terms of engineering and environmental
22 impacts?

23 A. Yes.

24 Q. And how so?

25 MR. FORT: Just to let you know, I will

1 have a continuing objection to her testimony
2 regarding oil and petroleum industry. I understand
3 what the Chair has said but I feel I have to make
4 the objection.

5 CHAIRPERSON BAILEY: We understand your
6 continuing objection.

7 Q. Please continue, Ms. Martin. Why does the
8 size and volume concern you?

9 A. Under cross-examination it became clear
10 that the size got larger and larger and the volume
11 that was to be held in the multi-well waste
12 management pit, which could also be called a frac
13 pit, was getting larger and larger. The surface
14 area and the depth would have to be increased way
15 beyond what would be considered the size of a
16 drilling pit. We are talking several-acre size, ten
17 to 15 feet deep maybe. And it would be in place for
18 years if not decades.

19 That's the way it kind of unfolded under
20 cross-examination, which completely changed how one
21 might look at the way the rule was recommended for
22 them, that these would be long-term liquid
23 impoundments relying upon just a plastic liner to
24 prevent pollution of groundwater when they would be
25 full of pollutants such as stimulation liquids which

1 in fracking would be quite salty fluids and
2 potentially frac flowback, which would include
3 whatever, biocides, corrosion inhibitors, proppants
4 or whatever that comes in the frac flowback plus
5 production fluids, which of course would be brine.
6 So most likely a saltier wastewater than is kept in
7 the drilling pit.

8 And then, of course, it would be there for
9 a long time. So the waste liner compatibility
10 issue, instead of trying to have a liner that has
11 wastewater compatibility for a year or a month, now
12 we are talking about a significant amount of time,
13 and I don't believe that that problem was adequately
14 expressed in the restrictive language of the
15 multi-well pits.

16 Q. Does exposure time make a difference?

17 A. The longer you expose the liner at the
18 surface to wind action, wave action, potentials for
19 rips and tears at the berm surface, then you start
20 to have leaks through the liner that can be
21 significant to the point where the majority of the
22 cases that I looked at where there was groundwater
23 contamination from lined pits, it was because of --

24 MS. FOSTER: Objection. Objection.

25 Unless she wants to talk about the cases that she

1 looked at post 2009, then I believe that she is not
2 qualified again to talk about anything that happened
3 and was debated and discussed and litigated at the
4 prior hearings.

5 Q. (By Mr. Jantz) Ms. Martin, for the
6 Commission's rule, please restrict your testimony to
7 either hypothetical situations or post 2009 factual
8 situations. Hypothetically, if you have a long-term
9 pit and exposure and liner incompatibility, what
10 problems would you see?

11 A. You could have --

12 MS. FOSTER: Objection. If you could
13 please clarify, again, based on her experience is
14 this an agricultural pit of which she has experience
15 and testified to in her resume or is this a
16 petroleum pit, something containing petroleum
17 byproduct.

18 CHAIRPERSON BAILEY: I understand your
19 continuing objections. I look forward to your
20 cross-examination to supply your answers.

21 MS. FOSTER: Thank you.

22 Q. Go ahead.

23 A. So the hypothetical based on my experience
24 and knowledge, the liner exposed at the berm has the
25 first problem with respect to wind action, wave

1 action and equipment cutting the liner, animals
2 affecting the liner. That's where you can see rips
3 and tears right away. Of course, with depth of the
4 liner and depending on how the separate was built
5 underneath the bottom of it, that's where you have
6 the highest pressure on the liner.

7 Q. What's the pressure from?

8 A. From the height of the liquid pushing down
9 on the plastic and then the plastic being pushed
10 down on the subgrade, and without more prescriptive
11 requirements for what that subgrade is, you may have
12 a puncture at the bottom because of this pressure at
13 the head of the water in the lagoon.

14 Q. Wouldn't the leak detection system
15 mandated by the rules solve that? I mean,
16 mr. Arthur testified that major or minor leaks would
17 be detected 100 percent of the time.

18 A. I think he was incorrect in stating that.

19 Q. Why do you say that?

20 A. He was saying no matter the size of the
21 leak that 100 percent of the time it could be
22 detected. We are talking about very large lagoons
23 now. We are not talking about a small drilling pit.
24 We are talking about these large multi-wells which
25 might be several acres in size. For example, if the

1 leak was in the center of the lagoon, then that leak
2 would have to travel the entire distance to the
3 edge, wherever the observation port is. And the
4 language that was proposed by industry regarding
5 leak detection actually doesn't provide any
6 prescription on whether or not that's an actual
7 engineering design or if it's a management -- if
8 it's a visual. So there's no guarantee by the way
9 the language is written whether or not a leak could
10 actually be transported from the place where it
11 occurred to an observation port or if there would
12 even be an observation port required by law.

13 Q. What's an observation port, Ms. Martin?

14 A. Ideally, like in the permanent Pit Rules
15 you have a double-lined system. You have two
16 plastic liners with a highly permeable zone in
17 between. If the primary liner develops a leak or
18 hole of some sort, any liquids would enter the
19 highly permeable zone and then would be transported
20 by hopefully the sloped surface of the bottom of the
21 secondary liner in order to encourage flow to the
22 outside of the lagoon where you could install some
23 sort of a bore hole with an observation port to look
24 for either gas vapor, moisture or actual liquid
25 accumulation.

1 So back to if you are looking at that
2 particular type of scenario, then let's say you had
3 a gallon leak. No one talked about how a one-gallon
4 leak could be translated all the way through a media
5 that was not prescribed in the rule to an
6 observation point where you would be able to detect
7 it and there was no prescription on how often this
8 detection might occur other than like weekly.
9 Whether there would be machinery or any type of
10 alarm system.

11 Q. Do the rules as you read them require a
12 leak collection system?

13 A. No, and that's another part of the
14 misnomer, that even a large leak, 100 percent of it
15 could be detected. First of all, you have to
16 capture it so there has to be an underlying
17 impermeable membrane like you have described in your
18 permanent Pit Rule that would prevent the leak from
19 continuing into the subsurface. It would be
20 captured and collected and held, and then for like
21 in landfills, they pump that leachate out and
22 dispose of it elsewhere, but that is not in the
23 language.

24 Q. It sounds like there may be site-specific
25 considerations involved with engineering one of

1 these multi-well pits?

2 A. Yes. Obviously, depth to groundwater,
3 whether or not you had enough subsurface soils to
4 build these multi-well pits which are large and
5 probably deep in order to hold so much volume, how
6 much of it would actually have to be above-grade and
7 below-grade and then that flows into other
8 engineering problems with the stability of the berm.

9 So yes, each site would be required. You
10 can't assume that in every site you would be able to
11 excavate deep enough to hold that quantity of
12 liquid.

13 Q. Would this idea of having a standardized
14 plan for multi-well pits, is that satisfactory in
15 terms of covering bases for environmental protection
16 for the multi-well pits?

17 A. No.

18 Q. So in your estimation, is the information
19 that Industry provided sufficient to promulgate a
20 regulation that's protective of the environment and
21 public health for multi-well pits?

22 A. No.

23 Q. During this discussion of multi-well pits
24 you mentioned that the liner would go over a berm
25 and that goes into some of the discussion that

1 Mr. Mullins and Mr. Arthur talked about with respect
2 to angle of repose and how angle of repose could be
3 used to -- what the relationship between angle of
4 repose and liner for temporary pits would be. Could
5 you just explain briefly for the Commission your
6 understanding of angle of repose?

7 A. Right. It's an engineering term, and you
8 can determine it for any type of materials: Sand,
9 soil, glass beads, whatever. You pour the material
10 onto a surface until it creates a cone of material,
11 and then the angle between the edge of the cone and
12 the flat surface, that angle is called the angle of
13 repose where no more sluffing or movement has
14 occurred. It's just if nobody breathes, that's
15 where it will stay. It's not protective of wind
16 erosion or rain erosion or heavy vehicular traffic
17 but it's the angle of repose of the soil material.

18 Q. Why is the angle of repose that
19 Mr. Mullins and Mr. Arthur talked about, why is that
20 important in the context of lining of temporary
21 pits?

22 A. Well, in his testimony he gave an example
23 of using a --

24 Q. Mr. Mullins' testimony?

25 A. Yes.

1 Q. Okay.

2 A. Of using a bulldozer to cut into the
3 ground to create a temporary pit and two sides would
4 basically be vertical and the other two sides would
5 be sloped and he referred to that as the angle of
6 repose. But there is no angle of repose for soil
7 materials that's 90 degrees or a vertical angle.
8 The only thing that would be for would be bedrock.
9 So I think he didn't understand what the proposed
10 language was requiring. It was requiring angle of
11 repose in place of two-to-one vertical side slope,
12 which is standard engineering; three-to-one, even
13 more so standard.

14 A two-to-one side slope is equal to about
15 26 degrees. A three-to-one side slope is about 18
16 degrees and angle of repose for earthen material can
17 be anywhere from 30 to 45 degrees. So the proposed
18 language basically allows you to double the angle
19 allowed now for the berm construction. But he was
20 discussing something that would be a vertical, and
21 that is not angle of repose. So you would not be
22 allowed to build that kind of lagoon under the
23 proposed language, nor under the existing language.

24 MS. FOSTER: Clarification, ma'am. This
25 witness, Madam Commissioner, Ms. Martin just again

1 used the word "lagoon." I think she is using the
2 word "lagoon" when she is talking about multi-well
3 fluid management pits, larger pits, but right now I
4 believe this line of questioning has to do with
5 temporary pits.

6 So I would just ask her not to use
7 agricultural terms, lagoon, when we are talking
8 about the oil and gas industry and temporary pits
9 versus fluid management pits for clarification.

10 CHAIRPERSON BAILEY: I think the
11 Commission is able to distinguish between lagoons
12 and pits.

13 Q (By Mr. Jantz) So Ms. Martin, in terms of
14 the slope of the pit, whether it's 90 degrees or
15 angle of repose, what difference does that make in
16 terms of installing a liner?

17 A. Well, it depends on if you are going to
18 have a temporary pit or a multi-waste management pit
19 and the duration that the pit will be expected to
20 endure. So if you have -- of course, the angle of
21 repose is for either, but it becomes more critical
22 if you are trying to have a stable berm for one to
23 ten years versus possibly only a few months.

24 Q. Does the slope have any effect on liner
25 failure?

1 A. The slope, of course, for the plastic
2 liner is another slope all together, and it actually
3 will control the final slope of the berm.

4 Q. Can you explain that more? What do you
5 mean by slope of the plastic liner?

6 A. There's something called the interface
7 friction angle, and that would be the angle that you
8 would have to have the berm so that when you lay the
9 plastic liner on top of that particular soil
10 material that the liner would not slide down the
11 berm; that the friction would basically hold it in
12 place, and then you could just anchor the top to
13 prevent wind from blowing it across.

14 The interface friction angle, if it's
15 smaller than the angle of repose, meaning you have
16 to have an even less steep or more gentle slope in
17 order to prevent the liner from sliding off, that's
18 the angle that you have to build the impoundment in
19 order for the liner not to be under undue stress at
20 the top. If the angle is greater, the interface
21 friction angle is greater than the angle of repose,
22 then you could do the angle of repose and it would
23 be fine.

24 And they actually have a way to determine
25 that. It's a safety factor are you take the tangent

1 of the friction angle over the tangent of the angle
2 of repose, and if it's greater than one you are okay
3 and if it's less than one you are not.

4 Q. So a friction angle might be a better way
5 to ascertain whether there will be stress on a liner
6 than angle of repose?

7 A. Or this ratio of the two angles to
8 determine whether it's greater than one or less than
9 one.

10 Q. The safety factor?

11 A. You can call it a safety factor, yes.

12 Q. Sounds like that's almost site-specific in
13 the soil?

14 A. In general, the interface, which is the
15 interface between the soil material and that liner,
16 that friction angle is determined by that particular
17 type of soil, so it would be different for sand than
18 it would be for silt then it would be for gravel or
19 plastic beads or whatever. So either you would have
20 to find some generic information out in the research
21 or determine your own in the lab to find that angle,
22 and it would depend on the plastic, whether the
23 plastic was rough or smooth, its weight, et cetera.

24 Q. Let's move on to Mr. Mullins' model. You
25 said during your qualification part of your

1 testimony that you reviewed Mr. Mullins' testimony;
2 that you had been here for portions of his
3 testimony, reviewed his model and results. Based on
4 your review and what you heard of Mr. Mullins'
5 testimony, do you agree with the assumptions that
6 Mr. Mullins made, the inputs to this model?

7 MS. FOSTER: I have a standing objection
8 to this, Madam Commissioner. Again, either the
9 witness is testifying as a petroleum engineer under
10 the regulations of the state of New Mexico or she is
11 not. She is specifically responding to a
12 professional engineer who is licensed in the state
13 of New Mexico, and I believe that we are veering off
14 into testimony and expertise that she might have
15 garnered through her education and experience as an
16 engineer. So as to this line of questioning, I
17 would have a standing objection.

18 MR. SMITH: I think the notion of the
19 standing objection is you don't have to raise it
20 each time.

21 MS. FOSTER: We are moving on to different
22 topics, with all due respect, and I want to make
23 sure specifically as to this issue, this is relevant
24 expert testimony. You are not going to find
25 somebody off the street who will be able to come in

1 and review the modeling that's been done by either
2 the OCD or Mr. Mullins without having an engineering
3 degree.

4 So, you know, I specifically stated when I
5 said I didn't want to be difficult here, but I
6 wanted to make sure that my objections are listed in
7 a timely basis. Since we veered off from the
8 multi-well fluid management pits into modeling, I
9 wanted to make sure that my objection stands.

10 MR. SMITH: Does the Commission understand
11 this all now so you can move on without further
12 interruption?

13 CHAIRPERSON BAILEY: I believe that we do.

14 COMMISSIONER BLOOM: Yes.

15 DR. BALCH: Yes.

16 MR. SMITH: Good.

17 CHAIRPERSON BAILEY: Mr. Fort?

18 MR. FORT: And I do have my standing
19 objection. To add to that, she does not have any
20 expertise in computer modeling.

21 CHAIRPERSON BAILEY: You may proceed.

22 Q (By Mr. Jantz) Again, Ms. Martin, do you
23 have concerns with some of the assumptions that
24 Mr. Mullins made in his modeling?

25 A. Right. Based on my experience doing many

1 of these calculations and iterations by hand, which,
2 by the way, takes hours and hours where you have to
3 do a very complex equation, take the answer from
4 that and do iterations, I am very familiar with how
5 that works, and a computer program basically just
6 makes that happen in a few minutes. So with my
7 experience of doing it by hand old school, I am very
8 interested in assumptions versus results because the
9 assumptions in any engineering problem dictates how
10 you treat the result.

11 So his assumptions on the line of
12 permeability, for example, if you look at IPANM's
13 Exhibit 11, which is the HELP engineering manual,
14 and you go to Page 75 and 76 --

15 MS. FOSTER: What exhibit?

16 THE WITNESS: Your Exhibit 11. This would
17 be the HELP engineering manual. The geomembrane
18 liner information starts on Page 74 and there's also
19 on Page 25 -- let's look on Page 25 first. Then
20 also if we look at Mr. Mullins' Exhibit 7, which is
21 the HELP model runs, and we can just look at -- if
22 you are on Exhibit 7, there's a handwritten number
23 on the bottom, the handwritten No. 2, and look at
24 the area that says Layer 4, which is the inputs for
25 the flexible membrane liner.

1 On Exhibit 7, Mr. Mullins utilized an
2 effective saturated hydraulic conductivity for the
3 flexile membrane liner of .39999 times ten to the
4 minus 12 centimeters per second rounded up as four
5 times ten to minus 13 centimeters per second.

6 If you look at Page 25 of Exhibit 11, the
7 default parameters for the HELP model -- that means
8 if you don't input your own permeability for the
9 liner material it already has some internal to the
10 computer program, and if you will look at Table 6,
11 which is the default geosynthetic material
12 characteristics on Page 25 of Exhibit 11, there is
13 an entry for low density polyethylene membrane. If
14 you will look and see, the saturated hydraulic
15 conductivity is four times ten to the minus 13.
16 That's the default value that the program will use
17 unless you change it, okay? So we are clear on
18 that.

19 Then if you look at the proposed rule,
20 especially for construction of temporary pits, there
21 is the requirement for plastic liner.

22 MS. FOSTER: Could I ask you what page?

23 THE WITNESS: I will get to that. NMOGA's
24 Exhibit 1, Attachment A, Page 14.

25 MS. FOSTER: Thank you.

1 A. This would be 19.15.17.11, which is the
2 design and construction specifications, Paragraph F,
3 which is Temporary Pits, and Subparagraph 3, which
4 discusses "The operator shall design and construct a
5 temporary pit." This is the existing language.
6 Nowhere in this paragraph is there a restriction on
7 the permeability of the liner. If you look on Page
8 19 of the same NMOGA Exhibit 1 Attachment A,
9 Paragraph J of the same big citation for multi-well
10 fluid management pits, and if you look at that
11 Subparagraph 3 which talks about the liner material,
12 again, there is no requirement or restriction on the
13 saturated hydraulic conductivity of the liner.

14 If you look to Page 18 on NMOGA's Exhibit
15 1, Attachment A, it's the proposed language in the
16 same construction, 19.15.17.11. Now we're looking
17 at Paragraph H. This is for liners -- Paragraph H,
18 Paragraph 4A. There is a saturated hydraulic
19 conductivity restriction for liners on below-grade
20 tanks, and that value is one times ten to the minus
21 nine centimeters per second.

22 Also if you look at Page 16 of NMOGA's
23 Exhibit 1 Attachment A, obviously the proposed
24 language, again, under Paragraph G for permanent
25 pits, Subparagraph 3, which is the primary and

1 secondary liner requirements, there is a hydraulic
2 conductivity restriction of no greater than one
3 times ten to the minus nine, and those are the only
4 plastic liner restrictions in the regulatory
5 language.

6 The difference between one times ten to
7 the minus nine and four times ten to the minus 14 is
8 that the regulatory language for permanent pits
9 allows the permeability of the liner to be 2500
10 times more permeable than the liner that was modeled
11 in the HELP model.

12 Q. Why does that matter, Ms. Martin?

13 A. Permeability is the ability to translate
14 fluid across the liner membrane, so the regulatory
15 language -- now, again, there is no restriction on
16 temporary pits. But if we were looking at permanent
17 pits, the permanent pits would be able to leak or
18 seep 2500 times more waste pollution than what was
19 modeled with any of the HELP models. Because all of
20 the HELP models that were presented by Mr. Mullins
21 used the same default permeability.

22 Q. Okay. So does Mr. Mullins' assumption
23 about permeability reflect the regulatory reality?

24 A. No.

25 Q. What other concerns did you have with the

1 assumptions that Mr. Mullins made in his inputs?

2 A. Basically it's a combination of the
3 infiltration rates, the evapotranspiration depths
4 and his testimony on it was that it wouldn't really
5 matter if you had a liner or not. This would be
6 just looking at the taco or burrito closure method
7 of what is hopefully dry solids at that time. What
8 he had done is he assumed a deep enough
9 evapotranspiration depth that any rainfall would be
10 evaporated and not enter into the buried materials
11 and that by virtue of that plus this liner that is
12 2500 times more restrictive than regulatory, that
13 literally no wastewater would come out of the buried
14 materials; that that indeed set up for there to be
15 this extraordinarily fantastical conclusion that it
16 would take 100,000 years for something to reach the
17 groundwater when, in fact, the assumptions have
18 basically set you up to fail in being able to
19 predict what actually happens in real life; that
20 those conditions are not what happens in New Mexico
21 and also what is not required in the regulations.

22 Q. Would it have made sense for Mr. Mullins
23 to compare his conclusions in his modeling outputs
24 with what's really gone on in the state of it New
25 Mexico?

1 A. Yes, I think that would have been a valid
2 and important comparison to look at known problems
3 with lined facilities and known groundwater
4 contamination and try to figure out why that
5 happened and why the model does not see that that
6 can occur or to prove that in a real case scenario
7 we have buried material. This industry has given us
8 the information and the model accurately reflects
9 that. That was not provided. What we were just led
10 to believe is that under these very strict
11 assumptions where basically no liquid gets to the
12 buried material, obviously no liquid could leak out
13 of it. So it could be eternity. But is that
14 realistic and is that what actually happens? And it
15 was not presented with real life cases.

16 Q. For the purposes of rule-making, in your
17 experience are those assumptions conservative?

18 A. No, these would be so ideal they would be
19 fanatical, because they do not represent even --
20 well, like I said, if no rainwater ever got to your
21 groundwater, then your groundwater is the most
22 precious thing you ever have because there's no
23 recharge, right? So the attitude in this proceeding
24 should be a much higher reverence. I think we agree
25 that groundwater is being recharged so it's not

1 being accurately reflected in the HELP model.

2 Q. I would like for you -- to wrap up,
3 Ms. Martin, both Mr. Mullins and Dr. Thomas
4 testified about their lack of concern for some of
5 the hydrocarbons being transported through
6 subsurface.

7 A. Could I make one more comment about the
8 HELP model before we go to that?

9 Q. Please do.

10 A. If you look on Page -- again, Exhibit 11,
11 Page 75, 76. I think I said those words and then I
12 lost my train of thought so I want to make sure we
13 do that. Page 75 and 76, and I don't have those
14 pages in front of me. But if you look, this is
15 where the model describes the equations that are
16 being used to calculate flow through the liner and
17 they used a combination of fixed and Darcy's --

18 MR. SMITH: Do you want to use these?

19 THE WITNESS: Yes, thank you.

20 MR. JANTZ: Thank you, Mr. Smith.

21 MR. SMITH: Just for the record, what I
22 handed the witness were Pages 75 and 76 out of IPANM
23 Exhibit 11.

24 A. Just to be clear, Page 74 is where the
25 HELP engineering manual begins the discussion of

1 geomembrane liner leakage. Page 75 is where it
2 begins to talk about the equations that were used in
3 the model to calculate flow through the plastic
4 liner, and 76 is a continuation of that discussion.
5 And then at the bottom of Page 76 it talks about how
6 the model calculates leakage through holes, and then
7 the final Page, 77, is what the default value is for
8 that, permeability.

9 Q. Okay. So --

10 A. But anyway, on Page 75, 76, this is the
11 equation that they used, which is basically flow is
12 equal to the permeability times the head plus the
13 thickness over the thickness of the liner, which is
14 traditional Darcy flow. So when we talk about K
15 being the permeability, if the regulation allows one
16 times ten to the minus nine, then this is where you
17 would multiply by 2500 times the answer that was
18 arrived at by Mr. Mullins' testimony.

19 And I think he said in cross that the
20 permeability would have no effect on the result of
21 the HELP model. I'm pretty sure that's how I recall
22 him saying that. And that is patently wrong, of
23 course.

24 There's only three things to look at: The
25 permeability of the material, the head of any liquid

1 over the material and the thickness of the material.
2 So if you change one by 2500 times, you are going to
3 have a change in the value of the answer. If you
4 increase the head, like if he assumed it was only a
5 half a foot and you increase it to one foot you will
6 double the amount of leakage that the equation will
7 generate. If you increase the thickness of the
8 liner, like instead of having a 20 mil or 40 mil
9 require a 60 mil, then that would reduce the flow,
10 because of the ratio between the total head over the
11 thickness of the liner. You are dividing by the
12 thickness.

13 So flow is proportional to permeability.
14 It's inversely proportional to thickness. It goes
15 down when the thickness goes up. His statements
16 that it would make no difference if there was a
17 liner or not must be restricted to the understanding
18 that he allowed no liquid into the closed area in
19 the first place, none. So, therefore, in fact it's
20 true. It doesn't matter if you have a liner. If
21 you have no liquid, there's no liquid to escape,
22 which is not a realistic model, okay? That's what I
23 wanted to make sure I clarified.

24 Q. Thank you for that clarification,
25 Ms. Martin. I want to talk to go back to the issue

1 of transport of hydrocarbons.

2 A. Yes.

3 Q. Mr. Mullins and Dr. Thomas testified that
4 those, the concentrations in the waste tables
5 weren't a concern to them because these
6 hydrocarbons, BTEX, Benzene in particular, don't go
7 anywhere in the environment. Do you agree with
8 that?

9 A. We're talking about the waste tables in
10 Table 1 and Table 2?

11 Q. Yes.

12 A. Which is on Page 41 of NMOGA's Exhibit 1,
13 Attachment A. And my concern with his statement
14 starts with his lack of concern over the fact that
15 industry has proposed multiplying the Benzene
16 trigger. Because Table 1 is a trigger. When you
17 are getting ready to do closure you do your five
18 point samples, each corner of the pit plus the
19 center, compost it up, take one sample, find out
20 what the chloride concentration is or find out what
21 the BTEX is, right?

22 Q. Yes.

23 A. This is an average value to see if there's
24 enough concentration to trigger further sampling.
25 What the industry did is they translated existing

1 language that's in a paragraph -- and it is
2 difficult to read --

3 CHAIRPERSON BAILEY: Can you tell us
4 exactly what she is speaking to?

5 MR. JANTZ: Page 41, Tables 1 and 2.

6 A. NMOGA's Exhibit 1, the proposed rule
7 language, Page 41, Table 1.

8 Q. 19.15.17.13 Table 1, NMOGA's NOI,
9 Attachment 1. This is the NOI from April.

10 CHAIRPERSON BAILEY: Okay.

11 Q. Please go on, Ms. Martin.

12 A. For clarification, the existing language
13 is on Page 28 of the same document and for temporary
14 pits, looking at Paragraph B1, B-I, and it's about
15 in the center of Page 28, and that's where it talks
16 about the trigger for Benzene, BTEX, chlorides, TPH.

17 MS. FOSTER: For clarification is this the
18 section that has been crossed out in NMOGA
19 Attachment A?

20 THE WITNESS: Correct.

21 MS. FOSTER: Why are we talking about it?

22 THE WITNESS: I'm going to talk about the
23 numbers that I pulled from existing language
24 comparing to the numbers that are in Table 1.

25 MR. JANTZ: Because it's the language

1 being modified. That's why we are talking about it.

2 THE WITNESS: I thought everybody was
3 clear on what the language was being modified.

4 MS. FOSTER: Again, you are here for
5 rebuttal testimony.

6 A. Well, he said he had no concerns about it
7 but I want to make sure that everybody understands
8 that, for example, for the Paragraph I, temporary
9 pits where groundwater is between 50 and 100 feet,
10 there are triggers. The trigger for Benzene is .2
11 milligrams per liter in the existing rule and
12 Industry has proposed 50 -- I'm sorry, 10 milligrams
13 per kilogram. It was .2 milligrams per kilogram and
14 they are proposing 10, which is 50 times. So the
15 trigger for any further sampling, now they will
16 allow 50 times more Benzene.

17 But the value for BTEX, if you look on
18 Page 28, the trigger for BTEX is 50 milligrams per
19 kilogram and in their Table 2 on Page 41 it remains
20 50 milligrams per kilogram. So what they are saying
21 is they are going to allow the Benzene to be a
22 greater percentage of the total BTEX, being 10
23 milligrams per liter instead of .2, so basically
24 becoming 20 percent of the BTEX.

25 However, if we know how BTEX works in the

1 subsurface, BTEX is the most soluble of the Benzene,
2 Toluene, Ethylbenzene and Xylene so it's the most
3 likely to be gone, to be disbursed. If the liner
4 leaked the Benzene will be gone.

5 Q. When you say will be gone, what do you
6 mean?

7 A. It won't be left in the solids in an equal
8 proportion as the other elements of BTEX.

9 Q. Where does it go?

10 A. Because of its water solubility, if
11 there's liquids it will go where the water went. In
12 fact, Benzene is three times more water soluble than
13 Toluene, and it's ten times more water soluble than
14 the Ethylbenzenes and the Xylenes. So it was very
15 curious that we are changing the entire
16 characteristics of BTEX, keeping it at 50 but
17 allowing it to have almost 20 percent Benzene before
18 there's a trigger for any more sampling, but yet not
19 being concerned about that, even though we know that
20 it's the one that would be there in the lesser
21 concentration.

22 And that is the chemical that we all agree
23 upon is a known carcinogen. It's the one nobody
24 will argue is not a pollutant of concern. So I
25 completely disagree with Dr. Thomas that there

1 should be no concern about these new tables. These
2 new tables show a complete disregard for how Benzene
3 exists in their environment and allows for a
4 considerable amount more of it before any other
5 sampling would occur. And also in conjunction with
6 that, his saying well, that's fine if you have that
7 much left --

8 MR. CARR: May it please the Commission.
9 I have been trying not to object but it seems to me
10 one thing Ms. Martin hasn't been qualified as is a
11 toxicologist. Now we are having testimony within
12 that area of expertise and I object to the
13 testimony.

14 MR. JANTZ: Ms. Martin isn't talking about
15 toxicology. She is talking about how Benzene moves
16 through the subsurface. Ms. Martin will not offer
17 any opinion whether when Benzene hits a receptor,
18 somebody drinks the water, that's going to do them
19 damage. She is making a statement about the
20 contaminant.

21 MR. CARR: She has been talking about it
22 being a known carcinogen, about it being the
23 chemical of concern, and she is moving to the area
24 of toxicology.

25 CHAIRPERSON BAILEY: I would like for the

1 witness to restrict herself to transport and not
2 toxicology.

3 MR. JANTZ: Understood.

4 Q. So Ms. Martin, notwithstanding the
5 toxicity or lack of toxicity of Benzene, what are
6 your thoughts on -- would you please continue your
7 thoughts about Dr. Thomas' testimony about this
8 stuff being locked up.

9 A. Well, as a project officer of Tar Creek
10 Superfund site I'm quite aware of what the EPA and
11 the national water quality standards and the State's
12 water quality standards of New Mexico consider
13 Benzene to be, and it's a hazardous pollutant and
14 it's hazardous because it is a known carcinogen.

15 CHAIRPERSON BAILEY: Ask your witness to
16 --

17 THE WITNESS: That is policy.

18 CHAIRPERSON BAILEY: I wish that you would
19 please pay attention to what the Commission has
20 requested, that you do not bring into toxicology,
21 that you confine your answers to transport of
22 contaminants.

23 Q (By Mr. Jantz) So again, this idea that the
24 stuff is locked up in the subsurface, do you agree
25 with that?

1 A. Not for Benzene.

2 Q. If you will give me just a moment, I need
3 to see if there's anything we missed. In terms of
4 transport of these hydrocarbons, Mr. Mullins
5 provided -- I believe it was Mr. Mullins -- provided
6 a study from the American Petroleum Institute as a
7 basis for this idea that these contaminants don't
8 move in the subsurface. Could you speak to that?

9 MS. FOSTER: Is that an IPANM exhibit?

10 MR. JANTZ: I believe it is. Let me see.

11 MS. FOSTER: It might be 13.

12 MR. JANTZ: Yes, it's IPANM Exhibit 13.

13 Q (By Mr. Jantz) Do you need that,
14 Ms. Martin?

15 A. Just a second. Excuse me. I pulled it
16 out so it would be easy to find. Give me just a
17 second. I'm sorry. Here it is. Okay. Yes, this
18 would be Exhibit 13, API report titled "Soil and
19 Groundwater Research Bulletin, Non-aqueous Phase
20 Liquid (NAPL) Mobility Limits in Soil."

21 Q. Independent producer's Exhibit 13?

22 A. Correct.

23 Q. Do you have concerns about using this
24 study as a basis for predicting contaminant
25 transport for the hydrocarbons in the waste Table

1 22?

2 A. Yes.

3 Q. What are they?

4 A. This report relies upon studies that
5 looked at DNAPLs or dense non-aqueous phase liquids
6 which would be more viscous -- pesticides,
7 herbicides, waxy, syrupy layers. The type of
8 hydrocarbons that you are going to expect in your
9 drilling pits are going to be LNAPLs or light, more
10 mobile, more soluble, more volatile. So it would be
11 highly inappropriate to talk about how dense
12 hydrocarbons are not mobile in soil and then
13 translate that information to things that we know
14 are highly mobile in soil through underground
15 storage tank remediation or anything else. So it's
16 inappropriate.

17 Q. I think that sums up our direct testimony
18 and I will tender the witness.

19 CHAIRPERSON BAILEY: It is 11:20. Would
20 you check to see if we have had any people who would
21 like to make comments? There are no members of the
22 public to make comments. Then at this point we have
23 time to begin cross-examination if you would like to
24 begin.

25 THE WITNESS: May I go to the ladies room.

1 CHAIRPERSON BAILEY: Sure. Let's take a
2 ten-minute break.

3 (Note: The hearing stood in recess at
4 11:22 to 11:32.)

5 CHAIRPERSON BAILEY: We will go back on
6 the record. We were about to finish
7 cross-examination of Ms. Martin.

8 CROSS-EXAMINATION

9 BY MR. HISER

10 Q. Ms. Martin, you testified about the design
11 standards for temporary pits and multi-well fluid
12 management pits; is that correct?

13 A. With respect to the regulatory language?

14 Q. Yes.

15 A. Yes.

16 Q. In that, you drew a concern about the
17 absence of the saturated hydraulic conductivity
18 level?

19 A. Correct.

20 Q. Do the design standards in Requirement F
21 for temporary pits, which is found in 11.F-3, which
22 is on Page 14 of NMOGA Exhibit No. 1, does that
23 specify the use of a 20 mil string reinforced LLDPE
24 liner?

25 A. Yes.

1 Q. And if we flip back a couple pages to the
2 equivalent provision under Section J, which is the
3 multi-well fluid management pit under Paragraph 3,
4 does that also specify the 20 mil LLDPE liner?

5 A. On Page 19?

6 Q. Yes, thank you, Page 19 of NMOGA's Exhibit
7 No. 1?

8 A. Yes.

9 Q. Do you have any reason to disagree with
10 the default saturated hydraulic conductivity for the
11 LLDPE liner that's provided in the HELP manual which
12 you cited to?

13 A. As far as what?

14 Q. As far as what the saturated hydraulic
15 conductivity of the low density polyethylene liner
16 would be?

17 A. To include in the rules as regulatory
18 language?

19 Q. I'm asking if you have any reason to
20 disagree --

21 A. With the default value? Actually, I had
22 some documents that provided a little bit different
23 information, more current information where it gave
24 the water permeability from like a manufacturer's
25 specs. One times nine to the minus nine or less,

1 which is still several orders of magnitude greater
2 as a starting point than the default that was used
3 in the model.

4 Q. Can you identify that manufacturer please?

5 A. Let's see. I didn't think I would have to
6 say that. It's Geoplas LD is the name of the
7 product and the product code would be their LD --
8 they only had a value for 40 mil so the product code
9 would be LD1000, which is for one millimeter, which
10 is about 39.4 mil, and it's the LLDPE geomembrane
11 tech specs for Geoplas.

12 MS. FOSTER: For the 40 mil liner?

13 THE WITNESS: Yeah. So it would be for --

14 MS. FOSTER: I object to her answer to the
15 question, again, because the question specifically
16 asked for the 20 mil liner and that's what's
17 recommended in the rule. So her answer is
18 completely irrelevant.

19 CHAIRPERSON BAILEY: You may continue,
20 Mr. Hiser.

21 Q (By Mr. Hiser) Do you agree that these
22 liners have a certain inherent hydraulic
23 conductivity just by the specification of the use of
24 the liner material and proper installation?

25 A. It has a permeability related to molecular

1 diffusion through the plastic itself and then it has
2 a leakage rate due to pin holes and manufacturer
3 defects. It's a dual.

4 Q. Yes, but the saturated hydraulic
5 conductivity that's used or used in the rule
6 generally goes to the manufacturing side?

7 A. Yes.

8 Q. No further questions.

9 CHAIRPERSON BAILEY: Now you may express
10 your opinions.

11 CROSS-EXAMINATION

12 BY MS. FOSTER

13 Q. I just have a few questions for
14 Ms. Martin. Ms. Martin, other than in graduate
15 school, have you done any actual HELP modeling
16 yourself?

17 MR. JANTZ: Objection. Ms. Martin
18 answered this on the qualifications voir dire.

19 CHAIRPERSON BAILEY: She did respond to
20 that question.

21 Q (By Ms. Foster) Ms. Martin, did you use the
22 HELP modeling that was done by the OCD in the 2007
23 hearing and the 2009 hearing and by Mr. Mullins?
24 Did you try to duplicate any of the inputs that
25 those several individuals did on the HELP modeling?

1 A. Duplicate meaning?

2 Q. Put in the inputs?

3 A. I did no modeling, no physical modeling.
4 I just looked at the assumptions and the manuals and
5 how the calculations were performed within the
6 modeling.

7 Q. And so you had concern with the HELP
8 modeling output which generates the input for the
9 Multimed?

10 A. Correct.

11 Q. Did you do any Multimed modeling or try to
12 duplicate to verify the veracity of the modeling
13 that was done?

14 A. No.

15 Q. And you stated that you had difficulty
16 with the infiltration rates as one of the inputs on
17 the modeling? That you stated, I believe, it was
18 unrealistic for the levels that were put in?

19 A. Correct.

20 Q. And have you done any research on the
21 infiltration rates in New Mexico?

22 A. From a closed, dry drilling pit burrito,
23 no.

24 Q. Have you done it for any oil and gas pits
25 or locations in New Mexico?

1 A. In New Mexico, yes. I did do some
2 background reading on the variety of subsurface
3 materials in the Southeast and the Northwest, USGS
4 reports, some other -- there was some other HELP
5 modeling reports for a landfill down in, I think,
6 Roswell. I read that and looked at how they
7 interpreted their results. I looked at a lot of
8 the -- when I was looking at the groundwater
9 pollution cases I looked at a lot of the borings to
10 look at what the subsurface materials were and noted
11 that the subsurface materials in the oil field are
12 not accurately reflected in the HELP model either;
13 that they are not a uniform soil and they are not
14 all loam. They are clay and sand and caliche, and
15 so that part of the model was not accurate either.
16 But I did do quite a bit of reading before I started
17 to attempt to critique. Yes, absolutely.

18 Q. And what will you consider a reasonable
19 infiltration rate in New Mexico --

20 A. Depends on --

21 Q. -- based on your research?

22 A. -- what soil materials. I read everything
23 from over the Ogallala, looking at up to 90 feet per
24 year down to .003 feet per year and it's really
25 site-specific.

1 Q. In looking at IPANM Exhibit No. 13 that
2 you pointed to, if you could turn to that exhibit,
3 please. I believe that you stated in your testimony
4 that this exhibit only concerned NNAPL, which were
5 more waxy substances; is that correct?

6 A. DNAPL, dense non-aqueous phase liquids.
7 When you go to the bibliography, some of the
8 statements that were made, they reference some
9 bibliography and the bibliographies were restricted
10 to DNAPLs.

11 Q. Would you look at Table 1 on Page 3 of the
12 document. Does that not refer to Benzene and have
13 some residual NAPL void fraction numbers as well as
14 liquid chemical density numbers on Benzene, et
15 cetera, et cetera?

16 A. Yes.

17 Q. Isn't Benzene one of the LNAPLs?

18 A. Yes.

19 Q. I'm sorry. I'm a little dyslexic when it
20 comes to all those numbers. The light one, correct?

21 A. Yes.

22 Q. So this document does refer to Benzene?

23 A. It has it in it, but the overall
24 conclusions include the dense.

25 Q. Include the dense?

1 A. Yes.

2 MS. FOSTER: At this time, based on what
3 has been testified to by Ms. Martin, I have no
4 further questions.

5 CHAIRPERSON BAILEY: Ms. Gerholt?

6 MS. GERHOLT: No questions.

7 CHAIRPERSON BAILEY: Mr. Dangler?

8 MR. DANGLER: No questions.

9 CHAIRPERSON BAILEY: Dr. Neeper?

10 MR. NEEPER: I have just one question.

11 CROSS-EXAMINATION

12 BY MR. NEEPER

13 Q. In your testimony I heard some concern
14 about leaks in multi-well pits. Was your concern
15 more with the transmission of the liner or was it
16 with the fact that there would be no secondary liner
17 required?

18 A. Both.

19 Q. Thank you.

20 CHAIRPERSON BAILEY: Mr. Fort?

21 MR. FORT: No questions.

22 CHAIRPERSON BAILEY: Commissioner Bloom?

23 COMMISSIONER BLOOM: Just a few questions.

24 Good morning, Ms. Martin.

25 THE WITNESS: Good morning.

1 COMMISSIONER BLOOM: I want to make sure I
2 understood your line of thinking about the modeling
3 that was done, and what you were saying is that the
4 HELP model default is four orders of magnitude. The
5 liner is less -- four orders of magnitude less
6 permeable than what Rule 17 requires where it
7 mentions liner permeability?

8 A. It's four orders of magnitude less
9 permeable than for permanent pits but there is no
10 restriction for temporary pits, so it could be any
11 permeability ideally because there's nothing to
12 enforce.

13 COMMISSIONER BLOOM: And what do you see
14 as being the possible effect of that as it goes
15 forward?

16 THE WITNESS: When you do a compliance
17 inspection, then all you have to look at is is there
18 a 20 mil liner. You don't have any ability to look
19 at whether or not it has prevented seepage because
20 that comes from knowing that there's at least a
21 ceiling of seepage based on the permeability, so
22 they wouldn't be in violation of seeping until it
23 contaminated your groundwater enough to trigger
24 groundwater pollution. But the language -- there's
25 one sentence that was the original trigger for

1 causing the agency to cause groundwater monitoring
2 to occur, and that sentence has been removed in the
3 proposed language. That is 19.15.17.13 D1C.

4 COMMISSIONER BLOOM: Do you have a page
5 number?

6 THE WITNESS: I have a printout from
7 LexisNexis but the citation, a one sentence -- I
8 guess we could find it in the proposed. Sorry about
9 that. So it would be NMOGA Exhibit 1 Attachment A.
10 Let's look at Page 29, Subparagraph C. That's the
11 crossed-out language. "If the operator or the
12 division determines that a release has occurred then
13 the operator shall comply with 19.15.29," which is
14 the spill rule, "and 19.15.30," which is for
15 abatement.

16 That was a step. Like you took the
17 five-point sampling, did your composite. If it
18 busted Table 1, then maybe the agency would require
19 additional sampling and it stops in the proposed
20 rule. Whereas in the existing rule there was
21 additional sampling plus this category, which
22 spilled them into the abatement program. So that
23 link has been removed.

24 So the problem, to summarize, is if you
25 don't have a restrictive liner permeability, then

1 you don't have a restriction on seepage or volume at
2 all. So basically they can have a temporary pit
3 with a 20 mil liner. It can have holes in it that
4 you can't see and it can be leaking like a sieve.
5 When they go to closure, if their five-point
6 sampling shows that the chlorides or the Benzenes
7 don't bust Table 1 they don't have to do anymore
8 sampling so you have no way of knowing if the
9 groundwater had been contaminated.

10 You have in the inspection -- to enforce
11 the ability to restrict the amount of wastewater
12 that can go to the groundwater, you do that by
13 having a permeability and then you can do compliance
14 by having them do a water balance on the pit to show
15 that seepage had not occurred or something like
16 that, and that's not expressed in the proposed
17 language.

18 COMMISSIONER BLOOM: Then you mentioned a
19 factor of 2500. Is that the increased amount of
20 seepage you would get because of the difference in
21 permeability between what --

22 THE WITNESS: Yeah, it was like a four.

23 COMMISSIONER BLOOM: -- would seep and the
24 permeability mentioned in the current rule?

25 THE WITNESS: Yeah. It's basically four

1 to one which is a quarter, so that made it 2500
2 instead of 1,000, I think is how it worked.

3 COMMISSIONER BLOOM: I think a couple of
4 times in the testimony that we have heard, I
5 believe, from NMOGA and again from Mr. Mullins, we
6 heard there has been no leaking or contamination
7 from lined pits, correct?

8 THE WITNESS: Correct.

9 COMMISSIONER BLOOM: And what you looked
10 at, you found -- was it 36 cases you testified to?

11 THE WITNESS: There were 222 that had a
12 designation of pit out of a much larger dataset of
13 other types, like natural gas processing plants or
14 whatever else the OCD regulates. I just looked at
15 the 222 that had a designation of pit, and then I
16 had to physically go on the internet and look at the
17 files to see if it was a drilling pit, a dehydrator
18 pit, a tank battery pit, etc.

19 Of those, I focused from September 2000
20 on. Basically, I went from 2010 back until I got
21 tired. And then of that, I decided to look at a
22 subset of just what happened after Rule 50 when you
23 started to require some sort of liner, be it clay or
24 plastic, because that would be the only time I would
25 expect to find a plastic liner for sure.

1 So of those, I found 16 cases that were
2 definitely drilling pits and definitely had plastic
3 liners.

4 COMMISSIONER BLOOM: Between 2000 and
5 2010?

6 THE WITNESS: From 2000 to 2010 of the
7 things that ended up in an abatement plan basically.

8 MS. FOSTER: Madam Chair, as to this line
9 of questioning, this directly relates to Exhibit No.
10 5, which was ruled that we were not going to discuss
11 any cases that were --

12 CHAIRPERSON BAILEY: This is a
13 commissioner asking.

14 MS. FOSTER: I understand that. I'm
15 asking for leave to clarify some of the answers that
16 she just gave because I believe there's some
17 additional information that would be useful for the
18 Commission to understand pertaining to those alleged
19 cases of groundwater contamination that she found.

20 I did not go into that during my
21 cross-examination because that particular exhibit
22 was taken out and it was not discussed additionally
23 by this witness. So technically, it would not have
24 been proper cross-examination for me at that time.
25 However, now that Commissioner Bloom has brought out

1 the question and she has answered the way that she
2 has, I would like to have leave to answer some of
3 the questions.

4 COMMISSIONER BLOOM: I'm not sure we took
5 that exhibit out. I believe the questioning stopped
6 after we were told that there would be no more
7 commentary on anything that didn't have to do from
8 implementation of the current pit rule forward.

9 MS. FOSTER: That exhibit was not offered
10 and put into evidence.

11 MR. JANTZ: Madam Chair, members of the
12 Commission, my recollection is we did offer it as
13 evidence and it was admitted.

14 MS. FOSTER: No.

15 MR. JANTZ: Madam Chair simply prohibited
16 further questioning about the substance of the
17 exhibit.

18 MR. HISER: For the benefit of the
19 Commission, what Madam Chair said was that it was
20 accepted.

21 CHAIRPERSON BAILEY: Would you like
22 additional information that could be gleaned from
23 cross-examination?

24 COMMISSIONER BLOOM: Sure. Absolutely.

25 DR. BALCH: I also have a question about

1 the exhibit, so I concur with Commissioner Bloom.

2 CHAIRPERSON BAILEY: Why don't we break
3 for lunch at this point so we can all reorganize.
4 After we come back, we will allow information
5 concerning that exhibit and cross-examination on the
6 exhibit that's been accepted.

7 MR. SMITH: Madam Chair, so I have some
8 kind of idea of what's going on here, are we
9 interrupting the Commission's questioning now to
10 allow questioning on this exhibit and then we are
11 coming back to the Commission's questioning?

12 CHAIRPERSON BAILEY: Apparently so.

13 (Note: The hearing stood in recess at
14 11:51 to 1:14.)

15 CHAIRPERSON BAILEY: We will go back on
16 the record. We need to clarify what exhibits for
17 OGAP have been introduced and which have been
18 accepted, so if we can clarify. The spreadsheet of
19 exhibits, there's no label on it but I have it
20 written in as Exhibit 3.

21 MR. JANTZ: Madam Chair, members of the
22 Commission, Exhibit 3 is Ms. Martin's CV. That
23 would be OGAP's Exhibit 4.

24 MS. FOSTER: Five. Exhibit 4, I believe
25 is your OCD Exhibit 13C from the 2007 hearing.

1 MR. JANTZ: Exhibit 5.

2 CHAIRPERSON BAILEY: So the Commission has
3 accepted Exhibit 5 now as an exhibit in the case.
4 There were other documents that were supplied as
5 part of the Notice of Intent?

6 MS. FOSTER: Madam Chairwoman, as to
7 Exhibit 5, there was no question as to whether there
8 were objections. I don't think there was a
9 foundation laid to Exhibit 5. The discussion
10 previously, I believe, was that it was accepted for
11 discussion purposes but it was not moved into
12 evidence, so I would object to the admission of
13 Exhibit 5 as part of this case.

14 CHAIRPERSON BAILEY: Okay. Your objection
15 is based on what?

16 MS. FOSTER: My objection is based on the
17 fact that Ms. Martin cites to 228 cases in this
18 spreadsheet and she has not testified to any of the
19 background information as to those pits. She makes
20 the claim that these are all cases of contamination.
21 However, there's no information in the record as to
22 what type of pits they are. I believe some of them
23 are tank batteries, some of them are legacy pits.
24 She also makes no representation in the record as to
25 the depth of groundwater.

1 I believe the date on file on the exhibit
2 is pre 2009, July 2009. The date that is listed
3 there is the date of the abatement plan, so
4 therefore, again, it would come in under the old Pit
5 Rule and would not really be relevant to the case at
6 hand.

7 I would also point to the fact that she
8 claims this exhibit is in rebuttal to Mr. Mullins'
9 testimony where he testified that he reviewed 421
10 cases of alleged groundwater contamination. That
11 was the list that was prepared by Mr. Fesmire that
12 was in the media and all that, and he testified that
13 there were some cases that were under investigation
14 at the time but to his knowledge there was no proven
15 cases of groundwater contamination.

16 So, you know, Exhibit No. 5 completely
17 misrepresents the facts and I would not want to lead
18 this Commission to look at that spreadsheet of 228
19 cases without having additional information, so I
20 would object.

21 CHAIRPERSON BAILEY: Do any of the other
22 attorneys have comments?

23 MR. FORT: I would join in with those
24 objections.

25 CHAIRPERSON BAILEY: Mr. Carr?

1 MR. CARR: May it please the Commission,
2 in addition to this, in terms of foundation, all we
3 know is this is just something that has been taken
4 from another proceeding. We don't know what the
5 spills may have been. We haven't had a chance to
6 look at them to see if they were remediated. The
7 real question with these is whether or not what is
8 being delivered to you -- what these are are
9 situations that violate Rule 17 as we propose to
10 amend it. And until they can show that, I don't see
11 any relevance.

12 MR. JANTZ: Madam Chair, first of all,
13 with respect to Ms. Foster's objection. We heard
14 that this morning. It's my understanding that the
15 Commission did accept it. I don't know if we have a
16 transcript or we can read the transcript back and
17 see what the Commission said with respect to
18 admitting this into evidence. My understanding was
19 that the Commission did.

20 In any event, simply for the sake of
21 argument that the Commission did not, Ms. Martin
22 laid the foundation. She explained what process she
23 went through, what documents she inspected to create
24 this spreadsheet, and Ms. Foster agreed to
25 cross-examine her on any of the information that may

1 be contained therein.

2 With respect to Mr. Carr's objection, this
3 is relevant to this proceeding because it has to do,
4 as Ms. Martin will explain, with the effect of
5 liners and how liners are protective or not in
6 temporary pits and groundwater contamination. So
7 the relevance lies in Ms. Martin's testimony about
8 the particular situation, the pit liner strength,
9 the way it was installed, the berm, angles, things
10 like that to help the Commission make the
11 determinations about this rule. It's essentially by
12 analogy. We are asking the Commission to make a
13 decision by analogy based on what we know is the
14 reality of pits and pit liners that have been
15 installed in the past.

16 CHAIRPERSON BAILEY: Mr. Carr?

17 MR. CARR: May it please the Commission,
18 there has to be some connection between a well
19 identified on a list of several hundred and whether
20 or not the berm was improper, whether or not the
21 liner was torn, what rule was in place at the time
22 this was done, whether it was a lined pit or not,
23 whether that was authorized at that time, whether,
24 it's like the first one in overflow from a tank
25 battery that was really designed to control brine.

1 Just to say, you know, problems happen,
2 well, until they are connected to the issue before
3 you, we will say sure, problems have happened. Were
4 they remediated? Did they violate the rule and does
5 this rule address that problem and are these in
6 violation of a rule and are we looking at
7 enforcement issues rather than regulatory issues?
8 Until you do those, just locking a table into the
9 record and saying, "Look, Mr. Fesmire, we looked at
10 it and there were problems," we need to find out why
11 the problems existed and tie it to the proceeding.
12 That has not been done.

13 CHAIRPERSON BAILEY: Mr. Smith? Why don't
14 you weigh in also.

15 MR. SMITH: I think it meets the
16 relatively low threshold test of being admissible.
17 You can make of it what you will, but I think of the
18 arguments we have heard, Mr. Jantz' argument edges
19 the rest of them out, even Ms. Foster's.

20 CHAIRPERSON BAILEY: This table is
21 accepted for exhibit purposes as OGAP Exhibit No. 5.

22 (Note: OGAP exhibit 5 admitted.)

23 MR. JANTZ: Thank you Madam Chair. Now,
24 just to be clear on where we were, is Ms. Martin
25 going to be able to testify about what she

1 discovered in her review of the record in response
2 to Commissioner Bloom's question? That was my
3 understanding is how we were going to proceed. Or
4 not?

5 CHAIRPERSON BAILEY: Mr. Bloom, can you
6 recall what your question exactly was?

7 COMMISSIONER BLOOM: I believe I asked --
8 we heard testimony previously that if there was any
9 contamination -- we heard testimony previously from
10 Mr. Mullins and a NMOGA witness that there has been
11 no contamination from lined pits. They have gone
12 back and looked at the Fesmire study, and I believe
13 that's where Ms. Foster interjected with an
14 objection. And then there was some ensuing
15 conversation about Ms. Foster asking other
16 questions.

17 DR. BALCH: We are ready for the question
18 where she was going to cross-examine on the piece of
19 evidence.

20 CHAIRPERSON BAILEY: That's the logical
21 conclusion, yes.

22 MR. JANTZ: That was my understanding of
23 where we were on this. Thank you for the
24 clarification, Madam Chair, members of the
25 Commission.

1 DIRECT EXAMINATION CONTINUED

2 Q (By Mr. Jantz) So Ms. Martin, you
3 understand that we are going to talk about just what
4 you found in your exploration of this OCD database
5 and the files that you looked at, right?

6 A. Yes.

7 Q. Can you describe the seven cases -- was it
8 seven cases you looked at in greater detail?

9 A. Yes, seven out of the 16 drilling pit
10 contamination cases, I picked seven of those out and
11 prepared more complex analysis.

12 Q. Okay. Could we talk about the first one?

13 A. Sure. I looked at starting with the most
14 current date, and just for the record, the one that
15 was dated 2010, that was a closure for a 1949 pit.
16 But I looked at AP 81, which was a Chevron U.S.A.
17 Mark No. 13 drill pit, and so if every one sees
18 that, it's probably on the first page. Don't put
19 that up there because that's different.

20 DR. BALCH: Do you have the order number
21 on the -- can you refer to which cases these are
22 with an order number that we can cross-reference on
23 the table we have in front of us?

24 THE WITNESS: Let me see the table you
25 have.

1 DR. BALCH: Are these distributed or are
2 they the first seven?

3 THE WITNESS: Let me see what you are
4 looking at. So mine is in the reverse order. Yeah,
5 the youngest case is the No. 1, the 2010, and I'm
6 going to be looking -- you look down the order
7 number, AP 81 is the fifth one on the first page.

8 DR. BALCH: Maybe if you are talking about
9 a particular case you could just give us the order
10 number and then we know which one you are talking
11 about?

12 THE WITNESS: Yes, sir. Absolutely. AP
13 81 Chevron Mark drill pit. The things that I looked
14 at were how long the pit was open before the solids
15 were removed, whether it was lined with plastic
16 obviously was the first thing, and then what was the
17 soil contamination and if there was groundwater
18 contamination and what those values were, so I
19 picked those highlights out.

20 This one was drilled in January of 2006.
21 They started stiffening the drilling mud with clean
22 dirt in March of 2006 so just a couple months later,
23 but they didn't excavate the pit until January of
24 2007 so it was about a year to actually remove the
25 source. Then there were soil borings made.

1 In July of 2007, more samples in August,
2 and finally in January of 2008 a remediation
3 proposal was submitted and the plan was approved the
4 following month to backfill the pit with a 40 mil
5 liner at the bottom.

6 Just for information, depth to groundwater
7 was determined using a generalized format, which is
8 what's proposed in the regulations, not having
9 site-specific groundwater information but to look at
10 maybe existing water wells around the area, and they
11 provided a table that had a list of water wells and
12 then they said it was 63 feet below ground surface.

13 But the Mark No. 13 is in Section 3, and
14 in that table that they provided there was no
15 groundwater depth for Section 2, 3 or 4. So
16 actually they picked a value that was several miles
17 away and applied that depth to groundwater to this
18 case.

19 The last items would be the consultant
20 report to the agency said that the --

21 MS. FOSTER: Objection. I don't believe
22 she prepared the consultant report. She can call
23 that witness to come in and testify. This is going
24 to make for a very long day.

25 MR. SMITH: What is your objection,

1 hearsay?

2 MS. FOSTER: Yes.

3 Q (By Mr. Jantz) Was this from a public file,
4 Ms. Martin?

5 A. Yes.

6 Q. So it's public record?

7 A. Yes.

8 MR. JANTZ: It fits the hearsay exception.

9 CHAIRPERSON BAILEY: Sustained.

10 A. The reason for requiring the abatement was
11 there was an overflow area that had caused
12 contamination and there was also the pit liner had
13 failed in the southeast corner of the pit causing an
14 overflow. Like I said, death to groundwater was
15 estimated at 63 feet below ground surface, but
16 actually, once they finally did soil borings they
17 found very moist soil at 20 feet below ground
18 surface. They never said actually where the
19 groundwater was.

20 This particular site had soil chlorides at
21 five feet below ground surface ranging from 200 to
22 10,000 milligrams per kilogram and at ten feet below
23 ground surface ranging from 5,000 to 20,000
24 milligrams per kilogram, and in the borings at five
25 feet there was a caliche, which was described as

1 fractured rock, but below that was sand. So this
2 would be illustrative of something that was
3 different from the HELP model definitely for
4 subsurface materials.

5 The second one I looked at would be 1878.
6 If you go down, that's the third one down after AP
7 81. This is Pride Energy Company. As you can see
8 there's five sites. I picked one of them. This
9 will be for Reserve Pit No. 15 in South Four Lakes
10 Unit, and again, the things that I looked at, number
11 one was the drill date was November 2004. The well
12 was completed actually March 2005.

13 In September of 2005 they submitted the
14 C-104 form to allow transport of products. In
15 August of 2007 the pit closure form was submitted,
16 that C-144, so that was basically -- they completed
17 the well in 2005 so they didn't submit the form
18 until August of 2007. Then they had to revise it in
19 December of 2007 and then they started doing initial
20 groundwater sampling in 2008, which would be just
21 about three years after the well was completed. The
22 reason for potential pollution was "brine from the
23 pit migrated through the vadose zone to groundwater
24 via saturated flow during operation of drilling pit
25 or during the drying process."

1 And the groundwater abatement was to pump
2 and use. Basically, they were pumping out the salty
3 water and disposing of it elsewhere.

4 In this case they had estimated -- let's
5 start with the monitoring data. The background
6 groundwater quality was 167 milligrams per liter
7 chloride and 1210 milligrams per liter TDS. For the
8 soil samples that were taken at eight feet we had
9 1600 to 4800 milligrams per kilogram chlorides. At
10 14 feet, 1500 to 4200 -- obviously, the 4200 is the
11 hot spot. At 20 feet, 450 to 2600 milligrams per
12 kilogram and at 30 feet, 300 to 800 milligrams per
13 kilogram. So they excavated the pit down to 30
14 feet.

15 The groundwater information, they had the
16 initial groundwater concentration was 3930
17 milligrams per liter chloride and so they did some
18 subsequent sampling. Oh, and also 9820 TDS, and
19 then compare that to the background chloride that I
20 just said, which was 167.

21 This was the report that estimated the
22 linear groundwater velocity nine to 90 feet per year
23 and that the chloride mass had traveled 150 feet
24 downgradient from the pit. The velocity calculated
25 for this particular facility then said the travel

1 time was from November 2004 to May 2008 or basically
2 40 feet per year.

3 The next one I looked at was AP 77, which
4 would be the very next one on the table, another
5 Pride Energy, Well No. 14 out of the South Four
6 Lakes Unit. This well was spudded in September 2004
7 and completed in October 2004. The Closure Form
8 C-144 was submitted in August of 2007, which is
9 almost three years later. The C-141 form was
10 submitted in January 2008. The abatement plan --
11 the agency required an abatement plan in February of
12 2008 and the abatement plan was submitted September
13 2008, which would basically be four years after the
14 well was completed.

15 We will start with the beginning and I
16 will tell you what the end result was. Again, the
17 consultant had supposed that brine from the pit
18 migrated to groundwater from a failed liner.

19 With respect to soil concentrations, this
20 was January 2008 soil concentrations. At eight feet
21 it ranged from 1300 to 14,000 milligrams per
22 kilogram. At 12 feet, 1500 to 12,000 milligrams per
23 kilogram, and at 16 feet 900 to 9200 milligrams per
24 kilogram. The highest concentration was in the
25 center of the pit and the southeast corner. They

1 used a trench burial system for closure so they took
2 the solids and put that trench right next to the
3 pit. That's where it was located. The estimated
4 downgradient migration was given at 150 feet
5 lateral.

6 The first monitoring well was located in
7 the southeast corner, which is where they had the
8 highest soil concentration. The groundwater
9 concentration three feet below the water table was
10 1100 milligrams chloride with 2200 milligrams per
11 liter TDS. At 17 to 20 feet below the water table,
12 so deep into the water, it increased to 3100
13 milligrams per liter chloride and 5400 for TDS.

14 After purging the monitored well the
15 chloride increased to 4700 milligrams per liter, so
16 it went from basically an unpurged well at the top
17 of the water table 1100 to a purge where you are
18 really drawing the salt. 4700 for chlorides and
19 8100 for TDS. The depth to groundwater was
20 estimated originally at 24 to 38 feet below ground
21 surface but later was determined to be 23 as they
22 did their monitoring of wells.

23 Then at the end it was decided that this
24 site was originally a legacy site. March 1961
25 Humble Oil drilled Unit No. 1 and they completed the

1 well in July of 1961, and in 1967 Humble submitted a
2 plug and abandonment form basically six years after
3 the well was completed. When Pride Energy went back
4 to the same site, they put their drilling pit
5 basically in the same place as the original one so
6 there was some confusion of where all the pollution
7 came from for this site. But it leads you to make
8 sure you understand, especially when you are going
9 back in and maybe going to a different formation and
10 you're going back and putting another pit at the
11 same well, and pits are gravity-drained. You are
12 going to go to the low spot and you may be building
13 your drilling pit right upon the last place. So I
14 found that problem in several.

15 Now for something completely different.
16 AP 94, which would be -- this is the Marbob Scratch
17 State Corn, No. 1, Lea County. Sorry, it's like two
18 down. Does everybody see where that is? It's from
19 the 77. Okay. This one had a 12 mil plastic liner.
20 The well was spudded April 2005. The C-141 form was
21 submitted in August 2007 with the words "compromised
22 pit" on it saying "encountered wet soils and water
23 at 40 feet below surface. Most of pit material has
24 been removed."

25 So in August of 2007 a soil investigation

1 ensued. In September of 2007 they drilled
2 Monitoring Well No. 1. In October they did
3 Monitoring Wells No. 2 and 3. In August of 2008,
4 and again, this would be basically three years after
5 the well had been finished, the Stage One abatement
6 plan was requested by the agency and based on the
7 form back in October 2007 where groundwater impacts
8 had been determined. So it took a little while for
9 the abatement plan to be requested.

10 The monitoring well, the first
11 sampling event -- oh, and first of all, there were
12 two conflicting statements. The C-141 -- I'm sorry,
13 the C-144 form dated December 13, 2004 said
14 groundwater was greater than 100 feet. A C-144 form
15 dated September 21, 2007 said groundwater was less
16 than 50 feet.

17 The first monitoring well event, in
18 monitoring Well No. 1, 396 milligrams per liter
19 chloride. Monitoring Well No. 2, 45,590 milligrams
20 per liter chloride. In the second sampling event,
21 Monitoring Well 1 was 708, so twice basically the
22 first sample. They did not sample Monitoring Well
23 No. 2, but they sampled Monitoring Well No. 3.
24 After purging the well for a half gallon they got
25 472 milligrams per liter chloride.

1 In October, which was the third sampling
2 event, Monitoring Well No. 1 had 2260 milligrams per
3 liter chloride. Monitoring Well No. 2 had 42,800
4 milligrams per liter chloride, and Monitoring Well 3
5 had 400. In the January sampling event, Monitoring
6 Well 1 had 35,200 milligrams per liter chloride and
7 Monitoring Well No. 2 had 44,400 milligrams per
8 liter chloride.

9 And what was interesting about the case --
10 because obviously, very, very high concentrations in
11 the groundwater -- is as they did the boring, as
12 they were drilling Monitoring Well No. 1 they did
13 take soil samples and do chloride concentrations.
14 So at 35 feet below ground surface they had less
15 than 16 parts per million chloride in the soil. At
16 40 feet, which is just five feet deeper, it rose to
17 3900. Then at 45 feet it was 3500 and at 50 feet it
18 dropped to 208.

19 With Monitoring Well No. 2, at 35 feet
20 below ground surface the chloride concentration in
21 the soil was 9800. At 40 feet it was 5,000. At 45
22 feet it was 3200. At 50 feet it was back to 5,000
23 and at 55 feet it was 528. For Monitoring Well No.
24 3, 35 feet, the concentration was only 48. At 40
25 feet it was only 64. At 45 feet, only 192, and down

1 at 55 feet back to 64. So monitoring well 3 would
2 be the least contaminated. Monitoring Well 2 showed
3 the highest contamination, and Monitoring Well 1
4 showed that there was salt contamination at
5 significant depth.

6 Then the next one would be AP 69, which is
7 an Apache NEDU, and it is --

8 Q. Ms. Martin, by way of correction, I
9 believe that's AP 68.

10 A. Okay. Sorry about that. Yes, you are
11 right, 68. And I got my glasses on and everything,
12 and that is just a couple of lines below the Marbob.
13 It's Apache Corporation NEDU 527 Pit, Lea County.
14 The well was drilled September 2005. The well was
15 logged in October of 2005. In July of 2006 a leak
16 detected during a dig and haul remediation pit
17 closure procedure and material was removed to a
18 depth of ten feet below ground surface and disposed
19 of at the Sundance facility, so that was basically a
20 year after the well was drilled.

21 July 19, 2006, a groundwater impact report
22 was submitted to District Office One in Santa Fe --
23 and Santa Fe. On July 31st an additional 9,000
24 cubic yards were removed to a depth of 21 feet below
25 ground surface which was under the pit liner. In

1 November 2006 Form C-141 was submitted with the
2 words "drilling pit liner has somehow been
3 compromised and leaked below the liner."

4 In November 2006 the Stage 1 investigation
5 was required by the agency and in February 2007 the
6 Stage One abatement plan was submitted.

7 There was up to 37,000 parts per million
8 chloride in the soils at 16 feet below ground
9 surface at the southwest quadrant of the pit and
10 groundwater at 52 feet below ground surface was 2007
11 milligrams per liter.

12 The next one I looked at is AP 62 and that
13 would be just a few more down. This is the Samson
14 Livestock, Samson Resources Livestock 30-1, Lea
15 County. The well was completed December 2003. The
16 pit was left open to dry the entire year 2004, per
17 writing in the report. A large rainfall event
18 occurred during that time that may have damaged the
19 liner. I'm paraphrasing. Up to four feet of
20 standing water in the pit during the dry-out period.

21 In February 2005 Pit Registration Form 144
22 was submitted showing a 20 mil plastic liner, so
23 that was submitted a year and a couple months after
24 the well was completed. May 2005, soil samples were
25 taken below the pit. The highest value was at the

1 center of the pit at 4,000 to 8,000 milligrams per
2 kilogram chloride.

3 In July of 2005 a site delineation plan
4 was done and then in September of 2005 nine borings
5 were taken and the first monitoring well was
6 installed in the center of the pit. October 4, 2005
7 the Santa Fe office was -- the operator notified the
8 Santa Fe office of groundwater impact. The
9 following June it was reported in October of 2005.
10 So June 2006 a corrective action plan was submitted
11 which would be using the evapotranspiration cover.

12 June 26, 2006, basically a couple weeks
13 later, depth to groundwater was measured to
14 determine groundwater flow direction, and in August
15 of 2006 the agency required a Stage 1 and Stage 2
16 abatement plan which was submitted in September of
17 2006 proposing to use a capillary barrier.

18 The final abatement plan was submitted
19 November 2007, which would be four years after the
20 well was completed. Okay.

21 For sampling. Shallow groundwater. Let's
22 go with depth to groundwater. Shallow groundwater
23 was at 40 feet below ground surface with a
24 background water quality of 30 milligrams per liter
25 chloride and 650 milligrams per liter TDS. The

1 saturated hydraulic conductivity of the subsurface
2 materials was provided as 50 to 100 feet per day,
3 and in this case they used clustered monitoring
4 wells, shallow and deep, so we will start with the
5 monitoring well information.

6 Like I said, in September of 2005 the
7 first groundwater monitoring sample brought back
8 3999 milligrams per liter chloride at the center of
9 the pit. March 2006 they overpurged the well and
10 got 2230 milligrams per liter chloride with 4500 in
11 TDS. In May, just a few months later, they purged
12 400 gallons and got 2400 milligrams per liter
13 chloride. In June 2006, again, just the next month,
14 they purged 5600 gallons and still got a chloride
15 concentration of 1930 milligrams per liter.

16 In June 2007 the following year, they
17 started reporting -- there's a table where they
18 report the shallow and the deep concentrations in
19 their groundwater monitoring annual report. The
20 shallow water sample was 1620 milligrams per liter
21 chloride. The deep water sample, 6700 milligrams
22 per liter of chloride and 13,000 milligrams per
23 liter TDS. They also had a soil sample at 25 feet
24 below ground surface. The average was 4300
25 milligrams per kilogram of chloride.

1 Monitoring Well 1 was in the center of the
2 pit. Monitoring Well 2 was east of the pit and
3 Monitoring Well 3 was south of the pit, and I think
4 that kind of summarizes the severity of that.

5 The next is AP 61, Chesapeake. This will
6 be the last one I looked at, and it is the very next
7 one on the table. Even though it's called
8 Chesapeake, they were not the original operator.
9 Zurich Oil and Gas drilled on July of 2002 and they
10 had a lined drilling pit. In November the New
11 Mexico Oil Conservation Division noted problems with
12 the pit but did not issue a violation letter. In
13 May of 2004 Chesapeake bought the well and the pit
14 was closed during that transaction and it was not
15 clear if they closed with the materials on-site in
16 the trench or not.

17 August of 2004 NM OCD requests an
18 abatement plan to Chesapeake because chloride
19 contamination was detected in a monitoring well in a
20 property east of the well site which was Champion
21 Technologies, basically across the street, who was
22 also monitoring their groundwater for a pollution
23 problem and chloride started to show up in their
24 Monitoring Well No. 7. And Champion Technologies
25 was an oil and gas service yard. Basically, the

1 agency looked for where the source would be and
2 right across the street was this well site.

3 In November of 2006 the consultant, BBC,
4 submitted a two-page letter as an abatement plan in
5 response to the August 2004 requirement, so over two
6 years before the two-page letter was submitted. The
7 agency rejected that letter as an abatement plan and
8 submitted several warnings letters to Chesapeake to
9 please submit an abatement plan. Finally one was
10 submitted December of 2006, and that would be four
11 years after the well was drilled. And in August of
12 2007 Chesapeake was still asking about the status,
13 whether or not it was approved or not, which was
14 interesting.

15 Here the hydraulic gradient was estimated
16 at .003 feet per foot or three times ten to the
17 minus three centimeters per second, but the
18 pollution did travel off-site. They did -- a site
19 investigation proposed to do drill borings outside
20 the pit footprint. The first monitoring well was
21 put at the southeast corner, which would be the
22 closest corner of the pit to the Monitoring Well No.
23 7 that detected chlorides. Then they did a
24 monitoring well to the north of that and to the west
25 trying to find the delineation and trying to find

1 the backgrounds and it was kind of left at that.
2 They were waiting for the agency to approve their
3 abatement plan.

4 Q. Thank you, Ms. Martin. I just want to ask
5 you one more question as a point of clarification.
6 This testimony is based on your review of public
7 records; is that right?

8 A. Yes.

9 Q. You didn't do any independent
10 investigation within the sites?

11 A. No, these were all on the agency website.

12 Q. Thank you. That's all I have.

13 CHAIRPERSON BAILEY: Any
14 cross-examination?

15 MR. HISER: No.

16 MS. FOSTER: I do.

17 CROSS-EXAMINATION

18 BY MS. FOSTER

19 Q. Ms. Martin, this is an eight-page exhibit
20 and you claim there are 13 cases of groundwater
21 contamination out of the listed 228 cases?

22 A. What I said was all 222 of these have been
23 described to me as groundwater pollution cases. Of
24 those I restricted my initial -- I started at 2010
25 and worked up until I got tired of downloading

1 files. I spent about 40 hours just looking at all
2 the files to get to September of 2007 just to find
3 out the spud date and what kind of pit it was and
4 whether they had a plastic liner.

5 Then I went back and said okay, let's just
6 narrow it down now to of all those in the universe
7 just after the Rule 50, which was 2002, and those
8 are 66 files that all have groundwater
9 contamination. Then of those, 35 are drilling and
10 the rest are production.

11 Q. Okay.

12 A. Of the 35 drilling, 16 of those -- let's
13 see -- are obvious drilling workover pits. When I
14 say obvious, that means in the records on the
15 computer it said it, no question about it. There
16 were lots of -- there were several closure plans but
17 it was unclear whether it was the reserve pit or the
18 production pit so I ignored those. I went straight
19 for the ones --

20 Q. Right. I'm looking at why it is that you
21 have 228 on here when we are really only talking
22 about 16. Now, you were present for Mr. Arthur's
23 testimony, correct?

24 A. Yes.

25 Q. And he had an exhibit there that he talked

1 about 12 cases that were under investigation on his
2 testimony. I think it was one of his slides. Are
3 you familiar with those?

4 A. Where he was saying that it was 99.98
5 percent something.

6 Q. Well, he had a list of cases that were
7 under investigation. Are any of those duplicates on
8 the list?

9 A. Can you point me to his exhibit? I would
10 have to look at it. He is a NMOGA witness, right?

11 Q. Yes.

12 MR. HISER: This is NMOGA Exhibit 3, Page
13 3 of that exhibit.

14 A. This is Mr. Gantner's testimony?

15 Q. Mr. Arthur's exhibit.

16 MR. HISER: Maybe it's 5.

17 MR. JANTZ: NMOGA 5 looks like Mr. Lane.

18 CHAIRPERSON BAILEY: Exhibit 14.

19 MR. SMITH: What do you think it is?

20 MR. HISER: Commissioner Bailey suggested
21 14.

22 MS. FOSTER: I think it's Exhibit 15, Page
23 4, Table.

24 A. Let's see. Let's look at, I think, AP 61.
25 Didn't I talk about that one? That was the

1 Herradura, so that's on there. The Marbob is on
2 there. Samson Livestock is on there. Pride No. 14,
3 yeah, that was one of the ones I just discussed.
4 And the NEDU is one I discussed. As far as the
5 other ones, of the 16 I didn't actually call out
6 those numbers but I will check that against my list.
7 I did the 81, I did the 94, I did 61. So I did AP
8 61, AP 94 and AP 81, the bottom three.

9 R485, when I looked at the files that's
10 the Chesapeake Williams No. 14 Federal No. 1, it was
11 interesting. I did not consider that to be
12 definitive one way or the other. The note I made to
13 myself was that the agency said the application was
14 not normal but approved it anyway.

15 Q. That was a reserve pit actually.

16 A. I didn't include that.

17 Q. So looking at the ones that you have in
18 common here, let's talk about those. Those are all
19 pre 2009, correct? In fact, the Chesapeake
20 Herradura was 2002 pit construction. The Marbob
21 Scratch date Com 1 was 2005 construction and the
22 Chevron Mark 13 drill pit was 2005 or '6 pit
23 construction?

24 A. Yes.

25 Q. That would have been study in the last OCD

1 hearing, right?

2 A. I was not there. I have no idea.

3 Q. You didn't review the testimony from the
4 last OCD hearing pertaining to these cases?

5 A. I looked at the HELP models but I didn't
6 look at the testimony. My goodness gracious, I have
7 already spent 100 hours so far.

8 Q. All right. So the Chevron Mark 13
9 actually had a 12 mil polyethylene liner; is that
10 right? That's what you testified to.

11 A. Which one?

12 Q. The Chevron Mark 13.

13 A. The AP 81?

14 Q. Yeah.

15 A. Yes, 12 mil polyethylene liner. I'm sorry
16 I didn't mention that, but yes, I was aware of that.

17 Q. Okay. And so the Industry's
18 recommendation -- and you are consistent with the
19 original 2009 Pit Rule in that we are keeping 20 mil
20 liners on all our pits, correct?

21 A. You are keeping them on there? That's
22 what you are required by the rule. Whether or not
23 they are done or not --

24 Q. Our proposal --

25 A. That you are keeping, yes.

1 Q. We are not recommending removal of liners,
2 right?

3 A. Correct. I understand the question now,
4 yes.

5 Q. It's the end of the day. I'm tired. So
6 all of these pits that we have are moving forward,
7 the APDs would have liners, correct? Or the pits
8 would have liners?

9 A. The APDs?

10 Q. The APDs would state that the pits will
11 have liners?

12 A. Instead of saying under Rule 50, yes. It
13 will say under this new rule, yes.

14 Q. Right. Now, you mentioned a couple of
15 times -- you used the word pollution, contamination.
16 Are you familiar with the WQCC, the Water Quality
17 Control Commission of New Mexico?

18 A. I worked with them on the Dairy Rule for a
19 few years. I am familiar with that.

20 Q. So then you would be familiar with what
21 the standard of contamination in the State of New
22 Mexico would be?

23 A. At this point in the day I can't recite it
24 to you.

25 Q. Let me bring that to your attention.

1 A. I would imagine it would be different for
2 different scenarios.

3 Q. Well, the abatement standards and
4 requirements, first of all, do you need to abate the
5 vadose zone in the state of New Mexico for all these
6 wells?

7 A. I did not look at the abatement rule.

8 Q. The TDS concentration of 10,000 milligrams
9 per liter, if the water quality is greater than
10 10,000 milligrams per liter that is not protected
11 water in the state of New Mexico, is it?

12 A. If the background was that. To tell you
13 the truth, I know if it's less than, it is.

14 Q. All right. And if it is less than the
15 10,000, then in order to consider something to be
16 groundwater pollution you have to meet the toxic
17 pollution standards under Section 20.6.2110.1; is
18 that not correct?

19 MR. JANTZ: Objection. Calls for a legal
20 conclusion.

21 MS. FOSTER: This witness is testifying
22 that these are all cases of groundwater
23 contamination and I am just asking her if she knows
24 what the background TDS level is and whether truly
25 it was a legal determination that this was actual

1 contamination. She is making these allegations on
2 the record that there was groundwater contamination
3 and I don't think she has testified to the actual
4 levels that were presented to meet the legal
5 definition of groundwater contamination.

6 CHAIRPERSON BAILEY: Please answer to the
7 best of your ability as a non-lawyer.

8 A. Could you read me the citation again,
9 please?

10 Q. Section 20.6.2.1101 N.M.

11 A. I don't have that in front of me. I don't
12 have a copy of that. Talking about Rule 20?

13 Q. No, talking about Rule 1101 N.M.

14 A. I don't have it in front of me.

15 Q. Okay. And and in addition to the toxic
16 pollutant requirements you also have to meet the
17 standards of 3103; is that not correct?

18 A. 31203 sounds familiar, yes, from the Dairy
19 Rule.

20 Q. So looking at these wells, can you tell me
21 what the level of Benzene was in the Chevron Mark 13
22 Unit drill pit, AP 81? Level of contamination?

23 A. I didn't write it down so I'm assuming it
24 wasn't mentioned. They had remedial goals but I
25 didn't make note of that here. I did make note of

1 the other 16 that had BTEX contamination but I only
2 did these seven for chloride contamination.

3 Q. But you are here testifying as an expert
4 witness saying there's contamination and the only
5 thing that you know is the chloride level at the
6 time of the abatement plan, correct?

7 A. In the soil and in the water as it was
8 presented in the abatement plan or the -- whatever
9 the documentation was on the website, yes.

10 Q. But you are not familiar with the toxicity
11 levels that were under, say, Toluene or Chloroform
12 or any of the other requirements under Rule 1101 for
13 this to be a legal determination of contamination?

14 A. The term contamination was actually words
15 in the abatement plans. It was the words of the
16 operator.

17 Q. It was the word of the consultant that
18 worked --

19 A. For the operator, who I would assume
20 approved the documents before they were submitted.

21 Q. But was this a final legal determination
22 by the OCD, a hearing officer, or was there a fine
23 that was instituted in any of the seven cases you
24 looked at?

25 A. I don't believe that kind of information

1 was uploaded on the website. It was just abatement
2 plans, monitoring reports, correspondence, E-mails,
3 sampling results. Like I said, with the chain of
4 custody and all that. So those were the kinds of
5 things uploaded on the website and that's what I
6 restricted myself to.

7 Q. But again, what I'm trying to get at is
8 you don't know what the background groundwater
9 levels were, if it was greater than 10,000 TDS; in
10 other words if it was protected waters under the
11 Office of the State Engineer that is under the
12 jurisdiction of the OCD.

13 A. Maybe you didn't hear me when I mentioned
14 what the background concentrations were on several
15 of them that were provided in the materials. They
16 were like -- the Ogallala, 167 parts per million
17 chloride, and I know a lot about the Ogallala. It's
18 not going to be 10,000.

19 Q. So that is maybe one area that is
20 protected by the State Engineer. But in all of
21 these you can state this is actual legal
22 contamination because it is less than the 10,000
23 milligrams per liter standard for water and it meets
24 all the toxicity requirements as well as the heavy
25 metal requirements of 3103 in order to meet the

1 legal contamination? What I'm getting at is there's
2 a difference between impacted soils and
3 contamination of groundwater.

4 A. Are you instructing me?

5 Q. No, I'm asking you. Are you familiar with
6 that difference?

7 A. I would think that you are talking about
8 having -- the agency will allow you to pollute the
9 aquifer up to 10,000 parts per million and whether
10 or not that's considered contamination legally or
11 not, you are putting pollution into the groundwater
12 up to a level. But I took the word "contamination"
13 from the documents themselves and I would refer to
14 the authors of those, whether they thought that was
15 a legal contamination or not.

16 Q. So you are just mimicking their words?

17 A. I suppose that's a disrespectful way of
18 saying that I was accurately taking notes from their
19 presentation.

20 Q. Now, looking at -- say, for example, AP
21 77, the Pride Energy well. This was completed in
22 2004 and there was an abatement plan that was
23 ordered. Everything was done here under the current
24 Spill Rule, Rule 29, and the abatement rule, which
25 is Rule 30, correct?

1 A. Correct. That was the sentence that I had
2 spoken that was now removed under your proposed
3 language, which is the trigger to go into the
4 abatement plan, yes. Exactly.

5 Q. So these operators operated under
6 established rules and requirements of the OCD,
7 right?

8 A. If they existed during the same time
9 frame, yes, they did. Whether they obeyed them, I
10 don't know.

11 Q. Looking at Page 2 of your Exhibit 5, if
12 you could go to --

13 A. I have to see it.

14 Q. AP 22 half-way down the page, the first
15 Yates Petroleum, Williams Pit?

16 A. Yes.

17 Q. What kind of pit was that?

18 A. The only thing I could discern is it was
19 1997, so I did not count that as a definitive
20 drilling pit with a liner.

21 Q. All right. So that was a production pit?
22 Would it surprise you?

23 A. It was not definitive or I would have
24 written it down.

25 Q. How about the Dominion Oklahoma Texas

1 Exploration Production Well further down that page?

2 What type of pit is that?

3 A. The Dominion?

4 Q. 270, yeah.

5 A. My cutoff was at September 7, 2000. The
6 last one I looked at -- the oldest one I looked at
7 was the Dominion 8 3RP 272 and that was a well that
8 was drilled before 1995 so I didn't pay any
9 attention to it.

10 Q. Okay, but you included another six pages
11 on the document of things you didn't review that
12 were older than these dates?

13 A. This is the universe from the big universe
14 of groundwater pollution cases like, say, from gas
15 processing plants or pipelines or whatever. The
16 universe that had the designation pit, okay? So
17 there's 22 of those. I cut that out, created a new
18 document, sorted it by chronology and then took from
19 the most current backwards. I actually did count
20 how many, you know, abatement plans per year, just
21 because it was interesting, but I really just
22 focused on the most current until I got tired going
23 backwards in time.

24 Q. So you don't know that the Dominion
25 Oklahoma well was actually a separator and that the

1 depth to groundwater was only 18 feet on that one?

2 I mean --

3 A. Well, of course, like I said, I didn't
4 even open up those files. The last file I opened to
5 see was the 272. So you are asking for one beyond
6 where I investigated, and I thought it was very
7 clear that I opened each and every one of those
8 files and read to determine the date it was drilled,
9 whether or not it had a lined pit and whether or not
10 there was contamination of the groundwater. And I
11 made little notations to myself like going backwards
12 in time, 1999, unlined pit. Unlined separation pit.

13 Q. When you say contamination of groundwater,
14 that is based on a line in a report by a consultant.
15 You didn't actually verify the information to
16 determine what the background water level was or
17 whether there were any other toxins that were truly
18 a legal definition of contamination. You didn't do
19 that, did you?

20 A. I was trying to see if I have that
21 abatement rule.

22 MS. FOSTER: Again, I'm going to object to
23 the exhibit. We can go through. There's 228 cases
24 here and I have notes on most of those in terms of
25 depth to groundwater. Other than the three cases

1 that she brought up, none of the other ones are
2 lined reserve pits. None of them are after 2009
3 that have occurred. I don't know why we have this
4 big huge thing of 228 cases when she just testified
5 that she had only gone through the first page and a
6 half of all of these cases.

7 So, you know, if she would like -- if
8 there could be an exhibit of just the seven that she
9 talked about that are actually relevant to the
10 Commission, if you want to review those more, that
11 would be a much more relevant exhibit instead of all
12 this additional information where she can't
13 substantiate any of the claims because she just
14 testified that she didn't review anything.

15 CHAIRPERSON BAILEY: Do you have any other
16 questions or cross-examination?

17 MS. FOSTER: I do not.

18 CHAIRPERSON BAILEY: Do any of the other
19 attorneys have cross-examination?

20 MR. FORT: I have a couple questions.

21 CROSS-EXAMINATION

22 BY MR. FORT

23 Q. I noticed that in Exhibit 5 several of
24 these have drilling pit in the name of the facility
25 or the name of the well, but is that you that did

1 that or was that in the name of the well itself?

2 A. That was in the -- the agency did that.

3 Q. The agency did that?

4 A. Yes. I myself, when I did my notations to
5 myself, that is not on your exhibit but I have like
6 my little notes to myself. So any time it says pit
7 or drilling pit or workover pit, I did not think
8 that that was a drill pit. Actually, I went and
9 looked at the file to make sure that I understood
10 but all of those delineations were from the agency
11 or whoever typed it into the database.

12 Q. Okay. So which of these are drilling pits
13 other than the ones that are designated drilling
14 pits -- or workover pits, excuse me.

15 A. From the top of the page down, ACO 255,
16 that's like the third one, Unit Petroleum.

17 Q. Okay.

18 A. And AP 100, those two are drill pits. AP
19 95 St. Mary is a drill pit. AP 81, AP 80, AP 79, AP
20 78, AP 77, AP 76 and AP 94, those are all in a row.
21 Then skip two. I think the three RP 21 sounded like
22 it was a blow pit, so in effect that could be a
23 drilling pit but it was not lined. Same for the
24 three RP 20s. The AP 68 was described as a working
25 pit. AP 61, a drill pit. AP 62, drill pit. AP 56,

1 horseshoe pit. The 3RP 406, that was an unlined
2 dehydrator production pit. 1RP 465 was an unlined
3 pit. Didn't say what it was. 1RP 461 is actually
4 now AP 62. 3RP 400 --

5 Q. Okay.

6 A. That was a dehydrator pit.

7 Q. 461 is actually 61 so that's a double
8 entry?

9 A. Yeah, but I didn't count it. I just made
10 a notation that it was now AP 62 and I only counted
11 it as AP 62. The Cimarex, 1RP 431, that was called
12 an open reserve pit. 1RP 485, that was the thing
13 that called it a not normal, approved anyway. It
14 wasn't definitive and I didn't count it. 3RP 394,
15 which is XTO's, that was a blow pit unlined. 3RP
16 395, the Fannie Ward, production pit. The next one,
17 3RP 393 was a separator pit.

18 Q. What was 392?

19 A. 395. I'm getting to 392.

20 Q. Sorry.

21 A. 392 was a production tank pit. The 3RP
22 415 which is XTO, that was a dehydrator pit. 3RP
23 491, they called it a disposal pit, so again, not
24 clear so I didn't count it. 3RP 389, that was a
25 dehydrator, ten feet to groundwater in sand, by the

1 way. The 3RP 389 and 3RP 387 are the same. For
2 some reason they have two different numbers but you
3 can see the well number is the same. Actually, in
4 the total number I did count that, but as the number
5 of drill pits or something it didn't affect my
6 counting.

7 Q. Okay.

8 A. And for 3RP 347 to 3RP 337, the Williams
9 Four Corners, they had the same documentation. I
10 didn't consider them a drilling pit. I just let it
11 go. I was kind of looking for interesting things
12 after a while, something different. The 1RP, when
13 we get to the Meteor Developments, the Bobby Lewis
14 Ranch, by the way, those are as a duplicate entry
15 again. That's A 1973 battery pit.

16 3RP 385, the Johnson was a production tank
17 pit, less than 15 feet to groundwater, BTEX in the
18 groundwater. 3RP 384, a separator pit, less than
19 seven feet to groundwater. The 3RP 382, a McCoy,
20 that's a blow pit, less than six feet to
21 groundwater. 3RP 379 BP, that's a separator pit,
22 less than four feet to groundwater, 1,000 parts per
23 million BTEX in the groundwater. AP 25, which is
24 the beginning of the Yates, the Scripp pit, that was
25 a battery pit. The Inex pit and the Lattion pit and

1 the Williams pit, those were all tank batteries and
2 they were like 1997 or before the year 2000. Those
3 were obviously tank battery pits.

4 Now to 3RP 381, the BP Exploration well.
5 That was a blow pit and a separator pit but it was
6 drilled before 1992. 3RP 380, I don't have any
7 information on that actually. 3RP 378 -- you can
8 tell I was getting tired -- separator pit. And from
9 then on the Manana Gas -- by the way, this was like
10 a good, long line of production pits. The Manana
11 Gas -- where is that one? I just saw it.

12 MS. FOSTER: Half-way down the page.

13 A. Thank you. I thought I was losing my
14 mind. That was less than 16 feet to groundwater,
15 30,000 BTEX but it was not obvious what the pit was.
16 Okay. When I say not obvious, a lot of these
17 abatement plans, they don't say. They just say it's
18 a pit. Now, some of them, there was a whole series
19 of closed like amnesty for closing unlined pits, so
20 I guess they didn't really have to say but I just
21 tried to pick the ones where they absolutely said
22 there was a plastic pit and there was a liner.
23 There was quite a few that were not good.

24 The 3RP 132, which is XTO, blow pit, eight
25 feet to groundwater. 3RP 120 also XTO, pre 1992

1 construction. That was a blow pit. 3RP 374, El
2 Paso Field Services, constructed the drill before
3 1995. It was a line drip pit.

4 Q. A what? I'm sorry.

5 A. A line drip pit. 3RP 269 Koch, drilled
6 before 1995, a separator pit. 3RP 264 Yates,
7 unlined separator pit drilled before 1998. When I
8 say that, I think whatever date -- sometimes they
9 would say the drill date and I would say the drill
10 date but sometimes it was just an activity like
11 sampling and they didn't say when the well was
12 drilled but it was obviously before the sampling
13 test. Could have been God knows how old.

14 The last two I did, 3RP 308 Williams Four
15 Corners, it was drilled before 1999. It was an
16 unlined pit, part of the unlined pit closure
17 program. 3RP 272 Dominion, it was drilled before
18 1995, and I said forget about it, let's do something
19 else.

20 Q. Now, the unlined pit for Williams Four
21 Corners 3RP 308, you said it was an unlined pit.
22 Did you treat that as a drill pit?

23 A. If it did not definitively say drill pit I
24 did not count it as a drill pit.

25 Q. So the 16 that you mentioned, those are

1 definitively drill pits?

2 A. Right.

3 Q. Based on the record?

4 A. From what I could read on the stuff
5 uploaded to the internet. I didn't go to the agency
6 and look into the files or whatever. Whatever was
7 on the internet.

8 Q. So all you know was about the 16?

9 A. Right, which is the smaller. I didn't go
10 back through the other -- what was it? We just did
11 what, 65? And there's 222 total. I have no idea
12 what those are and it was not important to me. I
13 kept it whole so you know where it came from. Does
14 that make sense?

15 Q. Yes.

16 A. Okay.

17 Q. Now, I noticed that some of these newer
18 pits, AP 100 and ACO 255, Unit Petroleum Company, 3Q
19 drilling pit, are those one and the same actually?
20 The well name appears to be the same.

21 A. There were several things that were
22 duplicates, yes. Sometimes it's obvious when you
23 look at the table and sometimes it was when you
24 pulled up the -- you know, there's a -- you fill out
25 the little questionnaire on the website. Put the AP

1 number or the 3RP number and you hit continue. It
2 will have a document and you open the document up
3 and it will say, "Go see AP 62," or something, or
4 you look at it and it's exactly the same information
5 as something you just read. There were some
6 duplicates. And I think we put them on the record,
7 the ones that were obvious.

8 Q. So did you treat AP 100 and ACO 255, the
9 two we were talking about, did you treat them as one
10 or treat them as two in the twelve?

11 A. I don't have -- tell me where the AP 100
12 is.

13 Q. It's the second one --

14 A. I didn't count that one.

15 Q. -- of the 12. Did you count 255?

16 A. Yes.

17 Q. Okay.

18 A. You want me to tell you the ones I
19 counted?

20 Q. Yes.

21 A. Okay. I've got little checkmarks. As we
22 were going through I noticed I didn't have
23 checkmarks on all of the ones, so this is still not
24 going to be accurate, but for sure that I have
25 checkmarks, I did the ACO 255, AP 81, 80, 79, 78,

1 77, 76, AP 94. Skip a couple. The 3RP 420, AP 68,
2 AP 61, AP 56. Then skip about four, 1RP 431, then
3 3RP 394, which is just a couple down. And that's
4 16. And I think in there there was one -- oh, the
5 Samson Resources should have been, but I think that
6 was where there was a duplicate.

7 Q. Right.

8 A. So I don't think I counted it twice.

9 Q. Okay. So those are the 16 and you looked
10 at the seven which are part of that 16; is that
11 correct?

12 A. I looked at all 16 pretty carefully but
13 then for the purposes of this rebuttal I went back
14 and spent another eight hours on just seven of them
15 trying to pull out consistent information. That's
16 what I did.

17 Q. Okay. I'm very curious. I'm assuming
18 that the very first one is not applicable because
19 it's a tank battery.

20 A. Yes.

21 Q. The next one, the very first one you
22 included in the 16 is ACO 255, and why did you not
23 include that in your further research? Because
24 that's the latest one.

25 A. I restricted to ones where it definitively

1 said in the closure documents that it was lined with
2 plastic, preferably 20 mil. One of them was 12.
3 That was the criteria, and it was a drilling pit.
4 Like I said, not all of these abatement plans were
5 very clear of what they were doing.

6 Q. In ACO 255, what was the drilling date?

7 A. I didn't put it. I didn't --

8 Q. Okay.

9 A. I just put drilling pit but I didn't put
10 it on my notes here. Sorry. But it obviously
11 wasn't -- it was the third one I looked at. I
12 hadn't developed the system for documentation yet.
13 Later I got much more rigorous in documenting.

14 Q. Okay. Let's go through these 16 because I
15 want you to answer one question for me, if you can.

16 A. Sure.

17 Q. Whether or not the release occurred during
18 the operational phase or the post-closure.

19 A. Right, and, you know, the ones that I
20 tried to quote from the closure documents, where it
21 was supposed that it happened during either the
22 drilling phase or in the drying out period.

23 Q. So both of those would be post-closure?

24 A. Not necessarily. That's why I gave you
25 the well completion date and then when they started

1 to remove solids if it was known. Sometimes that
2 was two years.

3 Q. But if it's during the drying phase you
4 are letting the liquid dry out, are you not? You're
5 going to leave the solids there and then you may
6 start doing something with the solids once they're
7 dried out.

8 That's my point. If it's operational
9 during the drilling phase, that's one thing. We may
10 have a breach of a liner. But if you are letting it
11 dry out, you still have liquids in there at some
12 point, and it becomes dry and then at some point
13 you're going to come back in and do the closure, but
14 my question really relates to whether or not this is
15 pre-closure or post-closure. Maybe that's a better
16 way of saying it.

17 A. To me what it illustrates is even though
18 the majority of the attention of the HELP model, the
19 Multimed during this hearing has been focusing on a
20 dry burrito or tostada closure, that in effect,
21 those closures are occurring either right next to
22 drilling pits or on top of the drilling pits that
23 could have leaked voraciously during the one or two
24 months that they were in operation, and that there
25 could be significant salt concentration in the

1 subsurface and pollution of the groundwater. And
2 that we have been mesmerized by the 100,000 years to
3 contamination and forgetting that the groundwater
4 could be totally contaminated just during the use of
5 the drilling pit.

6 Also I wanted to emphasize that a lot of
7 times there were several years between when the pit
8 was supposed closed according to the rule, such as
9 six months, before there was even a form submitted.
10 And then years after that actually the source
11 material was removed and years after that the
12 contamination was like a pump and treat type of
13 thing.

14 And that's the value of this review, is
15 that to put our minds back on the fact that these
16 temporary pits can cause significant pollution; that
17 closure occurring on top of that pollution without
18 doing any subsurface sampling -- for example, like
19 maybe the multi-well pit, if the leak detection
20 system didn't detect the leak there would be no soil
21 samples at all even if the pit had been in use for
22 ten years.

23 Q. Do you know when they have the multi-well
24 fluid management pit when they detect a leak they
25 have to fix it?

1 A. If they detect it. I talked about the
2 fact that you don't have prescriptive language to
3 ensure the collection and transportation of that
4 leak to an observation port. It only says that a
5 leak detection system could be used, which could be
6 a visual walk-around. See what I'm saying? As
7 compared to the permanent pit where there is a very
8 specific system prescribed.

9 Q. Okay. So you would say that a leak
10 detection system, since we have to know, may or may
11 not include an observation port?

12 A. Well, it could include engineering
13 controls or management controls or both, and I would
14 hope it included both, such as a mass balance on the
15 lagoon, especially the big ones. Leak detection,
16 someone having to go out and look at an observation
17 port, maybe doing some dye or tracer study making
18 sure that a leak could actually be translated all
19 the way across the width or the length of the bigger
20 pits, and that the underlying liner, which is not
21 required by the multi-well management pit, that you
22 may have a leak but only 10 percent of the leak get
23 to the observation port. Did you collect 100
24 percent of the leak and capture it, and there's no
25 requirement for that.

1 Q. If you have a secondary liner?

2 A. There's no requirement for secondary liner
3 on the multi-well.

4 Q. Are you sure? Look under leak detection.

5 A. Okay. Let's go there. Because we talked
6 about that, whether or not it was obvious.
7 Multi-well. This would be under Construction,
8 19.15.17.11 Paragraph J, Subparagraph 9. It says,
9 "The operator shall design the leak detection system
10 to adequately detect any leak from the primary
11 liner." And my notation to myself, it does not
12 require two plastic liners. Because when you look
13 in the permanent pit language, it very clearly
14 requires two plastic liners with a high permeable
15 zone in between, and you did not replicate that
16 requirement under multi-well pits. I'm sorry, it's
17 NMOGA Exhibit 1, Attachment A, Page 19 towards the
18 bottom.

19 Q. I'm not picking it up. It does talk about
20 having a leak detection system from a primary liner
21 so the implication is you have a secondary liner.

22 A. But the system could be mass balanced. So
23 let's say you have your inputs and outputs of the
24 lagoon. You consider the rainfall and evaporation,
25 the difference between inputs and outputs could be

1 considered to be seepage or leakage from the pit and
2 that could be a detection system. It doesn't
3 specify that it has to be the kind of leak detection
4 system that is absolutely prescribed for permanent
5 pits.

6 Q. Okay. So you would be happy with just a
7 secondary liner? Because what you are telling us --

8 A. I would be encouraged.

9 Q. What you want is a better definition.
10 That's all you said.

11 A. Well, I would be encouraged. If there was
12 a better prescriptive language, absolutely.

13 Q. Now, from those 16 you can't tell me -- on
14 the ones you can tell me, they are not post-closure,
15 the leaks. They are operational. I understand what
16 you are saying about leaks. Now, how many wells
17 were spudded during this period of time that you
18 looked at? Do you know?

19 A. I didn't look but I think Mary Ellen
20 testified about that.

21 Q. Are we talking 10,000, 20,000?

22 A. I didn't look. I'm not going to hazard a
23 guess.

24 Q. But based on the information you have, you
25 only have pre-closure leaks that you're aware of?

1 A. Well --

2 Q. And specify which one is not a pre-closure
3 leak.

4 A. Are you talking about closure, removing
5 the source?

6 Q. I'm talking about closing the -- okay. In
7 terms of if you have a pre-closure -- talking about
8 closing the pit itself or removing it in the case
9 where you have an abatement, yes.

10 A. Because I would think the chronology is
11 your drilling maybe takes a month. The pit isn't
12 actively used, and after that there's a closure
13 date? Is that what you mean?

14 MR. JANTZ: I object to this line of
15 questioning. Maybe if Mr. Fort defined his terms,
16 what he means by closure, Ms. Martin would be better
17 able to answer the question.

18 CHAIRPERSON BAILEY: Can you do that?

19 MR. FORT: Yes, I can.

20 Q. Closure is when you are no longer using
21 the reserve pit for operations; that you have dried
22 it out and you have started to either remove it and
23 take it to an off-site landfill that's approved by
24 OCD or that you are going to close it on-site and
25 cover it with the four foot of topsoil.

1 A. Okay. I get that. That's your definition
2 of closure. Please ask me the question again.

3 Q. The question is, of these 16, all the of
4 these are what I would call a pre-closure leak.

5 A. No.

6 Q. Which one is not?

7 A. Of the ones that I talked about the seven,
8 I think all of them were pre-closure plus some of
9 the solids were still there. They hadn't made --
10 well, in the chronology provided in the file on the
11 internet, okay? That's the limitation of my
12 knowledge --

13 Q. That's our limitation as well.

14 A. Right. But they usually say when they
15 dried out the solids, when they removed it if it's
16 known. And I thought I testified to that. But some
17 of the ones I just testified about, the seven that I
18 talked about, like, for example, the one year of
19 drying out period, it rained really bad and there
20 was four feet of water in the pit, so I would say in
21 that case there was probably more seepage.

22 If the original seepage was because of a
23 liner failure, it's possible the four feet captured
24 that liner failure, but I didn't really segregate
25 whether it was just during the one month that was in

1 operation or through the entire. At some point
2 during the lifetime of that pit, the pollution was
3 established in the subsurface and in the
4 groundwater. Those were all I --

5 Q. So you really didn't care about
6 operational or drying out or post-closure?

7 A. When it was available I noticed the dates
8 and I found those instructional. Because the rule
9 requires that you have to close it pretty quickly,
10 but the ones where there was pollution, they didn't
11 close them really quickly.

12 Q. That's part of the problem about prior to
13 2004.

14 A. Prior to what?

15 Q. These pits being closed under the old
16 rule, okay?

17 A. Well, I don't know. No question? Just a
18 statement?

19 Q. Just a statement.

20 A. Okay, I'll be quiet.

21 Q. I have no further questions.

22 CHAIRPERSON BAILEY: Mr. Dangler? Ms.
23 Gerholt? Dr. Neeper?

24 MS. GERHOLT: No questions.

25 MR. NEEPER: No questions.

1 MR. DANGLER: No questions.

2 CHAIRPERSON BAILEY: Do you have rebuttal
3 to those specific cross-examinations?

4 MR. JANTZ: No redirect.

5 CHAIRPERSON BAILEY: Okay. We are back to
6 the question --

7 THE WITNESS: Madam Chair?

8 MR. JANTZ: I think the witness needs a
9 break.

10 CHAIRPERSON BAILEY: Let's take ten and be
11 back at ten till 3:00.

12 (Note: The hearing stood in recess at
13 2:40 to 2:50.)

14 CHAIRPERSON BAILEY: Would you please put
15 the spreadsheet on the screen? Thank you. Back to
16 your question, Mr. Bloom.

17 COMMISSIONER BLOOM: Actually, I think
18 this question --

19 THE WITNESS: May I make a comment? In my
20 enthusiasm I forgot to mention that I have a
21 printout on all 66 of the cases. So if you wanted
22 to ask a question about one of them, I do have that
23 information here and I know Mr. Fort had asked
24 something, and I forgot. They were out of sight,
25 out of mind, but I have printouts from all of the 66

1 cases. If you have a question I will try to answer.

2 COMMISSIONER BLOOM: Thank you,
3 Ms. Martin. Just to your left of the testimony
4 here, you went through them a little fast. I was
5 wondering AP 78, Pride Energy, what county was that
6 located in?

7 THE WITNESS: I think those were all in
8 Lea County.

9 COMMISSIONER BLOOM: I believe most of
10 these were in the Southeast. Did you find any in
11 the Northwest?

12 THE WITNESS: Of the seven I presented,
13 unfortunately, they were all in the Southeast. I
14 did not go and do some for the Northwest. I'm
15 working at .75 cents an hour right now, so I just
16 stopped. Other people may be familiar with the
17 names and know that better than I.

18 COMMISSIONER BLOOM: You provided us with
19 a number of summaries. Could those be made
20 available to us to review?

21 THE WITNESS: Sure.

22 COMMISSIONER BLOOM: That would be
23 helpful. So back to my original question. Were
24 there any post Rule 17 leaks, pit liner leaks that
25 you are aware of?

1 THE WITNESS: As you can see on the table,
2 the last entry was in 2010, right? The Apache tank
3 battery. That was actually a 1949 pit that was
4 being closed. Doesn't have anything to do with
5 anything. So I think the only 2009 were the
6 effective date -- July. So to answer your question,
7 after the effective date of the Pit Rule, there was
8 nothing on this list. Whether this list is all
9 encompassing, I have no idea. That finite list.

10 MR. CARR: When you say this list, are you
11 referring to your exhibit?

12 COMMISSIONER BLOOM: Exhibit 5?

13 THE WITNESS: Exhibit 5, which was a
14 subset of a larger exhibit that you guys referred
15 to.

16 MR. CARR: I didn't know what list you
17 were talking about.

18 THE WITNESS: I agree.

19 COMMISSIONER BLOOM: So then I think I
20 will leave that there with respect to pits. And
21 would you describe again what happens with liners in
22 a situation where you have more weight on top of
23 them? We talked about the multi-well fluid
24 management pits. We heard that the typical
25 multi-well fluid management pit could have about 40

1 acre feet of water in them. What happens to liner
2 performance in that sort of situation?

3 THE WITNESS: Well, ten acre feet is about
4 3 million gallons, so four times that, 12 million
5 gallons. It depends how they do that. If they get
6 that capacity in depth, like have it maybe 18 feet
7 deep. If they are trying to conserve water they are
8 probably going to reduce the surface area exposure
9 and go for depth, depending on how they do that.

10 COMMISSIONER BLOOM: Loss through
11 evaporation?

12 THE WITNESS: Right. Loss through
13 evaporation if they are holding it to be used, which
14 was the way it was described as one of the uses.
15 But the height, the maximum height of the liquid is
16 the driving force, so if you had a wider surface
17 area and shallower, you would have less driving
18 force to the liner but you would have more liner
19 material that was exposed.

20 A lot of seepage rates are given in
21 gallons per acre per day. The permeability times
22 the hydraulic gradient gives you the seepage rate
23 and that's in gallons per acre per day so you
24 multiply it by acres, which is the surface area, and
25 it's already incorporated in the depth. So the

1 bigger, you have, obviously, more possibilities for
2 downward migration. The bigger surface area, sorry.

3 COMMISSIONER BLOOM: No further questions.
4 Thank you.

5 CHAIRPERSON BAILEY: Commissioner Balch?

6 DR. BALCH: I'm going to start off on
7 Commissioner Bloom's question about -- I think you
8 said that deeper pits, as you call them, can
9 increase punctures in the liner?

10 THE WITNESS: Well, it increases the
11 weight on the liner so if there's a sharp thing
12 underneath it I suppose you are right, yeah. I
13 could put -- if there was already a weakness in the
14 liner -- there's a lot of liner failure studies on
15 plastic liners where during construction a heavy
16 object had fallen like a big, heavy wrench and then
17 the impoundment had been used.

18 Dr. Daniel Smith did some studies where he
19 actually went and drained 13 lagoons to look at what
20 happened to the liners, and some of them, actually
21 the impression of the wrench had been pushed like an
22 impression. Didn't poke all the way out but it was
23 pressed into the liner. So some of those kinds of
24 things can happen, too. But yes. Increased depth
25 is increased pounds per square inch.

1 DR. BALCH: So this is mostly in the
2 context of the multi-well fluid management pit which
3 presumably has more than just the primary liner
4 system to protect it. So if there was a leak like
5 that, it would be detected if there was an
6 appropriate detection system in place: Secondary
7 liner, catch basins.

8 THE WITNESS: Yeah, we talked about it.
9 It's not obvious in the rule, right. So if there
10 was a secondary liner and it was capable of
11 capturing that through the duration of the use. And
12 then, like I said before, there's did you capture 10
13 percent of the leak or 100 percent of the leak? So
14 it's the idea of leak capture, not just leak
15 detection.

16 DR. BALCH: So from your experience with
17 agricultural, is it possible to design a pretty much
18 foolproof liner detection systems?

19 THE WITNESS: My experience in 15 years
20 with the agricultural industry is they are even more
21 resistant to putting in plastic liners than the oil
22 and gas industry. They share between a compacted
23 clay and plastic, but they are behind.

24 DR. BALCH: Usually a single liner system,
25 something like that?

1 THE WITNESS: Yes, if you are lucky.

2 Depends on the size and depends on the state.

3 DR. BALCH: Your experience is primarily
4 in Oklahoma but you testified that you also worked
5 in 21 other states or 22 other states?

6 THE WITNESS: Right.

7 DR. BALCH: Give me an impression on how
8 long the agricultural liquid pit would typically be
9 in operation for.

10 THE WITNESS: Like for a large scale
11 dairy, 20 years or more.

12 DR. BALCH: So they don't move around
13 every couple years, they just have one pit --

14 THE WITNESS: Correct.

15 DR. BALCH: -- for the entire operation.
16 I guess I am still asking you about agricultural
17 pits because I'm curious. You gave a part of an
18 answer in how they were designed. You said clay or
19 plastic liner, usually single without leak detection
20 or with leak detection?

21 THE WITNESS: Correct.

22 DR. BALCH: What would be a typical design
23 in New Mexico, for example? I know your experience
24 is primarily in Oklahoma.

25 THE WITNESS: Right. Actually, my

1 experience started in Oklahoma for CAFOs, but I have
2 actually spent since 2004 working on CAFOs in
3 Indiana and I spent -- I looked at 50 facilities in
4 Colorado, looked at the four facilities of the
5 largest facility in the United States, 70 mile long
6 facility. I looked at 16 -- anyway, more
7 information than you need to know.

8 Depending on the state, some states
9 require monitoring wells to be installed when you
10 construct the lagoon. So there's monitoring from
11 the get-go. Others have a trigger that if there's a
12 leak or spill that monitoring wells could be
13 required, and this is written into their NPDS permit
14 or their water quality permit.

15 In New Mexico for agricultural it's a
16 groundwater permit for dairies, for example. I
17 think we wanted monitoring wells to be included but
18 it's an option for the permit writer. Does that
19 answer your question? So that's the leak detection
20 is monitoring wells rather than a double-lined
21 system with a highly permeable sandwich.

22 DR. BALCH: That answered the question.

23 THE WITNESS: I did?

24 DR. BALCH: I think you did. I think you
25 were already asked if you tried to incorporate some

1 of your questions about Mr. Mullins' Multimed
2 modeling and you have some criticisms of some of the
3 values and you went into it. I think you were asked
4 if you tried to do the simulations yourself using
5 the HELP of Multimed models and you said you hadn't
6 used the software, but did you do any calculations
7 or just use professional knowledge to come up with
8 the conclusion that results would be different?

9 THE WITNESS: What I did try to do is read
10 the manuals very clearly to understand what
11 equations were used and where the parameters came
12 from. Were they default parameters or input
13 parameters, so that I understood. And then all I
14 did was address whether or not some of those default
15 parameters made sense when you looked at the
16 regulatory language or made sense like if you make
17 an assumption that you have four feet available for
18 evaporating moisture, but that's not the case
19 everywhere in New Mexico. Then that's not really
20 fairly representing what happens in the field.

21 I looked for those kinds of things and
22 then I doublechecked on the equations to make sure
23 that they had some sort of relevance, how they were
24 used in the actual computation of the model.

25 DR. BALCH: I guess I thought I heard you

1 conclude that you thought that Mr. Mullins' model
2 was overly conservative.

3 THE WITNESS: No. Overly conservative?

4 DR. BALCH: Well, misrepresented the
5 amount of possible infiltration or chlorides
6 transport, under-represented.

7 THE WITNESS: Yes.

8 DR. BALCH: Did you make any calculations
9 to back up that assertion? Back of the envelope or
10 modeling?

11 THE WITNESS: I looked at the permeability
12 equation that I mentioned on Page 74, 75 and how
13 that would be affected by the change of
14 permeability. You have to understand, if you say no
15 liquid gets into the closure area at all, obviously
16 no liquid can leave it because there's no input.
17 And that's what one of the assumptions was, no
18 rainfall ever would reach below four feet.

19 So, you know, you could have any kind of
20 permeability and you would get no flow because there
21 was no input, and I thought that was not reflective
22 of what goes on in the field as far as the types of
23 subsurface materials, et cetera.

24 DR. BALCH: Well, I guess asking a little
25 bit more about that assumption of infiltration from

1 rainfall events, for example, in New Mexico. What
2 is the primary source of water table recharge? I
3 mean, if I think about the Ogallala, I think about
4 water coming off the Rockies and kind of going
5 underneath rather than coming in from above as
6 rainfall.

7 THE WITNESS: Actually, like in Oklahoma,
8 the Ogallala is recharged at Beaver River where the
9 aquifer is exposed at the surface.

10 DR. BALCH: But it's still runoff from --
11 I don't know where that source water --

12 THE WITNESS: The little bit of water that
13 Colorado and Texas allows to enter the state of
14 Oklahoma. So mostly it's rainfall, which is why we
15 have a significant drop and why everyone has gone
16 dry farming. Because we had a 50 to 100-foot drop
17 in the Ogallala in the panhandle and that's just not
18 sustainable.

19 DR. BALCH: I think that's all my
20 questions for you. Thank you.

21 CHAIRPERSON BAILEY: I have some.
22 Throughout your testimony you did not distinguish
23 plastic liners and we all know with your expertise
24 that there's a world of difference between plastic
25 liners that are six or eight mil thickness and 20

1 mil string reinforced L -- whatever it is -- DPE or
2 equivalent. The list of wells on your spreadsheet,
3 I paid close attention when you were talking about
4 wells that had been -- or pits that had been
5 constructed under Rule 50 as opposed to pits that
6 had been constructed under Rule 17. Are you aware
7 of the differences in the plastic requirements for
8 liners between drilling pits constructed under 17
9 and those constructed under Rule 50?

10 THE WITNESS: Yes, I'm aware of the
11 difference. In Rule 50, the language is to pick a
12 liner that was adequate for the situation, so it
13 could be clay or plastic. With respect to whether
14 or not I delineated in my testimony whether it was
15 LLDPE or HDPE or PVC and what thickness, I could
16 only tell you what was presented in the information
17 on the internet, so that would maybe direct the
18 industry next time they do a closure plan that they
19 be more specific. But when it was definitively said
20 like 12 mil or 20 mil, then I brought that out.

21 CHAIRPERSON BAILEY: Right.

22 THE WITNESS: A lot of times it just said
23 plastic, okay?

24 CHAIRPERSON BAILEY: Which could have been
25 six, eight or ten mil plastic?

1 THE WITNESS: No telling.

2 CHAIRPERSON BAILEY: As was testified to
3 in the original pit rules.

4 THE WITNESS: There's no telling, yes.

5 CHAIRPERSON BAILEY: So the question is
6 which of these wells that are on your list have
7 drilling pits that were constructed under Rule 17,
8 not under Rule 50?

9 THE WITNESS: Right. And I think I
10 answered that already. None of them.

11 CHAIRPERSON BAILEY: Which is what
12 Mr. Mullins had to say.

13 THE WITNESS: By the nature -- that wasn't
14 what I was looking for. That is what everybody else
15 was looking for. What I was looking for was
16 groundwater contamination with liners, period.
17 There were 20 mil liners used in the past, even
18 though they weren't required by law, and there was
19 pollution, so I needed to bring that up because it
20 seemed like we were always looking at the dry
21 burrito and not talking about the groundwater
22 contamination source which was the drilling pit
23 itself during operation.

24 CHAIRPERSON BAILEY: And the specific
25 requirements for the pit liners are not proposed to

1 be changed, are they, under these applications?

2 THE WITNESS: For the temporary pits,
3 right?

4 CHAIRPERSON BAILEY: Yes. To retain the
5 20 mil string reinforced LLDPE or equivalent.

6 THE WITNESS: Right.

7 CHAIRPERSON BAILEY: I just want to have
8 that very clear.

9 THE WITNESS: Yes.

10 CHAIRPERSON BAILEY: I have heard of
11 companies who are developing above-ground tanks that
12 are large enough to be used as multi-well fluid
13 management pits. So there would be no digging out
14 of earthen materials. They would be constructed on
15 top of the surface. Have you seen any of those
16 brochures?

17 THE WITNESS: I know in the agricultural
18 industry there are above-grade silos that can handle
19 up to maybe one to two million gallons of storage.
20 Of course, those are glass-lined, fancy-schmancy.
21 So I would not be surprised that there are companies
22 out there proposing that.

23 CHAIRPERSON BAILEY: Do you have any
24 comments concerning those above-ground tanks?

25 THE WITNESS: The construction materials,

1 maybe cathodic protection for corrosion and maybe
2 some kind of secondary containment and that would be
3 the way to go with that. At least you can see it.

4 CHAIRPERSON BAILEY: Given evaporation and
5 high duration of clays and drilling muds, you
6 several times have discussed calculations of water
7 balance to determine leaks from temporary pits. Is
8 that a practical way of determining smaller volumes
9 of fluid loss?

10 THE WITNESS: Well, for example, in
11 Colorado for agricultural impoundments, that's
12 required. They have to do a mass balance in order
13 to prove there was no seepage from the plastic
14 liner. And you're right, for small volumes you
15 would have to have a very good metering system, very
16 good documentation, have on-site evaporation
17 records, not just use the local airport or the local
18 lake pan evaporation data, map, have your own
19 rainfall data to narrow it down. But you would
20 probably restrict it to some fraction of the pit.

21 And then what I found, because I looked at
22 50 of these in Colorado, and what I found is the
23 really critical area is to have a depth to volume
24 chart created by the engineer after construction
25 where you know for each incremental foot in the

1 lagoon what is that volume of storage. So if you
2 had a depth marker and you showed a two-inch drop in
3 fluid level when everything should be the same --
4 say it happened in one day, so
5 evaporation/precipitation is not necessary to
6 count -- you could actually see it in the
7 demarcation with your binoculars that there was a
8 two-inch thing that you could actually calculate
9 that that might be a seepage loss.

10 But if it was a quarter inch or if there
11 was wave action, yes, in a larger lagoon your
12 accuracy would be out the window. But it is a good
13 starting point.

14 CHAIRPERSON BAILEY: That's all I have.
15 Do you have any redirect?

16 MR. JANTZ: No redirect, Madam Chair.

17 CHAIRPERSON BAILEY: All right. Your
18 witness may be excused. The next rebuttal witness
19 would be -- Dr. Neeper, you had your turn?
20 Dr. Jantz? We come to Dr. Buchanan.

21 MR. CARR: We prefer to have Dr. Buchanan
22 as the last witness.

23 CHAIRPERSON BAILEY: Who is the next one?

24 MS. FOSTER: Mr. Mullins.

25 CHAIRPERSON BAILEY: He would be rebuttal?

1 MS. FOSTER: Well, yes.

2 CHAIRPERSON BAILEY: If you would like to
3 put Mr. Mullins on, why don't we allow them time to
4 --

5 MS. FOSTER: Actually, can we do this
6 while we are waiting?

7 CHAIRPERSON BAILEY: Please go ahead.

8 MS. FOSTER: Madam Chair, this morning in
9 the opening comments that we made to open this case,
10 there was a statement that was made that the IPANM
11 Case No. 14785 initially had an application
12 concerning Otero Mesa in Rule 39. That was the
13 initial application made by IPANM. I think back in
14 October. That was part of our petition. By order
15 of this Commission dated January 19th of 2012, Otero
16 Mesa is severed from the case. Yet this morning
17 there was a statement made that that issue was still
18 pertinent.

19 At this time I would make an application
20 to the Court to dismiss IPANM's petition regarding
21 Rule 39. We do not intend at this point to continue
22 litigation on Rule 39, and I have spoken to
23 Ms. Calman, who has been there through this entire
24 hearing expecting to discuss Rule 39, so I wanted to
25 put the Court on notice that we are dismissing that

1 part of our petition at this time. So, therefore,
2 there is no more severed case and, therefore, we are
3 wholly under Case No. 14785 for this matter in this
4 proceeding at this time. I have a copy of the order
5 if you would like to see that as well.

6 CHAIRPERSON BAILEY: I recall. Any
7 discussion?

8 MR. SMITH: You might ask Ms. Foster to
9 draw up an order or give it to Florene to finalize
10 dismissing that portion of the petition.

11 CHAIRPERSON BAILEY: Would you do so?

12 MS. FOSTER: Yes, I will.

13 CHAIRPERSON BAILEY: Thank you.
14 Mr. Mullins, you are still under oath. You will
15 remain under oath for your entire life.

16 TOM MULLINS
17 after having been previously sworn under oath,
18 testified as follows:

19 DIRECT EXAMINATION

20 BY MS. FOSTER

21 Q. Mr. Mullins, were you present for
22 Ms. Martin's testimony today?

23 A. Yes, I was.

24 Q. She testified at length to what was
25 eventually admitted as OGAP Exhibit No. 5. Are you

1 familiar with that exhibit?

2 A. Yes, I am.

3 Q. And that exhibit pertains to 228 cases of
4 pits that are on the OCD website. Are you familiar
5 with that list of pits in New Mexico?

6 A. Yes, I'm familiar with the list. I have
7 228 just because that's the line numbers. I believe
8 there's been 224 or 222 listed because some of them
9 are duplicates.

10 Q. Now, in your original testimony you
11 testified to a number 421 cases of contamination. I
12 believe that was one of the reasons for Ms. Martin's
13 rebuttal testimony. And I believe you stated there
14 was no cases of groundwater contamination from a
15 drilling and reserve pit. Would you like to clarify
16 that as it pertains to Exhibit No. 5, OGAP Exhibit
17 No. 5?

18 A. Yes. Thank you. Originally I looked at a
19 number of -- industry committee members. We looked
20 at roughly 760 cases of alleged groundwater
21 contamination. Of those, 421 cases were listed as
22 having contaminated groundwater. And those related
23 to entirely, every single one of those, to an
24 earthen dehydrator, separator, drip pit, blow pit in
25 those instances. None of those 421 dealt with a

1 workover or a drilling reserve pit and were lined in
2 any way.

3 Q. Now, for clarification, if you could
4 please describe to the Commission what do you mean
5 by a blow pit?

6 A. We have had a few regulations regarding
7 pits of all types over the years. A blow pit, a
8 separator pit or a dehydrator pit was an earthen
9 production usage pit. It received water as well as
10 hydrocarbons on a very frequent basis for a long
11 period of time, sometimes 40 years or 50 years or
12 more, which is a different usage of the pit than
13 what we're talking about principally here at this
14 hearing today.

15 It's under a different sort of hydraulic
16 head situation. It's being continually refreshed,
17 and the incidents of those contamination cases,
18 there were approximately 65,000 earthen production
19 pits up in Northwest New Mexico, and when you look
20 at the listing of those closures that occurred under
21 the various regulations, we cycle those down to the
22 421 cases where soil had been contaminated. And
23 from that list you have a smaller number where
24 groundwater had been contaminated.

25 In all of the instances that I'm aware of

1 groundwater was typically less than ten feet or less
2 than twelve feet in-depth. There are a few
3 instances where it was 40 feet but those were all
4 long-term production pit usage. So that differs
5 from Exhibit 5, although the cases that are
6 referenced in Exhibit 5 OGAP include a large number
7 of the cases that were reviewed previously in 2007
8 and 2009.

9 Q. So of the cases that -- actually, before I
10 ask you that question, on these type of pits, why
11 don't you discuss the level of hydraulic head on
12 some of these pits because that seems to be of great
13 concern in terms of the migration issue.

14 A. First of all, we are dealing with a
15 constant liquid phase. You have your water faucet
16 dripping continually and it's dripping outside the
17 house under the soil, it will continue to -- that
18 column can stay hydrated and be under constant
19 hydraulic head. The testimony in modeling that I
20 presented was a diffuse natural recharge area which
21 is effectively dry vadose zone material, not down
22 along the river bank. And I believe that the
23 testimony that I have given previously was correct
24 with regard to infiltration rates that are typical
25 for the state of New Mexico.

1 We are dealing with two different animals
2 when we are talking about liquids being stored
3 long-term versus short-term versus the modeling that
4 I performed, which was modeling the solid drill
5 cuttings and the movement of liquids potentially
6 through the drill cuttings down to the vadose zone.

7 Q. Would it be fair to say in a very
8 simplistic fashion that your modeling really did
9 relate to drilling pits and not the multi-well fluid
10 management pits being proposed by NMOGA and the
11 IPANM petitions?

12 A. That's correct.

13 Q. Now, are you familiar with the seven cases
14 that Ms. Martin raised and described to this
15 Commission?

16 A. Yes, I am. I have reviewed Exhibit No. 5
17 and all 228 line items, and I concur with
18 Ms. Martin's representation that there were 16 that
19 are drilling reserve pit related cases, so I am
20 familiar with those. I reviewed those records.

21 Q. And you are a professional engineer
22 licensed in New Mexico, correct?

23 A. That's correct.

24 Q. And are you testifying as a professional
25 engineer?

1 A. Yes, I am.

2 Q. As a professional engineer having reviewed
3 those seven cases, what is your professional opinion
4 as to the contamination claims that were made by
5 Ms. Martin on those 16 cases?

6 A. Well, I believe Ms. Martin testified that
7 the records indicate the word "contamination" by
8 consultants in several of the reports. I reviewed
9 each of these incidents, and again, they were all
10 prior to the current Rule 17. Several of these
11 reports reference an existing pit that is on the
12 well site location, whether it was 1960s vintage,
13 1950s vintage. And in those particular instances,
14 whether they were reserve pits initially, they were
15 then utilized for produced water. So in those
16 instances -- I think there's three or four cases --
17 in those instances I don't believe you can
18 definitively indicate that the temporary lined
19 reserve pit might be the potential cause of the
20 groundwater impact.

21 It's interesting that it appears from my
22 review of the records that there was a pursuit of
23 the standard being -- the new standard of 250
24 milligrams per liter or effectively a pursuit of
25 anything that would be greater than drinking water.

1 And then --

2 Q. For clarification, that's 250 milligrams
3 per liter of which substance?

4 A. Of chlorides.

5 Q. Are chlorides a toxin?

6 A. I don't believe chlorides are a
7 contaminant or a toxin that I'm aware of. I have
8 reviewed the records and I don't see any information
9 on the 16 cases that I reviewed that deal with any
10 Benzene or hydrocarbon-related migration. They are
11 all chloride related. There's no information in the
12 analysis that was done with regard to the metals
13 that potentially might be in there. So I think it
14 would be inappropriate to conclude for the
15 Commission that groundwater had been contaminated
16 based upon just a cursory review and what was
17 presented by Ms. Martin on drilling reserve pits.

18 Q. Now, Ms. Martin also testified to your
19 modeling. Do you recall that line of questioning?

20 A. I do.

21 Q. And she specifically was concerned, as it
22 related to the HELP model on your inputs, the
23 infiltration rate discussion. Have you done any
24 background research or any review of any
25 peer-reviewed literature concerning acceptable

1 infiltration rates in New Mexico?

2 A. Yes, I have, and I believe I testified to
3 that previously in the record, that Dr. Daniel B.
4 Stephens had done an extensive study on the
5 infiltration rates in New Mexico. And I recall Dr.
6 Balch asking me the question what figure that was.
7 Off the top of my head, that number does not come to
8 me, but it was consistent with my prior testimony of
9 what were reasonable infiltration rates.

10 Ms. Martin also indicated that I did not
11 allow any water within the system. That would be
12 incorrect. If you look at the HELP model input
13 pages, you will find that I utilized an initial soil
14 moisture in every instance within the model and
15 accounted for the precipitation appropriately.

16 In addition to the infiltration rate,
17 Ms. Martin indicated that she had a problem with the
18 evapotranspiration depth. I believe the HELP model
19 actually contains a map within the engineering
20 manual that indicates that at 48 inches to 60 inches
21 there is an appropriate depth for the evaporative
22 zone depths being utilized, and in my opinion I
23 think the modeling that I did is appropriate.

24 Q. Now, as to the API exhibit that Ms. Martin
25 referred where she said that that only addressed the

1 heavier constituents, did you use that document in
2 your modeling in your education in order to do the
3 modeling in this case?

4 A. That would be Exhibit 13, the non-aqueous
5 phase mobility when it's in soil. I utilized that
6 in conjunction with all of our testimony in relation
7 to Table 1 and Table 2, what would be acceptable
8 threshold standards. Ms. Martin indicated in her
9 testimony that this research document did not
10 include reference to light aromatic hydrocarbons.
11 And Page 3 of the exhibit covers Benzene, mineral
12 oil, and then Page 5 of the exhibit also sets
13 thresholds for gasoline, middle distillates, and I
14 believe the exhibit adequately covers both light as
15 well as dense, is her term, hydrocarbons. It can be
16 utilized as a reference document for soil screening
17 levels before you are concerned about the
18 contamination becoming mobile.

19 Q. Now, as a professional engineer, have you
20 testified in other jurisdictions?

21 A. I have testified in New Mexico where I am
22 licensed.

23 Q. And why is it that you answer it like
24 that? Would you not testify in Texas with a
25 license?

1 A. I would send my \$150 to the State of Texas
2 and obtain my license in the state of Texas before I
3 testified in a technical expert manner.

4 Q. When you say technical expert manner, is
5 that in response or rebuttal testimony to another
6 professional engineer's opinions?

7 A. That is correct. My understanding is that
8 as a professional engineer you have to understand
9 the regulations and rules not only in your state of
10 jurisdiction but in every state where you plan to
11 offer expert testimony.

12 Q. When you say expert testimony, is that on
13 anything relating to your engineering experience as
14 a petroleum engineer?

15 A. If I'm going to practice engineering as a
16 professional in that state, I should have that
17 designation, and especially before a regulatory body
18 or a court.

19 Q. There was discussion by Ms. Martin that
20 you had made the statement that the liner thickness
21 is completely irrelevant to the modeling. I believe
22 that she referred you to IPANM Exhibit No. 7, the
23 HELP model. Could you discuss why it is that the
24 thickness of liners is input that was relevant to
25 your modeling?

1 A. I believe Ms. Martin inaccurately was
2 representing what I said. My answer was given in
3 response to Dr. Balch's question about whether the
4 modeling output results from HELP regarding what the
5 infiltration rate would be, would be appreciably
6 different if the liner was present or the liner was
7 not present, and I recall my prior testimony
8 indicating that it didn't make much difference
9 whether the liner was there or not. And that would
10 be correct. The liner thickness is in this
11 particular instance only .02 inches. Obviously the
12 hydraulic conductivity, or if you change the liner
13 style, it will affect the infiltration rate. But in
14 this particular instance, given the entire
15 four-layer model, it didn't make much difference.

16 Q. One final question concerning New Mexico
17 recharge. I think this is a question that Dr. Balch
18 put to Ms. Martin concerning the source of water
19 table recharge in New Mexico. There is recharge in
20 New Mexico, is there not? Particularly in the
21 Southeast and the Northwest?

22 A. Yes, I believe there is. There is
23 recharge along the rivers, recharge in the
24 mountains. But my modeling in particular dealt with
25 the unsaturated soil areas where we would be burying

1 drill cuttings.

2 Q. Thank you. No further questions.

3 MR. CARR: No questions.

4 CHAIRPERSON BAILEY: Cross-examination?

5 MS. GERHOLT: No questions.

6 CHAIRPERSON BAILEY: Mr. Fort?

7 MR. FORT: I would like to ask one
8 question.

9 CROSS-EXAMINATION

10 BY MR. FORT

11 Q. Mr. Mullins, in your review of those seven
12 cases, were you able to determine when the leak
13 occurred, the operational phase or pre-closure or
14 post-closure?

15 A. I could not from those records.

16 MR. FORT: Thank you.

17 CHAIRPERSON BAILEY: Mr. Jantz, do you
18 have any?

19 MR. JANTZ: I do not.

20 CHAIRPERSON BAILEY: Mr. Dangler,
21 Dr. Neeper?

22 MR. DANGLER: I have a few questions.

23 CROSS-EXAMINATION

24 BY MR. DANGLER

25 Q. I'm just trying to understand the

1 statement about it doesn't make much of a difference
2 about the liner, which I think you retestified to
3 now. And I'm sorry, but I'm really not at the level
4 of the science so I need to ask a couple smaller
5 predicate questions. It would seem to me just
6 intuitively that the liner would create a barrier
7 and could force some things upward in an
8 evapotranspiration model; is that correct? Or not?
9 Is that completely crazy?

10 A. I don't think that's correct what you
11 said.

12 Q. So essentially the liner depth, there's no
13 effect on the evapotranspiration at all, the
14 existence of the liner at all?

15 A. In the model that I prepared for the
16 Commission, the liner material was below the
17 evaporative zone depth, so in all the cases that I
18 presented a liner would not have had an impact on
19 the near surface, potentially moving water to the
20 side, let's say, over the top of the material.

21 Q. Okay. And what about the Darcy's flow
22 model where one of the parameters appears to be the
23 permeability of the liner? Why would the existence
24 of a liner or not, not affect that?

25 A. The modeling that I performed, and when

1 you look at the distance that was traveled, I stated
2 that the thickness of the liner material was .02
3 inches, as I recall, from the exhibit. So it's not
4 very thick. In addition, we also had the other
5 depths of material which also have hydraulic
6 conductivities or permeabilities for flow, and my
7 statement was that it was not going to be
8 appreciably different given the order of magnitude
9 that we are talking about and the scale of years
10 whether the liner was present in the pit for the
11 analysis of the drill cuttings.

12 Q. Okay. Let me ask you another question
13 about the drill cuttings. Does your modeling assume
14 that the drill cuttings have basically no moisture
15 in them; that they are completely dried out?

16 A. As I recall, there's an initial moisture
17 content of the waste material of the drill cuttings
18 material, so that would be the moisture content.

19 Q. And do you recall how you came to that
20 moisture content?

21 A. I don't specifically. Not at this moment.

22 Q. So if, per chance, drill cuttings had not
23 dried out entirely and, in fact, were wet when they
24 were buried, how would that affect your modeling, do
25 you know?

1 A. It would change the initial conditions. I
2 think given the scale of time, because the source of
3 precipitation basically, the water that's coming
4 into the system is controlled in the top 48 inches
5 of the HELP model, that long, that it wouldn't
6 change the long-term modeling very much.

7 Q. And then my other question for you is I
8 believe other people have asked this and it may have
9 been covered and answered, but in case I missed
10 something. How do you test your modeling against
11 real world conditions like, you know, how do you
12 verify that the modeling has any meaning at all? No
13 offense.

14 A. And I think that the evidence that the
15 Industry has put on specifically in discussing the
16 salt bulge, when you look at the natural soil
17 profile that are everywhere in the State of New
18 Mexico you will identify the salt bulge
19 characteristics as being at various levels that I'm
20 sure Dr. Buchanan can reference.

21 But our instances indicate 60, 70 inches
22 in the case that comes to mind from the Burlington
23 Resources pit up in the Northwest, as well as a
24 review of the literature appears to indicate that
25 very long infiltration times through the soils in

1 the areas that we're talking about here.

2 Q. So in terms of soil structure, we see some
3 evidence of instability? Is that fair to say?

4 A. It breaches the natural -- breaches the
5 profile, yes.

6 Q. And that seems to support the modeling
7 that you did?

8 A. That is correct.

9 Q. And have you at all looked at any other
10 sources of leaks and things that have gone through
11 the soils that we have read about that are kind of
12 common knowledge to people?

13 A. That's a very large statement. I have
14 been working in this business for 20 some years.
15 I'm not sure if it's within the scope of my
16 testimony or not of rebuttal, but --

17 MS. FOSTER: I would object.

18 MR. DANGLER: Madam Chair, in response to
19 the objection, I'm just speaking of common
20 occurrences that are common knowledge to people.
21 And the question would be, assuming I could ask it
22 in parts, have you heard about the jet fuel leak in
23 Albuquerque, and assuming you have, is there any
24 attempt to rule out those migration patterns or
25 compare those with what his testimony has been to

1 the Commission of what happens under his model.
2 That's really the question. If he doesn't want to
3 speak to it, that's fine.

4 CHAIRPERSON BAILEY: It would be helpful
5 to have those specific questions.

6 Q. We will take the jet fuel from
7 Albuquerque. That's one spill and leak that
8 everybody is aware of. Obviously it's not from a
9 pit but creates migration patterns and some
10 surprising migration patterns. For instance, it
11 doesn't go down towards the river but the other
12 direction because it's being pulled by suction from
13 water pumps. Have you considered anything like that
14 in terms of testing your models with what we see in
15 the real world?

16 A. I'm not familiar with that particular
17 spill or release, but in general, long-term
18 hydraulic head type fluid migration is a different
19 animal than what we are talking about here with my
20 modeling, so I don't know if it would be appropriate
21 for me to comment on that.

22 Q. And have you taken statistics from the
23 leaks that we have been discussing that have
24 happened that are appropriate to compare?

25 MS. FOSTER: Objection. Could we get some

1 clarification?

2 MR. DANGLER: I think the clarification
3 would be that we have been discussing a number of
4 leaks that have occurred that people have testified
5 to. There's been some talk about it today in
6 rebuttal.

7 CHAIRPERSON BAILEY: The specific spills
8 and releases in Exhibit 5?

9 MR. DANGLER: Yes, the 16. That would be
10 my question, whether it is taking into account
11 those.

12 A. Could you rephrase or ask that question
13 again? Because I have looked at --

14 Q. Sure. Those are real world statistics
15 from real world movement of chlorides.

16 A. Well, I don't think that's a correct
17 statement on the question. Some of the cases relate
18 to chlorides, some of them relate to, as in the
19 long-term production pits, it was not chlorides that
20 were being chased, it was a different contaminant.

21 Q. So various contaminants and they moved out
22 of pits, and that movement is interesting. Have you
23 attempted to use any of those figures to cross-check
24 your modeling?

25 A. I don't think it would be saying

1 cross-check my modeling. I don't understand that
2 with regard to your question. And in a general
3 statement, I'm not trying to be flip, but you're
4 lumping a large number of leaks or alleged cases of
5 contamination and asking me to make a statement.

6 Q. That's because I don't do the work.
7 That's why.

8 A. Generally, and I want to be very careful
9 about what I'm saying.

10 Q. I'm just wondering if you have done any
11 work with those kinds of movements, whether they are
12 legally contaminants or they're just called
13 contaminants by people, including the chlorides.
14 Just those kinds of movements that we can document
15 and then use that information to go check your model
16 to see if your model makes sense. I wonder if you
17 have ever done that?

18 A. I have done that but not for this specific
19 case in here.

20 Q. Thank you. No further questions.

21 CHAIRPERSON BAILEY: Commissioner Bloom?

22 MR. NEEPER: Madam Chairman, is it
23 possible to have other questions before the
24 Commission?

25 CHAIRPERSON BAILEY: Yes, please do. I

1 did not see that you were wanting to.

2 CROSS-EXAMINATION

3 BY MR. NEEPER

4 Q. Mr. Mullins, my question deals with your
5 response to an immediately previous question. Do
6 you recall your testimony?

7 A. I noticed your face twist there.

8 Q. In response to a question you testified
9 that to your best estimate, the presence of a liner
10 in your HELP calculation did not affect
11 significantly the evapotranspiration, that is the
12 rejection of water back to the surface in the model;
13 is that correct?

14 A. In the modeling that I performed, that's
15 correct.

16 Q. In the modeling.

17 A. But if I placed a liner higher up in the
18 profile within the evaporative zone depth, then that
19 would not -- then I would have a different answer,
20 but I did not do that.

21 Q. In your model calculations, the
22 calculations showed on the average, depending on the
23 location, an average of several millimeters of
24 saturated water on the liner; is that not correct?

25 A. I believe the HELP model would indicate

1 inches of water above the liner -- above Layer 4, so
2 it wouldn't be in millimeters, it would be in
3 inches, and it would be referenced in the specific
4 exhibit.

5 Q. But to your memory did it not show then a
6 significant fraction of an inch to inches of water
7 on the average on the liner?

8 A. Yes. It held that there was water in the
9 column above the liner, that is correct.

10 Q. So now I think my final question: How can
11 you maintain a saturated zone at four feet deep and
12 yet at the same time maintain it does not affect the
13 evapotranspiration? That's equivalent to having
14 groundwater at four feet.

15 A. Well, I guess I'm not understanding your
16 statement.

17 Q. I will rephrase the question.

18 A. The liner in this particular incident in
19 the modeling that I performed is not within the
20 evapotranspiration zone. It's deeper than that. So
21 the recipe, as we talked about ahead of time, is
22 removing the water at the top part, but there is
23 water in the column that is referenced within the
24 HELP model that is present on top of the liner
25 material effectively. Now, whether that's all

1 directly in contact with one another, it's within
2 the profile above the liner material. It's in Layer
3 1, 2 and 3 in this particular instance. So I guess
4 I'm trying to understand where you are going.

5 Q. I will try to clarify the question,
6 because I've already been there. What I'm asking
7 about is the comparison between then the model and
8 reality, and if in reality you maintain on the
9 average a saturated region at a depth of four feet,
10 does that not significantly alter the
11 evapotranspiration as compared to what would happen
12 if you had no liner and maintained no saturated zone
13 at that depth?

14 A. I'm not trying to avoid the question. The
15 moisture content of the soil is going to control the
16 amount of water above the liner material. So ask
17 me -- you're saying at four feet, which -- are you
18 going hypothetically? Because the liner material
19 and everything that we have is deeper than four
20 feet.

21 Q. I'm sorry, I heard 48 inches.

22 A. That's the evaporative zone depth. The
23 liners in all the instances I'm talking about are
24 deeper than that interval. Then I tried to clarify
25 by stating the amount of water above the liner

1 material is the water, as indicated in the HELP
2 model, above the liner.

3 Q. Would you give us then just an example of
4 depth to liner? Six feet?

5 A. Well, if I could reference my drawing on
6 one of our prior exhibits, I know we had four feet
7 of soil covering material, and I recall twelve and a
8 half feet of waste without looking at the exhibit at
9 the moment.

10 Q. My question is the same really. At that
11 depth, if you maintain saturated at that depth, have
12 you not altered the conditions and a return to the
13 surface compared to what would happen if you had no
14 saturation? It would make no difference whether you
15 had groundwater at that depth or no groundwater at
16 that depth?

17 A. I'm just not understanding your question,
18 Dr. Neeper. I'm trying to get to an answer but I'm
19 not understanding your question.

20 Q. I will try just one more time and get off
21 it. I don't want to delay the Commission. You have
22 stated that the liner, in your professional
23 estimation, made no difference effectively to the --

24 A. No. No. I said the presence of the liner
25 made a minor amount of difference with regard to the

1 calculation of the infiltration rate that would come
2 out of the HELP model. That's what I stated. I
3 didn't say that the liner wouldn't make any
4 difference. It wouldn't make any difference because
5 it's not involved in the evaporative zone depth. If
6 it was, it would.

7 Q. The model?

8 A. Correct.

9 Q. In reality, which is what I'm trying to
10 get at, if you maintain a saturated zone at that
11 depth, it would certainly alter the
12 evapotranspiration.

13 A. If you maintain saturation at depth --

14 Q. Whatever the depth the liner is?

15 A. At the depth that the liner is. Does that
16 also imply, Dr. Neeper, saturation occurs from the
17 liner back up to the surface?

18 Q. Not at all, but it certainly implies that
19 you can conduct water backwards.

20 A. Yes, I'm saying that in this particular
21 instance, the modeling that I performed is limited
22 to 48 inches because of where the depth of the liner
23 is.

24 Q. Okay. I'll give it up. No further
25 questions.

1 CHAIRPERSON BAILEY: Commissioner Bloom?

2 COMMISSIONER BLOOM: No questions.

3 CHAIRPERSON BAILEY: Dr. Balch?

4 DR. BALCH: I think I have exhausted the
5 questioning of you. Thank you for your time.

6 CHAIRPERSON BAILEY: Just a couple. None
7 of the testimony today refuted your conclusion that
8 the concentration of chlorides at water that's found
9 at 25 feet exceeded -- that the maximum chloride
10 level at that depth was 13.3 parts per million; is
11 that correct?

12 THE WITNESS: That's what my modeling
13 showed, that's correct.

14 CHAIRPERSON BAILEY: And that that was
15 based on an initial leachate of 1,000 milligrams per
16 liter?

17 THE WITNESS: Correct.

18 CHAIRPERSON BAILEY: Does that directly
19 transfer over to the low chloride drilling fluids of
20 15,000 parts per million of chlorides in the
21 drilling fluids?

22 THE WITNESS: I believe it would be
23 applicable, yes.

24 CHAIRPERSON BAILEY: So our bottom line,
25 once again, is if we are using low chloride drilling

1 fluids, the contents -- the fluid is removed from
2 the pit, the contents of the pit are stabilized so
3 they pass the paint filter test, that there's a
4 bottom liner but no top liner, four feet of soil,
5 earthen material put on top of the buried pit with
6 vegetation; that the groundwater at 25 feet would
7 not be contaminated beyond groundwater quality
8 control commission regulations.

9 THE WITNESS: That's correct. It would
10 not be above 250 milligrams per liter.

11 CHAIRPERSON BAILEY: That's all I have.
12 Do you have any redirect?

13 MS. FOSTER: No, I do not. Thank you.

14 CHAIRPERSON BAILEY: Your witness may be
15 excused. It is now 4:00 o'clock. We are ready for
16 Dr. Buchanan but I would expect that he would take
17 more than an hour.

18 MR. CARR: I suspect with cross it will go
19 beyond that.

20 CHAIRPERSON BAILEY: Then we shall
21 reconvene tomorrow morning at 9:00 a.m.

22 MS. GERHOLT: Excuse me, public comment?

23 CHAIRPERSON BAILEY: Yes. Do we have any
24 other? No one has signed up today. Okay. Is
25 Dr. Buchanan the last witness that we will have?

1 MR. CARR: I believe so.

2 CHAIRPERSON BAILEY: Then we will be able
3 to wrap up tomorrow?

4 MR. CARR: Yes.

5 MS. FOSTER: Do you want closing
6 statements orally or written? If I recall from the
7 discussion previously you wanted everything written?

8 CHAIRPERSON BAILEY: Yes. We have asked
9 for the attorneys to present closing statements and
10 what is your request?

11 MR. SMITH: Findings and conclusions
12 citing the specific spots in the record.

13 MS. FOSTER: That's what I recall.

14 MR. SMITH: What was the date?

15 CHAIRPERSON BAILEY: September 17th for
16 closing statements to be presented to the
17 Commission.

18 MR. SMITH: Closing statements, findings
19 and conclusions?

20 CHAIRPERSON BAILEY: Exactly. And a week
21 later we will begin deliberations, September 24th.
22 Is there any other business before the Commission
23 today?

24 MR. JANTZ: What was the discussion?

25 CHAIRPERSON BAILEY: The closing

1 statements, findings of fact and conclusions are due
2 to the commission on September 17th.

3 MR. JANTZ: Thank you.

4 CHAIRPERSON BAILEY: Is there any other
5 business before the commission today? Then we will
6 adjourn until tomorrow morning.

7 (Note: The hearing was adjourned for the
8 day at 4:00)

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REPORTER'S CERTIFICATE

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I, JAN GIBSON, Certified Court Reporter for the State of New Mexico, do hereby certify that I reported the foregoing proceedings in stenographic shorthand and that the foregoing pages are a true and correct transcript of those proceedings and was reduced to printed form under my direct supervision.

I FURTHER CERTIFY that I am neither employed by nor related to any of the parties or attorneys in this case and that I have no interest in the final disposition of this case.



JAN GIBSON, CCR-RPR-CRR
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