STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

APPLICATION OF OWL SWD OPERATING, LLC FOR AUTHORIZATION TO INJECT, LEA COUNTY, NEW MEXICO. CASE NO. 15723

REPORTER'S TRANSCRIPT OF PROCEEDINGS

SPECIAL EXAMINER HEARING

Wednesday, August 2, 2017

Volume 2

Santa Fe, New Mexico

BEFORE: WILLIAM V. JONES, CHIEF EXAMINER
SCOTT DAWSON, TECHNICAL EXAMINER
GABRIEL WADE, LEGAL EXAMINER

This matter came on for hearing before the New Mexico Oil Conservation Division, William V. Jones, Chief Examiner, Scott Dawson, Technical Examiner, and Gabriel Wade, Legal Examiner, on Wednesday, August 2, 2017, at the New Mexico Energy, Minerals and Natural Resources Department, Wendell Chino Building, 1220 South St. Francis Drive, Porter Hall, Room 102, Santa Fe, New Mexico.

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INDEX

EXHIBITS OFFERED AND ADMITTED

(8:38 a.m.)

EXAMINER JONES: Let's go back on the record. This is August the 2nd, and we're still on Case Number 15723.

I would say that Case 15753 is scheduled for 9:00 a.m. today is -- that case will be delayed, and we'll talk about scheduling it later -- later on today.

And I wanted to ask the Applicant, we have an amended pre-hearing statement, and can you just say what was amended about that right quick before we --

MR. MOELLENBERG: Really, substantively, it was adding Mr. Blandford's report so you had that in advance of the hearing.

EXAMINER JONES: Okay.

MR. MOELLENBERG: I don't recall anything else of note that was really amended in there.

EXAMINER JONES: Okay.

Well, we have Mr. Blandford on the stand this morning. Let the record show that he's been sworn.

And has his direct testimony been concluded?

MR. MOELLENBERG: Yes. We're finished with his direct testimony.

We can add a few of the exhibits that we talked about yesterday now. I think we have his resume,

which I didn't admit it at the end of yesterday; the affidavit regarding notice that you mentioned, and -- and the full Jal report that Mr. Newell mentioned. We can introduce those now and get those in, if you'd like to take care of that.

EXAMINER JONES: That sounds good.

MR. MOELLENBERG: Okay. I would move for admission of Mr. Blandford's resume as Exhibit 6; the City of Jal, New Mexico Public Water System -- I actually have the wrong one here, but it's the April --

MS. CHAVEZ: They have the right one.

MR. MOELLENBERG: -- and that one was Exhibit 7; and then the affidavit regarding the hearing notice as Exhibit 8.

EXAMINER JONES: Any objections to those?

Do you have anybody to talk about Exhibit 8, the actual notice? You're going to have a witness to talk about the C-108, correct, which includes the notice that was -- that was part of the C-108?

MR. MOELLENBERG: That was part of the C-108, yeah. That's in the C-108, and that's in that package.

EXAMINER JONES: Let's admit -- any objection to these?

MR. BROOKS: No, not from I.

MR. NEWELL: No.

MS. MOSS: No, I don't object.

EXAMINER JONES: So Exhibits 6 and 7 are admitted by the Applicant.

Exhibit 8, let's wait and talk about that just a little bit more before we admit it.

MR. MOELLENBERG: Okay. All right. So we can go ahead with --

EXAMINER JONES: Remind me of that, though.

MR. MOELLENBERG: Okay. I'll remind you of that.

-- with Mr. Blandford.

(OWL SWD, LLC Exhibit Numbers 6 and 7 are offered and admitted into evidence.)

EXAMINER JONES: Okay. So, Mr. Brooks, would you like to cross-examine?

MR. BROOKS: Yes, I would.

Before I begin, I would like to mention to the Examiners that the luncheon meeting that I usually have on Thursday has been moved to Wednesday this week, which means today, and if it does not inconvenience the proceeding too much, I would like to have a lunch recess from 11:45 to circa 1:30. I can be back by 1:15 if necessary.

EXAMINER JONES: Any objections to that

schedule?

MR. MOELLENBERG: No objection.

MS. MOSS: No objection.

MR. BROOKS: Well, it may depend on where we are at the time.

EXAMINER JONES: It's similar to what we did yesterday anyway.

MR. BROOKS: Yes, similar, a little more extreme.

THOMAS NEIL BLANDFORD,

after having been previously sworn under oath, was questioned and testified as follows:

CROSS-EXAMINATION

BY MR. BROOKS:

Q. Good morning, Mr. Blandford.

A. Good morning.

Q. I'm glad we have people with your intelligence to do things, as modeling is an arcane domain, is it not, very -- requires a great deal of knowledge of the subject matter?

A. Of the tools and methods, yes, it does.

Q. Is it true the models have to be carefully regulated, that one has to make sure that one's assumptions are realistic and in accordance with the facts of the case?

A. They should be -- the assumptions should be realistic given the physical situation. Yes.

Q. Yes.

And if the facts differ significantly in any respect from the assumptions, that can throw the conclusions off, right?

A. It's possible. That's not necessarily true, but it's possible.

Q. Now, an engineer once told me that a model gives a very precise answer, but the actual calculation at the end of the day is not going to be what the model predicts; it's going to be something else, even though it may be very close. Is that a fair assumption?

A. It would depend on the situation. You would expect a prediction to be off by some amount even if it is close. Yes.

Q. Okay. What assumptions did you make in this model? Would you just tell us the principal ones? I know it's very difficult to explain a very intricate process to people who do not -- who are not grounded in it, but I would ask you to do the best you can.

A. Well, there is -- there is a mixture of assumptions and facts. So I guess I would ask do you want me to cover only assumptions, or do you want me to cover the process of putting the model together, which

melds assumptions and facts.

Q. Well, I would like now, principally, what did you assume?

A. The assumptions were the injection rate of the Bobcat well as put in the application. There were assumptions regarding hydraulic properties of the different portions of the Artesia Group. I mean, those are also based in part in fact on the geology, but the exact numbers are an assumption based on the geology and the physical observations.

Q. Now, did you rely on Mr. Kronkosky for the geology?

A. We discussed his interpretation of the geology, but I did not rely solely on Mr. Kronkosky.

Q. Okay. Go ahead.

A. We assumed a starting initial head for the Artesia Group. And, again, that's based on a calculation and observations, but there could be some variability in that assumed number.

Q. I thought you -- if I understood you, I thought you said that for your principal calculations, you assumed the head to be zero in Artesia Group. Is that incorrect?

A. The starting head was close to sea level. It was a little bit above sea level, I think 13 feet.

That's correct.

Q. What effect does that have on modeling? Well, no. Maybe I better withdraw that question.

Go ahead and state what other matters you assumed.

A. We assumed conductance terms at all the boundary cells of the model where there is a boundary of either vertically or horizontally between the Artesia Group and the Capitan Reef Aquifer. We assumed a conductance which limits the flow according to the hydraulic conductivity across that boundary cell. That was an assumption. Our initial assumed hydraulic head, we assumed that applied throughout the entire model domain. That was an assumption. And those are all I can think of right now.

Q. Okay. I assume you made a study of the history of this field. You referred many times to the project area, or was that Mr. Kronkosky?

A. I believe Mr. Kronkosky. He has a region on some of his figures. I believe he may have referred to it as the project area.

Q. Now, you defined -- you defined your area of study by a rectangle that's shown on pages 6 and 7, right?

A. That's the extent of the model domain. Yes.

Q. And was that -- what were the dimensions of the rectangle?

A. I don't recall the exact dimensions offhand. There is a scale on the figure that can be used to judge. It looks -- I don't know -- maybe nine or ten miles north-south and maybe about ten miles east-west, something like that.

Q. Do you know how many injection wells there are within that area of study?

A. I do not, but my understanding is there are some other injection wells in that area.

Q. Right. Some active and some abandoned, right?

A. That's my understanding. Correct.

Q. And studying the hydraulic properties of this area, did you take a count of the water that was contributed to it by the other existing injection wells in the area?

A. Only in the sense that the estimated pressure at the Bobcat location was very low. So my estimation is that whatever the effects were, so to speak, of other wells in the area were not reaching the Bobcat location in any significant manner. So that was the reasoning that I used to simulate the Bobcat well itself.

Q. Now, from what data did you determine that that was the case?

A. That was based on conversations with Mr. Kronkosky and my understanding of his evaluation of the injection test and his estimation of the downhole pressure. It's my understanding there wasn't a direct measurement, but there was a calculation that showed that the injected fluid was basically being taken under -- under I guess what's called vacuum and its free drainage, is the way I think of it.

Q. Now, if there were to be multiple additional disposal wells located in this area -- and I believe Mr. Kronkosky and perhaps you also, in my recollection -- I have trouble keeping who said what straight from yesterday. But I believe it was probably Mr. Kronkosky that said that this was a very good reservoir for disposal of produced water because shallow doesn't require deep drilling, and it's close to the place where they have the water available and -- I have forgotten all the other reasons. But he said that or you said that or somebody said it.

Anyway, if there were a significant number of additional disposal wells added in the immediate area, how would that affect your conclusions?

A. Those wells would have to be looked at individually. From what I've seen from our simulations so far, there could be additional wells added in this

area without a significant adverse effect, you know, if the additional wells are far enough away from the Bobcat so that you don't have significant interfering pressure under injection. But we're looking at, you know, the Bobcat well, you know, as part of this application alone right now.

Q. So if we have another application, somebody is going to have to bring you back up here and testify again based on new work, right?

A. I guess if there is somebody like myself, if you wanted to answer the question what are the effects of two wells instead of one that are at some distance.

Q. Or five wells or six wells.

A. However many that would be, yes.

Q. Okay. Thank you.

Now, you did run a check on your -- on your work by making the assumption -- making a counter-assumption, and as I understood, that was an assumption disregarding the head that's in the reef?

A. Yes, sir. That is correct.

Q. So that would have put the pressure on the reef and on the -- that would have put the downward pressure on the reef and on the Artesia Group equal rather than -- rather than unbalanced, in favor of the reef?

A. That's correct. There would have been a very

slight difference because we assumed a TDS of 20,000 parts per million in the Artesia Group water, and in the reef water, we assumed the TDS of 13,000. So that would have created a very slight difference in head based on the density, but --

Q. And what did you assume in the Artesia, again?

A. 20 --

Q. I mean in the reef. You said -- I heard what you said for the Artesia. What did you assume for the reef?

A. In the reef, 13,000 -- a little bit over 13,000. It was based on the TDS measured at the EOG well that we've been talking about, which is southwest of the Bobcat location.

Q. Yeah, I remember that.

So that was within the range of the reported readings, relatively low, I believe, if I remember right?

A. That was the reported reading from that particular well. In between -- if you draw a line from the Bobcat well location to the EOG well, in between those two wells, there is a USGS observation well where it's been documented that the TDS is much higher than 13,000, but I used the 13,000 in the model.

Q. And then you used an amount -- but you said

that didn't make a great deal of difference, the TDS level of the two -- the difference in TDS on the two orders [sic] was not a major factor?

A. Not in this run that we're talking about where we're looking at, essentially, no Capitan Reef Aquifer head. We're just assuming a very low hydraulic head across the Artesia Group and the reef. In that case, it makes almost no difference. That's correct.

Q. Now, in modeling, is it not true that a term that you often hear is "sensitivity analysis"?

A. That can be conducted. Yes.

Q. What does that mean?

A. Sensitivity analysis is the process of adjusting one or more input parameters to the model and evaluating what the effect of that change is on the simulated output.

Q. Now, would your assumption of a -- would your assumption about the head of the -- of the reef and the then your contra- -- your contra-run that discarded that assumption, would that be a type of sensitivity analysis?

A. That could be viewed as a type of sensitivity run. Yes.

Q. Did you do any other sensitivity analysis to ascertain the effect that might occur from differences

in some of the parameters that you assumed?

A. I did not other than what I've presented in the report.

Q. Okay. What is your level of confidence in your conclusions with regard to the water -- the fact that the water will not affect the water in the Capitan Reef Aquifer?

A. I'd say very high.

Q. Okay. Well, thank you. I think that's all the questions I'm going to ask you.

MR. BROOKS: So once again cross has been shorter than direct, but I don't speak for Ms. Moss.

EXAMINER JONES: Ms. Moss.

MS. MOSS: I'm not going to cross. I'd like to reserve the cross if I need to, if there is no objection.

EXAMINER JONES: Mr. Newell?

MR. NEWELL: Yes, please.

CROSS-EXAMINATION

BY MR. NEWELL:

Q. I believe yesterday you indicated on your modeling you modeled out injections going out 20 years?

A. That's correct.

Q. Okay. And you heard the testimony of Mr. Johnson yesterday, correct?

A. Yes.

Q. And he said he anticipated this facility to be in use two, three or four decades, 40 years out, correct?

A. I don't recall that specifically. I may have missed it.

Q. Okay. Assume for me that he made that testimony yesterday.

You also heard us talking about 280 barrels of water being produced over that period of time. Do you recall that, 208 million barrels of water produced water being injected over that period of time. Do you recall that?

A. I recall that being your number. I believe you did that calculation based on a 40-year period. We did injection for 20 years, so that would not be the volume of water that we're talking about in these simulations.

Q. What volume of water are you talking about?

A. 25,000 barrels per day for 20 years straight, which I believe is 175 million, if I did my calculation right yesterday.

Q. Okay. And so you have no -- no projections out beyond your 20 about where this water is going to migrate or flow in your modeling, correct?

A. No. I do. We do the injection for a 20-year

period at the Bobcat well, and then we stop the injection, and we keep the model running for a follow-up [sic] of 20 years for the record, look at a total period of migration of the fluid of 40 years.

Q. Sure. Your answer was much better than my question. Let me rephrase my question.

You do not do any modeling where you projected out water flows where injection occurred beyond 20 years, correct?

A. That is correct.

Q. Okay. And you can't testify before the Commission or the Hearing Officer or anybody else what's going to happen if there is continued injection after 20 years because that's not included in your modeling, is it?

A. It's not specifically included in the modeling. There is certainly some conclusions that could be drawn from the modeling, but I did not specifically do a scenario of longer than 20 years of active injection.

Q. Okay. Now, then, is it your testimony, then, that you can only safely -- or -- well, no, I withdraw that.

Let me ask you: Have you had an opportunity to review the application of the Applicant?

A. Yes, I have.

Q. Okay. And I want to call your attention to -- and if you have it in front of you, I'd ask you to pull it out. It's a diagram that basically identifies within a two-mile radius other oil wells, gas wells, plugged wells, and, more importantly -- this is what I want to call your attention to -- other disposal wells and abandoned disposal wells.

EXAMINER WADE: Are you referring to a specific exhibit?

MR. NEWELL: Yeah. I was trying to find the exhibit number on it.

EXAMINER DAWSON: What does the front of it look like?

MR. NEWELL: It looks like that (indicating). It's Exhibit 5. I'm sorry. I should have been more precise on that.

EXAMINER DAWSON: And which number on Exhibit 5?

MR. NEWELL: It's not numbered, but it's a diagram that is a two-mile radius diagram.

EXAMINER WADE: It says, "Offset Wells 2 Miles," in the top right corner?

MR. NEWELL: Yeah, "Bobcat SWD No. 1 Offset Wells 2 Miles."

EXAMINER DAWSON: Okay.

Q. (BY MR. NEWELL) All right. So by my count, there are -- there are nine existing saltwater disposal wells or plugged saltwater disposal wells. Would you agree with that?

A. Within the two miles?

Q. Yes.

A. I haven't counted them up, but that roughly appears to be about the number, if I'm looking correctly.

Q. Fair enough. I could have been off by one or two.

Anyway, I want to call your attention -- first of all, there are two plugged saltwater disposal wells that are just outside the half-mile radius ring. Do you see that?

A. I see one to the north and one to the south.

Q. Yeah. Correct.

Okay. So let's start with the one number, 09811, that's just to the north. Do you see that?

A. Yes.

Q. Okay. So do you know what formation that disposal well was disposing into?

A. I do not offhand. My understanding is that in this area, a number of them would be in the same injection zone targeted by the Bobcat well, but that

well in particular, I do not know.

Q. And as I heard you testify yesterday, in this particular formation and what you expect the water to do is then move out horizontally; is that correct?

A. It'll move horizontally, certainly, in the injection zone, and there will be some vertical movement as well. But it's upward and downward.

Q. Okay. Looking at well number -- the plugged one, 08911, how much fluid was injected in that particular disposal well?

A. I do not know.

Q. Did you take into account the amount of fluid that was disposed of in Well Number 08911 in your modeling?

A. I did not.

Q. Okay. Same question with the one south. Do you know what formation 09829 was disposing in?

A. No.

Q. Do you know how much water was injected into 09829?

A. I do not, but I believe those volumes would be included in Mr. Kronkosky's exhibits. He looked at this entire area and had an exhibit of -- of records of injected water.

Q. Do you know where the water from both of these

abandoned disposal wells went if it was modeled along the same lines as your modeling showed for the proposed well?

A. I can't say exactly without doing it, but I do not believe that it's gone very far. We certainly don't see the effects of that at the Bobcat well location, which is approximately a half mile from each of those locations. And to my knowledge, the volume of injection at those locations would be less than what -- certainly over the 20-year period of what we put at the Bobcat. So if I believe you looked at the migration of that water, it would be similar conclusions to what we're showing for Bobcat, but there would certainly be no effect on the Capitan Reef.

Q. How would the cumulative effect of the injection from those two wells impact the Bobcat well?

A. There could be a slight increase -- well, those are -- those are plugged and abandoned, so there is no cumulative effect. We're starting with the estimated condition at the Bobcat well as it would be today, and so whatever effect would have been there, if any, would be observed at the Bobcat well today. And like I've been saying, there doesn't seem to be hardly any pressure there, to my knowledge.

Q. There are two existing -- okay. But you did

indicate that at some point there might be a situation where the formation pressured up, correct?

A. With active injection, the formation would pressure up at the Bobcat well. Yes.

Q. Okay. So there's already existing water that's been injected in the area within close to a half mile of the proposed well, correct?

A. Yes.

Q. Okay. And so what you're saying is -- well, do you have any predictions about when you think the Bobcat well would be pressured up?

A. What do you mean by pressured up?

Q. Well, when it would no longer be able to accept fluids.

A. In our simulations, you can inject for the 20-year period without exceeding the allowable pressure that's stated in the application.

Now, in the field, if, you know, something different could happen, I do not know, but in our predictive simulation shows that you could do it for the 20-year period.

Q. There are two disposal wells in the proposed well in the same section. Do you see those, 09808 and 09807?

A. Yes, I see those.

Q. Okay. Let's start with 09807. How long has that well been in existence?

A. I do not know offhand.

Q. Did you take into consideration the amount of fluids that are being disposed of in 09807 in your modeling?

A. I did not, because my understanding of the fluids that are being disposed of at those wells are less by a significant amount than what would be disposed of at the Bobcat well. So if there was an effect, it would be a relatively small secondary effect on the pressure.

Q. What do you understand to be the volumes that are injected in 09807 and 09808?

A. I do not recall exactly. But I remember looking at Mr. Kronkosky's exhibits, and I don't remember seeing any saltwater disposal wells that were on the order of 25,000 barrels a day for an extended period of time.

Q. Are there any wells within the two-mile radius that you considered that had a disposal volume that would be in the neighborhood of what the Applicant is proposing to dispose of in the Bobcat well?

A. I did not. Because of the initial conditions, the conditions that are in the field today at the Bobcat

well, I focused on that well exclusively and did not add on other potential volumes for the same reason I stated in my last answer.

Q. All right. Now, I was looking at some of the material, including the hydrological investigation that was prepared for the City of Jal, and just a couple of things.

Are you familiar with the fact that the City of Midland has started a process of grabbing water roughly four miles away from where the Jal Westfield water facility is?

A. Yes.

Q. And do you believe that that's going to impact the ability of Jal to access water from the Pecos Valley Aquifer?

A. It may. I haven't looked at that question specifically, but it could, depending on how much Midland pumps through time.

Q. Are you aware of the fact that it looks like maybe they're going to be pumping roughly -- approximately 12 million gallons per day? Is that information that you considered?

A. I think that's referenced in the report that you're discussing. What they have actually been pumping may be different. I think they've had problems getting

that water field on line due to conditions. Ultimately what they'll pump over what time frame, I really don't know.

Q. So -- and let's talk about the Capitan Reef. Would you agree with me that the Capitan Reef Aquifer is a productive aquifer within the meaning of what you guys consider productive aquifers?

A. Yes. It yields typically on the order of 500 gallons per minute.

Q. Would you agree with me that the water quality is variable?

A. Yes.

Q. Okay. And would you also agree with me that, at least in the report, they were unable to locate any water-quality data from the Capitan Reef near the City of Jal?

A. That's what it says in the report, but, you know, clearly there is quite a bit of information available that we've presented in this hearing. So I think that's probably one area of that report where the, you know, Souder, Miller folks could have done a little bit better job, frankly.

Q. And you're talking about, then, the -- there are some oil companies that are -- that have oil -- or let me rephrase that.

There is at least one oil company that had a well that was obtaining water from the Capitan Reef Aquifer, and I think there were some federal government monitor wells. Is that what you're referring to, or test wells or however you refer to them?

A. Yes, observation wells. There was also the -- I don't know if it's Ochoa or Ochoa, but there is the Ochoa Mine supply wells. That information was available at that time. The Skelly Jal System well information was available. So there is actually quite a bit of water-quality information available for the -- for the Capitan Reef Aquifer.

Q. Is that Ochoa or Ochoa, however you pronounce it, is that the INC, the International --

A. ICP?

Q. Yeah.

A. Yes.

Q. Okay. And that's their -- their water, correct?

A. That's correct.

Q. And didn't they just last month -- or actually now, since it's August. Didn't they, in June, announce that they were selling that water, and there was an entity that had agreed to purchase that water for the purpose of reclaiming it and putting it to productive

use?

A. I believe I read something about that in the paper. It would be another industrial user that they're selling to.

Q. So you're not saying that the Capitan Reef Aquifer is a nonproductive aquifer, correct?

A. It's a productive aquifer with very poor quality water. That's what I'm saying.

Q. In places?

A. Just about everywhere, really. Everywhere I see a water well completed, particularly a recent water well, the TDS is in excess of 10,000, and in some places, well over 100,000.

Q. Let me make sure I understand. So you're saying everywhere within the Capitan Reef Aquifer you looked, you found high TDS levels?

A. Where the measurement was from a water well -- with the exception of one old measurement in one of the Skelly Jal System wells, the measurement was, I think, from back in the '60s. It's plotted in my figure. But every other water well that I've looked at where the water quality is available, the TDS was well above 10,000 milligrams per liter.

Q. So you didn't look at, like, the results further south, like, were being used in the Fort

Stockton area or the results over from the west side of the Capitan Reef where the water is used as part of the Carlsbad municipal water supply; is that correct?

A. No. That's not correct.

So let me -- and I should ask you to define questions a little bit better.

My response to the last question, I assumed we were talking about the vicinity of Jal.

Q. And that's what I understood.

A. Okay. That was --

Q. And that's why I wanted to ask the follow-up question. You didn't consider those because what you were looking at was the area in and around Jal?

A. Well, I did consider those. I mention those in my report. But when I'm talking about water quality, I'm talking about anywhere in the remote vicinity of the Bobcat well. I'm not thinking 60, 70 miles away. I think it's been established if you're in the recharge areas of the Capitan Reef Aquifer, the water quality is much better. That's a well-known fact.

Q. And under your modeling, if there is injection for 40 years, would you just simply -- and let's say the injection volumes remain the same. Would you simply double the area -- the radius in both the vertical and the horizontal footprint of your modeling? Is that how

you would approach it?

A. No. It wouldn't double. I would approach it by running the model for 40 years and seeing what it showed me. But you wouldn't take the -- you wouldn't take the figure at 20 years and just double what you see there. It's a little bit different process.

Q. And you didn't take into account future desalination or other cleanup technologies, correct?

A. Well, that wouldn't have any bearing on my opinion. I'm assuming a disposal volume at this well for a set period of time.

Q. Okay. Fair enough. And, again, that was a bad question.

In looking at -- well, let me rephrase this.

In looking at the migration of this water -- and, again, in the Bobcat well, the produced water that would be injected, and looking at the diagram that's part of Exhibit Number 5 that's the two-mile radius, did you consider any type of casing integrity issues on any of those plugged wells that are in this area in terms of migration of fluids that are injected into the Bobcat well?

A. I didn't specifically look at casing-integrity issues. I believe that's done, if I understand it

correctly, as part of the application in the area of review. And you can also look at the simulated hydraulic head, you know, from the model. And if you look out a half mile, it's -- I'm looking at Figure 12B in my report. And if you go out about a half mile, it's less than -- you know, less than 400 feet of simulated hydraulic head. So that's about -- we're starting at about sea level, so that's 400 feet of head. If there was some type of casing issue within that zone, that head rise wouldn't even -- it would hardly get you into the bottom of the Salado. So it's certainly not going to get up -- you wouldn't have fluid coming up boreholes to shallower aquifer units.

Q. That's assuming that no other pressure -- no other areas are applying pressure into the aquifer, right?

A. That is correct. But you'd need a lot of pressure. You'd need to add another 1,000 feet of pressure on the top of what's here from Bobcat if you're going to get fluid up through the Salado. So I don't think there is anything else out there that would add anything even close to those types of pressures.

Q. Okay. So you're saying that those two disposal wells that are northeast of the proposed well would not apply that type of pressure on that abandoned well that

looks to be 09804?

A. That's correct. Yes.

Q. But you didn't model that, did you?

A. I did not model that explicitly, no. But I can tell from the results of what I did do -- I can, you know, reasonably ascertain what the results of that simulation would be.

MR. NEWELL: Pass the witness.

EXAMINER JONES: Do you want --

MR. MOELLENBERG: I do have a couple of redirect questions.

EXAMINER JONES: Yes.

MR. MOELLENBERG: Thank you, Mr. Hearing Examiner.

REDIRECT EXAMINATION

BY MR. MOELLENBERG:

Q. Mr. Blandford, Mr. Newell asked you a couple of questions which I think related to the possibility that Jal might look to the Capitan Reef as a future water supply. Are you familiar with the Souder, Miller Report?

MR. MOELLENBERG: And let me correct something. I think I may have referred to that as Exhibit 7 earlier, but I think it may have been marked as Exhibit 8; is that right?

MS. CHAVEZ: Yes.

Q. (BY MR. MOELLENBERG) So that one is Exhibit 8. That's the Souder, Miller water supply report. You've reviewed that report, right?

A. Yes, I have.

Q. Does that report identify that Jal's consultant considered the Capitan Reef as a potential future water supply for Jal?

A. They do not. They list it as one of the aquifers in the area when they're going through and determining a recommendation, but when they make their recommendation, they recommended that Jal pursue water rights in the Santa Rosa Aquifer and clearly say that the Capitan Reef is not the aquifer to pursue. And I also think it's clear that Jal took their recommendation.

And this report is dated April 2015, and then Jal's notice of applications for nine Santa Rosa wells was filed beginning June 2015. So I think it's pretty clear what the recommendation was and where Jal is headed with regard to their future water supply.

Q. Now, regardless of whether we might speculate that Jal might look to the Capitan Reef for a water supply at any time in the future, does your model predict any water-quality impacts to the Capitan Reef as

a result of the injection proposed in OWL's application?

A. I don't believe there is going to be any impact. The simulations do not predict that impact. The physical setting, you would not expect an impact. And, in fact, some of the water quality in the reef is worse than the water quality in terms of TDS that is being injected at the Bobcat location, or that would be.

MR. MOELLENBERG: That's all I have. Thank you.

EXAMINER WADE: Nothing.

CROSS-EXAMINATION

BY EXAMINER DAWSON:

Q. Good morning, Mr. Blandford. Just a couple of questions I have here.

In your modeling and when you created your model on the Maralo Sholes B No. 2, you took that injection -- cumulative injection that is being injected into that zone from that well. Did you put that -- did you input that into your model?

A. I did not, other than to the extent that whatever went into that well -- there was the testing of the downhole pressures, so whatever pressures that fluid led to in the injection zone would have been intrinsic in the estimate of the starting hydraulic head that I worked on obtaining with Mr. Kronkosky.

Q. Okay. Do you know what the cumulative injection volumes of that Maralo Sholes B No. 2 wells would have been? Do you have an idea?

A. I remember seeing that data in Mr. Kronkosky's report, but I don't recall offhand what that number is.

Q. All right. In looking at your report on the groundwater model hydraulic properties, on your layers -- you have like six layers that you have modeled?

A. Yes, sir.

Q. And, basically, you're saying -- as a conclusion from your modeling, you're saying that the injected produced water will only go into, roughly, layers two and three and maybe just a very small percentage of layer four?

A. Yes. Layer four was the scenario where we did not have the higher Capitan Reef head.

Q. Okay.

A. So I would say probably layers one through three.

Q. Just those three?

A. Yes.

Q. And the others, four, five and six, which are deeper down into the Artesia Group, they have very low permeability and low porosity, is that correct, if I

look at your Table 1?

A. They are low relative to the injection zone.

Q. Okay.

A. But these numbers -- let me back up for a moment. If we're looking at properties, the layer one, three, five and six, those values are very consistent with the average permeability that Hiss reports in his study that were made from a number of drill-stem tests. So they're low relative to the injection zone, but they're average according to across the Artesia Group.

The injection zone is the highest. That's the 350 in layer two. And then layer four is a second high zone. Not as high as the injection zone, but I put 150. And that was just assuming another high permeability layer, because as you go down through the section, if you look out laterally, you get over to the Capitan Reef sooner if you're going down through the layers. And so we put another high permeability layer just to try to cover the case if we have vertical migration and then lateral from that closer to the reef. And so that's what that layer four is doing with the 150. So we assumed the higher permeability than is likely there.

Q. Okay. I'm going to go back now to your report, Figure 4, and I wanted to talk a bit about the well

field to the north. You do have -- these are the water-quality figures and dates, the TDS of the water quality and the date of the sample?

A. Yes, sir.

Q. And those are -- I see the 69,000 to -- well, let's see. 3,409 up to 165,000 on those Skelly Jal System wells, and that's Capitan Reef?

A. Yes. Everything in this figure is Capitan Reef.

Q. How come there are no numbers for the Skelly Jal Water System numbers four, five -- one, four, five, six and seven? Are those shallower wells?

A. No. They're all Capitan Reef wells. I don't know if there is water quality available for those wells.

Q. Oh, okay.

A. I took my information on these wells -- it's provided in Mr. Kronkosky's -- one of his exhibits. And that's where I obtained the information for these particular wells. And so I posted everything that I was aware of.

Q. Okay. So those wells are in the Capitan Reef, and those wells are supplying Jal with Capitan water?

A. No. No.

Q. No. Those are the numbers that you --

A. The Jal Water System is not a water system for the City of Jal. It's just a naming convention for industrial supply to oil and gas.

Q. Oh, okay.

A. And I don't know -- I believe those wells may have been plugged and abandoned. They were acquired by a different operator some time ago, and I'm not sure what the current situation is, but they have not been active for quite some time.

Q. Okay. So you think those wells were probably drilled in the order as they are named, like Skelly Jal's Water System Number 1, 3, 4, 5? They were probably drilled in that order, probably, weren't they, or do you know?

A. Maybe. I do not know, because these wells, they may have been former oil and gas wells that were plugged back and then perforated in the Capitan Reef. I believe that could be the case on these wells. I know that was the case with the USGS monitor wells. They were former oil and gas wells that were plugged back. So the wells on this figure that I know were drilled specifically to be water supply wells are the EOG Resources southwest of Jal and the CP-1057 and 56. Those are the Ochoa Mine supply wells. Those three were drilled specifically as water supply wells and were

never, you know, plugged back as oil and gas wells.

Q. And I think Mr. Kronkosky gave us numbers for those -- the TDS in those wells. Those were in the testimony, correct?

A. Yes, he did. There is an exhibit in the back of his report.

Q. And apparently you would have access to those wells in case they needed to be tested in the Capitan Reef?

A. We would have to get access from the owners if a third party wanted access to those wells. You're talking about the EOG and the --

Q. To monitor, yes.

A. Yes. I mean, we don't own those wells, so we'd have to get permission for access.

Q. Okay. Okay. Now, I'm sorry I'm flipping around here, but I'm going back to the Souder, Miller report. And I know you didn't do this report.

A. Yes.

Q. But as I look on page 2 in this report, it says, "The City of Jal has recently acquired rights to 100 acre-feet of water per year from the Capitan Underground Basin near the City of Jal. This right will allow for the installation of four supply wells to provide water to irrigate parks and supply water to the

Jal Lake." Do you know about that agreement, or do you know if they've acquired those rights? Do you know anything about that?

A. They have -- there is an application for appropriation for those rights. It's four wells, as I understand it, around a lake that's on, I think, the south side of Jal. I do not know if those four wells have been drilled or not.

Q. Okay. So that would -- that would be fairly close to your proposed SWD, correct?

A. Relatively close, yes. I mean, a mile or so maybe.

Q. So that would -- if they do drill the wells, those four supply wells, and utilize that water, then they would have to treat that water to irrigate and to use it to probably put in the Jal Lake, correct?

A. I have to see what the quality would be, but they probably would not need to treat for the lake and to irrigate. It could be borderline with regard to municipal supply, but that wasn't their designated use, as far as I know, for those four wells.

Q. Okay. Okay. That's all the questions I have. Thank you very much.

A. You're welcome.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Mr. Blandford, thank you for coming, first of all.

Do you -- you work for Daniel B. Stephens. Do you associate with the Souder, Miller people also? Seems like it's a small group of hydrologists around here.

A. Yeah. Infrequently. We compete with them sometimes, and we know some of the folks over there, but we don't work -- I can't think of any projects where we've worked collaboratively. There may have been some, but --

Q. Did you talk to them, their people, as you were doing your model?

A. I did not.

Q. We've got folks on the Respondent's side here that know a lot about hydrology, and they didn't ask a lot of questions about it.

Your layers that you set up -- Scott asked you about the layers, but -- you're a geologist also, correct?

A. I don't officially have a degree in geology, but I have enough credits for one, if that makes sense. So --

Q. Oh, okay. But you have a lot of geology?

A. Yes.

Q. Yeah. So how did you determine your layers, just briefly one more time? This is the probably the fourth time you've been asked this.

A. So in the -- in the Artesia Group, you know, we did not -- we had a top of Yates' surface, so the Tansill, we did not include in the model.

Q. Right.

A. We had a top of surface from Mr. Kronkosky.

Q. Okay.

A. We did not have the top of Seven Rivers across the entire domain, top of Queen and Grayburg. So we didn't have these subdivisions.

In addition, the proposed injection zone is the base of the Yates and top of Seven Rivers, so we have an injection zone that's crossing formations. So for those reasons, I didn't try to follow geologic delineations going down through the Artesia Group.

So the way I did my layering is I figured out at the Bobcat well what's the thickness from top of Yates to the top of the injection zone, and that's about 200 feet, then an injection zone of 50 feet. And then the next layer was getting into what seemed to be a thicker lower permeability zone that was base of Seven

Rivers and maybe getting into top of Queen. I gave it a thickness of 200 feet. We had the second high permeability zone, which conceptually you may think of as a sand in the Queen Formation. We just assumed that as 50 feet. And now we've got remaining thickness to deal with in two more layers, so we did 100 feet and whatever's left.

Q. Okay. Okay. But we asked Mr. Kronkosky about -- whether this was dolomite or limestone and the permeability of the vertical permeability. Did you look at any of the logs to conclude the same way Mr. Kronkosky did about whether it's limestone or dolomite?

A. I did not look at the logs myself. I don't assess geophysical logs. That's not -- I'm not competent in that skill, but the geologic descriptions are certainly dolomites and evaporites. I haven't seen any geologic descriptions of limestone in the Artesia Group. So if it's there, I think it would be extreme -- extremely minor.

Q. Okay. What about -- what about vugs or holes going down through those layers? Are you concerned about any of that possibility?

A. I'm not, no, because there's a lot of -- if there are permeable layers, there are a lot of

interbedded anhydrites, which, in my experience, are very low permeability both horizontal and vertical.

And, again, going back to, you know, the work of Hiss, he pulled together a large number of drill-stem tests and permeability measurements. And what we're using outside of the high injection zones -- or not -- injection zone is very consistent with what he listed for this region. So I don't think we're on the low side. I think we're on the -- I think we're on the expected side. And then when we put these hydraulic properties into the model and we apply the Capitan Reefer hydraulic head, we see Capitan Reefer water coming into the model domain in significant amounts, which is telling me at some location, these permeabilities need to be even lower by quite a bit.

Q. The vertical permeability between layers, can you talk about that in your model?

A. Well, in the higher permeability layers, we used a factor of 1 to 100. In the injection layer, layer two, it really doesn't matter because we're injecting water throughout the whole thickness.

Q. Right.

A. So that really doesn't matter.

The higher anisotropy factors in the lower layers, the factor of 1,000, that's indicative of the

evaporite deposits. I think it's a reasonable number. I think it could easily be even a lower vertical permeability than what we've used.

Q. Okay. Okay. So each layer had a pretty uniform porosity permeability?

A. Yes. Each layer was uniform across the entire model domain at these values that are listed in this table.

Q. Okay. Even though, in reality, heterogeneous reservoirs are probably not like that; is that correct?

A. That's correct. But it's also a scale issue. I mean, the distance simulated going out is a mile, maybe plus a little bit. So even though the model domain is large, where we're actually simulating what's going on due to the Bobcat well is much smaller than the entire model domain.

Q. Okay. Does the potash industry extract water from the reef? You said the Ochoa Mine does?

A. They drilled supply wells, but I don't -- I don't believe they're -- I don't know what their exact situation is, but I do not believe they're actively producing those wells. But I would really have to look at that. I'm not 100 percent certain.

Q. Isn't it true, though, in the future, the reef waters are going to be more and more demand for

industrial uses?

A. I believe they are, yes.

Q. So for hydraulic fracturing, though, you would need, what, 10-, 20,000 at the most TDS? Do you have any expertise on that?

A. I do not. That's outside -- I do know the industry has made great strides in using poorer quality water to do their operations, but I don't know what the limitations are.

Q. If you spend a lot of money on a frac job, though, you don't want it to go wrong, do you?

A. I imagine not.

Q. This distance to the reef vertically from this well -- this proposed well, what was the distance vertically to the --

A. Let me see if I can -- so there is a model layer thickness in Figure 8, and the injection interval would be Figure 2 -- or layer two -- I'm sorry -- in this figure, Figure 8, layer two. That's the 50-foot injection interval. So going down through the other layers, layer three is 200 feet. Layer four looks like it's going to be 50. Layer five looks like it's another 100 feet, 350, and then we're into maybe another 100. Judging by this, maybe 400, 500 feet. I could look exactly, but that's approximate.

Q. But you did have to make quite a bit of assumptions on the lower layers? You did overestimate putting in a high permeability layer, like number five or four, you said?

A. It was number four. Yes. Correct.

Q. Four.

But those were -- because of no logs through that interval, really you had to make assumptions on that?

A. I did in the context of the overall hydrogeology, the values reported by Hiss for different units, the observation of the hydraulic heads in the Capitan and the lack of elevated pressures in the production zone. So I've taken those things into account in addition to -- but at some level, we ended up with an assumption. That's correct.

Q. How would you verify this model as far as going forward in the future? Is there -- you're probably better equipped to answer that than almost anybody here. So --

A. We could verify in part observations at the wellhead. I mean, obviously, there is -- injection is not going to be exactly 25,000 barrels per day for every day and so on. I mean, so there's going to be some variability in that. The pressures would be measured.

That's one way to verify at the well. Other ways to do it would be to have pressure measurements possibly at other wells, but I really can't speak to the viability of that because I'm not used to measuring things at this depth.

Q. Okay. Thank you very much.

EXAMINER JONES: Anything else for this witness?

MR. MOELLENBERG: Nothing for this witness.

MR. NEWELL: I have just one question, and it just plays off of --

MR. MOELLENBERG: I would object to any further questions.

EXAMINER WADE: I think we've had enough questions.

EXAMINER JONES: Is this your last witness?

MR. MOELLENBERG: We have one more witness, Kevin Burns, and we would put him on just to address the question you had about logging and monitoring of the new well.

EXAMINER JONES: Okay. Mr. Kronkosky, I hope he doesn't leave the room. I want to ask him a few more questions.

MR. MOELLENBERG: Would you like to do that now?

EXAMINER WADE: Do you want to take a break in a couple of minutes?

EXAMINER JONES: Maybe after -- it depends if he's going to leave right away or if he's going to stay through the whole --

MR. MOELLENBERG: As far as I know, Mr. Kronkosky will be here for the whole duration.

EXAMINER JONES: It's probably better if we wait and hear the rest of the -- but definitely --

MR. MOELLENBERG: In all likelihood, we'll probably have the witnesses back for a little rebuttal, so we could do it then, or we could do it now, however you prefer.

EXAMINER JONES: We'll do it later.

And let's take a ten-minute break.

(Recess, 9:49 a.m. to 10:04 a.m.)

EXAMINER JONES: Are we ready to start?

MR. MOELLENBERG: We'll call Kevin Burns.

KEVIN MICHAEL BURNS,

after having been previously sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. MOELLENBERG:

Q. Mr. Burns, would you state your name, address and employer for the record?

A. My name is Kevin Burns. Address is 200 North Loraine, Midland, Texas. My employer is OWL SWD.

Q. Mr. Burns, what are your current responsibilities with OWL SWD?

A. I am their in-house engineer.

Q. Okay. And I'll ask you to kind of talk to the Examiners. It's a little confusing that way, but -- so thanks for that.

What do you do as OWL's engineer?

A. I focus on design, construction and optimizing the operational surfaces and downhole facilities.

Q. Mr. Burns, would you talk a little bit about your education and experience?

A. I received my petroleum engineering degree from University of Texas Permian Basin in Odessa. I spent three years working for BOPCO as a drilling engineer. I was also their facilities engineer for SWD systems in Eddy County. In addition, I was an operations engineer for their Keystone Field outside of Kermit. Prior to that, I've done some production, artificial lift design type stuff for Midland Basin operators.

MR. MOELLENBERG: I think we have a resume for you, which we can introduce as an exhibit. I think this is fairly straightforward, but we might as well qualify him and take care of that right now.

EXAMINER JONES: Okay.

Q. (BY MR. MOELLENBERG) So while we're doing that, Mr. Burns, there are a couple of documents there on the table in front of you. I think the bottom one, if you pick that up, has been admitted into this proceeding as Exhibit 5. It's a copy of the C-108 application; is that right?

A. That's correct.

Q. Are you familiar with that application?

A. I have reviewed the document.

Q. Mr. Burns, I'm going to show you what's been marked as Exhibit 9. Is that a copy of your current resume showing your experience and qualifications?

A. Yes, it is.

MR. MOELLENBERG: So I would ask that Mr. Burns be qualified as an engineer.

EXAMINER JONES: Petroleum engineer?

MR. MOELLENBERG: Petroleum engineer.

EXAMINER JONES: Any objection?

MR. BROOKS: No objection.

MS. MOSS: No objection.

EXAMINER JONES: He is so qualified.

Q. (BY MR. MOELLENBERG) So, Mr. Burns, I think you were probably here yesterday and the Hearing Examiners indicated that they may have a couple of questions

perhaps relating to the C-108, but particularly about OWL's plans for logging and monitoring the proposed new well. So I guess, first off, could you describe what OWL intends to do with respect to logging --

A. Yes, sir. If you notice in our application, our C-108 -- I don't know what page it is -- it's Section 8, the geological data, if you go down -- actually -- excuse me -- if go down to X, logging and testing on the wellbore, you notice that we plan to run your typical resistivity, gamma ray and density logs during the completion and operation of this new wellbore.

Q. So with that, then, the C-108 describes the extent of the logging that OWL is proposing to do?

A. Yes, sir, it is.

Q. Does the C-108 application discuss any monitoring that is planned for the new well?

A. No, it does not.

Q. What would OWL plan to do as far as monitoring with respect to the proposed well?

A. We plan to utilize the injection rates and injection pressures of the wellbore and compile that into what's called a Hall Plot to monitor the injectivity of the wellbore on a daily basis.

Q. And, Mr. Burns, that's the extent of the

monitoring?

A. At this time, yes, sir.

Q. To your knowledge, is that consistent with standard industry practice for this type of well?

A. Yes, it is.

Q. Okay.

MR. MOELLENBERG: That's all I have on direct.

EXAMINER JONES: Mr. Brooks?

MR. BROOKS: I have no questions.

EXAMINER JONES: Ms. Moss?

CROSS-EXAMINATION

BY MS. MOSS:

Q. I have one question. Under what circumstances would OWL place monitoring wells in connection with this Bobcat well if it were approved?

A. Since that is not industry standard practice, I'd have to evaluate that a little more to give you a better answer at this time.

Q. Okay. Thank you.

EXAMINER WADE: I have no questions.

CROSS-EXAMINATION

BY EXAMINER DAWSON:

Q. In your logging of injection rates and pressures, that'll be on a 24-hour basis? I mean, is it

going to be digital?

A. It can be. Yes, sir.

Q. That's the only questions I have. Thank you.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. So you're going to run open-hole logs?

A. Yes, sir. Since this is an open-hole completion, we would run open-hole logs.

Q. So however far it'll stand fluid in there, the logs will be valid --

A. Yes.

Q. -- for that distance?

But you don't really expect it to stand very much fluid, do you?

A. No, sir. But there are ways to mitigate that and address that issue.

Q. Okay. So you can run a case hole log, too, if you need to?

A. Yes, sir.

Q. And what about cores or sidewalls or any kind of injectivity test?

A. Coring has not been evaluated at this time. That's something I'll have to do at a later date to try and give you a better answer.

Q. All right. But you're kind of assuming that if

you redrill a well, you're going to get as good a well as the Maralo Sholes?

A. Due to the distance of the two wells, based on industry standard, it's pretty difficult to utilize existing well performance to inject those characteristics. Yes, sir.

Q. But there is a possibility you won't get as good a well; is that correct?

A. That's correct. I mean, there is also the possibility it may be better. Yes, sir.

Q. Okay. Yeah. And there's a possibility that the injection -- the disposal zone will not take fluid exactly like the temperature tracer survey on the Maralo Sholes, and so would you be -- would OWL object to some requirements in any permit that was issued to run tracers temperature surveys on a periodic basis and also maybe fall-off tests?

A. I would have to address others within the company to -- to give you an answer on that.

Q. Yeah. Okay.

And you'll run a bond log on your -- your casing design, I just glanced at it, and you're going to -- are you going to run any DV tools?

A. Due to the depth and length of the string, I do not see any plans for a DV tool, but we will run bond

logs. In addition to after performing the cement job on the well, we will obviously do a pressure test --

Q. To test the casing?

A. -- to test the casing. Yes, sir. And then we'll drill out and again do an additional test just to make sure there are no leaks within the casing to maintain the integrity of the casing.

Q. Okay. And who does your C-115 for OWL? Who is the production reporting person? Do you do that?

A. No, sir. We have a group in our Dallas office that handles that type of information.

Q. Yeah. Years ago, they moved our pressure reporting -- I know we're going to have inspectors on the well, obviously. But we moved the pressure reporting -- the monthly pressure reporting of disposal injection wells over to the C-115, so we sometimes have issues with operators not paying attention to that and reporting the same pressure month after month on there, you know. So whoever's going to be doing your C-115s. You will probably need to talk to them or look at what's being reported yourself and see if it looks reasonable to you, because you're the -- you're going to have a field foreman out there or a production foreman; is that correct?

A. Yes, sir. We have field personnel to help

monitor that information, in addition to the digital data gathering.

Q. Okay. Do you have any SCADA systems set up --

A. We do.

Q. -- or --

A. We do. We have SCADA to monitor our rates and our pressures, plus ancillary data for various other operations.

Q. Okay. And so what kind of tanks will you have out there? What are you planning on for that?

A. As far as tanks go?

Q. Yeah, water tanks, skimming tanks, and how much oil are you planning on getting from this?

A. I can't really speak to that because due to the nature of the water we're collecting, those numbers will vary greatly because of the various customers we have within the area.

Q. So your pipeline varies -- the yield of your pipeline varies quite a bit.

You also receive trucks to the location?

A. We do, some, very little at this time.

Q. Okay. How many water tanks will you set?

A. The facility is already actually in place that we would process the water through.

Q. Okay. So how far away from the Maralo Sholes

is this well going to be?

A. From the existing Maralo Sholes B well?

Q. Yeah.

A. From my understanding, it's roughly a couple hundred feet or less from the existing wellbore.

Q. Okay. So pretty close by?

A. Yes, sir.

Q. So your Hall Plot is kind of a classic way to monitor disposal performance. Is that something that you're going to pay attention to, or you have a reservoir engineer somewhere that will be watching that?

A. No. I will do that.

Q. Okay. Okay. Did you do the C-108, or did Steve Pattee do the C-108?

A. Lonquist, Steve.

Q. Lonquist did it --

A. Yes, sir.

Q. -- but you worked with them?

A. Yes, sir, some.

EXAMINER JONES: Is Steve Pattee going to be available at all?

MR. MOELLENBERG: Mr. Hearing Examiner, we could probably make him available by phone if you have some questions for him.

EXAMINER JONES: Yeah. We're going to have

questions on the notice issues.

MR. MOELLENBERG: Okay.

EXAMINER JONES: I think we're going to need to talk to him about that just a little bit.

MR. MOELLENBERG: Okay. If you're done with Mr. Burns, what I'd like to do, then -- because I think I've actually messed up some of the numbers this morning -- is actually have Ms. Chavez go through all the exhibits and clarify that and make sure we're clear on that. And part of that may be the notice -- notice affidavits, because I don't know that I was complete on that. So she's got those details, so if I could have her just run through those, make sure we're all clear on those.

EXAMINER JONES: Mr. Newell, quickly, do you have any questions for this witness?

MR. MOELLENBERG: No. Thank you.

EXAMINER WADE: Mr. Moellenberg, does that mean you want to wait to enter Exhibit 9 as an exhibit?

MR. MOELLENBERG: No. I would move admission of Exhibit 9 right now.

EXAMINER JONES: Any objection to the resume?

MR. BROOKS: No objection.

MS. MOSS: No objection.

EXAMINER JONES: Exhibit Number 9 is admitted.

(OWL SWD, LLC Exhibit Number 9 is offered and admitted into evidence.)

MR. MOELLENBERG: So with that, if I could have Ms. Chavez come up, and she can straighten me out.

MS. CHAVEZ: Mr. Hearing Examiner, is it okay if Mr. Burns steps down?

EXAMINER JONES: Sure.

Thank you, Mr. Burns.

MS. CHAVEZ: Mr. Hearing Examiner, I'd just like to quickly go through what we have proposed so far as exhibits. Some of them were provided before we started in a binder, and then I handed some out as we found the need for them during the course of our witnesses.

So in your binder, you will for sure have Exhibit 1, which was filed with OWL's pre-hearing statement on June 1st. That is the final UIC hydrological assessment prepared by Chad Kronkosky. Also in your binders and provided as an outside exhibit, you will have Exhibit 2, which is expert opinions prepared by Mr. Neil Blandford. In your binders, you will have what we titled as Exhibit 3, which is the resume for Mr. Chad Kronkosky. Next in your binders,

you will have what we labeled Exhibit 4, which is the report prepared by Mr. Phillip Goetze dated March 15th, 2017. Next provided to you with a binder clip at the top is going to be the C-108 application prepared by Lonquist, LLC, and we have labeled this Exhibit 5. Next in your binders you will have a resume from Mr. Neil Blandford, which we labeled Exhibit 6.

And I think this is where we start to get a little tricky. In your binders, you will have a document that looks like this (indicating), titled "Affidavit." This is an affidavit by Mr. Stephen Pattee, from Lonquist, stating that he prepared the C-108 and provided notice of such. We have labeled it as Exhibit 7. I would move for its admission.

EXAMINER WADE: That's the Notice of Affidavit?

EXAMINER JONES: Right.

EXAMINER WADE: So we want to hear from Mr. Pattee?

EXAMINER JONES: Yeah. Yeah. We need to get him on the phone sometime today --

MS. CHAVEZ: Okay.

EXAMINER JONES: -- ask him questions.

MS. CHAVEZ: Sure.

EXAMINER JONES: Just remember we need to

admit that officially.

MS. CHAVEZ: Sure.

All right. Next what we have is Exhibit 8, and it was provided in its own three-ring binder. It's the report prepared for the City of Jal by Souder, Miller dated April 2015. And I believe it's labeled "Exhibit 8" for you inside the binder, but the title cover on the outside just has the title page.

All right. Next, Exhibit 9 was the resume of Mr. Burns, which was just admitted momentarily -- I'm sorry -- shortly before we got to the exhibits.

And lastly in your binders, you will have another affidavit that says "Affidavit of Notice" on your index, and we would label this Exhibit 10.

EXAMINER WADE: And this is notice for what?

MS. CHAVEZ: Of the hearing.

EXAMINER JONES: Yeah. That hasn't been admitted yet.

MS. CHAVEZ: Those two, 10 and 7 have not been admitted, and they're both affidavits regarding notice.

EXAMINER JONES: We'll have to look at -- I'll have to get --

EXAMINER WADE: I don't have that in front

of me so we can wait.

EXAMINER JONES: Okay.

MS. CHAVEZ: And then, Mr. Hearing Examiner, if I can address any questions you have regarding the notice requirements, I'm happy to address those.

EXAMINER WADE: Did you assist in preparing notice?

MS. CHAVEZ: For the hearing, and then in obtaining the affidavit from Mr. Stephen Pattee.

EXAMINER JONES: And also we should -- that way we can have Respondents question Mr. Pattee briefly on notice.

MS. CHAVEZ: Okay. That concludes my overview of the exhibits that the Applicant has moved thus far.

EXAMINER JONES: Number 8?

EXAMINER DAWSON: Was Souder, Miller.

MR. TRUJILLO: Mr. Hearing Examiners, the gentleman is actually available now, if we'd like to do that now, or we can find a --

EXAMINER JONES: Okay. Yeah, unless Respondents intend to testify as to the notice provided administratively.

MR. BROOKS: We're not planning to offer

testimony on notice.

EXAMINER JONES: Okay. Let's get him on the phone then.

EXAMINER DAWSON: Do you have a phone number?

EXAMINER JONES: For the notice of the hearing, was OWL requested by the Division to re-notice people that were noticed for the administrative application, because sometimes that happens?

MS. CHAVEZ: I would need to look at that letter, Mr. Hearing Examiner. The rules simply require notice within a half mile of the proposed site.

EXAMINER JONES: Yeah. And if it goes to hearing, it's usually just whoever protests.

MS. CHAVEZ: Yes.

EXAMINER JONES: But sometimes the Division asks for -- makes clear what kind of notice is going to be required if it goes to hearing, and I just wondered if that happened or not.

MS. CHAVEZ: And, Mr. Hearing Examiner, in this large document bank I have here, I know I have that letter, so I'll double-check that for you.

EXAMINER JONES: Okay. Okay.

EXAMINER DAWSON: I'll call Mr. Pattee.

(Mr. Pattee contacted via telephone, 10:29

a.m.)

EXAMINER JONES: Hello, Steve, Mr. Pattee --

MR. PATTEE: Yes.

EXAMINER JONES: -- this is William Jones, Hearing Examiner in Case Number 15723. Would you please stand and be sworn by the court reporter?

STEPHEN PATTEE,

appearing via telephone from Austin, Texas, after having been first duly sworn under oath, was questioned and testified as follows:

EXAMINER JONES: Do you want to direct a second?

MS. CHAVEZ: Is it all right if I come a little closer?

EXAMINER JONES: Yes. Yes, go ahead.

DIRECT EXAMINATION

BY MS. CHAVEZ:

Q. Mr. Pattee, this is Rikki-Lee Chavez. Can you hear me?

A. Yes, I can.

Q. Can you please, for the record, state your name, address and place of employment?

A. Name is Stephen Pattee. Place of employment is Lonquist & Company. Address -- physical address or

address of employment?

Q. Address of employment will suffice.

A. Sure. 3345 Bee Cave Road, Suite 201, in Austin, Texas. The ZIP Code here is 78746.

Q. Mr. Pattee, can you tell us what your position is at Lonquist?

A. Yes. I'm regulatory manager at Lonquist & Company.

Q. Mr. Pattee, are you familiar with the C-108 application filed by OWL SWD Operating, LLC?

A. Yes, I am.

Q. And why are you familiar with the application, Mr. Pattee?

A. This application was prepared by my staff. Myself and my staff put this entire package together.

Q. And, Mr. Pattee, can you please tell me if you provided notice of that application?

A. Yes. We provided both public notice and notification to offset operators and the property owner of the land in which the well is to be situated. That notice was issued -- they went on or about May 1st of this year.

Q. Okay. And was any other additional notice provided by you or Lonquist?

A. We also provided notice to the property owner,

Fulfer Oil & Cattle, Fulfer Ranch. We provided notice of the hearing as additional notice.

Q. Okay. I have no additional questions for you, Mr. Pattee. You'll be asked some questions now by other parties.

EXAMINER JONES: Mr. Pattee, I'm going to pass you to David Brooks, attorney for the Division, see if he has questions of the preparation of the C-108 and the notice.

MR. BROOKS: Let me approach.

MS. CHAVEZ: Mr. Hearing Examiner, I realize I forgot to ask him about his affidavit, too.

EXAMINER WADE: Do you want to do that now?

EXAMINER JONES: That's the affidavit on the hearing, right?

MS. CHAVEZ: Of the application, sir.

EXAMINER JONES: Of the application? Okay. Go ahead.

MS. CHAVEZ: Sorry about that, Mr. Pattee. I had a couple additional questions for you.

Q. (BY MS. CHAVEZ) Did you receive a prepared application stating your providing of notice of the C-108 from me?

A. Yes.

Q. And did you affix your signature to that

affidavit in the presence of a notary?

A. Yes, I did.

Q. Okay. Thank you.

EXAMINER JONES: Mr. Brooks?

CROSS-EXAMINATION

BY MR. BROOKS:

Q. Did you personally review the list of people who -- parties to be notified and verify that notice was actually sent to each one of them?

A. Yes, I did. And we have certified mail receipts of all of the noticed parties.

Q. Okay. I can't -- since we are on the phone and we were not anticipating your testimony, we don't have a way to identify the exhibits I'm looking at to be sure that we're on the same page. But if you have verified the list and made sure that notice was sent to each person, I think that will be -- that will suffice.

And I have one other question. I have to go back to my seat and get the document for the question.

The original administrative application contains the following statement, Mr. Pattee. "Based on the available engineering and geological data, we find" -- "we find no evidence of open faults or any other hydrologic connection between the disposal zone

and any underground sources of drinking water." The term "we" doubtless refers to Lonquist & Associates, but you're the geologist. Did you -- did you personally examine the engineering and geological connection -- geological data to make that statement?

A. Yes. All of the engineering and geology performed by Lonquist went across my desk for final review, and the "we" does refer to the staff at Lonquist & Company that put this application together.

Q. However, you stand by that statement as something that you verified; is that correct?

A. Yes, sir. That is correct.

Q. Thank you.

MR. BROOKS: No more questions.

EXAMINER JONES: Ms. Moss?

MS. MOSS: None. Thank you.

EXAMINER JONES: Mr. Newell?

MR. NEWELL: Briefly.

CROSS-EXAMINATION

BY MR. NEWELL:

Q. When you use the term "drinking water," what are you referring to?

A. Drinking water? By EPA standards, underground source of drinking water is identified as anything less than 10,000 parts per million.

Q. Okay.

A. And so multiple jurisdictions identify drinking water differently here in Texas. 3,000 parts per million or less is considered potable. 3,000 to 10,000 is considered treatable. But the base definition of drinking water per EPA is 10,000 parts per million. Yes.

Q. So you didn't -- you didn't consider then -- well, did you consider the Capitan Reef Aquifer to be a source of drinking water?

A. The Capitan Reef is considered in some parts along the reef boundary as drinking water quality. You'll have to forgive me in my preparation response to this. But if I recall, the Capitan Aquifer at this location is not. It falls greater than 10,000 parts per million.

MR. NEWELL: Pass the witness.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Mr. Pattee, this is William Jones, the Hearing Examiner.

A. Yes, sir.

Q. The notice -- first of all, we check to make sure the notice followed the rules in the C-108 administratively. And I've got a list of your noticed

parties and it includes -- includes a bunch of operators; is that correct?

A. Yes, sir. That is correct.

Q. Okay. The C-108 says, "Notify all surrounding operators within a half mile and" the surface hole -- "the owner of the surface location." Did you do that?

A. Yes, we did.

Q. Okay. Also in Part 26 of the OCD rules, it has a definition of affected parties. Can you tell me what that means?

A. Affected parties -- the way we identify affected parties is by identifying mineral leasehold operators within the boundary established in the OCD rules and notifying all parties associated with a mineral lease. For example, in one of our notice areas, we identified that the interested parties or the affected parties were multiple operators such as Chevron U.S.A., Conoco, Apache, ZPZ Delaware. They all were affected parties because all had -- all of those operators had mineral lease percentages in the area identified.

Q. Okay. So there is no producing wells within a half mile; is that correct?

A. That's correct.

Q. So there are no operators of record. So you

had to notify the lessees; is that correct?

A. That's correct.

Q. Okay. So your land research notified -- identified and notified the lessees, and that is -- we have a page in your C-108 that is -- hopefully we'll get a color copy for the court reporter that will show the legal separate leases or -- or identically owned tracts, we call them. For example, the largest identically owned tract is owned evenly by Chevron, Conoco, Apache and ZPZ Delaware; is that correct?

A. That's correct. ZPZ Delaware, I believe. ZPZ II has operations in the area, but it is not affected by this well.

Q. Okay. Okay. And you notified them around May the 17th?

A. May the 1st --

Q. May 1st is when --

A. -- and 17th. Yes, sir.

Q. May 1st is when you mailed them?

A. Yes. They were mailed -- we received proof back -- I wish I could find it. ZPZ Delaware, I returned their receipt -- the date of delivery signed for was 5/4/17.

Q. Is it your understanding that everyone returned a receipt that you mailed notice to?

A. That is correct, with one exception and that is Legacy Reserve Operating.

Q. Not surprised.

A. I have a product -- I've got tracking information from the U.S. Postal Service from our service -- from our certified mail, and it was available for pickup on May 12th, 2017, but we did not receive a return receipt.

Q. Okay. But you posted newspaper notice despite --

A. Yes, sir. That's correct.

Q. Okay. Now, were there any instructions to you -- you knew this was going to hearing; is that correct?

A. Yes, sir.

Q. And why was -- why were you informed it was going to hearing? What was your understanding?

A. My understanding was -- well, I didn't know the background of why it was going to hearing. I knew it was going to hearing. So I was asked to provide exhibits in preparation for presenting at this hearing by others.

Q. Okay. Okay. So you didn't -- you weren't instructed by the Division to notify additional parties other than the -- in other words, you didn't do the

notice for the hearing itself, did you? That was done by another affidavit that we're going to talk about in a few minutes?

MS. CHAVEZ: Mr. Hearing Examiner, I think it was done by both, by us and Mr. Pattee.

EXAMINER JONES: Okay. I wanted to go over that, the notices provided administratively and for the hearing itself.

And in light of the testimony yesterday and this being converted into a commercial disposal well -- high-volume disposal well and into a reservoir that's productive of oil and gas, I was uncomfortable with the one-half-mile area of review for the notice. And we have discussed that with the director this morning, and he has agreed to go -- to go with a one-mile area of review for the notice for -- to proceed before we take anything under advisement in this case. So I wanted to let you know that.

MR. MOELLENBERG: Yeah, if I could respond to that, then. So this would be the first notice OWL has had of OCD exercising or the director exercising authority to require additional notice.

EXAMINER JONES: This would, yeah. I hate to hit you with this like this, but you've already researched the people within those four sections. It's

just a case of widening it a bit more.

MR. MOELLENBERG: Understood. So, obviously, since we didn't have notice of that, we haven't addressed the expanded notice and just so I can understand the process here, you would -- we would go ahead and finish --

EXAMINER JONES: Finish the hearing.

MR. MOELLENBERG: -- the technical hearing, and then you would ask us to do a broader notice?

EXAMINER JONES: A broader notice. We would continue the hearing for at least one month. We think it would probably take you about a week to identify the parties, and depends on how fast Mr. Pattee and his group can work. And you've got to give them, I think, 15 days' notice before we can -- we can hear it finally and take it under advisement -- take the case under advisement. And the court reporter, by that time, will have the transcripts. She should have them within two weeks, and we should have it all. We could practically have a draft ready, you know, in a short amount of time. In other words --

MR. MOELLENBERG: So let me ask this question: Has the director made the same decision with respect to the compliance hearing?

EXAMINER JONES: No. We haven't discussed

that with the director, on the compliance hearing.

MR. MOELLENBERG: So you don't know if the same thing is going to happen with respect to the compliance hearing?

EXAMINER JONES: No.

MR. MOELLENBERG: I think the Division is responsible for notice for that.

EXAMINER JONES: I don't know.

EXAMINER WADE: I can't see that that would be the case for a compliance issue being that it's already an operating well. This is, obviously, a new well with a new proposal.

MR. MOELLENBERG: Okay. So you wouldn't anticipate --

EXAMINER WADE: I don't think so.

MR. MOELLENBERG: All right.

EXAMINER WADE: One question for the Hearing Examiner so you know, Mr. Moellenberg, are you asking for the notice pursuant to the rule to be complied with? In other words, the landowners, as well as operators or affected persons?

EXAMINER JONES: Lessees -- yeah lessees of record. The wells have been plugged and abandoned, most of them, so there is no operator of record.

EXAMINER WADE: So it would be affected

persons pursuant to the rule.

EXAMINER JONES: It would be affected persons.

EXAMINER WADE: And landowners.

EXAMINER JONES: You've already noticed the people within a half mile, so it would be a doughnut.

MR. MOELLENBERG: Yeah. The hearing notice is that. So we're doing an expanded hearing notice, and we're including not only surface owners but the mineral interests.

EXAMINER JONES: Not surface owners, just -- just mineral owners.

MR. MOELLENBERG: Just mineral. Okay.

EXAMINER JONES: Yeah. And operators of record, any wells -- any wells to any depth that exist within a mile and they have an operator of record, those need to be noticed in addition to the affected persons.

MR. MOELLENBERG: Just so we can be clear on this and make sure we get the notice correct, would it be too much to ask if the director could actually direct a letter to OWL asking for the specific notice since -- and my understanding here is the director is exercising discretion here to require additional notice.

EXAMINER JONES: That's true.

MR. MOELLENBERG: And we want to make sure

we get it right. So if we could have a letter to that effect, I think that would be very helpful. I don't want to mess it up based on this discussion.

EXAMINER JONES: Yeah.

EXAMINER WADE: I think that would be fine.

Can we also, for the record, have that Post Office information regarding the Legacy attempt to notice?

MR. MOELLENBERG: Okay.

EXAMINER WADE: It's common that the OCD accepts just the printout saying it was available for pickup and nothing happened.

MR. MOELLENBERG: Okay. Okay. All right. Thank you.

MS. MOSS: That letter will be put in a file that I can access?

EXAMINER JONES: It'll be scanned.

EXAMINER WADE: Well, I kind of wonder if it can't -- what you really want is specific information as to what notice we are requiring.

MR. MOELLENBERG: The scope.

EXAMINER JONES: Maybe it could come via email.

MR. MOELLENBERG: I think that's okay.

EXAMINER WADE: Yeah.

MR. MOELLENBERG: I just want direction from OCD that's very clear as to the scope of the notice.

EXAMINER JONES: Specific. I think that's fine.

MS. MOSS: Can you cc us?

EXAMINER WADE: It will be to all parties.

EXAMINER JONES: Now, the affidavit of the hearing, did we already --

MS. CHAVEZ: That was going to be my next move, Mr. Hearing Examiner. Did we need to have Mr. Pattee still?

EXAMINER JONES: Unless he was involved with it, if he was involved with it.

MS. CHAVEZ: Not the affidavit of hearing, just the affidavit we have here of the C-108 application.

EXAMINER JONES: Okay. Mr. Pattee, you heard what's coming, correct?

THE WITNESS: Yes, sir, I did.

EXAMINER JONES: Okay. Thank you very much.

THE WITNESS: Okay. Thank you.

MS. CHAVEZ: So for the record, Mr. Hearing Examiner, I wanted to make sure we did move OWL's

Exhibit 7 for admission, which is the affidavit by Mr. Pattee.

EXAMINER JONES: Any objection?

Mr. Newell, any objection?

MR. NEWELL: No, Your Honor -- no, Mr. Hearing Officer.

EXAMINER JONES: Exhibit 7, the Affidavit of Notice/Application?

MS. CHAVEZ: Yes.

EXAMINER JONES: Okay.

MS. CHAVEZ: Okay?

EXAMINER JONES: That is admitted.

(OWL SWD, LLC Exhibit Number 7 is offered and admitted into evidence.)

MS. CHAVEZ: I recognize now there are new requirements for hearing notice, but to keep our record clean, I would like to move for the admission of Exhibit 10, which is in your binders, which is the Affidavit of Notice/Hearing prepared by counsel of record for OWL. And I would move for that admission.

EXAMINER WADE: Any objections?

MR. BROOKS: No objection.

MS. MOSS: No objection.

MR. NEWELL: No objection.

EXAMINER JONES: Okay. That's admitted.

(OWL SWD, LLC Exhibit Number 10 is offered and admitted into evidence.)

MR. MOELLENBERG: Thank you, Ms. Chavez. I think we are concluded then.

EXAMINER JONES: Do you want to take a --

MR. BROOKS: We'd like to have a brief recess.

EXAMINER JONES: -- brief recess? So 11:00.

(Recess, 10:52 a.m. to 11:03 a.m.)

EXAMINER JONES: Let's go back on the record and proceed with the OCD's case.

PHILLIP R. GOETZE,

after having been first duly sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. BROOKS:

Q. Good morning, Mr. Goetze.

A. Good morning, Mr. Brooks.

Q. It is still morning, I believe --

A. Yes, sir.

Q. -- by an hour.

MR. BROOKS: Am I speaking loud enough for the court reporter?

(The court reporter responds.)

Q. (BY MR. BROOKS) You have an exhibit notebook before you, Mr. Goetze?

A. I have our exhibits as presented by OCD. Yes.

Q. Okay. Before you go into the exhibits, though, I need to ask you: Have you testified before the Oil Conservation Commission and the Division previously, and have your qualifications and experience been made a matter of record?

A. I have testified before both Division and Commission, and my certifications and qualifications have been accepted by both.

Q. Right.

And was there some observation made about that subject last time you testified before the Commission?

A. They were tired of seeing my resume.

Q. Well, even though the Examiners may feel the same way, would you please give a brief summary of your qualifications and experience?

EXAMINER WADE: If there is no objection to his qualifications, I don't know how much foundation we really need. I think we're all pretty familiar with him.

MR. MOELLENBERG: I guess the only thing from my perspective, I would like to hear just what the

topic of qualifications are. That's --

EXAMINER WADE: Okay.

THE WITNESS: Well, I have 39 years of experience. The last four years, I have been a UIC technical reviewer, as well as examiner, and I deal with administrative orders, as well as provide support for the UIC Program in response to EPA.

Part of that, six years with Glorieta Geoscience doing environmental, hydrologic, natural resource assessments, which includes Los Alamos National Laboratory, under their groundwater stewardship program, which include both sampling, waste characterization, modeling, oversight of drilling deep exploration wells; Rio Rancho City Water Program, hydrologic modeling, groundwater abatement plan for several dairy facilities around Roswell.

Outside of that, primarily several other environmental, doing Phase I's, PFTD projects. Before that, with Tetra Tech, doing drilling, construction and deep monitoring well oversight at Kirtland Air Force Base.

Let's see. Then we have seven years with AFCG, which was the former Leeds, Hill & Herkenhoff. There, FTL at Los Alamos for oversight of drilling; PSDV, again, project development and management of soil

and groundwater mediation of hydrocarbon and solvent-contaminated sites; supervised and participated in USEPA CA/CO 1998-02, which was the Bureau of Indian Affairs, site characterization, as well as waste disposal, which will include also groundwater projects on the Navajo Nation; also provided sampling programs for AMAFCA's Storm Water Study, which was later published and used by AMAFCA, their MS4; several, again, UST sites with that.

Prior to that, Billings and Associates, where I spent several years in, I would say, about 20 sites over the state of New Mexico.

Prior to that, Roy F. Weston, overseeing drilling and groundwater wells in an UMTRA site; and then again back with Billings, bioventing and underground storage tanks, as well as site assessment, characterization.

And before that, Charles B. Reynolds and Associates as a seismologist and crew chief, doing USGS hydrologic assessment of Mesilla Bolson, plume and paleosurface mapping at the Johnson Space Center facility north of Las Cruces, and plume and paleosurface mapping in Mortandad Canyon and TA-22 site, Los Alamos, plume and paleosurface surface mapping at the Western Pipeline facility at Thoreau, New Mexico; again, plume

and paleosurface mapping at UNC Partners' mill and tailings site north of Milan.

And then we get into the real ancient history with the BLM where I participated in hearings before the Interior Board of Land Appeals doing the characterization of resources and delineation of competitive and noncompetitive status.

And prior to that, the U.S. Bureau of Mines, field geologist, mapping ligneous [sic; phonetic] areas, and then that gets me back to the USGS.

Q. (BY MR. BROOKS) I think we've probably gone far enough, Mr. Goetze. In a situation that causes you to get laid off, we'll recommend you for a job reading the medical warnings that accompany commercials on television.

(Laughter.)

EXAMINER JONES: What are you offering him as? A geologist or --

MR. BROOKS: A geologist and hydrologist.

EXAMINER JONES: Any objection to that?

MR. MOELLENBERG: No objection.

MS. MOSS: No objection.

MR. NEWELL: No objection.

EXAMINER JONES: So qualified.

MR. BROOKS: Thank you.

We will admit his resume --

Q. (BY MR. BROOKS) Oh, well, just for the record, then, is Exhibit 14 a copy of your resume?

A. That is correct.

Q. Okay. Mr. Goetze, I want to be somewhat systematic about that, so I will go through your exhibits generally in the order they appear in the notebook.

We will start, then, with Exhibit 1. Can you tell us what Exhibit 1 is?

A. Basically, Exhibit 1 is a location map to provide those people with not enough information as to where this subject matter is. I think we pretty much know where the proposed well is in relationship to the Maralo Sholes B Well No. 2, and as well as the relationship with the City of Jal.

Q. It looks like, from looking at this, that it's approximately a mile and a half southwest of the City of Jal?

A. That's correct.

Q. Okay. I believe all the information that is on Exhibit 3 is -- on Exhibit 2 is also on Exhibit 3, which shows some additional area. However, some of it may be more readable on Exhibit 2. But I don't think --

I'm sorry. It's all on Exhibit 2. It may

be more readable on Exhibit 1. But I'm going to ask you to turn to Exhibit 2 now because we want to get some other locations in mind. What is Exhibit 2 generally?

A. Exhibit 2 is an enlarged aerial photograph of the area. This is based on our GIS database that we maintain. The attempt here was to provide locations of significant discussion, primarily the location of the proposed well, the adjacent Maralo Sholes B Well No. 2.

Along with that, also, were included the injection wells in the immediate area of the photograph -- photographed area. They are noted with the administrative or hearing order for injection authority, along with numbers representing the May 2017 -- and I will have to note a correction in my explanation; that should be 2017 -- as well as cumulative volumes of injection in barrels.

Along with that, there is a discussion I made in my report with the Maralo Sholes B 25 No. 1, which is identified north of the Bobcat. I've also highlighted the Sholes B 30 No. 1, which is a plugged-and-abandoned well within the one-half-mile area of review.

Q. Okay. What is the yellow-dashed circle?

A. That is the limit of the one-half-mile radius review required by our UIC Program.

Q. Now, in regard to these SWD designations, you said that the bottom of the two barrel numbers is the cumulative injection; is that correct?

A. That is correct.

Q. And the top is what again?

A. That is the May monthly report as supplied through the C-115 to the Division.

Q. So that's monthly?

A. That is the most current month at the time of the preparation of the figure.

Q. So this injection in the Maralo Sholes Well Number 1H -- Well No. 2 -- Maralo Sholes B Well No. 2 was 771,180 barrels in one month?

A. That is what was reported.

Q. Okay. Now, moving out from the subject wells, you have a label here from the Sholes B 30 Well No. 1. And is the actual location of the Sholes B 30 No. 1, is that the red dot within the rectangle below the label?

A. That is correct.

Q. Okay. What's significant about the Sholes B No. 1?

A. This well was identified in the Applicant's C-108 delivery. It is a well where the information on record with OCD is essentially nothing. We do have an API number, but there is no documentation regarding any

phase of this well's life.

Q. Okay. And I will ask you more questions about that when we get to the relevant exhibit. I just wanted to get it located. That is a problematic well within the area of review, correct?

A. Correct.

Q. Okay. Now, it looks like, if I plotted it correctly --

Well, first of all, before I ask you that, how are producing oil well -- producing oil or gas wells indicated on this map?

A. The dark black circles are representative of oil producers.

Q. Okay. Looks to me like there are two within the area of review?

A. That's correct.

Q. Okay. Now, one of them has a label on here as the Sholes B 25 Well No. 1. Now, is the location of that well the black dot within the black rectangle above the label?

A. That is correct.

Q. And what's significant about the Sholes B No. 1 for this hearing?

A. This was the well when I did my review of information in the area regarding potential or possible

influences from injection within the existing Maralo Sholes B Well No. 2.

Q. Okay. So I will ask you some more questions about the Sholes B 25 Well No. 1 when we get to the relevant exhibit.

But for purposes now, that is a well that appears or at least appeared to have been influenced by injection in the Maralo Sholes B No. 2, correct?

A. Correct.

Q. Okay. Now, the other well is below the label for the Bobcat SWD, way down in the south part of the section; is that right?

A. That's correct.

Q. And we have no particular -- we have no specific concern with that well?

A. The history of production there is intermittent. Therefore, there would be no way of correlating. So with a broken-up reporting period, really it would not provide any relevance.

Q. Now, down in the section to the southeast, which would be Section 31, correct --

A. Yes, sir.

Q. -- we have a water well within the area?

A. That is an application for a monitoring well.

Q. Okay. So that's --

A. It's shallow, and it's not really relevant to our discussion.

Q. Okay. Now, the other wells in the area of review appear to be plugged and abandoned, correct?

A. Other than the two producers, the remaining of them are PA'd.

Q. How are plugged-and-abandoned wells indicated on this exhibit?

A. They are represented by a red dot.

Q. Okay. And the API numbers are indicated in red type above the red dots?

A. That's correct.

Q. And they're virtually illegible on my copy anyway.

A. Well, unfortunately, based upon the projections, it is difficult to carry through. However, the application by the C-108 does have the listing of the wells.

Q. Yeah. And if anyone desires to pull up the files, they can do so by the location, if they can't read the API number.

A. That's correct.

Q. There appear to be a number of producing wells up to the northwest in both the west half of Section 25 and in the east half-east half of Section 26, right?

A. Correct.

Q. And those wells are -- those six wells, they're all producing?

A. They are Yates Jalmat Pool producers. Correct.

Q. Now, there aren't any producing wells in this area in any pool other than the Jalmat?

A. They would be to the east of this location.

Q. And to the east, farther than --

A. Than the figure.

Q. Than this figure shows. Very good. Thank you.

Now I'm going to ask you to look at Exhibit Number 3, and tell us what is Exhibit Number 3. It's three different things, but --

A. This is a reiteration of what was presented in my letter of -- in March of this year regarding a response to the -- well, it was 2016 -- response to the testing that was done at the Maralo Sholes B No. 2. Again, all we're trying to do is provide the basis of what we have already seen in numerous submittals by the various participants, again, that we're above the lateral extent of what has been defined as the Capitan Aquifer by Hiss. That would be Figure 3A.

Figure 3B is the chloride ion concentration as provided by Hiss for that primarily in the Capitan, along with samples from the Yates, as well as Queen and

Seven Rivers.

Again, in Figure 3C, which I provided in my letter and assessment, is the fact that we're looking in the influences of having the Jal submarine canyons which got through the Capitan and influence what I felt was a preferred direction of fluid movement to the north from the injection.

And then finally Number 3 -- Figure 3D is a reiteration of the Hiss cross section in this area, along with one prepared by INTERA, which came out of their Ochoa Mine Water Resources Monitoring Plan, which they have submitted to the State Engineer's Office.

The basic concept I am presenting here is we still have a degree of flexibility in interpretation in the area, that we do get new information periodically, and with that comes a re-definition of previous surfaces and stratigraphic delineation as far as the Capitan goes.

Q. Okay. You said there were -- you said that you believed that -- did you say that you believed there is a preferred direction of flow to the north in this area?

A. At the time of the information that I had and my response in the letter, yes, I did feel that was the basis of what I saw in the information.

Q. Have you revised your conclusions since that

time?

A. Well, the modeling creates a new opportunity for interpretation, but I still feel that there is a degree of flexibility in what we see, fluid injections, especially at this volume.

Q. Would a normal movement carry -- if there is such a movement, would it carry injected water in the direction where there is -- there are other producing wells?

A. Yes. Based upon -- if all of the factors in the models are accurate, then we have a concern with regards to where the injection waters are going to go and the potential impact to the Jalmat Pool.

Q. But actually there are producing wells in every direction except that they don't go very far in the westerly direction, right?

A. East is a little bit depleted, but north-south, we do have production shown.

Q. Well, actually, this entire area is depleted compared to what it was 20 years ago, right?

A. Yes. But we still have the presence of small producers.

Q. Okay. We'll get more in detail on that with another exhibit.

I'd call your attention to what's been

marked as Exhibit Number 3. Well, there seems to be a -- those are 3A, 3B and 3C that we looked at. There is a foldout exhibit that is a designated Exhibit Number 3.

A. It's 3D.

Q. 3D. Okay. I'm going to mark mine 3D so I know that is the case.

And, Mr. Goetze, what is shown on Exhibit 3D?

A. Basically a reiteration of the cross section showing the relationship of the Artesia Group with the Capitan Aquifer. And as previously stated, the bottom section was a rework by the folks at INTERA showing a little more definition, but basically the same conclusion as what came through the work by Hiss.

Q. Now, unlike 3A and 3B and -- well, first of all, on 3A, B and C, there is a red dot. What does that indicate?

A. That was the location of the Maralo Sholes well.

Q. Which is immediately adjacent to the Bobcat well?

A. That is correct.

Q. To the proposed location of the Bobcat well.

Okay. Exhibit 3D, then, does not have such

a red dot. Can you give us a clue as to how to locate the Maralo Sholes and the Bobcat well on Exhibit 3D?

A. Basically, we'd be looking in the proximity of the Joyner No. 2 on the upper projection, which would be the Hiss, and then going the same -- going farther south. In the land section, it would be the similar vicinity.

Q. Okay. I was thinking that the injection well was farther east than that. Am I mistaken? Not that there would be anything unusual about that, if I were mistaken. I'm just trying to get clear where it is in relation particularly to the drawing of the Capitan Reef -- of the Capitan Aquifer as shown on the upper figure.

A. Well, you have me at a disadvantage. Give me a moment.

It would be past the Skelly Oil Joyner.

Q. Skelly --

A. Skelly Oil Company No. 2 W.T. Joyner.

Q. Passed in which direction?

A. I believe it would be to the west.

Q. To the west. Okay. Good. That's what you said, and you said it would be in that vicinity. So I'm glad we got that clarified.

Now, the injection zone in the -- in the --

well, we've already covered that, so I'll go on in the interest of time.

I'll call your attention to Exhibit Number 4.

A. Number 4 was an expanded map in the area, again referencing many of the wells that were identified in discussion. Primarily, this was provided in my letter of March 2016, which showed the areal extent of the aquifer as delineated by Hiss on a photographic base. It includes several of the wells, as well as the delineated areas for proposals. Beginning at the north end, we have the Jal -- Skelly's Jal water well field. Going south --

Q. That is the field on which we have some -- on which the water analyses have been admitted in evidence, correct?

A. That's correct, and also that was misidentified by me. And we shall make note that the municipal reference was wrong.

Q. Right.

A. And then we used information which has come up with the ICP Ochoa Mine water well field, which is the polyhalite activity.

Q. And that we also have some water analysis reports on, right?

A. That's correct. That's what has been submitted into evidence already.

Q. Okay. Go ahead.

A. Going south, we have a location for the Johnny East SWD No. 1 well.

Q. And what is significant about that well?

A. This was an application made by another party to have an injection well in the same interval, the Yates, which was heard before Division.

Q. Okay. Now, was that one that was granted, or was that denied?

A. That was denied.

Q. And is the order denying that one one of the exhibits we will be talking about later?

A. Correct.

Q. Okay. Then go on.

A. Then going farther south, we show the approximate location of the Bobcat and with that also the Maralo Sholes B Well #2.

Q. And that's the section line between Section 26, and Section 36 is the lowest -- the furthest south red line on this map, right?

A. Correct.

Q. And on the scale of this map, the Bobcat location is just south of that red line?

A. It would be right next to the Maralo Sholes.

Q. North of --

A. Yeah.

Q. Even though -- well, it's over farther to the right where I was looking.

Okay. Now, go ahead.

A. We've had the discussion with EOG Resources and their effort for their supply wells. There was an area delineated in their report for development with multiple wells in an effort to use in their production -- drilling and production.

Q. And is that the black dot on the line of the purple figure in about the center of the map at the bottom?

A. The small black dot is CP 1446, which is the State Engineer's designation for the EOG well, which was drilled and sampled. The dot in the center of it is the Southwest Jal Unit No. 1, which is the USGS monitoring well used for measurements in the Capitan, which was established during the period when Hiss was doing his work.

Q. And which of these wells is it or is it both of them that we have water sampling analysis?

A. The most recent one would be EOG Resources.

Q. And that would be the well that's labeled CP

1446 POD?

A. That's correct.

Q. Has that analysis been admitted in evidence and previously discussed?

A. Yes, it has been.

Q. Very well.

Now, what is the -- there is a lot of green on this map. What does the green indicate?

A. The green is a projection of Hiss' understanding of the boundaries for what he designated as the Capitan Aquifer.

Q. Now, does that coincide -- does that correlate with the area labeled Capitan Aquifer on the upper diagram in Exhibit 3D?

A. It is basically similar as Hiss presented.

Q. Now, there are several graphs on here, on Exhibit 4. What do they depict?

A. That's part of -- and I'll have to make the correction. It is the March 2017 letter that I prepared. One of the issues I raised, based upon observations provided to the Division in monthly reporting, was water production from the Sholes B 25 No. 1 well and compared it to water injection with the Maralo Sholes B Well No. 2. Taking that into consideration and reporting what had originally been

reported, we saw -- or at least I and one other person saw a correlation with the injection, along with the production of water from the Sholes B 25 Well No. 1. And this well is to the north of the injection well.

MR. MOELLENBERG: I'm sorry to interrupt you. Are you moving --

Q. (BY MR. BROOKS) Are you talking about Exhibit 4 or Exhibit 5?

MR. MOELLENBERG: I think the question was on 4.

Q. (BY MR. BROOKS) Yeah. That was the question. So I'll restate the question again. There are four graphs shown on Exhibit 4 on the sides of the map. What do those graphs depict?

A. Oh. Again, as submitted previously, this was the observations of the USGS in their water sampling done at these two wells, which have been somewhat maintained. They have just reinstituted a monitoring program back in 2013 and is currently ongoing.

Q. Observation by USGS as to what?

A. To water levels.

Q. That was the water level in these wells?

A. Correct.

Q. And is this within the depth interval of the Capitan Reef?

A. It was -- it has been identified as being in the reef.

Q. Now, I will go on to Exhibit Number 5, and you were telling us what it was at the time that I interrupted.

A. Well, I went ahead too fast.

Again, this is a graph that was prepared and attached to my March 15th, 2017 letter. It is production from the Sholes B 25 Well No. 1 versus reported injection of the Maralo Sholes B Well No. 2.

Q. Okay. Now, what is the blue line? What does that indicate?

A. That is the monthly reported injection -- excuse me -- produced water from the Sholes B 25 Well No. 1.

Q. Was that the injection -- were those -- now, the blue line is the monthly injection?

A. No. The blue line is the production from the oil producers.

Q. And that was the production from the Sholes B 25 No. 1?

A. Correct.

Q. And that graph -- was that graph based on the numbers that appeared on the reports received by the OCD, that were maintained by the OCD at the time you

prepared this?

A. That's correct.

Q. Now, what is the red line -- the red graph?

A. The red line is the monthly injection reported for the Maralo Sholes B Well No. 2.

Q. Now, these graphs go on fairly steady for a long time, and then they start zigzagging. Would you explain that, what that depicts?

A. We looked at the period of time, initiating with the injection of the Maralo Sholes B Well No. 2. January 6th, 2009 was the initiation of injection into the well. For almost five years, we see a consistent pattern of around 5,000 to 10,000 barrels per month being injected. Then the period following August 24, 2014 is when we have operation by OWL, at which point we see an increase in injection rates magnified several times, and we have the maximum in the reporting period of the 42,880 barrels per day.

Q. And does that tend to correlate with what the first witness said about OWL's business plan?

A. This would be above what they propose as a maximum of 30,000.

Q. Above?

A. Yes.

Q. Okay. But the -- the higher flows -- is OWL

projecting higher -- considerably higher injection than the numbers shown on the graph until we get to November -- until we get to December 2014?

A. Could you repeat the question again?

Q. Okay. Look at the red line.

A. Yes.

Q. The numbers for injection are all, with one anomaly, in the range of 2- to 6,000. And I believe this is -- the injection is calibrated on the right side of the figure?

A. Injection is the red and on the right. Yes.

Q. And these numbers are barrels per day?

A. That's correct.

Q. Okay. So except for one month, the injection prior to January of 2015 -- I said December of 2014, but that's not correct -- January of 2015 were all below 15,000 barrels per day, and most of them were below $10,000, it looks like?

A. That's correct.

Q. Now, is this much larger injection, in the range of 20- to 30,000, what is being projected for the new well?

A. That is correct.

Q. Now, I realize that the 40 is much higher, correct?

A. That is correct.

Q. That appears on the graph for July through November -- through October 2016 -- 2016. Yeah.

Now, you said the blue was water production from a different well, right, the Sholes B Well No. 1?

A. The Sholes B 25 No. 1.

Q. The Sholes B 25 No. 1. Is that the well that is within -- is that the producing well that is within the area of review that we talked about before?

A. That is correct. That is one of the two producers within the one-half-mile area of review, and it's directly north of the Maralo Sholes.

Q. Now, what did you conclude from this graph the way you had it drawn?

A. My first consideration was that there was an influence from injection at the higher levels, which were reported, which appeared as produced water in this producing well -- or reported as water.

Q. You have two very high peaks that tend to correlate between those two curves, right?

A. That's correct.

Q. And was that a logical conclusion based on that data?

A. Based upon the available data, yes.

Q. Okay.

MR. BROOKS: I believe it's time for me to take my recess, Mr. Examiner.

EXAMINER JONES: Yeah. Let's take a lunch break. Can we be back at 1:15?

MR. BROOKS: I will be back at 1:15.

(Recess, 11:45 a.m. to 1:44 p.m.)

EXAMINER JONES: We're ready to go back on the record, and if we don't finish this afternoon, we're looking at starting again at 8:30 on Friday morning. We'll have a substitute Examiner -- or Examiner's counsel for about 30 minutes or so.

MR. BROOKS: Well, you know, I'd be real happy to make it 9:00.

EXAMINER WADE: Cheryl wouldn't care. My only fear -- let's see how it goes.

MR. BROOKS: Because we do want to get through. I would not want to cause us not to get through on Friday.

EXAMINER JONES: Did you want to -- Ms. Moss to talk on the record about her -- you mentioned earlier that she --

EXAMINER WADE: I don't think -- let's get through this case -- this portion of the case today before we start talking about the second case.

EXAMINER JONES: Oh, I didn't know you were

talking about the second case.

Okay. Let's go. Let's forge ahead here.

Mr. Brooks.

MR. BROOKS: Okay. Thank you.

Q. (BY MR. BROOKS) Mr. Goetze, we meet again.

And I want to go back to Exhibit 3D to ask you one question. You told me that the proposed Bobcat well is located on -- you attempted to locate it on this map, and there was some -- a little miscommunication. Did you refresh your recollection about that subject during the break?

A. Yes. I went back and looked at the sources with regards to the wells referenced in both cross sections. It was -- finding that my location should be to the east of the W.G. Joiner No. 2 in the upper Hiss D to D cross section, and the same well, the Skelly Company No. 2 W.T. Joyner in the lower INTERA cross section. These are both the same wells, and they should be -- the well -- the Maralo Sholes B No. 2 should be located to the east of these -- of these specific wells.

Q. Yes. And these wells are -- then does that put these wells east of the high point of the -- of the more right high point of the Capitan Reef as shown on Exhibit -- the Capitan Aquifer as shown on Exhibit 3D?

A. It puts it in the proximity of the peak for the

projection for the Hiss cross section.

Q. Thank you.

Now, let's go back to Exhibit 5. And I think you discussed that fairly thoroughly, but I'd ask you to look -- do you have the Applicant's exhibits up there?

A. Yes, I do.

Q. Okay. I would like you to look at 1G.

A. That would be Chart A.

Q. It's titled "Chart A" at the top, "Sholes B 25 Water and Gas Production versus Maralo Sholes SWD."

A. Yes, sir.

Q. Okay. This -- in addition to -- there's some information on Exhibit 1G -- Applicant's Exhibit 1G that does not show on OCD Exhibit 5, but some of the information is the same curves that are shown on OCD Exhibit 5; is it not?

A. Yes, sir.

Q. Now, which of the curves shown on Exhibit 1G are equivalent to which curves shown on Exhibit 5 -- OCD Exhibit 5?

A. I believe they have shown a curve in blue -- light blue, which is referred to as the uncorrected water production for the Sholes B 25 well.

Q. And that is the same curve as which curve on

OCD Exhibit 5?

A. It's the dark blue on Exhibit Number 5 by Division.

Q. Okay. And there is a dark blue or perhaps a purple curve on Exhibit 1G?

A. Yes.

Q. What does that correspond to?

A. That is the Maralo Sholes injection rates.

Q. Okay. Now, the red curve on Exhibit -- Applicant's Exhibit 1G and the dashed red line are not equivalent to anything on OCD Exhibit 5?

A. That is correct.

Q. Do you recall Mr. Kronkosky's testimony -- I believe it was he -- about the reporting errors that were allegedly corrected?

A. Yes, sir.

Q. But this -- is this purple line on -- or I mean -- I'm sorry -- this blue line on -- the purple line on Applicant's Exhibit 1G, is that the corrected figures, or is that the same figures you used?

A. The uncorrected for June, July, August still appears to be what I have plotted. The second peak for December 2016 and November 2016 have been modified to show a nominal volume near zero.

Q. They show an actual -- there is something here

that says "actual," right?

A. Correct.

Q. But the diamond -- the blue diamonds are not plotted on the graph, are they?

A. No, they are not.

Q. They just say that these are corrected. I should say allegedly corrected because -- well, let me put it this way: When an operator reports production, do we at the OCD have any way to determine if they reported correctly?

A. No. Under our rules, the operator's responsible for providing information specific for that well.

Q. And if they file an amendment to their reports, do we have any way of determining which, if either, is correct?

A. I'm not aware of it at this current time.

Q. So you mentioned conclusions that appeared reasonable based on what appeared in the OCD records at the time?

A. That is correct.

Q. And if there were changes made -- well, first of all, have you looked at the OCD's records to see if, in fact, changes have been incorporated into the OCD's records?

A. They have.

Q. But would you know -- would you know which are correct of either --

A. No. I would be using the information that was current at the time of the assessment.

Q. Okay. Thank you.

Let me go on to Exhibit Number 6. What is Exhibit Number 6?

A. Exhibit 6 are two water sample analyses provided for -- one for the Bobcat and its application. The second one was the water sample provided for the Maralo Sholes B No. 2 well. The copy of the Maralo Sholes water sample was included in its original C-108 application for this well.

Q. What does this exhibit show about the proposed well?

A. That the concentrations of total dissolved solids would be significantly higher than was previously injected with the prior operation. The prior operation being the approved SWD Order for the Maralo Sholes, which was to be in support of production primarily from the Applicant's well in the Jalmat Field.

Q. What TDS does Exhibit 6 predict with the injected water in the Bobcat?

A. Based upon what was submitted, they are looking

at a TDS of 140,543 milligrams per liter.

Q. What was the TDS -- what TDS information do you have about the injectate prior to the time that OWL became operator of the well -- the Maralo Sholes well?

A. Based upon the original application, we had a range going from 75,000 to 5,000, based upon 114 wells that Fulfer has under -- as operator. The primary TDS level would have been represented by the Seven Rivers and Queen production, which would have been 8,200 to 5,000 TDS.

Q. The idea that the TDS will be much higher would be consistent with -- would that be consistent with the testimony of the first witness, that OWL will be piping in water from outside this immediate area?

A. That is correct.

Q. Is there anything else significant about Exhibit Number 6?

A. Not that I'm aware of at this point.

Q. All right. Exhibit Number 6 has two pages. Is there anything significant on the second page?

A. That's the -- that's the sample that was submitted for the Sholes.

Q. Is this from the original application for the Maralo Sholes well? Is that what you're telling me?

A. That's correct.

Q. Now, on the lower table here, there is a column entitled "TDS Milligrams Per Liter." What does that represent?

A. Well, those were the samples that were used for the application, the description of the source waters or the produced water to be injected.

Q. The source water. Not water on location?

A. No. This is not a measurement of the formation water.

Q. Okay. Okay. Thank you.

Well, this may still have some significance. They represent -- they represent that a measurement was taken from the Seven Rivers' waters -- I assume water extracted from the Seven Rivers?

A. These wells that are in close proximity to the Maralo Sholes, so they would be representative of discrete samples from the Seven Rivers as well as the --

Q. And they represented the TDS from the Seven Rivers to be 8,200, correct?

A. Yes, sir.

Q. And 8,200 is less than 10,000?

A. Yes, sir.

MR. MOELLENBERG: Could I just clarify who the "they" is? We have a couple different Applicants here, I believe.

MR. BROOKS: Yeah.

Q. (BY MR. BROOKS) This was not OWL. This was --

A. This was Fulfer Oil & Cattle.

Q. And Fulfer was the party that originally applied for the saltwater disposal permit for the Maralo Sholes No. -- well, whatever it is. I think there is only one Maralo Sholes, right?

A. They were the original applicant and did receive the designation as operator.

Q. Okay. Thank you.

Now, at the time that we were talking about wells, one of the wells we talked about is the Maralo Sholes -- well, it's when I was pointing out the location of the wells that was going to be talked about later. I'm talking about the Maralo Sholes -- no. One of them was the Sholes B 25 No. 1. Now, we talked about that, did we not, with Exhibit 5, right?

A. Yes, sir.

Q. Was the other one the Sholes B 30 Well No. 1?

A. Yes, sir.

Q. Is Exhibit 7 for the Sholes B 30 No. 1?

A. This is a copy of the well diagram as provided by the Applicant.

Q. And is this well within the half-mile area of review of the proposed Bobcat well?

A. Yes, sir.

Q. What does Exhibit 7 tell you about the Sholes B 31 [sic] No. 1?

A. The Applicant provided what is probably the only information available on this well, as doing a search in the -- through an outside vendor, in this case his. It has provided a well diagram that is based upon that information. It is very limited. And with that, we have no information -- this well is plugged and abandoned, but we have no information how these plugs were set and what methods were used.

Q. Is there any information in the remaining pages of Exhibit 7 that's relevant to that subject?

A. The only other aspect of this is with the reported volumes, that the cement was calculated to have circulated to surface. Other than that, we have just depths -- setting depths and volumes of cement for setting casing.

Q. Now, when it says "calculated," what exactly does that mean?

A. In order to establish what portion of the casing has been cemented over, a scientist or an applicant will calculate how much volume of cement based upon reported quantities of sacks with particular conditions and will provide an estimate as to where the

top of cement will be.

Q. Does that indicate that anybody actually went to the well and saw that it was cemented to surface?

A. Based upon the information, we would not have any indications that it was observed as circulated to surface.

Q. When was this well plugged and abandoned? I'm talking about the Sholes B No. 30.

A. Based upon the report --

Q. I believe there is a date on page 2.

A. -- August 20th, 1948.

Q. Okay. To give some perspective on that, I was born on March 14th, 1948, so that kind of concludes this is an old well.

A. This is correct, sir.

Q. The casing setting depths and cement sacks appear on what page of this report?

A. In the ISH report, it is on the last page. It is highlighted in yellow.

Q. Okay. Thank you.

Now, in connection with this well that you suggested that we -- proposed that we offer the Dennis Powers article that is Exhibit 8?

A. That's correct.

Q. Now, is this article a source that an expert

witness would rely on -- or an expert in the practice of his profession would rely on as establishing something of importance?

A. Yes, sir.

Q. What does this -- what's the subject of this paper, Exhibit 8?

A. It is a paper done by Dr. Powers related to the formation of sinkholes in this area. It discusses several locations. The one in particular in his discussion is in reference to the Jal Water System Well No. 2.

Q. Where is that well in relation to the subject wells?

A. It is north in the abandoned Jal water well field.

Q. Okay. If you go back to Exhibit Number 2, is it --

A. Exhibit Number 4.

Q. It's shown on Exhibit Number 4.

Okay. Can you point everyone to where it is on Exhibit Number 4?

A. It is in the center north or center top, the blue circle. Within that is a highlighted box with the well name and the API number, along with the dot representing its location.

Q. That being the Jal Water System No. 2, right?

A. Yes, sir.

Q. Okay. And what is significant about Powers' observations as it relates to the Sholes B Well No. -- whatever -- 2?

A. In his discussion of sinkhole formations, this well had a particular event with a sinkhole forming adjacent to it.

Q. Hold on. Let me interrupt you. I said Sholes B 30 No. 2. It's the Sholes B 30 No. 1, correct?

A. Yes, that's correct.

Q. Okay. Go ahead with what you were saying?

A. Basically referencing to this article by Dr. Powers showing that there's been concern with improper cementing of wells and with it comes a higher risk of formation and dissolution communication up the annular space of casing with improper cementing. And his suggestion was correlation, that the source of dissolution was injection associated with possibly waterflood with pressure in the Capitan.

Q. Injection into this particular --

A. No. This is not --

Q. -- well or injection in the general area?

A. Injection in the general area.

Q. Based on your examination of Exhibits 7 and 8,

would you have an opinion as to whether or not it would be prudent to require this well to be replugged if we were to permit a high-volume injection well in that radius?

A. It has been a policy of OCD where we have situations like this associated with commercial injection and not having a rate limited, as would be in a waterflood, that wells such as this, where we don't have any information, at least be required to re-enter and ensure proper plugging.

Q. Does the fact that sinkholes -- that a sinkhole has occurred in an old well that was apparently improperly plugged indicate that that policy ought to be followed in this case?

A. It is what we recommend, especially since our underground drinking water aquifers are at shallow depth.

Q. Let me ask you to look now at Exhibit Number 9. Now, this is an opinion or order written by the Honorable William Jones, correct?

A. That's correct, sir.

Q. And what conclusions did Mr. Jones come to -- well, what was this case about, first off?

A. This case was an application for a disposal well with the same interval for injection. It was

designated the Johnny East SWD No. 1. It is located approximately three miles northwest of the present application.

Q. Back to Exhibit Number 4, can you show us where the proposed well was located?

A. It is located on the figure -- on the map approximately halfway down. It is highlighted by a red triangle.

Q. And it's within a blue ellipse?

A. No. It's stand-alone. It's the Johnny East SWD.

Q. Okay. And what was decided in this case?

A. In this case the well was protested by an operator in the area. It made a protest based on the adverse effects to existing disposal and the location of the proposed disposal well would be within the Capitan Reef Complex.

Q. You said adverse effects on existing disposal --

A. I mean -- excuse me -- existing production.

Q. Oh. That's what I was thinking.

Okay. And what was the decision?

A. The Division concluded -- let's see -- that "the oil and gas reserves from the Yates Formation could be threatened by allowing commercial disposal of

wastewater into the proposed disposal well," that "the nearest existing well within this Yates Formation are almost depleted; however potentially may still exist in this shallow reservoir for increased density or delineation drilling and those wells would be relatively inexpensive to drill." And with that and consideration that it gave to the potential for impacting the reef, it denied the application.

Q. Okay. Usually we don't site precedence through a witness -- through a sponsoring witness, but that was in this notebook, and there's one other in this notebook. So I'm going to present these two in that manner, since there's been no objection to it so far.

The next one is Exhibit Number 10.

A. Number 10 represents a case involving an application for disposal which took a more direct path into the Capitan, and we actually sited it as an interval for which injection should occur for a disposal well, in this case a commercial disposal well.

Q. Now, this was to be in the Capitan?

A. Yes, sir.

Q. Now, Exhibit Number 9, Order Number R-14034 was not in the Capitan?

A. That's correct. That would have been Seven Rivers-Yates, comparable to what we're seeing in today's

application.

Q. And Exhibit Number 10 is Order R-9913. And you said this was to be for disposal of the Capitan?

A. That's correct.

Q. And this was written by Michael E. Stogner, one of the famous examiners. What was -- what was the situation in Case Number 10693 that's the subject of Order R-9913?

A. Basically, what we're seeing in this, there was a model done. This started the model of not having enough field verification information. However, the main item is the fact that the injection was denied into the reef due to its classification or consideration that it still is an underground source of drinking water and that if Applicant wished to proceed with doing this type of application, that the path would have been through the Exempt Aquifer Program.

Q. Very good. Thank you.

MR. BROOKS: And, again, although these orders were sponsored by a witness, I will ask that the Division consider them as precedent to the extent our Division orders are so considered.

Q. (BY MR. BROOKS) Now, let us look at Division Exhibit 11. Is that a report that you wrote?

A. That is the March 15th, 2017 report that I

wrote that's been entered several times.

Q. And this Division Exhibit Number 11 does not appear to include any figures or tables or exhibits.

A. No, it does not.

Q. Did the Applicant enter a copy of the same report with the attached exhibits yesterday?

A. I am not aware.

MS. CHAVEZ: (Indicating.)

THE WITNESS: They may have.

MR. BROOKS: May I ask the Applicant, because if it's already in evidence, I don't need to find it?

MR. MOELLENBERG: It's in evidence. And yeah, I think it's the complete report with the attachment.

MR. BROOKS: That was my recollection. So I will go on.

Q. (BY MR. BROOKS) Is there anything -- Exhibit Number 11 is already in evidence. Is there anything you would like to emphasize?

A. The only thing I would like to emphasize is that with the origins for the investigation, we did receive three other applications from OWL for doing commercial disposal in the same area of the current application. With that, as a technical reviewer, I felt

that it was one of the decision-making elements that said that the current Bobcat application should go through a hearing process based upon the potential there may be additional requests for new wells in the area.

Q. Was the case originally filed as an administrative application?

A. Yes, sir.

Q. And you recommended to the Director, based on your review of it, that it be sent to hearing?

A. Yes, sir.

Q. Thank you.

Let's go on, then, to Exhibit Number 12.

A. Exhibit Number 12 is, again, just a highlight of the Hiss Ph.D. thesis that was done on the Capitan Aquifer. It has been referenced many times. I included the equivalent information that has already been discussed. I did highlight the fact that we do have communication between the Capitan and Seven Rivers Formation, as observed in a test done -- or observations done by Hiss during preparation of his thesis, and also included the information regarding the permit to the south, the Hendrick Field, around Kermit.

Q. Is Mr. Hiss' thesis a reference for which experts in your field would reasonably rely on the work?

A. It has been the strength of most of the

discussion here today.

Q. I've heard a lot about it -- about Mr. Hiss. He has been mentioned many times both yesterday and today, right?

A. Yes, sir.

Q. Is there anything else you want to say about Exhibit Number 12?

A. Nothing else other than that.

Q. Okay. Now, Exhibit Number 13, when was this exhibit prepared?

A. Upon receipt of the Daniel B. Stephens report and model done for the proposed injection of the Bobcat well, I took a look at the results of the injection model and plotted out certain items from it.

Q. Okay. What is the solid yellow line -- yellow circle? What does that depict?

A. I took the projections provided for the second layer for the 20-year simulated injection, and I divided it up, basically, using the yellow -- the 82 -- actually, just outside, the 70,000 to 125,000 milligram per liter, and then the exterior for the 30,000 to 40,000 milligrams per liter TDS lines. Having taken that, I projected it onto an area photograph base for the layer two only and plotted out the area of influence based on what I would have assumed would have been

impact from the injection using the model as a basis.

MS. MOSS: Excuse me. We don't seem to have that exhibit, which makes it difficult for us to --

THE WITNESS: I gave her a copy. There is one up front.

MS. MOSS: Right here?

THE WITNESS: Yeah.

MS. MOSS: Thank you.

Q. (BY MR. BROOKS) Would you explain which of the lines that are superimposed on this map has -- indicates what?

A. The solid circle is the one-half-mile radius area of review that is mandatory under our agreement with the EPA. With that, the dashed yellow line is the best approximate limit for the 70,000 milligrams per liter TDS. The outer white being the limit of the 30 gram or 30,000 milligram per liter TDS.

Q. Now, Mr. Blandford testified for a 20-year production life and a 40-year dispersal. Which map of Mr. Blandford's is this based on?

A. This is only the 20-year.

Q. So it does show the farther extent that would occur after production was stopped, according to Mr. Blandford's model?

A. We stayed with the most conservative and most

representative of the business model, which would have been 20 years of injection.

Q. Based on Exhibit Number 13 and your experience as a reviewer or a technical reviewer for saltwater disposal applications, would you -- in light of Mr. Blandford's testimony, would you recommend a wider investigation of the area of review versus the standard half mile?

A. Based on the 70-gram yellow line, there would be 24 wells, which seven are producers and 17 are plugged and abandoned. If we go out to the 30 gram, the white line, we have an additional 25 wells of which five are producers and 20 are plugged and abandoned. So we're looking at a total of 49 wells that would not be considered using the one-half mile, and, therefore, yes, I would recommend a greater area of review.

Q. Would you consider that to be prudent as a matter of Division review of this application?

A. It would be prudent. Yes, sir.

Q. Yeah. Thank you.

I want to ask you -- this is kind of diverging from the exhibits, but I want to ask you a question about the 20-year-life assumption. Do we have a lot of -- do we have wells -- saltwater disposal wells that have been permitted well before 1997?

A. Currently, I'm looking at Order R-2, which is still active from, I believe, back in 1950s, early '51, '52.

Q. Are there a substantial number of wells that are injecting that have lives in excess of 20 years?

A. There are a significant population of wells that are greater than 20 years.

Q. Are there wells in this area greater than 20 years?

A. Based upon, I believe -- if you were to look at just the order numbers, the Sholes B No. 2 being 513, is a very low number, and then, of course, the Guttman [phonetic], having a hearing order of 3604, these would be fairly early.

Q. Now, based on the frequency of longer-producing wells, would you think it might be prudent to assume a longer injection life in order to create a valid dispersal?

A. With consideration given to the ability of whatever reservoir you're injecting into, it has been my experience that injection literally goes to the point where you are reaching the maximum injection pressure, which typically is the formation parting pressure.

Q. And as the injection pressure increases, does that increase the -- in a reservoir like this, where

you're injecting initially at low pressure, does that increase the dispersal?

A. That, I could not -- I would not dare to venture. But I would say that given the observations of the well's operation, it has only been within the last two years any reported pressure has occurred, and then previous injection at high volumes were reported as zero.

Q. Thank you.

Let's take a look at Exhibit Number 14. That is your resume, and I'm going to offer that, but I think we talked about it enough.

Exhibit Number 15, I will reserve until Mr. Land testifies, if he does.

Now, Mr. Goetze, is there anything more that you would like to say that you have developed in these exhibits that are relevant to this permit application?

A. Well, I think what we've seen here is we've reached somewhat of a milestone in this area. We have interconnected with the Capitan the shallower Yates and Seven Rivers. Our concern at the Division is if we have issues with correlative rights, we need to address them and the impacts, and if communication with the Capitan, that the exempt aquifer opportunity is there. But we

have here quite a conundrum with the aspect of increased use of this area for shallow disposal.

Q. Now, someone -- one of the other witnesses testified that the Yates-Seven Rivers was a great place to dispose of, right?

A. Yes, sir.

Q. You remember that.

Has the Yates-Seven Rivers itself ever been designated as an exempt aquifer?

A. No, sir.

Q. Has the Capitan Reef ever been designated or any part of it -- any specific part of it ever been exempt -- designated as an exempt aquifer?

A. No, sir.

Q. What procedure has the Division followed in the past when they have had an opportunity or have felt it necessary to decide whether or not an aquifer or a part thereof was exempt?

A. Primarily, in a situation like this, even though -- and we've had the discussion about this. The Seven Rivers and Yates are producers. And even though they are below the 10,000, it is our primacy agreement that we consider them oil and gas producers.

The Capitan, which has been recognized and is well documented, has a very strong database for areas

from the recharge all the way around through the Pecos to the Hobbs outflow. This portion of it is somewhat of a diversity. It has very high water TDS. We've demonstrated that in testimony. We still have some historical information from Hiss that would suggest that there are influxes or holdings of protectable waters. In that case, if the Capitan were to be impacted, that through the process of defining an exempted aquifer, they would go ahead and provide a method to set aside any protection that would be required as an underground source of drinking water.

Q. What procedure would be used to do that?

A. Typically, with the current two underground exempted aquifers, it would be through a hearing process.

Q. Okay. Would that hearing process involve any particular parameters, testimony about the aquifer?

A. It would involve information that was presented today probably and a delineation of what is going to be exempted.

Q. And what do you mean by delineation?

A. That at least some area has to -- you have to draw a square around what you're calling your exempted aquifer.

Q. In other words, this would differ from merely

permitting one well. It would require determining the parameters of the aquifer itself -- of the exempted portion of the aquifer?

A. That's correct, sir.

Q. The boundaries --

A. Correct, sir.

Q. -- of the exempted portion of the aquifer?

Thank you.

Mr. Goetze, are Exhibits -- were Exhibits -- oh, I'm sorry. I'm forgetting Exhibit Number 16 here. I skipped over 15. I'm going to go on to Exhibit 16. What is Exhibit 16?

A. It is a well list that you compiled to show the producers within one-half mile -- or one mile.

Q. One mile, right.

A. Okay. Of the proposed disposal well.

Q. Now, is this from the OCD's record -- online records?

A. Yeah, it is.

Q. And is anything added?

A. Well, what you definitely see is the presence on the Jalmat, the existing pool in this area.

Q. And that information is in the computer records of the OCD, is it not, if not the same page?

A. It is publicly available.

Q. Okay. This doesn't give any other information except just identifying what wells are now purported to be producing, right?

A. That's correct.

Q. Okay. Now, Mr. Goetze, Exhibits 1 through 14 and 16, were those exhibits either -- either prepared by you, compiled by you from OCD records or compiled by persons working with you from OCD records?

A. That is correct.

Q. And I think I've asked this, about specific articles, but any published materials that are included in here, are they of such a nature that a person in your profession would reasonably rely on in your work?

A. That is correct.

Q. Very good.

MR. BRUCE: Mr. Examiner, I am going to offer OCD Exhibits 1 through 14 and 16, and with that, I'll pass the witness.

EXAMINER JONES: Objection?

MR. MOELLENBERG: No objections.

EXAMINER JONES: No objection?

MS. MOSS: No objection.

MR. NEWELL: No objection.

EXAMINER JONES: Exhibits 1 through 14 and Exhibit 16 are admitted.

(OCD Exhibit Numbers 1 through 14 and 16 are offered and admitted into evidence.)

EXAMINER JONES: Mr. Moellenberg?

MR. MOELLENBERG: Mr. Hearing Examiner, if it would work for you, I would propose that Ms. Moss go first, based on the alignment of the parties, and then I can follow up with that.

EXAMINER JONES: That makes -- please.

MS. MOSS: Are we discussing cross-examination?

EXAMINER JONES: You can ask him.

MR. MOELLENBERG: I'm suggesting you do cross-examination first, if you're inclined to do so. Otherwise, I can go.

MS. MOSS: Thank you.

MR. BROOKS: I'm sure Mr. Moellenberg would be happy to change places with you.

MR. MOELLENBERG: Yeah. Sure.

MS. MOSS: Oh, no, I'm just fine.

CROSS-EXAMINATION

BY MS. MOSS:

Q. I would appreciate looking at Exhibit 5 with you for a minute.

A. Yes, ma'am.

Q. And I'd just ask: What was the time lag

between increasing disposal rate between 1/1/2015 and the increase of water production in the Sholes B 25 No. 1 well?

A. Well, what we're seeing here would be, I would say, 11/2014 and then to 5/2015. So it would be around six months.

Q. And would that timeline be the same between the lag between the second --

A. The second event?

Q. Yeah, which is 5/1/2016, increase of water production in the Sholes B 25 No. 1.

A. We would see a period of 5/1/2016 to 10/2016, so five months.

Q. And can you tell me what the timelines demonstrate?

A. That would also support a symmetry in response by showing the arrival of water as a result of injection and the production of that water at the well.

Q. And has this affected correlative rights?

A. This would be an indication that it has affected production, which would be a requirement for us under the Oil and Gas Act to respond to.

Q. Thank you.

MS. MOSS: That's all the questions I have.

EXAMINER JONES: Mr. Newell?

CROSS-EXAMINATION

BY MR. NEWELL:

Q. Looking at that same Exhibit 5, did you find any other explanation, other than the influence of the produced water, on the water production in the Sholes B 25 No. 1 well?

A. I looked at adjacent wells as far as injection. Again, this was the only well with a continuous reporting over this period of time, plus the prior history. It would indicate -- and this is what caught my eye -- that this would be an impact associated with injection.

Q. Let me ask you to look at Exhibit 10, please, and I'll ask you to look at the third page of Exhibit 10, beginning with finding number nine.

A. Finding number nine, "The Capitan Reef."

Q. Yeah. I believe you answered this question under direct examination about whether the Capitan Reef had been exempted, and your testimony was consistent with the prior findings; is that correct?

A. It is not, at this point, an exempted aquifer.

Q. Okay. And then would you look at finding number ten? It indicates fresh water in the Capitan Reef to the west of the proposed location, and it also indicates, I believe, fresh water areas, I believe,

somewhere in areas in and around -- or to the east of this location.

A. The last sentence says, "There is also fresh water in the Capitan Reef starting 18 to 20 miles southeast of the proposed injection location and continuing into the State of Texas."

Q. Yeah, that's it. So do you know what area they're making reference to there? It appears by the language, it would start in New Mexico and continue into Texas on the eastern portion of the reef, correct?

A. Yes. I would assume it's referring to the Hiss map.

Q. And it also, on number 12, continues, "significant withdrawals of water from the Capitan Reef from the fresh water portions west and southeast of the proposed injection location"; is that correct?

A. That's correct.

Q. And then let me ask you to look at Exhibit Number 11, and I'll ask you to look at page 5 of 9. Actually, go to the bottom of page 4 of 9, with the sentence in paragraph number two of the Conclusions that begins "The current well construction is in violation of Rule 19.15.16.10(A) NMAC and, we continued disposal operation, increased risk for impacts to USDWs if this situation is not addressed." Do you see that?

A. Yes, sir.

Q. What violations are there that they're making reference to and what type of risk are they identifying there?

A. This is the subject matter of the associated case with this. This case -- in this case, the Maralo Sholes, upon review of the casing, we found that the intermediate casing was only mudded in, and, therefore, we had open annulus exposing a segment which contained both the Rustler Formation and the Dockum, which in this case is Santa Rosa, which has been the target of development in this area for -- for drinking water.

It is our intention to require that this be sealed off in order to maintain the quality of the interval and also meet our requirements of sealing off the strata.

Q. Okay. And then if you look at the next paragraph, the last sentence, which states, "This model would favor a migration of the disposal fluids towards the lithostratigraphic boundary of the Seven Rivers Formation and the Capitan Reef, as presented in cross sections by Kronkosky (2017) and Hiss (1976), with the opportunity to impact the Capitan Reef Aquifer." Do you see that?

A. Yes, sir.

Q. Is there any reason why the proposed well wouldn't face the same risk as that identified in that model?

A. Well, it depends on what faith you put the model on, but this is an opinion I came to.

Q. And it's an opinion you developed based on your professional background and experience and the facts you had available, correct?

A. Correct.

Q. And are you stating all of your opinions to a reasonable probability based on the scientific research in your field?

A. Yes, sir.

Q. Okay. Now, let me ask you to look at -- I believe it's Exhibit Number 12, and I believe this is a report done by William Louis Hiss. And you've identified and highlighted some portions in this. And I'll ask you to begin with the portion you highlighted on page 301.

A. Yes, sir.

Q. Okay.

A. Basically, the only thing I was doing here is bringing it back to the basics that there is communication.

Q. Sure. And that's what you're trying to

identify, communication between the Seven Rivers Formation and the Capitan Aquifer, correct?

A. Yes, sir.

Q. Then let me ask you to look at the next portion you've highlighted, which I believe -- excuse me -- is on page 332.

A. Yes, sir.

Q. Basically, there it's identifying that the water quality is basically the same. And to me I read that to suggest that there is a great deal of communication there. Is that what I'm understanding? Am I reading that correctly?

A. That is what Hiss put in his thesis.

Q. Okay. And I believe his conclusion was, "Therefore, most of the water produced from the Seven Rivers and Yates Formations in this field can be considered as having been produced from the Capitan Aquifer." Do you see that?

A. Yes, sir.

Q. Do you concur with that?

A. I would not know in the Hendrick Field that -- I would certainly have to take a closer look.

Q. Are you aware of any substantive distinctions in this area between the Jalmat Field and the Hendrick Field?

A. There are other fields along the well. But there are oil producers along that side, the back reef side, a very prolific producer.

Q. Okay. Now, I did some addition, I think, based on your Exhibit Number 2, and if I'm correct in my math, it looks like the amount of fluids that have been injected from those seven injection wells that you identified in Exhibit Number 2 have a cumulative total of 85,448,769 barrels of produced water.

Did you hear anything in the modeling that was presented by Applicant which suggests they took into account over 85 million barrels of water that's already been introduced into this formation?

A. I'm not aware of any calibration based upon that.

Q. Okay. And then let me make sure I understand, on Exhibit 5, the peak -- it looked like monthly production on the Maralo Sholes No. 2 was in excess of 42,000 barrels of water per day; is that correct?

A. That's correct.

Q. And has the Applicant, anywhere in this material, applied to inject 42,000 barrels of water per day?

A. No, not in the Bobcat.

Q. And I believe the explanation from Mr. Johnson,

when he testified yesterday morning, was the fact that they were drilling the Bobcat to basically replace the Maralo Sholes; that's why it needed to be on this location, to accommodate their existing infrastructure. Is that what you understood?

A. That is what I believe was the original application purpose.

Q. Okay. Do you know whether or not -- whether the Bobcat well will accommodate 42,000 barrels of water being injected per day?

A. That is the reason for the injectivity test.

Q. Okay. And we heard the discussion of the modeling this morning, which indicated that the modeling assumption was 25,000 barrels a day, correct?

A. That's correct.

Q. Would you look at Exhibit Number 4? And I want to call your attention to the graph on the top right, and I want to see if I understand this. Does this suggest there is some type of recharge or increase in the amount of water that's being measured in the diagram or the chart that's reflected on Exhibit Number 4 in the top left-hand corner?

A. The figure in Division Exhibit Number 4, the two graphs on the right side are for the Jal Unit No. 1. The upper graph is the most recent water level

measurements at the time of the chart's preparation, which shows water is increasing, with the depth of water decreasing from approximately 400 feet up to about 378 feet.

Q. Okay. And has it been your -- have you heard testimony that suggests that areas where there is recharge in the Capitan Aquifer are areas that seem to be most appropriate for drinking water? Have you heard that?

A. Would you repeat that question again?

Q. Sure.

The areas where there is recharge, whether it be Fort Stockton or the area over by Carlsbad or the other areas, that seems to be the areas that seem to be most receptive to having drinking water quality water, correct?

A. Correct.

Q. Okay. Do you have any reason to explain the recharge or the increase in water levels that are occurring here that's reflected in your exhibit?

A. Currently, the Division is undergoing a review of existing disposal wells related to the Capitan. A study done in 2009 identified over 250 points of injection which has the possibility for communication. So we have some thoughts on that.

MR. NEWELL: Pass the witness.

EXAMINER JONES: Before Mr. Moellenberg begins cross-examination, we'll take a ten-minute break.

(Recess, 2:49 p.m. to 3:03 p.m.)

EXAMINER JONES: Okay. Back on the record.

MR. MOELLENBERG: Thank you, Mr. Hearing Examiner.

CROSS-EXAMINATION

BY MR. MOELLENBERG:

Q. Good Afternoon, Mr. Goetze.

A. Good afternoon.

Q. I'm going to try to go through your exhibits more or less in the same order that Mr. Brooks did. I don't believe I have any questions on Exhibit 2. I do have a question on Exhibit 2.

There was some mention earlier in the testimony of this case, and I -- I -- if I recall correctly, you have, essentially, sat through the entire hearing; is that right?

A. Yes, sir.

Q. About an injection well known as Jal North, is that shown on the map?

A. Jal North is probably on Figure 4, and it probably is one of the two wells up near the Johnny East SWD.

Q. So that would perhaps be off of the map that's shown in Exhibit 2 if --

A. Yes, sir.

Q. Yeah. Okay.

But that's your understanding of the location of Jal North?

And just to make sure we're talking about the same well, that's a Devonian injection well?

A. Oh, no. There is also a Jal well that is Yates injection, too.

Q. Okay. Are you familiar with the Jal North well that's a Devonian -- a recently constructed Devonian injection well?

A. Yes, sir.

Q. Okay. And have you taken a look at the OCD records regarding the efforts to successfully operate that well and inject into it?

A. I have not reviewed its historical aspects.

Q. And this would be very recent. This is a new well.

A. Yes, I understand.

Q. Very well.

A. I have the API number.

Q. But you haven't reviewed that?

A. No, sir.

Q. So you're not really familiar with what's going on with that well?

A. My understanding is it did not live up to expectations.

Q. Okay. With regard to your -- in connection with your Exhibit 3, you discussed the -- you stated in your March 15 report regarding preferential flow to the north. Do you recall that?

A. Yes, sir.

Q. Did your evaluation of that -- well, first of all, did you do any kind of quantitative analysis with respect to that, or is that just based on your view of the available geologic information?

A. As in numerical modeling or --

Q. Or any other kind of calculation.

A. Calculation as in cross sections or --

Q. Oh, possibly cross sections. What I'm trying to get to is if there is a preferential flow, the relative of that compared to the general flow direction.

A. No. I did not do anything to that depth.

Q. Okay. So in other words, in your view of preferential flow, that perhaps could be a possibility, but you haven't really evaluated how far, how fast?

A. No, sir.

Q. Okay. Thank you.

And, of course, Mr. Blandford's model -- and I know you didn't comment a lot on that, but it does -- it would contain that kind of analysis, correct?

A. Assuming all the variables are correct, yes, it would provide another alternative which is very acceptable.

Q. Okay. Turning to Division Exhibit 4 -- I need the other map -- you indicated that this was an exhibit that was presented in your March 15th report, but you made a couple of changes; is that right?

A. Yes, sir.

Q. And one of those -- and just so we're clear, you removed the municipal designation of the wells that were part of the Jal Water System, and there's no disagreement right now that those are not and never have been municipal wells?

A. That is correct. That was a misconception on my part. When Skelly made its application through the APDs, our WSW designations were not in place at that time. And in their application, they threw out the suggestion that it may possibly be a source of water for Jal, but it never has been a municipal.

Q. Very good. Thank you.

And I think the other change that you mentioned was adding the Ochoa Mine water well field?

A. Correct, sir.

Q. And if I recall correctly, you said you didn't know whether the Ochoa Mine has even been constructed or whether it's in operation or is actually using that water supply?

A. At this time I would say that Ochoa is not on line or doing production. I know there is an application which is over its shaft or its decline, so we are still very much at the initial phases.

Q. Okay. Turning to Division Exhibit Number 5, this graph, as I recall, was also in your March 15th report; is that right?

A. This is correct.

Q. Have you updated or made any changes to this graph since it was presented in the March 15th report?

A. I added at least up till May 1st, 2017 reporting.

Q. Okay. So just adding -- adding those plots?

A. Correct, sir.

Q. And other than extending the timeline, you haven't made any other changes since your March 15th report?

A. Well, I will take that back. This is a combination of the two graphs that were in my March 16th report.

Q. Okay.

A. So I had taken the water production from the B 25 well and overlaid it with the injection from the Maralo Sholes wells.

Q. Okay. And I think you, during your direct examination, acknowledged that -- that there have been corrected reports filed regarding the produced water production from the Sholes B 25 well?

A. Yes, sir. They have been filed.

Q. So they're there. You haven't plotted those here, right?

A. It was plotted on your -- on your applications, you know, so --

Q. On Mr. Kronkosky's graph?

A. Yes.

Q. And if I understand your view of that issue, you've got an earlier report, you've got a later corrected report. And from your point of view or policy, you don't break the tie? You don't have any particular preference or view as to which one of those is right; is that correct?

A. I would say that based upon the earlier reports, that it is worth the effort to further investigate so that we meet our obligation under the Oil and Gas Act to ensure that we are not impacting the

Jalmat Pool.

Q. Yeah. And that may be -- had gone a little further than I was talking about. I was really trying to get to what is the -- you know, what is -- what is the data point.

Have you reviewed and considered Mr. Kronkosky's evaluation of that data?

A. Yes, I have.

Q. Okay. Do you have any views one way or the other of whether it's correct or incorrect?

A. It is his opinion based upon what he sees in his information. Again, it is valid, but at the same time, I'm also obligated to take a look at what he's reported and, with that, advise that we do have to at least look in the area with the proposed activity and whether it will impact existing production in the Jalmat.

Q. But as to which of the data points are correct or incorrect, you have done no evaluation yourself of that; is that correct?

A. Other than moving the graph around -- this is one of our dilemmas of being the receivers of information. This was initially provided, and I assume when an operator makes his submittal, that it is accurate. So if it is such that the secondary one is --

the second information is corrected, then I have no way of knowing.

Q. You have no way of knowing, but you would acknowledge that operators do make errors in their reports from time to time; is that right?

A. I would say more than time to time.

Q. If the Hearing Examiners were to agree that the data that you're showing on your graph is reported in error and if you were, in fact, yourself to consider that, would that affect your conclusion that injection at higher levels from the Sholes wells is showing up as produced water in the Sholes B 25 No. 1 well?

A. Well, I would offer my opinion, and I'll leave the Examiners to make their own decisions on the weight of the evidence provided.

Q. Turning to Division Exhibit 6 and particularly the second page of that exhibit, I think you mentioned that -- and this shows up in the red box that you have -- that there is a TDS level for the Seven Rivers shown there as 8,200; is that correct?

A. Correct, sir.

Q. If you look up above, there's -- in the top table, in the second line, there's another line identified as "7 Rivers." Do you see that?

A. Yes, sir.

Q. There are some additional values in there. One of those is for chloride. Do you see that?

A. Yes, sir.

Q. If I'm reading that correctly, it says 8,460. Do you read it the same?

A. Yes, sir.

Q. And to the right of that, there is a separate number for sulfates of, looks like, 3,080. Would you agree?

A. That's correct.

Q. Aren't chlorides and sulfates typically components, in fact, separate components of the total dissolved solids?

A. That is correct.

Q. Is it, within your knowledge, possible to have a total dissolved solids value of 8,200 if the chlorides value was 8,460 for the same sample at the same location?

A. I could not make any opinion without a methodology or a standard method deviation plot, which would come along with such a report. And so in my some-odd years of doing this, we would have to see which component in this way -- which analyte [sic] method had the greater degree of accuracy. So at this point, what I have is an assay, and we don't know the true

calibration or the accuracy of the analysis.

Q. And that would -- I guess from that standpoint, what you're saying -- and tell me if I'm interpreting it right. You're just taking this data -- these numbers at face value. You haven't done any assessment of which of these numbers may be correct or incorrect?

A. This is the total sum of the analytical report submitted in the application just as the analytical report provided with Bobcat does not provide any QAQC nor chain of custody nor sampling plan.

Q. There was some discussion earlier in this hearing that there is a general rule of thumb that total dissolved solids may be on the order of double the chloride values. Do you recall that?

A. Correct.

Q. Have you analyzed or heard of that?

A. Yes, I have.

Q. And if one were to utilize that rule of thumb, then the chloride level using the value in the upper table, the total dissolved solids method would be considerably higher than 10,000; is that right?

A. That would be right. But my TDS was reported to me, and that was the basis of my decision, by the Applicant. So --

Q. I do not believe I have any questions on

Exhibit 7.

With respect to Division Exhibit 8, if I recall correctly, you related that exhibit just to the Sholes B 30 well that's discussed in Exhibit 7; is that right?

A. It is a direct literature reference to what may possibly happen.

Q. Have you investigated the geology in the vicinity of the Sholes B 30 Well No. 1 discussed in Exhibit 7?

A. Yes.

Q. And did you have any information indicating that the geology in the vicinity of that well is similar to the geology discussed in Division Exhibit 8?

A. Division Exhibit 8 is a well completed much deeper into the Capitan, and the Sholes well is certainly shallower in the Yates. My attempt is only to show that we do have a history of concern with regards to how a well is submitted and the potential movement of water upwards.

Q. Fair enough.

And as it relates to Division Exhibit 8, would you agree that the incident that's discussed in there, that the site-specific geology around that well and other site-specific factors around that well are

pertinent to consideration of whether such an event might happen at another well?

A. It always is, the geology, as well as well integrity.

Q. So let's turn to Division Exhibit 9. I would like you to turn to finding number -- I guess it's stated as Division conclusion number 12. And read the first sentence of that conclusion to me.

A. "Despite the testimony related to hydrology, there were no witnesses on either side that were qualified as hydrologists."

Q. So if I read that and sort of the rest of that conclusion, it sounds like from that case that folks threw out some literature or publications relating to area geology or hydrology, but there really wasn't a qualified hydrologist to evaluate that information, right?

A. That's correct.

Q. And in this proceeding, to the contrary, we have had witnesses qualified as hydrologists, correct?

A. That's correct.

Q. And those witnesses have investigated this particular area and the site-specific hydrology, as well as geology in great detail. Do you agree with that?

A. Yes. But my intent with this order was to

bring forth the potential of production even in this portion of the Jalmat, which was a strong portion or 50 percent of this case.

Q. So you're talking about the oil and gas production in the Jalmat reservoir?

A. Correct, sir.

Q. That really was your point with this?

A. Yes, sir.

Q. Okay. Very good.

So turning, then, to Division Exhibit 10, if I recall your testimony correctly, this is another denied application, but that the proposed injection addressed in this case would have resulted in injection into the Capitan Reef Aquifer; is that right?

A. The Applicant did make an application for direct injection into the Capitan.

Q. And looking at the finding of page 6, would you read the first sentence there?

A. "The Division has not allowed injection into the Capitan Reef up to this point in time because of the concern for protection of the fresh water in the reef."

Q. And would you agree with me that in the case of the application we're considering in this case, there is no proposal to inject into the Capitan Reef Aquifer?

A. There is no proposal, but I still have

communication between the proposed injection interval and the reef.

Q. In your evaluation of that potential communication, have you considered the head difference between the Capitan Reef Aquifer and the head at the location of the proposed Bobcat well?

A. I did not construct a -- metric map of the reef in this area, but it is something that was brought forward in this discussion and in the modeling.

Q. Very good.

So I take it from that that the analysis you've done to date does not consider that difference in head?

A. Not at this point, no, sir.

Q. So let me go to Division Exhibit 11, which is your March 15th report. Now, this report actually relates to the Maralo Sholes B Well No. 2 that is the existing injection well that OWL is operating, right?

A. Correct.

Q. But that said, I think it's fairly well established in this hearing that the conditions that we're talking about are -- should be very similar with respect to the existing well versus the well proposed in the application we're considering now, right?

A. You would assume that it would be, but if you

look at the Brown No. 5 to the northwest of this, it has -- it's very tight, and as a result, last month, we only put in zero barrels. So there is an influence.

Q. You never know until you drill?

A. Yes, sir.

Q. So your report indicates that this issue was brought to your attention as a result of a letter from the City of Jal dated April 28th, 2016; is that right?

A. That is correct. That was one of the items.

Q. The second item you mentioned -- I think you mentioned this earlier in your testimony -- was three other applications for injection wells submitted by OWL, right?

A. Yes, sir.

Q. And if I understand correctly, the Division denied the approval of those three applications administratively. So at this point, I guess to speak a little loosely, they're off the table?

A. No, sir. What it indicated is that the -- what was provided in a standard application was not adequate to make a decision. And so realizing the complexity of the area and realizing the scale of the project, something like this would not be handled properly with just an administrative order.

Q. Fair enough.

And I guess my point is OWL's going to have to re-initiate an application process of some sort if it wishes to pursue those three wells?

A. Yes. They would have to re-apply, sir.

Q. And the third reason you mention here is a request by EPA to review current oil and gas injection activities; is that right?

A. Yes, sir.

Q. I think you mentioned under direct examination that the Division has identified something like 215 injection wells that -- I'm not sure. I don't recall exactly how you characterized it, but it may need some further review or investigation. Is that how you stated that, or --

A. Yes, sir.

Q. Please correct me if I'm wrong.

A. No. In 2009, RESPEC, a consulting firm, plotted all the wells in the area along the Capitan and gave us a list which showed a projection that should be further reviewed as far as depth to see if they were or related to the Capitan.

Q. Okay. So -- and I may have had the dates wrong. If that was in 2009, that would not have been a part of this -- or have been prompted by this August 2016 EPA letter?

A. The response was in October 24th, 2016, is when I composed a letter and sent it to the EPA. And the request came August 31st, 2016.

Q. Right. Right.

I'm a little confused. I don't know. Do we have the letter that you're talking about in October of 2016?

A. That is on the Web site. It is under UIC Permit Number 1.

Q. Okay.

A. So it is available, along with all the other supporting data.

Q. But that's not -- that's not in this record at this point?

A. No.

Q. And I don't know that it needs to be. I'm not suggesting that either.

So with regard to that particular EPA request, are you reviewing a great number of wells or a few wells, or how are you dealing with that particular EPA request?

A. We are trying to go through the list. We have chosen wells that have easier information. Not only do we have, for instance, plotted wells, in certain cases, I've shown, with review of the logs, we are injecting in

Delaware, not in Capitan, so they're taken off the list. There are other wells that are associated with waterflood, which can be assessed and evaluated based on the performance of the waterflood. And then there are those which are disposal wells, which will probably require a little more work.

Q. Okay. And in that answer, you referred to a list. What list are you referring to there?

A. That would have been -- there was a list of at least 30-some-odd wells that were identified with high probability of injection. Again, that came out of the 2009 RESPEC report.

Q. And those 30 wells, is that a list OCD prepared or a list EPA prepared?

A. It is a list that a consultant prepared and that we identified a potential and, therefore, took their recommendation to further review.

Q. Okay. And that would -- that was a consultant working for OCD?

A. That's correct.

Q. Is the Maralo Sholes B No. 2 on that list?

A. Yes, sir, it is.

Q. And that's the list of the 250 or the list of the 30?

A. It is the list of 30.

Q. So jumping back to the letter from the City of Jal, following OCD's receipt of that letter, the Division sent a letter to OWL requesting testing of the Maralo Sholes B well; is that right?

A. Correct.

Q. And your March 15th report talks about the injection surveys. As I understand it, there were a couple of efforts of that. But the injection surveys were conducted, it looks like, pretty much in the second half of 2016, correct?

A. Correct.

Q. And in your March 15th report, you concluded that based off those surveys, the injection fluids are entering the correct interval, correct?

A. That's correct.

Q. And you also concluded that the survey results indicate no vertical migration of the disposal fluids to shallower formations; is that correct?

A. That's correct.

Q. Your report also discusses some changes in water elevations in the Capitan Reef Aquifer; is that right?

A. Yes, sir.

Q. And as I understand your report, it suggests that a source of changing water levels in the Capitan

Reef Aquifer may be from injection activity in the area; is that right?

A. It may be injection related to disposal. Yes.

Q. But would you agree with me that there are a number of factors that can influence changes in water levels in an aquifer?

A. Oh, this is no simple model. This is -- I am looking at it from the side of the regulator. And with the concerns with the Capitan, if nothing else, we would like to go through our own house and see if it is such that we are contributing to an elevation change, as well as a water-quality change.

Q. And another factor that can affect changes in water levels in an aquifer is changes in pumping rates from that aquifer over time, right?

A. There are many sources, including pumping rates. Yes.

Q. Okay. And you mentioned this is a complex model. Are you thinking of sort of a conceptual model of how this aquifer works, or are you thinking of some other model?

A. Well, conceptual is just in my head because I'm not a modeler. I'm just making observations and then responding to those observations.

Q. So you have not run any model of --

A. No, sir. We do not have enough money to run a model, let alone have a modeler.

Q. That would be a big model.

A. No. This is why we rely on industry and universities and associated observations to provide us with this type of information.

Q. Now, your March 15th report has some statements in it that suggests that the City of Jal is looking to the Capitan Reef Aquifer as a potential water supply. What was the source of your information?

A. It was the Souder, Miller.

Q. There's been some testimony here which you probably heard that the Souder, Miller report uses terminology of the Capitan Basin versus the Capitan Reef Aquifer. Do you recall that?

A. Yes. The OSC designation as opposed to the Hiss aquifer, yes.

Q. And have you considered that, or have you re-read the Souder, Miller report since you've received that information to see if it actually talks about the Capitan Reef Aquifer versus the Capitan Basin?

A. In the chart, I saw Capitan as being a unit to be considered along with Santa Rosa. So I may have misinterpreted, but my memory is I have not looked at it.

Q. Okay.

MR. MOELLENBERG: I may be close to finished here, but if I might have just a few moments.

EXAMINER JONES: Sure.

(Pause in proceedings, 3:42 p.m. to 3:43 p.m.)

MR. MOELLENBERG: I believe I'm finished.

EXAMINER JONES: Okay.

Mr. Brooks, any redirect?

MR. BROOKS: I think not. Thank you.

EXAMINER WADE: I may have a couple of questions.

CROSS-EXAMINATION

BY EXAMINER WADE:

Q. If you could turn to your OCD Exhibit 13.

MR. NEWELL: Was that 13?

EXAMINER WADE: 13.

THE WITNESS: Yes, sir.

MR. BROOKS: OCD Exhibit 13?

EXAMINER WADE: That's correct.

Q. (BY EXAMINER WADE) I guess I want to explore more what the purpose of this exhibit was to show --

A. Basically, if the model is valid and you do have migration to the east as indicated by the model, then you're going to have an area of influence in the

Jalmat, which includes both production and plugged-and-abandoned wells.

With our issues regarding the Oil and Gas Act, with correlative rights and protection of resources, you also have a consideration that our area of review for wells is very limited compared to what was predicted as a model of influence. So what we have here -- and many of these wells date back to the '30s. Some of them have been shot with nitroglycerin. Some of them have used used casing. They have cementing that predates any API standard. Though Halliburton methods were used, we do have a situation of irregular well integrity based upon what's available in the well information.

Q. So this is more -- is it correct that it's more an issue of correlative rights within a producing zone than the separate issue of interaction between the Capitan Reef?

A. Yes.

Q. Okay. So the smaller yellow circle represents the half-mile area of review?

A. Correct, sir.

Q. And you heard earlier that the Hearing Examiners would like notice to go out to more of a mile review for the proposed well?

A. Uh-huh.

Q. What distance does the dashed yellow and the dashed white represent from the well? Could you estimate that?

A. Well, it was a rough estimation based upon a small figure projected up, but we're looking at something of approximately 1.2 miles from the well to the most eastern for the 20-year plot on the second layer, which is the most -- the greatest area.

Q. And do you have any idea of how many wells, I guess of any type, producing, plugged and abandoned, disposal, production, that are within the greater area of possibly being affected?

A. That's 49 wells identified.

Q. Now, you made a direct comparison between the Maralo Sholes and the Sholes B 25 Well No. 1 because of some information that you saw. Did you make a direct comparison between any of the other wells that are in what you are demonstrating as the potentially affected area in Exhibit Number 13 and the Maralo Sholes?

A. No, I did not, because of our protocol required us to only consider a one-half mile radius.

Q. So you just stuck with the rule provided?

A. Well, yes, because at this point, that would be the only thing we could be responsible for.

Q. Did I hear you suggest that an alternative to considering, basically, a well-by-well application for disposal into this area, that it would be more appropriate to have a broader discussion of an exempted aquifer?

A. That is the potential.

Q. And what do you see as being the boundaries of that exempted aquifer?

A. I would not even dare to make a conjecture on it. We have historical information. We have very limited water sampling at this point for -- if you just looked at the two townships, and that would be 102 -- in 172 square miles, you have three water samples, maybe four. It is -- it's one of these things that would require an effort that currently is not accustomed to doing a C-108 application, and, therefore, it would take a greater effort.

Q. It sounds like it would take a very big effort.

A. Both -- both exempted aquifers that we had were very limited. One in the Entrada was based upon a stratigraphic limitation. Therefore, a boundary definition was -- you were able to draw out an exempted aquifer that was very specifically small. The other one in the Menefee is a little bit larger, and it was done based upon well information provided by the operator.

So it is a process.

Q. So am I confusing the two concepts of possible correlative rights issues that you've identified in Exhibit 13 with an exempted aquifer?

A. There are two issues to be looked at.

Q. They're separate issues, though?

A. That's correct.

Q. But they're related in --

A. In that the injection will be the driving force as to what needs to be resolved.

Q. Okay. So you couldn't at this time really give a parameter as to what an exempted aquifer that could be applied for would look like? What kind of evidence would you consider or want to see in an application from --

A. That would have to be negotiated. I mean, truly, in many cases, it is the applicant who comes in and who typically is an operator, who provides both hydrologic studies, as well as sampling information and water information. Again, the scale of this is fairly large depending upon what limitations can be seen. This is not an easy way, but at the same time, it is feasible.

Q. Are you also considering not only a case-by-case application for individual disposal wells,

but also the broader idea of this area being used for disposal? In other words, there would be a future application; in fact, there might be three that were -- I didn't quite catch. There were three in your report that were denied or at least not to be considered at this time administratively?

A. There were three applications made by OWL to the north, and seeing what was happening with the applications and the zone selected, it was decided that administrative approval would not be a proper path. So looking at that each of the wells was proposed for 25,000 barrels per day. So you would have 100,000 barrels per day for a distance of less than a mile apart -- well, mile and a half, I believe.

Q. Okay. So there's potential -- you said a mile and a half. We're looking -- the OCD and particularly the Hearing Examiners are looking at three potential applications?

A. (Indicating.)

Q. So obviously there's a plan for development within this area for disposal?

A. Well, there is a pressing need for disposal, and at the same time, there has been hiatus in our responsibilities to see what's available. At that point, I would say we have here a series of applications

that have brought to the forefront what we've neglected for some time. At the same time, applications by OWL do offer the opportunity to see what a depleted reservoir can do. It is a quandary.

Q. So in part you're saying that the OCD hasn't made a decision but maybe needs more information?

A. I will leave that up to the discretion of the Examiners.

EXAMINER WADE: I have no other questions.

CROSS-EXAMINATION

BY EXAMINER DAWSON:

Q. Mr. Goetze, I just have a few questions.

A. Yes, sir.

Q. In reviewing your exhibits that you proposed, that you presented, on Exhibit 3, I'm looking at the map showing the structure of the Capitan Aquifer --

A. Yes, sir.

Q. -- the top, Figure 3A.

A. Yes, sir.

Q. And there is a contour in there at minus 250, but there is really not any data point to honor that 250 contour. And that's something that the Applicant had talked about, and they kind of felt like that 250-foot contour should not probably be there. Are you in agreement with that, or what are your thoughts on that?

A. We have -- again, the following figure with INTERA's interpretation, as well as Hiss' interpretation, we rely a lot on Hiss until we find something that is more defendable or presented.

Q. So in looking at this, I mean, and in looking at those contours, those data points -- or the contours that are contoured below sea level, that's the Capitan Reef below sea level, correct?

A. That is datum from sea level. Yes.

Q. So would you agree, just to the south of the proposed disposal well location, that there is kind of an anticlinal feature or a mound in the Capitan Reef in that area?

A. Well, that would assume that the Capitan, which is a lithesome, has had some sort of folding. I would not dare to venture on that at this point. It was more of an erosional depositional feature.

Q. Okay. And then going down to the next figure, Figure 3B, it seems like the Yates -- you know, they're at the proposed disposal interval is -- it has a chloride ion concentration of 53,000 and then 69,000 just to the well to the north -- or to the data point to the north. So right there in the Yates in that vicinity, it seems like the chloride concentrations are much higher right there near the proposed saltwater

disposal well, correct?

A. Based on Hiss' information, yes.

Q. And then going on down to Figure 3C, the isopach map is showing that the Capitan Aquifer is 20-foot fit roughly in that -- that area just to the south of the proposed saltwater disposal?

A. Hundreds of feet.

Q. Oh, hundreds of feet. Oh, okay. So that's going to be like --

A. 2,000.

Q. -- 2,000 feet thick?

So going to the next page on the Hiss-INTERA cross sections, you said that the Capitan Aquifer -- the proposed location of the well is just east of the Skelly Oil W.G. Joiner No. 2 well?

A. That's correct.

Q. And so that would pretty much coincide to the peak there of the aquifer, which is -- kind of coincides with that mound -- or that map that we were just talking about on the last page?

A. Yeah.

Q. Yeah.

So the vertical separation between the injection interval and the top of the Capitan Reef in the proposed well location is less -- probably one of

the least vertically separated points between the bottom of the injection interval and the top of the Capitan Reef. Would you agree with that statement?

A. It is a short distance.

Q. And I'm going to go on further -- go to your Exhibit 5 where you plotted the injections.

A. Yes, sir.

Q. And in looking at these increased injections for the Maralo Sholes B Well No. 2, it looks like the water production for the Sholes B 25 Well No. 1 to the north does go up drastically after they injected greater amounts of water -- more water into the Maralo Sholes B Well No. 2 and probably -- would you think that it's going to be lagged maybe two to four months, roughly, after the increased injection in the Maralo Sholes B Well No. 2? It would affect those wells to the north probably two to four months -- is that your estimate -- after?

A. Well, the graph would show, roughly, a six-month, five-month period of lag.

Q. So several months after they increased the injection, it would show up on some of the wells to the north -- or to that well to the north, the Sholes B 25 Well No. 1?

A. Correct.

Q. So that just gives the water time to travel to that location, correct?

A. It would show an influence.

Q. And then looking in there at their Exhibit 1, the Exhibit G, Chart A --

A. Yes, sir.

Q. -- I was looking up at the top left-hand corner of that, and it says, "Fulfer Oil & Cattle field personnel were mistakenly reported all water contained in Sholes B 25 tank battery facility as being allocated to the Sholes B 25 No. 1 API number. The tank battery receives and holds water production from other wells and sources. Fulfer acquired the well in 2014 and has operated it since that time."

So the operator, if they reported incorrectly, they would be required by the Division to amend their C-115 to reflect the proper injection, correct?

A. Correct.

Q. And they have not done so, correct?

A. Well, they have.

Q. They have. Okay.

And you haven't -- you didn't plot that out for your exhibit? I mean --

A. They have plotted it already.

Q. Did they correct that around March of 2017?

A. I don't know when they corrected it. But upon visiting -- prior to hearing, I did inspect it and saw the correction.

Q. Okay. In your opinion, would the approval of this injection well cause an impact on the Capitan Aquifer beneath the proposed well location in excess of the current 13,000 milligrams per liter TDS?

A. There is no indication of vertical migration at the wellhead. It's when you step away that our concern gets more dramatic.

Q. And in your opinion, would a cased hole versus open-hole completion, would there be -- would it make a difference, in your opinion, whether it was cased or open hole?

A. Not really in this interval. The competency of the rock is very good. When the well was tested for a second time, they did clean out the well, and it did not have that much fill material in it. So it retained its structure well. As far as limiting injection, that would be a discussion for another -- based on another type of information.

Q. Okay. That's all the questions I have. Thank you.

CROSS-EXAMINATION

BY EXAMINER JONES:

Q. Okay. Mr. Goetze, the C-108 that you reviewed, can you -- do you have any -- can you remember the issue you saw with that, if any?

A. At that time, we had already identified the Maralo Sholes in the letter in March. In response, OWL made the application in an effort to replace what we had cited as being a well that needed remedial action. So it was in response to our activities.

Q. Okay. The -- the casing design for the proposed well is only two strings. It looks like one through the Rustler anhydrite above the salt, and then the production string would be drilling, I assume, with saltwater mud through the -- through the salt and down into the Tansill-Yates-Seven Rivers and then setting the production pipe. Is that --

A. No. There wouldn't be -- it would be open hole, so the intermediate casing would be landed right above the injection interval.

Q. Is that adequate, in your estimation?

A. It is a practical approach. There are areas where there have been three strings, and there have been two things that have used DV tools. At this location, I have no knowledge that would indicate additional strings

would be required.

Q. They'll probably -- they'll probably almost have trouble supporting, you would think, their cement -- the head of the cement on the bottom of this if they get into that low pressure zone at all, but there is no DV tool proposed?

A. No. But then that's not unfound -- as you know, in the application, a DV tool may be added later and submitted through a C-103. So --

Q. Yeah. And that was --

Okay. And I see in the area of review, there are two producing wells --

A. Correct.

Q. -- in the area of review?

A. Uh-huh.

Q. So that alone would prompt this to be bumped to a hearing; is that correct?

A. Yes.

Q. Yeah.

And those are wells are operated by Fulfer?

A. Fulfer, yes, Oil & Cattle.

Q. But he's not here today opposing this application at all?

A. There has been no protest from anyone.

Q. Did you talk to him at all on this?

A. No, I did not.

Q. Were you on the hearing for Mesquite's well that was denied?

A. Yes. I did attend that as an Examiner.

Q. Okay. Do you remember Mr. Fulfer putting up a spirited defense of his well in the area of review that was an extremely marginal well, but he was worried about --

A. The Applicant made a very strong presentation with regards to the oil and gas potential, and so that was one of the stronger points on the case. Whereas, the lack of any hydrologic expertise did make that argument sufficiently moot as far as claiming interference with the Capitan.

Q. Okay. And the other -- this testimony so far showed that the reef at different spots in the general vicinity is -- varies a lot in the TDS. So how do we reconcile that with the reef having connectivity -- hydrologic connectivity? Is it connected only down in the lower part of the reef, or is it -- and you get up on the higher parts and is it compartmentalized, or how do we reconcile that?

A. I'm afraid what you're asking is a very difficult question to provide. I mean, we have no way of really, at this point, utilizing what information we

have to go through the list of what you think you need. If it is such that a minimal amount of effort isn't required, you could probably do a characterization without much expenditure. But there is a requirement for additional information on that scale.

Q. The ratio in the -- I think it was your Exhibit Number 6, about the produced water analysis.

A. Yes, sir.

Q. I could be wrong, if that's not the right exhibit. But it had information on chlorides versus TDS --

A. Uh-huh.

Q. -- for the different formations, and for the Yates-Seven Rivers -- Yates and -- maybe it was the Yates and the Queen or the Yates and the Seven Rivers.

A. Yates and the Queen -- Seven Rivers and Queen.

Q. The ratio was extremely high for the chlorides over the TDS. It was -- but if you look at the ratios for those carbonate formations, the Devonian and the -- well, the carbonates look like it's more in the line of one-to-one chlorides versus other ions, so the TDS is almost twice what the chlorides are. So is that a function of whether you're looking at carbonates versus sandstones?

A. I would not make a correlation along that line.

The origin of the waters, as well as the environment which they are in and how they dissolve and decay, that's a whole other spectrum of expertise that I'm not involved in.

Q. But you studied the Hiss report as it relates to the connection between the waters in the Artesia Group versus the reef. Was that -- was that considered in that report, considering the reef as a carbonate and what we're hearing today -- or during this hearing is that the producing zone of the Artesia Group is sandstones. So --

A. But yet do you have a hydrologic connection between the reef and these Artesia Group, in a sense, aquifers? So --

Q. So Hiss didn't -- Hiss concluded because of the TDS relationships --

A. Oh, no. He had -- in his thesis, he had a well to the north -- and this is a time when a notebook is a good thing to have.

Q. I guess the gist of the question was if it was related to being a sandstone versus carbonate and then the reef being a carbonate versus the Artesia Group being a sandstone, if you could just look at the relationship of the chlorides versus the TDS to see if the waters were similar -- similar origin?

A. Well, in his thesis, again, as we reviewed the quality of water produced from nearby water fields completed in the Capitan Aquifer is identical to those from the Hendrick Field, the reservoir pressure in the same water fields, in the Hendrick Field, are apparently declining at similar rates. The bottom line being, "Therefore, most of the produced water from the Seven Rivers and the Yates Formations in the field can be considered as been produced from the Capitan Aquifer."

Q. Okay. So all the water that's been removed -- the oil and water that's been removed from the Artesia Group through production since the '20s, that -- Mr. Kronkosky talked about the volumes that have been removed. If that volume relates to a certain pressure and if that -- if disposal is allowed in this area that goes back to about the similar pressures, how is that going to affect the reef?

A. It may not.

Q. So it just depends on the relationship of the pressure in the reef versus pressure in the Artesia Group?

A. That's the models, which one you wish to accept.

Q. Okay. Thank you.

EXAMINER WADE: So I say we wrap it up for

today.

EXAMINER JONES: Anything else for this witness?

MR. BROOKS: Well --

EXAMINER JONES: We won't let him off easy.

MR. BROOKS: Yeah. Well, I don't really have anything else for this witness.

I was a little puzzled as to whether the 8,860 or 8,460 or 8,480 in the Seven Rivers, on Exhibit 6, was 84 or 64, but then I usually -- when I have to examine small numbers, I usually use my glasses and a magnifying glass, and I don't have a magnifying glass here. So I guess I'll -- the exhibits are before everybody, so they can see what it is. I don't need to --

EXAMINER JONES: Mr. Brooks, do you intend to put on another witness?

MR. BROOKS: Let me confer with my -- with Mr. Goetze for a moment, and I'll let you -- I will advise you of that.

Can I talk to you, Mr. Goetze?

THE WITNESS: Can we have a five-minute break?

EXAMINER JONES: Okay. Sure.

MR. MOELLENBERG: And I would add, if we

have a little time, if we have additional questions for Mr. Kronkosky, we could probably do that. I don't think we have anything else right now.

MR. BROOKS: Well, I think they're probably thinking of adjourning if we don't put on Mr. Land.

EXAMINER WADE: Were you suggesting doing some form of rebuttal?

EXAMINER JONES: Didn't you need him again?

MR. MOELLENBERG: Yeah. We would do rebuttal, but I think the logical thing for rebuttal would be after Mr. Brooks finishes with -- just offering in case we wanted to use the time.

(Recess, 4:14 p.m. to 4:21 p.m.)

EXAMINER JONES: Back on the record.

Mr. Brooks, are you ready to rest your case?

MR. BROOKS: Yes. Mr. Examiner, we've decided not to call Dr. Land. The Division will rest.

EXAMINER JONES: And so we're done with two of the Applicant's witnesses and one of the Respondent's. And we'll begin --

MR. BROOKS: We have the State Land Office still to present their case.

EXAMINER JONES: We'll begin at 9:30 -- approximately 9:30 on Friday morning.

EXAMINER WADE: Just to clarify, Mr. Newell, you don't -- you don't have a case-in-chief?

MR. NEWELL: No. And I didn't present any pretrial testimony. And I think I'm participating by leave of you guys and the parties, so I appreciate that.

EXAMINER WADE: So what I anticipate at 9:30 on Friday is that we hear from the State Land Office, and then we'll hear rebuttal.

MR. MOELLENBERG: Right.

EXAMINER WADE: Can we get an idea of time that you think your case will go?

MS. MOSS: I think we'll be less than an hour.

EXAMINER JONES: And rebuttal, do you have an idea yet?

MR. MOELLENBERG: Yeah. Given the pace of everything, I would best guess a couple of hours. It might go a little longer than that. And that's kind of been the thing, obviously, because more questions come up.

EXAMINER WADE: That being said, we also might have a discussion about the other compliance case that was pending that was to be heard today, but it sounds like we can finish on Friday.

EXAMINER JONES: And, Mr. Moellenberg, the

extra notice, we've talked about that.

And instead of the one-mile circle, we intend to give you something in writing asking only for those four sections that are surrounding the well.

MR. MOELLENBERG: Okay.

EXAMINER JONES: That makes it easier to find people and ownership.

MR. MOELLENBERG: And I appreciate that. And are we talking about now sections kind of mostly to the east of the well, or are we just --

EXAMINER DAWSON: It will entail Sections 25 and 36 of 25 South, 36 East and Sections 30 and 31 of 25 South, 37 East.

EXAMINER JONES: That's correct.

MR. MOELLENBERG: And in essence -- so that's the area.

And in terms of the parties that would receive notice, we're not talking about surface owners?

EXAMINER JONES: No, no surface owners, just affected parties as of Rule 26 and also --

MR. MOELLENBERG: So affected parties.

EXAMINER JONES: Yeah, affected parties.

MR. BROOKS: That would be, I assume, oil and gas lease owners.

EXAMINER DAWSON: Lessees of record.

EXAMINER JONES: It's unleased.

MR. BROOKS: Well, I don't think -- the term "lessees" is used in the OCD rules, and I've always interpreted that to mean owners of the lease, whether they be the original lessees or whether owners of record title.

Now, if they have nothing but record title -- if it's federal and they have nothing but record title, probably not, probably no need to include because they're really not affected. But with the state leases, I would think it would include operating rights and -- because operating rights owners are the equivalent of working interest owners in a private lease.

EXAMINER JONES: So if there is an active well -- operator of that well for that spacing unit.

MR. BROOKS: Active well, or if it's a secondary recovery unit, it would be on the owner/operator. I don't know if there are any secondary recovery units within those sections.

MR. MOELLENBERG: We won't know until we get into it. I mean, it's an old field. It may or may not be complicated.

MR. BROOKS: If the leases have expired, under the terms of our rules, affected parties would

include the mineral owners. I don't know if you really want to go there because -- I just don't know. That's up to you. You were the one that has talked to the Director.

EXAMINER JONES: If it's BLM and the State Land Office, yes, the owners --

EXAMINER WADE: Well, I don't think we have to make that decision. We're going to give written instruction. We'll send it to all parties. It'll give us time to think about what we want, and we can send that out.

EXAMINER DAWSON: It will be spelled out in the email.

EXAMINER JONES: The rule does say that, though.

EXAMINER WADE: There is a definition within Rule 26.

MR. BROOKS: There is. And I think that definition definitely does include mineral owners if there is no lease. In fact, of course, I would expect some -- many leases in this field are probably expired, but I don't know that. That's just a speculation.

EXAMINER JONES: They weren't in the half mile according to the notice list that was provided, and Mr. Pattee testified to that.

MR. BROOKS: I'm not raising an objection because that was a matter raised by the Examiner and Director.

EXAMINER WADE: Yeah. At this point the rule's been complied with, and we're asking for additional notice, and we can shave that.

MR. MOELLENBERG: If I can just add, once we get that -- we'll get them going, and I would just ask that if we come up -- you know, in the interest of time and we're ahead in this proceeding, if we come up with some real difficulties, perhaps we could ask for some clarification or something in that regard. Would that make sense?

EXAMINER JONES: Yes.

MR. MOELLENBERG: Okay.

EXAMINER JONES: Okay. We're adjourned until Friday morning at 9:30.

(Recess, 4:27 p.m.)

STATE OF NEW MEXICO

COUNTY OF BERNALILLO

CERTIFICATE OF COURT REPORTER

I, MARY C. HANKINS, Certified Court Reporter, New Mexico Certified Court Reporter No. 20, and Registered Professional Reporter, 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 that were reduced to printed form by me to the best of my ability.

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