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

COPY

IN THE MATTER OF THE APPLICATION OF THE  
BOARD OF COUNTY COMMISSIONERS OF RIO ARRIBA  
COUNTY FOR CANCELLATION OR SUSPENSION OF  
APPLICATIONS FOR PERMITS TO DRILL (APDs)  
FILED BY APPROACH OPERATING, LLC, RIO  
ARRIBA COUNTY, NEW MEXICO.

CASE NO. 14134

IN THE MATTER OF THE APPLICATION OF  
APPROACH OPERATING, LLC, FOR APPROVAL OF  
SIX APPLICATIONS FOR PERMITS TO DRILL,  
RIO ARRIBA COUNTY, NEW MEXICO

CASE NO. 14141

REPORTER'S TRANSCRIPT OF PROCEEDINGS

SPECIAL EXAMINER HEARING

BEFORE: DAVID K. BROOKS, Legal Examiner

June 23, 2008

Santa Fe, New Mexico

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RECEIVED

This matter came for hearing before the New Mexico Oil  
Conservation Division, DAVID K. BROOKS, Legal Examiner, on  
June 23, 2008, at the New Mexico Energy, Minerals and Natural  
Resources Department, 1220 South St. Francis Drive, Room 102,  
Santa Fe, New Mexico.

REPORTED BY: JOYCE D. CALVERT, P-03  
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A P P E A R A N C E S

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1 MR. BROOKS: We're back on the record in  
2 Case Nos. 131 -- I'm sorry. Case Nos. 14134 and 14141. I  
3 believe the County presented all their witnesses, but I don't  
4 believe that -- I do not recall that the County stated that  
5 they rest. Does the County rest?

6 MR. A. TRUJILLO: The County rests.

7 MR. BROOKS: Very good. You may proceed, Mr. Hall.

8 MR. HALL: Mr. Examiner, at this time we would call  
9 Ross Craft to the stand.

10 MR. BROOKS: Okay. Have your witnesses been sworn?

11 MR. HALL: Mr. Craft has been sworn.

12 MR. BROOKS: Very good. Mr. Craft, you've been  
13 sworn, and you're still under oath. You may proceed, Mr. Hall.

14 ROSS CRAFT  
15 after having been first duly sworn under oath,  
16 was questioned and testified as follows:

17 DIRECT EXAMINATION

18 BY MR. HALL:

19 Q. For the record, please state your name.

20 A. My name is Ross Craft. I'm president and CEO of  
21 Approach Resources.

22 Q. And where do you live, Mr. Craft?

23 A. I live in Fort Worth, Texas.

24 Q. Okay. Let me ask you, Mr. Craft, are you  
25 familiar with the areas that are the subject of these

1 proceedings today?

2 A. Yes, I am.

3 Q. And you're familiar with the applications that  
4 have been filed in these cases?

5 A. Yes, I am.

6 Q. Now, in our pre-hearing statement, I listed you  
7 as a geologist. That wasn't right, was it?

8 A. No. Actually, I'm a petroleum engineer. I'm a  
9 graduate from Texas A&M University.

10 Q. Sorry about that.

11 A. It's all right.

12 Q. I intend to elicit some geologic testimony from  
13 you. Let me ask you, have you previously testified before the  
14 Division or one of its examiners and had your credentials as a  
15 petroleum engineer or in any capacity established as a matter  
16 of record?

17 A. I have never testified in front of the OCD.

18 Q. Let's do this. Could you give the Hearing  
19 Examiner a brief summary of your educational background and  
20 work experience?

21 A. Sure. As I said earlier, I got a degree in  
22 petroleum engineering. I'm registered in the state of Texas.  
23 I've got about 28 years of experience predominantly in  
24 unconventional gas and tight gas, unconventional resources  
25 places as well.

1 I've got -- I've probably been involved or drilled  
2 personally -- I don't know, thousands of wells. I don't have  
3 no idea -- ranging from 15,000 foot all the way up to 2000 foot  
4 both international and domestic. A lot of it is tight gas  
5 shale gas, things like that.

6 Q. All right. Tell us, in the course of your  
7 career, have you been required to, in essence, do your own  
8 geologic analysis and study?

9 A. Oh, definitely. One thing we do -- and that's  
10 part of the reason why we've been very successful in doing what  
11 we do -- is a lot of what we do centers around geology. You  
12 have to know the geology before you know what to do to the rock  
13 to make it produce. And so there's a lot of -- whole lot of  
14 geology involved in what we do. Our engineering design is  
15 centered around geology. We have to know what makes up the  
16 rock. So there's quite a bit of geology involved in our  
17 operations, always has been.

18 Q. Now, have you evaluated the geology of the east  
19 El Vado lease area?

20 A. Yes. Yes, the geology on east El Vado, and if I  
21 may, I'll stand up and just --

22 Q. Well, let me establish your credentials first.  
23 Mr. Craft, based on your background and experience, do you feel  
24 that you're competent to provide the Hearing Examiner with  
25 expert testimony in areas of geology as well as petroleum

1 engineering?

2 A. On this, I really do, yes.

3 Q. Okay.

4 MR. HALL: At this point, Mr. Examiner, we would  
5 offer Mr. Craft as an expert petroleum engineer. He will also  
6 be up for purposes of expertise in the petroleum geology.

7 MR. BROOKS: Any objection?

8 MR. A. TRUJILLO: Mr. Hearing Examiner, if I could,  
9 I'd like to ask Mr. Craft just a couple of questions to  
10 establish.

11 MR. BROOKS: You may.

12 MR. A. TRUJILLO: Mr. Craft, are you a registered  
13 engineer in the state of New Mexico?

14 THE WITNESS: No.

15 MR. A. TRUJILLO: I think that's it. No objection.

16 MR. BROOKS: Mr. Craft is qualified as requested.

17 Q. (By Mr. Hall): Mr. Craft, would you tell the  
18 Hearing Examiner something about your company, Approach?

19 A. I'd be glad to.

20 Q. And if you would refer to the hearing exhibit  
21 notebook?

22 A. If you turn to Exhibit 1, please.

23 Q. What is Exhibit 1?

24 A. Exhibit 1 is the coverage of Approach Resources.  
25 It says, New Mexico Oil Conservation Division. And if you go

1 to the next page, what it is, is a quick overview of our  
2 management company history. Approach Resources -- we founded  
3 this company in 2002. We are a publicly traded company. We  
4 went public November of 2007. We trade on the NASDAQ, symbol  
5 AREX.

6 We operate in basically six areas, currently Texas  
7 being the bulk of our development operation with Cotton Valley,  
8 Bossier sand type environments in east Texas, the Ozona  
9 Northeast part of the Permian Basin and Cinco Terry. That's  
10 basically Canyon Sands, pluvial canyon sands. Ellenburger  
11 Formations, Strawn Formations, we have operations there as  
12 well, plus the Wolfcamp.

13 We also have operations in Kentucky. We're working  
14 on operations in New Mexico, and we're currently involved in a  
15 joint partnership in British Columbia drilling tight gas wells  
16 in very close proximity to the Peace River up south of Fort  
17 St. John.

18 We operate about roughly a little bit over 300 wells  
19 right now. These wells have been drilled since 2004. The  
20 first well was drilled February 2004. And the bulk of our  
21 operations has been for this company in Texas. My experience,  
22 as I said, and my colleague over there, Glenn Reed, we've been  
23 together since the I guess the 1990 era while I was at American  
24 Cometra which they hired me to develop their tight gas  
25 projects, which in turn we picked Glenn up. And Glenn and I

1 have been working together since that point. Glenn is  
2 currently our EVP head of operations and drilling and  
3 engineering for our company. I'm very active hands-on  
4 involvement. I still have a lot of involvement with  
5 engineering. A lot of times they would like me to get away  
6 from it, but I still stay in it.

7 And as I said earlier, we focus predominantly on  
8 unconventional rock, tight gas, shale gas, things such as that.

9 Q. Okay. Does Approach have an in-house geology  
10 staff as well?

11 A. Yes, we do. We have an in-house geology staff.  
12 We have one geologist currently. We had a second geologist but  
13 he recently retired. And I think he's moving to the mountains.  
14 And we're currently staffing up the geological staff quite a  
15 bit. That is one area that I place very highly on my list of  
16 needing -- you have to have a good geological staff. If you  
17 don't have geological stuff, then us engineers are basically  
18 shooting in the dark.

19 Q. Okay. Have you and your company had experience  
20 in operating in environmentally sensitive areas?

21 A. Yes. The east Texas operations and our Cotton  
22 Valley Sand, Bossier Sand, Cotton Valley Line Play, we're  
23 drilling in and around federal wetland classification areas.  
24 So we have to be very careful there building pipe lines, roads,  
25 structures such that where we're crossing the wetlands. We

1 have to take very -- we have to be very careful of what we do  
2 there, even to a point where we have to go underground with our  
3 pipelines by boring them and not by cutting ditches. We  
4 actually have to bore under the wetlands to get our pipelines  
5 in. So that's been an area that's been of high concern to us,  
6 but these wells are about 12, 13,000 feet, very large rigs out  
7 there, so we have to be very careful there.

8 In my previous, as I said when I was at American  
9 Cometra, when I was involved with that, one of our areas we  
10 operated in was the Piceance Basin up on Black Sulfur Creek in  
11 that area.

12 Q. Is that in Colorado?

13 A. This is in Colorado. And that was all BLM so we  
14 had to operate under the BLM guidelines as well there. Other  
15 areas we operate are very sensitive, especially to west Texas  
16 to artifacts and such as that, that we have to be aware of.

17 Q. Okay. If you look at your Exhibit 1, it's your  
18 PowerPoint presentation in hard copy form. Basically, Page 2  
19 of that shows management and company history in your areas of  
20 operation. There's a reference in the lower left-hand quadrant  
21 to El Vado East. Is that -- does Approach own the oil and gas  
22 lease at El Vado East?

23 A. Yes, we do.

24 Q. And does Approach have the right to drill on that  
25 lease?

1 A. Yes, we do.

2 Q. If you would, Mr. Craft, would you give the  
3 Hearing Examiner an overview of the geology for El Vado East?

4 A. I'll be glad to. If you'll turn to Exhibit  
5 No. 2, we'll start there. Now, what I'd like to do,  
6 Mr. Examiner, if I might stand up and use the bigger stencils?

7 MR. BROOKS: Yes, sir.

8 THE WITNESS: And this will be the same for everybody  
9 in here. This will be the same map that you see here. They're  
10 easier to see when you're up here.

11 MR. BROOKS: Okay. If you would move the stencil  
12 back sort of parallel to the wall here so that the members of  
13 the audience will be able to see it as well as the people up  
14 here at the front.

15 THE WITNESS: Sure. Sure. All right. Now, if you  
16 look at Exhibit No. 2, what this is, this is an overview of the  
17 Chama Basin and the --

18 MR. BROOKS: If you're going to point to things,  
19 you'll need to stand on the other side, because I can't see  
20 anything.

21 THE WITNESS: All right. How about that?

22 MR. BROOKS: I think that will work.

23 THE WITNESS: All right. I'll stand back here so  
24 everybody can see.

25 MR. BROOKS: Okay.

1           A. Now, what drew us to this particular area -- it  
2 was a company that managed to secure the mineral rights out  
3 here and they brought this to us. We looked at it from a  
4 geological standpoint. And what was interesting was the best  
5 proximity of our study area to multi-million barrel fields;  
6 West Puerto Chiquito, East Puerto Chiquito, Boulder, Verde, all  
7 these fields are located right here on the western flank of  
8 the -- there's a series of anticlines. Archuleta Anticlinorium  
9 is what they call it which is a series of parallel anticlines  
10 that form this area. In common terms they call it Hogback.

11           What happens, you come from the San Juan Basin and  
12 then you have these anticline structures that come up. Well,  
13 what happens when it comes up, because of the Mancos Shale in  
14 the Niobrara member of the Mancos Shale, it's composed of silt,  
15 limestone stringers, some very thin silty sand stringers.

16           Well, all that contributes to brittleness. And when  
17 you have brittleness, you have a reservoir for hydrocarbons.  
18 Mancos Shale is a source rock. There's no question about it.  
19 But without a reservoir, you don't have anything. It has very  
20 little porosity or perm inside the shale alone.

21           So when you look at what's at these fields, the West  
22 Puerto Chiquito, East Puerto Chiquito fields right over here,  
23 as this structure -- this is coming out of the San Juan Basin  
24 which is an incline in the San Juan Basin as you can see right  
25 here, as you come off this incline and come back up, you create

1 a bunch of very long parallel fractures systems. And for  
2 fractures, these things are big. I mean, up to a half inch in  
3 diameter fracture systems are considered huge. They are almost  
4 like pipelines.

5           So we looked at that and we said, okay, there's one  
6 thing going for us. Then what you also have, you have the  
7 Chama syncline that comes right through the middle of the  
8 acreage, very similar to what you have over here at the San  
9 Juan Basin incline. And the Chama syncline live right in the  
10 this area right here. And what that is, it sunk. As it comes  
11 off this western flank of the syncline, it sinks down and comes  
12 back up.

13           Not only that, but you have a major ridge fault that  
14 goes through the middle of this. And this ridge fault  
15 reportedly has slippage of up to 10 miles. So you have a lot  
16 of tectonic activity taking place which is all good for  
17 fracturing, faulting, all that is necessary to hold the  
18 reservoir in place and to store hydrocarbons.

19           And then on the east side of this thing, what you  
20 have is a Brazos uplift going into the mountains. So right  
21 there you have a perfect environment for fracturing and  
22 reservoir storage. Not only that, but on our lease out here,  
23 there's been about 10 wells drilled starting in the 1940s. I  
24 think they go as high as -- the bulk of them were drilled from  
25 the '40s up to the end of the '50s. I think there was one

1 drilled in the '70s out here. Out of these wells, you have  
2 four of them that have actual oil shows reported as they  
3 drilled through this member. And I'll show you a map in just a  
4 few minutes of that.

5 MR. BROOKS: That was the Mancos?

6 THE WITNESS: That was the Mancos, yes, sir.

7 Q. (By Mr. Hall): You are referring to Exhibit 3  
8 now?

9 A. This is Exhibit No. 3. Now, what this is -- I'll  
10 just -- this is basically a duplication of what I just said,  
11 but what this is, is kind of taking a satellite view, the  
12 terrain and showing the anticlinorium structure I just  
13 referenced to. Our acreage is in the red here. This is Puerto  
14 Chiquito over here. Boulder is sitting over here. Puerto  
15 Chiquito West, Puerto Chiquito East right here.

16 So you have this big anticline system that runs  
17 through here. You have this Chama syncline that runs this  
18 direction. This is the trough of the syncline line, so from  
19 this point over, it's going up. From this point over, it's  
20 going this way, the Brazos uplift. You have the Brazos uplift  
21 right over here and the big unconformity that runs through  
22 here, this is your big ridge fall right here. So when you look  
23 at it from a reservoir standpoint, this thing has everything it  
24 needs to have oil and gas present there.

25 I want to refer to another slide. Now, this one I

1 don't have a major map on it. But if you refer to your  
2 Exhibit 4 -- and I'll hold it up for everybody to see.

3 MR. BROOKS: Okay.

4 A. Now, let's put this map back up real quick.

5 Q. (By Mr. Hall): Exhibit 4 is your cross section?

6 A. That's correct. Exhibit 4 is a cross section and  
7 here it is. And what you're doing -- I know it's hard for  
8 everybody here to see, but the cross section actually goes B to  
9 B-prime across this entire area, okay?

10 Now, when you look at that cross section, this is  
11 what the cross section actually looks like. This is the San  
12 Juan Basin. The Puerto Chiquito field is located right here.  
13 You can see it flexing up. And that's going to be right here.

14 Then you come across your anticlinal structures, a  
15 series of parallel anticlines, as you see them right here,  
16 right here, right here -- that's this region. Then you're in  
17 the Chama Basin. And you're coming off -- here's your syncline  
18 structure right here. That's coming across right through this  
19 area. And then and you have the Brazos uplift. The Brazos  
20 uplift is this thing.

21 All these reservoir rocks outcrop in the Brazos  
22 uplift. They also outcrop on the far western side of this  
23 acreage, too. And that's important. Because when these things  
24 outcrop, you can actually go to the rocks and see the members  
25 of the Mancos. And you'll see the stain of the rock. You'll

1 see odor in the rock. Not only this, but a very interesting  
2 point -- we have a mine located -- an old mine located in our  
3 acreage. I think it's right around here -- right there.

4 Now, that mine, they did some geochemical testing on  
5 that mine on that McAfee Shale. The McAfee Shale is located  
6 right on top of the Mancos. Now, what they did, they took the  
7 McAfee Shale and they went through and they determined that the  
8 thermal maturation of this shale supported oil generation in  
9 the oil window. Which basically in common terms is, you turn  
10 the oven up, you heat it up, and you're either going to have  
11 gas or you can have oil or it can be baked totally out.

12 Well this particular one supports oil formation. So  
13 we have all of this here to work with. When you look at that  
14 and look at the different structural features -- again, you go  
15 back. This is performed to form fractures, faults, storage  
16 vessels for this Mancos Shale Niobrara member. In addition,  
17 there's deeper stuff, the Entrada, all the way down to the  
18 Dakotas that could be productive.

19 The big problem out here is basement rock. Where is  
20 basement rock? And that dictates a lot of what you're looking  
21 at. So whereas in the center of the field, you might find  
22 basement rock as deep as 5,000 feet. We don't know yet. As  
23 you move over to this side, the basement rock is going to come  
24 up, because everything is flexing upward, pushed up. And so  
25 that's important to us because that's going to dictate how deep

1 we drill.

2 Now, the next one -- let me go to Exhibit --

3 MR. A. TRUJILLO: Mr. Hearing Examiner, at this  
4 point, I'm going to object. I'm not sure if any of these  
5 exhibits have been offered into evidence or properly  
6 authenticated. I don't know. This is all very interesting,  
7 but I don't know where this came from or what the source is or  
8 how Mr. Craft has any -- what his basis of knowledge is for  
9 these particular exhibits.

10 MR. BROOKS: Well, Mr. Trujillo -- the -- I know you  
11 don't regularly practice here, but we do things a little bit  
12 differently as a rule in the OCD than we do in court, and  
13 generally speaking, the custom here is to allow a witness to go  
14 through his proceeding and then the attorney offers the  
15 exhibits in evidence and we deal with those evidentiary issues  
16 at the conclusion of the witness' presentation.

17 The reason we do that is we don't have the question  
18 of things that are not ultimately admitted into evidence being  
19 exposed to a jury, because we're not dealing with a jury here.  
20 So based on that, I'm going to overrule your objection with  
21 prejudice to you raising those issues again if and when  
22 Mr. Hall offers his exhibits into evidence.

23 A. Now, there's a lot of literature which we can  
24 make -- you can look at it --

25 Q. (By Mr. Hall): Tell us what you're referring to.

1           A. Okay. This is one of many papers. I have over  
2 400 technical papers written on the Chama and San Juan Basin in  
3 this particular area. This is one written by Benson and Greer  
4 Drilling Corporation, Albert Greer. For anybody who wants to  
5 know who Albert Greer is, Albert Greer was the one who found  
6 West Puerto Chiquito, East Puerto Chiquito. He's kind of the  
7 father of the Mancos out here, you might say. Very intelligent  
8 man. Did a lot of work, a lot of geochemical work on it, and  
9 these papers, if you'd like copies of them, I'll be glad to  
10 give them. And they support -- and they will tell you the  
11 different authors behind the different structures out here.

12           Q. Mr. Craft, let me ask you: Did you rely on this  
13 paper in conducting your geologic evaluations?

14           A. Of course. I relied on this and about 400 other  
15 pages over there because this basin is so unexplored.

16           Q. All right. Since you're referring to this one  
17 specifically, if you would read into the record the title,  
18 author, and where we might find this piece of literature.

19           A. Okay. You can find this on the geologic website  
20 or you can just type in this title, "West Puerto Chiquito USA  
21 San Juan Basin New Mexico." It was posted by Albert Greer and  
22 Richard Ellis, and it is "Field Classification of the San Juan  
23 Basin." That's all you have to do is type that in and this  
24 will come up.

25           Q. Is there a date on that?

1 A. There is a date. It's very old. Let me find it.

2 MR. HALL: Mr. Examiner, we didn't intend on  
3 tendering this as an exhibit, but we'll certainly make it  
4 available to you and Mr. Trujillo.

5 MR. BROOKS: Are you speaking of the article?

6 MR. HALL: Yes, sir.

7 MR. BROOKS: Okay.

8 MR. HALL: He did rely on it in part, though.

9 THE WITNESS: I do not see a date handy. I'm sure  
10 there is one on here. I don't see a date on here. I see the  
11 references.

12 MR. HALL: That's all right, Mr. Craft. We can get  
13 that information.

14 MR. A. TRUJILLO: Mr. Hearing Examiner, if Mr. Craft  
15 would be so kind as to let us know the publisher and the  
16 journal name of that report?

17 THE WITNESS: The publisher.

18 MR. BROOKS: Is that information on there?

19 THE WITNESS: I don't think so.

20 MR. A. TRUJILLO: What about the journal name?

21 THE WITNESS: The journal name is not on here. This  
22 was written as an independent basis -- independent report, I  
23 believe. But let me -- I can look through it and figure out  
24 where it is. Hang on. It's got to be in here somewhere.

25 MR. HALL: We'll certainly be glad to make a copy

1 available to counsel.

2 Q. (By Mr. Hall): Let's go on, Mr. Craft.

3 A. Okay.

4 Q. Did you rely in part on Mr. Greer's article in  
5 your geologic evaluation?

6 A. Yes, I did.

7 Q. Tell us, is there something in particular in  
8 there that you would like to --

9 A. Okay. Well, let me skip over something just real  
10 quick. And we'll just skip -- let's go to this one. This is  
11 Exhibit No. 5. Now, one of the reasons that I looked at that  
12 paper and took notes was this was the field -- the field was  
13 actually discovered in 1960, I believe. Actually, West Puerto  
14 Chiquito was established in '62. East Puerto Chiquito was  
15 established in 1960, I believe.

16 Well, one thing that Greer kept referencing through  
17 the write up and in his conclusions, which you all will see --  
18 and here's the field I'm talking about right here, they were  
19 overdrilled. These fields were drilled initially on 80s, 160s,  
20 and because of the nature of the fracture system out here --

21 MR. BROOKS: Now, you're referring to Exhibit 5?

22 THE WITNESS: Exhibit 5.

23 MR. BROOKS: And the area that you're saying that's  
24 been drilled is on the left-hand side?

25 THE WITNESS: On the left-hand side right over here

1 at these two arrows.

2 MR. BROOKS: Okay. Go ahead.

3 A. Okay. Now, one thing that the paper described is  
4 the overdrilling and the waste of reserves, the waste of land,  
5 by drilling these on 40-acre spacing, on 80-acre spacing, on  
6 160-acre spacing. The reason for this, because these fracture  
7 systems are very long parallel fracture systems, and when you  
8 find the fracture swarms that you need to be in and the  
9 parallel fracture systems, one well will drain a large area, up  
10 to 640. He recommends drilling on 640-acre spacing in his --  
11 after he looked at the whole thing.

12 He also recommends, because East Puerto Chiquito was  
13 developed in a competitive land situation, the spacing was not  
14 controllable because you had different oil companies competing  
15 for reserves. He recommends also that to keep this Mancos  
16 development in this particular area is going to be secure a  
17 large acreage position. If you secure a large acreage  
18 position, you basically take out the competitive nature of the  
19 reservoir. You're in control.

20 So I looked at that and I said, you know, that's  
21 going to help from the standpoint from drilling, recovery per  
22 well and what we have to do when we're in here. So we're going  
23 to look at that and take the same type of thought process when  
24 we start drilling these wells out here.

25 Now, the last thing now -- this is -- we're going

1 back. This is part of your Exhibit 1. This is actually the  
2 third page of your Exhibit 1.

3 MR. BROOKS: Okay.

4 A. This is kind of interesting. This is why  
5 basically -- why we elected to explore -- and this is an  
6 exploration project, by the way.

7 Q. (By Mr. Hall): Let me ask you a question. What  
8 are we looking at here? What are the boundaries shown here?

9 A. This is our acreage position, our 90,000 acreage  
10 as highlighted in yellow here.

11 Q. Okay.

12 A. And what you have, this is El Vado Reservoir.

13 MR. BROOKS: Hold on a minute. Let me clarify.  
14 Everything in yellow is your acreage position or the darker  
15 color?

16 THE WITNESS: Everything in yellow is our acreage  
17 position here.

18 MR. BROOKS: On my copy of the exhibit there is that  
19 in darker colors. That doesn't appear to be the case on the  
20 one on the board.

21 THE WITNESS: That is correct. That is a map that I  
22 referenced to. What you are looking at is lease holdings  
23 inside our acreage position. So let's just look at this one.

24 MR. BROOKS: Okay.

25 THE WITNESS: And we'll enter that one.

1 MR. BROOKS: I would also note that the writing  
2 that's inside the various blocks on my copy of the exhibit is  
3 totally illegible.

4 THE WITNESS: It's totally unreadable. Exactly.

5 MR. BROOKS: Hopefully it has no significance.

6 THE WITNESS: Not for what I'm presenting here.

7 MR. BROOKS: Okay. You may proceed.

8 A. This is our acreage. Remember I said there were  
9 old wells drilled out here. And what we have done, we have  
10 marked the wells. You can see them, tin building, tin  
11 building, this is the Hamilton State right here. You move up  
12 here, you have the Martinez. You move up, tin building,  
13 Tierra, TA-A1 and El Vado 1 here.

14 MR. BROOKS: By what kind of symbols are the old  
15 wells marked?

16 THE WITNESS: The old wells are going to be marked as  
17 dry hole symbols.

18 MR. A. TRUJILLO: Excuse me. I didn't catch that.

19 THE WITNESS: Dry hole symbols are a circle with a  
20 plus sign through the middle of it.

21 MR. BROOKS: And these are in blue on my copy,  
22 anyway; is that correct?

23 THE WITNESS: These are --

24 MR. BROOKS: No. We got one dry hole symbol that's  
25 in red.

1 THE WITNESS: These dry hole symbols should be in red  
2 here.

3 MR. BROOKS: Most of them appear to be blue on my  
4 copy, although the ones way over on the left are in red.

5 THE WITNESS: Let's see.

6 MR. BROOKS: The ones on -- there are three out on  
7 the left side that are in red. All the rest of them seem to be  
8 blue.

9 THE WITNESS: Okay.

10 MR. BROOKS: Some over there on the right are in red,  
11 too. I don't know if that has any significance.

12 THE WITNESS: Well, go to Exhibit No. 7.

13 MR. BROOKS: Exhibit No. 7?

14 THE WITNESS: And maybe we can take some of that  
15 clutter off of there.

16 MR. BROOKS: Okay.

17 THE WITNESS: It's still hard to read on the map, but  
18 on this, the red line, is our acreage position. As you can see  
19 the red line and we didn't do the yellow in here. Also, it's  
20 hard to see, but you can see the dry hole symbols on the  
21 acreage position as we go through. So everybody can see it --

22 MR. A. TRUJILLO: Mr. Hearing Examiner, could Mr.  
23 Craft let us know how many there are so we don't --

24 THE WITNESS: Yeah. There's 10 dry holes on the  
25 acreage. There's about 18 wells surrounding, including in the

1 acreage, but there's actually 10 on the acreage.

2 Q. (By Mr. Hall): You mean the lease acreage?

3 A. On the lease acreage.

4 Q. Okay. Go ahead.

5 A. And you can't see it on this mapping. That's why  
6 you're going to have to look at this map. On here we've  
7 colored with a green color the wells that had shows in it. And  
8 I'll point that out to your guys in a minute.

9 But here's the wells. Here they are. They're right  
10 here, right here, right here, right here. And we have three  
11 right here, and we have four right here.

12 MR. BROOKS: That may well explain the color  
13 difference that I was looking at, what I was characterizing as  
14 blue may be green.

15 Q. (By Mr. Hall): If you would show the Hearing  
16 Examiner as well, that would be helpful.

17 A. Okay. Here's the well, you see one, two, three,  
18 four?

19 MR. BROOKS: Well, yeah. Would you mark them on my  
20 copy -- well, mark them on the copy that's going to be put in  
21 evidence. Take the court reporter's copy over there and mark  
22 them on there, please. That way we'll have a record.

23 MR. HALL: Mr. Examiner, would it be helpful to you  
24 to have the PowerPoint slides displayed on the screen? I'm  
25 pretty sure this is not a function of our AGI site, but, we

1 would be glad to do that.

2 MR. BROOKS: Actually, I can see them fairly well  
3 from here. But if it's feasible to display them on the screen,  
4 that would probably help members of the audience substantially.

5 MR. A. TRUJILLO: Mr. Hearing Examiner, I did contact  
6 the Information Technology, Martin, and I told him we would be  
7 use a PowerPoint sometime today. And I'm sure if someone would  
8 run over and let him know, he could set it up in a matter of  
9 minutes. He did on Friday.

10 MR. BROOKS: Okay. If you could work on it while  
11 we're proceeding, that will avoid wasting time.

12 MR. HALL: Okay.

13 MR. BROOKS: Thank you. I appreciate it. Here you  
14 go.

15 THE WITNESS: We have the show wells, show wells,  
16 here's the different wells we've marked.

17 MR. BROOKS: Okay. The record will reflect that the  
18 witness circled the wells having shows on the Exhibit 7.

19 A. But one reason why we focused over here instead  
20 of over here, you have a lot --

21 MR. BROOKS: Now, because we're making a written  
22 record, I'm going to ask you rather than saying "here," say  
23 toward the right-hand side or toward the left-hand side. That  
24 way it'll make more sense to somebody reading it.

25 A. Okay. On the east side of our lease, before you

1 get into this separation piece right here, the reason we are  
2 looking on the east side is we have a couple of things of  
3 interest. We have some wells down here that we actually have  
4 logs on that are old, old wells. We have this Estabel Well  
5 right here, which is not located on your lease block, but just  
6 adjacent to it.

7 MR. BROOKS: That's to the east end of your large  
8 lease block.

9 THE WITNESS: That's right. These are in the large  
10 lease block. This Estabel Well, when they drilled into it with  
11 fluids and lost a lot of returns. They had total loss returns  
12 which supports fracturing. So when we started looking in this  
13 particular area we said, well, it makes sense because what  
14 happens with the Brazos uplift coming up like this, these beds  
15 are pretty steep here. You've got a lot of flexing here and so  
16 it makes sense that you can get these long parallel fractures  
17 at this point. And that's why we focused in this particular  
18 region on and over here first.

19 You have the same thing occurring on the far west  
20 side of our acreage position where it comes up to the eastern  
21 flank of this system. It's not as steep as it goes up. We did  
22 have some shows here on both these wells on the far west side  
23 of our acreage position, but we're going to initially try to  
24 focus here where we think we should have the bigger fracture  
25 systems.

1           Eventually -- and this is -- like I said, this is an  
2 exploration project. We're going to have to go in and do some  
3 drilling, find out what it is -- and as we go through, it's a  
4 work in progress. We're going to hydrate locations. We're  
5 going to look back. Some locations we have right now might  
6 fall out depending on what our geology indicates. But the  
7 whole reason for what we're doing right now is number one, is  
8 centered off of geology.

9           Q. (By Mr. Hall): Mr. Craft, let me ask you: In  
10 that regard, are your well locations sensitive to the available  
11 geology, then.

12           A. They are at this stage. Very much so.

13           Q. For drilling trendology, as they say; is that  
14 right?

15           A. That's exactly right. That's why it's  
16 exploration. We're drilling trendology. And this is an  
17 exploration project, even though we have some control over here  
18 and we have some control over here, it's still exploration.

19           Q. The well data that you've utilized for the older  
20 wells there, is that data available from the -- publically  
21 available?

22           A. Yes. The data is all publically available. We  
23 got ours from Dwight's PHD. You can get online with Dwight's.  
24 You have to have a subscription for it. But you can probably  
25 go into the OCD records and get the same information.

1 Q. All right. Go ahead.

2 A. Well, the last piece I want to show -- and we've  
3 already looked at this piece -- is just -- we'll refer back to  
4 El Vado East regional production. And over here --

5 MR. BROOKS: And which exhibit is this?

6 THE WITNESS: That's going to be back at Exhibit -- I  
7 think it's 7. No, it's 6 -- Exhibit 5, okay?

8 MR. BROOKS: Okay.

9 A. Now, what this is, this just gives you a  
10 30,000-foot view of the region. And what you have here, this  
11 is more of the TA area up in this area. And you can see  
12 there's a tremendous volume of wells -- not tremendous -- but  
13 there's a large number of wells that we are drilling up in this  
14 region. You have different producing fields.

15 MR. BROOKS: Are you talking about the region toward  
16 the north end of the nap?

17 THE WITNESS: Right. We're going up into the very  
18 northwestern end of the map, as you can see here. And this  
19 little field over here is called Chromo. As you come down --  
20 coming down to the far west side of the lease position, you  
21 come down about a little more than half way and you have the  
22 Boulder Field, Boulder/Mancos Field over here -- right here.

23 Then you come down and you have the Puerto Chiquito  
24 Fields. And that's in the very lower corner on the left side  
25 of this map, or in the western region of the --

1 MR. BROOKS: All those fields are along the left-hand  
2 side.

3 THE WITNESS: That's correct. Right up against that  
4 incline structure pushing up out of the San Juan Basin. There  
5 has been some wells drilled, as you can see. There has been a  
6 very limited number of wells drilled on this acreage position,  
7 but there has been some.

8 You also have some production just immediately  
9 offsetting our acreage position right over on the west side.

10 MR. BROOKS: The red outline on the bottom of this  
11 map that's Exhibit 5; is that your acreage position, again?

12 THE WITNESS: That is our acreage position with the  
13 exception of this one -- I think one issue here. This is an  
14 older map. This comes down. We do not have this piece. And  
15 as we showed on this map -- let me show you all -- this little  
16 piece right here as it comes down and drops to the south, we  
17 don't have that as depicted by this map.

18 MR. BROOKS: Okay.

19 THE WITNESS: Okay? Right here.

20 MR. BROOKS: That map being Exhibit 7.

21 THE WITNESS: Right. And that is basically the  
22 geology that we use to explore -- or we're going to use to  
23 explore in this particular region.

24 Q. (By Mr. Hall): Mr. Craft, based on the analogous  
25 reservoir data from the Puerto Chiquito and the Boulder Fields,

1 is there sufficient data that allows you to project your EURs  
2 for these wells?

3 A. Well, always we like to use geology. And if you  
4 refer back to --

5 MR. BROOKS: For the benefit of members of the  
6 audience who may not be into oil and gas terminology, EUR is  
7 Expected Ultimate Recovery.

8 MR. HALL: I beg your pardon.

9 THE WITNESS: Yeah, sorry.

10 A. If you turn to Exhibit 1 and come back about on  
11 the fourth page -- and I apologize for this being off -- and  
12 I'll show this to everybody. This is Puerto Chiquito East  
13 Field and Puerto Chiquito East Field. There was probably close  
14 to 60 wells at one time in the field. And if you look at it  
15 from a cum basis, this cum is almost five million barrels out  
16 of this field. Now, from the EUR, using EUR projections off of  
17 existing old fields is a good ballpark number. You can get  
18 close to it. But it's not exact science.

19 But if you look at recovery per well EUR you've  
20 projected out, you're looking at somewhere around  
21 100,000 barrels a well. Now, that's averaging the poor wells  
22 with the mediocre wells with the better wells. That's more of  
23 a statistical model we use.

24 If you go to Puerto Chiquito West Field -- and let me  
25 remind you of Puerto Chiquito West Field, too, this field is a

1 stellar field. This field is almost --

2 Q. (By Mr. Hall): You're referring to Page 5 of  
3 Exhibit 1?

4 A. Page 5 of Exhibit 1 titled Puerto Chiquito West  
5 Field. This field has, right now, has a cum of somewhere  
6 around 17 million barrels. And now, this field is a little bit  
7 different in that this field is deeper on the structure on the  
8 west side so you have some associated gas with this field. And  
9 if you do an MBO or MMcfe, however you want to look at it, but  
10 it'll get you around 20 million barrels.

11 Now, if you look at the average per well in this  
12 field because of increased recovery and less wells drilled on  
13 this field, it's about 285,000 barrels per well on the average.  
14 Now, the interesting thing about this field is, this field, as  
15 I said, it's a deeper structure. It's about -- it ranges from  
16 4,000 feet down to 7,000 feet on the structure. Well, the East  
17 Puerto Chiquito ranges from 2,000 feet down to about 93,000  
18 feet as it dips down the structure. And Boulder's around 2 to  
19 3 as well. So there's all up in the same what I call zip code  
20 as far as depth. About the same as what we're looking at over  
21 on our side of the eastern flank of our field.

22 Now, if you go back -- and also, what they did in the  
23 Puerto Chiquito West Field, because it had some solution gas  
24 with it -- and one thing about these fields, you have to  
25 have -- this is all for the most part excluding -- I know it

1 gets confusing when I say this -- excluding Puerto Chiquito  
2 because it does have some solution gas with it -- when you get  
3 on these fields that have very little gas, such as Boulder,  
4 East Puerto Chiquito, those fields are all based on gravity  
5 drainage. So you have to have a low spot, a collection point,  
6 gravity drainage and a storage capacity in it.

7           If you go to the next page which will be Page 6 right  
8 behind it, it's titled Boulder Field Production Summary. This  
9 field is a small field, somewhere around 2.8 million barrels.  
10 EUR per well somewhere around 88,000 barrels per well. But  
11 it's up shallow. It's up at the 2,000 foot mark.

12           Q. Let me ask you, Mr. Craft, I noticed on  
13 Exhibits 4, 5 and 6, the data is off the charts, so to speak,  
14 on the left side. It goes back to 1970. Was there production  
15 predating --

16           A. That's true. Dwight's went back -- Dwight's is  
17 the software we use, the proprietary software, which you have  
18 to have a membership to, and they don't record anything beyond  
19 the '70s in this particular area.

20           Q. Does that mean, in fact, some of the cums may be  
21 higher than reflected?

22           A. It's possible. It's hard to get data back in the  
23 '50s and the '60s. It's hard to get the data and really be  
24 able to quantify it. So most of this information I was talking  
25 about is cum stuff, that's based on the '70s forward. Now,

1 they -- went back -- Dwight's went back -- and they looked at  
2 cum numbers too, pulling records and things like that to try to  
3 get the exact volumes, but there could be some errors from the  
4 '70s back.

5 Q. Okay. Go ahead.

6 A. Well, that is basically the geological model.

7 Q. Okay. We asked you, Mr. Craft, based on a  
8 reasonable scientific probability, is there a reasonable  
9 expectation that you will realize production from your drilling  
10 project?

11 A. Oh, I think there is a reasonable expectation.  
12 The key on this is shows. We actually have some shows from the  
13 Mancos Shale that were recorded back in the '50s, early '60s.  
14 Some reports are even bailing oil out of the well. At that  
15 time, oil was not trading very high, so these wells, when they  
16 drilled these wells, they just got a show. It didn't mean  
17 anything to them. But with the technology we have now and with  
18 the advancements in completion processes, a show can mean a  
19 whole lot.

20 Actually, on the East Puerto Chiquito Field, the  
21 geological team that was in charge of finding that field first  
22 thought -- when they first drilled the first four wells -- that  
23 there wasn't anything else there. And then they went back and  
24 looked at it and started working it and they realized that  
25 their model was incorrect, so they changed their model.

1           One well, actually the largest well in Puerto  
2 Chiquito West Field, when they drilled in it, they got no  
3 shows. They went and did a big frac job on it where they  
4 pumped sand and opened these fracture systems up, and the well  
5 has cumed almost a million barrels of oil.

6           Q. You were present for the -- let me ask you it  
7 this way: None of your proposed locations are within one mile  
8 of an established pool or undesignated pool; is that correct?

9           A. That's correct.

10          Q. So these are all wildcat locations?

11          A. Yeah. And they're exploration locations, wildcat  
12 locations, exactly.

13          Q. It's based on statewide rules and 40-acre  
14 spacing?

15          A. The deal with the 40-acre spacing is -- because  
16 we think in the window, oil generation window we're in, and at  
17 these depths -- because remember, this is above sea level.  
18 These reservoirs are all above sea level. We think that the  
19 probability of having a gas solution, gas portion of this  
20 reserves is probably nil. So it's going to be oil.

21          Now, the state rules for New Mexico, 40 acres oil, is  
22 40 acres. Am I planning on developing this on 40-acre spacing?  
23 No. Not at this point. It's going to be a combination of two  
24 things. We're first going to have to get in and see what we  
25 have. We're going to have to do some proper core work, measure

1 these fracture systems as we get into them, and see the  
2 drainage of these fracture systems which requires doing some  
3 reservoir analysis on it. That's going to be more -- that will  
4 dictate our next step.

5 But the literature that we have available to us would  
6 suggest -- and it makes sense if you think about it -- you're  
7 dealing with long parallel fracture systems that are fairly  
8 large in nature that it would not be wise to drill this on  
9 close spacing. I mean, why? You can recovery the same amount  
10 of reserves from drilling it on maybe 320s or 640s, whatever  
11 the reservoir tells you.

12 Q. And again, do you know what the spacing is under  
13 the Puerto Chiquito pools? Are there special pool rules?

14 A. The Puerto Chiquito Field, they applied for 320  
15 with optional 640s -- or 640s with optional 320s. It was  
16 smaller. At the end they were drilling it on 640-acre spacing.

17 Q. And by virtue of the earlier development density,  
18 did the Division make the decision to establish a buffer zone  
19 around those pools?

20 A. They did. Actually, it was a unique occurrence.  
21 Because when Mr. Greer first got his West Puerto Chiquito Field  
22 on, he applied for a pooling -- or a unitization of over 70,000  
23 acres, which at that time, it was unheard of. And they granted  
24 it to him because he was showing the fact that these wells do  
25 not need to be drilled on 40s, or close spacing. These wells

1 need to be drilled further apart because it's a waste of money.  
2 It's a waste of reserves, especially when you have a solution  
3 gas drive in combination with gravity drainage on this field.  
4 So what he did on this field, he tried to get the spacing as  
5 large as he could and then he reinjected the gas back into this  
6 field.

7 Now, you do that for two reasons: Pressure  
8 maintenance to move oil out of it. And then at the end, he  
9 blew the gas cap down and sold the gas.

10 Q. Do you know enough now about what you expect to  
11 encounter on your lease to say whether pressure maintenance may  
12 be necessary?

13 A. Well, if it's oil reservoir, for example, if  
14 there's any produced water associated with the Mancos in this  
15 particular case -- and one thing I want to point out, the  
16 produced water is fresh out here. And in these other fields,  
17 for the most part, it's been fresh or very low salinity ratios  
18 in it -- that the water would be reinjected back into the  
19 fracture systems to use as a washing type deal or as a quasi  
20 poor-boy flood. That way you recover as much oil as possible.

21 But we won't know that until we do some reservoir  
22 studies on it and we actually get some data on it. And that's  
23 one thing that's going to have a lot to do with the API gravity  
24 that's accrued. We're believing this is going to be in the  
25 35 API gravity range, which is a nice gravity accrued to have.

1 We're going to have to find out if there's any associated gas  
2 with this, which we don't think there will be based on the  
3 elevation of where these reservoirs are going to be. We very  
4 seriously doubt that there is any associated gas with it.

5 And a lot of things are going to take place. This is  
6 a learning process for us. I mean, this is wildcat. We don't  
7 have a lot of information out here. We do have some old  
8 control wells, and that's about it. And so, you know, every  
9 well we drill is going to be a new data point. And the first  
10 well is going to be very important to us.

11 Q. Do we have enough information now to predict what  
12 our post-drilling production facilities might look like?

13 A. Well, at this point -- let's just say we assume  
14 that we are not going to have any solution gas with this and  
15 it's just going to be plain old gravity drainage system. Which  
16 gravity drainage will necessitate a pumping unit because it  
17 doesn't have any drive mechanism. It's not a water drive.  
18 It's not a solution gas drive. This oil is just sitting in  
19 these fracture systems.

20 And so we'll have to put a pumping unit, a small  
21 pumping unit, on it. They're not very big at this depth. And  
22 then we'll have a storage facility to store the oil in. Most  
23 likely this will be on individual locations. I don't think  
24 there's enough information to say we're going to do a central  
25 facility out here. Plus, the terrain makes it very difficult

1 to do central facilities because then at that point you have to  
2 build pipelines and there's scar off the pipelines. So we're  
3 looking at probably just a well site storage facility.

4 Q. All right. Mr. Craft, do you have an opinion  
5 whether or not these wells can be drilled in an environmentally  
6 sensitive manner?

7 A. Yeah. I think they can. I mean, there's been  
8 tremendous work done, especially here recently and justifiable  
9 so, too, on getting the oil and gas sector to do a better job  
10 of drilling and reclamation of ground, which I applaud them for  
11 it. The OCD -- I applaud the OCD for the closed pit system. I  
12 think that's a fabulous idea. It does minimize the amount of  
13 contaminants that you're going to get out. I think with our  
14 process and based on the other areas we drill in, there's ways  
15 you can minimize any type of damage. Can I guarantee it? No.

16 Q. Let's talk about correlative rights briefly: Are  
17 any of your locations closer than 330 feet to a lease boundary?

18 A. I do not believe so.

19 Q. And Approach owns or controls 100 percent of the  
20 lease hold working interest?

21 A. That is correct. Well, yes. We control  
22 100 percent.

23 Q. Okay. If Approach is prevented from accessing  
24 these projected reserves, in your opinion, will waste result?

25 A. Yes. Reserves will remain in the ground.

1 Q. Let's talk about your lease briefly. Do you have  
2 a drilling obligation under your lease?

3 A. Yes, I do. Part of this lease process, we had  
4 a -- it was a little bit unconventional as far as we didn't  
5 have our standard three year, five year lease terms on this.  
6 And part of our negotiation with the previous owner of these  
7 minerals was to drill eight wells in a period of two, two and a  
8 half years, with one well going down to the basement rock.

9 Right now we're kind of behind the eight ball because  
10 the term of this -- I'm not sure exactly when it terminates,  
11 but there's probably -- I'm not sure of the date, but there's a  
12 short period of time left on it.

13 Q. All right.

14 MR. BROOKS: I assume you're going to offer us  
15 evidence of that date, Mr. Hall, at some point.

16 MR. HALL: I would be glad to get you the lease  
17 itself, Mr. Examiner. We will do that.

18 MR. BROOKS: Okay. Thank you.

19 MR. HALL: I believe you already have it, as a matter  
20 of fact.

21 MR. BROOKS: We probably do. I have not seen it, but  
22 it's probably in our file.

23 Q. (By Mr. Hall): Does April 2009, sound correct?

24 A. That's it.

25 Q. Okay.

1 A. Thank you.

2 Q. Are you requesting that the Division issue an  
3 expedited order in this case to allow you to proceed with  
4 drilling?

5 A. Yes. We have several factors that support the  
6 need to go ahead and get started, weather-related issues, once  
7 it gets wintertime out here, we cannot drill out here. Nor do  
8 we want to drill in the wintertime. So we have that issue. We  
9 also are sitting on the record oil prices right now, which  
10 makes us want to get in and drill this as soon as we can to  
11 find out if in fact, there is something out there.

12 MR. HALL: That concludes my direct of the witness,  
13 Mr. Examiner.

14 At this point, I would offer Exhibits 1, 2, 3, 4, 5,  
15 and 7. Let me ask the witness about those, briefly.

16 Q. (By Mr. Hall): Mr. Craft, were Exhibits 1, 2, 3,  
17 4, 5 and 7 created by you or at your direction and control?  
18 Did you participate in the creation of those exhibits?

19 A. I participated. They were actually created by  
20 our geologist, and I oversaw the creation of the documents,  
21 actually.

22 MR. HALL: We move the admission of those exhibits,  
23 Mr. Examiner.

24 MR. BROOKS: Which exhibits are you moving the  
25 admission of, specifically?

1 MR. HALL: 1, 2, 3, 4, 5 and 7.

2 MR. BROOKS: 1 through 5 and 7. Any objection?

3 MR. A. TRUJILLO: Yes, Mr. Hearing Examiner. I would  
4 ask Mr. Craft to explain the source of the information on most  
5 of these documents in terms of where they came from, where the  
6 information was compiled from, especially on some of these maps  
7 before I withdraw any objection to their admission.

8 MR. HALL: If you could explain that, Mr. Craft.  
9 Would you address that, please?

10 THE WITNESS: Oh, the information on the maps came  
11 from both --

12 MR. A. TRUJILLO: Mr. Craft, would you go one by one?

13 THE WITNESS: Yeah. Where do you want to start?

14 MR. A. TRUJILLO: Exhibit 1 will be fine.

15 MR. HALL: Exhibit 1 in the notebook?

16 THE WITNESS: Okay. All right. This page you're  
17 looking at.

18 MR. A. TRUJILLO: Yes.

19 MR. HALL: You're preferring to Page 2?

20 THE WITNESS: Page 2, right. The information on this  
21 is compiled -- actually, I did the actual reserves on this.  
22 Those are my numbers. So I'm intimately involved in the  
23 reserves of 180.4 Bcfe approved reserves overall.

24 MR. BROOKS: Which page are you on?

25 THE WITNESS: Page 2.

1 MR. BROOKS: Okay.

2 THE WITNESS: Let's just go down from portfolio  
3 highlights. We'll go down right underneath to Boomerang.  
4 That's our New Albany Shale project. I was the one that  
5 developed the New Albany Shale project here, 74,000 acres. And  
6 that's New Albany Shale similar to the Mancos Shale. It's  
7 located around 1500 feet of depth in very southwestern  
8 Kentucky. We currently have three wells drilled in that and I  
9 have development plans once we frac the wells.

10 North Bald Prairie, our East Texas project, we took  
11 that lease. It's a joint venture from EnCana. We took that  
12 July of 2007. Under the joint venture agreement, we had to  
13 drill five wells and carry EnCana 50 percent for the first five  
14 wells to earn a 50 percent interest in that lease. We're  
15 currently drilling Well No. 8.

16 Ozona Northeast Canyon Sands was a farmout from an  
17 oil and gas operator in Dallas. It covered 44,000 acres. We  
18 took the farmout and early of 2004, January, we drove a first  
19 well in that field, which is the Canyon Sand Field, pluvial  
20 deposit, deep water sands. We drilled the first well February,  
21 2004. We built a 65-mile gathering system. Our first day of  
22 production was May 7th, 2004. We have since drilled over 300  
23 wells in that field with a 95 percent success rate.

24 Moving on to the Cinco Terry. Cinco Terry was a  
25 continuation of the Ozona Northeast Field. Cinco Terry is

1 Wolfcamp, Canyon Sands and Ellenburger. One thing I failed to  
2 tell you on Ozona Northeast, part of that farmout only gave us  
3 depths down to the top of the Strawn Lime. The Canyon Sands  
4 sits immediately on top of the Strawn Lime. From the Strawn  
5 Lime you go into the Ellenburger. That's going to be important  
6 in the Cinco Terry.

7           The Cinco Terry project is located about  
8 two-and-a-half miles to the west of Ozona Northeast project.  
9 We have roughly 31,380 acres. On that, we're talking shallow  
10 Wolfcamp, sprayberry or if you want to call it wolfberry for  
11 short. We're also targeting the Canyon Sands and then we're  
12 targeting the deeper Ellenburger Sands.

13           MR. BROOKS: I maybe a little late interjecting here,  
14 but I don't believe we're too interested in the details of the  
15 matters that are not relevant to this proceedings.

16           MR. A. TRUJILLO: I have no objection this page. In  
17 terms of the maps of these proposed locations and some of these  
18 exhibits that Mr. Craft has introduced, I would like to know  
19 specifically -- what exhibit number is this?

20           THE WITNESS: This one?

21           MR. A. TRUJILLO: Is that No. 3? What's the source  
22 of that?

23           MR. BROOKS: I believe it's No. 4. No -- it's No. 3.  
24 You're right.

25           MR. A. TRUJILLO: I'd like to know the source of the

1 information for that exhibit before I withdraw any objection to  
2 it.

3 THE WITNESS: Okay. The source of the information on  
4 this is -- there's a lot of.

5 MR. A. TRUJILLO: Just the source.

6 THE WITNESS: I know, but you're asking the source.  
7 This is just a snapshot of our study area right here. So the  
8 source is -- this is the geology of the San Juan Basin. This  
9 is in any geological reference you want to go to, they show it.  
10 We have copies of them over there.

11 There are several authors that have written this.  
12 And this one, in particular was written by a guy by the name of  
13 Cather in 2004. And this is where he basically broke out the  
14 different members of the San Juan Basin showing the different  
15 tectonic activities that occurred in the San Juan and the Chama  
16 Basin.

17 MR. A. TRUJILLO: No objection.

18 MR. BROOKS: Okay. That was Exhibit No. 2.

19 THE WITNESS: That was Exhibit No. 2.

20 MR. BROOKS: Okay. Now, a question was asked about  
21 Exhibit No. 3.

22 THE WITNESS: Right. And Exhibit No. 3, what I was  
23 saying is this is our study area. We took this big map that  
24 was developed by this gentleman, Cather, in 2004. And  
25 basically what this red area is -- then we took our area which

1 is in this portion of this area and study block which  
2 represents what you see right there.

3 MR. BROOKS: And that's from the same source?

4 THE WITNESS: That's from the same source.

5 MR. BROOKS: Okay. Continue.

6 MR. A. TRUJILLO: Now, I believe Exhibit 4, which is  
7 the cross section.

8 THE WITNESS: Right. This cross section was from  
9 some literature that went across the whole area from Grant  
10 Foster in 1989 -- an article written by Grant Foster. He  
11 actually did this cross section representing the San Juan Basin  
12 going into the Chama Basin.

13 MR. A. TRUJILLO: No objection. Exhibit No.5?

14 THE WITNESS: Exhibit 5? Okay. This was put  
15 together -- all we did was take published information, which  
16 all these wells are published information. You can go to the  
17 New Mexico Oil and Gas Association or any of their reporting  
18 processes out here and you can get these wells. You can Google  
19 it in, type it in, or go to Dwight's. All our stuff came off  
20 of Dwight's. These fields are public record. That's where  
21 these came from. We're just showing the relationships and  
22 showing that there is activity in our area.

23 This is our lease outline. This was done by our land  
24 department. As I said, with the only exception of this piece  
25 right here.

1 MR. A. TRUJILLO: No objection. No. 7?

2 THE WITNESS: No. 7? Okay. No. 7, I'll use this for  
3 right now because it's a lot easier than pointing to the little  
4 map, if that's all right.

5 What we did here, we had our land department go out,  
6 using Dwight's data, and find the different wells -- any well  
7 within a certain area of our lease, a certain distance from our  
8 lease, whether it be a mile, two miles or three miles. We were  
9 just trying to get what is taking place in this region.

10 Then we downloaded the individual well records from  
11 these -- which we have -- and it shows how far they drilled,  
12 where they set pipe, what era drilling it was, whether it was a  
13 1940 or 1950, the type of fluids that were used, and if they  
14 had any reasonable show. And that's where you put this on the  
15 map.

16 MR. A. TRUJILLO: I am going to object to this, Mr.  
17 Hearing Examiner, unless Mr. Craft can establish the method by  
18 which the boundaries of the property were determined, whether  
19 it be survey or whether -- I'm not sure if I'm ready to admit  
20 that, unless that can be established.

21 MR. HALL: Mr. Examiner, I believe he testified the  
22 data came from Approach's land department.

23 MR. BROOKS: Yeah. I'm going to overrule the  
24 objection. If there is a specific issue with regard to a  
25 particular boundary, that would be something else again, but I

1 don't believe that's likely to occur in this case since we're  
2 not dealing with title issues in this forum.

3 Does that cover all the exhibits that were offered?

4 MR. HALL: Mr. Examiner, we still have Exhibit No. 1.  
5 And let me do this: Mr. Craft --

6 MR. BROOKS: Well, I don't -- did you have any  
7 objections to Exhibit 1, Mr. Trujillo?

8 MR. A. TRUJILLO: Well, not to -- well, there are  
9 portions that were not entered or were not -- the proper  
10 foundation was not laid by Mr. Craft. It's a lengthy exhibit  
11 with about seven or eight pages -- 15 pages that I can count.  
12 And I believe Mr. Hall only dealt with three.

13 MR. HALL: Mr. Examiner, let's do this: Mr. Craft  
14 discussed Pages 1 through -- I'm sorry. Pages 2 through 6 of  
15 Exhibit 1.

16 MR. BROOKS: Pages 7 through 16 have not been  
17 discussed. Are you offering --

18 MR. HALL: That will come through another witness.

19 MR. BROOKS: Okay. Then do you want to limit your  
20 offer at this time, Mr. Hall?

21 MR. HALL: Yes. To Pages 2 through 6 of Exhibit 1.

22 MR. A. TRUJILLO: No objection.

23 MR. BROOKS: Okay. Page 2 through 6 of Exhibit 1.  
24 Exhibits 2, 3, 4, 5 -- there is no 6 -- 2, 3, 4, 5 and 7.

25 THE WITNESS: 6 are the large maps.

1 MR. BROOKS: It's not been offered, though?

2 MR. HALL: Yes, it has.

3 MR. BROOKS: It has been? What is Exhibit 6?

4 THE WITNESS: Exhibit 6 is all these large maps, just  
5 the blown-up versions from the book.

6 MR. BROOKS: So Exhibit 6 is something that is also  
7 contained in the other exhibits? Now, I haven't seen  
8 Exhibit 6.

9 MR. HALL: Sorry for confusion. You recall that with  
10 respect to the lease boundary map, we had some --

11 MR. BROOKS: And the one he's holding up is Exhibit  
12 No. 2.

13 MR. HALL: That's correct. If you will look at  
14 Exhibit 7 in the notebook.

15 MR. BROOKS: Okay.

16 MR. HALL: Those gaps in the lease and the color of  
17 the subcomponents of the lease differed from the poster board.

18 MR. BROOKS: Okay.

19 MR. HALL: I wanted to get that in.

20 MR. BROOKS: The poster board is, then, what exhibit?

21 MR. HALL: That will be Exhibit 6.

22 MR. BROOKS: Okay. So that poster board will be  
23 Exhibit 6.

24 MR. A. TRUJILLO: It's marked 7.

25 MR. BROOKS: Yeah. It's Exhibit 7 in here. We'll

1 need to get a reduced copy of it because we don't have --

2 MR. A. TRUJILLO: I see. So this is the 6 --

3 THE WITNESS: Right.

4 MR. A. TRUJILLO: -- and this is -- No. 7 is this,  
5 but reduced?

6 THE WITNESS: Yeah. What No. 7 is -- what you have  
7 there doesn't show this piece right here.

8 MR. BROOKS: Okay. Pages 1 through 6, of Exhibit 1  
9 are admitted. And Exhibit 2 through 7 are admitted.

10 [Respondent's Exhibits 1 (Pages 1 through 6) and 2  
11 through 7 admitted into evidence.]

12 MR. HALL: That concludes my direct of this witness.

13 MR. BROOKS: Let's take a recess until 1:30.

14 [Recess taken from 12:13 p.m. to 1:32 p.m. and  
15 testimony continued as follows.]

16 MR. BROOKS: We'll go back on the record. And I  
17 believe you had passed the witness, Mr. Hall?

18 MR. HALL: Yes, sir.

19 MR. BROOKS: Okay. Mr. Trujillo, you may  
20 cross-examine.

21 CROSS-EXAMINATION

22 BY MR. A. TRUJILLO:

23 Q. Good afternoon, Mr. Craft. You know, this  
24 morning you gave us a very detailed analysis of geological  
25 formations and features regarding oil availability and

1 production, but you gave us absolutely no analysis on the  
2 hydrological situation that's present here, did you?

3 A. No.

4 Q. And, you know, you're in the same water  
5 formation -- you're in the same formation as a water aquifer,  
6 are you not?

7 A. Aquifer might be there, but no.

8 Q. Well you heard Mr. Finch's testimony, did you  
9 not? You saw Mr. Finch's exhibit that folks have wells 2,000  
10 feet down there in this area, don't they?

11 A. I heard what he said. I don't know if they have  
12 wells 2,000 feet there.

13 Q. Well, you saw the reports, didn't you?

14 A. I saw the reports.

15 Q. Okay.

16 A. The key is if you have water down there, then you  
17 won't have any oil down there that's been breached.

18 Q. I'm not sure if I agree with you, but if you have  
19 to frac to make this work, then you can't guarantee that you  
20 won't contaminate those water aquifers that are down there, can  
21 you?

22 A. If we have to frac it, we have reasonable methods  
23 that we can use to predict the frac stress profile, thus tell  
24 you how high you're going to get or how low you're going to  
25 get.

1 Q. But like I said, you can't guarantee that you  
2 won't contaminate the water aquifers.

3 A. I can't guarantee anything like that.

4 Q. You testified that you have a drilling obligation  
5 under your lease.

6 A. Right.

7 Q. And you do have a forced mature clause in that  
8 lease; is that correct?

9 A. That's correct.

10 Q. And that forced mature clause would extend the  
11 life of your lease until any governmental delays have been  
12 removed; is that right?

13 A. No. That's wrong.

14 Q. Are you sure?

15 A. Yes. It's for four years.

16 Q. So it would be extended?

17 A. It would extend that from the primary -- where  
18 the lease ends in April 2009, it would extend for four years  
19 max --

20 Q. Right.

21 A. Which at that time, then we have 60 days once  
22 it's terminated -- once the four years is over -- to complete  
23 our obligation.

24 Q. Right. And you have triggered that extension  
25 clause; have you not?

1           A. I'm not sure we have. That would be something  
2 that we need to ask the land department. I'm not sure if we  
3 have triggered it or not.

4           Q. But you are president of this corporation; is  
5 that right?

6           MR. HALL: I'm going to object to the question as  
7 being outside the scope of the direct. We did not get into --

8           MR. A. TRUJILLO: I believe that Mr. Craft testified  
9 that they have a lease obligation to drill by April 2009, that  
10 this is essential for them. To do otherwise, they might lose  
11 the terms of the lease.

12           MR. BROOKS: That's true. I'll overrule the  
13 objection.

14           Q. (By Mr. A. Trujillo): So that extension clause  
15 has been triggered?

16           A. I'm not sure if it has. I'm not sure. Our land  
17 department is the one that would be working on that. I know we  
18 talked about it, but I'm not sure if it's officially been  
19 triggered or not.

20           Q. So you never saw a letter from Curtis Henderson  
21 to the leaseholders indicating that they wanted to trigger that  
22 lease extension?

23           A. I saw a draft of the letter, but as far as has it  
24 been sent? I don't know.

25           Q. So you don't know if it's been sent?

1 A. I don't know.

2 Q. Okay. Yet, you're still asking this court --  
3 excuse me -- Mr. Hearing Examiner of the OCD, you're asking the  
4 OCD for an expedited order; is that correct?

5 A. That's correct.

6 Q. But even if you get an expedited order, you still  
7 have to comply with the County's ordinances, right?

8 A. That's correct.

9 Q. Okay. Now, I'd like you to turn to your  
10 Exhibit No -- let's just start with 8A, and 4 or 5 pages back,  
11 you'll see a form C-144.

12 A. Okay. Got it.

13 Q. And right below the instructions, "Please submit  
14 one application per individual pit, closed-loop system," it  
15 says:

16 "Pleased be advised that approval of this request  
17 does not relieve the operator of liability should operations  
18 result in pollution of surface water, groundwater, or the  
19 environment."

20 Did I say that right?

21 MR. HALL: Mr. Examiner, let me interpose an  
22 objection at this point. This evidence -- this exhibit is not  
23 in evidence at this time. This exhibit was not discussed and  
24 this is beyond the scope of direct.

25 MR. BROOKS: Well, that is true. But I, on the basis

1 that we talked about, that we can examine about exhibits not in  
2 evidence, well, I wouldn't have a problem with that. I do,  
3 though, believe this is outside of the scope of direct,  
4 Mr. Trujillo.

5 MR. A. TRUJILLO: I'll withdraw the question.

6 Q. (By Mr. A. Trujillo): Now, Mr. Craft, you  
7 testified that you have a lot of experience in dealing with  
8 very sensitive ecological sensitive areas; is that correct?

9 A. Uh-huh.

10 Q. But accidents do happen; do they not?

11 A. That's correct.

12 Q. Contamination does happen?

13 A. That's correct.

14 Q. And it happens to Approach?

15 A. It has in the past.

16 Q. Okay. Why don't you tell us Approach's record in  
17 drilling in environmentally sensitive areas?

18 A. Well, I would say we have had 10 instances with  
19 Approach, and I think it would be proper for Glenn to answer  
20 that since he's directly in charge of the cleanup and  
21 operations of these spills.

22 MR. A. TRUJILLO: No further questions.

23 MR. BROOKS: Okay. Mr. -- I'm sorry. I've forgotten  
24 your name.

25 THE WITNESS: Craft.

1 MR. BROOKS: Mr. Craft? Okay.

2 EXAMINATION

3 BY MR. BROOKS:

4 Q. Mr. Craft, I just have a few questions. And I  
5 want to be sure and enter in the log here so I don't charge my  
6 questioning time against either of the parties.

7 You said some of the wells that had been drilled here  
8 indicated that they had substantial fluid losses?

9 A. One well that I had record on had substantial  
10 fluid loss. That's how the report references it. It was  
11 drilled in the '50s.

12 Q. Was there anything in the report to tell you  
13 where that fluid was?

14 A. It was in the Mancos Shale.

15 Q. Okay. I don't know too much about the San Juan  
16 Basin area. Most of what I do know is about southeast  
17 New Mexico and the Permian Basin. Of course, there we're  
18 dealing with the salts and highly saline fluid and we get real  
19 concerned about where something is going. If you have fluid  
20 loss, it's from an environmental standpoint. Is there any  
21 reason to be concerned about that in this situation, about  
22 pollution of fresh water?

23 A. Well, the theory of loss of circulation or loss  
24 of mud in the hull is based on the way they used to drill these  
25 wells back in the '40s and '50s with fluids. And that was the

1 primary indicator of fracturing and that's what they were  
2 looking for in the reservoir.

3 Q. Yeah.

4 A. So, I mean, it isn't ever good to lose a lot of  
5 fluids in a formation from a reservoir standpoint, especially.

6 Q. Right.

7 A. We feel that by going with air drilling -- and  
8 that's what our plans are, to do air drilling -- that we'll  
9 minimize the loss with the air drilling. We do that quite  
10 often in other areas we operate in as well.

11 I would like -- now, as far as the water down there,  
12 as far as confined reservoir parameters down there, until I get  
13 down and we are able to look at it through logs and through  
14 sonic logs to determine the resistivity or the resistive forces  
15 on top and bottom for containment, you know, everything I would  
16 be saying right now would be based on 1950s information.  
17 That's part of our plan of drilling to determine --

18 Q. And they didn't have real good logs back then.

19 A. They didn't have hardly any good logs. So, I  
20 mean, a lot of this is hand-written information that you see  
21 talking about oil dripping off the hand of somebody.

22 Q. And they didn't know a whole lot about how to  
23 produce out of shales in those days.

24 A. The shale concept, as we all are aware of -- the  
25 shale concept has been a recent concept from the mid '90s to

1 current. And there's a lot of technology in the oil and gas  
2 sector applied to shale production.

3 Q. Yeah.

4 A. Most of it, I mean -- people have been drilling  
5 through shales, these productive shales, such as the  
6 Fayetteville, the Haynesville, the Mancos, Marcellus up in  
7 Pennsylvania, the Barnett down in Texas, even the Cotton Valley  
8 Lime Sequence. They've been drilling through those for years,  
9 30, 40 years. And it wasn't until we were sort of running out  
10 of the other stuff that people started focusing on that. It's  
11 very high cost to do these shale completions. And it does  
12 require, in most cases, large stimulation treatments.

13 Q. And you're expecting to produce oil from the  
14 shales?

15 A. From the silt. Inside the Mancos Shale, which  
16 covers a big horizon, there is what they call the Niobrara A,  
17 B, and C members. The Niobrara, what that is, that's a silty,  
18 thinly laminated silt members, thinly laminated shell members  
19 that are very brittle. And that's where the reservoir is  
20 created whenever this thing is flexed. Those brittle members  
21 contain it, and that's where your fracture is.

22 Now, the shale above -- because the interesting thing  
23 about the Mancos, which is very unusual, the Mancos is not only  
24 the source, it's the reservoir, and it's the seal. And very  
25 seldom do you find that in a reservoir. And so what we have to

1 do when we run our logs in these wells, we're going to have to  
2 run some sonic logs and some logs so we can determine the  
3 compressibility, the overstress, the overburden, of these  
4 reservoirs to find out the perf. And I think Glenn is going to  
5 address some of that in one of his slides here in a minute.

6 Q. Okay.

7 A. But, also, one thing we don't want to do is use a  
8 big fluid frac for these fracs. We're going to be using a CO2  
9 foam which is 70 percent CO2 and very little water and at  
10 30 percent fluid phase because of the exact reason you said,  
11 loss of circulation.

12 Q. Right. What depths are these wells going to be  
13 drilled to?

14 A. Well, where we are right now, it looks to be  
15 somewhere between 2,000 feet as a target, 2000 to 1500 to  
16 1700 feet, right through that range. It could be higher. It  
17 just depends on the structure -- the dipping structure.

18 Q. You said you didn't think that you'd actually be  
19 drilling on 40-acre spacing.

20 A. Everything that I'm reading -- and unfortunately  
21 these articles, I have volumes and volumes of articles written  
22 about this area, about the Chama Basin which I can give to  
23 anybody who wants them. That's what we have to go off of, the  
24 existing producing around it.

25 Q. Yeah.

1           A. And if you look at the articles, one thing they  
2 all have in common is they are overdrilled. And because of --  
3 like East Puerto Chiquito was overdrilled because it was a  
4 competitive acreage position. So if you look at it in the true  
5 sense of a parallel fracture system that is parallel, and these  
6 fractures are, if you buy the concept that you have this  
7 incline and then you have the Brazos uplift here, you've got  
8 the inclines over on the west side, these things should run for  
9 quite a ways -- we hope.

10           Q. You said something about 320s or 640s as a  
11 possible spacing pattern?

12           A. The spacing I would like, I would hope that we  
13 could do them on 640s, maybe 320s, but until we actually get  
14 into the reservoir and see what we have, that's a wish for me.

15           Q. I understand that. What we have typically done  
16 in the past -- and I guess because we kind of have had a  
17 priority of certain ways of doing things, but we've usually  
18 said, okay, when the operators come in and ask for a special  
19 pool rule, then we say, okay, the special pool rule will be in  
20 effect for X period of time. And then at the end of that  
21 period of time, it's going to expire to go back to statewide  
22 rules, unless you come in and show that the field and the  
23 special rule is appropriate.

24           Given what you're telling us today -- and I'm just  
25 thinking off the top of my head, now, I haven't discussed this

1 with anybody -- might it not possibly have some time limit here  
2 and say if you do not come in and file an application for  
3 special pool rules, say after some period of time, six months  
4 to a year or something like that, then the OCD will undertake  
5 to make an investigation and propose rules itself for this  
6 field.

7 A. I think that's very fair. The key is we have to  
8 get in and start drilling so we know the type of productivity  
9 of the reservoir.

10 Q. Well, I certainly understand that. That's why we  
11 do these temporary special pool rules.

12 A. But that's a reasonable request.

13 MR. A. TRUJILLO: And I'm going to object, Mr.  
14 Hearing Examiner, and ask you to clarify that you are speaking  
15 in the hypothetical if these applications are approved.

16 MR. BROOKS: That's what I said. And I have not  
17 discussed this idea with the director or anybody else, and I  
18 was just getting the witness' reaction to it.

19 And yes, that would be the idea -- it was a condition  
20 we might put on the approval in the event that the permits were  
21 granted.

22 Q. (By Mr. Brooks): Okay. You said something about  
23 you would be using a tank battery at each location?

24 A. Yes.

25 Q. Do you anticipate moving the production by truck?

1           A. At this point, I think a truck would be the least  
2     invasive, unless we can build a pipeline system, but in this  
3     terrain, a pipeline system would leave a huge scar on the  
4     ground. So a truck would be -- now, we can if we're in areas  
5     that are a reasonable distance, we can -- and we have common  
6     mineral ownership -- we can do a consolidated facility between  
7     two or three wells. But it's going to be dependent on that and  
8     the distance away. Because the last thing I want to do is  
9     build a pipeline system down the side of a mountain out here, a  
10    hill, and have the scar. It's awfully hard to fix that.

11           Q. And although the exhibits haven't borne it out so  
12    far, your counsel stated in his opening statement that you were  
13    going to be using closed-loop systems.

14           A. That's correct.

15           Q. Will you have a drying pad?

16           A. Well, we're going to show you in just a minute  
17    when Glenn presents his side of it. We're going to show you  
18    the schematics of the closed-loop system, exactly the pallets  
19    underneath it, the catch basins, engine-wise and all of that,  
20    and he should make it clear.

21           Q. Well, with that equipment and your drilling area  
22    and your tank batteries, how much -- what size of location are  
23    you going to be needing?

24           A. I don't think it's a whole lot larger than the  
25    actual size. Somewhere around 100 foot by 150 foot, something

1 like that. I don't think it's much bigger than that because  
2 after all, you don't have to have your pits out there. Your  
3 pits are on the surface, so your actual footprint would be  
4 somewhat smaller. I'm not sure of the exact --

5 Q. Would another witness be the person to discuss  
6 this with?

7 A. That's it.

8 Q. Okay. Back to the spacing pattern. It looks  
9 like you've got a big acreage block out there.

10 A. That's correct.

11 Q. So you're probably not going to have to drill a  
12 lot of wells for competitive protection, right?

13 A. That was the key, yes. That's why we got such a  
14 large position.

15 Q. And one other question about your acreage block.  
16 Do you own any surface out there?

17 A. No, we don't.

18 Q. And when your -- assuming your oil and gas leases  
19 were to expire, would you be out of the whole area?

20 A. Yes.

21 Q. That would be -- that's the only thing you own  
22 out there?

23 A. That's correct.

24 MR. BROOKS: That's all I have here.

25 MR. HALL: Mr. Examiner, we do have available for you

1 the PowerPoint slides of the map. There was some difficulty in  
2 looking at the P and A wells that are out there. We'd be glad  
3 to show that to you if you would find that helpful.

4 MR. BROOKS: Very good. The reds are your locations?

5 THE WITNESS: That is correct.

6 MR. BROOKS: Red dots? Okay. I pretty well followed  
7 that on the map. Do you have redirect?

8 MR. HALL: Very briefly, Mr. Examiner.

9 REDIRECT EXAMINATION

10 BY MR. HALL:

11 Q. Mr. Craft, you were asked by counsel about the  
12 water aquifer out there. You won't be drilling through any  
13 known municipal drinking water supply, will you?

14 A. Not that I'm aware of.

15 Q. The analogy on drilling through water is from the  
16 Puerto Chiquito Field; is that correct?

17 A. That's correct.

18 Q. And what was the experience there in terms of  
19 volumes of water?

20 A. The volumes of produced water were very small.  
21 It doesn't have a lot of free water in the reservoirs there.  
22 And so -- but the associated water that was produced, which as  
23 I said earlier, was very limited, was not salty. It was on the  
24 fresher side. And plus, you would expect that at this level  
25 where this field is.

1 Q. Explain to us what you mean when you say  
2 associated water.

3 A. Associated water is water that's in the fracture  
4 systems in conjunction with the oil. And so the oil and the  
5 water exist together in there. And so when you produce the  
6 oil, you'll produce a little bit of water if it's there.

7 Also in a normal reservoir where you have a surface,  
8 your associated water is what's going to be associated -- or  
9 your producible water is what's associated with the rock wall  
10 or the surface.

11 MR. HALL: That concludes my redirect.

12 MR. BROOKS: Okay. I will allow recross, if you want  
13 to, given the fact that I asked some questions that weren't  
14 covered on direct.

15 MR. A. TRUJILLO: No recross.

16 MR. BROOKS: Okay. Very good. Mr. Hall, you may  
17 call your next witness.

18 MR. HALL: Mr. Examiner, at this time we call  
19 Mr. Glenn Reed, who has previously been sworn.

20 GLENN REED  
21 after having been first duly sworn under oath,  
22 was questioned and testified as follows:

23 DIRECT EXAMINATION

24 BY MR. HALL:

25 Q. For the record, state your name.

1 A. My name is Glenn Reed.

2 Q. Mr. Reed, where do you live and by whom are you  
3 employed?

4 A. I live in Ft. Worth, Texas and I'm employed by  
5 Approach Resources.

6 Q. And in what capacity?

7 A. I'm executive vice president of engineering and  
8 operations.

9 Q. Okay. Could you give us a brief summary of your  
10 job responsibilities?

11 A. Okay. Well, I'm in charge of all the drilling  
12 and engineering in all operations of the company.

13 Q. All right. You're familiar with the lands that  
14 are the subject of this application and proposed wells?

15 A. Yes, I am.

16 Q. Have you previously testified before the Division  
17 and had your credentials accepted as a matter of record?

18 A. I have not.

19 Q. Please give the Hearing Examiner a brief summary  
20 of your educational background and work experience, please.

21 A. I graduated with a Bachelor of Science degree in  
22 petroleum engineering from Texas Tech in 1982 and I've worked  
23 since then in the oil and gas industry. I've drilled and  
24 completed in excess of a couple thousand wells, ranging in  
25 depths from a couple of thousand feet all the way down to

1 17,000 feet. Some of those being in the sensitive wetlands of  
2 East Texas.

3 Q. And are you a registered petroleum engineer in  
4 Texas?

5 A. In Texas.

6 Q. All right.

7 MR. HALL: At this point, we'd offer Mr. Reed as an  
8 expert petroleum engineer.

9 MR. A. TRUJILLO: No objection.

10 MR. BROOKS: So qualified.

11 Q. (By Mr. Hall): Mr. Reed, does Approach seek  
12 approval of the six APDs referenced in Approach's application?

13 A. Yes.

14 Q. And does Approach seek to exercise its right to  
15 drill under the four previously approved APDs?

16 A. Yes, we do.

17 Q. Let's look at the exhibit book, please. Would  
18 you refer to Exhibit Tab 8. Under that tab are sub-tabs A  
19 through J -- I'm sorry, A through I. Would you identify those,  
20 please?

21 A. These are the well files for the wells we have  
22 permits on and ones that we're requesting permits for.

23 Q. Let's describe the contents of the materials  
24 under each of tabs.

25 A. Okay. In A, we have a form C-101 and a C-102.

1 We have an aerial photo. And a C-144, requesting the use of a  
2 closed-loop system.

3 Q. Now, does the C-144 include a schematic layout  
4 view of the well site?

5 A. Yes, sir, it does, including the closed-loop  
6 system equipment.

7 Q. All right. And does it also include an  
8 operations plan in each case for each well?

9 A. Yes, it does.

10 Q. Okay. Following those materials, is there a  
11 blowout preventer stack diagram?

12 A. Yes.

13 Q. In fact, there are two; is that correct?

14 A. That is correct.

15 Q. Is it your understanding that in each case for  
16 each of the wells the applications for permits to drill and all  
17 of the regulatory materials are complete?

18 A. Yes, it is.

19 Q. All right. Let's talk about the C-102s chiefly.  
20 If you could turn to -- as an example, the well under Tab C,  
21 the Sena No. 2 well. And then if you'll turn to the C-102  
22 acreage dedication plat. In each case, were the locations  
23 certified by a surveyor?

24 A. Yes, they were.

25 Q. Can you discuss briefly with the Hearing Examiner

1 the situation you encountered with respect to locating these  
2 wells in an unsurveyed area?

3 A. Since it was unsurveyed, what we did was we  
4 spotted the wells by lat/longs, GPS lat/longs.

5 Q. And is it your understanding that the  
6 identification of those well locations by that means is  
7 acceptable to the OCD's district office?

8 A. Yes, sir.

9 Q. In fact, in certain circumstances, was there some  
10 difficulty in establishing the actual proximity to a section  
11 line?

12 A. Yes, there was.

13 Q. Because the section lines don't exist?

14 A. That's right.

15 Q. And each of these wells are wildcat oil  
16 locations; is that right?

17 A. That is right.

18 Q. And again, what are the closest pools?

19 A. Well, there's no pools within a mile radius of  
20 these wells.

21 Q. Okay. Has Approach Operating, LLC filed its  
22 financial assurance for the well plugging with the NMOCD?

23 A. Yes, they have.

24 Q. And now, did you supervise the development of the  
25 drilling plan for each of the wells?

1 A. Yes, I did.

2 Q. And does Approach's plan for each of the wells  
3 comply with the rules and regulations of the Division as you  
4 understand them?

5 A. Yes, they do.

6 Q. Now, Mr. Reed, do you have an opinion whether  
7 Approach's drilling plan will adequately protect against injury  
8 to human health and the environment?

9 A. Yes, I do. We employ rig contractors that have  
10 an HSE program and do their own rig inspections that we  
11 supervise or agree to. The companies that we don't -- that  
12 don't have one in place, then we let them use ours.

13 Q. Tell the Hearing Examiner what that term means,  
14 HSE.

15 A. HSE is Health, Safety, and Environmental.

16 Q. And typically what comprises an HSE plan?

17 A. Well, we'll have a site assessment done. It will  
18 have a Phase 1 environmental assessment. And then we also,  
19 since we're drilling with air, if the crews aren't familiar  
20 with them, we put them through a safety program. Since we're  
21 going to be using a closed-loop system, if the crews aren't  
22 familiar with that, then they'll go through a training program  
23 for that system also.

24 Q. All right. And in the case for each of these  
25 wells in Rio Arriba County, did Approach design the rig pad it

1 plans to use taking into consideration the recommendations of  
2 the HSE consultants?

3 A. Yes, we did.

4 Q. And tell us what that process will consist of  
5 when you get around to actually designing and constructing  
6 those rig pads?

7 A. Okay.

8 Q. Do you do an environmental assessment?

9 A. Yes. We do an environmental assessment, and then  
10 we sample -- do soil samples to establish a baseline, you know,  
11 of the soil that is there. And then we are constructing these  
12 pads and using the guidelines of the BLM.

13 Q. Will they be designed to control runoff, runon,  
14 and erosion?

15 A. That's right. We'll have diversion ditches  
16 around them. It'll control, you know -- there won't be any  
17 runon. And then we'll have the locations built where there  
18 won't be any runoff.

19 Q. All right. During actual drilling operations, do  
20 you undertake any monitoring program at all?

21 A. Yes, we do. We'll monitor and keep, you know --  
22 people come out and check to make sure that on an ongoing basis  
23 there's not something wrong. If there is, it can be corrected  
24 then instead of after the fact.

25 Q. Okay. When the drilling rig arrives on location,

1 is there any sort of inspection?

2 A. Yeah. We do a rig inspection of it. And then --  
3 well, before it comes, we will do a rig inspection when we  
4 first look at it if it's one we're not familiar with. Then  
5 once they rig up, we'll do a complete inspection on it at that  
6 time. Yes, sir.

7 Q. Okay. Now, will you monitor for discharges,  
8 storm water runoff or runoff during drilling?

9 A. Absolutely. Absolutely.

10 Q. And do you also monitor for noise and dust  
11 pollution?

12 A. That is correct. Yes, we will.

13 Q. If the well is successfully completed, what are  
14 the steps then?

15 A. If it's successfully completed, then what we'll  
16 do is, do an interim reclamation where we will go ahead and  
17 just leave a minimal footprint that we'll have to have to  
18 produce the well or work on the well at a later date. All the  
19 cuts and everything will be put back and contoured as per, you  
20 know, the area. The equipment that we put in will be painted  
21 to match into the landscape around it.

22 Q. All right. If the well is not completed as a  
23 producer, what do you?

24 A. If it's not completed as a producer, we'll P and  
25 A it as per the OCD recommendations or approval. And then the

1 entire location and road will be reclaimed and put back like it  
2 was, reseeded. The topsoil will already be pulled off to start  
3 with and so then we'll just put the topsoil back on and reseed  
4 it.

5 Q. All right. And in either case, whether it's a  
6 producer or P and A well, is there a follow-up environmental  
7 assessment?

8 A. Absolutely there is. And if it's a producing  
9 well, it's an ongoing deal. Every six months or so we'll check  
10 it. But certainly, if at the end of the well, if it's a P and  
11 A's well, then we'll do an environmental assessment after we  
12 get through drilling the well before we start the reclamation  
13 to make sure there's not something that's been spilled.

14 Q. Right. Tell us what Approach will do for spill  
15 prevention and control?

16 A. We have an SPC plan that we do that's a spill  
17 prevention, control, and counter measures. And we have a third  
18 party environmental company that does our environmental and  
19 safety. And they -- so we do one of those on every well.

20 Q. All right. Do you have an emergency response  
21 plan?

22 A. Yes, we do. We do have an emergency response  
23 plan also that's filed with the local authorities, the fire  
24 department, the sheriff's department, and all that for public  
25 safety.

1 Q. And is that maintained on site as well?

2 A. It's maintained on site.

3 Q. Tell us generally what an emergency response plan  
4 consists of?

5 A. It'll be things like, you know, if there's  
6 certain chemicals on location, then it would have the MSDS  
7 sheets for each of the chemicals. Or if there is fire out on  
8 location, then the fire department would already have  
9 directions to it and be able to respond accordingly and control  
10 access to the location.

11 Q. All right. Now, let's discuss with the Hearing  
12 Examiner your plans to use a closed-loop drilling system. And  
13 you might want to refer to our PowerPoint slides under  
14 Exhibit 1.

15 A. In this exhibit, it would be --

16 Q. Let's look first at Page 11 of Exhibit 1.

17 A. Okay. What this is, is the plan of the  
18 closed-loop system. And what it consists of, the rig is -- and  
19 maybe I should stand up there and point at it -- but you can  
20 see the substructure sets of the rig, the square in the middle.  
21 And we will have steel tanks that contain fluid in them that is  
22 parallel to the rig there.

23 Q. Are they colored dark gray in this slide?

24 A. They are colored, yes, dark gray.

25 Q. Okay.

1           A. From the return, since we'll be drilling with  
2 air, the returns will come and go to the vessel there. That's  
3 called the drilling muffler. And what that does is, air will  
4 go through there with the cuttings. We'll be circulating mud  
5 through the bottom of that muffler. And it has a vortex in  
6 that muffler rigged up to where it'll separate the cuttings  
7 from the air. And the cuttings will stay in the fluid and the  
8 air will come out the top of that vessel to the blooie line.  
9 And then -- well, I think that diagram is a little different.  
10 The one in the book here shows that the blooie line will go out  
11 to the flare tank.

12           Q. Where will it -- show us the --

13           A. Well, that slide doesn't have the flare tank.  
14 The ones in the books have the flare tank.

15           Q. Let's look back at the book, then, to Page 11.  
16 And in the upper right-hand corner.

17           A. The blooie line will come out from the drilling  
18 muffler right here. And it'll come out to the flare tank. And  
19 there will be a flare wall there that anything coming out that  
20 blooie line will hit that wall and then it will be sloped to  
21 where it runs back into the tank. So if there's any -- if we  
22 have to go to miss-drilling or anything like that, then if  
23 there's any fluid at all that comes out of the hole and doesn't  
24 get caught in the drilling muffler, it will just hit that wall  
25 and run back down into the steel tank.

1 Q. Now, is that flare tank below grade?

2 A. No, sir.

3 Q. And explain the construction of the flare wall?

4 A. Okay. The flare wall will just be a wall of dirt  
5 that's above the wall of the tank, and it'll be sloped. So  
6 when everything comes out and hits that wall, if there's any  
7 fluid in it at all, or even a mist, it'll run down into the  
8 tank.

9 Q. What will be coming out of that blooie line?

10 A. Most of the time it'll just be air.

11 Q. Okay.

12 A. The drilling muffler has a de-duster in it which  
13 essentially sprays water in there to de-dust the fluid to  
14 minimize the amount of dust that's even coming out of the  
15 blooie line.

16 Q. So the drilling muffler functions as a dust  
17 suppression equipment?

18 A. Exactly.

19 Q. Okay.

20 A. Then the cuttings, when they circulate it through  
21 the drilling muffler, it'll go across to the shale shaker,  
22 which is -- you'll see it right there. It's next to the  
23 drilling muffler. And that's where the cuttings will be  
24 separated from the drilling mud.

25 The drilling mud will go back into the steel tanks.

1 And then you can see that -- I believe it's called drive and  
2 catch there -- and a front-end loader will go in there when the  
3 cuttings pile up there. They'll drive in there and just scoop  
4 them up and then they'll take them out to these three-sided  
5 tanks on the side that's called cutting storage. And they will  
6 be put in there until such time we finish the well, then  
7 they'll be hauled off to the land fill.

8 Q. So are there any pits or below-grade tanks  
9 utilized at all?

10 A. None.

11 Q. Let's look at the next slide your -- the Slide 12  
12 under Exhibit 1. Explain to us what this shows.

13 A. This shows the flow diagram of the closed-loop  
14 system. And you'll see when the RCD is coming out from the  
15 well, from the rig.

16 Q. Just a minute. Tell me what RCD is.

17 A. It's just the rotary drilling rig.

18 Q. Okay.

19 A. You can see right there at the blooie line where  
20 those three points, those three arrows, come in right there.  
21 Well, that's where they circulate the water back through, and  
22 it comes in contact with the air and the cuttings and  
23 everything that's coming out of the well into the drilling  
24 muffler. And that's what suppresses the dust and all the  
25 cuttings where they will drop out inside the drilling muffler.

1 Q. So Slide 12 doesn't show us an actual, physical  
2 array on the ground, rather it shows the path for the dust and  
3 fluids and cuttings?

4 A. That is correct. That's just the flow diagram of  
5 all the fluids and everything that's in there. If for some  
6 reason, due to well control or something else, we have to load  
7 the hole and go to drilling mud, all the components are there  
8 for a closed-loop system using drilling mud.

9 Q. Okay. Will there be any on-site burial of drill  
10 cuttings or other materials?

11 A. None.

12 Q. Where do they go?

13 A. We'll haul them to the land fill, a permitted  
14 land fill.

15 Q. A disposal facility permitted by the Division?

16 A. Correct.

17 Q. Anything further with respect to the closed-loop  
18 drilling process?

19 A. I believe that's it.

20 Q. Okay. How long does it take to drill these  
21 wells?

22 A. On air, these 2000-foot wells, it'll probably  
23 take about three days, including surface casing -- cementing  
24 and surface casing. On air it won't take very long to drill  
25 these wells.

1 Q. And you have a basement obligation well, in  
2 addition, correct?

3 A. That's correct.

4 Q. How long will that well take, do you expect?

5 A. That one will, if we can drill the entire well on  
6 air, then it should take about 9 or 10 days to drill. If we  
7 have to drill it on mud, it would probably end up taking, you  
8 know, 20, 25 days to drill with mud, a 6,000-foot test.

9 Q. And for a typical well that Approach might  
10 operate and might drill in Texas, how long do those drilling  
11 times typically take?

12 A. Well, around Ozona, we drill 8,000-foot wells in  
13 about six to seven days on air.

14 Q. Okay. And how about with fluids?

15 A. On the ones that we've had fluids, they've been  
16 about 18 to 25 days on them.

17 Q. Okay.

18 A. The thing about air that we need to drill, it's  
19 not only the speed, but as you can see, these other wells that  
20 they drilled in these fields that, you know, they did record  
21 some shows. But by drilling with air, you can see your shows  
22 as you are drilling. And so I think it gives us a lot better  
23 chance of evaluating what we have and any potential reservoirs  
24 of water or oil. You know, whatever we find, we'll be able to  
25 see a lot better than we would on drilling mud.

1 Q. By using air instead of drilling fluids, do you  
2 minimize the risk of environmental damage from drilling?

3 A. Absolutely, as well as formation damage.

4 Q. All right. And you eliminate the need for pits  
5 of any type, correct?

6 A. That's correct, yes.

7 Q. What are your volumes on your steel tanks?

8 A. We'll have about 900 barrels of pits -- not  
9 pits -- but steel tanks out there. Plus, you know, the tanks  
10 that we have are diesel and have other lubricants and stuff in  
11 them.

12 Q. Now, there will be some need to maintain some  
13 fluids on location, won't there?

14 A. Yes, there will be.

15 Q. Tell us about that.

16 A. We'll need to keep fresh water on location for  
17 cementing our casing strings. And then we'll have brine water  
18 on location in case we have to go to fluid. These shales are  
19 so sensitive to fresh water that they'll swell on you. And  
20 also even the reservoirs. You'll do a lot of formation damage.  
21 So if we go -- if we load the hole, we'll have to do it with a  
22 salt gel.

23 Q. And why would you need to load the hole?

24 A. For well control. If it came into a well control  
25 situation or we started making, you know, more water than we

1 could handle on air.

2 Q. Prudent drilling practices and safety  
3 considerations require you to maintain some fluids on site,  
4 correct?

5 A. That is correct, yes.

6 Q. How about fuels?

7 A. We'll have diesel and lubricants on location.

8 Q. Okay. What is the protocol for the storage and  
9 use of the fluids like that on location?

10 A. The protocol?

11 Q. For storing fluids?

12 A. Well, for storing them, we'll have diesel tanks  
13 and, you know, they'll be contained. And that's it.

14 Q. Does your search of the available data indicate  
15 to you that you're likely to encounter hydrogen sulfide in  
16 concentrations greater than 100 parts per million in a gaseous  
17 mixture in the process of drilling?

18 A. I don't anticipate it. We haven't seen any  
19 evidence out there in the other wells, but we will have  
20 compliance packs on location, because this is an exploratory  
21 well. We will have compliance packs just for safety reasons in  
22 case we do encounter them.

23 Q. All right. Mr. Examiner, we'll be presenting a  
24 hydrogeologist this afternoon, but let me ask this question  
25 about water in the course of locating these wells. Did

1 Approach take into consideration the proximity to groundwater,  
2 fresh water wells and surface water?

3 A. Yes, we did.

4 Q. Let's turn back to Exhibit A, if you would.

5 Again, back to the well file we have for the Sena No. 2 under  
6 Tab C. To access the location for the Sena No. 2, you're going  
7 to be required to cross the TA Creek and one or more acequias;  
8 isn't that right?

9 A. That is correct, yes.

10 Q. Where you are required to cross water courses  
11 like that, can you construct crossings that will not interfere  
12 with access to and use of those water supplies?

13 A. Yes, we can, but we feel like it would be prudent  
14 for us to work in conjunction with the local people, you know,  
15 to get their input on how they think they would be better  
16 crossed, because they've been there a long time and they know a  
17 lot more about it.

18 Q. So you would confer with the acequia  
19 associations?

20 A. Absolutely.

21 Q. Let's talk about your plans for your casing and  
22 cementing program. And if you would, let's turn to -- back to  
23 Exhibit 1 and Pages -- Slides 8 and 10. You have two well bore  
24 schematics there, right?

25 A. That is correct. I did one of a typical shallow

1 well, 2000-foot well. And if you'll look on the previous page,  
2 Page 7, you'll see a list of wells there that are over in the  
3 Puerto Chiquito Field, the surface setting depths -- or the  
4 settings depths for surface casing. And they drilled TD and  
5 projected depths there.

6 But I felt like we would be better served and safer  
7 if we planned on setting 350 feet of surface casing of 9 5/8,  
8 and then drilling a 2,000 foot hole and then setting 4 1/2-inch  
9 casing.

10 Q. Okay. So let's look at your Exhibit 7 and 9,  
11 your surface pipe depth. If we refer to Exhibit 7, it's  
12 showing an average depth of surface pipe to what?

13 A. The surface pipe depth is anywhere from 20 feet  
14 to 150 or 200.

15 Q. And that gives you that average DEMENTSDZ of 93?

16 A. Yes.

17 Q. And again, your plans are to set surface casing  
18 to what?

19 A. 350 feet.

20 Q. Okay. Let's look at the information on Slide 9.

21 A. These are the deeper wells that they set surface  
22 pipe of, you know, an average of 222 feet.

23 Q. Okay.

24 A. Now, on the Slide 10, that is our proposed deeper  
25 well, the basement test. And the reason we're proposing 9 5/8

1 casing and 4 1/2-inch casing is if we encounter any water flows  
2 or anything that needs to be protected, then we have enough  
3 room to set an intermediate string in there to protect whatever  
4 we need to, and then still continue on drilling our deep hole.

5 Q. Okay.

6 A. The well, the Spills well, is one of the wells  
7 that was drilled offset. They were going to be one of our  
8 closer wells, and they drilled to 6,000 feet without having to  
9 set an intermediate string, but we just want to have that  
10 option.

11 Q. Right. Let's go through the sequence of events  
12 for the Hearing Examiner when you first drill your hole for  
13 your conductor pipe all the way through your cement program.

14 A. Okay. What we'll do is we'll drill the surface  
15 hole with air, if possible. And we'll have, you know, a  
16 3,000-pound working pressure blowout preventer on it. We'll  
17 set a 40-foot conductor -- set a 14-inch conductor to 40 feet.  
18 So we'll be able to run a rotating head when we're drilling  
19 with the surface hole. And we'll use a 3,000-pound blowout  
20 preventer.

21 And we've got a sequence that we test, how often we  
22 test the BOP. Every time we pull out of the hole we check the  
23 ram and make sure the rams are closed and everything. We don't  
24 expect any overpressured zones. But in the event that we do,  
25 then that's why we'll have drilling mud on location for that.

1           We'll drill a 12 1/4-inch hole for 350 foot, set 9  
2   5/8-inch casing. And then drill out -- what we'll do is, we'll  
3   drill out the shoe. We'll have probably, approximately 10 feet  
4   or so of open hole below us, and our standard procedure is to  
5   test the shoe. And we will test it to pressure -- we will  
6   exceed the pressure that we're expecting to see from the well.  
7   So if it holds, that means we don't have any communication with  
8   the -- we've got a good shoe test. Then we'll take off and  
9   start drilling.

10           Our proposed cementing of that 9 5/8-inch casing is  
11   that we're going to use Premium Cement. And after 24 hours,  
12   it'll have about 400 psi of compressive strength. And then  
13   after 72 hours it'll have about 675 pounds per square inch of  
14   compressive strength.

15           When we drill our production hole, we're going to set  
16   4 1/2-inch casing and we will cement it using a 50/50 Poz. And  
17   with the additives and everything we were planning on bringing  
18   up about the height of the cement about 2000 foot. If we need  
19   to tie it back to surface for any reason, then we'll just go  
20   ahead and tie it back to surface.

21           The compressive strength of this cement after 72  
22   hours is about 3,000 psi. So back on our surface string, I  
23   know there was some questions the other day about that, you  
24   know, using 9 5/8 in a 12 1/4-inch hole. What we typically do  
25   is, we'll use three bolt spring centralizers on the first

1 joint, and then we'll use a centralizer every third joint on  
2 the well. So we pretty well have the pop centralized. Then  
3 when we pump it, we make sure that we are pumping in turbulent  
4 flow. If you get too big of an annulus there, and you're not  
5 in turbulent flow when you pump that, you know, the profile of  
6 fluid moving in an annulus, the velocity of the fluid on the  
7 wall of the casing and the hole will be zero unless you're in  
8 turbulent flow.

9           So that's why it is an industry standard that you can  
10 run 9 5/8 in a 12 1/4-inch hole. We feel that by doing that  
11 and the shoe test, then we pretty well can guarantee that  
12 there's no communication.

13           Q. Can these wells be drilled safely utilizing an  
14 annular space less than three inches?

15           A. Yes, sir.

16           Q. All right. Do you have any plans to run a casing  
17 bond log or temperature log?

18           A. What we do is, we don't circulate the cement on  
19 the surface hole. We'll run a temperature survey and see.  
20 Because most of the time you run excess cement, because when  
21 you drill these holes, you'll have washout in them. You'll  
22 actually end up with a bigger hole.

23           So we run excess cement. If we don't circulate  
24 cement, what we do is run PVC pipe down the side between the  
25 pipe and the annulus and then we'll pump cement and top it out

1 where we know we've got cement top to bottom. We don't have to  
2 perforate the surface casing, because if you do, then you're  
3 jeopardizing the integrity of the casing in the event you have  
4 a well control problem.

5 Q. Now, what does temperature log data tell you?

6 A. It'll tell you where the top of the cement is.

7 Q. Okay. Let's turn to Exhibits 9 and 10 and let me  
8 have you identify those two exhibits.

9 A. Okay. These are the operations plan for the  
10 Sena No. 2, and 10 is the operation plan for the Sulzemeier  
11 No. 1, which was our proposed first deep well.

12 Q. All right. If the Hearing Examiner wishes to get  
13 more details about the drilling operations plan, may he refer  
14 to these two exhibits?

15 A. Absolutely. Now, the difference in the two is --  
16 really the only difference in the two is the intermediate  
17 casing, if necessary. Like I say, we designed it to where we  
18 could run intermediate if we need to, if it's required. So we  
19 if we don't need it, then we don't. But that's basically the  
20 only difference between the two.

21 Q. All right. In your opinion, Mr. Reed, can the  
22 fresh water zones be protected with the cement job that you are  
23 proposing for all of these wells?

24 A. Yes.

25 Q. Let's talk about how these wells will be

1 completed.

2 A. Okay. What we'll do, is the production casing  
3 will be perforated, and then we'll hydraulically fracture them  
4 with a CO2 foam. And if you'll turn --

5 Q. Let's refer back to Exhibit 1 and Slides 13, 14  
6 and 15, and identify those. Let me ask you to elaborate a  
7 little bit more on the well fracing process?

8 A. Okay. What we do is, we use CO2 foam and with  
9 pressure, we break down the formation through the perforations.  
10 And then we'll pump this fluid along with sand, and we'll  
11 create a fracture in the reservoir and then we will prop it  
12 open with sand. And then we shut it in for a while to let the  
13 gel break it and then we flow the fluid back.

14 Q. Are you confident that you can keep the fracture  
15 wings contained within your fracture interval?

16 A. Again, I am confident. Because what we did on  
17 this slide here you can see -- and maybe --

18 Q. And you're referring to Slide 13?

19 A. 13. What I did was I took three intervals here  
20 that's in the --

21 Q. Let me ask you this: This fracture profile is  
22 from the Spill Brothers No. 1 well?

23 A. That is right. And I wanted to show where it  
24 was. Here's the Sultemeier Well here. And here's the Spill  
25 Brothers dry hole right here. When we got logs for that well,

1 they had a sonic log. And what you can do from a sonic log is  
2 create a stress profile of the formations.

3 And you can see on the left-hand column here that the  
4 brown and the yellow is the lithology. Like Ross was talking  
5 about earlier, these laminated sands are in shales. There are  
6 just laminations of them. And from that they can determine --  
7 from that sonic log, they can determine the modulus and  
8 elasticity of the formation.

9 So what this is, is a fracture profile from a frac  
10 pro run that shows that at the rate and pressure that you're  
11 pumping, what the maximum height of the fracture will be  
12 created. Now, the colored part is the prop part. The white  
13 part of that fracture is just the pad fluid that is just the  
14 water. It'll close when you blow the fracture fluid back.

15 Q. When you say the colored part is the prop part,  
16 did I hear you correctly?

17 A. That is correct, yes. And that's different --  
18 what that is, the blue is the least conductivity and it goes  
19 all the way to the red and it has the most conductivity of your  
20 fracture.

21 Q. All right. So this slide shows the fracture  
22 profile at what depths?

23 A. Yes. It's 750 feet. Now, there's -- this model  
24 is really a skeptical model at this depth, because the fract  
25 pro does not do pancake fracs.

1 Q. Explain what you mean.

2 A. Okay. You're looking at that fracture wing like  
3 this, just like it is right there. Well, you can go through a  
4 series of calculations that when your pressure is less than  
5 your overburden pressure, your frac is actually going to be  
6 like this, like a pancake.

7 Q. And so you are indicating for the Hearing  
8 Examiner in a horizontal fashion?

9 A. Right, in a horizontal fashion. And if that's  
10 the case, the height of the fracture, the growth of that  
11 fracture is not going to be 100 feet. It's going to be just  
12 maybe a few feet. But it just goes out like a big pancake.

13 And if you go through those calculations, which I've  
14 done, based on this stress profile, anything above about 1600  
15 foot, you're more than likely going to get a pancake frac  
16 instead of a horizontal frac. But -- I mean, instead of a  
17 vertical frac.

18 But with this frac program, I wanted to see if for  
19 some chance we did get a vertical fracture what the height  
20 growth would be. And it shows that from that, at about  
21 650 feet, the formation is ductile enough there to contain the  
22 fracture. It's a barrier right there.

23 Now, the next slide what I did was -- and that is --  
24 that one right there, the 600 feet correlates to about where  
25 the Niobrara Formation would be, the Niobrara sub-member of the

1 Mancos Shale would be. And this one is -- our target zone from  
2 the permits was the Graneros, so this is the same Spill  
3 Brothers stress profile on the left there. But it shows the  
4 height growth would only be about the same, 100 feet.

5 Q. Now, tell us why you have a stress profile for  
6 these different depths? Of what value is the stress profile  
7 for the 600-800-foot depth?

8 A. Well, I wanted to show that it wouldn't go up  
9 into the groundwater or up in the water zones.

10 Q. All right. Go ahead.

11 A. And this one is just, you know, showing there's  
12 not a lot of height growth in this one either. And then the  
13 last one is, even though it's going to be below the total depth  
14 of our wells, the next slide --

15 Q. Let's establish for the record, you're referring  
16 to the fracture profile from 1300 feet to 1500 feet. In our  
17 exhibit book, it's No. 14. Here it says 13, but we want to  
18 refer for the record.

19 A. Oh, yeah. It does. Okay.

20 Q. Now, let's look at Slide 15 in the exhibit book,  
21 which would be--

22 A. This is a Morrison Formation.

23 Q. At what depth?

24 A. At about 2200 feet.

25 Q. Okay.

1           A. And since we had that information, you know, in  
2 the Spill Brothers, since we don't know the depth that we're  
3 going to encounter, we're quite a ways away. If it does come  
4 in up depth to us, then I wanted to be able show that we could  
5 control that frac height there also.

6           Q. Okay. In your experience, have stress profile  
7 models been established as a reliable and acceptable  
8 methodology for predicting containment in the field of  
9 petroleum engineering?

10          A. Absolutely. Yes, it is. It's been proven with,  
11 you know -- verified with running tracing servers.

12          Q. Okay. Based on the methodology that we have, the  
13 modeling that you've done and are your plans for completing  
14 these wells, in your opinion, can these completions be  
15 conducted in a manner so that the escape of hydrocarbons or  
16 other fluids out of zone can be avoided?

17          A. Absolutely, yes.

18          Q. Okay. What happens to your frac fluids?

19          A. Well, you flow them back. They're popped into  
20 flow-back tanks. But since it is going to be mostly CO2, if  
21 it's 70 quality foam, then there's only 30 percent of the foam  
22 that's the water phase. But they are collected in flow-back  
23 tanks and disposed of at the disposal sites.

24          Q. All right. Let's discuss for the Hearing  
25 Examiner how you propose to go about constructing the rig pads.

1 Would you discuss that, please?

2 A. Okay. We're going to be using the guidelines of  
3 the BLM to construct them.

4 Q. Let's turn to Exhibit 11 and have you -- let me  
5 ask you this: What is Exhibit 11?

6 A. Pardon me?

7 Q. What is Exhibit 11?

8 A. Oh, it is the Gold Book, some chapters out of the  
9 Gold Book of the construction and maintenance of the well site,  
10 and then drilling and production operations, and then our  
11 reclamation and abandonment.

12 Q. All right. So Exhibit 11 is excerpts from the  
13 BLM Gold Book; is that right?

14 A. Yes.

15 Q. And what's the purpose of the Gold Book?

16 A. Well, it's just to set the guidelines of how to  
17 conduct operations on the BLM land.

18 Q. All right.

19 A. And we feel like it's a good thing to, you know,  
20 to go by.

21 Q. And the Gold Book is also applicable to Forest  
22 Service lands; that right?

23 A. It is; from what I understand.

24 Q. So what you've excerpted here are the guidelines  
25 for construction and maintenance. Do you wish to point out

1 anything about that to the Hearing Examiner?

2 A. Yeah. I mean, as I was saying earlier, when we  
3 will start construction, you know, we'll end up scraping  
4 topsoil off. We'll have a, you know, a kind of a cross section  
5 of the location of how much we're, you know, going to have to  
6 move and how much dirt and everything. And so we will be  
7 constructing it to minimize erosion, and be able to divert, you  
8 know, water around the location so there's no runoff.

9 When we finish with the drilling operations after  
10 we've tested or done our environmental test to make sure that  
11 everything is still clean, then we'll just do our  
12 reclamation -- partial or interim reclamation where we can  
13 minimize the footprint that we have out there.

14 Q. Do the guidelines also provide to the location  
15 and construction of associated roads?

16 A. Yes.

17 Q. And does Approach plan on following the --

18 A. Absolutely.

19 Q. -- BLM guidelines or roads?

20 A. Absolutely, yes.

21 Q. Do you plan on constructing silt traps?

22 A. Absolutely. Especially coming out of the  
23 culvert. You know, we have a grade there and you need one.  
24 Absolutely we will be building silt traps --

25 Q. Right.

1 A. -- where they're needed.

2 Q. Chapter 6 of the Gold Book is excerpted here.

3 Does that address reclamation and abandonment?

4 MR. A. TRUJILLO: Which page?

5 MR. HALL: It's Page 43.

6 A. Yes, it does. It calls for the interim  
7 reclamation if you make a producing well. And as I stated  
8 earlier, we'll paint the facilities which will not only be  
9 contained with firewalls or containment to the full capacity of  
10 the tanks, but I feel like we'll probably end up having a  
11 separator there and possibly a heater/treater there. But it'll  
12 be painted to blend in with the landscape there.

13 And then on the final reclamation, we will  
14 essentially put it back like it was, reseed it with the same  
15 type of vegetation that's there, and everything will be  
16 recontoured -- or the same contour of the lay of the land, and  
17 the roads reclaimed also.

18 Q. (By Mr. Hall): All right. While we're in the  
19 Gold Book, let's refer back to Page 17 at the construction and  
20 maintenance chapter. If you look in the left-hand column on  
21 Page 17, it says, "To prevent contamination of groundwater and  
22 soils or to conserve water, it is recommended that operators  
23 use closed-loop drilling systems."

24 Is that what you plan to do?

25 A. That is correct. The OCD visited three of our

1 locations and recommended that we use closed-loop systems, so  
2 we just made the corporate decision to just do them all  
3 closed-loop.

4 Q. All right. Let's talk about well site safety,  
5 human safety. Explain Approach's plans and protocols for drill  
6 safety.

7 A. Like I say, we train our crews and they are  
8 supervised. We will control access to the location. We'll  
9 have a, you know, supervisor on location at all times that will  
10 be staying out there. In the event that we do encounter some  
11 H2s everybody will already be certified H2S. They'll know what  
12 to do. And we just have a pretty good safety program.

13 Q. Do you have crew training.

14 A. Crew training?

15 Q. Yes.

16 A. Yes, sir.

17 Q. And what does that consist of?

18 A. Well, they'll be trained on how to, you know,  
19 handle and do their work properly on the closed-loop system,  
20 what to look for in the event something is not functioning  
21 properly to avoid a spill.

22 Q. Are they trained to eliminate control and protect  
23 your employees in the environment and general public from  
24 potential and accidental releases of fluids and chemical  
25 products?

1 A. Right.

2 Q. And how does Approach plan to provide for public  
3 safety?

4 A. Well, like I say, we'll restrict access to the  
5 location during operations or during -- while we're drilling,  
6 and we have an emergency response plan in place. And our  
7 supervisor out there, you know, he'll be -- like I say,  
8 restricting access where nobody -- in the event that we have a  
9 problem, then our emergency response plan will be implemented.  
10 If somebody requires hospitalization, they know exactly where  
11 to go and where to take them and where the closest hospitals  
12 are.

13 Q. All right. Let's address the issue with the pit  
14 at the Sultemeier No. 1.

15 A. Okay.

16 Q. Was that pit ever used to store drilling fluids  
17 or cuttings?

18 A. No. The well was never drilled. We never put  
19 anything in the pit. We just lined the pit to get ready to  
20 drill the well, but we never drilled the well.

21 Q. And will that pit and liner be removed?

22 A. Yes.

23 Q. Is it your understanding that because that pit  
24 and liner were unused, that a closer plan will be required by  
25 the OCD?

1 A. No, we don't.

2 Q. How about that unknown well casing you  
3 encountered there at the Sultemeier No. 1 location?

4 A. The casing that was there, we don't know if it's  
5 a water well or an old well -- oil and gas well that was  
6 drilled there. We know there is a fluid level in there. What  
7 we proposed to do is get a sample of the fluid and then plug  
8 the well. We recommend that we plug the well. I believe the  
9 other day we were given permission to go ahead and cap it -- at  
10 least until we can plug it.

11 Q. Mr. Reed, were Exhibits 8A through I, and  
12 Exhibit 1, Pages 11, 12, 7, 8, 9, 10, 13, 14, and 15, and  
13 Exhibits 9 and 10, and Exhibit 11, prepared by you or at your  
14 direction and control?

15 A. Yes, they were.

16 MR. HALL: We move the admission of those exhibits,  
17 Mr. Examiner. That concludes our direct of this witness.

18 MR. BROOKS: Any objections?

19 MR. A. TRUJILLO: No objections.

20 MR. BROOKS: Okay. You went fairly fast and I'm not  
21 sure which exhibits -- would you go over that again, please?

22 MR. HALL: Exhibits 8A through I, Exhibit 1, Pages  
23 11, 12, 7, 8, 9, 10, 11, 12, 13, 14, 15. And then stand-alone  
24 Exhibits 9 and 10, and Exhibit 11.

25 MR. BROOKS: Okay. Is that all of the exhibits -- A

1 through I, is that all of Exhibit 8? It looks like it is.

2 MR. HALL: Yes, sir.

3 MR. A. TRUJILLO: 8A through I; I have 9 and 10  
4 twice.

5 MR. BROOKS: Yeah. It looks like -- Exhibits 7, 8,  
6 9, 10, 11, 12, and 13, 14, and 15, are admitted.

7 MR. HALL: Are we straight on everything?

8 MR. A. TRUJILLO: No. Explain to me again why 9 and  
9 10 are stand alone. I don't --

10 MR. HALL: They are under Tabs 9 and 10. We also had  
11 Exhibits 7, 8, 9, and 10 under Exhibit 1, so, that's the  
12 confusion.

13 MR. A. TRUJILLO: Okay.

14 MR. BROOKS: Yeah. Pages 7, 8, 9 and 10, and 13, 14,  
15 and 15 from Exhibit 1.

16 MR. HALL: Correct.

17 MR. BROOKS: Okay. So here's what's admitted:  
18 Exhibits 8, 9, 10 11, and Pages 7, 8, 9, 10, 11, 12, 13, 14,  
19 and 15 of Exhibit 1.

20 [Respondent's Exhibits 1 (Pages 7 through 15) and 8  
21 through 11 admitted into evidence.]

22 MR. HALL: Yes, sir.

23 MR. BROOKS: Okay. That's what's admitted. We will  
24 at this time take a 10-minute recess. We'll reconvene at  
25 3 o'clock.

1 [Recess taken from 2:49 p.m. to 2:54, and testimony  
2 continued as follows.]

3 MR. BROOKS: Okay. We're going back on the record  
4 now. Okay. Mr. Trujillo, for informational purposes, the  
5 County has 1 hour, 1 minute left and Approach has 2 hours,  
6 40 minutes left. You may proceed.

7 MR. A. TRUJILLO: Mr. Hearing Examiner, could we get  
8 the door closed before I start?

9 MR. BROOKS: Yeah. Would someone shut the door  
10 please? Thank you.

11 You may proceed.

12 MR. A. TRUJILLO: May I approach, Mr. Hearing  
13 Examiner?

14 MR. BROOKS: You may.

15 CROSS-EXAMINATION

16 BY MR. A. TRUJILLO:

17 Q. Mr. Reed, I want to go over and clear something  
18 up real quick. Here we have what's labeled County Exhibit 1,  
19 and I believe this is labeled Approach Exhibit 7? 6? It's the  
20 map.

21 Now County's exhibit indicates that the Anthony  
22 Garcia Well number is on the north side of Highway 64. Do you  
23 see that? That being north? And Approach's exhibit  
24 demonstrates -- indicates that the well site is south of 64.  
25 Do you see that?

1 A. I do.

2 Q. And now, if you'll take a look at County's  
3 Exhibit No. 19 and turn to Page 2 -- Exhibit 19. Is it not in  
4 there? I'll show you my Exhibit 19.

5 Now, this is Steve Finch's memorandum and Mr. Finch's  
6 memorandum indicates that the Anthony Garcia Well is north of  
7 Highway 64; is that correct?

8 A. It's looks like to me like it's right on it.

9 Q. Right on Highway 64? It's not south of Highway  
10 64, is it? It is very near Highway 64; is that correct?

11 A. That's correct.

12 Q. And you heard testimony yesterday that the County  
13 and Mr. Finch used the lats and longs, the latitudes and  
14 longitudes from Approach's application. Do you recall that?

15 A. Well, correct me if I'm wrong, didn't the County  
16 say that you all converted to XY? So I don't know how -- the  
17 mathematics you all used in conversion from lat/long to XY. So  
18 that may be the difference.

19 Q. Well, there exists a genuine issue as to where  
20 exactly that well is located; is that right? We've got --

21 A. I mean, it's south of the highway. I've been out  
22 there.

23 Q. But the County's exhibit and Mr. Finch's  
24 memorandum indicate that it's in a different spot.

25 A. Well --

1 Q. I'm just asking. Two different maps show two  
2 different places.

3 A. I don't know how they calculated the difference  
4 when they converted from lat/long to XY.

5 Q. And they both used the same latitudes and  
6 longitudes; is that correct?

7 A. Well, I know that they had to go to a conversion  
8 to convert to XY. And if they're off in that conversion, then  
9 that may be why it's mis-spotted on you all's map.

10 Q. I understand Mr. Reed. I'm saying that three  
11 different individuals used the same latitudes and longitudes to  
12 place a spot and there are two different results; is that  
13 correct?

14 A. Ours is done by the lat/longs. You all did the  
15 conversion to XY.

16 Q. I'm just asking, Mr. Reed, if three different  
17 calculations were done and two different locations were placed.

18 A. Yes.

19 Q. Thank you. Now, you didn't physically inspect  
20 all of these sites on these applications before you actually  
21 submitted them, did you?

22 A. No, I did not.

23 Q. And no one from Approach actually physically  
24 inspected all of these sites before they submitted their  
25 applications, did they?

1           A. I don't know if we did. I know our geologist  
2 came up here and did some of them. And I don't know if he did  
3 them all, but I don't know if we were there to inspect all of  
4 them.

5           Q. Is he here to testify today?

6           A. No, he's retired.

7           Q. So -- and you didn't have a hydrologist come and  
8 look at these sites until about two weeks ago.

9           A. Correct.

10          Q. But you said that you took into consideration the  
11 groundwater and surface water features, didn't you?

12          A. Yes, sir.

13          Q. How could --

14          A. Based off of the study -- information provided by  
15 the state as far as the groundwater depths and stuff like that.

16          Q. But not in terms of having a hydrologist actually  
17 on the ground to see the features and see the water?

18          A. Not a hydrologist, no.

19          Q. Now, do you have knowledge -- you stated that the  
20 OCD official, that you know, went to three of the sites; is  
21 that right?

22          A. Correct.

23          Q. And can you identify which sites those were?

24          A. I believe they went to the Woolley and the Sena 1  
25 and the Sena 2.

1 Q. Now, you state that -- on direct examination, you  
2 stated that Approach has six applications; is that right?

3 A. To be submitted?

4 Q. Yes.

5 A. I think we withdrew.

6 Q. That's right. It's five, isn't it?

7 A. Right.

8 Q. You have five applications. Because you withdrew  
9 Benjamin Trujillo's application; did you not?

10 A. There were six applications but we withdrew one.

11 Q. And it was Benjamin Trujillo's; is that right?

12 A. Right.

13 Q. And that was the application located between an  
14 acequia and the Rito de Tierra Amarilla, right?

15 A. That is correct.

16 Q. But you didn't withdraw the Mot Woolley Site  
17 which is 40 feet on one side from a headwater stream and 40  
18 feet from a headwater stream on the other side, did you?

19 A. We did not. But we weren't aware of that until  
20 two weeks ago when we got a report from the hydrologist.

21 Q. You've been aware of it for two weeks, but you  
22 still haven't withdrawn that site, have you?

23 A. We have not withdrawn that site.

24 Q. And you don't plan to withdraw that site, do you?

25 A. I'm not going say. We may withdraw it. We may

1 not. We may move it, recommend a different site or what.

2 Q. And a new site would be a new application; would  
3 it not?

4 A. That's correct, yes.

5 Q. So you're not here -- you're not prepared to tell  
6 the Hearing Examiner today that you're going to remove that  
7 site, are you?

8 A. No. That we're going to --

9 Q. That you're going to withdraw that site?

10 A. We're not prepared to say we're going to withdraw  
11 it, no.

12 Q. And Mot Woolley's site and Rosemary Roller's  
13 sites are located in the unimpaired location portion of the  
14 Tierra Amarilla Creek; is that right?

15 MR. HALL: I'm going to object. This is beyond the  
16 scope of his direct.

17 MR. A. TRUJILLO: Mr. Hearing Examiner, the scope of  
18 his direct is the submission of these applications. These  
19 applications have a specific geographic location and specific  
20 geographic features.

21 MR. BROOKS: I'm going to overrule the objection.  
22 However, I do have a concern about your question because I  
23 think you're talking about location in the Tierra Amarilla  
24 watershed. I don't recall that there was any evidence -- and  
25 straighten me out if I'm wrong -- I don't recall that there was

1 any evidence that any of these sites is actually in the creek.

2 MR. A. TRUJILLO: Actually in the creek? Located  
3 within the physical creek?

4 MR. BROOKS: The way I understood your questions you  
5 asked him were not two of these located in the unimpaired  
6 portion --

7 MR. A. TRUJILLO: I understand.

8 MR. BROOKS: -- of Tierra -- or impaired portion,  
9 which it was, of Tierra Amarilla Creek. I want to clarify,  
10 because I don't recall or didn't understand that any of these  
11 locations was actually in the creek.

12 MR. A. TRUJILLO: Mr. Hearing Examiner, I stand  
13 corrected. I can clarify that for you.

14 MR. BROOKS: Okay. Then, if you would clarify the  
15 question, please.

16 Q. (By Mr. A. Trujillo): Now, Mr. Reed, you were  
17 present for Dr. Terrence Boyle's testimony; were you not?

18 A. Yes, I was.

19 Q. And you did hear Dr. Terrence Boyle testify that  
20 from the headwaters to approximately 8,000 feet the Tierra  
21 Amarilla Creek's waters are considered unimpaired by the EPA;  
22 is that correct?

23 MR. HALL: Again, Mr. Examiner, this is beyond the  
24 scope of his direct. We will be presenting a hydrogeologist  
25 later this afternoon that can address matters like this.

1 MR. BROOKS: Well, I'll overrule the objection. Go  
2 ahead.

3 Q. (By Mr. A. Trujillo): Did you hear that  
4 testimony?

5 A. I heard that testimony.

6 Q. And Rosemary Roller's site is located  
7 approximately 9,000 feet; is that correct?

8 A. Yes.

9 Q. And Mot Woolley's site is located approximately  
10 10,000 feet; is that right?

11 A. Right.

12 Q. And so both of those sites are located along the  
13 corridor where those Tierra Amarilla Creek waters are  
14 unimpaired by the EPA.

15 MR. BROOKS: Excuse me. There's a gentleman taking  
16 flash photography in the audience. I wish to advise you that  
17 flash photography is not allowed during the proceedings.

18 You may continue.

19 A. I heard Mr. Boyle say that, yes, sir.

20 Q. (By Mr. A. Trujillo): Okay. Now, so you didn't  
21 withdraw Mot Woolley's Site, and you're not going to withdraw  
22 Beth Sultemeier's site which is in the mouth of a box canyon  
23 drainage, are you?

24 A. We don't intend to withdraw it.

25 Q. And you didn't comply with the verbal commitment

1 to Beth Sultemeier regarding the placement of her wells after  
2 that conference. You didn't even consult with her on the  
3 second, did you?

4 MR. HALL: Objection. Again, beyond the scope.  
5 Assumes facts not in evidence. This witness didn't testify he  
6 had any conversations with Beth Sultemeier.

7 MR. BROOKS: Well, since we're getting down to the  
8 end of time here, I'd end up sustaining these objections back  
9 when he called the witnesses to allow the County to develop  
10 their case, but I do believe what they've done with regard to  
11 the landowner is irrelevant, so I will sustain your objection.

12 Q. (By Mr. A. Trujillo): Now, four of your initial  
13 permits that were granted were submitted back in September of  
14 2007; is that right?

15 A. Yes.

16 Q. And you didn't include a closed-loop designation  
17 to those, did you?

18 A. No, I did not.

19 Q. In fact, you didn't apply for a closed-loop  
20 designation until about three days ago; is that correct?

21 A. That is correct.

22 Q. So all of these remedial measures that you're  
23 taking are actually after the fact; is that right?

24 A. At the time that we constructed the Sultemeier  
25 location, we were within the guidelines of the application.

1 Q. So the initial intention of seven of those  
2 applications was a pit, wasn't it?

3 A. Until we -- yes, until we -- if we -- until we  
4 found out the results of the rule changes, we intended to do  
5 pits, but when we saw what the rules had changed to, that's  
6 when we made the decision to go ahead and do the closed-loop  
7 system.

8 Q. When you saw that the rule changed?

9 A. Yes.

10 Q. It wasn't in response to this controversy, was  
11 it?

12 A. No. When we saw the results of the change that  
13 the OCD changed the Pit Rule.

14 Q. And when was that?

15 A. I don't know what the date of it was. I just got  
16 the --

17 Q. The applications were submitted three days ago --  
18 or, actually, last week.

19 A. No. I'm talking about the original applications,  
20 the first four wells, the Sultemeier being the first.

21 Q. I'm sorry. I don't understand, but I'm going  
22 to -- we're not going to get into that line of questioning  
23 here. If you can turn to your Exhibit No. 13.

24 A. Mine?

25 Q. Your Exhibit No. 13.

1 MR. HALL: Mr. Examiner, this exhibit is not yet in  
2 evidence.

3 MR. A. TRUJILLO: I believe it was in evidence. I  
4 have Exhibit 13 on my list.

5 MR. HALL: I think that's part of Exhibit 1, Page 13.

6 MR. BROOKS: Yeah. I believe that's correct. And I  
7 believe you're right. Exhibit 13 was not admitted.

8 MR. A. TRUJILLO: This exhibit has not been admitted?

9 MR. BROOKS: I think that's correct. According to my  
10 notes, Page 13 of Exhibit 1 was admitted.

11 Q. (By Mr. A. Trujillo): Mr. Reed, you claim to  
12 operate Approach Resources in an ecologically sensitive manner;  
13 is that correct?

14 A. Correct.

15 Q. But you didn't consult with any of the landowners  
16 prior to placement of these wells, did you?

17 MR. HALL: Again, this has been asked and answered  
18 and I'll make a relevance objection to --

19 MR. A. TRUJILLO: I don't believe it has. And  
20 Mr. Hall is continuing to try to delay this cross-examination.  
21 I ask that any objection Mr. Hall makes not go against my time  
22 so I can actually have an adequate cross-examination of this  
23 witness.

24 MR. BROOKS: Well, I'm going to sustain the objection  
25 as far as this is concerned. If there are too many objections,

1 I'll extend your time.

2 MR. A. TRUJILLO: With all due respect, Mr. Hearing  
3 Examiner, I've counted at least five. And normally this would  
4 not be an issue, but the fact is that Mr. Hearing Examiner has  
5 imposed time limits on the presentation of evidence in this  
6 matter, which I feel is highly unusual for such a hearing with  
7 such technical testimony.

8 Now, I am prepared to do an adequate  
9 cross-examination of this witness, but I cannot do that if  
10 Mr. Hall continually objects to procedural matters that will  
11 eat away at my time.

12 MR. BROOKS: Well, we'll make a judgement about that  
13 after we've been through the examination. Please continue.  
14 I'm sustaining the objection because I believe that the  
15 consultation with the landowner is a Surface Owner Protection  
16 Act issue, not an OCD issue.

17 Q. (By Mr. A. Trujillo): Now, Mr. Reed, placement  
18 of a well is one of the first steps in terms of being  
19 ecologically sensitive, right? Would you agree?

20 A. I would agree.

21 Q. And you've testified that absolutely yes, you can  
22 prevent the release of hydrocarbons into other formations while  
23 you are fracing; is that right?

24 A. No.

25 Q. You can't guarantee that?

1           A. I didn't say I absolutely could prevent it. When  
2 you're fracing a well --

3           Q. When you're fracing -- so in other words, you  
4 can't guarantee to us that when you frac that well that you  
5 won't release hydrocarbons into the water aquifers that are  
6 below the surface in this area, can you?

7           A. I cannot guarantee it.

8           Q. In fact, that may very well may happen?

9           A. But I've shown industry accepted engineering  
10 practices that shows of actual measurements of formations that,  
11 you know, it shouldn't happen. And then how deep is your  
12 water? What zone were you talking about?

13          Q. It shouldn't happen, but that's not to say that  
14 it couldn't; is that correct?

15          A. How close are you talking about the water zone  
16 being away?

17          Q. Well --

18          A. Are you talking about -- if it's 1,000 feet away,  
19 it's not going to break into it. If it's 10 feet away, you  
20 might break into it.

21          Q. Okay. That's fair enough. You can turn to your  
22 Exhibit No. 11, which I believe has been admitted into  
23 evidence. Now, turn to Page 35, middle of the page, it says,  
24 "Wetland crossings: Wetlands are especially sensitive areas  
25 and should be avoided if possible."

1 Did I read that right?

2 A. Yes.

3 Q. A little further on down the page, the last  
4 sentence says, "Construction of some wetland crossings may  
5 require a Section 404 Corps of Engineers permit in addition to  
6 the approval of the surface management agency."

7 Is that correct?

8 A. That's what it says.

9 Q. Now, Approach may need a Section 404 Corps of  
10 Engineers permit in the well placement of the Woolley site; is  
11 that right?

12 A. Well, we are basing our -- we're working to do  
13 the construction of our site based off the best practices and  
14 also using BLM. Now, if it is, I don't know -- well --

15 Q. Well, Mot Woolley -- Mr. Woolley says that is a  
16 wetland, is it not?

17 A. Well, I wasn't aware of that until yesterday.

18 Q. Now, you are aware that that is a wetland.

19 A. I had heard that it was a wetland yesterday.

20 Q. And so Section 404 Corps of Engineers permit may  
21 be necessary; is that correct?

22 A. I'll have to check in to see if it is.

23 Q. And there was testimony that if Anthony Garcia's  
24 well is sited where the County maintains it is sited, that is a  
25 marshy area. Did you hear that testimony?

1 A. Where the County has it sited?

2 Q. Yes.

3 A. I heard that testimony.

4 Q. And so if that well is staked there, that may  
5 require a Section 404 permit; is that right?

6 A. If that well is staked there, if it applies to  
7 the private land, you know, we'll do what's necessary, what's  
8 required of us.

9 Q. Would you turn to Page 39. Now, "Pollution  
10 Control/Hazardous Waste" -- second paragraph on Page 39:

11 "The BLM requires immediate reporting of all Class 1  
12 major events, such as spills of more than 100 barrels of  
13 fluid/500 MCF of gas released; fires that consume 100 barrels  
14 or more" --

15 Did I read that right?

16 A. That is correct.

17 Q. Now, why don't you tell us, what is Approach's  
18 ecological record in terms of spills or pollution control or  
19 hazardous waste?

20 A. We haven't had any spills over 100 barrels.  
21 We've had a few minor spills. I believe we've -- as far as the  
22 Railroad Commission is concerned, anything over five barrels  
23 you have to report. And that's what we do. We do a site  
24 assessment. We've had eight of them where we've had -- and two  
25 of them were confined inside firewalls of a tank battery, but

1 they were reported regardless. We build containment walls  
2 around the tank batteries to hold the volume of fluid of the  
3 tanks in case there is a spill or release of it. Then it is --  
4 then it's contained right there in the --

5 Q. Let me ask you a question: What do you consider  
6 a minor spill?

7 A. A minor spill?

8 Q. You said that, "We've had some minor spills."

9 Let me just make sure this is clear. You stated that  
10 you have not had spills over 100 barrels; is that right?

11 A. That is correct.

12 Q. And you --

13 A. I believe a minor spill would maybe be a barrel  
14 or two. That would be a minor spill.

15 Q. And you stated that you've had how many of those  
16 spills, a barrel or two.

17 A. Eight.

18 Q. Eight?

19 A. At eight wells over the last four years.

20 Q. Well --

21 MR. BROOKS: Could I clarify? I thought you said  
22 eight -- you had had eight spills exceeding five barrels. Did  
23 I misunderstand you?

24 THE WITNESS: I said the Railroad Commission requires  
25 us to report any spills over five barrels.

1 MR. A. TRUJILLO: May I approach?

2 MR. BROOKS: Okay.

3 Q. (By Mr. A. Trujillo): Mr. Reed, what I'm handing  
4 you is marked "Railroad Commission of Texas Oil and Gas  
5 Division Crude Oil, Gas Well Liquids or Associated Products  
6 Loss Report Form H-8." Do you see that?

7 A. Uh-huh.

8 Q. Now, it says "Approach Operating, LLC" at the  
9 top; does it not?

10 A. Yes, it does.

11 Q. And it says County, Crockett, right?

12 A. Right.

13 Q. And it says -- actually --

14 MR. HALL: I'm confused. Are you --

15 MR. A. TRUJILLO: I know. I'll rectify that. I'm  
16 going to go one at a time.

17 Q. (By Mr. A. Trujillo): Now, Mr. Reed, the date of  
18 this is 4/23/06; is that right?

19 A. Yes.

20 Q. And it states under "Type of Liquid Hydrocarbon  
21 Loss, Gas Well Liquid." Is that correct?

22 MR. HALL: Mr. Examiner, I'm going to object to  
23 proper foundation at this point.

24 MR. A. TRUJILLO: I can lay some foundation if you  
25 would prefer.

1 MR. BROOKS: I think that would be premature. I'll  
2 overrule the objection.

3 Q. (By Mr. A. Trujillo): It does state "Gas Well  
4 Liquid," does it not?

5 A. Yes.

6 Q. And gas well liquid is liquid that comes out in  
7 the production of gas?

8 A. Correct.

9 Q. It could contain toxins. It could contain  
10 benzine, is that right?

11 A. It's condensate is what it is.

12 Q. It's condensate. Now, total barrels of liquid  
13 hydrocarbon lost in leak or spill -- I'm concerned more with  
14 Number 14, barrels of liquid hydrocarbon unrecovered. It says  
15 140, does it not?

16 A. Correct.

17 Q. So this is a spill that is over 100 barrels; is  
18 that correct?

19 A. Yes.

20 Q. And the cause of the liquid hydrocarbon loss,  
21 Number 16, says "Cow opened 1/2 inch valve inside of loadline  
22 containment." Is that correct? Do you see that?

23 A. Yes.

24 Q. Number 16?

25 A. Right.

1 Q. Now, in Number 17, "Remedial Measures Taken and  
2 How Successful," it says, "Mixed 1/3 contaminated soil with 2/3  
3 clean caliche," does it not?

4 A. Correct.

5 Q. So this spill contaminated the soil; is that  
6 right?

7 A. Right.

8 MR. HALL: Mr. Examiner, again, let me interpose a  
9 foundational objection. He's not laid any foundation at all.  
10 If I might have a minute with my client, I might be able to --

11 MR. BROOKS: Okay. We will charge that against your  
12 time.

13 MR. HALL: I'll withdraw that objection.

14 MR. BROOKS: Okay. You may proceed, Mr. Trujillo.

15 Q. (By Mr. A. Trujillo): Now, in Number 18,  
16 "Remarks, Area 4500 square feet with a volume of 84 cubic  
17 yards." Is that correct?

18 A. Correct.

19 Q. And in Number 7, "Description of Facility From  
20 Which Liquid Hydrocarbon Loss Occurred; tank battery." Is that  
21 right?

22 A. Correct.

23 Q. And you heard Mr. Craft testify today that a tank  
24 battery would be used?

25 A. Correct.

1 Q. Now, I've gone ahead and handed you three more  
2 pieces of paper. Why don't we look at the first one. That is  
3 dated 10/19/06; is that correct? Box No. 10?

4 A. Yes.

5 Q. And that's in the County of Schleicher?

6 A. Right.

7 Q. For the record, Schleicher and Crockett Counties  
8 are in West Texas; are they not?

9 A. Correct.

10 Q. And you heard Mr. Craft testify that that's a  
11 very sensitive area; is that right?

12 A. Correct.

13 Q. And the total barrels spilled of liquid  
14 hydrocarbon lost in this application is 83?

15 A. Right.

16 MR. BROOKS: Now --

17 A. It's less than 100, though.

18 Q. (By Mr. A. Trujillo): But it's more than one or  
19 two?

20 A. It's less than 100.

21 Q. And more than one or two, right?

22 A. Yes.

23 Q. And total barrels spilled is 83 and total barrels  
24 uncovered is 83 total; is that right?

25 A. Uh-huh.

1 Q. And the cause of the liquid hydrocarbon was a  
2 hole in the bottom of the tank, correct?

3 A. Correct.

4 Q. And the remedial measures taken is mixed 1/3  
5 contaminated soil with 2/3 clean caliche; is that right?

6 A. Right.

7 Q. So this soil -- this spill contaminated the soil;  
8 did it not?

9 A. Correct.

10 Q. Now in the "Remarks," the area is 21 square feet  
11 with a volume of 39 cubic yards; is that correct?

12 A. Correct.

13 Q. Now, if we turn to the next page.

14 MR. BROOKS: And which page number? I see these have  
15 page numbers on them.

16 MR. A. TRUJILLO: I believe 167, Mr. Hearing  
17 Examiner.

18 MR. BROOKS: Okay.

19 Q. (By Mr. A. Trujillo): Now, Mr. Reed --

20 MR. BROOKS: Page 3 of the fax?

21 MR. A. TRUJILLO: Page 3 of the fax.

22 MR. BROOKS: Okay. Go ahead, Mr. Trujillo.

23 Q. (By Mr. A. Trujillo): Now, this H-8 report has  
24 Type of Liquid Hydrocarbon Loss, Crude Oil; is that correct?

25 A. Uh-huh.

1 Q. And the previous was Gas Well Liquid; isn't that  
2 correct?

3 A. Right.

4 Q. And this is dated June 1st, 2007?

5 A. Correct.

6 Q. And the total barrels of liquid hydrocarbon loss  
7 in this leak or spill is 12?

8 A. Right.

9 Q. And the total unrecovered is 12?

10 A. Right.

11 Q. And the cause of liquid hydrocarbon loss is,  
12 "Roustabout crew did not connect overflow between production  
13 tanks," is that correct?

14 A. Correct.

15 Q. And the remedial measures taken are, "Mixed 1/3  
16 contaminated soil with 2/3 clean caliche." Is that right?

17 A. Correct.

18 Q. And so this spill is more than one or one; is  
19 that right -- barrels?

20 A. Right.

21 Q. And so this -- and the area, in the "Remarks"  
22 area, it is 30 feet by 10 feet; is that right?

23 A. Right.

24 Q. For 5.5 cubic yards? And another area, a mist  
25 was 40 feet by 30 feet; is that right?

1 A. Right.

2 Q. So this spill was actually spraying crude oil out  
3 in an area that covered 40 feet by 30 feet; is that right?

4 A. Right.

5 Q. And some of these sites are only 30 foot, or 40  
6 foot away from a water source; that is right?

7 A. I think Trujillo was the only one, and it was  
8 withdrawn.

9 Q. Well, Dr. Terrence Boyle testified that there are  
10 springs and creeks 40 feet from this well pad -- or from this  
11 stake; do you recall that?

12 A. I heard that, yes.

13 Q. And the last is Page 227, Page No. 2 fax: Now,  
14 the date of this was June 16, 2007; is that right?

15 A. Yes.

16 Q. And that means that Approach was responsible for  
17 two spills in the month of June, 2007; wasn't it?

18 A. Well, this one was struck by lightening.

19 Q. That's not my question. My question was Approach  
20 responsible for two spills -- or, actually -- excuse me -- for  
21 two discharges?

22 A. There's no spill.

23 Q. No spill. I understand. There was no spill. It  
24 was struck by lightning; is that right?

25 A. Yes, sir.

1 Q. That means there was a fire, wasn't there?

2 A. That is right.

3 Q. There was a gas fire?

4 A. It was --

5 Q. A gas well liquid fire?

6 A. Correct.

7 Q. And 74 barrels were lost; is that right?

8 A. That's right. No spill, though.

9 Q. And 74 barrels were unrecovered?

10 A. Right.

11 Q. So that means that 74 barrels of gas well liquid  
12 burned throughout the night, didn't it?

13 A. Uh-huh.

14 Q. And you testified that you're going to have a  
15 fire protection response to make sure that if any fire breaks  
16 out that it's contained immediately, didn't you?

17 A. I said we had an emergency response plan that if  
18 an incident occurs that we would have it in place. If somebody  
19 was hurt, we would get them to the hospital and so forth.

20 Q. Well, the remarks in Cause of Liquid Hydrocarbon  
21 Loss states that, "Lightening hit tank battery sometime during  
22 the night. Pumper found burning in the morning."

23 A. Right.

24 Q. That means that the emergency response didn't  
25 work, did it?

1           A. Well, it may have been 5 o'clock in the  
2 morning --

3           Q. I see.

4           A. -- when the lightening struck, to my knowledge.

5           Q. But this fire burned over 500 gallons of  
6 hydrocarbons in a few short hours, then?

7           A. Uh-huh.

8           Q. That sounds like a mighty big fire, doesn't it?

9           A. You don't know how long it took the fire  
10 department to get there.

11          Q. A lot of these applications are in wooded areas,  
12 aren't they?

13          A. I understand.

14          Q. And so we're dealing here with 500 gallons of gas  
15 burning in the night in a potentially wooded area, are we not?  
16 In the case of Sena 1 -- I mean, that hill is very steep. It  
17 might take fire trucks hours to get out there.

18          MR. HALL: At this point, Mr. Examiner, I'm going  
19 object, argumentative and speculative.

20          MR. A. TRUJILLO: Mr. Hearing Examiner, I'm asking  
21 questions regarding his testimony.

22          MR. BROOKS: Since we're dealing with time limits, I  
23 think I will allow counsel to be argumentative for the extent  
24 of his time. I'll overrule the objection.

25          MR. A. TRUJILLO: Mr. Hearing Examiner, at this time

1 I would move for the admission of County Exhibits 51, 52, 53,  
2 and 54.

3 MR. BROOKS: Okay. Do you have marked copies?

4 MR. A. TRUJILLO: I will mark them subsequent to the  
5 hearing, Mr. Hearing Examiner.

6 MR. BROOKS: Well, okay. To make the record correct  
7 and complete, I will stop the time now. And let's get these  
8 exhibits marked before we go ahead so we have a complete  
9 record.

10 MR. A. TRUJILLO: Exhibit No. 52 will be Page No. 4  
11 of the fax.

12 MR. BROOKS: Okay. I'm going to put this RAC No. 52.  
13 Which page is that?

14 MR. A. TRUJILLO: Upper top right-hand corner,  
15 Page 4.

16 MR. BROOKS: All right. I'll mark that RAC  
17 Exhibit 52?

18 MR. A. TRUJILLO: 52.

19 MR. BROOKS: Okay.

20 MR. A. TRUJILLO: Exhibit No. 53 will be marked by  
21 fax Page No. 5.

22 MR. BROOKS: Fax No. 5 is RAC Exhibit No. 53.

23 MR. A. TRUJILLO: And fax Page No. 3 will be  
24 Exhibit No. 54.

25 MR. BROOKS: Okay. No. 3 is 54.

1 MR. A. TRUJILLO: And fax Page No. 2 will be  
2 Exhibit 55.

3 MR. BROOKS: Okay. I will give my copies, then, that  
4 have been marked to the reporter. Any objections to these  
5 exhibits, Mr. Hall?

6 MR. HALL: No objections.

7 MR. BROOKS: Very good. Rio Arriba County  
8 Exhibits 52 through 55 will be admitted.

9 [Applicant's Exhibits 52 through 55 admitted into  
10 evidence.]

11 MR. BROOKS: And we'll go back to the clock.

12 Q. (By Mr. A. Trujillo): Now, Mr. Reed, these  
13 spills and fires took place from April 2006 until June 2007; is  
14 that right?

15 A. Right.

16 Q. That's a period of 14 months; is that correct?

17 A. Uh-huh.

18 Q. And if you total all these up over the course of  
19 14 months, Approach is responsible for 6,600 square feet of  
20 soil contamination; is that right?

21 A. I haven't done the math, but --

22 Q. I did do the math. If you would care to, we can  
23 go over it.

24 MR. HALL: Mr. Examiner, he either knows the answer  
25 or he doesn't.

1 Q. (By Mr. A. Trujillo): "I don't know" is a  
2 perfectly reasonable answer.

3 A. I don't know.

4 Q. And Approach is responsible for 132.2 cubic yards  
5 of soil contaminated in that time; is that right?

6 A. I don't know.

7 Q. And Approach was responsible for over 235 barrels  
8 spilled of hydrocarbons in that time; is that right?

9 A. I don't know.

10 Q. But you do know that one barrel equals 42  
11 gallons.

12 A. Uh-huh.

13 Q. So 235 barrels spilled equals 9,870 gallons that  
14 were spilled into the earth; is that correct?

15 A. Okay. If the math works.

16 Q. Now, you had 74 barrels burned in that event; did  
17 you not?

18 A. Correct.

19 Q. So doing the math, 3,108 gallons were burned by  
20 by Approach in the same time; is that correct?

21 A. Right.

22 Q. And you can't guarantee to us that these types of  
23 spills and fires won't happen in these applications, can you?

24 A. I can't guarantee you, no.

25 MR. A. TRUJILLO: I have no further questions.

1 MR. BROOKS: Very good.

2 EXAMINATION

3 BY MR. BROOKS:

4 Q. I'm not good with names. I believe you are  
5 Mr. Reed; is that correct?

6 A. Yes.

7 Q. Very good. Mr. Reed, I'm going to go back to --  
8 and once again, both counsel can be assured that my questioning  
9 time does not come off of either of their time. I'm going to  
10 go back to Page 12 of -- well, I guess each of these is  
11 essentially the same, isn't it? I'm looking at Exhibit E, but  
12 -- Exhibit 8E, but this schematic is the same in each one,  
13 isn't it?

14 A. I believe so.

15 Q. Your drilling fluid, which is air, goes into this  
16 muffler, correct?

17 A. Correct.

18 Q. And there is mud circulating threw this muffler?

19 A. Yes, sir, it is.

20 Q. And what is that? Is that fresh water mud?

21 A. Yes, sir. It would be just a fresh water fluid,  
22 yes, sir.

23 Q. Okay. And then you're going to remove the  
24 cuttings from the mud. The mud will remove the cuttings from  
25 the air?

1 A. Right.

2 Q. And then you remove the cuttings from the mud by  
3 going through the shakers?

4 A. The mud comes across the shale shaker and that's  
5 where it separates the cuttings from the mud.

6 Q. Okay. Now, do you have multiple separation  
7 devices? It looks like you do from this diagram, but I'm not  
8 sure.

9 A. Well, I mean, you'll have those two screens on  
10 that shaker, and the mud will just go straight on through and  
11 the cuttings will just go off the end into this cuttings catch  
12 pit, or tank.

13 Q. Okay. Now, I don't know much about closed-loop  
14 systems, I'm afraid. What I do know I learned in the course of  
15 the Pit Rule debates of the OCD. And the ones they talked  
16 about there they had the mud went through multiple centrifuges  
17 to remove solids.

18 A. Well, if there's still solids contained in the  
19 drilling mud, or in the mud when it goes -- before it goes back  
20 into the pits, it'll go through some centrifuges. But in the  
21 diagram it shows here, if mud, you know -- in the flow diagram  
22 here, if the mud cleaners are required, they'll have a catch  
23 tank also.

24 Q. Okay. I see that down in the lower left-hand  
25 corner of the diagram on Exhibit 12.

1           Okay. Now, you say front end loader mixes and  
2 stabilizes solids in bins. Now, what is this bin? What type  
3 of structure is that?

4           A. It's a three-sided tank.

5           Q. Yeah. Okay.

6           A. And it's a steel tank like -- and this is what  
7 they do in Alaska in these environmental sensitive areas, is  
8 they mix them with sawdust.

9           Q. Yeah.

10          A. And it dries them quicker. And sawdust is  
11 completely inert, so that's how they -- and then they just  
12 contain them in these storage tanks until the well is complete  
13 and then they haul it off to the landfill.

14          Q. Well, are these bins going to be removed? Or are  
15 they going to be -- is the entire bin going to be removed?

16          A. Right. It will be removed and trucked off.  
17 They'll actually just, you know, take it out of these storage  
18 tanks and put it in. I believe there's one here that's called  
19 the transport where they actually take the cuttings out of  
20 these storage tanks and they just haul it off in a trailer,  
21 transport.

22          Q. Yeah. And then when you get through, then what  
23 about the bins? Are they removed then?

24          A. Yes, sir. Then the bins are removed when the rig  
25 is removed.

1 Q. And the bins have solid bottoms?

2 A. They're steel bins.

3 Q. Okay. Now, how big is the site. How big is your  
4 pad going to be during drilling?

5 A. It's going to have to be around 200 feet by  
6 275 feet because of these storage bins and this additional  
7 equipment is going to be in there. That's about what it will  
8 be.

9 Q. And I'm not very good in math in my head. How  
10 many square feet is that, approximately?

11 A. It's probably a little over an acre.

12 Q. Okay. And when you go on production, assuming  
13 you do, and you're going to have a tank battery on location, as  
14 Mr. -- the last witness testified --

15 A. Right.

16 Q. -- how big a footprint are you going to have for  
17 your production location?

18 A. Well, it shouldn't be but about half that size.  
19 Because all we'll have to have is just a place for the storage  
20 tanks and the a heater-treater, if necessary. And then we'll  
21 just have to have enough of the pad to get a completion -- or a  
22 work-over rig in there in the future if we have do.

23 Q. You're going to have pumps on these wells, right?

24 A. We'll have pumps.

25 Q. And you said they were small pumping unites?

1 A. Right.

2 Q. Do you know what the height of the pumping units  
3 is?

4 A. I would expect they're probably going to be --  
5 from that depth, they're going to be pretty small. They will  
6 probably be -- they won't even be 114s. They'll be smaller  
7 than 114s, so it probably won't be maybe six or eight foot  
8 tall.

9 Q. Okay.

10 A. Now, if we do deeper wells, those will be larger  
11 pumping units, and that would probably require a 114 then.

12 Q. Right. Have you visited these sites? I think  
13 you said you visited some of them. Have you visited all of  
14 them?

15 A. There was -- the day I went out there, we  
16 couldn't go up the Sena because the creek was running real --  
17 but I did the others.

18 Q. And have all of those locations been physically  
19 staked?

20 A. Yes, sir.

21 Q. You testified that you're going to prevent runon  
22 and runoff. Can you describe the measures that you're going to  
23 take to prevent runon and runoff with reference to these  
24 locations?

25 A. We'll have diversion ditches and berms

1 constructed to prevent the runoff.

2 Q. Right.

3 A. And then runoff, we'll have berms to do that  
4 also, to go around. It'll be inside the ditches, but if  
5 there's a -- if we're filling in, then we'll have a berm across  
6 there too to prevent runoff.

7 Q. Now, the witnesses testified -- and I think at  
8 this altitude, it would be a matter of common knowledge, that  
9 we could take administrative notice that there's quite a lot of  
10 snow up there in the wintertime. But, of course, you're not  
11 going to be drilling in the wintertime, I'm sure.

12 A. That's correct.

13 Q. But your production location is going to be  
14 there.

15 A. Right.

16 Q. And how are you going to control runoff from snow  
17 melt on your production location?

18 A. Well, we'll have the containment around the  
19 tanks -- or the tank battery. Now, to prevent it from coming  
20 off -- running off around the well, we'd have to have some  
21 containment around it also, which is --

22 Q. And is that incorporated into your location  
23 design?

24 A. It is on the tank now. I need to put it in on  
25 pumping unit, yes.

1 Q. Okay. Very good. And I understand another  
2 witness is going to talk about the hydrological issues?

3 A. Yes, sir.

4 Q. How did you select 350 feet for your surface  
5 casing depth?

6 A. Well, I just looked at those other fields and  
7 saw, you know, what they said, the dry holes that were already  
8 on this. All those were, you know, around 60 feet or 100 feet  
9 of surfacing casing is all they said. I just went ahead and  
10 picked arbitrarily 350, you know. That would give us plenty of  
11 room to protect the surface water. That's the reason.

12 Q. Have you studied the available data on what  
13 surface fresh water there is in that area?

14 A. Well, I've just seen, you know, just the report  
15 and information from the other wells and stuff, you know. And  
16 then the data that was produced yesterday.

17 Q. Okay. What discussions have you had about these  
18 locations with the personnel in our Aztec office?

19 A. Personally, I haven't. But other people in our  
20 company, or that represent us, have.

21 Q. Okay. But you don't know what they've discussed,  
22 then, per se?

23 A. Well, I know they've had discussions on the  
24 Sultemeier pit and things like that.

25 Q. Very good.

1 MR. BROOKS: I think that's all my questions.

2 Mr. Hall, redirect?

3 REDIRECT EXAMINATION

4 BY MR. HALL:

5 Q. Mr. Reed, if you'll look at Rio Arriba County  
6 Exhibits, the Railroad Commission reports. If you'll look at  
7 Line 15 in the Railroad Commission reports.

8 A. Yes.

9 Q. Look at Line 15 there. It asks, "Did liquid  
10 hydrocarbon loss affect inland or coastal waters?"

11 In each case, what's the answer to that question?

12 A. No.

13 Q. In each circumstance reflected on the Railroad  
14 Commission Reports, did Approach comply with the remedial  
15 criteria as directed by the Railroad Commission?

16 A. Yes, we did.

17 Q. And does Approach have any outstanding violations  
18 from the Railroad Commission with respect to these?

19 A. No, we do not.

20 Q. Can you tell us briefly about the nature of the  
21 materials lost?

22 A. Well, I mean, it was condensate or crude oil in  
23 each case. The Railroad Commission was notified and then our  
24 environmental consultants, White Buffalo Environmental, came in  
25 and did the remediation on it and then came back six months

1 later and did a post-remediation site assessment on it.

2 Q. Okay. Let's find the Anthony Garcia No. 1 Well.  
3 Let's turn to Exhibit 8E and the aerial photo. Is the well  
4 spot on the aerial photo based on GPS lat/long.

5 A. Yes, sir.

6 Q. The well is south of the highway?

7 A. South of the highway.

8 Q. Okay. Let's turn to Exhibit 8C, and if you would  
9 turn to the C-144 Form that's part of the well file for the  
10 Sena No. 2. It's marked up in my book.

11 A. Okay.

12 Q. Let's look at that. Do you have that in front of  
13 you, the C-144?

14 A. Yes, sir.

15 Q. You were asked why Approach only recently  
16 indicated to the Division that it's going to use the  
17 closed-loop drilling and why you only recently filed any sort  
18 of regulatory permit application to the OCD. Let's look at the  
19 first page of the C-144, the upper right-hand corner, does that  
20 tell us when this form was first promulgated by the commission?

21 A. Yes, June 16, 2008.

22 Q. Okay. Let's go through the components of some of  
23 this very briefly. If you look on the first page, there's a  
24 place for you to check on the right-hand side for closed-loop  
25 system.

1 A. Correct.

2 Q. And that was checked --

3 A. That is correct.

4 Q. -- in this instance?

5 A. That is correct.

6 Q. And if you'll look at the bottom of Page 2 of the  
7 C-144, there's an additional place for an operator to provide  
8 information for a closed-loop system permit. Do you see that?

9 A. Yes.

10 Q. And it references attachments you're supposed to  
11 include?

12 A. Correct.

13 Q. And in this case, you've indicated a design plan  
14 and operating and maintenance plan?

15 A. Correct.

16 Q. Were those materials included with your C-144  
17 application for each of these wells?

18 A. Yes.

19 Q. And do they consist of the flow process and the  
20 layout view as well as your operations plan?

21 A. That is correct.

22 Q. The top of Page 2, the first half of Page 2,  
23 deals with siting criteria?

24 A. Uh-huh.

25 Q. And it addresses proximity to groundwater, water

1 courses, residences, wetlands, et cetera? If you look at the  
2 instructional part for the C-144 in bold at the very top of the  
3 page?

4 A. Yes.

5 Q. Look at the last sentence in the instructions.  
6 Does it indicate siting criteria does not apply to drying pads  
7 or above grade tanks associated with the closed-loop system?

8 A. Yes.

9 Q. And that's what we have in the circumstance of  
10 each of these wells; is that correct?

11 A. That is correct.

12 Q. Turn to Page 3, Proposed Closure, a place for you  
13 to provide information there. In this case, will you have any  
14 pits to close?

15 A. No.

16 Q. And then let's look at Page 4 of the C-144. It  
17 says, "Waste Removal for Closed-loop Systems."

18 The second box there.

19 A. Yes.

20 Q. Does this indicate where Approach plans to haul  
21 its drilling fluids and cuttings?

22 A. Yes.

23 Q. And where is that?

24 A. The basin disposal.

25 Q. Is that a permitted facility by the Division?

1 A. Yes, it is. And the number is listed here.

2 MR. HALL: That concludes my redirect, Mr. Examiner.

3 MR. BROOKS: Recross?

4 MR. A. TRUJILLO: No, Mr. Hearing Examiner.

5 MR. BROOKS: Very good. Mr. Hall, you may call your  
6 next witness.

7 MR. HALL: Can we do a time check?

8 MR. BROOKS: You have 2 hours, 32 minutes, and the  
9 County the 26 minutes.

10 How many witnesses do you have?

11 MR. HALL: We have one more witness, a technical  
12 witness.

13 MR. BROOKS: That's okay. I was expecting to go  
14 beyond 5 o'clock. But you only have one more witness?

15 MR. HALL: Yes.

16 MR. BROOKS: Very good. We may break during this  
17 witness' testimony, but I think it will be a little early to  
18 break now, so --

19 MR. HALL: If you could allow me just a minute to get  
20 organized?

21 MR. BROOKS: Well, in that case, let's go ahead and  
22 take a break, a short one. We'll try and get started again at  
23 4 o'clock.

24 [Recess taken from 3:55 p.m. to 4:04 p.m., and  
25 testimony continued as follows.]

1 MR. BROOKS: Back on the record. You may call your  
2 next witness, Mr. Hall.

3 PETER MAGGIORE

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

6 DIRECT EXAMINATION

7 BY MR. HALL:

8 Q. For the record, please state your name.

9 A. Peter Maggiore.

10 Q. Mr. Maggiore, you have previously been sworn; is  
11 that correct?

12 A. That's correct.

13 Q. Where do you live?

14 A. I live in Los Alamos, New Mexico.

15 Q. And by whom are you employed and in what  
16 capacity?

17 A. I'm employed by North Wind, Incorporated, and I  
18 serve as the senior vice president and manager of the  
19 Los Alamos office.

20 Q. Have you previously testified before the Division  
21 or the Commission and had your credentials established as a  
22 matter of record?

23 A. No.

24 Q. Would you give the Hearing Examiner a summary of  
25 your educational background and work experience. And if you

1 would refer to Exhibit No. 12, please.

2 A. Yes.

3 Q. What is Exhibit 12?

4 A. Exhibit 12 is a recent version of my resume. I  
5 hold a Bachelor of Science degree in geology from Stony Brook  
6 University that was awarded in 1978. And I hold a Master's  
7 degree in geology from the University of New Mexico that was  
8 awarded in 1981. I'm a certified professional geologist with  
9 the American Institute of Professional Geologists.

10 During my graduate work, I worked for Conoco Minerals  
11 out of Albuquerque doing uranium exploration in the Southern  
12 Rockies. Upon graduation with my Master's degree, I was  
13 employed for several years with Shell Western ENP out of  
14 Houston, Texas where I served as an exploration geologist.

15 In 1984, I accepted a position with the University of  
16 Maine as a research associated and as a member of the graduate  
17 faculty teaching a course in X-ray microanalysis and  
18 supervising graduate student master's theses.

19 In 1985, I returned to New Mexico and accepted  
20 employment with the New Mexico Environment Department in  
21 various capacities through 1989. One of the most relevant one  
22 was I managed the groundwater permitting bureau for awhile.

23 Between 1989 and 1995, I was employed by two separate  
24 consulting engineering firms working in the areas of regulatory  
25 compliance, hydrogeology, did some siting studies, worked on

1 some mining projection, municipal water projects.

2 In 1995, I accepted an offer from then Governor  
3 Johnson to become Director of the Environmental Protection  
4 Division with the New Mexico Environment Department. In 1998,  
5 I became Cabinet Secretary for New Mexico Environment  
6 Department. And then in 2002, I left the Environment  
7 Department. And since that time, I've worked for two separate  
8 consulting engineering firms doing environmental consulting in  
9 a wide range of capacities.

10 Q. In the course of your career at the Environment  
11 Department as Cabinet Secretary, did you have the opportunity  
12 to become involved in the administration of the Water Quality  
13 Act?

14 A. Yes, I did. In my capacity as Environment  
15 Secretary, I served as chairman of the Water Quality Control  
16 Commission for four years. That's the commission that  
17 promulgates the surface water and groundwater quality standards  
18 in this state as well as adopts TMDLs, Total Maximum Daily  
19 Loads.

20 Q. And in that capacity, did you become familiar  
21 with the jurisdictional overlap between the Oil Conservation  
22 Division and the Environment Department in the administration  
23 of that act?

24 A. Yes, I did.

25 Q. Are you familiar with the lands that are the

1 subject of these proceedings?

2 A. Yes, I am.

3 Q. And, in fact, have you conducted an onsite  
4 inspection of the well locations we've been talking about?

5 A. As many as I could get to on the day I was there.  
6 It was snowing and some gates were locked, but I visited or  
7 came close to visiting 9 of the 10 proposed locations.

8 MR. HALL: At this point, Mr. Examiner, we offer  
9 Mr. Maggiore as a qualified expert hydrogeologist.

10 MR. BROOKS: Any objections?

11 MR. A. TRUJILLO: No objection.

12 MR. BROOKS: So qualified.

13 Q. (By Mr. Hall): Tell us about your site  
14 inspection for the these locations. How did you go about  
15 locating them?

16 A. In conjunction with some of the exhibits that  
17 you've already seen here today, and with the companionship of a  
18 landman from Approach, we basically used the well locations  
19 that appeared on the map, along with consultation with the  
20 landowners that we could communicate with, to visit these  
21 locations.

22 Q. Now, why is a site visit indicated in this  
23 circumstance? How does that help you?

24 A. Well, the site visit helped me try and understand  
25 in real time and directly some of the relationships that I had

1 come to learn through working through some of the literature  
2 and some of the databases associated with getting technical  
3 information about this project and about these locations.

4 Q. All right. Are you familiar with the Division's  
5 new Rule 17 regarding pits, closed-loop systems, and  
6 below-grade tanks, and pumps?

7 A. Yes, I am.

8 Q. What has been the impact of that new rule?

9 A. I believe the impact of this new rule has caused  
10 the oil and gas industry to review the historical practices  
11 that they've employed relative to drilling oil and gas wells in  
12 New Mexico, particularly with regard to some of the features  
13 that you specifically see at a drill site. And it gives them  
14 an opportunity to re-evaluate the appropriateness of historical  
15 practices given the new regulatory framework.

16 Q. Does it establish certain criteria for siting  
17 requirements?

18 A. Yes, it does.

19 Q. And in certain circumstances, does the new rule  
20 encourage, in your view, the use of a closed-loop drilling  
21 system?

22 A. Yes, it does, specifically Rule 19.15.10.10  
23 establishes siting requirements associated with specific  
24 drilling methods. And the new so-called Pit Rule requires  
25 closed-loop systems to be used in certain situations.

1 Q. Can you briefly identify those to the Hearing  
2 Examiner, although I'm pretty sure he knows them.

3 A. Certainly. I'm referring to the 19 NMAC, Chapter  
4 15, Part 17, titled Pit, Closed-loop Systems, Below Grade  
5 Tanks, and Pumps. And Section 19.15.7.10 titled Siting  
6 Requirements. And if I might read from Part A, "Except as  
7 otherwise provided in 19.15.17 NMAC, operator shall not locate  
8 a temporary pit or below grade tank" -- Part A -- "where  
9 groundwater is less than 50 feet below the bottom of the  
10 temporary pit or below grade tank."

11 And it goes on to also prohibit temporary pits or  
12 below grade tanks in areas within certain proximity to  
13 continually flowing water courses, permanent residences, or  
14 private domestic fresh water wells.

15 Q. Now, you've heard from previous testimony that  
16 Approach has elected to use closed-loop systems without pits  
17 at each of these locations. Did you hear that?

18 A. Yes, I have.

19 Q. Is it your understanding that the OCD has  
20 required Approach to use closed-loop systems at some of these  
21 locations?

22 A. Yes, it is.

23 Q. Can you elaborate on that?

24 A. Certainly. As you've heard others testify, the  
25 Oil Conservation Division has previously required at three

1 locations that Approach Resources use a closed-loop system. I  
2 believe those locations are the Sena 1, the Sena 2, and the  
3 Woolley No. 1 locations.

4           It's also my understanding that the OCD based this  
5 determination after visiting the site and looking at certain  
6 types of vegetation that was observed in the vicinity of the  
7 proposed locations, as certain vegetative types may correspond  
8 to shallow groundwater occurrences. And that's a fairly  
9 standard technique. Approach is supportive of these  
10 determinations OCD has made and has readily agreed to adopt the  
11 closed-loop drilling system at those three locations.

12           As I mentioned earlier, by establishing a prohibition  
13 against certain drilling practices in certain sensitive  
14 hydrogeologic environments, I believe that the Pit Rule  
15 actually encourages the use of more protective drilling  
16 techniques in areas of environmental sensitivity.

17           And upon further examination of the requirements of  
18 the new Pit Rule, looking at the applicability of these  
19 restrictions in certain drilling locations, Approach has  
20 decided that the most appropriate and the most responsible  
21 corporate decision it could make would be to adopt a  
22 closed-loop system at all the proposed drilling locations,  
23 essentially going above and beyond what the new Pit Rule  
24 requires.

25           So in short, Approach has agreed to adopt the most

1 restrictive requirements of Rule 17 for each of the proposed  
2 drilling locations.

3 Q. Now, have you had the opportunity to review  
4 Approach's drilling program overall including its casing and  
5 cementing program, its pit permit applications, and its plans  
6 for rig pads at the associated wells?

7 A. Yes. I have.

8 Q. Do you have an opinion whether or not that  
9 drilling program plans to use closed-loop drilling rather than  
10 the use of pits and can be done in a manner that protects the  
11 environment?

12 A. Yes, I believe it can.

13 Q. What's the basis of your opinion?

14 A. The basis of my opinion is that it significantly  
15 reduces the potential for drilling fluids and other materials  
16 that are used during the drilling process to become released  
17 into the environment. By using the tanks, having these tanks  
18 above ground, their integrity is immediately obvious.

19 MR. A. TRUJILLO: Mr. Hearing Examiner, I'm going to  
20 object. It appears to me that Mr. Maggiore is reading from  
21 something. I'm not sure if he's reading from that, or what it  
22 is. But if he is, that's a writing that should be produced to  
23 adverse -- opposing counsel so that we may cross-examine him on  
24 it. Because I'm not sure if this is free-flowing testimony,  
25 because he keeps looking at his notes.

1 MR. BROOKS: Well, that point is well taken. If he  
2 is refreshing his recollection from a writing, then that needs  
3 to be made available to counsel. Can you respond to that,  
4 Mr. Hall?

5 MR. HALL: Well, let me just ask the question this  
6 way.

7 Q. (By Mr. Hall): In addition to drilling those  
8 wells as Approach plans, to protect the environment, can they  
9 also be drilled in a manner that will protect fresh water and  
10 protect public health?

11 A. Yes, I believe so.

12 Q. How will it do that?

13 A. It will do that by using the techniques the  
14 previous witnesses have described; basically establishing  
15 surface casing and cementing off the uppermost layers of the  
16 strata that it's drilled through in order to seal off the  
17 shallow groundwater environment.

18 Q. Now, for each of these well locations, have you  
19 been able to determine proximity to groundwater?

20 A. Yes -- well, to the best of my ability.

21 Q. And how did you go about that?

22 A. I did that in several -- using a couple of  
23 different techniques. The first was to review the information  
24 that was submitted previously on the C-101 Forms. I believe  
25 that data has been discussed by several witnesses previously.

1 And I attempted to summarize that data in Exhibit 13.

2 Q. All right. Let's turn to that. Tell us what  
3 Exhibit 13 shows us.

4 A. Exhibit 13 shows information that I excerpted  
5 from the 10 drilling applications that were available to me at  
6 the time I put this table together. It shows the name of the  
7 well, an approximate township range, section location, and  
8 depth to water, proximity to fresh water wells, and surface  
9 water, and then some comments that I added.

10 Q. All right. The comments on the right side, what  
11 is the source of those comments?

12 A. Those are comments that I personally attached  
13 based upon a search of the State Engineer's Waters Database.

14 Q. Okay. And in your search of the Waters Database,  
15 approximately how many wells were indicated -- well, first let  
16 me ask you this: How did you go about making your search?

17 A. In looking at the Waters Database, I took a  
18 slightly different approach than Mr. Finch did and I don't  
19 think there's only one correct approach. There are multiple  
20 approaches to try to capture this kind of information.

21 What I elected to do was to use the proposed  
22 individual well locations and then do a Waters Database search  
23 for any wells within a one mile fixed radius of those proposed  
24 locations. The results of that search appear as Exhibit  
25 No. 14. And in instances where water wells were found in the

1 vicinity of the proposed well locations, or in instances where  
2 there appeared to be a surface water course or acequia in the  
3 vicinity of the proposed well location, I attempted to include  
4 a comment in the far right-hand column on Exhibit 13.

5 Q. Now, you were here yesterday for the testimony --  
6 I'm sorry, Friday -- for the testimony by Mr. Finch, and you  
7 saw the area searched by him, if you recall that.

8 A. Yes.

9 Q. Can you show on a map -- one of the map exhibits  
10 from your search of the database -- the area that yielded the  
11 results for you?

12 A. Sure. I'm not finding what I'm rooking for.

13 Q. You want to look at Exhibit 15?

14 A. Yeah. I think that's what I'm looking for.  
15 Okay. I'm looking at Exhibit 15. And this exhibit plots the  
16 locations of the proposed Approach wells with the locations of  
17 both acequias and domestic water supply wells that were located  
18 in the Waters Database search through the Office of the State  
19 Engineer.

20 Q. Okay. Now, when Mr. Finch conducted his search,  
21 was he able to identify wells in the proximity you've shown on  
22 Exhibit 15?

23 A. I think Mr. Finch and I might have identified  
24 different wells. I don't recall some of the wells that I've  
25 identified on this map appearing in Mr. Finch's search, but I

1 would really need to crosswalk that.

2 Q. Okay. Were you able to identify surface waters  
3 from your site visits?

4 A. Yes. I was able to identify surface water  
5 courses both through the windshield survey and some of the  
6 walking around I did and looking at some topographic quadrangle  
7 maps.

8 Q. And the results of that are also shown in  
9 Exhibit 15, correct?

10 A. Yes.

11 Q. Let's go to Exhibits 8A through 8I. Have you had  
12 an opportunity in each of those cases to review the C-144 pit  
13 applications --

14 A. Yes, I have.

15 Q. -- signed by Approach? Do each of those appear  
16 to be complete?

17 A. Yes, they do.

18 Q. Now, based on your inspection of well locations,  
19 and bearing in mind Approach's plans to use closed-loop  
20 drilling systems associated drilling facilities, can each of  
21 these well facilities comply with the siting requirements of  
22 Rule 17.10, the Pit Rule?

23 A. Yes.

24 Q. And is that facilitated by the use of air  
25 drilling tools?

1 A. Yes.

2 Q. Let's look at Exhibit 16, please. Can you  
3 identify Exhibit 16 for us?

4 A. Yes, I can. This is a map which depicts an area  
5 of interest that I selected based upon my review of the Natural  
6 Resource Conservation Service website which allows a user to  
7 identify and search an area of interest in order to determine  
8 soil type.

9 Q. And how about Exhibit 17?

10 A. Exhibit 17 is the second part of the map.  
11 Unfortunately, the software has an acreage restriction that  
12 prohibited me from collecting information from all 70 -- the  
13 entire lease area. So I had to separate my search into two  
14 separate maps.

15 Q. Why did you evaluate soils mapping, soils data,  
16 in connection with your evaluation of this project?

17 A. It's important to understand the soil types so  
18 you can evaluate erosion potential, potential for flooding,  
19 potential for ponding, things like that.

20 Q. And what soil types were you able to ascertain  
21 exist in these locations, and why is that important to the  
22 Hearing Examiner?

23 A. There's about six or seven different soil types.  
24 Several proposed well locations have the same soil type. The  
25 soil types change as you progress vertically upward through the

1 watershed. And again, it's important to understand the soil  
2 relationships when looking at erosion potential and things like  
3 that.

4 Q. Do these soil types tell you something about the  
5 ability of the soils to transmit water?

6 A. Yes, they do. They -- this database  
7 qualitatively evaluates hydraulic saturation potential as well  
8 as potential for flooding in ponds.

9 Q. Let's look at Exhibit 17 -- 16 -- I'm sorry, a  
10 little bit closer -- for the location of the -- pick one or two  
11 of the locations. The location for the Sena No. 2: What does  
12 your map tell us about the soil in the location, in the  
13 vicinity of that location?

14 A. Sure. It's No. 125 and unfortunately, I don't  
15 have the precise soil types or characteristics memorized. I  
16 would need to refer to some notes for that.

17 Q. Are you familiar with Mora Loams?

18 A. Yes, I am.

19 Q. And are those found in the vicinity of the Sena  
20 No. 2 Site?

21 A. Yes, they are.

22 Q. And what is the nature of that soil?

23 A. I know that counselor has objected to me looking  
24 at notes, so I can look at them and make that portion  
25 available. Basically, they are descriptions that come directly

1 out the of the NRCS.

2 MR. A. TRUJILLO: If the witness needs a writing in  
3 order to refresh his memory, that's perfectly okay. Just as  
4 long he provides me a portion or copy of that so that I can use  
5 it.

6 THE WITNESS: Sure. I can do that.

7 A. Okay. We were looking at the Sena No. 2 location  
8 and the soil type there is the Hogg-Mora Loams, and the soil  
9 type, the geomorphology, is typically as hills, and it's  
10 derived from shale materials, alluvium. It's listed as a  
11 well-drained soil with a moderately low to moderately high  
12 capacity to transmit water. And the frequency of flooding --  
13 the frequency of flooding and ponding in this soil is described  
14 as none.

15 Q. (By Mr. Hall): How about the site for the Sena  
16 No. 1?

17 A. Sena No. 1 has a different soil type. It's part  
18 of the Rombo-Wiggler Complex. Again, though, the geomorphology  
19 is hills. It is derived partly from colluvium, partly from  
20 alluvium, but again, from shale. It is well drained,  
21 moderately low to moderately high capacity to transmit water.  
22 And the frequency of flooding and ponding is described as none.

23 Q. All right. Why is that important for the Hearing  
24 Examiner to note, the frequency of flooding and ponding?

25 A. I think the frequency of the flooding and ponding

1 is important for the Hearing Examiner to note because that  
2 speaks towards some of the site-specific controls that may need  
3 to be put into place to try and mitigate any erosion and runoff  
4 and runoff from the drill pad locations.

5 Q. All right. Let's refer over to Exhibit 17 where  
6 the location is for the Rosemary Roller No. 1. What sorts of  
7 soils occur there?

8 A. The database lists the Nusmag-Tottles clay loams  
9 which occur as stream terraces and foot slopes derived from  
10 alluvium that occurs in streams. Again, it's a moderately well  
11 drained soil, moderate with very low to moderately low capacity  
12 to transmit water. Frequency of flooding and ponding, again,  
13 is described as none.

14 Q. And again, referring back to Exhibit 16, the  
15 soils in the vicinity of the Hinkle Well, the Valdez Well, and  
16 the Sultemeier No. 2.

17 A. Those are all part of the Topetaui Complex.  
18 These soils typically occur as cuetas which are ridges that  
19 have one steep slope and one more gentle slope. Soil type is  
20 ultimately derived from shale pathology. It is well drained  
21 and moderately low to moderately high capacity to transmit  
22 water. Frequency of flooding and ponding is described as none.

23 Q. All right. And as well for the Sultemeier No. 1,  
24 the soil types there?

25 A. The Sultemeier No. 1 proposed location is the

1 El Pedro silty loam.

2 MR. A. TRUJILLO: Mr. Hearing Examiner, could I ask  
3 the witness to spell these so that --

4 THE WITNESS: Certainly. These are not common names.

5 MR. A. TRUJILLO: I don't find them on this, on the  
6 map itself.

7 THE WITNESS: That's correct.

8 MR. A. TRUJILLO: And it's difficult for me to --

9 THE WITNESS: Certainly.

10 MR. BROOKS: That would probably help the reporter,  
11 too.

12 THE WITNESS: Okay. Let me start at the beginning.  
13 Sena No. 2 is Hogg, H-o-g-g, dash Mara, M-a-r-a, Loam, L-o-a-m.  
14 Sena No. 1 is Rombo, R-o-m-b-o, dash Wiggler, W-i-g-g-l-e-r.  
15 I'm trying to remember what the next one you asked me.

16 Q. (By Mr. Hall): For the Rosemary Roller.

17 A. The Rosemary Roller was Nusmag, N-u-s-m, as in  
18 Mary, a-g, dash, Tottles, T-o-t-t-l-e-s, clay loam.

19 Q. And for the vicinity of the Hinkle, Valdez and  
20 Sultemeier No. 2 locations?

21 A. Those three wells were part of the -- I'm  
22 pronouncing it Topetaui, but it might not be correct. T, as in  
23 Thomas, o-p, as in Peter, e-t, as in Thomas, a-u-i, dash, Hogg,  
24 H-o-g-g Complex. And does that bring us up to the Sultemeier?

25 Q. The Carrick silt loam.

1 MR. A. TRUJILLO: I'm sorry. Was Hinkle, Sultemeier  
2 No. 2 and 1 -- were all those Topetaui-Hogg?

3 THE WITNESS: The Hinkle, Valdez and Sultemeier No. 2  
4 all appear to have the Topetaui-Hogg.

5 MR. A. TRUJILLO: Thank you.

6 THE WITNESS: You bet.

7 Q. (By Mr. Hall): And the Anthony Garcia Well?

8 A. The Anthony Garcia appears as a Carrick,  
9 C-a-r-r-i-c-k silt loam. And I don't know if we had talked  
10 about this yet or not.

11 Q. Why don't you discuss it briefly.

12 A. It forms stream terraces that are derived from  
13 eolian, which are windblown deposits primarily from volcanic  
14 rocks. Well-drained soil, moderately low capacity to transmit  
15 water. Frequency of flooding and ponding in the soil is  
16 described as none.

17 Q. And for the location at the Sultemeier No. 1?

18 A. Sultemeier No. 1 as listed is the El Pedro, E-1  
19 and then Pedro, P-e-d-r-o, silty loam. And these deposits  
20 typically occur at the bottom of land forms, again from  
21 windblown deposits. It's pretty well-drained soil, high  
22 capacity for transmitting water. Flooding and ponding in the  
23 soil was described as none.

24 Q. And finally, for the Woolley location?

25 A. The Woolley location appears to be Angostura,

1 A-n-g-o-s-t-u-r-a, very cobbly, sandy loam which occurs as  
2 mountain slopes, primarily derived from igneous rock.  
3 Well-drained soil, moderately high to high capacity for  
4 transmitting water. The NRCS lists the frequency of flooding  
5 and ponding as none.

6 Q. All right. Now, given what you know about these  
7 soil types, can the rig pad locations and the access roads be  
8 constructed so that erosion runoff/runon is controlled  
9 adequately?

10 A. Yes.

11 Q. And are you familiar with the Division's  
12 Pollution Prevention Best Management Practices?

13 A. Yes, I am. I believe that was published in 2000.

14 Q. And if Approach follows those best management  
15 practices in the construction of its rig pads and wells, can  
16 erosion and loss of silt be adequately controlled?

17 A. Yes.

18 Q. And it further follows, then, can the wells be  
19 drilled in the locations constructed so that water supplies are  
20 protected and public health and the environment are further  
21 protected?

22 A. Yes.

23 Q. Are you -- do you have some familiarity with the  
24 BLM US Forest Service Gold Book guidelines?

25 A. Yes. I believe that was published in 2007.

1 Q. Is it your understanding that Approach plans to  
2 follow the guidelines set forth in the Gold Book?

3 A. That is my understanding, yes.

4 Q. Do you believe that's appropriate to help protect  
5 the environment and human health and safety?

6 A. Yes, I do.

7 Q. Can you talk to us a little bit about surface  
8 hydrology? What have you seen out there from your review?

9 A. As other witnesses have mentioned, the main water  
10 course through the -- surface water course -- through the area  
11 that we're talking about is the Rito de Tierra Amarilla.

12 Adjacent to the Rito de Tierra Amarilla is a series  
13 of acequias for which the State Engineer has maps on record.  
14 And so those are some additional surface water bodies that need  
15 to be taken into account. The Chama River sits a ways off to  
16 the west. The Rio Nutrius sits further to the south. Of most  
17 important interest, the things that I learned the most about,  
18 were the -- was the Rito de Tierra Amarillo and the associated  
19 ditch systems.

20 Q. All right. And in your opinion, can the drill  
21 site access roads be constructed so there's no interference of  
22 those water courses or water supplies?

23 A. Yes.

24 Q. Do you know whether a trench and fill permit will  
25 be required from the Army Corps of Engineers for any of these

1 crossings?

2 A. I haven't fully researched that. Section 404 of  
3 the Clean Water Act requires that permits be acquired from the  
4 Army Corps of Engineer when activity is being performed in what  
5 is termed the waters of the US. That's certainly something  
6 that needs to be looked at.

7 Q. Okay. Now, in your opinion, can the pit  
8 locations, onsite burial locations, and drying pad locations be  
9 reclaimed in accordance with Division rules?

10 A. Given that there are no pit locations, no drying  
11 pit locations -- and what was the third?

12 Q. Disposal on site burials.

13 A. Onsite burials. Since there's going to be no  
14 material left, no closure onsite, the answer is yes.

15 Q. And now, does the dust associated with the use of  
16 air tools present any threat to the environment?

17 A. I don't believe so. I believe the requirements  
18 that are established by the New Mexico Environment Department  
19 for requiring permits for that is that any dust that is  
20 generated from these operations will fall far below those  
21 thresholds, yes.

22 Q. All right. From your background in the industry  
23 prior to your career in state government, have you had the  
24 opportunity to review casing and cementing programs for oil and  
25 gas wells?

1           A. Not in my former capacity with the Environment  
2 Department, I didn't do that, but I did review what was  
3 presented.

4           Q. All right. In your view, is the casing and  
5 cementing program proposed by Approach adequate to prevent any  
6 risk to fresh water and protect public health and safety and  
7 the environment?

8           MR. A. TRUJILLO: I'm going to object. I don't think  
9 that Mr. Hall has established that Mr. Maggiore is competent to  
10 testify in that regard. He admitted himself that he hadn't  
11 done that kind of work. He did review the materials presented  
12 to him. I do not think that's foundation for expert testimony.

13           MR. BROOKS: Okay. Well, I'll overrule the objection  
14 and his qualifications can be further inquired about if  
15 necessary, on cross. You may continue.

16           A. Can somebody repeat the question? I'm sorry.

17           Q. (By Mr. Hall): Well, let me ask you again.

18           A. I just -- given the objection, I just want to  
19 make sure I understand the question.

20           Q. Right. Is the casing and cementing program  
21 proposed by Approach adequate to prevent any risk to fresh  
22 water, public health, public safety and the environment?

23           A. I believe that the casing and cementing program  
24 as presented doesn't completely eliminate, but certainly would  
25 be protective of fresh water.

1 Q. All right. Mr. Maggiore, you were present on  
2 Friday for the testimony by the County's experts, Mr. Finch and  
3 Mr. Boyle. Let's address the testimony of Mr. Finch in the  
4 methodology. And you may wish to refer to County Exhibit 19.  
5 Do you have that available to you?

6 A. I hope so. Yes, I believe I do.

7 Q. And do you have an opinion whether the  
8 methodology utilized by Mr. Finch in the conduct of his  
9 investigation set forth in his memorandum is particularly  
10 useful to the Hearing Examiner?

11 A. I think the approach that Mr. Finch used was --  
12 has value. It adds information -- some questions I had with  
13 regard to, you know, what the search criteria were. A lot of  
14 the wells that were depicted in the database appear to be from  
15 subdivisions in the Tierra Amarilla area that were several  
16 miles away from the proposed drilling locations. And they may  
17 not form the, you know, the best comparison for what we would  
18 encounter in the immediate vicinity of the wells that were  
19 drilled.

20 In addition, I'm looking at the conclusions from  
21 Mr. Finch's PowerPoint presentation. Mr. Finch recommends  
22 prohibiting development to the upper watershed areas. I'm not  
23 going to opine on that. That's beyond the scope of my opinion  
24 in this hearing. But he recommends implementing hydrologic  
25 evaluation before issuing permits. I think, in part, that's

1 the purpose of the Pit Rule, to establish siting criteria, and  
2 to encourage oil and gas operators to use more protective  
3 drilling techniques. And I think, certainly in this case, the  
4 Pit Rule has achieved that goal.

5 Mr. Finch recommends using only closed-loop systems  
6 in the Rio Chama Watershed. Myself and others have given  
7 testimony that that will be Approach's drilling system here.  
8 And then finally, Mr. Finch talked about the integrity of the  
9 annular seals, and I think we've heard testimony from other  
10 experts from Approach on that.

11 Q. All right. Mr. Finch discussed the impairment to  
12 the lower half of the TA Creek. Do you recall that testimony?

13 A. Yes, I do.

14 Q. And what do we understand were the causes of that  
15 impairment?

16 A. Do we have an exhibit for that, Counselor?

17 Q. Let's look at what's been marked as Exhibit 23.  
18 Can you identify that for us?

19 A. Yes. Exhibit 23 is a report dated September 9,  
20 2003, titled, "Total Maximum Daily Loads (TMDLs) for the Upper  
21 Rio Chama Watershed (El Vado Reservoir to the Colorado  
22 Border)."

23 Q. Tell me what this document is all about. Did  
24 Mr. Finch utilize this document?

25 A. I'm trying to remember if it was Mr. Finch or if

1 it was Mr. Boyle. I apologize.

2 Q. I may be mixed up.

3 A. One of the witnesses -- it might have actually  
4 been Mr. Boyle -- utilized this information. I don't know if  
5 he -- I think he did refer directly to this document, because I  
6 recall a map in here that we may want to talk about. But I  
7 think Dr. Boyle noted that the Rito de Tierra Amarilla has been  
8 separated into two segments. And the lower segment has been  
9 found to be impaired for free water quality parameters,  
10 including turbidity, stream bottom deposits, and temperature.

11 Q. And what are the causes of that impairment, as we  
12 understand it?

13 A. With the Hearing Examiner's permission, I would  
14 like to read directly from portions of this document.

15 Q. Do you have a page reference?

16 A. I'm looking at the last paragraph on Page 34,  
17 which appears in Section 3 point -- well, it's in Section 3.  
18 And it states:

19 "The primary sources of impairment for this reach  
20 identified in the state 303(d) list are range grazing, removal  
21 of riparian vegetation, road maintenance, flow  
22 regulation/modification, and agriculture. There were no  
23 turbidity exceedences observed in the upper Rito de Tierra  
24 Amarilla sampling station (Surface Water Quality Bureau  
25 Station 15) during the 1998 survey. Increased turbidity at the

1 lower station (Station 16), likely results from a number of  
2 potential factors. There is a change in soil type and geology  
3 from the upper station to the lower station in the valley. The  
4 main source of impairment along this lower reach appear to be  
5 from livestock grazing and removal of riparian vegetation in  
6 the floodplain upstream from the lower sampling stations.  
7 Agricultural practices such as grazing appear to have  
8 contributed to the removal of riparian vegetation and stream  
9 bank destabilization. Field staff observed several horses,  
10 colts, and cattle while taking measurements at the lower  
11 sampling station. There are several small animal confinement  
12 pens, irrigation return flow, and poorly designed culverts at  
13 road crossings." And they list the reference.

14 "The reach flows through Tierra Amarilla in which all  
15 of the above factors are concentrated. When the area was first  
16 settled, creating narrow strips from the road all the way to  
17 the stream so each family's livestock would have access to a  
18 water source broke up the land. In many instances, these plots  
19 have been completely cleared of vegetation what would have  
20 filtered out sediments before reaching the stream. Direct  
21 access of livestock to the stream banks has caused stream bank  
22 destabilization in many areas."

23 And the final paragraph concludes, "The channel  
24 appears to have an increased width-to-depth ratio throughout  
25 this lower portion of the Rito de Tierra Amarilla as a result

1 of the above-mentioned land use practices. Given the low  
2 valley slope at the lower station, the channel should be  
3 narrower and deeper, which would transport sediment more  
4 efficiently." And it gives a reference for that statement.

5 Q. Is it correct to say that present and past land  
6 uses for the area contributed to the impairment condition of  
7 the TA Creek?

8 A. Yes.

9 Q. Is there any indication that the past mineral  
10 development from the coal mines that were discussed or the old  
11 oil wells contributed?

12 A. No, there is not. It was interesting in the  
13 figure that Dr. Boyle showed in his map, and it's in this  
14 document somewhere, there was at least four or five mine  
15 symbols that appeared to be in relative proximity to the Rito  
16 de Tierra Amarilla. But those features were not noted as a  
17 source of the potential impairment that's been observed.

18 Q. And you're referring to one of the maps that was  
19 presented to us in Dr. Boyle's PowerPoint presentation?

20 A. Yes, I am.

21 Q. Let's discuss erosion. I believe Mr. Finch  
22 discussed erosion in his testimony on Friday. What effect has  
23 erosion had on the current quality of TA Creek?

24 A. Erosion has degraded the qualities of the Tierra  
25 Amarilla Creek. As I understand it, it has caused a higher

1 percentage of silt and fines that you might otherwise find in  
2 the creek. That, in part, has caused the creek geometry to  
3 change as noted in the information I read. And I believe that  
4 phenomenon also is partly responsible for the temperature  
5 impairment which the lower stretch experiences.

6 Q. Did agricultural practices contribute to erosion?

7 A. Yes, as they noted here. They talk about return  
8 flows from agricultural practices. My previous experience on  
9 the Lower Rio Grande in potential litigation with the State of  
10 Texas, their main concern with the State of New Mexico was the  
11 quality of the water. Particularly, the turbidity was higher  
12 than they would like to use for a drinking water source. And  
13 the turbidity source was determined to be the tails water, or  
14 the return flow, from a lot of the irrigated fields along the  
15 Southern Rio Grande. It appears that a similar type of  
16 phenomenon, although on a much smaller scale, may be occurring.

17 Q. In your inspection of the lands and proximity of  
18 these well locations, did you observe whether any disking or  
19 any plowing had occurred?

20 A. When I visited, unfortunately, there was a fair  
21 amount of snow on the ground. But I understand that historical  
22 practices certainly, in addition to some of the testimony I've  
23 heard -- that those practices do occur.

24 Q. Mr. Finch discussed a number of the Water Quality  
25 Control Commission regulations and designations for the area of

1 the TA Creek. Do those designations actually restrict the use  
2 of the land?

3 A. No, they don't.

4 Q. What is their purpose?

5 A. They're basically -- as I understand them, those  
6 designations are basically targets or goals, but they do not  
7 have any direct relationship towards facility siting or land  
8 use practices.

9 Q. Mr. Finch noted that they did not conduct site  
10 inspections, but I believe both he and Mr. Boyle recommended  
11 that specific site inspections be done. Do you agree?

12 A. I agree that it's a good idea to get out there  
13 and look at the land and look at where these proposed locations  
14 are and to get a first-hand knowledge of what's on the ground.  
15 You bet.

16 Q. And do you recall Dr. Boyle was recommending that  
17 risk-analyses should be conducted for each of these sites? Can  
18 you explain to the Hearing Examiner what is a risk assessment?  
19 How is that useful?

20 A. The way I have seen risk assessments be done --  
21 and I believe he might have used the words "formal risk  
22 assessment" -- those are typically very sophisticated, very  
23 time consuming --

24 MR. A. TRUJILLO: At this point, I'm going to object  
25 until Mr. Maggiore can establish -- or Mr. Hall can establish

1 the foundation for this testimony. I did not know that  
2 Mr. Maggiore was qualified in risk assessment or toxicology or  
3 anything that would qualify him to interpret Dr. Boyle's  
4 testimony.

5 MR. BROOKS: Well, testimony included testimony that  
6 he served as Secretary of the Environment Department, and I'm  
7 sure he couldn't have been in that position without acquiring  
8 some knowledge of that subject.

9 MR. A. TRUJILLO: Mr. Hearing Examiner, I think that  
10 at least needs to be developed for the record.

11 MR. BROOKS: I'll overrule the objection. You may  
12 testify.

13 A. In my experience, the way I've seen formal risk  
14 assessments utilized is primarily in the federal arena, looking  
15 at US Department of Energy disposal sites. The DOE is  
16 self-regulating for certain contaminant or pollutants and their  
17 orders direct the Department of Energy to do formal risk  
18 assessments when certain wastes will be left on site for  
19 extended periods of time.

20 In those instances, it's important to understand the  
21 relationship that that variable will have in terms of potential  
22 receptors -- not only now, but well into the future. Again,  
23 those are very formal, very extensive, very long-term types of  
24 studies that are done for waste sites that essentially may be  
25 at a location in perpetuity.

1 Q. (By Mr. Hall): So "formal risk assessment," is  
2 that a regulatory term?

3 A. I'm trying to recall if I've seen risk assessment  
4 requirements. I know it's a term that's used in the regulatory  
5 arena with the DOE, so I would say yes.

6 Q. Would the conduct of a formal risk assessment in  
7 this case be of any value to the Hearing Examiner in making his  
8 decision?

9 A. I don't believe so.

10 Q. How long do formal risk assessments typically  
11 take to conduct?

12 A. The more complicated ones can take several years.

13 Q. Are you familiar with the Boulder Field of the  
14 West and East Puerto Chiquito Mancos Field?

15 A. Anecdotally.

16 Q. Are you familiar with any reported surface water  
17 or groundwater impacts from that development over there?

18 A. I am not.

19 Q. Anything further with respect to the testimony of  
20 Dr. Boyle on Friday?

21 A. Dr. Boyle also noted that in addition to  
22 turbidity, stream bottom deposits and temperature were listed  
23 as water quality parameters that caused the lower Rito de  
24 Tierra Amarilla to be impaired. And there is similar language  
25 in this exhibit with regard to the New Mexico Environment

1 Department and the Water Quality Control Commission's  
2 understanding of what's causing that impairment. I didn't know  
3 if you wanted me to --

4 Q. Can you point that out to us?

5 A. Sure. In Section 4 of the referenced exhibit on  
6 Page 42, the last paragraph again, talks about the causes for  
7 the impairment with respect to stream bottom deposits. Would  
8 you -- Counselor -- Mr. Examiner --

9 Q. Go ahead and summarize it, please.

10 A. Okay. Basically, the causes for this impairment  
11 are very similar to the causes that were noted previously with  
12 regard to turbidity. They note the change in soil type and  
13 geology. Then they note the impairment being -- appears to be  
14 from livestock grazing and the removal of the riparian  
15 vegetation in the floodplain. They attribute that to  
16 agricultural practices such as grazing.

17 Again, they note the occurrence of livestock  
18 immediately in the vicinity and in the water course. They talk  
19 about irrigation return flows and poorly designed culverts.  
20 And they actually have a photograph showing livestock  
21 immediately on the banks of the Rito de Tierra Amarilla.  
22 They're not fenced out, anyway. This all contributes to the  
23 stream banks' destabilization and erosion and impairment.

24 Q. All right. Both, I believe, Dr. Boyle and  
25 Mr. Finch indicated that from their observations of available

1 materials that many of these locations were down gradient,  
2 hydraulically, from some surface loads. Can you comment on  
3 that? Is that important for the Hearing Examiner to know?

4 A. Well, a lot of these futures are down gradient  
5 and so one would need to take that phenomena into account  
6 during siting and during, you know -- during the siting on  
7 where to locate the road, how to construct the road, where to  
8 locate the drill pad, how to build the drill pad, so that you  
9 can attempt to mitigate using the best practices that we talked  
10 about -- you know, erosion, runon, runoff, things like that.

11 Q. You've concluded that Approach can take into  
12 consideration the down gradient conditions for each of the well  
13 locations in constructing its road in its well locations?

14 A. Yes, I believe they can.

15 Q. Anything further you wish to add, Mr. Maggiore?

16 A. One possible other addition. Again, in the TMDL  
17 report, Dr. Boyle noted an impairment parameter being  
18 temperature. And on Page 72 of the report are some pictures  
19 and a discussion of the impairment. And if I may summarize or  
20 briefly read from that:

21 "The main sources of impairment appear to be from  
22 livestock grazing and removal of riparian vegetation in the  
23 floodplain up stream of the lower sampling station."

24 And why it's important here with regard to  
25 destruction of riparian habitat, is riparian habitat will

1 assist in shading the creek, and that shade will assist in  
2 reducing the potential temperature rise. When you remove that  
3 riparian vegetation, you have the sun being able to directly  
4 impinge on the surface of the water. And when you combine that  
5 with the other practices that are noted, including the finer  
6 material causing the riverbed to widen, you're not only  
7 increasing the surface area that's available to sunlight, but  
8 you're reducing the potential for shade at the same time. That  
9 appears to be the reason for the temperature impairment.

10 Q. All right.

11 MR. HALL: At this time, Mr. Examiner, this concludes  
12 our direct of Mr. Maggiore. We move the admission of  
13 Exhibits 12, 13, 14, 15, 16, 17.

14 Q. (By Mr. Hall): And let me ask you with respect  
15 to Exhibit 23, Mr. Maggiore, what is the source of this  
16 publication?

17 A. This is Exhibit 23. I apologize. This is the --  
18 the source of this is the New Mexico Environment Department  
19 Surface Water Quality Bureau. It's available on their website.

20 Q. And again, this was referred to by Dr. Boyle.  
21 And did you take this into consideration in reaching your  
22 conclusions?

23 A. Yes, I did.

24 MR. HALL: We'd also move the admission of Exhibit 23  
25 and also ask the examiner to take administrative notice of the

1 Division's Pollution Prevention Best Management Practices  
2 publication.

3 MR. BROOKS: Okay. What were the exhibits again?  
4 You said 15 through --

5 MR. HALL: 12, 13, 14, 15, 16, 17 -- 12 through 17.

6 MR. BROOKS: 12 through 17, and 23?

7 MR. HALL: 23.

8 MR. BROOKS: Any objections, Mr. Trujillo?

9 MR. A. TRUJILLO: No objection.

10 MR. BROOKS: Okay. 12 through 17 and 23 are  
11 admitted.

12 [Respondent's Exhibits 12 through 17 and 23 admitted  
13 into evidence.]

14 MR. BROOKS: There was the issue of the examination  
15 of Mr. Maggiore's notes and to allow some time to deal with  
16 that.

17 MR. HALL: We'll provide that portion of his notes.

18 MR. BROOKS: Okay. We will take a 15-minute recess  
19 to deal with that issue.

20 [Recess taken from 5:02 p.m. to 5:15 p.m. and  
21 testimony continued as follows:]

22 MR. BROOKS: Let us proceed.

23 MR. A. TRUJILLO: I would rather not proceed until I  
24 can at least tell the people in the hallway that we're  
25 proceeding, because it breaks my concentration when everyone is

1 walking in late.

2 MR. BROOKS: My time here indicates that the County  
3 has 28 minutes remaining, so we can round that off to 30  
4 minutes just to make sure I'm accurate.

5 MR. A. TRUJILLO: Thank you, Mr. Hearing Examiner.

6 MR. BROOKS: I'm not sure I'm totally accurate, so  
7 I'm rounding to be within accuracy. You may proceed when  
8 you're ready.

9 CROSS-EXAMINATION

10 BY MR. A. TRUJILLO:

11 Q. Mr. Maggiore, are you testifying here today on  
12 the record that it is your recommendation that an oil and gas  
13 well be placed in an alpine wetland?

14 A. I'm testifying that I believe that closed-loop  
15 systems meet the OCD regulatory requirements and can be placed  
16 at the proposed drill sites.

17 Q. I see. So you're testifying that -- you're not  
18 testifying that it's your recommendation to place that there?

19 A. Your question focused on a definition or a  
20 designation of an alpine wetland at one of the locations. The  
21 only information I've seen regarding that designation was the  
22 presentation by Dr. Boyle yesterday.

23 Wetlands has a specific -- it's my understanding that  
24 wetlands has a specific regulatory definition. And I am not  
25 certain that the well site that you are referring to meets that

1 definition.

2 Q. Okay. Let me ask you: You visited the Woolley  
3 Site, did you not?

4 A. I did visit the Woolley Site.

5 Q. And did you see the springs on either side of the  
6 stakes?

7 A. No, I did not.

8 Q. You didn't walk 40 feet over from the stake to  
9 see if there was a spring there?

10 A. As I testified earlier, I did a windshield  
11 survey. I also did some hiking. But the day I was up there,  
12 it was snowing.

13 Q. And what month was that?

14 A. This was June.

15 Q. And there was snow on the ground?

16 A. There was snow on the ground.

17 Q. There was enough snow on the ground to prevent  
18 you from walking down to that site?

19 A. I did not have time to walk over every site in  
20 detail. I didn't go that far.

21 Q. So you don't -- so you're saying, then, that you  
22 don't know if there are headwater springs at the Woolley Site?

23 A. I did not personally observe headwater springs at  
24 the Woolley Site. I did see photographs that Dr. Boyle  
25 presented that showed ponded water in some of the locations at

1 that turnout.

2 Q. So it's your recommendation that an oil well be  
3 placed in that site?

4 A. I believe I've already answered that question.

5 Q. Well, is it your recommendation, then, that an  
6 oil well be placed in the mouth of a box canyon drainage?

7 MR. HALL: Can you specify the well location for us?

8 Q. (By Mr. A. Trujillo): Sultemeier 1?

9 A. I visited that site, and I believe that can  
10 accommodate an oil -- an exploratory well, given the practices  
11 that are outlined in the application.

12 Q. But is that the site that you would recommend  
13 that a well be placed at?

14 A. I'm not -- I have not been asked to recommend  
15 sites. I have been asked to review the sites that have been  
16 proposed and render a professional opinion.

17 Q. So you've been asked to justify the placement of  
18 the sites after the fact, then?

19 A. I've already answered that question as well.

20 Q. I don't believe you have, because this is the  
21 first time I've asked it.

22 MR. HALL: Object. Argumentative.

23 MR. BROOKS: I think it is argumentative. I'll  
24 sustain the objection. Go ahead.

25 Q. (By Mr. A. Trujillo): Now, I'm confused about

1 your testimony regarding impairment of the Tierra Amarilla  
2 Creek. You're not comparing oil and gas development, and risk  
3 of contamination involved in oil and gas development, with  
4 agriculture, are you?

5 A. I don't believe I made that comparison.

6 Q. I'm trying to get to what the testimony means.

7 And you're not --

8 A. My testimony was completely factual, and I read  
9 from documents that have received approval and adoptions by the  
10 Water Quality Control Commission and the US EPA. Those are  
11 their words, not mine.

12 Q. That's correct. Now, you're not testifying,  
13 then, that oil and gas development is comparable to the  
14 impairment and effects of agriculture and rangeland grazing,  
15 are you?

16 A. I didn't make any comparisons.

17 Q. Okay. And there are no active oil wells in the  
18 area that you know of, are there?

19 A. Not to my knowledge.

20 Q. And there are no active mines in this area, are  
21 there?

22 A. I do not believe so.

23 Q. And in essence, then, the cause of impairments  
24 are the only activity -- the causes of impairment are the only  
25 activity in this area, aren't they?

1 A. I don't understand the question. I'm sorry.

2 Q. Well, we have agriculture there; do we not?

3 A. Yes.

4 Q. And we've got rangeland grazing; is that correct?

5 A. Those are a couple of the land use practices I  
6 understand exist, yes.

7 Q. And what other land use practices exist there?

8 A. Well, in terms of the impairment, are you --

9 Q. Yes. I'm asking about impairment.

10 A. Well, if I might refer back to the appropriate  
11 sections of the report. In terms of the impairment for  
12 turbidity, Exhibit 23 says that the main sources of impairment  
13 along this lower reach appear to be livestock grazing and  
14 removal of riparian vegetation in the floodplain, agricultural  
15 practices such as grazing, removal of riparian vegetation and  
16 stream bank destabilization.

17 Again, livestock has unfettered access to the  
18 streams, irrigation return flow. Which again, I tried to  
19 explain was -- can result from soil loss from the fields and  
20 the tails water or return flow going back into either the  
21 acequia or the creek. And poorly designed culverts at road  
22 crossings were listed, for example, as the most probable  
23 courses of the turbidity impairment.

24 Q. I see. And the proposed applications, they will  
25 only add to that impairment, will they not?

1 A. Any --

2 Q. I mean, you're not telling us that there's going  
3 to be no effect, are you?

4 A. What I'm telling you is that on 100 percent  
5 private land with no commercial development, the lower reach of  
6 the Rito de Tierra Amarilla has become impaired.

7 Q. And that's it? Like I said, you're not telling  
8 us that these proposed well sites will have no effect on the  
9 streams, are you?

10 A. I'm not predicting what potential future  
11 activities or impacts might be. What I'm trying to do is place  
12 the testimony that previous witnesses gave with regard to the  
13 impairment status of the Rito De Tierra Amarilla in the context  
14 of the document within which those impairments were described.

15 Q. Well, you're familiar with the National Resource  
16 Conservation Service, are you not?

17 A. Yes, I am.

18 Q. And you're aware through prior testimony and  
19 probably just through your own basic knowledge, that the  
20 National Resources Conservation Service is currently in the  
21 process of remediating as much impairment through livestock  
22 grazing and agriculture in this area as possible, are you not?

23 A. Yes -- well, as much as possible. I don't know  
24 what the level of -- I can't testify as to the level of effort.  
25 A previous witness shared a photograph which showed some field

1 or agricultural rehabilitation. Some types stabilize and  
2 reduce some of the erosion. So that's -- I've seen a  
3 photograph of that.

4 Q. So basically, what's happening in this area is  
5 there are current attempts to remediate the already present  
6 erosion and impairment of those streams; is that correct?

7 A. Yes. There's activities undergone to try and  
8 come into -- to try and meet the requirements of the TMDL like  
9 there are at the, I believe, 99 impaired reaches of creeks and  
10 surface water courses in New Mexico.

11 Q. So while this remediation is taking place, it's  
12 your recommendation, then, that oil wells be placed in this  
13 vicinity?

14 MR. HALL: Again, Mr. Examiner, this has been asked  
15 and answered.

16 MR. A. TRUJILLO: I don't believe it has.

17 MR. BROOKS: Overruled.

18 A. If you look at the definition of a TMDL, the  
19 definition of a TMDL does not anticipate no future development  
20 or no future activity in the watershed wherein the impairment  
21 occurs. And if you'd like, I can try and find that definition.  
22 I don't have it memorized.

23 Q. (By Mr. A. Trujillo): No, no. I don't want a  
24 definition. I want an answer to the question.

25 A. Well, I think the answer to your question is best

1 described in the definition of the TMDL. So, if you'd like --

2 Q. It's a yes or no answer.

3 A. I believe --

4 Q. I'm asking in this context: When this  
5 remediation is taking place, it's your recommendation, then,  
6 that oil and gas development be placed in that area?

7 A. My recommendation -- my opinion is consistent  
8 with the definition of the term TMDL, which does not restrict  
9 or eliminate -- which does not eliminate future development in  
10 a water course under which a rehabilitation is occurring  
11 pursuant to an impairment designation.

12 MR. A. TRUJILLO: I will object as non-responsive.

13 MR. BROOKS: One of the problems with argumentative  
14 questions is they often draw argumentative answers. So I will  
15 overrule the objection.

16 Q. (By Mr. A. Trujillo): Now, in your capacity as  
17 Secretary of the New Mexico Environment Department, are you  
18 aware if injection of contaminants is allowable into a fresh  
19 water aquifer?

20 A. I am aware of a -- that groundwater cannot be  
21 degraded above numerical groundwater quality standards which  
22 the Water Quality Control Commission sets. And that is the  
23 underpinnings that the Water Quality Control Commission  
24 regulations have, and the groundwater permitting program has.

25 Q. I see. So you did hear the testimony from

1 Mr. Craft, I believe, that indicated that Approach plans to  
2 reinject the produced water into the aquifer, does it not?

3 MR. HALL: I'm going to object. I think that  
4 mischaracterizes prior testimony. I believe the testimony was  
5 it would be reinjected back into a producing formation which  
6 has associated oil and water in it already for pressure  
7 maintenance.

8 MR. BROOKS: Well, I believe that's correct, as I  
9 recall the testimony. So I'll sustain the objection.

10 Q. (By Mr. A. Trujillo): So what formation does the  
11 Cloyd Hinkle Well yield water from?

12 A. I don't know the answer to that offhand. I  
13 believe it's one of the deeper wells.

14 MR. HALL: I'm going to object to the form of the  
15 question. The well has not been drilled.

16 MR. BROOKS: Well, I thought he was inquiring about  
17 the Cloyd Hinkle Well that is part of the summary that the  
18 witness sponsored; is that not correct?

19 MR. A. TRUJILLO: I believe if I can rephrase the  
20 question:

21 Q. (By Mr. A. Trujillo): What formation does the  
22 Cloyd Hinkle water well yield water from?

23 MR. BROOKS: That's what I thought you meant.

24 A. And that's how I interpreted your question. I  
25 don't believe I --

1 Q. (By Mr. A. Trujillo): Go to your Exhibit 15.

2 The depth of that well is 820 feet; is that correct?

3 A. Yes.

4 Q. And so what formation does that well yield water  
5 from?

6 A. I don't know.

7 Q. Could it be the Mancos Shale?

8 A. I would doubt it's the Mancos because I don't  
9 think that the Mancos is typically an aquifer in this area.  
10 But again, I don't know. I would be surprised if it was the  
11 Mancos.

12 Q. Now, you didn't review the Rio Chama Regional  
13 Water Plan in preparing your analysis for this, did you?

14 A. I reviewed the executive summary. I'm aware of  
15 the document, but I didn't review it in detail, no.

16 Q. And that plan can be significant in terms of  
17 understanding the local issues in these applications, couldn't  
18 it?

19 A. I would agree that that document would give  
20 insight to the local values associated with the watershed,  
21 sure.

22 Q. And the Rio Chama Regional Water Plan addresses  
23 the restoration issues involved in the Rio Chama Watershed,  
24 doesn't it?

25 A. I believe it does, yes.

1 Q. In the context of that, we're here for oil and  
2 gas development in the regional watershed; are we not?

3 A. I don't believe that we're here in the context of  
4 the Rio Chama Regional Water Plan. I believe we're here in the  
5 context of the Oil Conservation Division regulations pursuant  
6 to drilling applications that have been submitted by Approach  
7 Resources.

8 Q. I see. Well, the Rio Chama Regional Water Plan  
9 has as its purpose the restoration in this regional watershed.  
10 And the placement of oil and gas development in that watershed  
11 would necessarily degrade the quality of the water in the Rio  
12 Chama Watershed, would it not?

13 A. I don't believe I --

14 Q. Oil and gas development will necessarily degrade  
15 the water quality in the Rio Chama Watershed, would it not?

16 A. Oil and gas development could impact it. I don't  
17 think it's an unequivocal fact that it will.

18 Q. But there's no guarantee that it won't; is that  
19 correct?

20 A. Sure..

21 Q. In fact, if any of the facts that have come to  
22 light today regarding these spills were to occur in this  
23 watershed, the results could be potentially catastrophic.

24 MR. HALL: I'm going to object. This is speculation  
25 at this point, Mr. Examiner.

1 MR. A. TRUJILLO: Mr. Maggiore was former Secretary  
2 of the Environment Department in which capacity he dealt  
3 extensively with contamination issues of all types.

4 MR. BROOKS: Well, I'll overrule the objection. The  
5 witness may answer the question if he has an opinion on that  
6 subject.

7 A. I don't know if I would share your use of the  
8 word catastrophic, but I would acknowledge that if releases  
9 occurred in the watershed, impacts could occur.

10 Q. (By Mr. A. Trujillo): Well, if 10,000 gallons of  
11 crude oil and mostly gas well liquid were discharged into the  
12 soil in the Rio Chama Watershed, can you give us an idea of  
13 what kind of problem that would create?

14 MR. HALL: Well, I'm going to object again. Assumes  
15 facts that are not in evidence.

16 MR. A. TRUJILLO: I believe --

17 MR. BROOKS: It's a hypothetical, and I think it's a  
18 reasonable one that can be asked of an expert witness.  
19 Overruled.

20 A. The volume again, was what -- 10,000 gallons?

21 Q. (By Mr. A. Trujillo): 10,000 gallons.

22 A. Of --

23 Q. Of toxic -- of gas well liquids --

24 A. Was discharged where?

25 Q. -- and crude oil -- was discharged in the

1 headwaters and along the Tierra Amarilla Creek.

2 A. That might meet my definition of catastrophic.

3 Q. Okay. Now --

4 MR. BROOKS: Did you say it might or might not?

5 THE WITNESS: It might.

6 Q. (By Mr. A. Trujillo): Now, the purpose of  
7 categorization of the upper reaches of the Tierra Amarilla  
8 Creek to about 8,000 feet as defined by the EPA as unimpaired,  
9 you're familiar with that designation, are you not?

10 A. Yes, I am.

11 Q. And the purpose of that designation is to not  
12 allow any further degradation; is that correct?

13 A. I don't believe that's correct. I believe that  
14 development can occur consistent with that designation.

15 Q. And do you have any proof to that effect here for  
16 us today?

17 A. Well, there's no development -- there's little  
18 development. What I'm saying is there is no prohibition.  
19 There's no regulatory prohibition against development that  
20 would be caused by that designation, as I believe you're  
21 implying.

22 What I'm saying is that designation does not restrict  
23 or eliminate certain land use practices. And one such land use  
24 practice is being proposed here.

25 Q. Okay. So you're saying that an allowable

1 practice in an EPA designated area for unimpaired water would  
2 be oil and gas development?

3 A. What I'm saying is that I believe that the  
4 specified drilling locations, using closed-loop systems, using  
5 best practices as defined by the Gold Book, using best  
6 practices as defined by the Oil Conservation Division's  
7 publication, that those locations can be developed in a manner  
8 that is protective of the public health and environment.

9 Q. That is protective or that is preventative?

10 A. That is protective of the public health and the  
11 environment. Many of the practices that are called out in the  
12 Gold Book are preventative practices, okay? When they discuss  
13 removing topsoil, for example, and then placing it back; when  
14 they talk about considering irregular drill pad geometries;  
15 when they talk about looking at road construction in a manner  
16 that minimizes future -- minimizes erosion and future  
17 reclamation. Those are all good things.

18 Q. Do you still have your exhibit book open to  
19 Exhibit 15?

20 A. I'll find it. Is that the water well map?

21 Q. Yes, it is. Now, it appears to me that if you  
22 look at the left-hand corner at the Cloyd Hinkle No. 1, there  
23 appears to be a water well almost on top of Approach's proposed  
24 site -- very near it; is that correct?

25 A. The map suggested that. And let me --

1 Q. Can you tell us how far away that is?

2 A. I don't know the answer to that. You've heard  
3 previous testimony that some of the lat/long township range  
4 section locations may not be accurate because of the historical  
5 lack of surveying in this area.

6 So what I attempted to do was take the information  
7 from the Waters Database and basically try and project it using  
8 the best professional judgement that we have. The next logical  
9 step, in my opinion, would be to take this data and then see if  
10 it can be ground truth, try and find out where these wells  
11 might actually exist or not exist.

12 Because sometimes when you're looking at section  
13 quarter section/quarter section and you're just plotting stuff  
14 in the center all the time, you're not hitting it where it  
15 really is on the ground. So these are estimates. And this  
16 isn't -- I wouldn't portray this has being 100 percent  
17 accurate.

18 Q. Well, the question I have is there appears to be  
19 three water wells directly in the vicinity of the Cloyd Hinkle  
20 well site application for Approach; is that correct?

21 A. This map certainly suggests that, yes.

22 Q. Now, do the Pit Rule siting requirements prohibit  
23 the drilling of a well location in a wetland or next to a water  
24 well?

25 A. I'm referring to --

1 Q. Let me modify the question: With a closed-loop  
2 system, do they prohibit the drilling of a well location in a  
3 wetland or next to a water well -- with a closed-loop system?

4 A. With a closed-loop system, I don't see the  
5 prohibitions you just mentioned.

6 Q. So basically with a closed-loop system, you can  
7 place an oil and gas well anywhere?

8 A. With a closed-loop system, I do not see a siting  
9 prohibition.

10 Q. Mr. Maggiore, listen to the question: With a  
11 closed-loop system, you can place an oil and gas well anywhere?

12 A. That's what the regulations appear to suggest.

13 Q. And so it's your opinion, then, that with a  
14 closed-loop system, you can place an oil and gas well right  
15 next to three water wells?

16 A. I do not see a regulatory prohibition against  
17 that.

18 Q. But it is recommendable? I mean, would you  
19 recommend that you place an oil and gas well next to three  
20 water wells?

21 MR. HALL: Again, it's argumentative.

22 MR. A. TRUJILLO: I'm sorry.

23 Q. (By Mr. A. Trujillo): Would you recommend --

24 MR. BROOKS: Overruled. He can answer the question  
25 if he has an opinion.

1           A. I don't know if those water wells are in those  
2 precise locations. The purpose of doing this survey was an  
3 attempt -- a good faith attempt -- to try and identify the  
4 locations of water wells within a mile vicinity of these  
5 proposed locations.

6           Q. (By Mr. A. Trujillo): So what you're saying,  
7 then, is that we need to find out if those water wells are  
8 right there, then?

9           A. That would be a good practice, but you  
10 interrupted me. I do not see a regulatory requirement to do  
11 what I did on behalf of Approach because of their use of a  
12 proposed closed-loop system.

13          Q. That seems like a flaw in the siting of these  
14 wells, wouldn't you say? Wouldn't you say -- I'm sorry. Let  
15 me withdraw my question.

16          Wouldn't you say, then, that the siting requirements  
17 in these -- in the Pit Rule -- would actually allow for oil and  
18 gas development in places that would pose a considerable risk  
19 to water supplies because there's no regulation of them?

20          MR. HALL: I object. It asks the witness to assume  
21 that there's no regulation of them.

22          MR. A. TRUJILLO: I'm sorry. He just said that he  
23 sees no regulatory authority for not placing these wells --

24          MR. BROOKS: I think it's repetitious, but I'm going  
25 to overrule the objection.

1           A. I believe what I said was I did not see a  
2 regulatory prohibition. With the use of a closed-loop system,  
3 the level of protectiveness is so much greater, in my opinion,  
4 than with below ground pits, with below ground tanks, with  
5 liners, with onsite disposal, onsite closure -- none of which  
6 will be occurring here -- that I believe that these locations  
7 can be drilled safely.

8           Q. (By Mr. A. Trujillo): Okay. So that gets to the  
9 point. The point is then -- or one of the points is that with  
10 a closed-loop system you're saying it's okay to drill 40 feet  
11 away from the headwaters of the Rio Chama Watershed.

12          A. I've not seen a map that clearly depicts the  
13 headwaters of the Rio Chama Watershed.

14          Q. Okay. So assuming that Mr. Boyle's photos or  
15 photographs are accurate regarding the distances and regarding  
16 the locations of those springs, you're saying, then, that with  
17 a closed-loop system, it's allowable to place an oil and gas  
18 well 40 feet from naturally occurring springs that serve as the  
19 headwaters for the Rio Chama Watershed?

20          A. I also don't know when that photo was taken. I  
21 don't know --

22          Q. Mr. Boyle testified that he -- Dr. Boyle  
23 testified that he took them two weeks ago; did he not?

24          A. I may have forgotten that portion of the  
25 testimony.

1 MR. BROOKS: Okay. Two things: First of all, you  
2 need to allow the witness to complete his answer. But you have  
3 five minutes remaining.

4 A. What I was trying to articulate was that whenever  
5 that photo was taken -- and if it was two weeks ago and I  
6 didn't realize that, I apologize -- I don't know what that  
7 looks like at other times of the year. There may not be water  
8 ponding there the whole year. That may be a short term  
9 phenomena relative to the runoff, relative to springs, things  
10 like that.

11 Q. (By Mr. A. Trujillo): Hypothetically speaking,  
12 if Approach had come to you in September of 2007 and said, "We  
13 want to do a hydrological study. We want you to tell us if you  
14 think this location or any of those locations is suitable for  
15 oil and gas development, and if there are other locations that  
16 are possible."

17 Would you have recommended these locations over other  
18 possible locations?

19 MR. HALL: Again, there's no foundation. It calls  
20 for speculation.

21 MR. A. TRUJILLO: I don't believe it calls for  
22 speculation. I'm placing a hypothetical to an expert witness  
23 saying that if he would actually recommend someone place an oil  
24 well in any of those locations if there was a better  
25 alternative.

1 MR. BROOKS: I think that I'm going to sustain the  
2 objection because I don't think he was asked to do that from  
3 what I understand of his mission. And I don't believe there's  
4 been any evidence of alternative locations submitted in this  
5 proceeding.

6 MR. A. TRUJILLO: I believe there has, Mr. Hearing  
7 Examiner.

8 I have no further questions.

9 MR. BROOKS: Okay. I do have some questions,  
10 however.

11 EXAMINATION

12 BY MR. BROOKS:

13 Q. Like Mr. Trujillo, I'm very concerned about the  
14 Cloyd Hinkle water well, but I gather you don't really have  
15 very much knowledge about it; would that be fair to say?

16 A. That would be fair to say. The extent of my  
17 knowledge is the information that was publically available on  
18 the Waters Database through the Office of the State Engineer.

19 Q. You haven't made any actual inquiries as to  
20 whether that well is still active, whether it's being used, et  
21 cetera?

22 A. I made no inquiries with regard to either the use  
23 or precise location.

24 Q. And you don't know how far it is from the  
25 proposed Cloyd Hinkle No. 1 well site?

1           A. I do not. All I'm suggesting is that if anybody  
2 in this room accessed the database and tried to plot that data  
3 on a map using standard techniques, that's where the well would  
4 fall out.

5           Q. Okay. I guess that's all that I have. All these  
6 other wells that you had plotted appear to be relatively  
7 shallow, although the Roy Martinez Well is very close, also, to  
8 the Cloyd Hinkle Well, correct, -- or somewhere in the general  
9 vicinity?

10          A. That's correct. That appeared to be on the west  
11 side of US 84.

12          Q. And that well depth is at 350, which is right at  
13 the proposed surface casing setting depth?

14          A. That's correct.

15          Q. And now, let's see. Where's this William  
16 Sultemeier Well that's listed on here? I didn't plot that on  
17 the -- I didn't look at that.

18          A. That well was --

19          Q. Yeah. I see where it is.

20          A. It's one of the southern-most wells. It's  
21 southeast of the proposed Sultemeier No. 2.

22          Q. But you haven't plotted any of these wells where  
23 you can tell us exactly how far they are from the proposed  
24 locations, correct?

25          A. No, I haven't.

1 Q. Okay. Now, Mr. Trujillo asked you a bunch of  
2 questions about the site where the spring was. Which one was  
3 that, Mr. Trujillo?

4 MR. A. TRUJILLO: My recollection is that it's the  
5 Woolley Site.

6 MR. BROOKS: Okay. I believe that's what you had  
7 asked about.

8 Q. (By Mr. Brooks): In your evaluation -- well,  
9 first of all, I'm not sure I remember the testimony for sure.  
10 Did you make an evaluation of the sufficiency of the proposed  
11 runon/runoff prevention measures that Approach is proposing?

12 A. Not quantitatively. I looked at the best  
13 practices identified in the Gold Book and the Oil Conservation  
14 Division best practices book.

15 Q. Okay. And did you give us an opinion that those  
16 measures would be adequate under normal circumstances to  
17 prevent runoff and runon to prevent communication between the  
18 well site and the watershed?

19 A. I gave testimony with regard to my opinion of the  
20 integrity of the well casing and the cementing.

21 Q. Yeah.

22 A. Yes. And I thought that would --

23 Q. What about the site protective --

24 A. The site protective, there would need to be  
25 some -- if the proposed well pad construction and drilling

1 occurred at the time, or the surface conditions were as those  
2 that Dr. Boyle presented, there would have to be some fairly  
3 significant mitigation with regard to trying to make that a  
4 site where --

5 Q. I'm sorry. I didn't mean to interrupt.

6 A. No. There would need to be a fairly robust  
7 amount of mitigation.

8 Q. Now, you're talking about the Woolley Site or are  
9 you talking about these sites in general?

10 A. I'm talking about the Woolley Site, specifically.  
11 I thought that's what we were referring to. I'm sorry.

12 Q. And you say "robust mitigation." Do you mean in  
13 addition to what is recommended, over and above what is  
14 recommended generally in the Gold Book?

15 A. Well, within the Gold Book they talk about, as I  
16 recall, you know, mitigating erosion and runoff and  
17 they mention wetland areas. And I think it's safe to assume  
18 that a higher level of effort would need to be supplied in  
19 those types of environments than there would if you were, you  
20 know, at one of the other locations.

21 Q. You were talking about wetland having a specific  
22 regulatory definition. I guess I'm not really aware of one.  
23 Are you thinking in the New Mexico Environment Department  
24 definition or regulations?

25 A. I'm not sure precisely where that definition is.

1 I'm just trying to exercise caution with regard to the use of  
2 the term in a casual manner. Because I know that wetlands have  
3 some fairly specific requirements attached to them in certain  
4 regulatory framework, and I try to defer to those definitions  
5 and frameworks.

6 Q. Of course, the 401 permit is only required if  
7 it's within jurisdictional waters.

8 A. I believe the term is "waters of the US."

9 Q. Yes. Unless Congress has changed it. I know  
10 there's a bill pending there, but I don't know -- I might not  
11 hear right away if it passed.

12 A. I believe you're correct.

13 Q. That's a very complex issue that the OCD really  
14 doesn't need to be concerned about, because I figure it's up to  
15 the feds to enforce their own rules. But we do need to be  
16 concerned about whether it's in an area that requires special  
17 mitigation measures.

18 A. I would agree. And that is prescribed under the  
19 Clean Water Act.

20 Q. Okay.

21 A. The Federal Clean Water Act.

22 Q. I guess that's really all I have for you.

23 MR. BROOKS: I'm going to want to recall Mr. Reed for  
24 a few questions after this witness is completed. But I will  
25 allow you to do a redirect, Mr. Hall.

## REDIRECT EXAMINATION

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BY MR. HALL:

Q. Mr. Maggiore, you were asked a number of questions with respect to your understanding of the operation of the siting criteria under the Pit Rule and the ability of an operator to locate a well in close proximity to a water well. Isn't it -- Pit Rule notwithstanding -- isn't it true the Oil Conservation Division has additional rules and regulations that prohibit the pollution of water outright?

A. Yes.

MR. HALL: That's all I have.

MR. BROOKS: Since I asked a number of questions, I'll give you five minutes if you want to take him on redirect -- I mean, recross.

## REXCROSS-EXAMINATION

BY MR. A. TRUJILLO:

Q. So special mitigation managers would be required, then, for a site such as Mr. Woolley's?

A. I believe I testified that I would expect a more robust series of mitigation efforts would be appropriate for a location like that.

Q. What about Mr. Sena's where he is 200 feet from -- or Sena No. 2 where a spring is 250 feet from a well site? Would that require special mitigation measures?

A. I don't know. I would need to look at what the

1 flow is, what the seasonality is when we're looking at drilling  
2 the well. There are a lot of other considerations.

3 Q. What about Sena No. 1? That is 200 yards away  
4 from an impoundment and is located in a natural drainage that  
5 runs every year. Would that require special mitigation  
6 managers?

7 A. Well, I would need to look at what the status  
8 of -- if it's a water course, what the flow is, what the  
9 seasonality of it is. It may or may not. I don't have enough  
10 information to answer that definitively right now.

11 MR. HALL: Mr. Examiner, I want to make sure I heard  
12 the question correctly. He said it calls for a special  
13 mitigation manager?

14 MR. A. TRUJILLO: I believe that this testimony was  
15 from -- well, actually, the term was used by the Hearing  
16 Examiner in terms of some kind of oversight of some of these  
17 well sites that are placed in delicate areas.

18 THE WITNESS: I apologize. I didn't --

19 MR. BROOKS: No. You may have misunderstood what I  
20 said. I was tracking what the witness said, and the witness  
21 said "special mitigation measures," as I understood, and that  
22 was the question I asked.

23 THE WITNESS: And that's what I responded to. I  
24 didn't understand that to be a personnel or organizational  
25 term. I understood that to be a level of effort term.

1 Q. (By Mr. A. Trujillo): And that's what I -- I'm  
2 not using it as special personnel. I'm using it in terms of a  
3 special -- and what would that special effort come from?

4 A. Well, what I would envision is to continue with  
5 the literature search, but also to consult with the landowners  
6 and the people on the ground that are the most familiar with  
7 that land and most familiar with the phenomena of the springs  
8 or seasonal runoff or acequia flow and things like that, and  
9 request that they work collaboratively in supplying information  
10 so that we can make the best decision possible.

11 Q. And in the event that we've had landowners  
12 testify that these are not some of the best placements for  
13 these wells, what effect does their testimony have on your  
14 opinion for their placement?

15 A. I'm talking specifically about hydrogeologic  
16 phenomena when I'm -- that is the purview of my testimony.

17 Q. As am I.

18 A. So, I would encourage -- as already has happened.  
19 There has been some requests made of some of the landowners to  
20 share information. And I expect those requests will continue  
21 as this process moves forward.

22 Q. Well, if a landowner is intimately familiar with  
23 the flows and drainage of their properties and says that is a  
24 terrible place for a well, doesn't that hold -- carry some  
25 weight in terms of your recommendation of the feasibility of

1 putting a well there?

2 A. Well, I would want to know why they consider that  
3 a terrible location for a well. If it's a view shed issue, if  
4 it's an ingress/egress issue, if it's a storm water issue, if  
5 it's a cultural issue, and based upon what those specific  
6 issues are, I think there might be different weights attached  
7 to that information and supply.

8 Q. Mr. Maggiore, we're here for specific  
9 applications and the specific testimony of the landowners has  
10 been that these are terrible places for a well because they're  
11 right in the middle of drainages next to creeks, next to  
12 springs, and next to seasonal runoff.

13 MR. HALL: Mr. Examiner, again, in accordance with  
14 your earlier rulings, I'm going pose a relevance objection  
15 because the testimony of the landowners is not relevant to the  
16 decision you have to make here today.

17 MR. BROOKS: Well, I think there is some.  
18 Mr. Maggiore's testimony injected some relevance to it, but I  
19 believe this is argumentative. But you have one more minute,  
20 so you can ask another question if you want to.

21 Q. (By Mr. A. Trujillo): Answer that question.

22 A. I apologize. Can you repeat the question?

23 Q. We have testimony from landowners.

24 A. Yes.

25 Q. That specific testimony has been that that is not

1 a good place for specific wells. There are multiple specific  
2 wells because they are right in the mouth of drainages. They  
3 are very close acequias, they are very close to springs, they  
4 are very close to natural drainages, and in the mouth of a box  
5 canyon. Shouldn't that carry some weight with your  
6 recommendations to place those wells there?

7 A. Well, certainly I would want to know all that  
8 information. But I stand by my previous testimony, that based  
9 on the information I have today, I believe that these -- all  
10 these locations can be drilled in a manner that's protective of  
11 public health and the environment.

12 Q. So that means you've disregarded, then, the  
13 testimony of these landowners in this hearing to say that these  
14 are the reasons why --

15 MR. HALL: Now we are getting argumentative.

16 MR. BROOKS: I agree. And I believe your time is up,  
17 Mr. Trujillo, so I'll sustain the objection to the last  
18 question.

19 Thank you, Mr. Maggiore.

20 At this time, I'd like to call Mr. Reed for a few  
21 questions.

22 FURTHER EXAMINATION OF MR. REED

23 BY MR. BROOKS:

24 Q. Mr. Reed, I'm looking at your schematics, your  
25 well bore schematics, Pages 8 and 10 of Exhibit 1.

1 A. Okay.

2 Q. Okay. You're going to cement surface casings at  
3 350 feet and then you're going to install production casing at  
4 approximately 2000 feet?

5 A. Yes, sir.

6 Q. Now, this symbol with the X, how are you going to  
7 install the production casing? Are you going to cement the  
8 production casing?

9 A. Yes. We propose to cement about 2000 foot of  
10 cement up.

11 Q. Yeah.

12 A. If we encounter other water flows -- or there may  
13 be some reason to cement it and put it back to surface.

14 Q. Okay. Now, I don't see it on your schematic, and  
15 I don't recall if it was in your testimony, I missed it, but  
16 are you going to install tubing?

17 A. Yes, sir. And that's what this symbol is, it's  
18 tubing. This is the production casing, this outside line. And  
19 this is tubing with a packer.

20 Q. Okay. I thought that symbol of X is a packer, so  
21 that's what was getting me confused. And do you know what  
22 diameter of tubing you are going to be using?

23 A. It'll be 2 3/8 tubing.

24 Q. Okay. But while you're drilling from 350 down to  
25 2000, then if there's a fresh water formation at 800 feet as

1 indicated in the case of the Claude Hinkle Well, that would be  
2 open to the well bore at that point. That space would be open  
3 to the well bore, would it not?

4 A. Right. And if we set --

5 Q. Until you set the production string casings.

6 A. Well, if it was a pretty significant water flow.  
7 That's why we left the option to set the 7 inch.

8 Q. Yes.

9 A. And we were fully prepared to set the 7 inch --  
10 even on these 2000 foot wells -- if we hit a significant water  
11 flow.

12 Q. Well, this is my concern here. That if you've  
13 got a water formation at 800 feet and your backup plan is to  
14 use brine mud if your air is not working, I was wondering how  
15 you're going to protect that fresh water formation from  
16 exposure to your brine mud if you have to use it.

17 A. Well, we -- in the instance of the Hinkle Well  
18 and a lot of that, it would be better to set the surface casing  
19 down at 900 foot or so to fully protect that water.

20 Q. Okay. I agree with that statement. Okay. Now,  
21 I don't know a lot about fracing. I know very little about it.  
22 In what configuration of the well do you frac? That would be  
23 after you set your production string casing, wouldn't it?

24 A. Yes.

25 Q. But it would be before you set your tubing?

1 A. Correct.

2 Q. That's what I thought. So your frac fluid when  
3 it flows back is going to flow back inside the production  
4 string casing?

5 A. Right.

6 Q. Okay.

7 A. For a while, as long as the well flows, and then  
8 we'll -- if it's flowing pretty good, a lot of times we'll go  
9 ahead and lubricate a packer in the hole and set it and then  
10 have it sealed off on the pump-out plug in it. And then you  
11 run tubing into the packer and pump the pump-out plug out. And  
12 then you've got your flow coming up the tubing and not the  
13 casing.

14 Q. Okay. I really believe that's all my questions.  
15 Counselors, Mr. Hall, Mr. Trujillo?

16 MR. HALL: I have no questions.

17 MR. A. TRUJILLO: No.

18 MR. BROOKS: Very good. Thank you. You may stand  
19 down.

20 Does that complete your presentation, Mr. Hall?

21 MR. HALL: We have one other item of business. You  
22 had asked for the presentation of the oil and gas lease because  
23 there was some testimony.

24 MR. BROOKS: I'm sorry?

25 MR. HALL: You had requested that the oil and gas

1 lease be made available.

2 MR. BROOKS: I did, yes.

3 MR. HALL: I would be glad to tender that into  
4 evidence, if you like.

5 MR. BROOKS: Okay.

6 MR. HALL: It's filed as record in the Rio Arriba  
7 County Clerk's Office, at 530, Page 25, 24. We have the lease  
8 and the assignment to Approach Oil.

9 MR. BROOKS: Is all this acreage under one lease?

10 MR. HALL: Yes, sir.

11 MR. BROOKS: Okay. And I believe, correct me if I'm  
12 wrong --

13 MR. HALL: We're up to Exhibit 24, so I'll mark it --

14 MR. BROOKS: Correct me if I'm wrong, but I believe a  
15 recorded document doesn't have to be authenticated.

16 MR. HALL: Rule 1005.

17 MR. BROOKS: I used to remember all those things, but  
18 I've forgotten. You may tender that into evidence.

19 MR. A. TRUJILLO: I'd like to object until I actually  
20 get a chance to see if it's --

21 MR. BROOKS: You have a chance to look at it.

22 MR. A. TRUJILLO: -- complete to my knowledge.

23 MR. HALL: We'll make sure we get you a complete  
24 copy. There is a missing page, but we'll tender this one for  
25 now, Mr. Examiner. And we'll get you a full copy.

1 MR. BROOKS: Okay.

2 MR. HALL: If there's no objection to it.

3 MR. A. TRUJILLO: For the record, Page 5 of the  
4 Addendum A, which contains the forced mature clause is missing.

5 MR. BROOKS: So you're going to supplement the record  
6 with a complete copy and furnish a copy thereof to  
7 Mr. Trujillo?

8 MR. A. TRUJILLO: I have a copy.

9 MR. HALL: Let me mark that for you.

10 MR. BROOKS: Okay.

11 MR. HALL: You want me to deliver that you to?

12 MR. BROOKS: If you get it to me by Thursday, then I  
13 can get it to the court reporter when she comes in for the  
14 regular Division hearing.

15 MR. HALL: Okay. I'll be here.

16 MR. BROOKS: One other thing I'd like to request:  
17 Well, first of all, do counsel want to present argument? It's  
18 a little late in the afternoon for it.

19 MR. HALL: Just to say the most dreaded words to any  
20 Hearing Examiner, and that is we request an expedited order,  
21 Mr. Brooks.

22 MR. A. TRUJILLO: And the County opposes an expedited  
23 order.

24 MR. BROOKS: Okay. Mr. Hall, I would like to request  
25 that Approach supplement the record on one matter, because I'm

1 really concerned about these deep wells, particularly, of  
2 course, the Cloyd Hinkle because of the indicated proximity to  
3 one of the locations. But also, there were several deep wells  
4 that were shown on one of the exhibits that the County  
5 introduced. And I forget where it was in the County's  
6 materials, but there were two or three or four deep wells. I  
7 forget exactly how many. I believe it was in Mr. Finch's  
8 presentation.

9 MR. HALL: I think if you look at our Exhibit 14, it  
10 has the water well on the TA Creek.

11 MR. BROOKS: Yeah. The one I was looking at was 14,  
12 and the one that was shown on there is the -- the deep wells  
13 are the Cloyd Hinkle, and then the Leroy Martinez is fairly  
14 deep and the Sultemeier is up toward that depth.

15 But there were some others shown in one of  
16 Mr. Finch's presentations. And I don't know if it was in the  
17 technical or --

18 MR. FINCH: The PowerPoint?

19 MR. A. TRUJILLO: Mr. Hearing Examiner, that exhibit  
20 is a slide of Mr. Finch's PowerPoint which you have a copy of  
21 on the CD directly in front of you.

22 MR. BROOKS: Okay. Could you furnish a copy of that  
23 exhibit to Mr. Hall? And I'm going to request that Approach  
24 ascertain the locations of those deep wells and --

25 MR. HALL: You want vertical distance?

1 MR. BROOKS: Yes. Where they're located in relation  
2 to any of the proposed locations. And also if you could -- and  
3 I'm not asking you to do too involved a search -- but if you  
4 can ascertain if they are active water wells, I would like for  
5 you to report to me whether they are or aren't. Or if you  
6 can't ascertain that, report also that fact.

7 I would like to make that part of the record. And  
8 Approach being the applicant for the permit, I think it's  
9 reasonable to put the burden of obtaining that information on  
10 Approach.

11 MR. HALL: Do you need actual survey?

12 MR. BROOKS: No. I just need you to -- I mean,  
13 you're going to have to -- given the way things are up there in  
14 Tierra Amarilla, my supposition is you're probably going to  
15 have to find out where they actually are and then plat them by  
16 lat/long. That's probably the only way you're going to be able  
17 to find that information.

18 MR. HALL: GPS lat/longs?

19 MR. BROOKS: I'm just asking for best effort. I'm  
20 not asking for any kind of rigorous proof here.

21 MR. A. TRUJILLO: Mr. Hearing Examiner, if I  
22 understand you correctly, you're asking Mr. Hall to supplement  
23 the record with maps?

24 MR. BROOKS: With locations and a plotted distance.  
25 It doesn't have to be an on-the-ground survey. It can be

1 plotted by GPS to where the -- the distance to where these  
2 wells are from the proposed locations. And, of course,  
3 furnishing a copy to Mr. Trujillo. But that goes without  
4 saying. But I guess it ought to be said anyway.

5 MR. A. TRUJILLO: Along those lines, Mr. Hearing  
6 Examiner, in terms of going without saying, let me state that  
7 at the close of the hearing on Friday I was approached and  
8 informed that a conversation was overheard by a member of the  
9 public between Mr. Hall and yourself where Mr. Hall informed  
10 you that he had tried to send you or sent you an e-mail.

11 Without casting any allegations, such an e-mail was  
12 not received by our office and may constitute an ex parte  
13 communication under the rules and regulations of the OCD. We  
14 would like Mr. Hall to provide any copies of any e-mails that  
15 he sent to you and vice versa, so that we can at least  
16 ascertain if any sort of ex parte communication has taken  
17 place.

18 MR. BROOKS: I will be happy to furnish those to you,  
19 Mr. Trujillo. The e-mails that I exchanged with Mr. Hall had  
20 to do with whether or not this was a standard location, which I  
21 think is really only a matter of concern for correlative  
22 rights. And the hearing didn't involve any correlative rights.

23 But I certainly will be happy to furnish them. They  
24 are matters of public record. And I will furnish you -- I  
25 assume you do have copies of Mr. Hall's administrative

1 Nonstandard Location Applications that were filed for the  
2 Sulzemeier and Sena No. 1 wells?

3 MR. A. TRUJILLO: I do not.

4 MR. BROOKS: Okay. I will furnish those to you also.

5 MR. A. TRUJILLO: I do object for the record, then,  
6 that I believe that in that case -- if those e-mails dealt with  
7 anything about the subject matter, the statutory subject  
8 matter, of this hearing, then ex parte communication has taken  
9 place.

10 MR. HALL: Let me establish for the record,  
11 Mr. Examiner. We discussed this first order of business when  
12 this hearing opened on Friday.

13 MR. BROOKS: We did.

14 MR. HALL: This is on the NSL applications we had  
15 pending and had been advised that they could be withdrawn.

16 MR. BROOKS: And I continue to believe that the NSL  
17 applications are wholly irrelevant to the subject matter of  
18 this proceeding since the question of standard location or not  
19 only effects correlative rights and there aren't any  
20 correlative rights issues. But that aside, I will certainly  
21 furnish all this material to Mr. Trujillo.

22 MR. A. TRUJILLO: And I believe for the record that  
23 Mr. Hall could accomplish the same goals by contacting anyone  
24 at OCD legal without contacting the Hearing Examiner regarding  
25 well applications in a pending hearing.

1 MR. BROOKS: Well, it actually -- I'm not going to  
2 argue the point any further. I will provide you with copies of  
3 all the materials that were exchanged with regard to the NSL  
4 applications.

5 And no action has been taken on the NSL applications  
6 because it appeared that from -- based on what Mr. Hall --  
7 well, I understood you to withdraw them based on what you  
8 represented.

9 MR. HALL: That's correct. And for the record here  
10 today, counsel should know the NSL applications are always  
11 directed to the Division Director, Mr. Fesmire.

12 MR. BROOKS: They are. And I'm the person who  
13 handles them. But I have coded those as being withdrawn.

14 Okay.

15 MR. HALL: I'll be glad to copy anything that you  
16 provide to counsel as well.

17 MR. A. TRUJILLO: Along those lines, a Public Records  
18 Request, pursuant to the Inspection of Public Records Act, has  
19 been filed regarding any e-mail sent from Mr. Hall to the  
20 Hearing Examiner for the period of time -- I believe it is  
21 May 1st through today.

22 MR. BROOKS: Okay. Copies of those will be --  
23 unfortunately, I don't know how to -- when they did the last  
24 upgrade, they eliminated the way I used to attached e-mails to  
25 e-mails, so I don't know how to do it anymore. I will mail

1 those to you tomorrow and I will fax them if you want to give  
2 me fax numbers.

3 MR. A. TRUJILLO: Mr. Hearing Examiner, 753-4750.

4 MR. BROOKS: 753-4750. I assume that's area code 505  
5 from here?

6 MR. A. TRUJILLO: 505.

7 MR. BROOKS: Okay. Anything else before I call for  
8 public comment?

9 MR. HALL: If my technical witnesses may be excused.  
10 That's all we have, Mr. Examiner.

11 PUBLIC COMMENTS

12 MR. BROOKS: Okay. If there is anyone here who  
13 wishes to make a comment before we close the proceedings?

14 It looks like we don't have an unbearable number of  
15 people, so I will allow three minutes each for the people who  
16 are present. You may proceed.

17 Well, I think I can -- yeah. I think it will be  
18 fairly flexible. Please don't go on to great length. I'll  
19 hold the stop watch on them.

20 State your name for the record and spell it.

21 MR. MICOU: My name is Johnny Micou, it's spelled  
22 M-i-c-o-u. And I'm actually going to read for someone else,  
23 and his name is Robert Coward, C-o-w-a-r-d.

24 The statement, again, is: "My name is Robert Coward.  
25 I represent myself as a concerned citizen of New Mexico. I

1 have a Ph.D. in geology from Rice University. I have worked in  
2 the oil and gas business for almost 30 years. I have worked  
3 for major oil companies, for independents and for myself. I  
4 have drilled wells in the same rocks in which Approach would  
5 like to drill.

6 "I have looked at hundreds of wells in Rio Arriba  
7 County, particularly in the Jicarilla Apache Reservation. For  
8 the past seven years, I've been involved with water resource  
9 projects. Until recently, I was employed by John Shomaker and  
10 Associates, Inc. Steve Finch works for them.

11 "I want to make statements on two topics raised in  
12 this hearing.

13 "1. The OCD needs to prohibit extraction of oil and  
14 gas from formations that contain potential water supply that  
15 could be put to beneficial use for the people of New Mexico.  
16 The OCD has the authority to protect groundwater with a  
17 background concentration of 10,000 milligrams per liter or less  
18 that can be put to beneficial use and to protect the flowing of  
19 springs, 19.15.1.19, Prevention and Abatement of Pollution;  
20 19.15.3.106, Sealing off the Strata.

21 "1A. There is fresh water with excellent water  
22 quality much less than 10,000 milligrams per liter in the same  
23 formations that Approach intends to test for oil and gas.  
24 There is clear, unambiguous data from a drill stem test and  
25 completion reports in T228NR4E and from the regional water

1 planning mentioned by Steve Finch.

2 "The formation water differs greatly from that in the  
3 Puerto Chiquito Fields. That water is saline and it is 10  
4 times much more saline than the TA area.

5 "1B. This fresh water is connected to recharge areas  
6 and may be connected to springs in the area and is part of the  
7 regional planning system that supplies water to people living  
8 in the Chama Basin.

9 "1C. The deep Sultemeier test is located in an area  
10 where faults have been mapped. These faults and associated  
11 fracturing would enhance connectivity between aquifers at  
12 difference depths.

13 "1D. Any completion techniques, i.e., fracing,  
14 acidizing into fresh water-bearing zones may contaminate these  
15 zones.

16 "1E. If Approach were to find oil and gas in zones  
17 that have potential for beneficial uses, such as aquifers, long  
18 term drilling in these intervals may draw down these water  
19 resources.

20 "2. The people living and working in this part of  
21 the Rio Arriba County need to raise a big stink about the  
22 so-called dominance of mineral rights over the rights of  
23 surface owners. The laws about this in this state need to be  
24 changed. The time is right to give the surface owner control  
25 over his own property on an equal basis as the owner of

1 minerals. A few thousand dollars will not compensate  
2 landowners, such as the Sultemeier family for the loss of  
3 property values.

4 "The oil companies could be more generous, but they  
5 won't. They could offer royalty payments or a percentage of  
6 the profits at least equal to the loss in the value of the  
7 property, but they won't. There is an increasing number of  
8 communities that are faced with the same problems. People need  
9 to join together to change the laws."

10 I'm finished with the statement.

11 MR. BROOKS: Thank you. Next? Again, please state  
12 your name for the record and spell it for the benefit of the  
13 reporter.

14 MS. VARELA: My name is Janice Varela with a V, and I  
15 am from the New Mexico Acequia Association. I'm a community  
16 organizer.

17 MR. BROOKS: Now would you spell your full last name.  
18 I realize in Spanish -- it's very easy to spell Spanish names  
19 if you're familiar with Spanish, but not everyone is.

20 MS. VARELA: Sure. V as in Victor, a-r-e-l-a. First  
21 name is Janice. And I am here to present comments on behalf of  
22 Paula Garcia. She is the Executive Director of the New Mexico  
23 Acequia Association, and she had to leave. She was here  
24 earlier. She had to take a flight. And I'm going to read a  
25 letter. It's short. And it's addressed to Mr. Fesmire.

1           "Dear Mr. Fesmire: I'm writing on the behalf of the  
2 New Mexico Acequia Association to express concern about permits  
3 recently granted by the Oil Conservation Division in Rio Arriba  
4 County. The New Mexico Acequia Association is a statewide  
5 advocacy organization for acequias whose mission is to protect  
6 water for agricultural and community uses. We seek to protect  
7 water rights and water quality, revitalize the agricultural  
8 economy, and strengthen our farming and ranching traditions.

9           "Acequias are a centuries-old legacy in New Mexico  
10 that continue to provide water for thousands of families who  
11 continue generational farming and ranching traditions. They  
12 are vital to the state's cultural heritage as well as the  
13 agricultural economy that supports all or part of the income of  
14 many families throughout the state. The State of New Mexico in  
15 recent years has recognized their importance by passing  
16 legislation strengthening their authority over local management  
17 of water rights and by passing a memorial recognizing them as  
18 cultural patrimony of the State of New Mexico and requesting  
19 various agencies to work with acequias on matters of state  
20 policy.

21           "We were dismayed to discover that the OCD granted  
22 permits without full consideration for the impacts to water  
23 quality. In particular, we are gravely concerned at the  
24 permits for drilling on the property that could impact acequias  
25 (Sena No. 1 and Sena No. 2). It appears as if the OCD granted

1 the permits without adequate consideration for the potential  
2 impacts on the watershed and on the water rights that are part  
3 of the historic acequias of the area. Both drilling sites pose  
4 potential threats to water quality, particularly the proposed  
5 site that is less than 100 yards from a community acequia.

6 "The OCD is charged with protecting the state's  
7 safety and welfare. We urge you to reconsider this approval  
8 and review the proposed applications more carefully. Both  
9 Approach Energy and the OCD should demonstrate greater  
10 attention to the concerns of local landowners and communities  
11 who will be impacted by drilling. We fully support the actions  
12 of Rio Arriba County to challenge these permits. For more  
13 information about our organization and our position, please  
14 call 505-995-9644."

15 Thank you so much. And I would like to submit this  
16 for the record.

17 MR. BROOKS: Thank you. Okay. Give it to the  
18 reporter.

19 MR. GLEADLE: My name is Brian Gleadle. I'm the  
20 chief of operations for the Game and Fish Department.

21 MR. BROOKS: Okay. Could you spell your name,  
22 please.

23 MR. GLEADLE: The spelling of my last name is  
24 G-l-e-a-d-l-e.

25 MR. BROOKS: Thank you. Proceed.

1           MR. GLEADLE: Typically the Game and Fish Department  
2 is consulted with federal land management agencies regarding  
3 any oil and gas drilling. Given the fact these applications  
4 are made on private property, some of that typically slips  
5 through the cracks and the department isn't consulted to a  
6 level that would give us the ability to coordinate the  
7 activities for any type of drilling activities.

8           I think, given these applications, the overreaching  
9 concern that the department currently has is just the lack of  
10 information regarding the placement of these well locations;  
11 specifically, critical habitats for deer, migration routes for  
12 elk and also the cold water fisheries and habitats throughout  
13 the upper reaches of the TA Creek.

14           While it concerns regarding oil and gas development,  
15 the hazards are typically noted through conversations and  
16 through most of the technical discussions. I think that the  
17 defendant shares the concerns that the drilling in such a close  
18 proximity to any of these perennial streams, even with best  
19 management practices, are of concern when those best management  
20 practices cannot guarantee that given a spillage or a -- any  
21 type of accident, that those water qualities can be controlled  
22 even with the -- specifically for wildlife, or even public  
23 consumption.

24           The department would offer our support to the OCD to  
25 evaluate these sites specifically for onsite concerns or

1 issues. Typically in these areas we might even have issues  
2 regarding the meadow jumping mouse which is currently being  
3 under evaluation for listing. And this area could, in fact,  
4 support those type of species. But without those types of  
5 onsite investigations, that type of information may be lost  
6 forever.

7 Through the testimony given today, it sounds like  
8 most of the ecological and hydrological onsite investigations  
9 were actually conducted after the application process was made.  
10 So I think a lot of that information might be backtracked, but  
11 it's important that that work be done.

12 Thank you.

13 MR. BROOKS: Thank you. Next? Again, please state  
14 your name for the record.

15 MR. ATKINS: My name is Arnold Atkins, A-t-k-i-n-s.  
16 I'm here representing the Truchas Chapter of Trout Unlimited.  
17 Trout Unlimited is a national conservation organization with  
18 thousands of members. In New Mexico there are nearly 1,000  
19 members and about 500 of them are with the Truchas Chapter,  
20 which is headquartered here in Santa Fe, which I represent.

21 I became a New Mexico residence in 1946, and I'm  
22 familiar with Northern New Mexico topography, history and  
23 traditions. I'm not personally familiar with the Rito de  
24 Tierra Amarilla, TA Creek, but I'm familiar with the terrain.  
25 Since it is private property, I've never actually been there.

1           Neither I nor Trout Unlimited has a position or  
2 objection to responsible development. We are, however,  
3 concerned with what sounds like voluntary compliance with best  
4 management practices without monitoring. And by that I mean  
5 that TU would generally oppose any project which did not place  
6 high priority, even guarantees, on protecting the watershed,  
7 the riparian habitat, and the aquifer.

8           I would, therefore, be opposed to such a project  
9 which didn't guarantee absolute protection of these entities  
10 and have some sort of punitive consequence for failure to  
11 protect these resources and a punitive consequence for failure  
12 to mediate any failures of protection.

13           On face value, drilling in a marsh or wetland seems  
14 extremely hazardous, even risky. How can one build berms and  
15 ditches in a marsh? How can building a well pad in a wetland  
16 not affect the watershed. It may be possible. But guarantees  
17 should be mandatory. We don't need another Superfund site or  
18 even a baby fund site.

19           Finally, Rito de Tierra Amarilla is said to contain  
20 Rio Grande Cutthroat Trout, our state fish, and a subspecies  
21 which was recently declared a candidate species for protection  
22 under the Endangered Species Act. I'm not familiar with this  
23 stream or the fish that reside in this stream, but we would be  
24 particularly wary of operations which might potentially damage  
25 the habitat of our state fish and note that any such damage

1 could soon become a violation of the Endangered Species Act  
2 further increasing our recommendation for stringent mandatory  
3 guarantees before any project approval.

4 MR. BROOKS: Thank you, Mr. Atkins. Anyone else?  
5 Would you please come forward? State your name for the record.

6 MR. McREYNOLDS: My name is Greg McReynolds. I work  
7 for Trout Unlimited, the national organization. We represent  
8 about 150,000 sportsmen across the United States, about 400  
9 chapters. I'd like to make three quick points.

10 One, Rito de Tierra Amarilla is listed as a host for  
11 a population of Rio Grande Cutthroat Trout. As Arnold  
12 mentioned, in light of the pending listing under the federal  
13 ESA, this population of native trout is extremely valuable to  
14 the State of New Mexico. And, frankly, here in New Mexico, any  
15 population of Rio Grande Cutthroat Trout is going to be  
16 essential to the long term persistence of the species.

17 Second point: Outdoor recreation here in New Mexico  
18 contributes more than 2 billion to the economy. Clean water  
19 and intact habitat are essential to this substantial portion of  
20 our economy. The fact that there are more than 11,000 wells  
21 already in Rio Arriba County, I think that attests to the fact  
22 that we're not protesting every single bit of energy  
23 development out there.

24 This is a pretty important place, and the simple fact  
25 that there's so many people here fighting for this one specific

1 area is probably a good indication that we shouldn't be up  
2 there drilling.

3 Last point: In an April 6th news story in the Ft.  
4 Worth Star Telegram, Approach Resources CEO J. Ross Craft is  
5 quoted as saying, "If we drill eight wells and don't do well,  
6 we still haven't lost a lot of money."

7 What that says to me is for Approach, this is a  
8 low-risk undertaking. For New Mexicans and residents of  
9 Rio Arriba County, this is a big gamble. They're not going to  
10 win anything out of this and they have a lot to lose. This is  
11 one of those places that needs to be protected and not drilled.

12 Thank you.

13 MR. BROOKS: Thank you, Mr. McReynolds. You sir?

14 UNIDENTIFIED PUBLIC MEMBER: My name is Oscar  
15 (inaudible). I represent the New Mexico Wildlife Federation of  
16 which we have 7,000 supporters and members. And I also am  
17 connected with the National Wildlife Federation, which has  
18 approximately 1 million members in the United States.

19 I have been dealing with oil and gas issues for quite  
20 a number of years, anywhere from a Congressional level all the  
21 way down to the state and county level. And my past  
22 experience -- or brief experience -- regulating the oil and gas  
23 industry when I worked for the Oil Conservation Division  
24 dealing with contamination and cleanup. So I have some  
25 experience.

1           As a sportsman, this is a critical habitat, critical  
2 to fisheries, especially since 3 percent of the habitat for the  
3 Rio Grande Cutthroat -- we're down to 3 percent of the habitat  
4 that the Rio Grande Cutthroat used to have -- this is a  
5 critical component for their fisheries. And especially since  
6 it's designated as a cold water fishery, every precaution  
7 should be taken.

8           And in this case, I agree with Rio Arriba County's  
9 petition. This should not be developed because of the aquifer,  
10 and the potential for contamination, and the resources there.  
11 There are a number of aquifers identified above and below the  
12 production zones that we know little of. And they said they  
13 can be communicated or have contamination potential, especially  
14 when you deal with fracking fluids. And the petroleum engineer  
15 said that he couldn't guarantee it.

16           Now, if you look at the cost to the nation, fracking  
17 has contaminated and got out of zone and contaminated fresh  
18 water aquifers and polluted private wells. In the case of up  
19 in Rifle, Colorado, the hydrocarbons got out of zone and  
20 they -- the gas, you could light the nearby creek with a  
21 lighter.

22           So there's a lot of potential there, and what I think  
23 you need to do if you're going to proceed with this, you need  
24 to make sure these voluntary best management practices are  
25 actually a stipulation of the Oil Conservation Division instead

1 of relying on a voluntary commitment with no teeth --  
2 especially on private land.

3           So you need to have -- the other thing I would  
4 recommend is the American Water Works Association requires  
5 drilling of water wells and those drilling fluids have to be  
6 toxic free. You're penetrating a lot of aquifers. You have  
7 some testimony that you might have lost fluids and circulation  
8 that may allow contamination using the type of drilling fluids,  
9 and you may allow those fluids to get into the aquifer and  
10 contaminate a large zone.

11           You have no monitor well network to insure that your  
12 drilling activities or fracing fluids will not contaminate or  
13 affect those drinking water zones above or below. So that  
14 should be a requirement. And also you should go in each one of  
15 these water wells and do background testing to make sure of all  
16 the water quality parameters and not just the TDS. You need to  
17 look for all the organics and do a complete sweep of testing to  
18 make sure that they match the Safe Drinking Water Act  
19 requirements.

20           Now, under the Energy Bill 2005, under the Safe  
21 Drinking Water Act which established the drinking water  
22 standards for public water systems, Congress in 2005 exempted  
23 fracing fluids. So if a company comes in and uses fracing  
24 fluids and it contaminates the aquifer, they're not responsible  
25 for cleanup or making sure that they get cleaned up.

1           As common practice, fracing fluids are considered  
2 proprietary and not being open and, I guess, listed in what  
3 they are using. That should be a requirement of OCD. Not only  
4 the OCD should know those fluids, but also the general public  
5 should know about all fluids that are being used in the  
6 drilling phase.

7           One of the other requirements -- and everyone talks  
8 about the drilling Pit Rule. That is fine for drilling. But  
9 if you go into the production rules, the OCD has no  
10 requirements for secondary containment for the tank batteries.  
11 If you look at your spill reports, hundreds of spills occur at  
12 those tank batteries. You are either going and getting those  
13 fluids out of them or oil and gas or condensate or produced  
14 water allows spills and leaks to occur at those sites. There's  
15 no secondary requirements.

16           A few places where you have vulnerability to shallow  
17 groundwater, a few industry practices are going and putting in  
18 secondary containment underneath the tank batteries and having  
19 secondary containment. That should be a requirement. Because  
20 if you put one in there -- and the spill reports indicate it --  
21 if you have a spill, especially in the wintertime, you have  
22 freezing and busting valves or accidental opening of valves.  
23 That way you can mitigate and you have it onsite.

24           Right now on these drill pads, if you have a spill or  
25 leak or an overflow valve is not required, all these things

1 overflow, and you got spills and leaks all over the place right  
2 in a very vulnerable watershed.

3 So those are some of the common approach tactics that  
4 should be required and stipulated if you proceed. But in my  
5 opinion, this is too special a place. You have too high  
6 vulnerability to contamination and you have inadequate site  
7 evaluation to determine what's there.

8 Thank you for your time.

9 MR. BROOKS: Thank you. Anyone else? Yes, ma'am.

10 MS. SULTEMEIER: I just want to -- I'm Beth  
11 Sulteimeier. I'm representing the Sulteimeier family. And I'm  
12 going to go a little bit backwards. I just want to mention on  
13 Sulteimeier Well No. 2, that well has not been approved yet.  
14 And we have not agreed to the site or things, especially with  
15 looking at the proposed road through the elk pasture.

16 Sulteimeier No. 1, you know, I've stated very clearly  
17 that we did not approve that site, not only because of  
18 sentimental reasons because it was my dad's favorite spot, but  
19 over the weekend we were talking about that was also one of the  
20 places that our family has dreamed of having a cabin -- as well  
21 as another location. There are several locations we like  
22 adjacent to No. 2.

23 But after hearing all the testimony over the last  
24 couple of days, we've just become more concerned even with  
25 putting it in the box canyon meadow with the runoff and things

1 like that. And then, also, the proximity to two wells, very  
2 close, which I marked in my testimony, and things like that.

3 And also, we had discussed that because the well has  
4 not been drilled on Sultemeier No. 1, it is the only place so  
5 far that they had already put in a lined tank and a pad. Now  
6 they're stating that they're going to use a closed-loop system.  
7 Also, following the Gold Book standard, that would all have to  
8 be removed now, because the pad is full of river rock and  
9 things. It wouldn't meet that standard, apparently. And then  
10 they lined tank.

11 We would like that permit to be gone away and removed  
12 and started again. And this would probably be the best time to  
13 do that since the well has not been drilled. We would like to  
14 have that permit withdrawn and go with another -- work on  
15 something else.

16 That's it.

17 MR. BROOKS: Okay. Thank you. Mr. Hall, on that  
18 subject, I didn't really quite understand. Are you going to  
19 use that location for the Sultemeier -- is Approach going to  
20 use that location for the Sultemeier No. 1? Or are they going  
21 to move that? I sort of got the idea they were going to move  
22 that.

23 MR. HALL: The pit in the liner will be removed.

24 MR. BROOKS: Okay. You're going to use the location?  
25 You're just not going to use the pit?

1 MR. HALL: Right.

2 MR. BROOKS: Okay. And do you or do you -- not that  
3 it's relevant as far as OCD is concerned, but you do not have a  
4 surface use agreement with the Sultemeiers at this point; is  
5 that correct?

6 MR. HALL: You know, I'm not altogether sure. I  
7 may -- you want me to find out?

8 MR. BROOKS: No. That's not necessary because you  
9 have the options that you have under the Surface Owners  
10 Protection Act, and I am sure you will comply with one or the  
11 other of them, and if not, you'll be subject to the penalties  
12 that that Act provides.

13 Anybody else before we adjourn?

14 MR. SCHREIBER: I'd like to make a comment.

15 MR. BROOKS: Oh, I'm sorry. Sure.

16 MR. SCHREIBER: I always count on Oscar to cover what  
17 I need to talk about, but he missed it.

18 My name is Don Schreiber, S-c-h-r-e-i-b-e-r. Mr.  
19 Hearing Examiner, thank you for providing this opportunity to  
20 speak. I represent the Devil Springs Ranch in Rio Arriba  
21 County. It's a constituency of two, my wife and I.

22 We get the feeling, listening to the closed-loop  
23 system that has been explained to us here extensively over the  
24 last couple of days, that it's some kind of a magic bullet or a  
25 silver bullet solution to the problems, and would solve the

1 watershed concerns that the landowners have expressed and  
2 certainly the expert witnesses have maintained.

3 But it is not magic. The closed-loop systems are  
4 subject to all the same accidents that Approach has already had  
5 in Texas; holes in the bottom of the tank, roustabout crews not  
6 picking up, not hooking up the hose; cows opening the valves;  
7 God striking your location, fires. We have all those same  
8 accidents waiting to happen with a closed-loop system. But now  
9 if a closed-loop system is used, we have the additional  
10 liability facing us that we're all too familiar with, not a  
11 hypothetical, it's something that we all know, unfortunately,  
12 and that's the simple traffic accident.

13 This closed-loop system's virtue is also its Achilles  
14 Heel. And now that fluid, those cuttings, all of that will  
15 have to be trucked away -- and as Mr. Reed, I believe,  
16 testified -- to a disposal facility, an approved one by the  
17 state. They have one picked out. And they specified it as a  
18 basin disposal facility.

19 So when that drilling fluid, cuttings, and all the  
20 rest of the waste of that drilling location gets up and gets  
21 mobile, it's not just Mr. Woolley's problem or his site, or  
22 Mr. Sena's problem or Ms. Sultemeier's problem or Mr. Garcia's  
23 problem or Ms. Roller -- it's everybody that's on the highway.  
24 It's the creek, it's the watershed.

25 It's all of our problem now, because those things

1 that you and I know about -- traffic accidents -- describe not  
2 an exotic oil field accident or some transmutation between  
3 underground aquifers and fractures and CO2 pressuring up in a  
4 vertical wing and blowing the top out of the Mancos Shale or  
5 lighting our water faucet on fire -- none of those sort of  
6 science fiction things that we might imagine.

7 We're subject, all of us, including Mr. Hall, to a  
8 T-bone, to a head-on collision, to a rear-end, and especially  
9 to a rollover. That's a very dangerous highway. My wife and I  
10 live on the other end of that highway. There's oil field wreck  
11 after oil field wreck after oil field wreck. Commonly, they  
12 will haul that out of there at 3200 gallons at a time in a  
13 vacuum truck far away to the basin disposal facility.

14 So no longer is it the problem of people that live,  
15 like Mr. Holloway does, on Highway 64 there and the traffic  
16 that might be going up between TA and Tres Piedra, now it's the  
17 problem of the people all along the route. Now it goes through  
18 TA. Now the truck goes to Chama. Now it goes to Lumberton, to  
19 Dulce, what's remaining of our town Govenador, into Blanco, New  
20 Mexico, over the San Juan River, then to Bloomfield where they  
21 turn right and head up five miles for a journey of 120 miles to  
22 the basin disposal pit. Then that truck turns around and comes  
23 back.

24 So, once again, instead of getting to be a rancher, I  
25 find myself trying to defend ourselves and our way of life and,

1 in fact, our family. Because my wife has been run off the road  
2 three times from off-road traffic of oil and gas well trucks  
3 exactly similar to this one. Those are reported.

4 And if the OCD doesn't look at the production, the 30  
5 years that happens after the closed-loop system goes away, and  
6 if the creek and the watershed and the rest of us survive  
7 trucking all that closed-loop waste out of there, OCD must  
8 recognize that the production for the next 30 years is an  
9 exposure every day just to the types of losses Mr. Reed and his  
10 company have had.

11 I don't think that it's beneficial whatsoever to  
12 condemn Approach. If you look at the RCC records for the  
13 months in which those losses that Approach had theirs -- and  
14 I'm sure they didn't want them, and I'm sure they did  
15 everything they could not to have them. I have no doubt of  
16 that. But there are 112 losses in those three months -- in  
17 those two months -- three months -- among your fellow oil field  
18 workers, operators, contractors -- in Texas. Good companies,  
19 Conoco, Devon.

20 I find your industry fascinating. I think it's  
21 complicated. I don't think it's rocket science. Let me know,  
22 Mr. Hall. But in rocket science, I believe our country puts  
23 the absolute best that the country has to put forward into  
24 every rocket in space. And when we launch those people, our  
25 astronauts, off this planet, it's with every single possible

1 accident prevention and thoughtfulness that we could possibly  
2 hope and wish for and bring this country's wonderful resources  
3 to bear on. But do we have accidents in space? Tragically, we  
4 do.

5 Let's not let that happen here. Thank you for your  
6 time.

7 MR. BROOKS: Thank you. Anyone else? Very good. We  
8 stand adjourned.

9 [Hearing concluded.]

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REPORTER'S CERTIFICATE

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I, JOYCE D. CALVERT, Provisional Court Reporter for the State of New Mexico, do hereby certify that I reported the foregoing proceedings in stenographic shorthand and that the foregoing pages are a true and correct transcript of those proceedings and was reduced to printed form under my direct supervision.

I FURTHER CERTIFY that I am neither employed by nor related to any of the parties or attorneys in this case and that I have no interest in the final disposition of this proceeding.

Signed this 23rd day of June, 2008.



JOYCE D. CALVERT  
New Mexico P-03  
License Expires: 7/31/08

1 STATE OF NEW MEXICO )  
2 COUNTY OF BERNALILLO )

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I, JOYCE D. CALVERT, a New Mexico Provisional Reporter, working under the direction and direct supervision of Paul Baca, New Mexico CCR License Number 112, hereby certify that I reported the attached proceedings; that pages numbered 1-234 inclusive, are a true and correct transcript of my stenographic notes. On the date I reported these proceedings, I was the holder of Provisional License Number P-03.

Dated at Albuquerque, New Mexico, 23rd day of June, 2008.



Joyce D. Calvert  
Provisional License #P-03  
License Expires: 7/31/08

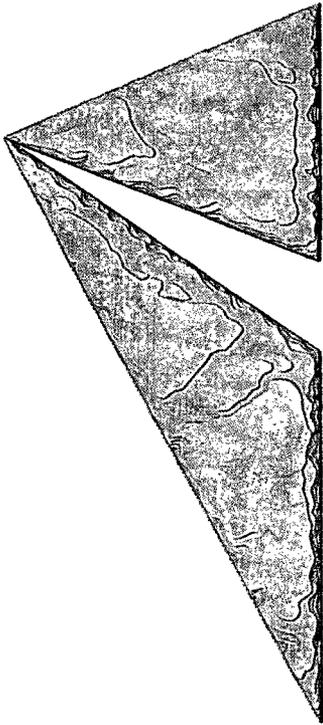


Paul Baca, RPR  
Certified Court Reporter #112  
License Expires: 12/31/08

**NMOCD Case Nos. 14134 and 14141**  
**Approach Operating LLC**  
**June 20, 2008**

**Exhibit Index**

<b>EXHIBIT</b>	<b>DOCUMENT</b>
1.	Approach Power Point Slides: Operations/Interests
2.	New Mexico and Colorado Structural Features (Poster)
3.	Structural Features Within the Tierra Amarilla Land Grant (Poster)
4.	El Vado East Cross Section (8 1/2 X 11)
5.	El Vado East Regional Production
6.	Geologic Maps
7.	Tierra Amarilla Land Grant Lease Map
8.	Well Files (A-I) (APD's with attachments)
9.	Operations Plan Sena No. 1
10.	Operations Plan Sultmeier No. 1
11.	Gold Book Excerpts
12.	Maggiore C.V.
13.	Excel C.101 Data
14.	Excel Waters Database
15.	Water Data Map
16.	Soils Map NRCS
17.	Soils Map NRCS



**Approach**  
Resources Inc.

\_\_\_\_\_  
**New Mexico Oil Conservation Division**

\_\_\_\_\_  
Santa Fe, New Mexico  
June 20, 2008

NMOCD Case Nos. 14134 and 14141  
June 20, 2008  
Approach Operating LLC  
Ex. No. 1

[www.approachresources.com](http://www.approachresources.com) | 6500 W. Freeway, Suite 800 Fort Worth, Texas 76116 | 817.989.9000

# Management and company history

- Approach Resources Inc. was founded in 2002
- Approach management/technical team has an average of 28 years of industry experience
- We operate over 300 wells
- Areas of operation:



(1) As of December 31, 2007 unless otherwise noted.

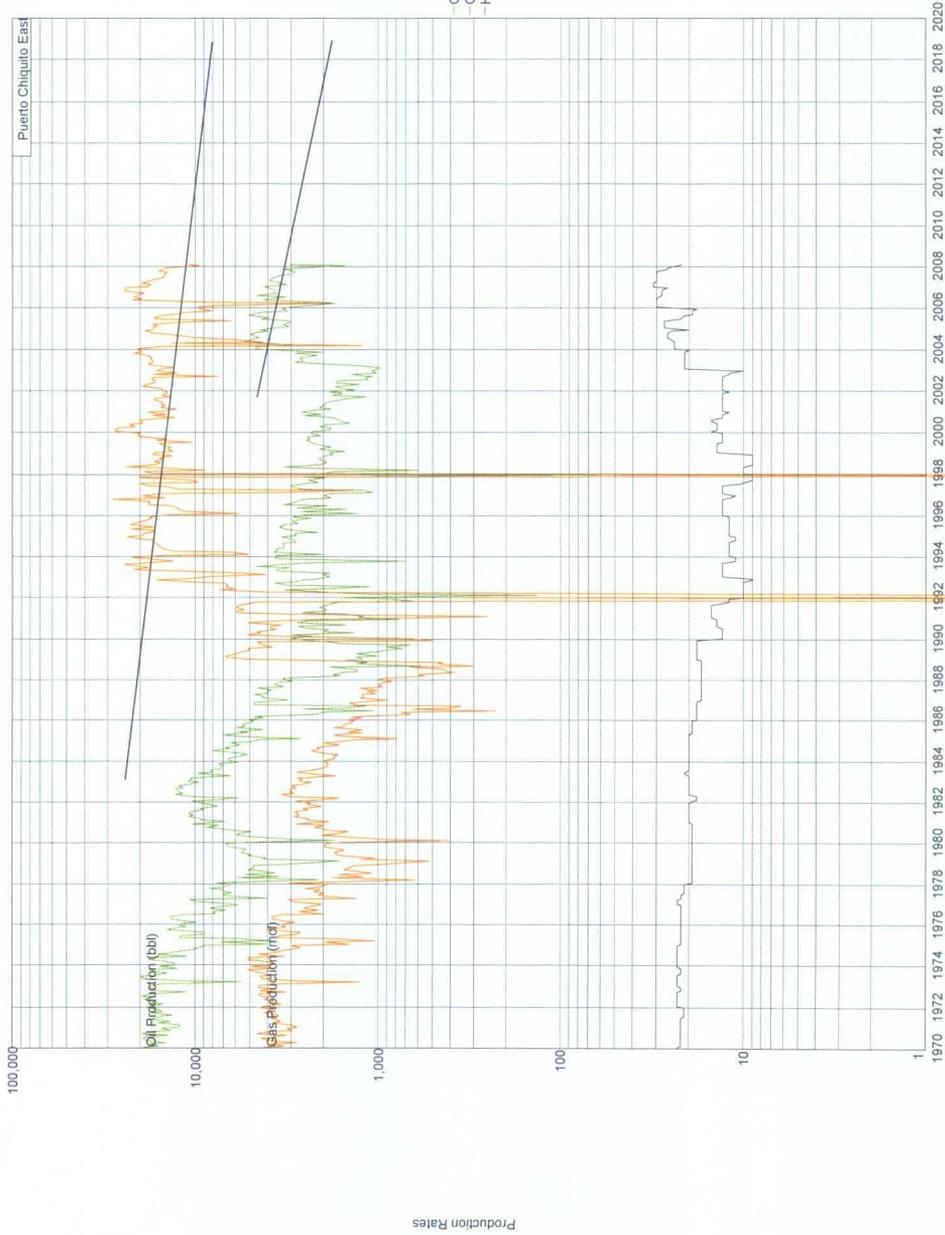


# Puerto Chiquito East Field - Production Summary

County

<b>Puerto Chiquito East</b>
Oil Production (per month)
Gas Production (per month)
MCFe (per month)
5,243,519
50
Cumulative
104,870
Reserves
EUR

MULTIPLE - PUERTO CHIQUITO EAST

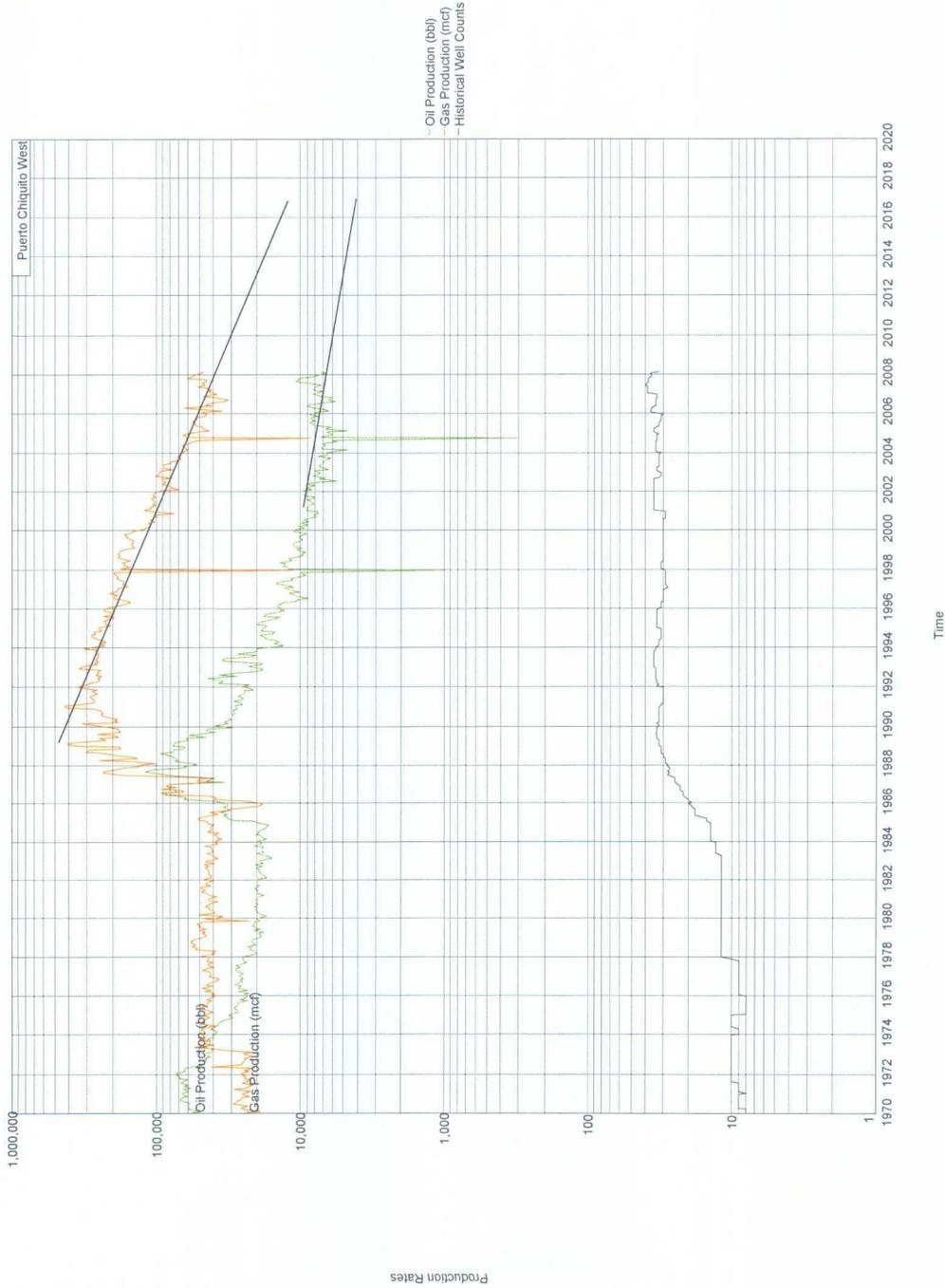


# Puerto Chiquito West Field - Production Summary

Arriba County

Puerto Chiquito West	
Oil Production (bbls)	14,342,893
Gas Production (mcf)	1,637,000
Number of wells	56
Cumulative Production Reserves	285,355 EUR

MULTIPLE - PUERTO CHIQUITO WEST

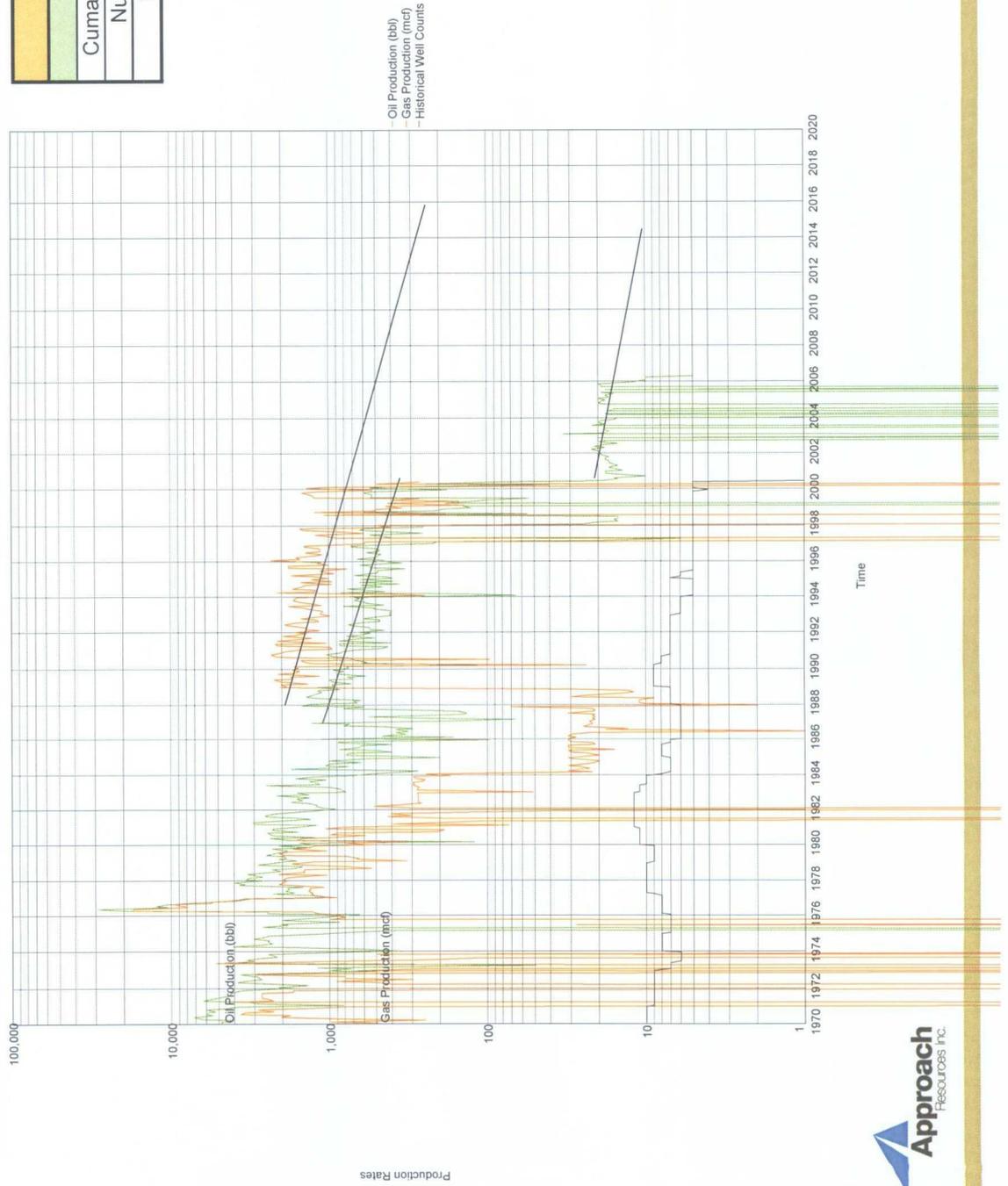


# Boulder Field - Production Summary

Rio Arriba County

Boulder Field	
Oil Production (bbls)	2,821,120
Cumulative Production	32
Number of wells	88,160
EUR / Well	

MULTIPLE - BOULDER



# Surface Pipe Depth and Size - 2000 to 2800 FT

## Puerto Chiquito Field – Rio Arriba County, New Mexico

Lease Name	Well Num	Surface Pipe Size	Surface Pipe Depth	Driller TD	Proj Depth	Field Name
JICARILLA 287	11	7-5/8	20	2180	2300	PUERTO CHIQUITO
BETSY	3	7-5/8	40	2184	800	PUERTO CHIQUITO
GREVEY	2	10-3/8	30	2185	2300	PUERTO CHIQUITO
JICARILLA	16-20	10-3/4	99	2202	2800	PUERTO CHIQUITO
BETSY-N	20	9-5/8	60	2239	2400	PUERTO CHIQUITO
SMITH	1/G-3/	8-5/8	146	2242	2250	PUERTO CHIQUITO E
PUERTO CHIQUITO	3-5	8-5/8	53	2288	2300	PUERTO CHIQUITO
JICARILLA	8-30	9-5/8	87	2324	2850	PUERTO CHIQUITO
USL-BAJO	1	10-3/4	150	2357	2700	PUERTO CHIQUITO
PUERTO CHIQUITO-MANCO	26	9-5/8	150	2511	3000	PUERTO CHIQUITO
FEDERAL	2-23	13-3/8	57	2630	2650	PUERTO CHIQUITO
ROYAL-HARVEY	1	8-5/8	100	2664	2700	PUERTO CHIQUITO
CIDO	6	8-5/8	200	2670	2700	PUERTO CHIQUITO E
SILVER	1	10-3/4	101	2675		PUERTO CHIQUITO
RD & P	2	8-5/8	100	2697	2400	PUERTO CHIQUITO E

Avg Depth:  
93

# Wellbore Schematic - Rio Arriba Shallow Well

John Manning 6/9/2008

Call Steve Gillett @ ext 4748 for guidance in using this spreadsheet

Approach Resources  
Rio Arriba Well

Generic Shallow Well

Rio Arriba Co.

Surface Csg 9 5/8" @ 350'

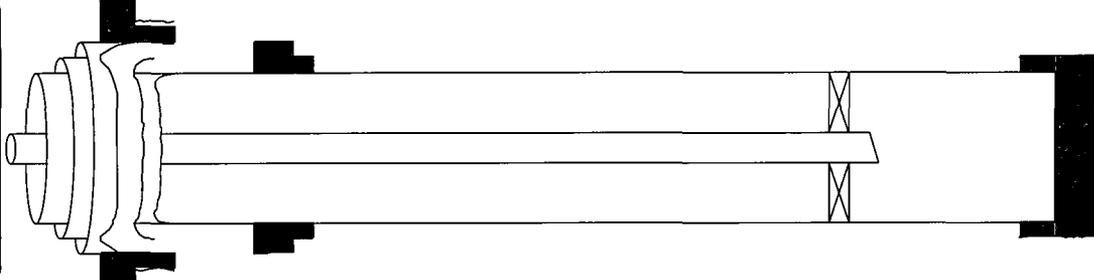
TOC Surface Casing @ Surface

TOC Prodn Csg @ TBD

Hole Size 8 3/4"

Production Csg 4 1/2" @ 2000'

PBTD = 2000'



# Surface Pipe Depth and Size - 4000 to 6500 FT

## Puerto Chiquito Field – Rio Arriba County, New Mexico

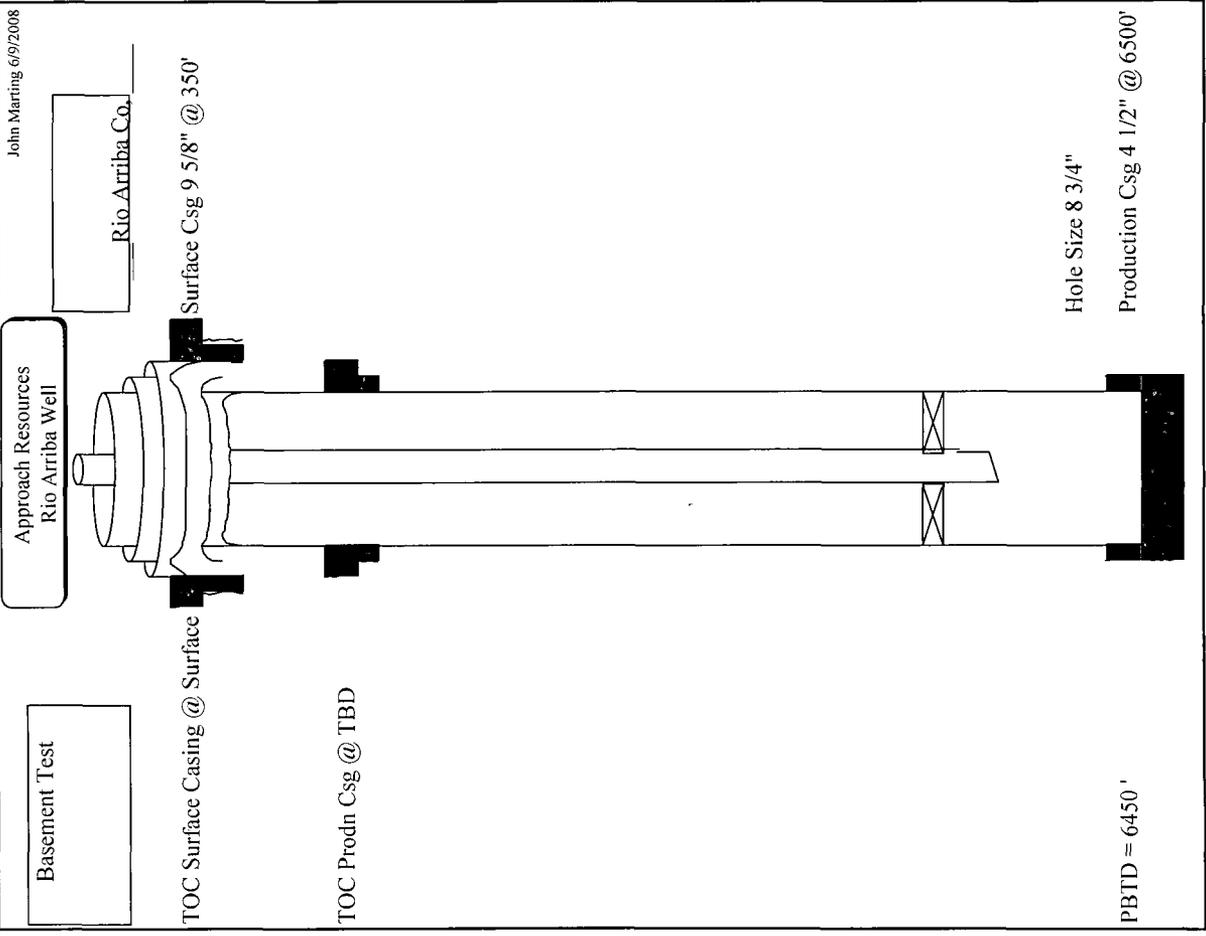
Lease Name	Well Num	Surface Pipe Size	Surface Pipe Depth	Intermediate Pipe Size	Intermediate Pipe Depth	Driller TD	Field Name
EAST PUERTO	41	10-3/4	105	7	2722	4162	PUERTO CHIQUITO
JICARILLA	81-1	10-3/4	336	7-5/8	2100	4245	PUERTO CHIQUITO
FEDERAL 17-32	1	8-5/8	140	5-1/2	3800	4279	PUERTO CHIQUITO
EAST PUERTO	40	10-3/4	121	7	2553	4346	PUERTO CHIQUITO
JICARILLA TRBL 4-26	1	8-5/8	110	5-1/2	4400	4798	PUERTO CHIQUITO
CYNTHIA	1	9-5/8	100	7	3300	4850	PUERTO CHIQUITO
JICARILLA 235	1	10-3/4	175	7	3999	4988	PUERTO CHIQUITO
JICARILLA	6A-1	10-3/4	329	7-5/8	2426	5026	PUERTO CHIQUITO
CANADA OJITOS UN 18	18	10-3/4	332	7	4929	5265	PUERTO CHIQUITO
CANADA OJITOS UN 17	17	10-3/4	222	7	4398	6092	PUERTO CHIQUITO
CANADA OJITOS UN 16	16	10-3/4	384	7-5/8	5739	6296	PUERTO CHIQUITO
CANADA OJITOS	16-11	13-3/8	314	7-5/8	5263	6375	PUERTO CHIQUITO

Avg Depth  
222

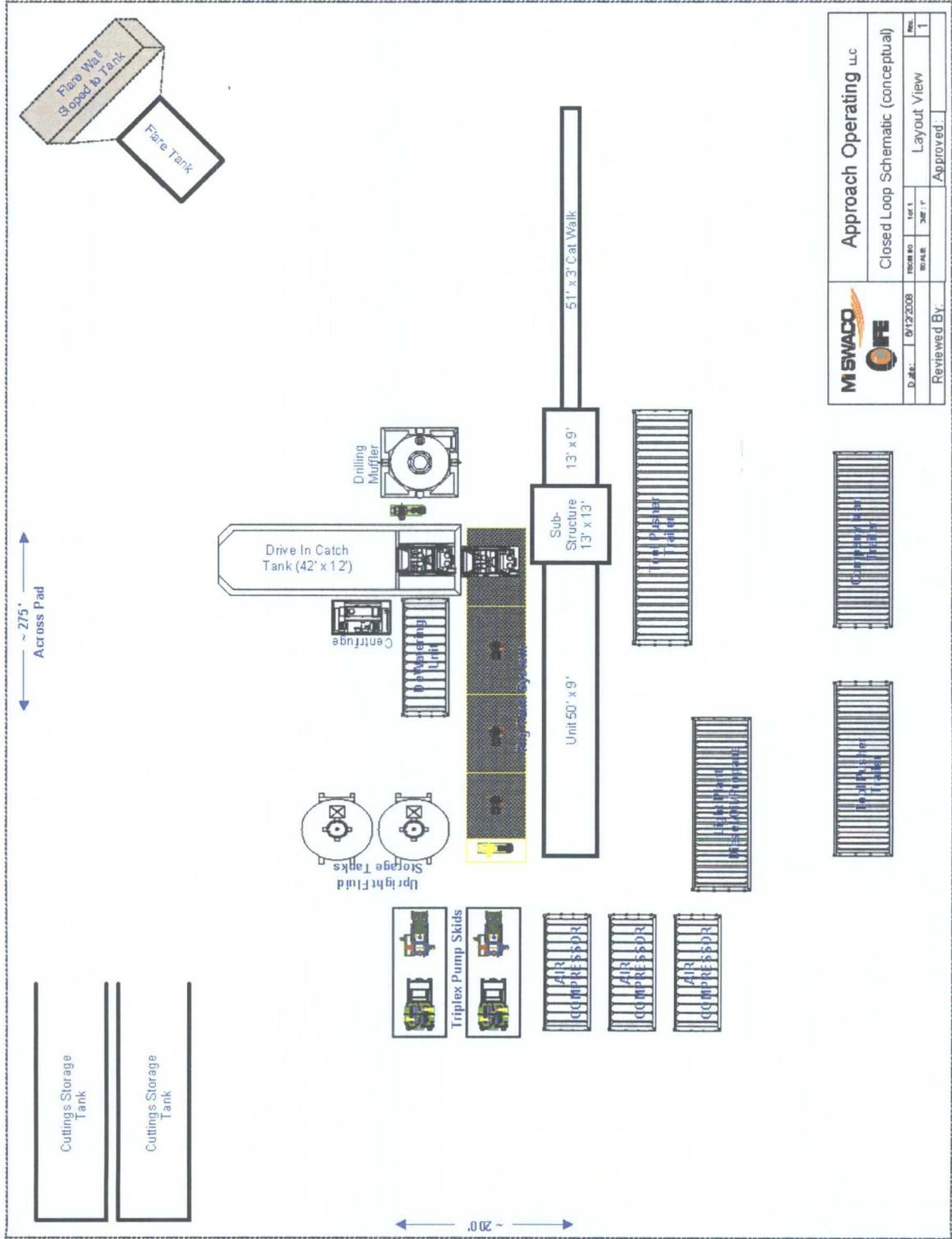
# Wellbore Schematic - Rio Arriba Basement Well

John Marring 6/9/2008

Call Steve Gillett @ ext 4748 for guidance in using this spreadsheet



# Closed-Loop Schematic

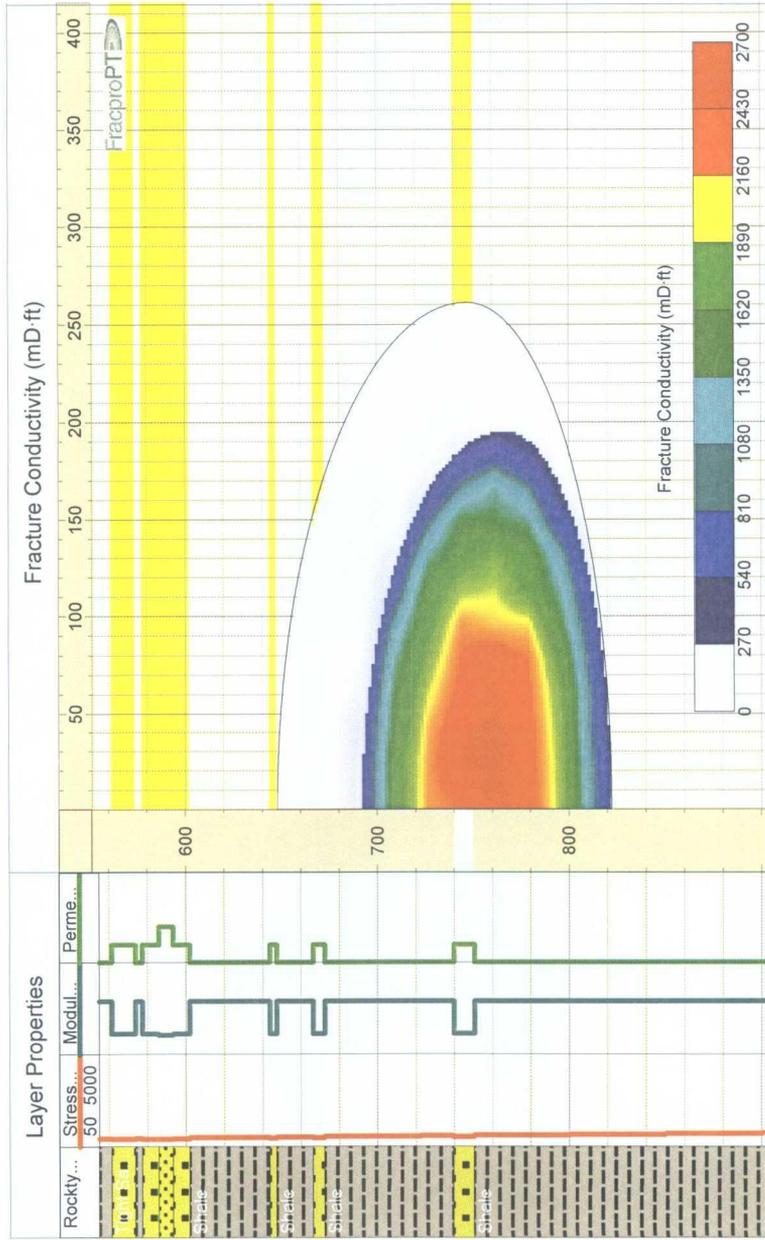


		<b>Approach Operating LLC</b>	
Closed Loop Schematic (conceptual)			
D. No.: 01/2/2008	SCALE: 3/8" = 1'	Lot 1	Rev. 1
Reviews By:		Layout View	Approved:



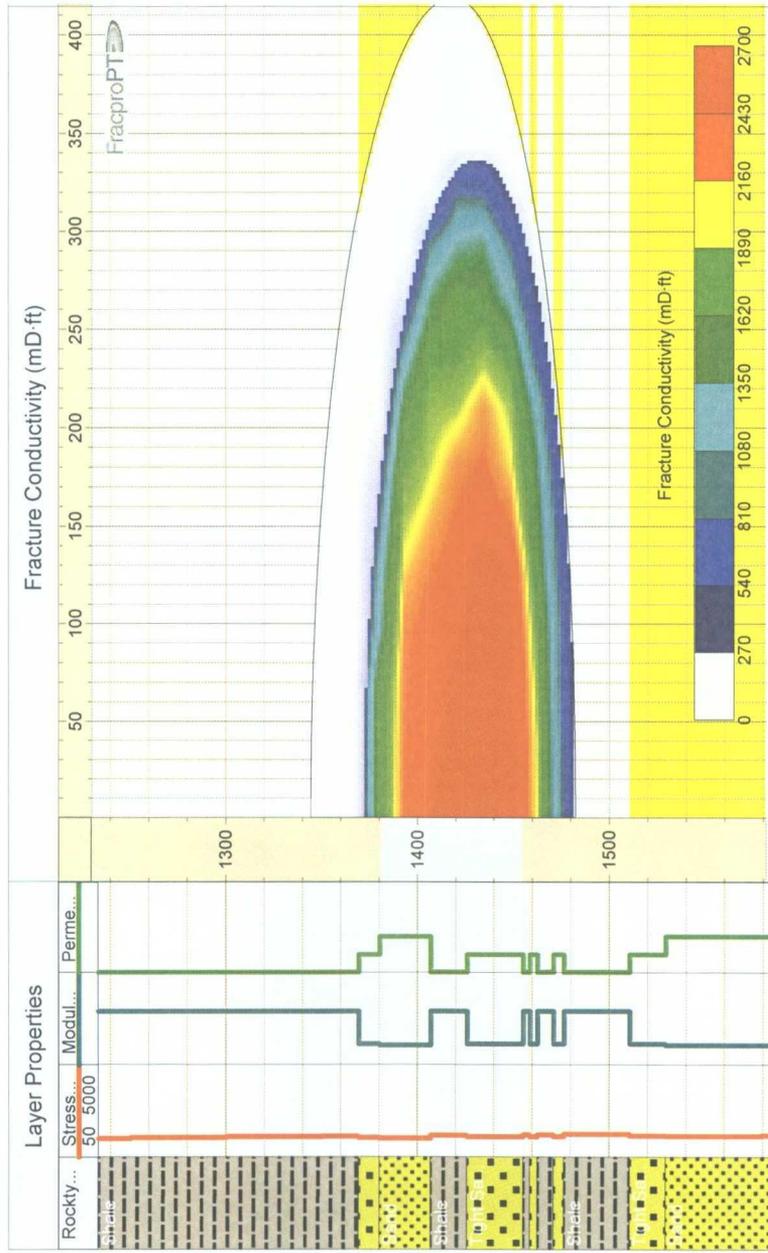
# Fracture Profile - 600' to 800'

Fracture Profile with Logs and Layers - Spill Bros #1 API# 30-039-05013  
Rio Arriba Co., NM, Wildcat Sandstone - 740 ft, AFE



# Fracture Profile - 1300' to 1500'

Fracture Profile with Logs and Layers - Spill Bros #1 API# 30-039-05013  
 Rio Arriba Co., NM, Graneros - 1400 FT Zone , AFE



# Fracture Profile - 2000' to 2300'

Fracture Profile with Logs and Layers - Spill Bros #1 API# 30-039-05013

