STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:	
PROPOSED AMENDMENT TO 19.15.1 NMAC ADOPTING A NEW SECTION TO BE CODIFIED AS 19.15.1.21 NMAC. THIS SECTION APPLIES TO THE CHIHUAHUAN DESERT AREAS OF OTERO AND SIERRA COUNTIES, NEW MEXICO, PROHIBITS THE USE OF PITS AND IMPOSES ADDITIONAL LOCATION, CONSTRUCTION, OPERATION AND TESTING REQUIREMENTS ON INJECTION WELLS AND RELATED FACILITIES USED TO DISPOSE OF PRODUCED WATER	CASE NO. 13,269

ORIGINAL

COMMISSION HEARING
EXCERPT OF PROCEEDINGS (Testimony of Robert Sivinski, Rachel Jankowitz and Steven Finch)

BEFORE: MARK E. FESMIRE, CHAIRMAN
JAMI BAILEY, COMMISSIONER
FRANK T. CHAVEZ, COMMISSIONER

June 17th and 18th, 2004

Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Commission, MARK E. FESMIRE, Chairman, on Thursday and Friday, June 17th and 18th, 2004, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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I N D E X

June 17th and 18th, 2004
Commission Hearing
CASE NO. 13,269
(Excerpts of proceedings)

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WHEREUPON, the following proceedings were had at 3:28 p.m. on Thursday, June 17th, 2004:

ROBERT C. SIVINSKI,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. BADA:

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

A. Robert C. Sivinski.

Q. Where are you employed?

A. I'm employed with the Energy, Minerals, Natural Resources Department, Forestry Division.

Q. How long have you been employed with the Forestry Division?

A. With the Forestry Division for 15 years.

Q. And what are your job responsibilities?

A. Seventy-five percent of my time I am a botanist for the State of New Mexico, mainly studying rare and endangered plants throughout the state, to fulfill the requirements of the New Mexico Endangered Plant Species Act, and to implement the state's full authorities agreement with the US Fish and Wildlife Service to conduct most of the research and recovery operations for endangered plant species in New Mexico.

The other 25 percent of my time I work with

various land conservation programs, including the Forest Legacy Program, the Natural Lands Protection Act, and the Land Conservation Incentives Act

Q. Where were you employed prior to working for the Forestry Division?

A. Prior to that by the same department, Energy, Minerals and Natural Resources, but in the Mining and Minerals Division for five years.

Q. And what were your job responsibilities there?

A. I was a coal mine reclamation specialist, and by the end of that term I was the chief of the Surface Mine Permitting Bureau.

Q. And what did you do in the coal mine reclamation, what were your specific duties?

A. It was inspection and enforcement of reclamation regulations that the State has that were based on federal regulations, and approving mine plans and close-out plans, such things like that.

Q. And what is your educational background?

A. I have a bachelor's degree in wildlife biology from New Mexico State University with a minor in range science. I have a master's of science from New Mexico State, also in wildlife biology, and an additional two years of graduate work at UNM in plant taxonomy and systematics.

MR. BADA: I'd like to offer Bob as an expert in botany and rare plants.

CHAIRMAN FESMIRE: Is there any objection?

So accepted.

MR. SIMPSON: Could you have the witnesses speak louder. The background -- the air is -- hard to hear.

CHAIRMAN FESMIRE: Okay. Mr. Sivinski is acceptable to the Commission as an expert.

Q. (By Ms. Bada) Bob, are you familiar with the Chihuahuan Desert area in Otero and Sierra Counties?

A. Yes, I am. Like I said, I went to school in Las Cruces. I also worked for the Bureau of Land Management in the Las Cruces District for a year and in the Socorro District for a year and spent most of my life in New Mexico. My work with rare and endangered plants has also taken me to practically every county in the state. I have done quite a bit of field surveys in these two counties.

Q. Bob, did you take this photo?

A. Yes, that's on Otero Mesa, just north of the Cornudas Mountains. This is the famous Chihuahuan Desert grasslands with a lot of elk on it. I took this photo last December.

Q. Could you run the other three?

A. Same area. This grassland, as you can see, does have some minor shrub component, but that just adds to the

species diversity out there. It is predominantly grassland, black grama, purple three-awn, Torrey muhly, various native species of grasses, quite a diverse assemblage of plants.

This is on the northern end of the Otero Mesa looking at the Cornucopia Hills. This is more of a playa area that's mostly burro grass and Tobosa grass.

As you can see, there's quite a bit of plant diversity out here in the Chihuahuan Desert, especially of yuccas, agave, cacti, as well as the grasslands. But this is kind of a soaptree-yucca savannah out Otero Mesa.

Q. Could we go back to slide 9? Could you identify the approximate area on this vegetation map of Otero and Sierra Counties that contain Chihuahuan Desert vegetation types?

A. Just about anything you see that isn't green. These green designations represent coniferous woodlands, starting with piñon-juniper elevation and up into higher elevation coniferous forests. Below piñon-juniper we are in Chihuahuan Desert, the Chihuahuan Desert ecoregion, throughout the remainder of these two counties.

Q. What makes the Chihuahuan Desert important?

A. It's really a huge desert. It extends from approximately Socorro in New Mexico on the north, all the way down to Nuevo Leon in Mexico. About 70 percent of the

desert is in New Mexico, but the northern subunit of the Chihuahuan Desert is predominantly in southern New Mexico and west Texas.

It is one of three most species-diverse, as far as plants and animals, of the arid regions in the world. There is even greater species diversity in the Chihuahuan Desert than there is in the Sonoran Desert next to us in Arizona and southern California. Although that desert gets much more attention because it has big saguaros, we actually have greater species diversity in the Chihuahuan Desert than the Sonoran.

The northern unit of the Chihuahuan Desert that occurs from, say Chihuahua City up through New Mexico and west Texas, was predominantly grassland in historic times, and that's one of the things that make it really unique, is, it is a desert grass.

Q. How much of the Chihuahuan Desert grasslands remain?

A. There's various estimates. Anywhere from 50 to 70 percent of the Chihuahuan Desert grassland has been eliminated and replaced with shrublands, less species-diverse scrub. In this particular area, the Bureau of Land Management has estimated that in the last 150 years approximately 62 percent of the grassland in these two counties have been highly degraded or eliminated.

Q. In New Mexico, what counties have a majority of the remaining grasslands?

A. Can I use this?

Q. Uh-huh, sure.

A. There is a little bit of grassland going up the Pecos River, not very much, but it's usually confined to the river valley. The largest examples of remnant grassland in New Mexico are from the Otero Mesa to the southern end of the Tularosa Basin. Then the northern end of the Tularosa Basin, there is some on the bajada of the San Andres mountains and a band of grasslands coming down the bajada of the Black Range in Sierra County.

There are some further north in the Jornada del Muerto, although they're more spotty in that area, all the way up to the city -- the National Wildlife Refuge near Socorro.

So there are remnant spots of grassland in quite a few places. In fact, if you get into a different section of the Chihuahuan Desert, which is called the Apachean, over in the boot heel of New Mexico and adjacent Arizona, there are some remnant grasslands in those locations. Probably the best known is the Animas Valley.

Q. Why are the grasslands in the Otero Mesa area different than those in the other counties?

A. Mainly their size. It's really a large,

relatively intact piece. There are still impacts to that area. They're somewhat higher in elevation, so they get a little bit more rain. They're mostly black grama grasslands, which are unusual for Chihuahuan Desert grasslands. Down lower it's usually various species of dropseed, but the density of background on this area is really kind of outstanding, really an outstanding example of a black grama grassland.

Q. Why are the desert grasslands important?

A. They're species diverse as far as plants, as far as wildlife. You'll probably hear testimony from the Game and Fish Department on why they're necessary for continuing populations of the antelope, prairie dogs, various predators in that area.

They have changed, though, over the last century or two, due to the pressures on them, mainly through grazing during drought periods and the elimination of wildfire that typically maintains grasslands.

So just having these remnant pieces, it's important to protect them, because animals move around. They need to be able to migrate, such as birds. Even larger animals will move from grassland to grassland, and it's good to have quite a few in proximity to one another so that movement -- those ecological processes can occur.

If we can maintain just the remnants we have, we

would have pieces of grassland all the way from the Sevilleta National Wildlife Refuge, down through the Jornada del Muerto, into the Tularosa Basin, across Otero Mesa, down to the Davis Mountain-Marfa grasslands in adjacent Texas, and then across the river to the remnant grasslands in central Chihuahua

Q. We've heard a lot of talk about pits, so I wanted to ask you about the problems that might be encountered in attempting to reclaim the vegetation over pits where drilling muds and other drilling wastes are buried.

A. I think it's going to depend on what it ends up in the pits. In reclaiming coal mines, our experience was, anytime you're dealing with very sodic material, a lot of salts of sodium, that material can migrate into whatever top dressing you use for the reclamation.

What you're burying these pits with, I assume, would be suitable root material for plants. But yet over time, if it's quite a bit of salt in that area, it can migrate upward into the root medium and essentially sterilize the soils.

Q. Are there any endangered or threatened plants in Otero and Sierra Counties in this area of the Chihuahuan Desert?

A. I wasn't finished on the reclamation part.

Q. Oh, sorry, go ahead and finish.

A. Also, when you disturb grassland soils, which are out here typically fairly shallow because of a caliche layer, when you mix all that up, you're breaking up that soil horizon and typically making that area suitable more for taprooted plants than you are for grasses, and you'll see a lot of annual herbaceous species coming in and even shrubs coming in. And it's perfect root medium for noxious weeds as well, and we see that quite a bit in the well patch, because noxious weeds follow the roads, the pipelines, the wellpads, and it just takes a long time for that -- maybe centuries, for that soil structure to redevelop into grassland-type of soils.

Also, one of the main problems for reclamation out here is, practically all of the species -- the grass species that I mentioned that occur on this area, are not available commercially. There has been so little reclamation done in the Chihuahuan Desert that growers have not begun to supply seed for reclamation purposes. There is no seed source on the open market for black grama, for Tobosa grass, for three-awn. All of the common grass species out here, just about, are not available for reclamation purposes. So even though this area might be seeded for a post-impact land use, it's probably not going to be seeded to effect restoration of what was there before.

Q. Okay.

A. Now your next question.

Q. Thanks, Bob. Are there any endangered or threatened plants in the Chihuahuan Desert in Otero and Sierra Counties?

A. Yes, there are six. Two are federally listed species. They occur on the Sacramento escarpment. One is the Sacramento prickly poppy. That's a very endangered plant that's on its way to extinction. It occurs on the lower part of the escarpment.

Just north of that is the Todson's pennyroyal, which occurs on gypsum outcrops on the escarpment. Those both are federally listed plants.

There's -- Villard's pincushion occurs on the escarpment just below Alamogordo. That is a state-listed cactus.

Duncan's pincushion occurs all over here, near T or C and the Mud Springs Mountains. That is a State-listed endangered cactus.

And down in the Crow Flats area there's the gypsum scale broom that occurs in the Alkali Lakes regions of Crow Flats.

And at Cornudas Mountain there's an endangered species of orchid called the shining coral root.

There are several other rare plant species out

here that do not have any formal protections under the federal or the state law but could be pushed in that direction, depending on what the land management in the area occurs as.

For instance, the Guadalupe mescal bean is in the Broke Off Mountains and the lower part of the Guadalupe Mountain escarpment.

And just right in here on gypsum is the Guadalupe blazing star and Howard's ringstem, which -- both of those plants were just found ten years ago. They were unknown to science until just ten years ago.

Q. The other thing I wanted to ask you is, how complete are the biological studies of the Otero Mesa area?

A. Very incomplete. This is probably one of the least botanically and biologically surveyed areas of New Mexico. It's very remote. There hasn't been a lot of agency interest in this area, because a lot of those types of surveys are project driven, so there's been very little survey in that area. I know I haven't looked at it all that much myself.

And I mentioned those two plants that were just discovered in the Cornudas Mountains. On the Texas side in the last ten years there's been two new species of ants and a new isopod discovery. So, you know, it's not just all antelope and prairie dogs out there, there's quite a few

other endemic species that could be unique to this area that just aren't known yet.

MS. BADA: I have no further direct questions. Does the Commission have questions?

EXAMINATION

BY COMMISSIONER BAILEY:

Q. What impact have the hundred or so previously drilled oil and gas wells had on the grasslands and on the endangered species you talked about?

A. No impact on the endangered species to this point. I have not personally looked at those hundred wellpads but I'm sure they have roads associated with them, which disturb large linear areas that could influence ecological processes out there, such as roads stop fires. Natural fire is very important in maintaining natural grasslands, and roads stop fires.

So there could have been -- you know, it's all incremental. I'm sure each pad disturbed a certain acreage, each road disturbed a certain acreage. But when we're talking about an area that only has 32 percent -- or 38 percent of its natural grasslands left, there are incremental impacts that will push that number even higher.

Q. Have you seen how many of the wellpads have been revegetated naturally?

A. You know, I've only looked at a couple of

wellpads in that area, and one was brand new, so I couldn't tell. I looked at an old wellpad and a pipeline running through the area that doesn't look like it's getting much natural vegetation on there.

There are a few annual species, native annual species coming in on them. But typically that isn't used as a reclamation criteria because it really doesn't -- annual species typically do not support a post-impact land use for, say, livestock grazing or wildlife habitat. And they don't show up every year. When there's insufficient rain they just don't come up, so they're not that useful. We need permanent vegetation coming in on these things.

I did see some shrub species come in, but for a grassland, adding more and more shrubs actually degrades the grassland.

Q. Talk to me about plant succession order, of how the grasslands become shrublands and how that's becoming more and more apparent in this area, even without oil and gas.

A. Okay. Out in this area, recovery -- if that's what you mean, succession, coming back to a climax grassland -- could be very slow, perhaps centuries. Perhaps never at all, if the soils are completely changed. For instance, there's very little of it in Sierra County, but there is some in the Jornada del Muerto.

But throughout Doña Ana County and southern Luna County, along the Mexican border, that was all grassland at one time, and now it's nothing but mesquite coppice dunes. The soils have moved away, and they're piled up around very long-lived shrubs. That area is never going to be grassland again.

So if you do really dramatic changes out there, recovery probably will not happen at all. There will be a different community, and the plants and animals associated with that community will no longer be there.

There are some creosote areas that move into overgrazed areas, especially grazed areas that were overgrazed during severe drought such as the late 1800s, the early 1900s, even the 1950s there was quite a bit of shrub dominance moving into Chihuahuan Desert grasslands in southern New Mexico, simply because they were being overgrazed during really dry periods. That is somewhat ameliorated lately, but it sill does occur, and we are in a drought right now.

Q. So with all this creosote area, where would they be on the map that we can eliminate them as grassland?

A. I think this is a vegetation map.

MS. BADA: Yeah, that's right.

THE WITNESS: Grasslands are the light yellow color?

COMMISSIONER BAILEY: Uh-huh.

THE WITNESS: Now, throughout that area there is going to be islands of shrublands. This is very gross scale, but you can see where the grasslands remnants are in this two-county region. Everything that's darker than that is now a shrubland.

Q. (By Commissioner Bailey) So what would be the harm of having oil and gas exploration in those areas of the darker yellow and the gray and the other areas that are not grasslands?

A. Ah-hah. The Chihuahuan Desert as a whole, the grasslands -- especially in the northern part, the grasslands make it special. Okay? So those are remnants that would be good to keep, because there are whole suites of flora and fauna that depend on that.

But not all of it is always grassland. There are gypsum outcrops that support really rare plants and animals, there are isolated mountain ranges that are shrubby with rock outcrop that support really diverse species assemblages of plants and animals. So those in themselves are important as well. I think the whole of the Chihuahuan Desert is important, but there are certain elements that we're losing because of our management of those areas, that deserve greater attention.

Q. But are you saying that there are no areas within

this vast map location where we don't have grasslands, that we can't have oil and gas either?

A. Oh, I didn't say that, no. I'm saying that the Chihuahuan Desert is important. There are certain elements that are more important than others, possibly, and -- Just because it's not a grassland, though, doesn't mean that it's not threatened.

I wouldn't say that you can't disturb any of it. There's disturbance going on out there all the time. Not just oil and gas, but there's ranch roads out there, there's towns out there, there's highways, there's ORV traffic, there's all sorts of impacts going on out there. I'm not saying that oil and gas has to stop in all parts of the Chihuahuan Desert. That isn't my point at all.

Q. Just for a point of clarification, one of the other folks who gave testimony said that this was the only area for Chihuahuan grassland in North America. You did clarify that this is simply the northernmost area of --

A. I think he --

Q. -- of a grassland that extends way into Mexico?

A. I think the intent was, this is one of the best remnant examples on Otero Mesa of Chihuahuan Desert grasslands left in New Mexico, and I would agree with that. There are some good smaller examples in other places, such as in Sierra County on the bajada of the Black Range, in

the Jornada del Muerto and in the Tularosa Basin, but they are much smaller.

And there are other grasslands outside of these two counties that are Chihuahuan Desert grasslands.

Q. Why do we have a huge area of the upper triangle that's white between Sierra and Otero County? Is there not grassland in through that area too? See how Otero County goes north and south on that western boundary, and then Sierra County comes up at an angle? But yet it appears from the map that we have grasslands throughout the whole area.

A. I'm not seeing where you're --

Q. North of I-25 --

CHAIRMAN FESMIRE: She's talking about the white area.

Q. (By Commissioner Bailey) The big white triangular area to -- Go south, go south, go south, go south, go east, go east --

CHAIRMAN FESMIRE: The uncolored.

Q. (By Commissioner Bailey) Yeah.

A. Oh, this. That's Doña Ana County.

Q. Okay.

A. And this is Luna County, and this is Hidalgo, and this is Chaves and this is Eddy. They all have Chihuahuan Desert in them.

Q. But we're not including that county in this discussion?

A. Apparently not. Apparently this discussion centers around the Governor's Order, Executive Order, on the Chihuahuan Desert in these two counties.

COMMISSIONER BAILEY: That's all I have.

CHAIRMAN FESMIRE: Commissioner Chavez?

EXAMINATION

BY COMMISSIONER CHAVEZ:

Q. Is there a -- since you've worked in reclamation, do you foresee there's a reclamation land that could be used by the oil and gas industry, or planning for reclamation during drilling production and final abandonment of operations that would minimize impacts or even restore the grasslands after it's done?

A. I would love to see that. We've done that with our mining industry in New Mexico already. Mining, all types of mining, but especially coal mining in New Mexico, have very strict regulations on reclamation standards and what can be called successful reclamation. There is no requirement yet, that I'm aware of, in regulation -- to regulate the oil and gas industry on how they leave their sites when they're finished.

Q. In studying what's happening with the Chihuahuan Desert, especially that extends outside of New Mexico, the

practices that are proposed under this Rule, are they -- Have you looked at the other practices, in other parts of the Chihuahuan Desert in Texas and New Mexico?

A. No, I have not.

COMMISSIONER CHAVEZ: Okay, thanks. That's all.

EXAMINATION

BY CHAIRMAN FESMIRE:

Q. Quick question. When you come into one of these grassland areas and you disturb the soil, dig deep enough to create a pit, does that provide an assured degradation of the grassland? I mean, does that destroy the grassland at least from that point, in the pit area?

A. It would if all you're hoping for is for natural revegetation of the site, because what would come in -- Once you mix the caliche layer or other subsoil layers with the topsoil layer, you're not going to get grassland back, you're going to get taprooted plants, shrubs and herbaceous plants, that, in that area, just through natural revegetation.

If you could top-dress the site with a topsoil material that could support grass growth and successfully seed grass on that area by using an appropriate seed mix and possibly even irrigation for the first couple of years, you could probably get it established as grassland and it would stay that way.

Q. But you're telling us that seed mix isn't available commercially?

A. No, and I don't know very many operators that would be willing to irrigate the site, especially during a drought period, to ensure that the grass comes in before the other taprooted plants come in.

CHAIRMAN FESMIRE: Ms. Bada, I have no further questions. Do you have a cross-examination, or can we -- further direct examination, or can we go to --

MS. BADA: I may have some redirect, but let's see if there's any other cross.

CHAIRMAN FESMIRE: Mr. Carr, do you have any cross-examination of this witness?

MR. CARR: No, I do not.

MS. BELIN: No questions.

MS. BADA: I had a couple questions that I wanted to follow up on.

FURTHER EXAMINATION

BY MS. BADA:

Q. You talked earlier about the difference between Sierra and Otero Counties as far as the highland --

A. Uh-huh.

Q. -- Chihuahuan Desert grasslands. Could you -- Are there large areas of that in the other counties?

A. Of the high --

Q. Of the black grama?

A. Black grama grasslands?

Q. Yeah.

A. There are small areas of it in this county. In the Tularosa Basin, right up around here, is a good example of black grama grassland. In this county there is little spots of it here, but not a big, huge area. And that's about it. So it is kind of a unique area, as far as a desert --

Q. So you wouldn't see that in Lea County or Eddy County or --

A. In Eddy County it's going to mostly be in playa bottoms and along the valley bottoms and mostly consist of alkali sacaton, which is a much taller grass species and more of a monoculture. It's not nearly as species-diverse. And that's true of a lot of these playa areas, such as the Middle Tularosa Basin.

MS. BADA: I have no further questions.

CHAIRMAN FESMIRE: Mr. Carr, I assume you have no --

MR. CARR: (Shakes head)

CHAIRMAN FESMIRE: Ms. Belin?

MS. BELIN: (Shakes head)

CHAIRMAN FESMIRE: Why don't you call your next witness?

MS. MacQUESTEN: The OCD calls Roger Anderson.

(Testimony of Robert C. Sivinski was concluded at 4:01 p.m., Thursday, June 17th, 2004.)

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(The following proceedings were had at 8:30 a.m. on Friday, June 18th, 2004:)

RACHEL JANKOWITZ,

the witness herein, after having been first duly sworn upon her oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. BADA:

Q. Good morning, would you please state your name for the record?

A. Rachel Jankowitz.

Q. And where are you employed?

A. New Mexico Department of Game and Fish, Conservation Services Division.

Q. How long have you been employed there?

A. Since April, 2003.

Q. And what are your job responsibilities with the Department of Game and Fish?

A. Well, my job title is habitat specialist. I

consult with the Energy, Minerals and Natural Resources Department, Mining and Minerals Division, regarding mine permits under the New Mexico Mining Act; I write response letters to requests for our Department's comment on other minerals-related development projects, including oil and gas; and I represent the Department concerning the ongoing hazardous materials cleanup at the old Terrero mine site in Pecos, which is deeded property of the Game and Fish Commission.

Q. Where were you employed prior to joining the Game and Fish Department?

A. Prior to joining Game and Fish, I was self-employed consultant. The bulk of my work was writing environmental assessments for oil and gas developments in San Juan Basin.

Q. And what are your educational qualifications?

A. A bachelor of arts degree in biology and a master of science in wildlife management.

MS. BADA: At this time I'd like to offer Ms. Jankowitz as an expert in wildlife management.

CHAIRMAN FESMIRE: Any objection from the Commission?

COMMISSIONER BAILEY: (Shakes head)

COMMISSIONER CHAVEZ: No objection.

CHAIRMAN FESMIRE: She's acceptable to the

Commission.

Q. (By Ms. Bada) First thing I'd like to ask you about is the habitat in the Chihuahuan Desert in Sierra and Otero Counties. What makes the Chihuahuan Desert in those counties important for wildlife?

A. The Chihuahuan Desert has one of the world's highest rates of plant diversity, both within the plant communities and on a scale across the landscape. The World Wildlife Fund has ranked the region globally outstanding for species richness in the categories of reptiles, birds, mammals and cacti. There's also a high degree of endovism, which means species whose distributions are limited to a small geographic area.

The high diversity of plants is a function of the geographic location, soil and topographic diversity and the history of evolution and response to climate change in that area. And the reason I'm repeating a lot here of what you heard from Bob Sivinski yesterday is because high plant diversity translates largely to high diversity of wildlife habitat.

The Chihuahuan Desert environment has been degraded by historic overgrazing and other factors, including loss of the fire regime and excessive diversion of surface water. The grassland component is shrinking in comparison with the area dominated by shrubs. Portion of

the Chihuahuan Desert in Sierra and Otero Counties is in relatively intact and functional condition.

This area provides a corridor for the connectivity of mobile wildlife between Mexico, trans-Pecos Texas and more northern areas of New Mexico.

There's also a variety of freshwater habitats, and these would be springs, cienegas, intermittent streams with high degrees of complexity and endomism, some of which provide home for rare fish and invertebrates. Although the wetlands and watercourses will presumably be protected from surface development, they are potentially vulnerable to changes in water quality and subsurface hydrology.

Q. How does the Chihuahuan Desert habitat in these two counties compare to surrounding counties?

A. Sierra and Otero Counties have the largest block of intact Chihuahuan Desert grassland. The word "pristine" was raised here yesterday morning, and the area is not pristine, obviously. There's things going on there like the existing gas well, ranching and other surface activities.

What we mean by a large block of intact grassland is that the level of impacts in that area is relatively low, leaving the function and a good ecological functioning system, condition.

So Chihuahuan Desert natural areas in the boot

heel area of New Mexico are part of a different ecological subregion. They have distinct and different conservation concerns.

The Chihuahuan Desert areas in Doña Ana County and in the eastern New Mexico counties have relatively heavy impacts from agriculture, urbanization and oil and gas development.

With the exceptions of Big Bend and Guadalupe National Parks, most all of the Chihuahuan Desert in Texas is in private ownership. That's not to say it's not being protected, but that is to say that its protected condition could change tomorrow. And much of the Chihuahuan Desert in Texas is also impacted by urbanization and pollution.

The northern subregion of the Chihuahuan Desert, which is the region we're talking about, is also subject to extensive urbanization and heavy grazing pressure in the nation of Mexico.

Q. Other than threatened and endangered species, what are the key wildlife species in this area?

A. Well, the BLM in consultation with our department has designated important mule deer and pronghorn management areas at the Caballo Mountains Deer Area, the Sacramento Escarpment Deer Habitat Area, the Otero Mesa Habitat Area, Nutt Antelope area and the Tularosa and Basin and White Sands Antelope Areas.

Based on historic reports, the Otero Mesa pronghorn herd appears to be one of the few herds in New Mexico that survived intensive commercial market hunting in the past and is truly native, not reintroduced.

Also important is that grassland birds, as a group of species, have been on the decline across this country. The decline is due to many factors, including habitat fragmentation, pesticide use, and loss of winter habitat to the south.

Chihuahuan Desert in Sierra and Otero Counties with its strong grassland component and large blocks of relatively unfragmented habitat is an important habitat that may help prevent the need for federal listing of members of this group of birds.

Q. Does the Chihuahuan Desert in these two counties provide areas suitable for desert bighorn sheep reintroduction?

A. The desert bighorn sheep is a state-listed endangered species for which the Game and Fish Department operates an active reintroduction and translocation program. Within the area we're talking about today, historic range, which is currently unoccupied by the sheep, occurs in the Caballo and Guadalupe Mountains. The Sacramento Range and escarpment has also been identified as potentially suitable, although there's no evidence of

historic populations there.

Q. Does it contain any potential habitat or habitat for any threatened or endangered species?

A. Yes, the BLM draft EIS for the fluid minerals leasing in Sierra and Otero Counties identified 10 federally listed threatened and endangered species and 45 other special-status species, and those would be federal candidate and proposed species, State-listed species and BLM species of concern. And I think that those numbers include those half dozen plant listed species that Bob mentioned yesterday, the various listed status.

And I'd like to just talk about a couple of animals on those lists.

The Aplomado falcon is a state and federally listed endangered species. It reaches the northernmost limit of its total distribution in the southwestern US. This falcon was largely extirpated from the US by the 1930s. The last nesting documented in New Mexico until recently was in 1952. Sightings have become more frequent in New Mexico since the 1980s, and last year we believe we had a nesting pair.

The Aplomado falcon requires large blocks of grassland with standing yuccas, similar to the slide that we saw yesterday. The Chihuahuan grasslands in Sierra and Otero Counties are prime habitat for the return of this

falcon to New Mexico, either through reintroduction or natural recolonization from old Mexico.

And another species that's -- for which that area is important is the black-tailed prairie dog, and this is a state-listed species of concern, is its status at the moment. It's a candidate for federal listing. New Mexico Department of Game and Fish has responsibility under a formal multi-state conservation agreement to protect existing colonies and increase statewide distribution to meet multi-state conservation goals, to preclude the need for federal listing.

Black-tailed prairie dogs occur on the BLM portion of Otero Mesa in 22 or 23 colonies averaging approximately five acres each. These colonies are important for future conservation efforts because they are some of the last extant populations within the Chihuahuan Desert within the US. They are likely to be uniquely adapted to their very xeric environment and represent most of the few surviving source populations for recovery elsewhere within the arid southern portion of their known historic range.

Q. I want to ask you now about whether you've had an opportunity to review the proposed Rules that are the subject of this hearing.

A. Yes.

Q. And does the Department of Game and Fish support those Rules?

A. Yes, we do.

Q. Why?

A. Above-ground tanks are more protective of wildlife and wildlife habitat than in-ground pits. Pits containing liquid in arid environments are a wildlife attractant. They pose direct hazards of lethal or sublethal toxicity. Oily substances on the exterior of birds and mammals can also reduce the insulation provided by fur and feathers, leading to risk of basically death by exposure or contracting illness by exposure to cold. Predators, scavengers and decomposers consuming contaminated carcasses are potentially placed at risk.

Pits also pose a greater possibility than tanks for indirect impact through contamination of surface water, groundwater and soils. Based on what I heard yesterday, I would think that tank pads are -- probably pose a greater ease of reclamation of the vegetation community than does a massively disturbed pit.

And we generally support closer regulation of produced-water injection wells due to potential impact on the groundwater, although we're not going to get into commenting on specifics of the injection well rule.

Q. Are you familiar with the Oil Conservation

Commission's current rules on pits, Rule 50?

A. Yes.

Q. And what concerns does the Game and Fish Department have about the current rules with regard to wildlife and habitat?

A. The existing fencing and netting requirements in Rule 50 are not sufficient to protect wildlife in this important habitat area. My answer to this question is kind of a nested series of ifs, because we don't know which way the Commission will decide to go on this.

If pits are going to be allowed, we would prefer that the Oil Conservation Division use its authority under the existing Rule to impose additional fencing requirements for protection of wildlife. A wildlife-exclusion fence would be a minimum seven-foot-high chain-link or woven or welded wire mesh, secured to the ground around the perimeter, with the finer-gauge material wrapped around the base to exclude small mammals, reptiles and amphibians.

If the post-and-wire-strand livestock-type fence is allowed, the Department would like to have the opportunity to recommend a design that will exclude antelope while minimizing potential injury to mule deer jumping over. And a post-and-wire fence should also be wrapped with finer gauge material around the base.

All pits should be netted, including drilling and

workover pits, which are accepted in the existing Rule. That Rule was promulgated primarily for the purpose of complying with the Migratory Bird Treaty Act. The Department, however, is equally concerned about the 10 species of bat that are listed as species of concern in Sierra and Otero Counties. Drowned or poisoned bats are often overlooked due to their small size, dark color and nocturnal habits.

Netting also needs to be extended through the ground around the perimeter and maintained in functional condition.

Steep-sided pits present a risk of entrapment to wildlife. When you line them wit a smooth-surface material, you enhance that risk of entrapment -- in other words, the difficulty of getting out of the pit. And we would like to see the inclusion of ramps or ladders for the escape of trapped wildlife, and Game and Fish does have design specifications which would be adaptable to that purpose.

Q. If tanks are used, what measures need to be in place to protect wildlife?

A. Okay, the existing Rule requires that tanks larger than 16 feet diameter be either covered or netted. Game and Fish Department believes that tanks less than 16 feet should be similarly protected.

To contain contamination following a spill or leak, above-ground tanks should be surrounded by an impermeable berm with capacity greater than that of the tank or tank battery.

And at whatever density of roads will exist on the oilfield, the effects of habitat fragmentation can be reduced by lighter traffic volume.

To this end, if produced water can't be used onsite for beneficial use, we support piping the water to central collector locations, rather than transport by water truck from individual wellsites. And that pipe should preferably be placed along access roads to minimize the disturbance footprint, and second choice would be placement along existing product pipeline rights of way.

MS. BADA: Thanks, I have no further direct questions.

CHAIRMAN FESMIRE: Commissioner Bailey?

COMMISSIONER BAILEY: I have a few.

EXAMINATION

BY COMMISSIONER BAILEY:

Q. You talked about these large impacts that are going on right now, the drought that affects the wildlife, the overgrazing that's already destroyed so much of their range, urbanization was a factor that you talked about. Compared to these large, major factors, what impact have

the hundred or so oil and gas wells that have already been drilled -- Can you give me a relative importance there, to try to get some perspective?

A. Yeah, I think -- You know, the point I was trying to make there was that the level of disturbance currently in the area that we're talking about is lesser than that of similar grassland environments in the surrounding area due to those factors you just mentioned. That's not to say there has been no impact from those existing hundred or so oil and gas wells.

And I think I need to give the same answer that Bob Sivinski gave yesterday, which is that the impact of these things is going to be a cumulative impact which is incremental with each development project, and also to keep in mind that in terms of wildlife habitat, the roads involved with the infrastructure are likely to have equal or greater impact than the actual wellpads themselves.

Q. And that also applies to only five percent of the area being developed? That's a very low percentage.

A. Right, you're talking about the five-percent proposal from the BLM and their --

Q. Yes.

A. Yeah, yes. Yeah. The answer is that that depends on some factors which I don't know the answer to, and I'm not sure that anybody does, which is where exactly

those five percent are and how they would be spaced and how they would be connected by roads.

Each road and each wellpad has a zone of impact around it, and it really depends on a whole lot of things that I believe are not specified at this point. And they probably aren't known by the oil and gas industry until they do their exploration.

Q. We heard testimony that beneficial use of produced water was being encouraged. If there is the possibility of beneficial use of produced water in this area, would that not help the populations if these tanks were not fenced in accordance with the way you've recommended?

A. I don't think that the materials which are placed directly into the tanks, pits, that there's any way to be certain that those materials don't contain toxics.

And water that is -- either comes out of the ground clean and is separated from hazardous materials or is -- can be treated to a clean and safe condition, we'd very much support use of that water for beneficial uses. And I would add that the two beneficial uses we would most like to see is on site right at the wellsite, irrigation for re-establishment of native grasses and drinking facilities for wildlife.

Q. Then my last question, concerning the antelope

herds, is there hunting allowed?

A. I believe so, yeah.

Q. So those herds are being hunted and killed as we speak?

A. Yeah, hunting requires a license from our department, and we have a process every two years, I believe, by which we determine levels of exploitation that the herds can sustain.

COMMISSIONER BAILEY: Those are all the questions I have. Thank you.

CHAIRMAN FESMIRE: Commissioner Chavez?

EXAMINATION

BY COMMISSIONER CHAVEZ:

Q. Ms. Jankowitz, one of your qualifications was that you had done assessments about oil and gas development in the San Juan Basin. Did I understand that correctly?

A. Yes, sir, environmental assessments under the NEPA process.

Q. Was that done for a government agency or --

A. Most -- the bulk of the work that I did personally was on the Jicarilla Apache Reservation, and the work was contracted to the Bureau of Indian Affairs.

Q. Okay. Is any of that observation helpful to you in reviewing the proposed Rule that the OCD has come up with?

A. Absolutely. Yeah, I think as a lot of the testimony brought up yesterday, what you see on paper and what you see in the field are not necessarily the same thing. And just being out there and observing has been tremendously helpful.

COMMISSIONER CHAVEZ: Thank you.

CHAIRMAN FESMIRE: Mr. Carr, do you have any cross-examination of this witness?

MR. CARR: No, Mr. Chairman, I do not.

CHAIRMAN FESMIRE: Ms. Belin?

MS. BELIN: I do not.

CHAIRMAN FESMIRE: Any redirect?

MS. BADA: No, thank you.

CHAIRMAN FESMIRE: Call your next witness, please.

MS. MacQUESTEN: Thank you. The OCD calls Chris Williams.

(Testimony of Rachel Jankowitz was concluded at 8:52 a.m., Friday, June 18th, 2004.)

* * *

(The following proceedings were had at 2:30 p.m. on Friday, June 18th, 2004:)

STEVEN T. FINCH, Jr.,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MS. BELIN:

Q. Mr. Finch, would you state your name for the record, please?

A. My name is Steven T. Finch, Jr.

Q. And what is your employment position?

A. I'm vice president and senior hydrogeologist at John Shoemaker and Associates.

Q. Can you be sure -- This microphone isn't going to amplify you, so you're just going have to --

A. Okay.

Q. -- amplify your own voice.

What is your educational background?

A. I have a bachelor's in science, in geology, from Sul Ross State University in Alpine, Texas, with a minor in chemistry. And I also have a master's in science, or a master of science in geology, from Northern Arizona University in Flagstaff, Arizona.

Q. And could you give a brief summary of your employment history?

A. Yes, I won't go all the way back, but before I started working with John Shoemaker and Associates I had various jobs related to geology, both in the oil and mining industry, and in 1990 I started working with John Shoemaker and Associates as a staff hydrogeologist. And in 1995 Mr. -- or Dr. Shoemaker made me a principal of the firm, and 14 years later I'm now vice president.

Q. So for the past 14 years you've been a hydrogeologist with John Shoemaker and Associates?

A. Yes.

Q. And did you say that -- did you -- Have you worked for an oil or gas company during your career?

A. I briefly worked in San Antonio for a petroleum geologist, or petroleum engineer, as essentially an apprentice geologist, go out and watch activities on various well sites and stuff, workovers, frac jobs, et cetera.

Q. Could you give a -- just a thumbnail sketch of the kinds of work you do at John Shoemaker?

A. You bet. I have really focused on water resource evaluation, both the quantification of groundwater but also the chemical aspects. A lot of my academic training was in geochemistry, so I've kind of jumped the fence a little bit there.

A lot of the projects that I've worked on have

ranged from things for -- everything, as far as clients, from a person that owns a domestic well, to industry, State of New Mexico and federal government, and all of those have related to wells and groundwater systems and analysis of those systems, whether to develop or protect them.

And more specifically, I've kind of gotten into the realm of modeling, which Dr. Shoemaker mentored me on, and I have developed a lot of regional groundwater fluid models within the State of New Mexico for municipalities and for the -- let's see -- State Engineer, thank you. Some of those models were the Tularosa Basin, Jornada, along the Rio Grande, various different models, San Juan Basin.

I've also had some experience with evaluating the feasibility of injection wells in the San Juan Basin as a project I did for the Gas Research Institute, which I now believe they've changed their name to something else.

Also kind of in parallel with that project was a fracture study looking at the occurrence of migration pathways for methane and water in the San Juan Basin along the Animas River valley.

Locally within the area that we're talking about here today, I've had quite a bit of experience of working in the Tularosa Basin and the Salt Basin, in the Tularosa Basin primarily for the City of Alamogordo and village of

Cloudcroft. Well, actually they're on the other side of the -- barely outside of the Tularosa Basin.

I'm currently working on the Tularosa Basin National Research Desalinization Facility for the Interstate Stream Commission and have done a detailed study of the Salt Basin, which we have used and revised for this particular, submitted -- or the work has been updated for the Coalition.

Q. And describe the nature of your study of the Salt Basin and who you did it for.

A. Well, it started off with a regional water plan for the Tularosa and Salt Basin. And then during that time -- I believe that was around 1999 -- the State Engineer became interested in what was going on in the Salt Basin. It was essentially an undeclared area. Very little was known about it.

And so then a few years later the Interstate Stream Commission hired us to do essentially an evaluation of the water resources in the Basin. Basically we collected all the data that was available to us and looked at what the possibilities were for developing water to meet compact deliveries related to stream-flow obligations.

Q. So you prepared a report for the Interstate Stream Commission on that area?

A. I did.

Q. And then subsequently you were hired to work in connection with the BLM's land plan amendment for the Otero Mesa area?

A. That's correct, I was hired by the Coalition to review the BLM Resource Management Plan and to provide comments based on my understanding of the water resources.

Q. And most recently the Coalition asked you to look at the proposed rules that are under consideration at this hearing and prepare the testimony you're preparing today?

A. They did, and I submitted comments which include the report that I've prepared that describes the details of the Salt Basin, and a summary letter that was attached to that and a map.

MS. BELIN: I would Offer Mr. Finch as an expert in hydrogeology.

CHAIRMAN FESMIRE: Any objection?

COMMISSIONER BAILEY: No.

COMMISSIONER CHAVEZ: No.

CHAIRMAN FESMIRE: He's acceptable as such to the Commission.

Q. (By Ms. Belin) Thank you. The format we would like to use is that Mr. Finch will go ahead and just make a PowerPoint presentation with his comments. I'll probably just have a few questions at the end, rather than a question-answer dialogue, if that's all right.

A. Okay, the map shown on the first slide of the PowerPoint presentation is from the report that I submitted as part of the comments, and it's titled Figure 7.

And what I wanted to, or how I envisioned structuring this, was briefly describe why there are important water resources in the Salt Basin area and then kind of give you a brief overview of where those resources are, just basically a description of the Basin since that's -- I think it's been lacking in this hearing -- and then provide some of the conclusions that are laid out in my report, and then finally my opinions related to the proposed Rule.

This map, which is Figure 7, shows -- the gray area is the outline of the Salt Basin. And there are several features I'd like to point out. One at the bottom is the Texas-New Mexico state line. And then at the top here, the Sacramento River comes in and essentially dead-ends in an area, a very vast linear feature that goes from the northern or northwestern to southeastern portion of the Basin that we call the Otero Break. And I'll discuss this in more detail here in a minute, but it's a significant hydrologic feature.

The little dots on the map represent water wells that we know about, and the yellow areas are areas of water-right applications that have been submitted to the

State Engineer.

There are a few communities that use the aquifer within the Salt Basin for municipal supply, one being Timberon, which is a small community up in the northwestern corner, right along the Sacramento River. The other is Piñon. And most of the other wells and dots in the -- I would say the western and northern parts of the Salt Basin -- are stock and -- primarily stock and domestic wells, until you get down into an area in the eastern -- the southeastern part which is called Crow Flat. Crow Flat is an area where there's significant irrigation and very productive wells.

In addition to Crow Flat you have an area right on the edge called the Dell City Irrigation District in Texas, right along the state line, and you'll see a concentration of wells down there. Those are primarily irrigation wells.

My next slide is a picture --

COMMISSIONER BAILEY: Before you leave that --

THE WITNESS: Yes.

COMMISSIONER BAILEY: -- what are the little red squares that are horizontal?

THE WITNESS: The little red squares. You know, that is an artifact of the land net, and I'm not really sure -- See, those are township/ranges --

COMMISSIONER BAILEY: Yeah.

THE WITNESS: -- and I'm not really sure what this part of that overlay -- and it has something to do with the land net, the way a survey was done or something, as far as the township/range stuff. I really don't know. It does look odd.

Well, the Otero Mesa area to the west of this has nice grasslands and antelope. To the east we have the irrigation and agricultural areas that I was talking about. This is right along the state line looking east. In the background there, you see the Guadalupe Mountains, and many of these wells produce over 2000 gallons per minute. It's very significant.

The first thing that I did when I started researching the Salt Basin was, I pulled up everything that I knew, or that I can find, and so I wanted to describe basically some of the major work that's been done on the area that I think has been overlooked by a lot of people.

In the 1950s the State Engineer did an assessment on the groundwater conditions in Crow Flat, which is east of Otero Mesa. And then -- or sometime after that, 1995, there's some work done by Mayer, which he did his PhD dissertation, and his advisor, Dr. Sharp -- They're both from the University of Texas at Austin. And they studied the Otero Break and the whole Salt Basin in great detail.

Mayer went out and mapped out all the fractures and provided great information on the types of fracturing, the distribution of them, and went to describe structurally how those occur, or why they're there, and also developed a groundwater flow model of the Basin.

Shortly -- maybe during the same time or thereafter, the New Mexico Water Resource Research Institute did a nice overview of water resources in the Salt Basin area and their trans-boundary aquifers of the El Paso and Las Cruces report that was one in several series, and then finally of the Tularosa and Salt Basin Regional Water Plan. We provided a lot of detail on the resources in that water plan, more than you see in the other regional water plans of the State.

This is my third slide, and it's really a generalized geologic map. It is also Figure 2 of the report that I've submitted as comments.

And basically what I wanted to show you are these regions that are divided by these green lines, and all of them except for the one in the Crow Flat area and down in the Salt Lakes, into Texas, by Dell City -- all those are -- there's bedrock at the surface, essentially, and it's primarily of Permian age, with the exception of right in the Otero Mesa area there's a series of hills, the Cornudas Mountains, which are, you know, volcanic intrusions and

things like that, that have come up.

One thing that I wanted to discuss or mention briefly about the water use from our previous map is that -- just to give you some numbers of what's going on in the Salt Basin, currently there's about 50,000 acre-feet of water rights that have been declared, and there's approximately 15,000 to 20,000 acre-feet of water that's historically been put to beneficial use.

Jumping back into the geology here, what I want to do is just show you what we -- some of the cross-sections that we put together, essentially to look at the vertical profiles of the aquifers. Here we have A-A', which is east to west on the north end of the Basin. And then down here is B-B'. Essentially it runs parallel to the state line. And I think this will give a good idea of what the aquifer looks like, and I'll point out some key features there.

Now, these cross-sections were developed from geologic mapping of what few -- or little data we had from wells, and also what the expected thickness or the measured thicknesses of those units are, the geologic units are in that area.

What you see here is, the blue primarily represents the Permian-age rocks, which are carbonate rocks. And then the red down here is primarily

Precambrian. There is a big section of rock missing from the Permian to Precambrian that was eroded off in the northern part of the Basin.

If you'll look at the scale on the -- the vertical scale on the map, each one of those numbers represents a thousand feet. And you'll see that the aquifer is approximately 1000 to 2000 feet thick in this region.

The black vertical line right here is called Number 1 -- I can't read it, but anyway that's an oil and gas exploration well, so we do have a control point there. These other black lines with the up-and-down arrows on them represent faults. And the faults -- those signify the northern part of what makes the Salt Basin, which is a graben feature. It's where rocks have been faulted and essentially dropped down.

Let's see, go to the next one.

COMMISSIONER CHAVEZ: Excuse me, you're saying that blue line is the water table?

THE WITNESS: That blue line is the water table at that point, and that's the regional water table. Thank you for helping me out there. There are also, in some of these arroyos and channels, there are perched water. So the depth of water, I'll touch on in a minute, is quite variable throughout the Basin. And I'll explain that. I

guess the next map would be my opportunity to do that.

Back to the geologic map that we had. Depth of water in the northern part up here, based on some of the wells that I've been involved with for the community of Timberon, ranges anywhere from 30 to 200 feet.

As you get out into the center of the Basin, the depth of water varies quite a bit, depending on whether it's a localized perched system or a regional system. And the measurements that I've seen range from one to five hundred feet.

Around the Cornudas Mountains, the same kind of thing. You'll see a lot more perched water, because it's a significant area of recharge. And I'd like to show my next cross-section, which goes through the Cornudas Mountains and down along the southern part of the Salt Basin.

As you can see, the blue line represents the water table on the regional system. Like I said, there will be shallower perched systems above that. A lot of the wells are in the perched system, and there are -- I'd say about half and half in the perched and in the regional system.

One thing that you can deem from this cross-section is that there's a lot of faulting that's been mapped, and -- plus with some well control. We know that those formations, there's blocks of them and they're

essentially stepped down to the east, and some around the Cornudas Mountains might be fairly high or closer to the land surface.

The blue color represents the Permian-age rocks again, that carbonate aquifer that I'm talking about, which is mainly the San Andres and the Yeso, similar to what the Roswell-Artesian Basin is composed of.

And this pink color here are the older rocks, sedimentary rocks, that from what I gather, reviewing the oil and gas logs, that's where some of the shows have been, in the Mississippian age, which probably might be in the middle of that pink section.

I would also like to make one other comment about the deeper rocks. Farther south and into Texas, right on the other side of the state line, I've reviewed some information on an oil/gas well that was done by Texaco years ago, and it was drilled down to, I believe, a little over 3000 feet. And they collected a water sample from the Fusselman formation, which is in the lower part of this pink stuff. And they took a water sample, and their analysis showed it was around 2000 to 2500 part-per-million water, which is fairly fresh for that depth.

There have been other publications that said there's a likelihood of fresh water at depth in this region, but with no specifics. Essentially one indication

is that the lack of salts -- we've been talking about salt beds, but the lack -- there are salt beds or gypsum deposits in the Yeso formation. The lack of them indicates a flushing effect, which means fresh water has moved through that system.

This slide is Figure 5 from my report, which shows groundwater or water-level contours, and this particular slide also shows the Salt Basin in New Mexico, as well as the portion in Texas. It extends fairly far into Texas, from Dell City on south, close to -- essentially all the way, practically, to Van Horn, Texas.

Q. (By Ms. Belin) Are the black numbers elevations?

A. The black numbers are elevations of the water-level con- -- that represent the water-level contours, yes. And the blue arrows are flow directions.

Now, one thing I would like to point out here that to me is significant as a hydrogeologist, the closer these lines are, the tighter their formation is and the less permeable the water -- I mean the slower the flow of water is, and the less will flow through that particular section of water. As they open up, means the formation has a greater transmissivity, it's able to move the water out faster.

Where these lines are greatly separated right here in the central part of the Basin, actually a good part

of the Basin, that's the Otero Break. And the Otero Break essentially consists of a group of fractures and faults and extremely high-density -- or high fracture density in areas right at the -- from where the Sacramento River stops, all the way to Dell City.

One thing we do not know is how deep these fractures are and the faulting. I suspect they're fairly continuous and deep. Essentially, it's a structure that's been reactivated from Pennsylvanian time, which means it was a structure that developed in those lower pink rocks, and then as the Permian rocks were overlaying it reactivated. So it's likely that it's fairly deep-seated, these -- this fracture system.

COMMISSIONER CHAVEZ: What number is that?

THE WITNESS: That is Figure 5 --

COMMISSIONER CHAVEZ: Figure 5 --

THE WITNESS: -- from my report.

COMMISSIONER CHAVEZ: -- thank you.

THE WITNESS: The well -- the oil -- or the gas test well I was talking about that had the fresh water down to 3000 feet was right over here, approximately 20 miles south of the state line, south of Otero Mesa.

COMMISSIONER CHAVEZ: Those elevations are sea level?

THE WITNESS: That is correct, that's feet above

sea level.

One thing, I did talk a little bit about the water use, but I haven't really mentioned anything about the recharge. And one of my big points about -- or the things that I've learned about this system is that it's a very large regional system. The Salt Basin, and particularly the Otero Mesa area, is a recharge area. It's -- You can see where all these flow lines are flowing towards the Otero Break, which essentially collects water and discharges it down to the Salt Lakes south of Dell City. But the recharge is primarily here where the fracturing is. There's also fracturing around the Cornudas mountains where the intrusions came up and essentially broke through the rocks around it.

This particular figure is appended in the report that I've provided, and essentially it's from Mayer and his PhD dissertation. And like I said, he went out and mapped the fractures, and that was a quite easy job for him. You can see here, this is the exposed rock, and that's a fracture, and so is this. And that's his dog up here. You read the title and it says, 45-pound dog for scale.

This is primarily exposed rock, and then the thin veneer of soil is what you see in the background. That's typically what I've seen in a lot of the Otero Mesa area, particularly in the Otero Break, is a thin veneer soil,

lots of fractures.

The recharge, quantity of recharge, has been estimated by several, including myself. But the estimates range from anywhere from 30 to 200,000 acre-feet a year, which is a lot. The 200,000 acre-feet a year I'm not buying. The 30 to maybe 75 is definitely more in the right ballpark.

Even given that, for how arid this climate is and the elevation, lack of snowfall and stuff like that, that is a significant amount of water. And what that means is that in order to have that much recharge you have to have a mechanism to efficiently really water from the surface to the ground, and that's indicative of the fracturing.

Let's see. The one thing I haven't discussed is water quality, and I couldn't -- within the short time frame I couldn't find a nice map that would demonstrate it, but there are maps that we've developed that show the distribution of water quality in the Tularosa and Salt Basin Regional Water Plan, which was adopted by the Interstate Stream Commission in 2002. But if I can just use my pointer, I think that might suffice.

Primarily, everything except for the Dell City and maybe part of the Cornudas Mountain area is less than 1000 part-per-million water. There is limited data on that, but we have fairly good coverage. And --

Q. (By Ms. Belin) When you say 1000 parts-per-million water, you mean 1000 parts TDS?

A. Correct, that's what I'm referring to, total dissolved solids. Essentially fresh water and -- what I call fresh water. I know the oil and gsa industry has a looser term for fresh water sometimes.

In the Dell City area the water is, although saltier -- and the reason why that is is because it's near the Salt Lakes or the playas, but also because of the extensive irrigation that's been going on for the last 50, 60 years, they've had a lot of return flow and kind of a little issue with salting of the water locally from agriculture.

The particular map I have up as a slide now is one that I submitted with my letter as part of the comment, and it shows many things. And it gets fairly complicated, but essentially I wanted to show everything I could on one map.

It has the water level contours, so you know the direction of flow, with the arrows. This brown line that covers a good portion of the Salt Basin, essentially the area of high fracture density that Mayer has identified, taken directly from his report. And then the light green coverage is from the BLM Resource Management Plan, which is the area that they claim has some -- I guess medium or

moderate oil and gas potential.

And there's some land ownership coverage here. The gray, which is also underneath this green -- it looks like a darker green -- that particular overlay represents the BLM land. You can see it's predominantly BLM.

Okay, I know I've missed some things, but hopefully I'll get questions where I can fill those gaps in. But I think I'll just go -- to save time, I'll just go right into my opinions that I've provided as public comment, and I'm just going to read them right off my PowerPoint slides, which makes it easier for me, and then conclude.

The first thing is that I think the proposed Rule is a good start, it's in the right direction for protecting water resources. I can probably talk all day on how valuable the water resources are. I know the Interstate Stream Commission would like to see those preserved for future use, as well as the Governor.

And the next bullet is essentially what I've pointed out. Given the geologic setting, which means the fractured rock, the lack of soil cover and the subsequent vulnerability of groundwater to contamination, the potential for leaks and spills needs to be eliminated to the maximum extent to protect known water resources.

I got the impression through listening to

testimony from the last day and a half of the hearing that people don't feel like they know a whole lot about the Salt Basin, and they probably don't. But I'm glad I'm here, because I feel fairly comfortable -- I've had five years of time to study the Salt Basin and I feel like it's a known water resource. We've quantified how much is there in the regional water plan, and for the Interstate Stream Commission's interest.

The groundwater in other areas has been impacted from oil and gas operations. I think that's been well demonstrated. Even though they're from older operations and the Rules might have been different at that time, they probably thought the Rules were great. They weren't good enough. We're learning all the time, and through that learning process, things eventually need to change.

I guess my comment on that is, Otero and Sierra County should not be put at risk to suffer the same consequences.

My opinions regarding pits, digging pits where there is little or no topsoil and fractured rock, I don't see how that's really a viable protective measure, or really economical. In the water-well business we wouldn't even -- we'd do a closed-loop system. It's just cheaper. I know there are differences in scale of depth, size of hole, all those kind of things, but I think there's room to

be able to modify things to meet those objectives.

The proposed Rule does not allow for pits, which I think is good, and supported by the things that I've observed and I've presented here today. Depth to water, we know, is less than 100 feet in many places. The fracturing is well documented, and there's a driving force for migration of surface spills. Essentially it's the recharge. If it spills out and becomes soil contamination, the recharge will drive it back in if it's not mitigated within a quick time frame.

Also, I think this has been discussed, but there are other things that are used in the oil and gas drilling, and I think the closed-loop system in the pits are a good idea when you -- it gives you the freedom to be able to use those things without worrying about the environmental consequences.

I know, for instance, I've seen a few cases where dealing with stuck pipe you'll have to circulate with diesel to get the stuck pipe out. Oil-based muds have quite a bit of diesel in them. I think I'd want to recover as much as I could. And I wouldn't even really recommend that in this particular area with the degree of fracturing.

For the injection wells, I'm not really sure if there's a zone viable for injecting produced water, unless if you inject it back into the zone you took it from, which

would be not in the interest of the industry.

There's a lot of unknowns as far as how deep-seated the regional freshwater groundwater flow system is, and I think given the structural setting it's probably likely it's there.

Also, with the fracturing and faulting there's a high potential for vertical migration. Even if you make the most beautiful Class I injection well, you can still contaminate the aquifer, freshwater aquifer, through these preferential pathways of faults and fractures. I don't think it's worth the risk to do it.

And then just some other things to conclude with, food for thought that I kind of picked up yesterday.

The water-well drilling methods are designed to protect the aquifer. They're quite different than oil and gas operations. Although we both do the same thing, we're trying -- I'm not saying oil and gas operations don't protect the aquifer. The primary method of a water well is to extract water, so you're going to do everything you can to maximize its production and maintain its integrity, while the oilfield and oil and gas industry has a similar objective, but mainly more focused for the resource they're trying to get. And a lot of times in lost-circulation zones, which might be freshwater zones, they'll use lost-circulation material, cement or whatever, which really, to

me, kind of -- what it does is, it ruins the porosity of the aquifer. It's not good for -- especially a fractured system. If someone wants to have a nearby well, it might limit that ability to do that.

The leaks that might incur from not -- using these -- the proposed Rule, from the past methods, essentially from buried piping, they're very difficult to detect in fractured rock settings. I've seen this in water systems. You'll have high water loss, you don't know where it's coming from.

And the last thing is, the water resource beneath the Salt Basin is -- it's really only an asset to the State of New Mexico if it remains protected and contaminant-free.

Right now, I remember Mr. Core saying that the feasibility of exporting water out of the Salt Basin to, say, the Pecos River or whatever was very low or negligible. Well, it would be even less if the resource is contaminated, and it kind of lessens our options to do things like that.

Q. I have just a couple of wrap-up questions.

A. Okay.

Q. Why, in your opinion -- why do you think that injection wells should be prohibited in this area covered by the Rule, as opposed to regulated as the Rule proposes?

A. Because I think there are areas that -- like I

said, you can construct a -- you can go through all the motions. You can do the calculations using the Tice equation, which doesn't apply to fractured rock. You can do all these things, even select another method, look at the -- you know, go through the motions of the regulations which are good in most cases.

But here, I think you still have the probability, or a high probability, of affecting a freshwater resource, mainly because of the fracturing and the depth at which it can occur. There's not much -- to my mind, there's not much separation between -- from what I know, between what might be the injection zone and the freshwater aquifer.

Q. Given all of your experience looking at water resources around the state, do you believe that the water resources in the area covered by this Rule are an extraordinary resource that deserve special protection?

A. Yes, I do, and that's -- I mean, I think the State has always had that in mind, in other areas as well, in their protection measures, to do that. But yes, I think this one is particularly of interest.

And it's not uncommon -- it's actually analogous in some ways to the Edwards Aquifer in central Texas. They've established a non-degradation policy where in the recharge zone there's no such activity for potential contamination.

Q. Because of the importance of this aquifer for --

A. Or that aquifer, right, that's right.

Q. And just so I understand, what are the hydrological problems that come from digging pits in areas of fractured rock with just a little bit of topsoil. Why do you think you shouldn't put pits in that kind of geology?

A. Well, you hit -- I mean, to dig a pit you'd have to excavate the rock, essentially. And a lot of times what a contractor will do is blast it out, which just magnifies the problem of the fracturing issue. And then you don't have a nice, even surface -- and I believe this was talked about by -- I've forgotten, maybe Mr. Olson -- where a liner or such can fail through a puncture.

It's just not worth the risk, I don't see the benefit. If I was a contractor, I wouldn't -- I'd rather do the closed-loop system.

Q. Is there anything else you want to add to your testimony?

A. I think I've done my -- my part.

MS. BELIN: I have no further questions.

CHAIRMAN FESMIRE: Commissioner Bailey?

EXAMINATION

BY COMMISSIONER BAILEY:

Q. Your reference to the Edwards Aquifer is rather

interesting since their issues have to do with resort hotels, golf courses, parking lots or shopping malls. Somehow I don't see Mall of America in Timberon.

A. No, you don't, but they also deal with -- Well, you never know about Timberon. They have, you know, high hopes. They did before their spring dried up. But it's the principle of protecting a recharge zone. You don't have to have a shopping mall or whatever. There's -- They also have special visions for underground storage tanks, well drilling, of provisions. There are many other things, rather than just what can be built on top of the recharge zone.

Q. Would a better comparison be right here in New Mexico, in the Carlsbad area, in the Dark Canyon area, and have special cementing provisions have been instituted for wells drilled throughout the fractured limestones? Wouldn't that be a more equal kind of comparison?

A. Well, you know, that's -- I'm interested in that, and I'm not as familiar, or I'm not familiar with that particular example that you've provided.

Q. Another thing that's crossed my mind is that this Application has to do with Otero County and Sierra County --

A. That's correct.

Q. -- but there's been very little testimony at all

for water resources or implications for Sierra County. I'm just curious why we should include Sierra County when we're talking Otero County water supplies?

A. Well, that's a very good question. I've done quite a bit of work in Sierra County, as well as Otero and the Tularosa Basin, and the geology is quite different. And I believe Mr. Core testified to that.

My primary focus was the Salt Basin, and the reason why is because it stands out from the rest because of its characteristics. I don't think you see those characteristics in the other parts of Sierra County or Otero.

Q. But you don't have any testimony for us to include Sierra County in our consideration of the --

A. I would be -- If you have an area in particular, I would be more than glad to provide testimony with what I know.

Q. You said that 50,000 acre-feet had been declared in the lower Otero County area, 20,000 acre-feet storage use. Do you know what the beneficial use is or is anticipated to be for those 70,000 acre-feet?

A. Maybe that was confusing. There's 50,000 acre-feet per year of declared water right. Of those declared rights, on the average, approximately 20 have been put to beneficial use.

Q. Oh, okay, I just had that wrong. The beneficial use, is that irrigation in Dell City?

A. No, that's irrigation in Crow Flats, that's municipal supply in Timberon and Piñon and all the other little -- you know, if you add up all the stock wells, all those things. It's a combination.

Q. So there is some beneficial use within New Mexico?

A. That is all in New Mexico. The Dell City portion, if you go right on the other side of the state line in Dell City, they pump over 100,000 acre-feet a year, and the City of El Paso is currently gearing up to spend $700 million to put a -- to buy good portions of that and pipe it to El Paso.

Q. With that high transmissivity within the Salt Basin, does that mean, then, that the rule of capture is applying here, that we are being drained by the Texas interests?

A. It does. The main thing, what we haven't -- the one reason why we haven't seen effects of great magnitude historically is because the return flows have been significant from the irrigation. Once El Paso starts to pump it, there will no longer be return flows.

Q. And so New Mexico will lose its resource through use in Texas?

A. To me, it is a very important card in the deck, with our ongoing water war with Texas. And New Mexico has the opportunity to develop that water and come up with good plans to use it, which would put the breaks on the Texas side, and that would be an extremely good negotiation tool for New Mexico.

Q. But at this time we're losing our water resources, we're not getting taxes from use of our resources if we offer oil and gas and coal --

A. Uh-huh.

Q. -- and uranium and other natural resources of the State --

A. That's right.

Q. -- we're not getting taxes, we're not getting royalties. So the beneficial use to New Mexico is only for a couple of small towns and a couple of ranches?

A. Well, and of that 20,000 acre-feet, I'd say 80 percent of it is agriculture and Crow Flat. So that's fairly -- you know, that's fairly significant, you know, 10,000 to 15,000 acre-feet a year of irrigation is nothing to sneeze at.

Q. Figure 2 shows the regional geology.

A. Yes.

Q. Has the northwestern portion showing as the Yeso formation and not the San Andres, which is more towards the

center and towards the Dell City area.

A. That's correct.

Q. Is the water quality in the Yeso as clean as the water quality around Dell City?

A. The wells that I've tested in the Timberon area are in the Yeso, and that's very fresh water. It's less than 500 milligrams per liter total dissolved solids.

Q. So -- You gave an example of water quality only around the Dell City area. I was looking for water quality more --

A. Oh --

Q. -- in other areas.

A. -- right, most of the Basin is 1000 milligrams per liter total dissolved solids, or less.

Q. That's what I was getting at.

A. We're blessed with the good quality of water, Texas is blessed with the ability to pump it from us.

Q. The intense fracturing is in the Otero Breaks area; is that what I understood you to say?

A. That's correct, and -- surrounding the Otero Break area, yes.

Q. What is the fracturing like in the other areas? Is it as widespread, or is it as conducive for transportation or whatever you call it in water?

A. Well, the map I showed, this brown line is

essentially the area that Mayer identified as extensive fracturing. I'd have to go back and look at his report, exactly how far he went to the west and east of that. But I'm not -- it's -- Primarily my understanding is that when you go back and look at the geologic map, the only place where there's not bedrock exposed at the surface or the -- you know, the Yeso or San Andres, is in the Crow Flat, which is essentially a small -- it's in the middle of the graben where sediments have filled in, so there wouldn't be fracturing there, except for below that.

Q. I'm looking for areas that don't have as high a potential for transmissivity as you have indicated, such as maybe in the northwestern area?

A. In the far north area, when you get up into the mountains, the Sacramento Mountains, where these water-level contours are fairly tight, around the communities of Timberon and Piñon and north, I'd say it's less fractured there, from my -- from what I know.

Q. So the testimony concerning the fracturing in the pipelines, as you have it, to Dell City --

A. Uh-huh.

Q. -- would not be as apparent everywhere, and there could be areas where the threat to groundwater as pictured by so many people over the last two days is not as threatening?

A. There may be localized areas, but even localized -- it depends on what your zone of influence is, as far as an injection well. In addition to the fracturing, there's the faulting that we showed on the map, that offsets the blocks, you know, essentially forms the Salt Basin graben.

So I think it's very complex. I'd be reluctant to say there's an area that's not vulnerable or susceptible in this particular region, Salt Basin.

Q. Including Sierra County?

A. No, I'm speaking just for the Salt Basin. Sierra County and the remainder of Otero County, it's quite variable. As Mr. Core testified to, you have the Rio Grande Rift, you know, the basin there. If you go out in the middle of the Tularosa Basin, essentially, you know, it's where the extremely saline water is, but it's also essentially mud. I mean, there's clay and silt. There's no fracturing there.

Q. Did you map the location of the hundred or so oil and gas wells to overlay your location of other wells in that --

A. I do have those locations, but I don't have that with me today.

Q. Could you see any impact from the previous oil and gas drilling on water wells?

A. I don't -- that assessment has not been done.

That would be quite an elaborate study all in itself.

Q. But for your purposes, you did not see any indications?

A. I don't think I can answer that question. I do not have the data to support it either way.

COMMISSIONER BAILEY: Those are all the questions I have.

CHAIRMAN FESMIRE: Commissioner Chavez?

EXAMINATION

BY COMMISSIONER CHAVEZ:

Q. Yes, in your slide titled Geology of Salt Basin, or Salt Basin --

A. Right, it was one of those cross-sections?

Q. Yes, I think that one right there.

A. Okay.

Q. I think it was the one before that --

A. Okay, that --

Q. -- with the same title.

A. Let's see, there's Figure 4 and Figure 3.

Q. That's the one I'm --

A. Okay.

Q. What you're showing there as the regional water table, that's the first occurrence of groundwater, is that what you're --

A. No, it's not.

Q. Okay, maybe I'm misunderstanding. What does that mean?

A. That is the regional water table. There are perched systems, as I described a lot of times, like along this geologic contact or in these valleys, there will be perched water that is essentially migrating down to the regional system. And you've got to remember, this is in the far north area, at the tail end of the Sacramento Mountains.

Q. Okay, so the water depth there, let's say right above where that little wording is, Otero Mesa, let's say the high point to just under the -- if you go down to the R, from there to the water table, we're looking at a distance of perhaps almost 2000 feet?

A. That's correct, in that particular area.

Q. Okay. And there doesn't seem to be any break because of the grabens for the regional table there on the right side of your graph. It seems like the regional water table is continuous regardless of what the geology shows with the grabens. Is that what that was indicating?

A. You mean the faulting doesn't affect the --

Q. Doesn't appear to affect the --

A. -- affect it as much?

Q. Right.

A. That's correct. My understanding is that a lot

of the faulting -- you know, faults can be barriers or conduits, and I guess it depends on which formation is offset from the other, but in this region the Yeso and the San Andres are fairly similar. There's not a big offset of totally different geologic units to cause a feature like that.

Q. Okay. In the very center of that slide, you show that regional water table with a bit of a dip in it --

A. Right.

Q. -- and yet you show the direction of flow downward?

A. Yeah, that is confusing. I need to probably brush that up a little bit.

Q. How would it look if you brushed it up?

A. I would probably take that one arrow out that's dipping down in the middle of that dip.

Q. Well, then on either side of it you have water flowing towards the center.

A. Right, then it's flowing out this way like a trough. This is only a cross-sectional plane, so there's another dimension we're not looking at.

Q. Okay. Then let's take a look at the other, similarly title, the B slide, that one there.

A. Okay.

Q. I guess according to those mountains with those

intrusions there, we have the same type of effect. There's no apparent change in water across there.

A. That's right, it's fairly -- from previous work that's been done by -- oh, I can't remember exactly who it was. It might have been somebody that -- New Mexico Tech was one paper, and then the City of El Paso has had me review their model of the area. And essentially the Cornudas Mountains is a highly fractured zone where it's radial flow of recharge away from it.

You can't determine the radial-flow from this -- a cross-section like this.

Q. Okay. You showed a slide where the fractures were right at the surface of the ground with very little soil, and you mentioned the -- There you go. How typical is that in the Otero Mesa area that -- the notation underneath says a fracture zone in Otero Mesa. Is this what might call typical of Otero Mesa, with this type of rock exposure with little soil?

A. You know, I've driven through the Otero Mesa area, Salt Basin, several times, and it's such a vast region. And I don't live there, so I'd be reluctant to say how typical this is. This is what Mayer presented as typical in his PhD dissertation.

Q. Okay. Now to the Figure 5 illustration that you have. There you go. You attribute the high

transmissibility to fractures. Now, we're talking about the same water -- regional water table that you showed in that other slide, the B-B' slide --

A. Correct.

Q. How -- Maybe I don't understand here. How is it determined that is more attributable to fractures than to some other connectivity of the natural permeability of the lithology of the rock itself?

A. Well, I took it from the PhD dissertation by Mayer and his advisor, Jack Sharp. They're the ones that did the very detailed study. And that's what I reference for this. The high-yielding wells that transect along that line also -- you know --

Q. So fracture permeabilities --

A. Fracture permeability has also been verified by well drilling, water-well drilling --

Q. Oh, okay.

A. -- in the southern part.

Q. This is kind of an odd one. Yesterday Mr. Core referenced a fault and I wasn't able to get back to him. Did you hear his testimony about a fault in Otero?

A. I vaguely recall that.

COMMISSIONER CHAVEZ: Okay. Well, I just wondered if there was something generalized there that -- it came up, that you might know about.

That's all that I have, thank you.

EXAMINATION

BY CHAIRMAN FESMIRE:

Q. I do need to follow up on something Commissioner Bailey said. I too don't understand the idea of 50,000 acre-feet of water rights and 20,000 acre-feet of beneficial use. Having spent some time at the State Engineer's Office, I thought those numbers would be pretty close together.

A. What happens is, say, a rancher, or a farmer or a a town or whoever, drills a well and then they file a declaration for a water right associated with that. Typically they'll file their declaration based on either -- let's take the farmer as an example. He's got a hundred acres he wants to irrigate, and his well will make 300 acre-feet. So he gets three acre feet per acre over his farm. That will be what he declares.

Now maybe over time, in reality, he only farms 50 acres. And so what he's diverting is half that.

And so when I talk about a declared water right, it's what people have declared as what they can legally use, and -- opposed to what they're actually pumping.

Q. So New Mexico could develop very easily another 30,000 acre-feet of use per year if the State Engineer were to step in and say, you know, if you don't develop this

right, you're going to lose it, right?

A. That's correct, those people can still -- until the State Engineer says you've forfeited your right, they could pump up to that amount.

CHAIRMAN FESMIRE: That was the only question I had.

Ms. MacQuesten, do you have any cross-examination for this witness?

MS. MacQUESTEN: No, Mr. Chairman.

CHAIRMAN FESMIRE: Mr. Carr, do you have any cross-examination?

MR. CARR: No, Mr. Chairman.

CHAIRMAN FESMIRE: Ms. Belin --

MS. BELIN: No further questions.

CHAIRMAN FESMIRE: -- do you have any other witnesses?

MS. BELIN: No.

CHAIRMAN FESMIRE: Okay. Why don't we take a 10-minute break and reconvene at 10 minutes to 4:00?

(Testimony of Steven T. Finch, Jr., was concluded at 3:50 p.m., Friday, June 18th, 2004.)

* * *

CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing excerpts of proceedings before the Oil Conservation Commission were reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the excerpted proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL June 23rd, 2004.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 16th, 2006