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

IN THE MATTER OF A SPECIAL
MEETING CALLED BY THE OIL
CONSERVATION COMMISSION FOR THE
PURPOSE OF CONSIDERING:
CASE NO. 25875

HEARING - DAY 1

DATE: Monday, July 27, 2026
TIME: 9:02 a.m.
BEFORE: Hearing Examiner Felicia Orth
LOCATION: Wendell Chino Building
1220 South St. Francis Drive
Pecos Hall
Santa Fe, NM 87505

REPORTED BY: Ryan Auten
JOB NO.: 8347071

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2 ALSO PRESENT:

3 Felicia Orth, Hearing Officer
4 Albert Chang, Commission Chair
5 Dr. William Ampomah, Commissioner
6 Paige Czoski, Commissioner
7 Zachary Shandler, Commission Counsel
8 Sheila Apodaca, Commission Clerk
9 Robert Balch, Attendee
10 Katherine Walton, WELC
11 Dean McClure, EMNRD, by videoconference
12 Elaine Heltman, NMSLO, by videoconference
13 Elvis Leunguen, EMNRD, by videoconference
14 Caroline Wachtman, Attendee, by videoconference
15 Allison Marks, Attendee, by videoconference
16 Oscar Quezada, Attendee, by videoconference
17 Delilah Dougi, EMNRD, by videoconference
18 Michael Buchanan, EMNRD, by videoconference
19 John Garcia, EMNRD, by videoconference
20 Patricio Sanchez, EMNRD, by videoconference
21 Peter Kondrat, EMNRD, by videoconference
22 Robert Mathes, Attendee, by videoconference
23 Tiffany Wallace, Attendee, by videoconference
24 Phillip Goetze, EMNRD, by videoconference
25 Heath Lovell, Attendee, by videoconference

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A P P E A R A N C E S (Cont'd)

ALSO PRESENT:

Gerasimos Razatos, EMNRD, by videoconference
Jasmine Sanchez, EMNRD, by videoconference
Ari Biernoff, NMSLO, by videoconference
Erin Ramaker, Attendee, by videoconference
Anthony Harris, EMNRD, by videoconference
Simon Addai, EMNRD, by videoconference
Sarah Clelland, EMNRD, by videoconference
Le Teaisha Carter, Attendee, by videoconference
Tami Knight, NMSLO ECO, by videoconference
BL, Attendee, by videoconference
Rebecca Rentz, Attendee, by videoconference
Claire Tate, Attendee, by videoconference
LLB, Attendee, by videoconference
Rosa Romero, EMNRD, by videoconference
Ana Gutierrez, Attendee, by videoconference

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P R O C E E D I N G S

MR. CHANG: Good morning. This is Albert Chang, chair of New Mexico Oil Conservation Commission. It is just after nine o'clock on July 27, 2026, and so I call the meeting to order.

This is a special meeting of the State of New Mexico's Oil Conservation Commission, and we are meeting today to -- primarily for Case Number 25875, application of the Oil Conservation Division to adopt various unique rules under the NMAC.

If I could have a motion to approve the agenda.

MR. AMPOMAH: Are we going to do a roll call?

MR. CHANG: Oh, I -- I'm sorry. I apologize. Let's start -- could we start with a roll call?

MS. APODACA: Yes.
Commissioner Ampomah?
DR. AMPOMAH: Present.
MS. APODACA: Commissioner Chair Chang?
MR. CHANG: Present.
MS. APODACA: And Commissioner Paige Czoski?
MS. CZOSKI: Present.

1 MR. CHANG: Great. Now I think I'm
2 ready to entertain a motion to approve the agenda.

3 DR. AMPOMAH: Mr. Chair, I did review
4 the agenda, and I so move that the agenda be accepted.

5 MR. CHANG: May I have a second?

6 MS. CZOSKI: Second.

7 MR. CHANG: Any objections?

8 DR. AMPOMAH: No objections.

9 MR. CHANG: Hearing no objections from
10 commissioners, so adopted.

11 On today's agenda, I -- I don't have
12 any minutes to approve or any other mechanics; right?
13 Okay. In that case, I will call Case Number 25875,
14 and I will turn it over to our hearing officer for
15 this matter, Ms. -- Ms. Orth. Thank you.

16 THE HEARING EXAMINER: Thank you,
17 Mr. Chair.

18 Good morning. My name is Felicia Orth,
19 the hearing officer appointed by the Commission to
20 conduct the hearing in the matter of the application
21 of the Oil Conservation Division to adopt Rules
22 19.15.41, 19.15.42, and 19.15.43 of the New Mexico
23 Administrative Code, docketed by the Commission
24 Administrator as Case Number 25875.

25 We -- we have a few things to do this

1 morning. The rulemaking will be conducted under the
2 Commission's rulemaking rules. Testimony will be
3 taken under oath and is subject to cross-examination.
4 For our -- Commissioner Czoski's benefit joining us
5 this morning, the rulemaking questions are posed first
6 by all the other parties and then by the Commission
7 and/or Commission Counsel on the way to a decision.
8 No decision will be made this week or this month. We
9 believe we'll continue through this week and at least
10 part of next week. Before ending, I will invite
11 public comment each day that the hearing proceeds.
12 Today, I'll invite public comment at 4 p.m., and every
13 subsequent day that we are actually in the hearing,
14 I'll invite public comment at nine in the morning.

15 If you will be offering public comment
16 and would desire simultaneous -- simultaneous
17 interpretation between English and Spanish or Spanish
18 and English, there will be interpreters available
19 during the public comment session of August 4th, and
20 again, on August 7th, if in fact we, again, make it to
21 August 7th.

22 There's a post-hearing process, which
23 the parties will have an opportunity to make their
24 closing arguments and offer up the findings of facts
25 or conclusions of law or draft statement of reasons

1 related to the Commission's decision. And everyone
2 will be informed as to which meeting the Commission
3 will be deliberating on the petition.

4 So we have a number of parties here.
5 Let's begin with appearances. Mr. Tremaine?

6 MR. TREMAINE: Good morning, Hearing
7 Officer, Commissioner Chairman, Commissioners, and
8 thank you for being here today. This is Jesse
9 Tremaine for the applicant, Oil Conservation Division.

10 THE HEARING EXAMINER: Thank you.

11 And do we have Mr. Pavlik or Mr. Cox?
12 Perhaps online?

13 MR. PAVLIK: Yes -- good -- yes,
14 correct. Good morning, this is Zach Pavlik. I
15 represent the Center for Biological Diversity, and my
16 co-counsel, Colin Cox, also online.

17 THE HEARING EXAMINER: Thank you,
18 Mr. Pavlik.

19 And for the conservation groups,
20 Ms. O'Grady?

21 MS. O'GRADY: Good morning, Madam
22 Officer and Chair Chang, members of the Commission.
23 My name is Morgan O'Grady for Dine C.A.R.E.,
24 Earthworks, San Juan Citizens Alliance, Sierra Club -
25 Rio Grande Chapter, To Nizhoni Ani, and the Western

1 Environmental Law Center. With me at counsel's table
2 is Attorney Rose Rushing. Thank you.

3 THE HEARING EXAMINER: Thank you,
4 welcome.

5 For Oxy, let's see, I think it's
6 Mr. Tucker?

7 MR. TUCKER: Good morning, Hearing
8 Officer and Commissioners. Aaron Tucker of Holland &
9 Hart, on behalf of Oxy USA. Thank you.

10 THE HEARING EXAMINER: Thank you.
11 For NMOGA?

12 MS. GUTIERREZ: Good morning, Hearing
13 Officer and Commissioners. Ana Gutierrez with Womble
14 Bond Dickinson. We also have Jessica Portmess online,
15 on behalf of New Mexico Oil and Gas Association.
16 Thank you.

17 THE HEARING EXAMINER: Thank you very
18 much.

19 And WildEarth Guardians?

20 MS. RUSCAVAGE-BARZ: Good morning,
21 Madam Hearing Officer, Mr. Chair, members of the
22 Commission. Samantha Ruscavage-Barz for WildEarth
23 Guardians.

24 THE HEARING EXAMINER: Thank you very
25 much.

1 All right. Just a few other
2 pre-hearing matters. We did have a motion to postpone
3 and dismiss for lack of authority under the relevant
4 statutes. I had indicated to Counsel verbally and --
5 and apologized for not having prepared a -- a written
6 recommendation before now, that I would be
7 recommending to the Commission that the motion be
8 denied. I think perhaps what might be best this
9 morning, so that we have it on the transcript, is just
10 a -- a brief kind of summation of your argument.
11 Would that be okay, no -- no more than ten minutes?

12 MS. O'GRADY: Madam Hearing Officer, I
13 may defer to Zach Pavlik if he is prepared to take
14 this on?

15 THE HEARING EXAMINER: Yeah.

16 Mr. Pavlik, can you argue there from
17 the platform? Just summarize the basis for your
18 motion to dismiss, if you would.

19 MR. PAVLIK: I'll get it as I can.
20 Just one moment, please.

21 THE HEARING EXAMINER: All right.

22 And then, of course, it will go to
23 Mr. Tremaine and any other counsel who'd like to weigh
24 in.

25 MR. PAVLIK: Okay, yes. Thank you for

1 the opportunity to argue this, Hearing Officer, and
2 just briefly summarize our position. This motion was
3 brought by the Center for Biological Diversity, Dine
4 C.A.R.E, Earthworks, San Juan Citizens Alliance,
5 Sierra Club - Rio Grande Chapter, To Nizhoni Ani,
6 Western Environmental Law Center, along with WildEarth
7 Guardians.

8 This is a joint motion to dismiss for
9 lack of jurisdiction for this rulemaking. And in
10 summary, what the motion argues is that neither the
11 Oil Conservation Commission nor the Oil Conservation
12 Division have the authority under the relevant
13 statutes to proceed with this rulemaking and
14 ultimately adopt any rule under this rule.

15 In terms of, you know, these arguments,
16 the -- the two statutes that are relied upon by the
17 Oil Conservation Division applicant in this matter to
18 suggest authority, those are the New Mexico Oil and
19 Gas Act and the Carbon Dioxide Stewardship Act, the
20 Geologic Carbon Dioxide Storage Stewardship Act; I'll
21 refer to that as just the Stewardship Act.

22 In terms of the, I guess, beginning
23 with the New Mexico Oil and Gas Act, we believe that
24 that act does not supply the requisite authority for
25 this rulemaking because the long-term permanent

1 storage of CO2 is a separate class of wells and it is
2 a separate program from the judicial New Mexico Oil
3 and Gas Act regulated activities that Oil Conservation
4 Division contains.

5 So the New Mexico Oil and Gas Act
6 concerns the conservation of oil and gas. It also
7 grants authority under a few narrow other subsections
8 of activities that OCD performs and those are
9 specifically articulated in that act. They have to do
10 with waste and waste water. However, the Oil and Gas
11 Act does not provide authority for an entire new
12 program and new class of wells, including the -- the
13 extensive permitting and regulatory framework that OCD
14 has put forth in this rulemaking.

15 In terms of the Stewardship Act, that
16 act is, of course, specifically tailored to the
17 long-term storage of CO2 underground; however, that
18 Stewardship Act is also very clear in its grants of
19 authority. In terms of its authority granted to the
20 New Mexico Oil Conservation Division, it grants
21 authority for largely post-operation ongoing
22 stewardship, and that involves -- according to the
23 act, it involves receiving certificates of closure.
24 It involves confirming that all of the closure
25 requirements have been undertaken by the operator, as

1 well as then sort of negotiating and navigating the
2 terms of the state's ultimate takeover responsibility
3 for those class of wells.

4 However, it does not allow for the
5 expansive framework that is put forth in this
6 rulemaking in this proposal. So the Stewardship Act
7 does not touch upon all permitting, all the technical
8 requirements, all of the site characterization, all of
9 these other aspects of the rule that OCD has -- has
10 currently put forth in -- the draft.

11 Additionally, and I think maybe more
12 importantly, in terms of the -- the Oil Conservation
13 Commission's according to the Stewardship Act, the
14 Stewardship Act really only grants a very express and
15 narrow authority to -- to establish a fee structure
16 for the Stewardship fund that's created by that act.
17 That stewardship fund is meant to help fund OCD's
18 activities with regard to post -- post-closure.

19 Importantly, the Oil and Gas Act grants
20 both these regular bodies of Oil Conservation
21 Commission and Oil Conservation Division, which would
22 then allow either of those entities to undertake
23 activities for which the other entity has authority to
24 undertake. That's not the case in the Stewardship
25 Act. In the Stewardship Act, each entity is named

1 individually and there is no express grants or
2 concurrent authority.

3 And I think that's probably good for
4 our purposes, in terms of just the summary of the
5 reasons, it -- it really just comes down to having --
6 having the authority for the rule as currently put
7 forth by the applicant, and it's our position that
8 without the concurrent authority that is present in
9 the Oil and Gas Act and without authority under the
10 Oil and Gas Act, the Stewardship Act does not go far
11 enough to allow the Commission or the Division to
12 promulgate this rule.

13 THE HEARING EXAMINER: Thank you very
14 much, Mr. Pavlik.

15 Mr. Tremaine, will you summarize your
16 response, please?

17 MR. TREMAINE: Yes, Madam Hearing
18 Officer, thank you.

19 I will not -- I will rely on the -- on
20 the papers to get into the detail, but I think I can
21 summarize on a few key -- key points here in regards
22 to the Motion to Dismiss.

23 The Division's position is -- is that
24 we, in part, rely upon the Oil and Gas Act to provide
25 the structure for permitting, enforcement,

1 inspections, and investigation generally. That's the
2 existing structure upon the framework upon which all
3 of the activities of the Oil Conservation Division
4 have been built. However, in terms of the Geologic
5 Carbon Dioxide Storage Stewardship Act, which for the
6 rest of the hearing, obviously, will be referred to as
7 the Stewardship Act, it would save us some time,
8 there's really two key provisions. Like, right at the
9 beginning of the act and I think that we can spend
10 some time arguing different legal interpretation, et
11 cetera, but here is really in plain language our
12 argument, that in 74-14-3.a, the act sets forth that
13 the Stewardship Act applies to sequestration
14 facilities that commence injection of carbon dioxide
15 after the date of the act.

16 Okay, and then 74-14-3.b expressly
17 provides authority to the Oil Conservation Division to
18 do two things. We have all necessary authority to
19 enforce the provisions of the Stewardship Act, and the
20 Division is authorized to adopt and promulgate rules
21 and issue orders for the implementation of the
22 provision of the Stewardship Act. And that is all the
23 further I think this argument needs to go.

24 The Division is acting upon the
25 expressed authority under 74-14-3.b and has submitted

1 this application to promulgate a rule in the -- in
2 seeking the grants of UIC Class VI primacy from the
3 EPA because geological -- sorry, CO2 sequestration
4 facilities are the exact same type of facility that
5 are contemplated in -- in Class VI regulation that are
6 currently permitted or allowed to be permitted in New
7 Mexico by the EPA. So what we are doing here is kind
8 of promulgate rules that bring regulation to those
9 facilities closer to New Mexicans that allow us to
10 promulgate regulations, which take into direct
11 consideration the specific needs of the -- the
12 geology, the environment, and the people in New
13 Mexico.

14 And the way in which we promulgate
15 those rules is to bring an application before the --
16 before the Commission. I think in terms of the
17 statutory construction argument, distinguishing the
18 rule promulgation authority between the Division and
19 the Commission is -- is fruitless, and we -- we have
20 that express authority, so that is how -- this process
21 is how we promulgate those rules.

22 THE HEARING EXAMINER: Okay, thank you,
23 Mr. Tremaine.

24 Is there any other counsel who'd like
25 to be heard on this question? No. All right. So

1 Commissioners, my recommendation is to deny the Motion
2 to Dismiss given the broad authority extended by the
3 New Mexico legislature to this Commission and the
4 Division under the Geologic Carbon Dioxide Storage
5 Stewardship -- Stewardship Act, which we should all
6 just call the Stewardship Act at this point, the New
7 Mexico Oil and Gas Act and the Safe Drinking Water
8 Act, which authority was actually included in the
9 Stewardship Act.

10 I think the totality of that authority
11 actually does authorize this Commission to adopt the
12 petition for these three rules because not only is
13 there express authority, as Mr. Tremaine has set out,
14 there is also authority that is fairly implied from
15 what is set out expressly under New Mexico case law.
16 If you have questions, I'm happy to answer them.

17 MR. CHANG: Commissioner Ampomah, any
18 questions?

19 DR. AMPOMAH: Yeah, Mr. Chang, if I
20 may, I do have a question both for the applicant and
21 then also for OCD, if I may.

22 MR. CHANG: Go ahead.

23 DR. AMPOMAH: So I'm looking at the --
24 the Stewardship Act rule, the law that was passed, and
25 I'm looking at Section 3, Subsection B, and I'll read

1 that. So the Division has the jurisdiction and
2 authority necessary to enforce the provisions of the
3 Geologic Carbon Sequestration -- Carbon Dioxide
4 Sequestration, Storage Stewardship Act, and may adopt
5 and promulgate rules and issue all this for the
6 implementation of the provisions of that act.

7 So my question to the applicant is:
8 explain to the Commission how OCD is going to be able
9 to implement the Stewardship Act where you do have EPA
10 having the primacy over UIC Class VI projects, but OCD
11 can still wait there and then implement the
12 Stewardship Act. Is there a correlation there? How
13 do you -- how do you more or less align these two?

14 MR. TREMAINE: So --

15 DR. AMPOMAH: -- to the applicant
16 first.

17 THE HEARING EXAMINER: The movement.
18 I'm sorry.

19 DR. AMPOMAH: Yeah, the movement.

20 THE HEARING EXAMINER: To the movement.

21 MR. PAVLIK: I'm sorry, sorry. Can
22 you -- I don't think I completely understood the
23 question. The -- you're wondering how to align the
24 authority that the -- that the applicant or that OCD
25 has currently to implement parts of the Class VI

1 sequestration program?

2 DR. AMPOMAH: Let me try to summarize
3 it. So what I'm asking you is, EPA do have the
4 primacy -- New Mexico do not have the primacy over
5 Class VI projects, right. Now, this rule is asking
6 OCD to implement Stewardship Act, so I'm asking you,
7 and I read the provision in there, that gives OCD the
8 authority to -- to promulgate rules and issue all this
9 for the implementation of the act. So I'm not saying
10 you, how do you square where OCD doesn't have -- well,
11 let's say New Mexico do not have primacy over Class VI
12 projects, but you are saying that this rulemaking is
13 not really -- we are not really -- they are not really
14 following the rule here. So how do you square, you
15 know, the Stewardship Act to where OCD or one has
16 issue or one has implement, and then they do not have
17 primacy?

18 MR. PAVLIK: Thank you, Commissioner
19 Ampomah. Yeah, I -- I understand now. So our
20 position is that currently they do not have primacy if
21 they're not able to, in this case, regulate Class VI
22 wells. And the Stewardship Act does not give them the
23 authority to do so in the -- in the broad fashion that
24 they seek to do so. So there could be an instance,
25 for example, in which a state takes control of

1 regulating a certain subpart of a program., and there
2 are ways for both EPA and the state to regulate
3 certain parts of the program under this sort of a
4 structure.

5 So our position is that the Stewardship
6 Act does give OCD in this example, which we see is
7 separate from OCC, but does give OCD authority to
8 regulate and to promulgate rules in order to fulfill
9 the purposes of the Stewardship Act, but based on its
10 language, the Stewardship Act is not broad.

11 The Stewardship Act specifically
12 relates to post-injection activities, post-injection
13 stewardship, and other post-injection,
14 post-operational aspects of the Class VI program. So
15 OCD does have jurisdiction and authority over those
16 grant -- those activities as granted by the
17 legislature, but any rule that it would seek to
18 promulgate would have to be within the bounds of that
19 authority, which does not extend to the regulation of
20 the Class VI program. That would be with EPA.

21 DR. AMPOMAH: Will OCD respond?

22 MR. TREMAINE: Yes.

23 MS. O'GRADY: Yes, if I may.

24 Commissioner Ampomah, may I add a little bit to
25 Mr. Pavlik's response?

1 Two additional points to make. Before
2 a state can obtain primacy from the EPA, it has to
3 show the EPA that it has the statutory authority to
4 regulate the -- the program that it is trying to take
5 on. So I think it's really the first question before
6 even looking to primacy is, does the state have the
7 authority to take on this program?

8 And this is a little bit relevant, but
9 also in response to what was discussed earlier,
10 traditionally, the Oil Conservation Division asks the
11 Commission to pass and promulgate rules. That's a
12 customary way that it passes rules. However,
13 typically, it is passing rules under the Oil and Gas
14 Act, which explicitly provides authority for the
15 Commission to pass rules.

16 And so saying that it is the common
17 practice for the Commission to pass rules on behalf of
18 the Division who here has authority to pass some
19 rules. I think we can all agree under the Stewardship
20 Act, that doesn't actually help the Commission here in
21 showing that it has statutory authority because there
22 is no -- unless you're relying on the Oil and Gas Act.
23 If you're only relying on the Stewardship Act and the
24 provision that you pointed to, Commissioner Ampomah,
25 the Commission doesn't have explicit authority to pass

1 rules on behalf of the Division under the Stewardship
2 Act. Thank you.

3 MR. TREMAINE: Thank you, Madam Hearing
4 Officer. Jesse Tremaine for OCD. So first off, I
5 want to start with I think the last thing that
6 Mr. Pavlik said about post-injection -- post-injection
7 activities. The Stewardship Act, that first section,
8 74-14-13.a, the Act applies to sequestration
9 facilities. If you look at the definition of
10 sequestration facility, which is 74-14-2.f, there's an
11 expansive list of activities that fall into that
12 definition for -- for equipment and monitoring
13 equipment, et cetera. So carbon dioxide injection
14 wells, monitoring wells, devices, science wells,
15 external monitors, et cetera and that, are all
16 pre-injection and during injection.

17 So the Act does not cut off at
18 post-injection activities. Sections of the Act do
19 speak to post-injection, post-closure, stewardship
20 transfer, et cetera, but the Act as a whole stands for
21 the proposition that the -- the Division has been
22 vested with the authority to regulate the entire
23 program.

24 In response to Commissioner Ampomah's
25 question about how the OCD could implement this

1 program if we don't already have primacy. First, I
2 would point out that the State of New Mexico has
3 concurrent authority with other agencies and the --
4 and the federal government on any number of topics.
5 For instance, the -- New Mexico already has primacy
6 for all other UIC classes, I through V. Class II sits
7 with the Oil Conservation Division, as -- as you're
8 well aware, covering saltwater disposal injection
9 wells and -- and in certain cases acid gas injection
10 wells. The EPA still has authority there as well, but
11 the state is acting in primacy, first and foremost,
12 but the EPA could, if necessary, assert that authority
13 and regulate over those wells. So this would not be
14 an uncommon structure.

15 Secondly, and I think the -- the best
16 answer here is that really what you're asking is an
17 order of operations question, which is that so OCD has
18 the authority to regulate sequestration facilities
19 and -- under the Stewardship Act, and in order to
20 effectively implement that program, we have to
21 promulgate a rule, all right.

22 So one of the requirements, as -- as
23 Ms. O'Grady just indicated, was that we have to, after
24 this hearing, go back to the EPA, who we've been
25 discussing this project with for the last year and a

1 half, two years, and demonstrate to them that we have
2 the statutory authority. That's already been
3 discussed and that's already in the works with the
4 EPA. And then we have to show them the rule so that
5 the EPA can vet that the rule that -- that New Mexico
6 has promulgated is at least as stringent as their
7 rule, right. They will not grant primacy to New
8 Mexico for us to take over that program unless we can
9 say it's at least as protected in any -- in any
10 particular way.

11 That requires a very large amount of
12 work, comparison and drafting between the rules, and
13 this will explain and I'll go into some more detail
14 later, about why the rules are structured the way they
15 are, why we've relied so heavily on EPA language and
16 the structure of the rules, why this is three parts
17 instead of one part, et cetera. All of those are
18 considerations that were intentional, whether they
19 looked at it or not, because we've adopted the EPA
20 structure. So we have to have a rule.

21 Now, if we -- if you promulgate a rule
22 and then the EPA says, no, you don't get primacy, the
23 program won't stand up, practically speaking. But we
24 have to do this before we can get to primacy.

25 THE HEARING EXAMINER: Does that answer

1 your question, Mr. Ampomah?

2 DR. AMPOMAH: Yes. Yeah.

3 THE HEARING EXAMINER: Mr. Chair?

4 MR. CHANG: Well, I'll defer to the
5 Commissioner.

6 MS. O'GRADY: No questions.

7 MR. CHANG: So if I could follow up
8 with a question, Ms. -- Ms. O'Grady. So I want to
9 separate and think about this in -- in two different
10 ways. One is the process, which I think you alluded
11 to about the -- the division of labor between the
12 Commission and the Division and the way the statute
13 was written granting rulemaking responsibilities and
14 authorities to the Division, but doesn't specifically
15 call out the Commission.

16 And then there's -- we can separately
17 talk about the scope of that particular act and what
18 kinds of rules, you know, whether or not the
19 Commission is the right forum separate from the scope
20 of what the OCD is asking for and whether that fits
21 under the Act.

22 So let me turn to the process question
23 first, because I -- I get where you're going -- I -- I
24 mean, I see your argument that the -- the statute
25 explicitly uses the word "Division" and doesn't use

1 the word "Commission" in that -- in the -- in the
2 relevant operative provisions here. Is that -- is it
3 possible, in your view at least, that that's because
4 the legislature saw the two acts as operating in
5 concert and therefore granting the OCC -- or by
6 granting rulemaking authority to the Division, they
7 understand that the Oil and Gas Act, which already
8 existed at the time the Stewardship Act was passed,
9 would have the process run through the Commission?

10 Because I'm trying to figure out is,
11 what would that look like, right, if the -- if the
12 legislature intended for rulemaking to happen outside
13 of the Commission via the Division. I'm trying to
14 figure out whether that's an interpretation --
15 whether -- whether taking such a narrow view of the --
16 the liberal wording of the -- of the statute and
17 Stewardship Act could hollow out the purpose of
18 the -- the Stewardship Act, because it -- the -- we
19 would end up interpreting the words of the legislature
20 as asking an entity that does not have a rulemaking
21 function -- or that doesn't have a rulemaking process
22 to conduct rulemaking, right. Like, wouldn't that be
23 inherently intention with itself?

24 MS. O'GRADY: Thank you for the
25 question, Chair Chang. I -- I do understand your

1 point, and I can't speak to what that process would
2 look like for the Division to pass rules, because it
3 is my understanding that typically they ask the
4 Commission to pass rules. However, these are housed
5 in different parts of the statutory framework, right.
6 The Oil and Gas Act is in -- and forgive me, oh,
7 Chapter -- Chapter 72, and this statute is housed in
8 Chapter 74, which I think is very curious because
9 there's nothing else for the Oil Conservation Division
10 within Chapter 74, to my knowledge.

11 I think that if this were housed within
12 Chapter 72, absolutely you could tie back to that
13 provision granting concurrent rulemaking authority to
14 the Division and the Commission. But unfortunately,
15 because it's housed in Chapter 74, I -- it seems like
16 to me, like a strange reading of the statute to say
17 they intended to tie back to a very different statute.

18 MR. CHANG: Fair enough, and I
19 appreciate that. But on the flip side of that --
20 and -- and I'll let OCD weigh in, too -- the flip side
21 of that is then we've got a legislative directive to
22 make rules to a body that can't make, and correct me
23 if I'm wrong, but it seems like that would be
24 interpreting the legislature statute in a way
25 that's -- that is inherently contradictory to the way

1 it's drafted.

2 MS. O'GRADY: I don't have a -- a great
3 response to that, Commissioner -- Chair Chang, and
4 perhaps other counsel have other responses. I think
5 it may have been an oversight of the legislature and a
6 mistake, perhaps -- or yes, perhaps -- I don't -- I
7 don't know exactly what they intended. I don't know
8 what that process would look like for the Division,
9 but I don't believe the Division can look to a
10 different part -- a different chapter for authority
11 for the Commission to pass these rules.

12 MR. CHANG: And certainly on behalf of
13 the Commission, I always hesitate to even imply that
14 the legislatures would -- would have done anything
15 that was -- was less than perfect drafting.

16 OCD, would you like to respond?

17 MR. TREMAINE: I -- I would. Thank
18 you, Chair.

19 I -- I apologize. I meant to answer
20 this in the last question and never read my note.
21 I -- I think that the -- to clarify the rules of the
22 Division and the Commission, I think the legislature
23 spoke to this years ago, and in 70-2 -- and to clarify
24 for the record, it's Chapter -- Chapter 70, Article 2,
25 and that gets -- on the record, gets turned into 72

1 all the time. It's 70-2.

2 So 70-2-6.b says that -- well, A speaks
3 to the Division authorities and B says that "The
4 Commission shall have concurrent jurisdiction and
5 authority with the Division to the extent necessary
6 for the Commission -- Commission to perform its duties
7 as required by the law," and then -- and then goes on.

8 This would not -- in 74, Environmental
9 Improvement, this statute I would submit is located
10 in -- in Article 70 -- Chapter 74, because it relates
11 to protection of groundwater. That relates to the,
12 say, Drinking Water Act, et cetera. It is not
13 uncommon for the Oil Conservation Division and
14 Commission to issue orders, promulgate regulations,
15 enforcement related to protection of ground or surface
16 water.

17 In fact, like groundwater discharge
18 permits, for instance, the source authority for that
19 does not come from the Oil and Gas Act. It's
20 regulated by the Oil Conservation Division because the
21 Division has the subject matter, experience, and --
22 and technical expertise to deal with the types of
23 wells and facilities that are -- that are contemplated
24 under certain specific sections of that act.

25 That is a more complicated example

1 because that authority for the Water Quality Act is
2 split up between NMED and -- and OCD. But we have
3 this analogous structure throughout New Mexico
4 statutes and I think it is clear that that was
5 intended here.

6 Also, just in terms of the statutory
7 construction, the legislature is certainly aware of
8 the language in 70-2-6, and I think that we have to
9 give them the benefit of the doubt that they -- that
10 they were aware of their own statute at the time that
11 they promulgated the Stewardship Act, and that this
12 was understood, that the Division was going to do
13 this. In fact, it -- it was -- I would submit that
14 there was a question of what agency should -- should
15 promulgate these rules, and it was specifically
16 decided that this should be the Oil Conservation
17 Division, and that's why this went into the Act, the
18 specific language that's referenced there.

19 THE HEARING EXAMINER: I have a
20 question, Mr. Tremaine. My memory is that the
21 preliminary steps for pursuing a rulemaking before any
22 of the boards and commissions that make rules for the
23 various agencies, especially the environmental
24 agencies, is that a letter is required to go to the
25 Legislative Counsel Service and the Small Business

1 Association. Did that happen in this case?

2 MR. TREMAINE: It is my understanding
3 that that happened through the -- the Commission clerk
4 and the -- the -- we have received approval through
5 the State Record Center for -- to promulgate these
6 rules in those particular sections.

7 THE HEARING EXAMINER: All right.
8 Thank you. Other commissioner questions?

9 MR. CHANG: Not so much a question, but
10 I think I'm ready to make a comment, I think, and then
11 make some recommendations to my fellow commissioners.

12 I want to recognize and I hear the --
13 the movements -- the -- the movement's reading, and I
14 get it, and -- and I thank them for a very close
15 speaking of -- of the statutes here, and I certainly
16 appreciate the careful consideration of the scope of
17 the Commission's jurisdictions and we -- I certainly
18 acknowledge that the last thing I want is to make
19 everybody sit through two weeks of hearings only to
20 end up -- end up out -- in -- in some sort of
21 outside -- outside the authority of the Commission to
22 act.

23 But I want to turn back to the language
24 in the Oil and Gas Act, which is 72 -- 70-2-6.b, where
25 it says, I think -- and OCD -- and OCD Counsel

1 Tremaine just quoted the language here that says, "The
2 Commission shall have concurrent jurisdiction and
3 authority with the Division to the extent necessary
4 for the Commission to perform its duties as required
5 by law." It's not limited to this particular law or
6 this act, and it simply says that the Commission and
7 the Division has concurrent jurisdiction and authority
8 as required by law, in general.

9 And so I -- it -- it is my view and my
10 recommendation to commissioners that, at least in
11 terms of the process of whether or not the Commission
12 has the authority to participate in this rulemaking,
13 it would be because we have the jurisdiction to
14 perform a duty as required by the Stewardship Act,
15 which is law, even if it's not part of the New Mexico
16 Oil and Gas Act. And with that, I'll -- I'll turn it
17 over and see if there's further discussion on this
18 point from other commissioners.

19 DR. AMPOMAH: Mr. Chair, I do agree
20 with your submission on this matter, so I'm leaning in
21 the -- I am more leaning towards the recommendation
22 from the -- the hearing officer. Thank you.

23 MR. CHANG: And that said, I think
24 we've addressed the process question of whether the
25 Commission has the authority to hear it at -- at this

1 moment, at least, but that does leave the -- the
2 question of scope, of what exactly the rule entails
3 and whether or not any part of a proposed rule that we
4 get to at the end of the hearing may or may not be
5 within the scope of what the -- the statutes
6 themselves confer.

7 So I think I'm happy to -- to take the
8 recommendations from Commission Counsel and from the
9 commission hearing officer at this moment, but if
10 there is -- if there does remain a question as to
11 whether or not the rule at the end of -- the actual
12 substance, whether that the scope issues falls within
13 the statute or the grant -- I -- I'll speak for --
14 just for myself at the moment, but I wouldn't be
15 opposed to if -- if parties still have a question
16 about that at the end of the hearing, will we have a
17 better sense of what the scope of the rule looks like,
18 I'd be happy to entertain, assuming my other
19 commissioners agree with me at that point, but I think
20 we can talk about whether or not the scope of whatever
21 the -- the package of proposed rules fit within the --
22 the statutes at that point.

23 But I think it might be a little early
24 for us to weigh in on that at this point, since we
25 haven't fully explored or given the parties a chance

1 to lay out what exactly the proposed scope of these
2 rules are. Should we -- at this point, should we
3 entertain a motion or how -- if you have a
4 recommendation?

5 THE HEARING EXAMINER: I would ask
6 Mr. Shandler if you made a motion.

7 MR. SHANDLER: Madam Hearing Officer,
8 Mr. Chair, a motion may be appropriate, but I -- I
9 don't know what the motion is, so it's -- I don't
10 know. It's a possibility.

11 MR. CHANG: Well, I will let my other
12 fellow commissioners weigh in at the moment, but I
13 believe the motion would be to deny the motion to
14 dismiss.

15 DR. AMPOMAH: And, Mr. Chair, so that
16 would be whether the Commission do have the authority
17 to hear the case or not, but that would be the first
18 part. But you still leave room if, let's say, other
19 parties believe that the -- the scope of the rule is
20 more or less beyond the scope of the Act, then we are
21 still looking to readdress that.

22 MR. CHANG: My suggestion is to deny
23 the -- the current motion in front of us to deny the
24 motion, but -- I -- I -- I'm happy -- you know, if
25 because, right, who knows whether -- maybe the parties

1 will all agree that there's no scope question at the
2 end, right, but if there are questions, I think there
3 will be a better time for us to address that at the
4 end, so -- but right now, I think my suggestion would
5 be to deny the motion in front of us and proceed to
6 the rulemaking. And if parties wish to renew a motion
7 regarding the -- the -- those jurisdictional
8 questions, we can take that on at the appropriate time
9 at the end as a new motion.

10 MS. CZOSKI: I agree with Commissioner
11 Chang to look at the scope as we go through the rule,
12 because there might be some concerns about things that
13 are missing.

14 DR. AMPOMAH: Mr. Chair, with that, I
15 so move that the application be denied at this time.

16 THE HEARING EXAMINER: The motion.

17 DR. AMPOMAH: The motion be denied at
18 this time.

19 MR. CHANG: May I have a second?

20 MS. CZOSKI: Second.

21 MR. CHANG: Any objections from
22 commissioners?

23 DR. AMPOMAH: No objection.

24 MS. CZOSKI: No objections.

25 MR. CHANG: Without objection, so -- so

1 ordered. Thank you very much.

2 I will turn the proceedings back over
3 to our hearing officer.

4 THE HEARING EXAMINER: Thank you,
5 Chair Chang.

6 So just to briefly summarize what we're
7 facing here as we go forward, the next thing that
8 happens is I will invite opening statements. Parties
9 have the opportunity to make an opening statement this
10 morning or to reserve their opening statement until
11 they make their own presentation. Those opening
12 statements are limited to 15 minutes apiece.

13 Then we will hear from the Oil
14 Conservation Division witnesses first. They have a
15 total of six witnesses. Five of them have both direct
16 and rebuttal testimony. One of them has direct. The
17 Division has discretion to present their witnesses as
18 part of a panel or individually; that's entirely up to
19 them. We'll then proceed to -- oh, and direct
20 testimony is limited to 60 minutes, rebuttal is
21 limited to 30, and then the other parties may
22 cross-examine for up to 30 for each witness.

23 We'll then hear from the Center for
24 Biological Diversity, then the conservation groups,
25 then Oxy USA, and then -- each of which has witnesses.

1 NMOGA does not have witnesses, but they are a party
2 for purposes of cross-examination and argument. The
3 same with WildEarth Guardians. And again, when we get
4 to four -- four o'clock, regardless of where we are in
5 the technical case, I'll invite public comment, both
6 in the room and on the platform.

7 So Mr. Tremaine, would you like to
8 offer an opening statement? Oh, I'm very sorry. Hold
9 on. Commissioner Ampomah has a question.

10 DR. AMPOMAH: Yeah, a quick one. So on
11 the -- this is the -- the procedure here. I do have a
12 quick question with regards to the cross-examination.
13 Now, if you look at the applicant witnesses, I mean,
14 there is one witness that is a chief witness. So I'm
15 wondering if that 30 minute cross-examination for all
16 the parties is more or less enough? Because some of
17 the witnesses probably will be 15 minutes, will be 10
18 minutes, but the chief expert, I'm not sure if 30
19 minutes will be enough.

20 MR. TREMAINE: I -- I would like to
21 respond, Commissioner Ampomah. So one -- I -- I think
22 this is -- it -- it is typical that we have witnesses
23 whose duration of their testimony and their
24 cross-examines are longer than others, and that is
25 some people, in terms of questions, do heavier

1 lifting. But this is a true multidisciplinary group,
2 and I think -- I think you're probably referring to
3 Dr. Schnaar, the -- the depth of the testimony and
4 the -- and the direct testimony.

5 But I would point out a couple things.
6 One, these are the rules that all the parties agreed
7 to. Two -- two, we are -- and I'll -- I'll talk about
8 the breakup, but we want to make sure that the right
9 witness gets the right question, and so we're
10 proposing to submit our witnesses in two panels.
11 Hopefully you agree with the logic of how we've broken
12 that up when we get there. And then each of the
13 parties gets half an hour.

14 So I -- I think that's -- I think
15 that's ample, and I will -- I have instructed my
16 witnesses on -- on the fact that the Commission does
17 not have time limits on its questions, so that's --
18 these are the rules of the venue, so we -- we haven't
19 constrained that at all. I do think that across the
20 board, I think half an hour is fair, and in the
21 interest of administrative efficiency, we've seen this
22 in -- in prior cases as well, that there has -- there
23 has to be a cutoff in -- in terms of cross-exam time
24 or we could -- if we started asking all of the
25 witnesses about every paper that they ever wrote or

1 commented upon, we could be here into September.

2 THE HEARING EXAMINER: Okay. All
3 right. All right, let's see. So, Mr. Tremaine, would
4 you like to begin your opening statement?

5 MR. TREMAINE: I will, thank you.

6 Madam Hearing Officer, Mr. Chair,
7 commissioners, members of the public, and the other
8 parties, thank you so much for being here and for all
9 of the time, attention, and the extensive preparation
10 that I know that the commissioners and the parties
11 have put into this case to be here today.

12 We're here because the State has
13 made -- declared the attainment of Class VI primacy,
14 the only remaining UIC class for which New Mexico does
15 not have primacy. This program has been an over
16 two-year priority for the State of New Mexico. As we
17 discussed earlier, this is also met with legislative
18 support in promulgation of the Stewardship Act, which
19 enabled the Oil Conservation Division to regulate
20 sequestration facilities in addition to its
21 authority -- general authorities under the Oil and Gas
22 Act.

23 Carbon sequestration is a permanent
24 carbon sequestration to be distinguished from
25 temporary or -- or enhanced oil recovery, CO2

1 injection. It is a program that, if appropriately
2 regulated, may present both environmental and economic
3 benefits. New Mexico primacy for Class VI would allow
4 for the greatest local New Mexico oversight over
5 projects and implementation of more stringent
6 requirements than that -- than currently exists at the
7 federal level.

8 We got here because the OCD engaged a
9 multidisciplinary team to assist with both the
10 development, the public engagement, and the
11 promulgation of the related rules. So you'll see that
12 we have a lot of witnesses that are not OCD staff. We
13 have relied upon New Mexico Institute of Mining and
14 Technology as a chief contractor and subcontractors
15 associated with -- with commonly referred to New
16 Mexico Tech generally throughout the hearing, and --
17 and so those are -- five of our six witnesses are
18 either associated with the university or -- or
19 subcontractors working for the university specifically
20 on this program.

21 Our strategy broadly is to rely upon
22 the existing EPA framework, the -- both the
23 regulations that are promulgated in the -- in the Code
24 of Federal Regulations and their guidance, but to
25 build extensively upon that for any areas where New

1 Mexico proposes to be more stringent.

2 In order to achieve primacy, the state
3 must act on the authority in the Stewardship Act and
4 promulgate Class VI rules that are at least as
5 stringent as the federal rules. If the Commission
6 promulgates these rules or a variation of these rules
7 as a result of this hearing, this next step after that
8 will be that the OCD will submit a final primacy
9 application to the EPA, including the final rules as a
10 part of that application.

11 Again, most of the rules -- I'm -- I'm
12 belaboring this point because most of the rules text
13 will mirror the CFR, so deviations contemplated from
14 the CFR from that language necessarily require a
15 review by the EPA and a stringency analysis. So we've
16 been intentional about where we're proposing to -- to
17 the EPA. So our intent, our presentation, OCD's
18 response to public comments and the -- and the
19 proposed redlines is to avoid edits that are -- that
20 are not substantively necessary.

21 This has also led to a process of the
22 amended application and the proposed changes to the
23 amended application reflected in OCD Exhibits 1, 2,
24 and 3. As the final proposal submitted by the
25 Division, I will rely chiefly in reference on OCD

1 Exhibits 1, 2, and 3. If those -- as the -- as the
2 final version, those were submitted as entirely new
3 language. If there are questions regarding exactly
4 how specific instances of those changes from the
5 amended petition, I'm happy to share redlines on that.
6 We have those prepared, but the proposed changes are
7 the final -- the final proposal.

8 Why did we make those changes? As
9 those who have participated in recent rulemakings
10 know, there are points in time typically after
11 rulemaking where -- where formatting, citation styles,
12 et cetera, are caught. I've seen this happen in -- in
13 recent cases. So I want to reiterate that we have not
14 proposed substantive changes here based on lessons
15 learned in prior -- prior rules and specific
16 instances, which Dr. Schnaar and others can testify
17 to. There are reasons why upon review for publication
18 of the rule that we identify additional changes where
19 needed.

20 And so specifically our citation style
21 and the federal citation style, they're -- they're
22 quite different, and so these -- this is a dense
23 technical rule that has a ton of cross references in
24 it. So there are frequent changes to the final
25 proposed rule because of those citation styles. The

1 other one that is becoming a recurring theme in ruling
2 these is the and/or discussion, and that -- the scope
3 of that issue when I submitted the -- the amended
4 application, it did not, frankly, catch the full scope
5 of the issue. The -- the underlying issue is that the
6 EP -- the Code of Federal Regulations actually used --
7 uses and/or in numerous places. We did not realize
8 early on in this process that that was prohibited
9 under a legislative drafting manual in New Mexico, did
10 not catch that, so we have made that change.

11 So it looks like there are a lot of
12 changes, but they are -- we can outline and speak
13 about those individually, and those are the reasons
14 for those. We are trying to do this upfront so that
15 those changes are not necessary or contemplated in the
16 middle of the hearing or after a rule is promulgated.

17 In terms of our order of presentation,
18 our intent is to lead off with the direct and rebuttal
19 testimony of Dr. Gregory Schnaar and then move on
20 to -- with the Environmental Bureau Chief, Justin
21 Wrinkle and then Dr. Sai Wang. We'll follow him with
22 Matt Eales and then Dr. Hassan Khaniani and then last,
23 we'll have the direct testimony of Jennifer Raney.

24 So in an effort to improve efficiency
25 and ensure that questions are directed to the right --

1 to the appropriate witness, we would offer Division
2 witnesses in two panels for cross-examination. So
3 we'll go all the way through the direct and rebuttal
4 testimony of all -- each six -- of the six witnesses
5 and then I would propose, if it pleases the
6 Commission, two separate panels: first one for cross
7 and Commission questions would be Dr. Wang and
8 Dr. Khaniani. I think that they have very technical,
9 very more specific testimony, and I believe that the
10 questions will most likely be, you know, logically
11 sorted for those -- for those witnesses. The second
12 panel would be Dr. Schnaar, Matt Eales, Jennifer
13 Raney, and Justin Wrinkle, and so that would cover the
14 structure, that would cover any questions about the
15 decision-making process, specific areas of -- of
16 stringency, et cetera.

17 And just as we discussed, I just want
18 to express that to the understanding that the other
19 parties may present their witnesses for cross as they
20 see fit and however satisfies the Commission, we deny
21 as that panel cross-examination of other witnesses.

22 So in -- in summary, in pursuing this
23 promulgation of this rule for carbon sequestration,
24 the OCD relies on the Stewardship Act, the expressed
25 authority there, the -- the Oil and Gas Act to provide

1 the structure, permitting, and enforcement,
2 inspection, and investigation authority, and again,
3 rely heavily on that rule structure from the EPA,
4 including EPA guidance, and I think that will become
5 clear as we -- as we work through and -- and reference
6 both the exhibits and rebuttal exhibits.

7 So the intent of the OCD is to present
8 this rule so that the meaningful discussion of this
9 hearing is focused on the areas where New Mexico or
10 the other parties propose to strengthen the federal
11 regulations and -- and not necessarily the base
12 language of those federal regulations. But
13 ultimately, we believe that New Mexico now proposes a
14 rule which results in -- which will result in a grant
15 of primacy for Class VI in the State of New Mexico and
16 will protect the interest of New Mexicans through
17 robust permitting, monitoring, and public
18 participation. Thank you.

19 THE HEARING EXAMINER: All right, thank
20 you.

21 Let's see, Mr. Pavlik, would you like
22 to offer an opening statement now or reserve?

23 MR. PAVLIK: We'd like to reserve,
24 thank you.

25 THE HEARING EXAMINER: Thank you.

1 Ms. O'Grady?

2 MS. O'GRADY: Conservation would also
3 like to reserve. Thank you.

4 THE HEARING EXAMINER: Thank you.
5 Oxy?

6 MR. TUCKER: Oxy will be reserving this
7 morning, too.

8 THE HEARING EXAMINER: All right.

9 NMOGA? Ms. Gutierrez may have stepped
10 away.

11 WildEarth Guardians.

12 MS. RUSCAVAGE-BARZ: Madam Chair,
13 WildEarth Guardians would like to go now.

14 THE HEARING EXAMINER: Terrific, thank
15 you.

16 MS. RUSCAVAGE-BARZ: Thank you.

17 Madam Hearing Officer, Mr. Chair,
18 members of the board, Samantha Ruscavage-Barz for
19 WildEarth Guardians. Thank you for the opportunity to
20 present this opening statement regarding the Oil
21 Conservation Division's proposed rules. WildEarth
22 Guardians is here today to raise a specific concern
23 related to OCD's capacity to manage and enforce the
24 requirements of the proposed Class VI regulatory
25 scheme, if it's enacted.

1 Because our concerns are essentially
2 issues related to OCD's budget and staffing for the
3 Class VI program, we will not be offering technical
4 witnesses, so I appreciate the opportunity to offer
5 this statement and to explain our concerns with the
6 department's proposal. With respect to the motion to
7 dismiss, just as an initial matter, WildEarth
8 Guardians preserves all objections raised in the
9 motion and also preserves any objections related to
10 the Commission's decision to deny the motion.

11 As OCD states in its petition for
12 rulemaking, it's seeking to assume primary
13 responsibility for permitting, compliance, and
14 enforcement of Class VI wells to fast track the
15 permitting of these wells, reducing the permitting
16 time from EPA's three to six years to six to eight
17 months for approval at the state level. The reason
18 OCD gives in its petition for needing to fast track
19 the Class VI permitting process is, quote, "bringing
20 the state closer to achieving its waste mitigation and
21 climate goals," unquote.

22 OCD's petition also states a need to,
23 quote, "enhance both regulatory efficiency and
24 environmental stewardship," unquote. Yet nowhere in
25 OCD's materials submitted for this hearing does the

1 Division explain the specific waste mitigation and
2 climate goals that the proposed regulatory scheme is
3 intended to achieve, or how having primacy over the
4 Class VI permitting process will achieve these
5 undefined goals or enhance environmental stewardship,
6 which begs the question of how a faster approval
7 process for a relatively new and permanent industrial
8 waste disposal method in the state actually benefits
9 people, the environment, or the climate when weighed
10 against the catastrophic impacts to people in the
11 environment when these injection wells fail and
12 release CO₂, as they have in other states.

13 As the pre-filed testimony illustrates,
14 failure of CO₂ injection wells has led to asphyxiation
15 deaths and long-term groundwater contamination, and
16 injection-induced seismicity has resulted in
17 earthquakes which caused personal injuries and
18 property damage in other states. What is referenced
19 consistently in OCD's pre-filed testimony is the need
20 for speed in processing and approving Class VI
21 permits, with little evidence demonstrating that OCD
22 has the staffing and funding capacity to ensure that
23 its permanent underground waste disposal program will
24 protect groundwater communities and future generations
25 from long-term contamination risks.

1 It's important to flag at the outset
2 the complicated and highly technical nature of a
3 Class VI permitting program as reflected in the
4 proposed regulatory scheme and discussed throughout
5 the pre-filed testimony of the parties. A Class VI
6 permit evaluation requires, at a minimum, structural
7 interpretation, geomechanical analysis, pressure and
8 fracture evaluation, reservoir simulation, predictive
9 footprint analysis, and assessing the adequacy of the
10 area of review and post-injection monitoring plan.

11 Once the OCD goes through this process
12 and issues a permit, it must ensure that operators
13 comply with permit requirements, must track and review
14 monitoring and other data, and manage emergencies when
15 these injection wells fail. According to OCD's
16 pre-filed testimony of Mr. Justin Wrinkle, the
17 Division is in the process of staffing the Class VI
18 regulatory program. Mr. Wrinkle states that when the
19 Class VI program is fully staffed, it will have a team
20 of three employees for, quote, "Class VI permitting,
21 technical review, compliance oversight, and long-term
22 monitoring," unquote. He also states that the
23 Division will rely on geologists, engineers, field
24 inspectors, and specialized technical contractors for
25 technical expertise to support the Class VI program.

1 But it's unclear from the testimony
2 whether these professionals are already on OCD staff,
3 are positions that will be added in the future, or
4 will be contracted to support the workload of the
5 person's three-person staff. The testimony does not
6 include a discussion of workload allocation between
7 permit approvals and oversight and enforcement, any
8 information relating to the number of Class VI permit
9 applications OCD expects annually, or whether the
10 small in-house team is an adequate staff to ensure
11 both rigorous permit review and comprehensive
12 post-permit oversight and enforcement.

13 In addition to concerns about staffing
14 levels for the Class VI program, particularly the
15 capacity for oversight and enforcement once permits
16 are issued, WildEarth Guardians also has serious
17 concerns with the tentative nature of the funding for
18 the Class VI program beyond the few full-time program
19 staff contemplated. Mr. Wrinkle states that the three
20 permanent positions are funded by the State's general
21 fund. Funding for contract services required to
22 support the full-time staff will come from, quote, "a
23 combination of existing funds and grant awards when
24 such resources are accessible," unquote.

25 Given the department's expected

1 reliance on specialized technical contractors to
2 review permit applications and to perform field
3 inspections to ensure compliance with construction and
4 operational requirements and ensure the safety of
5 those operations, the funding caveat of when such
6 resources are accessible is extremely troubling,
7 particularly given the lack of any funding contingency
8 plans in the pre-filed testimony.

9 Given that OCD's purpose in seeking
10 primacy is to fast-track Class VI permitting
11 approvals, WildEarth Guardians is concerned that any
12 funding shortfalls in the program will result in
13 program staff time being limited to permit approvals
14 with oversight and enforcement being relegated to an
15 indeterminate back burner until some future point when
16 OCD is able to obtain additional funding to hire more
17 permanent or contract staff for those activities.

18 If OCD is unable to ensure, secure, and
19 sustain funding for all phases of an industrial waste
20 storage program spanning multiple decades, then the
21 Commission should not let OCD start something that it
22 can't finish, especially when that finish here is
23 ensuring decades long containment of a poisonous
24 substance.

25 In closing, no matter how thorough a

1 regulatory scheme is on paper, the words don't do the
2 work. People do the work. And not just people to do
3 permitting, review, and approval. OCD also needs
4 people to ensure long-term permit oversight and
5 enforcement, and people cost money, especially people
6 with the requisite technical expertise needed to
7 assess upscaling in New Mexico of a relatively new
8 technology with a proven track record of failure in
9 other states.

10 The glaring omissions in OCD's
11 pre-filed testimony related to these capacity issues
12 should give the Commission pause in approving OCC's --
13 OCD's approval for Class VI primacy, especially given
14 the significant and serious stakes if even one of
15 these waste storage wells fails. For these reasons,
16 WildEarth Guardians urges the Commission to deny the
17 proposed rules. Thank you for the opportunity to
18 share our concerns.

19 THE HEARING EXAMINER: Thank you,
20 Ms. Ruscavage-Barz. I think rather than interrupt
21 your witnesses ten minutes in, we'll take our morning
22 break now and you can set up your witnesses. Let's
23 come back at 10:25.

24 (Off the record.)

25 THE HEARING EXAMINER: We had an e-mail

1 communication from NMOGA's counsel that they were
2 unable to unmute themselves and reserve their opening
3 statement.

4 So, Mr. Tremaine, if you would, please?

5 MR. TREMAINE: Thank you, Madam Hearing
6 Officer. I would proceed by calling to the stand
7 Dr. Gregory Schnaar.

8 THE HEARING EXAMINER: Mr. Schnaar,
9 would you spell your first and last name, please?

10 DR. SCHNAAR: G-R-E-G-O-R-Y. My last
11 name is S-C-H, N as in Nancy, A-A-R.

12 WHEREUPON,

13 DR. GREGORY SCHNAAR,
14 called as a witness and having been first duly sworn
15 to tell the truth, the whole truth, and nothing but
16 the truth, was examined and testified as follows:

17 THE HEARING EXAMINER: Thank you,
18 Dr. Schnaar.

19 DIRECT EXAMINATION

20 BY MR. TREMAINE:

21 MR. TREMAINE: Good morning,
22 Dr. Schnaar. Could you please tell the Commission
23 where you currently work and what your job title is?

24 DR. SCHNAAR: I'm a Principal
25 Hydrogeologist with Daniel B. Stephens & Associates.

1 MR. TREMAINE: And are you currently
2 working as a subcontractor with New Mexico Institute
3 of Mining and Technology to support the rulemaking
4 before the Commission today?

5 DR. SCHNAAR: Yes.

6 MR. TREMAINE: Okay. And are you
7 testifying on behalf of the Oil Conservation Division
8 as a technical witness today?

9 DR. SCHNAAR: Yes.

10 MR. TREMAINE: Madam Clerk, may I have
11 share capability?

12 Dr. Schnaar, to -- to proceed, I'd like
13 to ask you about a number of these exhibits as a
14 threshold matter before you get into your direct
15 testimony.

16 MS. APODACA: Do you have sharing
17 permission?

18 MR. TREMAINE: I do not have sharing
19 permission yet.

20 BY MR. TREMAINE:

21 MR. TREMAINE: Dr. Schnaar, are you
22 familiar with OCD Exhibits 1, 2, and 3, the proposed
23 changes to the amended petition?

24 DR. SCHNAAR: Yes.

25 //

1 (OCD Exhibit 1, Exhibit 2, and
2 Exhibit 3 were marked for
3 identification.)

4 MR. TREMAINE: Okay. And I'm wanting
5 to share screen with you, but I -- but I think with
6 your familiarity, I'll just try to get some foundation
7 for these. And you have reviewed the final versions
8 of those exhibits?

9 DR. SCHNAAR: Yes.

10 MR. TREMAINE: Are they true and
11 accurate to the best of your knowledge?

12 DR. SCHNAAR: Yes.

13 MR. TREMAINE: Okay. And Exhibit -- is
14 it true that Exhibits 1, 2, and 3 represent the
15 Division's final proposed rule for consideration by
16 the Commission?

17 DR. SCHNAAR: Yes.

18 MR. TREMAINE: Okay. Did you prepare
19 direct written testimony in preparation for this
20 hearing?

21 DR. SCHNAAR: Yes.

22 MR. TREMAINE: Is that marked as OCD
23 Exhibit Number 6?

24 DR. SCHNAAR: Yes.

25 //

1 (OCD Exhibit 6 was marked for
2 identification.)

3 MR. TREMAINE: And is that testimony
4 true and correct to the best of your knowledge?

5 DR. SCHNAAR: Yes.

6 MR. TREMAINE: Do you adopt that direct
7 written testimony as your sworn testimony?

8 DR. SCHNAAR: Yes.

9 MR. TREMAINE: Did you also prepare
10 a -- your resume submitted as OCD Exhibit Number 7?

11 DR. SCHNAAR: Yes.

12 (OCD Exhibit 7 was marked for
13 identification.)

14 MR. TREMAINE: And is that exhibit true
15 and correct to the best of your knowledge?

16 DR. SCHNAAR: Yes.

17 MR. TREMAINE: We've got a few more to
18 go. Thank you. Are you -- are you familiar with OCD
19 Exhibit Number 16, marked as EPA UIC Program Class VI
20 Implementation Manual for UIC Program Directors?

21 DR. SCHNAAR: Yes.

22 (OCD Exhibit 16 was marked for
23 identification.)

24 MR. TREMAINE: Okay. And you are
25 generally familiar with that -- with that manual?

1 DR. SCHNAAR: Yes.

2 MR. TREMAINE: And is OCD Exhibit
3 Number 16 a true and correct copy of that
4 implementation manual to the best of your knowledge?

5 DR. SCHNAAR: Yes.

6 MR. TREMAINE: Okay. I now have shared
7 capability, so I'll transition to that. So going over
8 so far, Dr. Schnaar, we have talked about OCD
9 Exhibit 1, Proposed Changes to Amended Exhibit 2-A;
10 OCD Exhibit 2, Proposed Changes to Amended
11 Exhibit 2-B; OCD Exhibit 3, Amended Changes to OCD
12 Exhibit -- amended Exhibit 2-C; the reference to your
13 direct testimony; and your resume at Exhibit 7. We
14 have also gotten through the UIC Guidance for Program
15 Directors as OCD Exhibit 7 -- or 16.

16 I'll move on and ask you about OCD
17 Exhibit 22. Dr. Schnaar, did you prepare pre-filed
18 rebuttal test -- or rebuttal testimony in preparation
19 for this today?

20 (OCD Exhibit 22 was marked for
21 identification.)

22 DR. SCHNAAR: Yes.

23 MR. TREMAINE: Okay. And does --
24 Exhibit Number 22, does that require any corrections
25 today?

1 DR. SCHNAAR: No.

2 MR. TREMAINE: And do you adopt your
3 pre-filed written rebuttal testimony as your sworn
4 rebuttal testimony this morning?

5 DR. SCHNAAR: Yes.

6 MR. TREMAINE: Okay. Moving on to
7 rebuttal exhibits. Are -- Dr. Schnaar, are you
8 familiar with what I have on the screen here marked as
9 OCD Exhibit Number 26, Underground Injection Control
10 Program Class VI Well Site Characterization Guidance?

11 (OCD Exhibit 26 was marked for
12 identification.)

13 DR. SCHNAAR: Yes.

14 MR. TREMAINE: And similar to the other
15 guidance, is this a true and accurate copy of the
16 reference guidance to the best of your knowledge?

17 DR. SCHNAAR: Yes.

18 MR. TREMAINE: Similarly for 27,
19 Class VI Well AoR Evaluation Corrective Action
20 Guidance, are you familiar with this -- with this
21 exhibit?

22 DR. SCHNAAR: Yes.

23 (Exhibit 27 was marked for
24 identification.)

25 MR. TREMAINE: And is it a true and

1 accurate copy of the reference guidance document?

2 DR. SCHNAAR: Yes.

3 MR. TREMAINE: OCD Exhibit Number 28,
4 same questions. This is labeled as Underground
5 Injection Control Program Class VI Well Testing and
6 Monitoring Guidance. Are you familiar with this
7 record?

8 DR. SCHNAAR: Yes.

9 (OCD Exhibit 28 was marked for
10 identification.)

11 MR. TREMAINE: And is this a true and
12 accurate copy?

13 DR. SCHNAAR: Yes.

14 MR. TREMAINE: And lastly, OCD Exhibit
15 Number 29, EPA Key Principles and Class VI rule
16 related to Class II transition. Are you familiar with
17 this record?

18 DR. SCHNAAR: Yes.

19 (OCD Exhibit 29 was marked for
20 identification.)

21 MR. TREMAINE: And do you -- is this a
22 true and accurate copy to the best of your knowledge?

23 DR. SCHNAAR: Yes.

24 MR. TREMAINE: Okay. Madam Hearing
25 Officer, I would move admission of OCD Exhibits 1, 2,

1 3, 6, 7, 16, 22, 26, 27, 28, and 29.

2 THE HEARING EXAMINER: I'll pause for a
3 moment in the event any other party would like to
4 raise an objection. Those exhibits are admitted.
5 Thank you.

6 (OCD Exhibit 1, Exhibit 2, Exhibit 3,
7 Exhibit 6, Exhibit 7, Exhibit 16,
8 Exhibit 22, Exhibit 26 through
9 Exhibit 29 were received into
10 evidence.)

11 MR. TREMAINE: Okay.

12 BY MR. TREMAINE:

13 MR. TREMAINE: Dr. Schnaar, did you
14 prepare a demonstrative exhibit to facilitate the
15 summary of your direct and rebuttal testimonies today?

16 DR. SCHNAAR: Yes.

17 MR. TREMAINE: Okay. I am able to
18 screen share that -- that record. At this time, I
19 would ask Dr. Schnaar to present the hour -- no longer
20 than one hour summary of his direct testimony for the
21 Commission.

22 DR. SCHNAAR: Thank you.

23 Move to the next slide. Next slide.
24 Briefly, by professional background, I'm a
25 hydrogeologist. I have a Ph.D. in Soil, Water, and

1 Environmental Science from the University of Arizona,
2 and I am a certified professional geologist in several
3 states. When it comes to carbon capture and storage,
4 I'll refer to as CCS. I was a key member of the
5 original Federal Class VI rulemaking as a
6 post-doctoral fellow at US EPA, and then as a
7 contractor with Daniel B. Stephens & Associates, or
8 DBS&A, I supported development of several of those
9 technical guidance documents that we just went
10 through.

11 Since that time, I have worked with
12 several project operators in different states
13 throughout the country in applying for Class VI
14 permits and establishing monitoring programs under the
15 Class VI programs. In addition to that, my work for
16 municipal agencies has included work for the US
17 Department of Justice. I -- I have done some
18 consulting work for the New Mexico Environment
19 Department, California State Water Resources Control
20 Board, and the California Department of Justice.

21 Next slide. So the purpose of my
22 testimony was really to explain the structure, both
23 the -- the framework and the technical structure of
24 the Class VI program proposed by the State of New
25 Mexico. It really focuses quite a bit on what

1 applicants need to submit in a Class VI permit
2 application that OCD will then review. And it covers
3 the core requirements of the Class VI program that I
4 will get into. It shows how the New Mexico proposed
5 rules reflect the Federal Class VI requirements, and
6 it also addresses key New Mexico-specific provisions
7 that add stringency as compared to the Federal
8 Class VI rule.

9 So briefly, I'll back up and just
10 explain what the Class VI program is. The purpose of
11 the Class VI UIC program is to regulate underground
12 injection of CO₂, specifically for the purposes of
13 long-term geologic sequestration, and in doing so,
14 protect underground sources of drinking water. And
15 therefore it sets minimum standards for siting,
16 permitting, construction, operation, and well
17 integrity or mechanical integrity. It covers
18 monitoring, reporting, emergency response, what's
19 called post-injection site care that I will get into,
20 site closure, and the financial responsibility
21 requirements. The overall aim is to ensure that the
22 injected CO₂ and the associated increased pressure
23 effects in the subsurface do not endanger the
24 environment.

25 Go to the next slide. But I want to

1 back up and first talk about sort of the overall
2 philosophy of how these risks are managed in the
3 Class VI program, and in that -- this diagram is meant
4 to really explain that. It's from -- this diagram is
5 in most of those technical guidance documents that are
6 exhibits. So the way this is intended to work is that
7 an operator collects data on the geologic structure of
8 where they intend to inject CO2. We call that site
9 characterization. Quite a bit of requirements related
10 to what kind of information they need to -- to
11 collect.

12 They take that, along with their
13 proposed operating data, that is their injection
14 volumes, injection rates, injection pressures,
15 injection depths, they take all that information and
16 they use a -- a model to predict how CO2 will behave
17 in the subsurface and how pressure will increase, map
18 the extent of the CO2 plume, and that's this box that
19 says, "Computational modeling." That modeling is then
20 used to delineate the area of review, which is the
21 area where the operator has to search for other wells
22 that could be conduits for fluid movement. But
23 there's a recognition we know that these models,
24 especially at the outset, will have some uncertainty.
25 So those models are also used in the next box, which

1 is in designing a monitoring system to collect actual
2 data on CO2 migration, pressure increases, and other
3 aspects of the project.

4 And as we move into actually injecting
5 CO2, that monitoring system is then used to collect
6 data, the operators interpret that data, and then
7 periodically, we move to the next box, which is "Model
8 calibration," on this slide. It's also a part of what
9 is called, "Area of review -- re-evaluation." And in
10 that process, we are essentially truing up our models
11 to data that we have collected and reducing the
12 uncertainty of those models. That new information is
13 used to assess any areas that may have risk. And this
14 entire circle of collecting data, updating the model
15 is intended to be continued through the lifetime of
16 the project. So you will see as part of this, that
17 that model is a central framework of the original
18 Class VI application and it's also used throughout the
19 project to understand where there may be risks in the
20 environment.

21 When it comes to primacy, EPA can
22 approve any state or tribe to run a UIC program in
23 place of direct federal administration under the Safe
24 Drinking Water Act. It requires that EPA review a --
25 a primacy application and that the agency has the

1 adequate legal authority, regulations, staffing,
2 technical capabilities, and enforcement as -- as least
3 as stringent as the federal program, and New Mexico
4 OCD already has primacy for the Class II program, and
5 NMED has primacy for several other well classes. So
6 Class VI primacy would extend that framework to the
7 last remaining well class, and it would include OCD
8 reviewing applications, issuing permits, and
9 enforce -- enforcing all requirements.

10 And the benefit of the State of New
11 Mexico having primacy would be a clear permitting
12 pathway for operators, but also a -- a focus on
13 locally informed review and oversight and additional
14 opportunities for public review and participation in
15 the rulemaking process. A key part of reviewing a
16 proposed new injection well is making sure that
17 there's no interference effects or cumulative impacts
18 for multiple projects. And because the State of New
19 Mexico already has primacy authority for all the other
20 injection well classes, it's the most direct agency
21 and -- and entity to review potential new permit
22 applications.

23 So again, backing up a little bit to
24 explain how this works over the lifetime of a Class VI
25 project. Again, this is a diagram from the Class VI

1 implementation manual. So first, the director, in
2 this case, OCD, would receive some notice of a project
3 and there is typically some pre-permitting
4 coordination. And really, the permit application
5 review starts when the permit application is
6 submitted. And we move to this red box that's the
7 pre-construction phase.

8 And at that point, OCD would be
9 reviewing the Class VI permit application. If the
10 determination is made to issue a permit, that's
11 actually a permit to construct the Class VI well. And
12 it's recognized in the Class VI program that during
13 the drilling of that injection well, a lot of
14 information and data will be collected that was not
15 available during the initial permit application
16 preparation.

17 So for that reason, there is a second
18 step where that data and information is used to assess
19 the model and the adequacy of the initial application,
20 and the OCD would then have to go through an
21 authorization to inject before the operator could
22 start injecting. So the initial Class VI permit is a
23 permit to construct, but the agency then has to give a
24 subsequent approval for an authorization to inject
25 before the project can actually start injecting.

1 So then during the injection phase of a
2 project, there is periodic reporting and oversight and
3 then the final step is after injection stops, the
4 post-injection period does entail additional
5 monitoring requirements. So even after you're done
6 injecting, the Class VI program would require some
7 ongoing monitoring, and based on that monitoring data,
8 the operator can then come to OCD for an application
9 to close the site to end that ongoing monitoring and
10 that would be the final step would be authorization of
11 site closure.

12 So what is an actual Class VI permit
13 application? I've worked on several of these.
14 They're typically several hundred pages long and
15 include multiple sections. The left-hand column here
16 is just a summary of the different plans and
17 application components.

18 So briefly, the main document is what's
19 called the "narrative," includes all of the site
20 characterization data, all of the well construction
21 information. The next is the area of review and
22 corrective action, which really focuses on the
23 modeling used to define this area of review. And any
24 search for wells within that area of review that may
25 require what's called "corrective action" or actions

1 to remediate those wells so they are not conduits for
2 fluid movement.

3 The testing and monitoring plan is the
4 third. That is the plan the operator has to monitor
5 all different aspects of the project. The injection
6 well plugging plan would be there, so in -- at the end
7 of injection, the injection well is plugged in a
8 manner to protect the environment. Post-injection
9 site care refers to this period after injection ends
10 when monitoring continues. And so there's a separate
11 plan where the operator lays out how they will monitor
12 the -- the site. The emergency review response plan
13 outlines how the operator will respond to any
14 emergencies if they arise. The operator is required
15 to demonstrate that they have financial
16 responsibility, as I'll talk about.

17 The pre-operational testing plan is the
18 plan to collect that information after they receive
19 the permit to construct and during the construction of
20 the injection well, and it -- it outlines what data
21 will be collected and how that data will be presented
22 to OCD. And the final is -- is there may be a
23 requirement to outline compliance with certain federal
24 laws. This can include a -- a biological assessment.

25 Again, relying on the diagram modified

1 from the EPA guidance, this -- this is just another
2 outline of -- of the permit review framework from the
3 initial submission. So the -- the permit application
4 is submitted to OCD in this case and the first stage
5 in that is what's called a "completeness review." So
6 as I outlined, these are heavily technically-dense
7 documents with a lot of requirements. There are
8 various checklists that the different agencies have
9 put out to make sure that you have every single piece
10 of information that's required.

11 I don't think I've ever worked on one
12 of these where there wasn't something that the agency
13 then said was missing. And so in that completeness
14 review, they flag some -- some piece of updated
15 information that they expect to be in the application
16 and then they go back to the applicant to submit that
17 missing information. Once that is resolved, the OCD
18 would start the technical review of the entire
19 application, all of those different components, and at
20 that stage, could either make a determination to
21 reject a Class VI permit application or move to
22 prepare a draft permit at which point there is a
23 public comment period and a final permit decision.

24 Next slide. So I'll move into what I
25 call the key components of -- of this Class VI program

1 and highlight how these work. And again, the --
2 I'll -- I'll talk at the end how New Mexico has
3 layered increased stringency on this, but -- but much
4 of this is -- is similar or the same in the federal
5 and proposed New Mexico programs.

6 So the first is site characterization.
7 And the main things that the applicant has to
8 demonstrate are that they have an injection zone that
9 can receive the proposed fluid, has adequate size,
10 permeability, porosity to receive the proposed
11 injected CO2, and that is a confining layer or
12 confining zone above that injection layer that will
13 restrict upwards movement. Those are really the two
14 key factors. Also would need to demonstrate that that
15 confining zone is free of any transmission --
16 transmissive fractures or faults that would lead to
17 leakage through that confining layer. And lastly,
18 it's very important to outline the distance between
19 the injection interval and the lowest underground
20 source of drinking water for USDWs. So typically
21 quite a bit of information is given on the salinity
22 and depth of all the different aquifer zones above the
23 injection zone.

24 Next slide. Next, getting to area of
25 review. As I've explained, the area of review is the

1 area around the project where operators must search
2 for other wells that may be present or other features
3 that could lead to leakage of carbon dioxide and is
4 required to be delineated with very complex
5 computational models and the proposed New Mexico rule,
6 as I said, requires periodic re-evaluation of that
7 area of review, which is the step of truing up your
8 model with any data that you have collected in the
9 intervening time period, and if that AoR re-evaluation
10 process leads to a different area of review, they must
11 at that point update any corrective action plans
12 for -- for wells that are in that new area.

13 Next slide. So this is an example for
14 one of the EPA guidance documents. The area of review
15 is really what required to be the outermost area of
16 two separate -- thanks -- the first being the area of
17 the free-phase CO2 plume. So we're injecting CO2
18 under pressures that it will be super critical in the
19 subsurface, and that CO2 plume is one feature that has
20 to be considered. The other is what is referred to
21 sometimes as "the pressure front." It's the area of
22 increased pressure such that pressures are so high
23 that they may, if there was a leakage pathway there,
24 endanger USDWs.

25 So in this diagram, the -- the blue --

1 and this -- this is just a hypothetical example,
2 there's three injection wells -- the blue is the
3 outermost extent of the CO2 plume, the orange is that
4 pressure-front area, and the -- the purple dashed line
5 is the final area of review, just demonstrating that
6 it's the outermost extent of both those potential
7 features.

8 Next slide. So the corrective action,
9 as I've outlined, entails identifying and reviewing
10 wells within that area. These may be former
11 production wells, injection wells, or other -- any
12 other transmissive features that are there, really to
13 ensure that they're adequately plugged so that they
14 won't them -- themselves become a pathway for CO2 to
15 leak upwards.

16 Next slide. The next key component is
17 the injection well construction requirements
18 themselves. So the Class VI program recognizes that
19 the area of greatest risk is typically at the
20 injection well itself, because the injection well is
21 where the pressures are greatest, and so there are
22 stringent requirements for Class VI well construction
23 materials to be compatible with the underground
24 formations and the injected CO2 so that over the
25 lifetime of the project, CO2 doesn't leak up that

1 well. So those requirements are -- are there to
2 ensure that the injection well maintains integrity
3 over the life of the project.

4 Next. This is a -- a diagram, again,
5 from the guidance documents, and it -- it really is an
6 overview of an important component, which is the
7 testing and monitoring program. So the top part of
8 this is a graph, you'll see this blue line, and it's
9 just an example, but it's meant to outline when there
10 are risks associated with these projects. So during
11 the siting and evaluation stage, there's very little
12 risk. During the actual well construction, there is
13 some risk of leakage, so that blue line increases.

14 And then as CO2 injection begins, that
15 risk is recognized to increase over time and that's
16 because pressures in the subsurface will increase over
17 time, up to some level. And then after injection
18 ends, those pressure -- those risks don't just
19 disappear. That's why there is this post-injection
20 site care period. So as the move graph shows here, as
21 you move into the post-injection site care period,
22 those risks do decline, but it's not instantaneous and
23 it takes some time. And it's not until those risks
24 are essentially back to their beginning state that the
25 project would be issued closure and then monitoring

1 would end.

2 So all of these additional rows
3 underneath this graph are the monitoring and testing
4 aspects of Class VI projects that are intended to
5 assess and manage these associated risks. And you can
6 see they are kind of tailored to the different time
7 frames. So for example, mechanical integrity testing
8 begins at the end of well construction and because
9 this is mechanical integrity testing of the injection
10 well, it would then end at -- at the end of injection.
11 So this is testing of a -- of the actual injection
12 well to maintain -- to make sure that it maintains
13 mechanical integrity.

14 The next is analysis of the carbon
15 dioxide stream. So in the initial permit application,
16 the applicant, they propose what will be in their
17 injected stream. It will not be 100 percent CO2 in
18 most cases. It may contain water vapor, H2S, other
19 things that have different risk profiles. So to
20 ensure that they are in compliance with the permit,
21 they actually are required to monitor that stream as
22 it's being injected during that time frame.

23 Monitoring injection pressure rate and
24 volume, again, to maintain compliance with the rule
25 during the injection phase, as well as corrosion

1 monitoring. So corrosion monitoring is required to
2 ensure that the injection well is not corroding, and
3 that, again, is during the injection phase of the
4 project. Monitoring for groundwater quality above the
5 confining zone to detect any potential leakage or
6 risks typically starts before injection begins to have
7 some baseline and then is required through the end of
8 the post-injection site care period.

9 Pressure fall off testing to assess the
10 near-wellbore area and the subsurface of the injection
11 zone during the injection phase. And then lastly, a
12 very important component is actually monitoring to
13 track the lateral extents of the plume and this area
14 of elevated pressure to make sure that it's conforming
15 to what the original modeling said. And again,
16 that -- that would occur primarily during the
17 injection and then post-injection time frames. So
18 that's really an overview of all of the testing and
19 monitoring.

20 Next slide. Briefly, and then I'll
21 move on for time, this is an example from the Class VI
22 guidance documents of one of the different geophysical
23 techniques that is in place to actually track the --
24 the CO2 plume, and this is actually shown in
25 cross-section for an actual project in the North Sea

1 and how that CO2 has migrated over time from 1994 to
2 2006.

3 Next slide. All right, one area where
4 New Mexico has added increased stringency compared to
5 the federal rule is in requiring seismicity
6 monitoring. So that refers to monitoring for the
7 occurrence of any type of earth movement or earthquake
8 that may be related to the increased pressures in the
9 subsurface from the injection project. And New Mexico
10 is going to require seismicity monitoring during the
11 operation and post-injection for all Class VI
12 projects. If seismicity is detected, the emergency
13 and remedial response plan would outline by steps need
14 to be taken, and that may include reducing injection
15 rates or pressures, suspending injection, increased
16 monitoring, updating the model, revising the permit
17 limits, et cetera.

18 Next slide. The reporting
19 requirements, another component of the rule. So
20 during the life of the project, the operators will be
21 required to submit reports on the Class VI operations,
22 things that will include all of the monitoring data,
23 like the CO2 streaming characteristics I spoke of,
24 injection rates and pressures, and -- and those
25 reports will let OCD compare the actual performance

1 against the permit assumptions.

2 Non-compliance reporting covers
3 conditions that may endanger health or the
4 environment, SDW endangerment, fluid migration, any
5 triggering of shutoff devices, and information
6 indicating endangerment must be reported within
7 required time frames, including a 24-hour reporting
8 for urgent conditions.

9 All right. Moving through the
10 different phases of these projects, post-injection
11 site care, often referred to as PISC. Again, this is
12 period after injection ends, and it's important
13 because monitoring is -- is performed during that time
14 period. And the default time frame for post-injection
15 site care in the rules is 50 years after injection
16 ends, but operators can petition during their initial
17 permit application to have a shorter post-injection
18 site care time frame.

19 So for example, if you have a project
20 that's only injecting for five years, they may be able
21 to show that pressures will decline fairly quickly,
22 the CO2 plume will not be migrating, and they may make
23 an application with -- with several required
24 components to the OCD to have a shorter post-injection
25 time frame default during their project than the

1 initial required 50 years. But no matter what
2 their -- this time frame is, at that time, when they
3 are actually done injecting and they've been
4 collecting data, they don't just stop at 50 years or
5 five years that they have an alternative time frame.
6 They actually have to submit a non-endangerment
7 demonstration to the OCD at that stage to show that
8 the project risk profile has lowered and they can
9 receive a permit.

10 Next slide. The operators are required
11 to demonstrate and maintain financial responsibility
12 enough to cover corrective action, injection funding,
13 post-injection site care enclosure, and emergency and
14 remedial response. They have to show that they have
15 adequate resources are available to perform any
16 required Class VI obligations if the operator was
17 unable or unwilling to do so. The operator then has
18 to establish a funding mechanism before injection and
19 maintain it while obligations remain, reducing the
20 risk of any delayed or unfunded protective work. And
21 this supports New Mexico's primacy request with
22 enforceable mechanisms ensuring funds are available to
23 protect USDWs across the project life cycle.

24 Next slide. So another issue that is
25 addressed in both the federal and the New Mexico rules

1 is that there is inherent potential overlap between
2 the Class II program and the Class VI program, and
3 that is because, as outlined in this schematic for the
4 PA, Class II wells may inject CO2 for enhanced oil
5 recovery or other reasons and there may be an instance
6 where an operator is already injecting CO2 for
7 enhanced oil recovery and then also begins to inject
8 CO2 for other reasons to permanently sequester the
9 CO2, and so the rule addresses that overlap.

10 You can go to the next slide. In
11 having certain requirements that the OCD director is
12 required to evaluate in determining if a well really
13 should be Class VI instead of Class II. So to hammer
14 this home, a Class well II -- a Class II well can't
15 just all of a sudden automatically start operating as
16 a Class VI without authorization. The operator would
17 have to actually apply for a Class VI permit, and then
18 OCD would review that Class VI under the standards
19 before authorizing.

20 But again, there may be this time
21 period when the Class II well is injecting CO2 for
22 multiple purposes and that is what the OCD director
23 under the rule would be required to evaluate the
24 project under these bulleted lists to see if a
25 Class VI permit really should be required instead of a

1 Class II, and that would be if there's an increase in
2 reservoir pressure within the injection zones compared
3 to the previous operation of the project, an increase
4 in carbon dioxide injection rates, a decrease in
5 reservoir production rates, looking at risks that can
6 be characterized as the distance between the injection
7 zone and the lower most USDW, the suitability of the
8 existing Class II area of review delineation, the
9 quality of any abandoned well plugs within the area of
10 review, really assessing the owner-operator's plan for
11 recovery of carbon dioxide at the end of their
12 injection, the source and properties of the injected
13 CO2, and any other factors that they deem appropriate.

14 So again, these are all the factors
15 that the OCD would then evaluate and determine if a
16 Class II project should be required to come in for a
17 Class VI permit application.

18 MR. TREMAINE: Dr. Schnaar, I have us
19 at approximately half of your time.

20 DR. SCHNAAR: Great. Okay. Thank you.

21 Another feature of the rule is what's
22 called an injection depth waiver. So in the vast
23 majority of cases, these injection projects will occur
24 below the lower most underground source of drinking
25 water, but there may be some limited circumstances

1 where they're actually injecting between the lower
2 most USDW and another one. And if they propose to do
3 that, they have to come in with another part of their
4 permit application, in addition to that whole list I
5 presented before. It's called an injection depth
6 waiver.

7 Essentially, it's a -- it's another
8 batch of site characterization data, a lot of
9 information on that most lower USDW to ensure that
10 there won't be risks to any USDWs above or below the
11 project. They are required to plan for monitoring
12 both USDWs. So again, just another requirement for
13 OCD to evaluate before they would be able to approve a
14 project if it was not below the lower most USDW. In
15 all cases, they cannot inject into a USDW. But this
16 would be instances where they're injecting between
17 USDWs.

18 All right. So I want to take some time
19 to focus on this -- this last aspect are the areas
20 where the New Mexico rule is more stringent than the
21 federal rule. So as was discussed previously, in a --
22 in a primacy application, the operator, you know, the
23 state in this instance is required to show that their
24 rule is at least as stringent as the federal rule, but
25 it may be more stringent. And these are areas where

1 the proposed New Mexico regulation are more stringent
2 than the federal rule.

3 All right. So first, community
4 outreach. So the proposed rule, the initial permit
5 application must contain a summary of community
6 outreach activities. There's no requirement for that
7 in the federal rule. Community engagement is -- is
8 required to be performed during development of the
9 testing and monitoring plan. So what that means in
10 practice is the operator will be required to
11 coordinate with community groups in the area where --
12 in the area of review to actually develop a testing
13 monitoring plan in coordination with that community.

14 And then lastly, the owner or operator
15 of the project must conduct outreach within -- with
16 communities located within the area of review, also
17 during the development of the emergency and remedial
18 response plan. So that would include coordination
19 with local emergency responders, and again, that's
20 something that's just not required in the federal rule
21 that's added here under the stated framework.

22 Another area of increased stringency in
23 the New Mexico rule is in the testing and monitoring.
24 So first, the federal rule just requires periodic
25 groundwater monitoring above the confining zone. So

1 above that confining zone and typically below the
2 lower most USDW projects are required to monitor
3 groundwater quality for any indication of potential
4 CO2 leakage. The federal requirement leaves that
5 open-ended as to what "periodic" means, but the -- the
6 State of New Mexico rule as proposed would require
7 quarterly groundwater monitor.

8 So the second would be soil gas
9 monitoring. So the federal rule does not require any
10 monitoring of shallow soil gas. This is a photo of my
11 colleague. I took this picture performing soil gas
12 monitoring at a CCS project. And the state rule
13 would -- would actually require this soil gas
14 monitoring and periodic reporting. And again, this
15 would be just another indication of potential leakage,
16 so you'd be monitoring for CO2, other gases in the
17 subsurface, comparing that to either a baseline or
18 areas outside of the project area to see if there's an
19 increase in CO2 that may indicate a potential leakage
20 around the project.

21 Again, as I mentioned, seismicity
22 monitoring is required. I -- I covered that. And
23 then lastly, the federal rule requires a re-evaluation
24 of the area of review. The State of New Mexico has
25 added a layer to that, but there must be periodic

1 re-evaluation of the testing and monitoring plan
2 itself to see if any additional monitoring or changes
3 to the monitoring plan are -- are necessary.

4 Next slide. Areas of increased
5 stringency related to well construction. First is
6 that the state would -- would say that the permit is
7 only valid for two years from the date of issuance,
8 whereas the federal rule leaves that open ended. The
9 state rule also requires cement type or grade slurry
10 density and volumetric yield be submitted with the
11 injection construction evaluation. It would -- would
12 require another type of well log, gamma ray logs, that
13 are not required under the federal rule. It also
14 require -- requires that all alarms be integrated with
15 automated shutdown systems and that those shutdown
16 systems be tested once every six months.

17 Next slide. All right. Another area
18 of increased stringency coming back to this diagram I
19 started with. This really comes down to how quickly
20 and how often you have to kind of move through this
21 circle of truing up your actual data with your model,
22 this AoR re-evaluation. The federal framework says
23 that you have to perform this AoR re-evaluation at
24 least once every five years or if there are specific
25 triggers that are outlined in your initial permit.

1 Like, for example, if your pressures are outside of a
2 certain tolerance, that might be a reason you have to
3 do it more than once every five years.

4 So this data in New Mexico rule has
5 added stringency to that by saying it's not once every
6 five years; it's actually two years after the -- the
7 injection starts and then no more -- no less
8 frequently than every four years thereafter. And the
9 reason for that initial two years is that that is seen
10 as sort of the first practical time period where
11 there's enough data that you've collected from your
12 injection project itself to really critically evaluate
13 the model and have time to run the model and evaluate
14 that data. So that's why there's an initial two
15 years. Again, much shorter than -- than the five
16 years that would be required under the federal rules.
17 And then again, no more -- no less frequently than
18 every four years thereafter.

19 Next slide. When it comes to injection
20 well plugging the areas of increased stringency
21 compared to the federal rule, the injection well
22 plugging plan must include a detailed description of
23 the size and quantity of the casing, tubing, and any
24 other well construction materials proposed for the
25 removal prior to well closure, and pre-closure and

1 post-closure well schematics. The well plugging
2 report, when you're actually plugging the well, must
3 also include a detailed description of site closure
4 procedures, clearly identifying any deviations from
5 the submitted plan during the closure process.

6 All right, so that kind of was an
7 overview of the key areas of increased stringency. I
8 think the last thing I would -- I would mention here
9 relates to what was already discussed with these rule
10 language changes. So my understanding is that this
11 really was driven by requirements from the New Mexico
12 State Record Center and -- and Archives, and it was
13 non-substantive changes to remove, for example, the
14 section symbol with the word "section."

15 There was an issue where the federal
16 rule uses "and/or," and so in most places, that was
17 replaced with the language that is equivalent saying,
18 for example, instead of "X and/or Y," it would say,
19 "X, Y, or both." So really the intent is the same.
20 There was a limited number of instances where just due
21 to the specific language in the phrase, it made more
22 sense to -- to use an "or" or an "and" rather than "or
23 both." And OCD determined that this language
24 satisfied the substantive requirements and intent of
25 the federal Class VI regulations and does not

1 otherwise render the proposed rule less stringent than
2 the corresponding federal Class VI requirements.

3 MR. TREMAINE: Dr. Schnaar, is there
4 anything else that you would like to add at this point
5 to wrap up the summary of your direct testimony?

6 DR. SCHNAAR: No.

7 MR. TREMAINE: Thank you.

8 Madam Hearing Officer, I'll move on to
9 rebuttal at this point.

10 THE HEARING EXAMINER: Thank you.

11 BY MR. TREMAINE:

12 MR. TREMAINE: Dr. Schnaar, we've
13 already -- since I have this slide up, I would now ask
14 that you provide a summary of your pre-filed written
15 rebuttal testimony for the Commission.

16 DR. SCHNAAR: Sounds good.

17 Next slide. So my understanding is,
18 you know, we reviewed redlines and reports
19 recommending changes to the state rule. And these
20 came from the Center for Biological Diversity, the --
21 the conservation groups here, and Oxy USA or Oxy. And
22 I evaluated each of those redlines and the underlying
23 explanation for those, and this slide summarizes where
24 I disagreed or agreed with those proposed changes.

25 For the most part, we would have

1 disagreed with something if there was a potential
2 issue with stringency compared to the Class -- the
3 federal program, or in many cases, there was proposed
4 much more specific detailed language that, in my
5 opinion, is better left to guidance and to
6 project-specific permit reviews than to actual
7 regulatory tests. So you can see there were some
8 instances where I agreed with the changes. So this
9 really summarizes the main points that I responded to
10 for each of the proposed redlines from each of the
11 parties, and in the subsequent slides, I'll get into
12 detail on many of these.

13 Next slide. So the first is the area
14 of review definition. The conservation groups
15 proposed a change to the definition of the area of
16 review, removing reference to area permits. That
17 language really was there as a -- as a carryover from
18 the federal rule and was never intended and didn't
19 really refer to Class VI area permits, which are
20 prohibited. So an area of permit would be actually
21 approving multiple injection wells under one permit,
22 and that's just prohibited under the Class VI program.

23 So I agree with this change to clarify
24 the area of review definition in the -- in the
25 proposed text. So if you look at the three exhibits,

1 there's actually three times there's an area of review
2 definition, and what I would propose, as opposed to
3 the redline that's shown here, is just to adopt the
4 area of review definition from the -- the final -- the
5 definition at 19.15.43.9.b.1, which is what I've
6 copied here, and just use that throughout. And I -- I
7 believe that would address the comment and is more
8 specific to Class VI, and our area of review is -- is
9 under Class VI. So I agree with the intent of the
10 change, but my fix would be a little different. I
11 would just repeat the area of review definition that
12 was not edited by the conservation groups. That would
13 be my recommendation.

14 All right. The Center for Biological
15 Diversity proposed a change, really establishing a
16 minimum area for siting and site characterization,
17 proposing a 10-mile radius for site characterization
18 and then in some instances, requiring corrective
19 action within that 10-mile area minimum. I didn't
20 agree with this change. The intent of the Class VI
21 program is really to build site-specific and
22 project-specific area of review based on specifics of
23 the project.

24 So, for example, a well that's proposed
25 to inject only for two or three years would have a

1 very different risk profile in an area of potential
2 impacts than a project injecting for 50 years. So the
3 reason for this initial site characterization modeling
4 process is to find where this project is actually
5 going to have impacts, and so I don't agree with the
6 proposal to just have a blanket 10-mile minimum radius
7 of site characterization, so I -- I did not agree with
8 this change.

9 CBD also proposed specific criteria for
10 a mandatory re-evaluation of the area of review. So
11 like I said, the operators are required to re-evaluate
12 the area of review at some minimum time frame, but
13 there also are specific triggers that would cause them
14 to have to do it sooner. And the way that the
15 Class VI regulations are written and proposed is that
16 those triggers would be project specific and written
17 into the initial area of review and corrective action
18 plan. So OCD would have input and oversight on those
19 triggers, but they would be project specific.

20 So I -- again, I don't agree with
21 actually listing specific triggers in the regulatory
22 text. I think that's better left to be project
23 specific, and there is a stage for OCD oversight
24 during the permit application review stage, so I would
25 defer to that. Another thing I would say is, as

1 included in several exhibits here, the Class VI
2 guidance documents, OCD intends to rely on those
3 Class VI guidance documents from the federal EPA and
4 considerations in development of those triggers and
5 many of the more specific aspects of these projects
6 are covered in detail in those guidance documents, and
7 that's where I think it's appropriately addressed.

8 Oxy proposed to remove the requirement
9 for the AoR re-evaluation two years after injection
10 begins and no longer than every four years and replace
11 that with the federal minimum requirement of once
12 every five years, and I did not agree with that. In
13 drafting the state rules, New Mexico deliberately
14 adopted a more frequent area of review re-evaluation
15 schedule than the federal minimum to ensure that these
16 predictive models are periodically compared against
17 actual monitoring and operational data.

18 And as I said, that two years was seen
19 as the first practical time that projects would have
20 data to really perform this process, and so it was
21 seen as a way of more quickly moving through this
22 process of truing up the data and the model, which is
23 a key aspect of how the Class VI program manages risk,
24 so that's why I -- I don't agree with going back to
25 the default EPA every five years.

1 The conservation groups, again, related
2 to the area of review, as I've said, this model is a
3 very central part of their initial permit application,
4 and the conservation groups propose specific
5 regulatory text requiring that an independent third
6 party verify the modeling. And you can go to the next
7 slide. This is just the -- the redlines. Again, I
8 don't agree with that. I -- I do believe that OCD
9 themselves and any contracting support they deem they
10 require is the most effective party to -- to review
11 this modeling.

12 OCD is responsible and its technical
13 staff to review these permit applications, including
14 all the modeling inputs and assumptions and
15 methodologies submitted by applicants. Evaluating the
16 adequacy of that technical analysis is -- is a core
17 regulatory function. OCD will have the expertise to
18 do that and where needed, specialized expertise can be
19 brought in by retaining -- consulting independent
20 technical expert to assist in evaluating those complex
21 modeling issues. So I -- I believe that that is the
22 most appropriate place for the modeling to be
23 reviewed, is with OCD and its -- and its own
24 resources.

25 Requiring third-party verification for

1 all projects would add significant cost and
2 administrative burden without a corresponding increase
3 in protection of USDWs. I've actually been through
4 this process and based on my experience, the
5 third-party review and -- and verification adds
6 significant time and very little benefit, and I -- I
7 would, again, just -- I would keep that review
8 capacity with the OCD.

9 Okay. The conservation groups, I went
10 through this list earlier. I was talking about what
11 the OCD director would be required to review when it
12 comes to whether or not a Class II well really needs
13 to come in for a Class VI permit, and I -- I actually
14 read through this list and the conservation groups
15 proposed a change to transitioning from Class II to
16 Class VI, adding another criteria to this list, which
17 was the integrity of the caprock seal for long-term
18 containment.

19 So long-term containment, a different
20 objective as compared to the initial EOR project or
21 CO2 injection project under Class II, so I agree with
22 this change. I think it makes sense that an
23 additional criteria would be added, so this is -- I
24 agree with adding this as a criteria. The only, I
25 guess, language quibble I would have with this is that

1 instead of saying, "integrity of the caprock seal," I
2 would say, "integrity of the confining layer or the
3 confining zone," just because that's the language and
4 definition that's used in the Class VI rule as opposed
5 to "caprock seal," but it's the same idea. And again,
6 I -- I agree with the intent of this change.

7 I explained that the state rule has
8 already added stringency in requiring soil gas
9 monitoring, not required in the federal program. CBD
10 would expand that requirement that a mandatory one
11 year of background soil gas monitoring be required,
12 and it would include a type of soil gas monitoring for
13 isotopes -- isotopic monitoring. I don't agree with
14 those specific provisions. Again, as someone who's
15 actually been out there doing this, I don't agree that
16 in all cases, a full year of baseline data would be
17 required, and I think that's better left to a
18 project-specific determination.

19 The usefulness of baseline data is that
20 when you see CO₂ concentrations fluctuating during the
21 life of your project, you have something you can
22 compare against. But the operators would also have
23 the opportunity to rely on CO₂ monitoring outside of
24 the area of their project instead of only data that
25 was collected before their project started, so -- and

1 there may not be a need really for a year -- a full
2 year of that baseline monitoring. So I don't agree
3 with that.

4 Isotopic monitoring is very
5 specialized. It would require specialized equipment.
6 For example, what is shown in this photo is a soil
7 flux chamber, which is a really useful tool because of
8 the flexibility of monitoring CO2 in soil at many
9 different locations as opposed to a fixed well. You
10 also get immediate real-time results. So I --
11 requiring isotopic monitoring would preclude the use
12 of the standard flux chambers, for example, really
13 requiring specialized equipment, and I don't think it
14 would be useful in all cases. The operators would
15 also have the opportunity to do isotopic monitoring.

16 The reason for requiring any kind of
17 isotopic monitoring, I assume, is that it would be
18 helpful to distinguish between the CO2 that's just
19 natively in the subsurface versus something that's
20 leaking from down below. Those two types of CO2 may
21 have different isotopic signatures. So it's a way of
22 determining where the CO2 may be coming from if you're
23 seeing it in soil gas. But my point would be that
24 there are other ways of doing that. You can look at
25 soil gas ratios, for example, CO2 to methane. And so

1 I wouldn't want to hamstring the operators and OCD in
2 their review by requiring a very specific thing with
3 isotopic monitoring. I would leave that to a
4 project-specific determination.

5 Surface air monitoring. In both the
6 federal and the state rule, actual monitoring of CO2
7 in the air above the project is left to the discretion
8 of the director. So it's not required, but it is
9 listed as something that may be required on a
10 project-specific basis. Again, this is a photo I took
11 of actually setting up an air monitoring station at a
12 CCS project. And I would not change the rules
13 written. I would not require surface air monitoring
14 in all cases. I don't believe that it's required for
15 all projects. I think the groundwater monitoring
16 above the confining zone and different intervals in
17 the subsurface and the soil gas monitoring is
18 sufficient to track potential CO2 leakage, and I don't
19 think that surface air monitoring would be usable in
20 all cases, and I wouldn't require it for all projects
21 in Mexico. So I don't agree with the -- with this
22 change.

23 All right. Moving on to monitoring
24 well construction standards. So these are really what
25 seek -- the conservation groups -- I'll back up.

1 The -- the rules as written have, as I spoke about,
2 pretty specific requirements that the injection well
3 construction itself is sufficient to preclude
4 migration of CO2 upwards. The conservation groups
5 would add monitoring wells to those requirements. And
6 I agree with that -- intent of that, that it makes
7 sense to actually list monitoring wells and ensure
8 that they themselves also aren't a pathway for fluid
9 movement.

10 And of most concern would be monitoring
11 wells that actually penetrate through the confining
12 layer all the way to the injection zone. So to back
13 up, operators are required to monitor the projects.
14 They're required to monitor the pressure in the
15 injection zone. That will require monitoring wells in
16 the injection zone. So these projects themselves will
17 be using wells, and in most cases, installing
18 monitoring wells that themselves could be a leakage
19 pathway if they are not constructed correctly.

20 So I agree with requiring certain, you
21 know, that those monitoring wells be constructed in a
22 way that they won't lead to fluid migration out of the
23 injection zone. The reason I see -- agree in part is
24 because the conservation groups kind of just use a
25 blanket term for all monitoring wells. I would really

1 only add these requirements for those injection wells
2 that penetrate the confining layer.

3 There are many different types of
4 monitoring wells. There may be very shallow
5 monitoring wells in USDWs that are only a couple
6 hundred feet deep. So I would not require specific
7 construction standards for all monitoring wells, but I
8 would think it's reasonable to have -- include that
9 monitoring wells that penetrate the confining layer
10 have certain requirements. So what I've done is, in
11 my response, in my rebuttal, I proposed my own
12 redlines that I think -- again, I -- I understand the
13 intent and I agree with it, but really focused more on
14 those deeper monitoring wells to distinguish and --
15 and not layer requirements that don't make any sense
16 on very shallow monitoring.

17 The conservation groups also proposed
18 to add a minimum of four monitoring wells, and they
19 also had language that would require monitoring well
20 placement based on very specific modeling scenarios.
21 I don't agree with -- with those changes. Again, I --
22 I look at this as very project specific. The number
23 of monitoring wells you would think would be much
24 lower for projects that are operating at smaller
25 injection volumes, lower time -- less time period. It

1 really makes more sense that that be a
2 project-specific determination.

3 Considerations for monitoring well
4 placement are covered in the EPA technical guidance
5 documents that OCD will be using, and it will also be
6 something that's a really key part of the testing and
7 monitoring plan that OCD will review. So I think that
8 the number and placement of monitoring wells is -- is
9 really project specific and is better covered in
10 project-specific oversight during the permit
11 application stage, so I would recommend, and don't
12 agree with, the redlines that are -- that are shown
13 here.

14 Oxy proposed removing the increased
15 stringency of quarterly groundwater quality monitoring
16 and reverting back to the federal language of
17 periodic, so leaving that frequency unspecified. I
18 don't agree with that. This was an area where the
19 state determined -- or OCD determined in their
20 proposed rules to add increased stringency and
21 intentionally selected quarterly groundwater
22 monitoring to ensure that groundwater quality and
23 geochemical data are collected frequently enough to
24 identify potential migration. It provides a
25 consistent data set for evaluating trends, validating

1 model predictions, and supporting timely regulatory
2 response if there were to be anomalous readings.

3 And I'll also say that in my
4 experience, it is also the standard and the norm at
5 CCS projects throughout the country. So although the
6 federal requirement is periodic in practice, projects
7 I've worked on have really, for the most part, agreed
8 to a quarterly monitoring. So it's not adding a ton
9 compared to other projects throughout the country.

10 Next slide. All right, so the
11 conservation groups, I -- I did kind of gloss over
12 this, but there is a requirement for what's called
13 "plume pressure-front tracking," and this is
14 monitoring to track the extent of the plume and area
15 of elevated pressure. The conservation groups
16 proposed some redlines that would require continuous
17 monitoring to track the extents of the carbon dioxide
18 plume.

19 And in using that word "continuous,"
20 this would be essentially some type of monitoring
21 technology that's collecting data routinely throughout
22 every single day. And when it comes to plume
23 tracking, I don't believe that's practical. There are
24 requirements for continuous pressure monitoring, for
25 example. These are gauges that are always collecting

1 pressure data. But when it comes to plume tracking,
2 that would preclude most, if not all, plume tracking
3 technologies I'm aware of, and so I -- I wouldn't
4 agree that's a practical change, that there would be
5 continuous plume tracking. And that's really
6 something that is done on a more periodic basis
7 than -- than continuous, so I don't agree with that
8 change.

9 I spoke about the alternative
10 post-injection site care time frame. Again, the
11 default is 50 years. But during the initial permit
12 application, operators can make a demonstration for
13 review and potential approval that that time frame
14 should be shorter. They're assumed the default time
15 frame. And the conservation groups, they propose
16 language that would remove that ability to have a
17 shorter default time period than 50 years.

18 Again, I don't agree with that. The --
19 the intent of this is, again, that there may be some
20 projects that have a much lower risk profile and may
21 be taking active steps during the entire operation of
22 the project to reduce their risks, and they -- they --
23 for that reason, it really -- there should be the
24 opportunity to have a -- a shorter default
25 post-injection site care time frame. And again, this

1 is something that would be reviewed by OCD.

2 In my experience, this is something
3 that gets a lot of review in permit applications. It
4 would, in many cases, they may not agree to it. There
5 may be some middle ground between what's applied for
6 in 50 years, and it really should be a
7 project-specific determination. And in reality,
8 really, operators would be required to -- to continue
9 monitoring no matter what until OCD agrees to their
10 non-endangerment demonstration. So I would retain
11 what's included in the federal rule to allow for an
12 alternative post-injection site care frame -- time
13 frame, and I don't agree with their redline change.

14 All right, I think this may be the
15 last. Oxy proposed a catchall category to minor
16 modifications of permits. So I didn't really speak to
17 major versus minor permit modifications, but the
18 federal rule and the proposed state rule do have a
19 list of what would be considered a minor permit
20 modification, and Oxy proposed to add to that a
21 catchall category saying that minor modifications
22 would include non-material, non-substantive permit
23 modifications that do not increase risk to USDWs.

24 Next slide. I don't agree with that
25 proposed language. If you look at the list that was

1 provided, there was already quite a bit of discussion
2 of what would consider to be minor. For example, it
3 says changes to all these plans that are just
4 clarifying and -- and don't change the -- the plans in
5 a more significant way. I think the terms that were
6 suggested of non-material and non-substantive could be
7 confusing. They could be looked at as subjective. I
8 don't really think they add a lot to what would be
9 made in this determination, so I don't agree with --
10 with that redline. And I believe that the current
11 rule already provides the director with adequate
12 discretion while maintaining clear boundaries around
13 the types of changes that may be processed as a minor
14 mod to the permit.

15 MR. TREMAINE: That -- that wraps up
16 Dr. Schnaar's summary of the rebuttal testimony. I'll
17 just ask the doctor if there's anything else we
18 haven't covered that you feel is appropriate to bring
19 the Commission's attention in terms of your rebuttal?

20 DR. SCHNAAR: No.

21 MR. TREMAINE: So at this point, I
22 would move on to my next witness, and we'll keep
23 Dr. Schnaar in the room for now.

24 THE HEARING EXAMINER: Thank you.

25 MR. TREMAINE: Madam Hearing Officer,

1 with it being 11:35, I believe that Mr. Wrinkle will
2 be shorter, so I would call him now, if possible?

3 THE HEARING EXAMINER: We have a
4 request to take an early lunch, Mr. Tremaine.

5 MR. TREMAINE: That's all right.
6 Mr. Wrinkle will be back after.

7 THE HEARING EXAMINER: All right. Is
8 an hour enough or hour ten?

9 MR. CHANG: Hour -- yeah, hour ten.

10 THE HEARING EXAMINER: All right. So
11 let's come back at 12:45. Thanks so much.

12 (Off the record.)

13 THE HEARING EXAMINER: All righty.
14 When we broke for lunch, we had heard all of Dr.
15 Schnaar's testimony.

16 Mr. Tremaine, would you call your next
17 witness?

18 MR. TREMAINE: Thank you, Madam Hearing
19 Officer. The OCD calls the Engineering Bureau Chief,
20 Justin Wrinkle.

21 THE HEARING EXAMINER: Mr. Wrinkle,
22 would you please spell your first and last name?

23 MR. WRINKLE: Yes. J-U-S-T-I-N W-R-I-
24 N-K-L-E, Justin Wrinkle.

25 //

1 WHEREUPON,

2 JUSTIN WRINKLE,

3 called as a witness and having been first duly sworn
4 to tell the truth, the whole truth, and nothing but
5 the truth, was examined and testified as follows:

6 THE HEARING EXAMINER: Thank you.

7 Go ahead.

8 MR. TREMAINE: Thank you, Madam Hearing
9 Officer.

10 DIRECT EXAMINATION

11 BY MR. TREMAINE:

12 MR. TREMAINE: I have already started
13 showing -- sharing screen to work through these
14 exhibits. Mr. Wrinkle, you are currently employed by
15 the Oil Conservation Division; correct?

16 MR. WRINKLE: Correct.

17 MR. TREMAINE: What is your position or
18 title with OCD?

19 MR. WRINKLE: Engineering Bureau Chief.

20 MR. TREMAINE: Great. And did you
21 prepare direct written testimony in preparation for
22 this hearing today?

23 MR. WRINKLE: I did.

24 MR. TREMAINE: And is that what is
25 marked as OCD Exhibit Number 4?

1 MR. WRINKLE: Yes.

2 (OCD Exhibit 4 was marked for
3 identification.)

4 MR. TREMAINE: Okay. Does -- are there
5 any corrections that you need to make to the direct
6 testimony this morning?

7 MR. WRINKLE: Yes, one small
8 clarification. I don't recall what part it is. It's
9 in the beginning where it asks if I have testified
10 before. Yeah, right there, "Have you previously
11 testified in the state or federal regulatory
12 proceeding," and what is wrong there is the technical
13 and fact witnesses are swapped. I should have been a
14 fact witness in an adjudication and a technical
15 witness in a rulemaking.

16 MR. TREMAINE: Thank you. No other
17 corrections to your direct testimony?

18 MR. WRINKLE: No.

19 MR. TREMAINE: And do you adopt your
20 direct testimony as your sworn testimony today?

21 MR. WRINKLE: I do.

22 MR. TREMAINE: Okay, moving on.

23 Mr. Wrinkle, did you prepare a resume in preparation
24 for this hearing marked as OCD Exhibit 5?

25 MR. WRINKLE: I did.

1 (OCD Exhibit 5 was marked for
2 identification.)

3 MR. TREMAINE: And is that resume true
4 and accurate to the best of your knowledge?

5 MR. WRINKLE: Yes, it is.

6 MR. TREMAINE: Okay. Mr. Wrinkle, I'm
7 going to show you what is labeled as OCD Exhibit
8 Number 17. Mr. Wrinkle, what is Exhibit 17?

9 MR. WRINKLE: It's a very, very high
10 level holistic view of what is reviewed in a Class VI
11 permit before it becomes a draft permit.

12 (OCD Exhibit 17 was marked for
13 identification.)

14 MR. TREMAINE: Similar to the flow
15 chart presented by Dr. Schnaar, is this a
16 representation of OCD's workflow and process?

17 MR. WRINKLE: Correct. Yeah, so the
18 current Class XVI is developing a New Mexico flow
19 chart based off of the implementation manual from the
20 EPA, and this is the product of that.

21 MR. TREMAINE: And did your team
22 prepare this slide or exhibit?

23 MR. WRINKLE: Yes, they did.

24 MR. TREMAINE: Okay. Thank you. One
25 more question on these. Mr. Wrinkle, did you prepare

1 a pre-filed written rebuttal testimony in preparation
2 for the hearing today?

3 MR. WRINKLE: I did.

4 (Exhibit 21 was marked for
5 identification.)

6 MR. TREMAINE: Okay. And are there any
7 corrections or changes necessary for your rebuttal
8 testimony?

9 MR. WRINKLE: No.

10 MR. TREMAINE: Okay. And do you adopt
11 your rebuttal testimony as your sworn testimony --
12 sworn rebuttal testimony today?

13 MR. WRINKLE: I do.

14 MR. TREMAINE: Madam Hearing Officer, I
15 would move admission of Exhibits 4, 5, 17, and 21
16 before we proceed.

17 THE HEARING EXAMINER: Thank you. I'll
18 pause for a moment in the event any other party would
19 like to object. Thank you, 4, 5, 17, and 21 are
20 admitted.

21 (OCD Exhibit 4, Exhibit 5, Exhibit 17,
22 and Exhibit 21 were received into
23 evidence.)

24 MR. TREMAINE: Thank you, Madam Hearing
25 Officer.

1 BY MR. TREMAINE:

2 MR. TREMAINE: Mr. Wrinkle, are you
3 prepared to provide a less than one hour summary of
4 your direct testimony for the Commission today?

5 MR. WRINKLE: I am.

6 MR. TREMAINE: Please proceed.

7 MR. WRINKLE: Okay. And just so you
8 know, I'll be working off some notes here that just
9 bolded parts of my direct -- you know, they're
10 available to anybody if they need them.

11 So the purpose of my testimony was
12 basically to demonstrate the OCD's readiness, staffing
13 structure, technical capability, and basically the
14 stability to administer the Class VI once we receive
15 primacy. So our regulatory strengthened capability
16 is, you know, we do have an AP -- or EPA-approved
17 Class II program since about 1982, which is actually
18 the year I was born, so a pretty long time, that we've
19 been administering that. We already have established
20 systems for permitting, inspections enforcement, and
21 data management. It's nothing new. We have existing
22 regulatory framework to provide a stable foundation
23 for implementation of the Class VI program.

24 To go into a little bit of detail about
25 what I touched on with the staffing and full-time

1 employees, there is three full-time employees
2 currently that are just for the Class VI program. We
3 have one supervisor that is a senior geologist, 25
4 years of experience. We got one of the technical
5 staff comes from a sistering state, I believe the
6 Railroad Commission Petroleum Engineer and then we
7 also have just given an offer to an individual that
8 currently works at the Railroad Commission in their
9 Class VI program with a Ph.D. in Petroleum Science,
10 and he should be starting in September.

11 It doesn't end there. The way that our
12 bureau works is basically we rely on all aspects of
13 engineering. If there's somebody that has a certain
14 particular skill or history, you know, we can reach
15 out and lean on them. Currently, I believe
16 engineering as a whole has about 45 individuals in it
17 that are -- come from a very diverse background and
18 specialize in different things. For the more complex
19 things, as I've talked about in my testimony, you
20 know, we do have the ability to retain specialized
21 contractors specifically for model vetting and those
22 type of things if we feel the need to.

23 To touch on funding source and program
24 stability, so all three of these positions are
25 permanent positions rather than any, you know, term

1 positions. They are funded directly by the general
2 fund. And I did notate the contract services are
3 supported through the existing funding, i.e., the
4 general fund, plus any supplemental grants when
5 available. So we know that those aren't guaranteed,
6 i.e., that's why it's supplemental. It'd be good if
7 we had that funding to utilize, but most everything is
8 going to be funded through the general fund.

9 Technical readiness. So we'll utilize
10 systems already in place for other permits, ensuring
11 consistent application of permitting, review,
12 monitoring, and enforcement standards. The EPA
13 implementation manual for Class VI program managers
14 has given us an extremely -- extremely well plotted
15 out avenue for how to conduct our permitting, you
16 know, when we do get primacy and then when there is a
17 final promulgated rule.

18 It's allowed us to, you know, pinpoint
19 where New Mexico is going to be more stringent and
20 kind of draw our own path from there to not deviate
21 from the implementation menu, but basically add to,
22 right, because there's things that New Mexico is going
23 to be doing that are more stringent than the EPA, so
24 we have to, you know, build up those flow paths for
25 our procedural needs. And then of course, again, you

1 know, internal staff can be supported by specialized
2 contractors to ensure, you know, all the coverage
3 across geology and engineering, geomechanics, and data
4 analysis.

5 Our digital systems that we already
6 maintain statewide handles thousands and thousands and
7 thousands of documents and permits and applications
8 and summaries. So we're, you know, more than ready
9 to, you know, take on that data burden, as you would
10 say.

11 The financial assurance and USD -- USDW
12 protection. These FA requirements ensure that funds
13 are available for corrective action as, you know,
14 Mr. -- or Dr. Schnaar was outlining in his:
15 corrective action, emergency response, any plugging,
16 site -- site closure, and post-injection site care.
17 So this ensures long-term or protection of underground
18 drinking water because those funds would be available,
19 if needed, if the operator was not willing or unable
20 to do so.

21 And that is really my demonstrative for
22 my testimony. I know I blew right through that, but I
23 apologize.

24 MR. TREMAINE: A couple -- I'd like to
25 ask you a question, Mr. Wrinkle. So we heard earlier

1 a question of the -- the clarity around positions.
2 Can you just clarify for the parties and the
3 Commission which of the positions you outlined are
4 already filled and which are to be filled?

5 MR. WRINKLE: Yeah. So the supervisor
6 of the Class VI program that reports directly to me,
7 that's filled already. And then one of the petroleum
8 specialists that report to him has been filled. The
9 other one starts September 12th of this year.

10 MR. TREMAINE: Okay. So as of
11 September of this year, all -- all three dedicated
12 positions will be filled with full-time -- full-time
13 staff?

14 MR. WRINKLE: Correct, yes.

15 MR. TREMAINE: And those staff are
16 dedicated solely to -- or -- or directly for future
17 Class VI permit review and -- and other related work?

18 MR. WRINKLE: Correct.

19 MR. TREMAINE: Okay. And the two staff
20 that are already in place, did they -- are they
21 already engaged in preparing and developing the permit
22 review program?

23 MR. WRINKLE: Yes. Yes, they are.
24 They're actually quite a ways into it and have been
25 meeting with organizations like the Groundwater

1 Protection Council. It showed them, you know, our
2 current progress, and they said that, you know, it's
3 their opinion, right, but they -- but they said that
4 we're a lot further ahead than -- than most other
5 states are at this point.

6 MR. TREMAINE: Mr. Wrinkle, have you --
7 are you prepared to provide a -- a brief summary of
8 your rebuttal testimony today?

9 MR. WRINKLE: Yes, I am.

10 MR. TREMAINE: Please summarize your
11 rebuttal testimony for the Commission.

12 MR. WRINKLE: Okay. Do you want me to
13 just summarize the findings of -- of mine or are we
14 looking at what I am rebutting?

15 MR. TREMAINE: No, just prepare --
16 provide your prepared summary for the Commission of
17 your rebuttal -- of your rebuttal testimony.

18 MR. WRINKLE: Okay. So just go over
19 the response then? Sorry.

20 MR. TREMAINE: Yes.

21 MR. WRINKLE: Okay. All right. So,
22 you know, my response to what my rebuttal was
23 basically the -- the Division already has an
24 established functioning appeals process under
25 19.15.4.a NMAC. This process will continue to apply

1 to Class VI permitting decision.

2 So as I was preparing my rebuttal, I
3 consulted with our division leaderships and include --
4 including the ones that are responsible for hearing
5 procedures. We collectively agreed that the current
6 process is effective, fully functional, and that
7 adding an appeals process to Class VI will not add any
8 value or anything to the new rule.

9 MR. TREMAINE: So is it the Division's
10 position that in the event an applicant appeals the --
11 the permitting decision, that that application and
12 hearing process would proceed according to the
13 existing adjudication rules?

14 MR. WRINKLE: Yes, correct, that
15 there -- there already was a determined path there for
16 anybody that wanted to.

17 MR. TREMAINE: Thank you. No further
18 questions.

19 THE HEARING EXAMINER: Okay. Thank
20 you, Mr. Tremaine and Mr. Wrinkle.

21 MR. TREMAINE: Madam Hearing Officer,
22 the Oil Conservation Division calls Dr. Sai Wang.

23 THE HEARING EXAMINER: Thank you.

24 All right, Dr. Wang, would you spell
25 your first and last name, please?

1 DR. WANG: My first name is S-A-I.
2 Last name, W-A-N-G, Wang.

3 THE HEARING EXAMINER: Thank you. Do
4 you swear or affirm to tell the truth?

5 DR. WANG: Could you please repeat?

6 THE HEARING EXAMINER: Thank you.
7 Go ahead.

8 MR. TREMAINE: He asked you to repeat.

9 THE HEARING EXAMINER: Oh, I'm sorry.
10 WHEREUPON,

11 DR. SAI WANG,
12 called as a witness and having been first duly sworn
13 to tell the truth, the whole truth, and nothing but
14 the truth, was examined and testified as follows:

15 THE HEARING EXAMINER: Thank you.
16 Go ahead.

17 MR. TREMAINE: Okay.

18 DIRECT EXAMINATION

19 BY MR. TREMAINE:

20 MR. TREMAINE: Good afternoon,
21 Dr. Wang. Thank you. Dr. Wang, are you -- what is
22 your current position and title with New Mexico Tech?

23 DR. WANG: I'm an employee at New
24 Mexico Tech as well as an assistant professor for the
25 Petroleum Department and also I'm leading the -- a

1 group for Petroleum Recovery Research Center at New
2 Mexico Tech right now.

3 MR. TREMAINE: And are you -- are you
4 engaged in this -- in this process as an employee of
5 New Mexico Tech to support OCD's application for
6 Class VI primacy?

7 DR. WANG: Yes, I do.

8 MR. TREMAINE: And are you testifying
9 today on behalf of the Oil Conservation Division as a
10 technical witness?

11 DR. WANG: Yes.

12 MR. TREMAINE: Okay. Dr. Wang, have
13 you prepared direct testimony -- pre-filed written
14 direct testimony labeled as OCD Exhibit Number 10?

15 DR. WANG: Yes, I did.

16 (OCD Exhibit 10 was marked for
17 identification.)

18 MR. TREMAINE: I will share screen
19 again. Dr. Wang, does your pre-filed written direct
20 testimony require any corrections or changes today?

21 DR. WANG: No.

22 MR. TREMAINE: And do you adopt your
23 pre-filed written direct testimony as your sworn
24 direct testimony today?

25 DR. WANG: Yes.

1 MR. TREMAINE: Okay. Dr. Wang, have
2 you also prepared a resume outlining your experience
3 and qualifications labeled OCD Exhibit Number 11?

4 DR. WANG: Yes, that's correct.
5 (OCD Exhibit 11 was marked for
6 identification.)

7 MR. TREMAINE: And does that Exhibit 11
8 require any corrections or changes today?

9 DR. WANG: No.

10 MR. TREMAINE: Dr. Wang, did you also
11 prepare pre-filed written rebuttal testimony labeled
12 as OCD Exhibit Number 24?

13 DR. WANG: Yes.
14 (OCD Exhibit 24 was marked for
15 identification.)

16 MR. TREMAINE: And does this exhibit
17 require any corrections or changes?

18 DR. WANG: No.

19 MR. TREMAINE: Okay. And do you adopt
20 your pre-filed written rebuttal testimony as your
21 sworn rebuttal testimony today?

22 DR. WANG: Yes.

23 MR. TREMAINE: Okay. Thank you.

24 Madam Hearing Officer, I would move
25 admission of Exhibits 10, 11, and 24.

1 THE HEARING EXAMINER: We'll pause for
2 a moment in the event there are objections. Exhibits
3 10, 11, and 24 are admitted.

4 (OCD Exhibit 10, Exhibit 11, and
5 Exhibit 24 were received into
6 evidence.)

7 BY MR. TREMAINE:

8 MR. TREMAINE: Dr. Wang, have you
9 prepared a demonstrative exhibit to facilitate the
10 summary of your direct testimony for the Commission
11 today?

12 DR. WANG: Yes, I did.

13 MR. TREMAINE: Okay. And are you
14 prepared to proceed? Are you prepared to present the
15 summary of your testimony for the Commission?

16 DR. WANG: Yes, I do.

17 MR. TREMAINE: Okay. All right.
18 Dr. Wang, please proceed.

19 DR. WANG: Thank you, Jesse.

20 Good afternoon. My name is Sai Wang.
21 I'm an assistant professor from New Mexico Institute
22 of Mining and Technology and short-term AMT, and also
23 I'm a section head for Petroleum Recovery Research
24 Center at New Mexico Tech some time. So I -- today,
25 my -- please go back to the previous one, yeah.

1 Today, I'm going to -- my testimony is going to cover
2 two portions: the 19.15.42 -- 19 [sic], the Section H
3 and Section M. Section H is about the logging,
4 testing, and the sampling prior to the well
5 construction and then the Section M is for the well
6 plugging.

7 Okay, next slide, please. So I -- I
8 got my master degree from New Mexico Tech with a major
9 in Petroleum Engineering, and also I'm holding a Ph.D.
10 degree from University of North Dakota. After that --
11 with the same major, Petroleum Engineer. After that,
12 I was hired as a field engineer, which focused on the
13 field operation in -- in EERC at the New Mexico -- the
14 University of North Dakota.

15 So I have a bunch of experience with
16 the federal CCUS projects. I was served as the co-PI,
17 key personnel, for the Department of Energy CarbonSAFE
18 Programs in New Mexico, in Utah, and Texas and North
19 Dakota, okay. So my main research was focused on the
20 well design, well drilling, well completion, and the
21 wellbore integrity, okay. So I also familiar with the
22 well logs, well characterization, and the geochemistry
23 aspects for the well -- well construction, okay.

24 Please next slide. So when we start
25 this kind of Class VI project, the first thing we are

1 going to consider as an operator is we need to perform
2 the site characterization in detail to make sure
3 the -- the site is proper for the CO2 storage
4 permanently, okay. So the purpose for the
5 pre-injection characterization right here is to verify
6 the reservoir and the confining zone, the suitability
7 in these two major zones, okay. And then also same
8 time with this kind of pre-injection characterization
9 effort, we -- the operator shall be able to establish
10 the baseline geological and geochemical conditions of
11 the data from this well test, from the logging
12 programs, from the sampling programs, okay.

13 And we also -- the -- the operator
14 shall be -- be very clear to ensure the well
15 construction confirms with the Class VI requirements.
16 For example, we look at the well logging program
17 performed. We get -- we got the gamma ray logs data.
18 So that log suite -- logging suite going to give you
19 some information for the formation tops. Then based
20 on the formation tops, you can do the well design.
21 And once the casing materials you can select and
22 the -- the length and the -- how many joints you can
23 select for this well design, okay. And this kind of,
24 like, effort is going to reduce the uncertainty before
25 the CO2 injection.

1 Next slide, please. Okay. Under the
2 19.15.43.9, Section H, the logging sampling and the
3 testing prior to the injection well operation, there
4 are several characterization effort needed to be
5 performed by the operator. So we -- the operator
6 shall perform the following efforts to confirm the
7 formation depths and the thickness, and also the
8 lithology, what is the lithology for the injection
9 zone and caprock? For example, the injection zone, it
10 cannot be sandstone or limestone. It depends, okay.
11 So this kind of, like, logging effort going to give
12 you the firm answer on the formation lithology, okay.

13 Also we need the porosity and
14 permeability. Basically, the porosity property of the
15 formation can be acquired from the direct logging
16 effort, so we have the porosity logs that can be
17 performed through the available -- through the output
18 available. And alternatively, we can link the
19 porosity to some geophysical correlations to get the
20 permeability data from the porosity. So these two
21 parameters are very important for the CO2 storage
22 capacity estimation in the modeling.

23 So when we know the porosity, porosity
24 means the space for the CO2 fluid or stream to occupy
25 in the reservoir, okay. What's the possibility that

1 the CO2 can occupy those kind of empty space or void
2 space in the reservoir? So porosity is going to give
3 a firm answer on those. And also we need to -- the
4 operator shall confirm the formation fluid salinity.
5 From the EPA Class VI program, There is clear -- there
6 is a clear definition on the USDW.

7 So through these well logging programs
8 and sampling programs, they should be able -- they
9 definitely going to give you a clear answer on the
10 fluid salinity. The data going to define as a
11 potential USDW or it's not, okay. And all of those
12 characterization is going to be from the baseline data
13 for the future comparison after several years
14 injection from testing and monitoring plan, okay. So
15 those kind of data can be compared with the initial
16 data and see if there's any property automation
17 through injection or post the injection and how to
18 evaluate this kind of automation, okay.

19 And as an engineer objective, those
20 kind of required characterization can demonstrate the
21 suitability of the storage system for the Class VI
22 program in New Mexico, okay. The required program --
23 logging program under the 19.15 -- 15.43.9, Section H,
24 including the pre-casing logs, the gamma ray,
25 resistivity, SP logs, caliper, and porosity for the

1 surface casing in terms of the casing and production
2 casing, and the fracture finder logs are specifically
3 for the long-string casing portion, okay.

4 After the casing installed or placed,
5 the operator shall also perform the post-casing
6 logging program, including the cement bond logs,
7 variable density logs, and temperature logs. Those
8 three combination, CBL, VDL, and temperature logs,
9 going to give you a firm information or solid
10 information to evaluate the cement bond between the
11 casing and the -- the formation and between casing,
12 okay, all those three channels that has the cement
13 install -- placed.

14 Next slide, please. So besides the
15 logging portion, we -- the operator shall also perform
16 the mechanical integrity verification. The purpose
17 for this verification is to verify or prove the
18 internal and external mechanical integrity during the
19 well construction phase. So there's always some
20 engineering issue happened when we place the casing.
21 So for example, the over torque through the coupling
22 or connections, there's going to be a potential
23 leakage portion for the -- through the CO2 injection.
24 So this kind of mechanical integrity verification
25 going to justify those potential leakage as a pathway

1 for the CO2 fluid internally through the tubing and
2 through the casing, okay. And also this mechanical
3 integrity verification can confirm the zone isolation
4 and prevent the intended fluid migration upward.

5 So the proposed measures under this
6 program, including the pressure test through the
7 casing, the tracer survey to identify any unfocused
8 leakage through those well construction elements and
9 temperature noise logs and also casing inspection
10 logs, okay.

11 Next slide, please. So under this
12 section, the -- the last portion is -- is about the
13 cement evaluation. So cement is very important. It's
14 a very critical barrier for the wellbore integrity,
15 okay. So the -- the operator shall perform the cement
16 evaluation to identify -- to -- to identify the cement
17 quality, okay. You can see on the right side there's
18 an image on the cement -- cement bond. That's the
19 radio map on the cement quality, okay. The dark
20 portion means we have a good cement bond there. The
21 yellowish color means there is some potential channel
22 within the cement, okay.

23 So there's a criteria from industry
24 from the -- from the rules to identify the cement bond
25 quality, okay. So those kind of evaluation can help

1 the operator to further do the remediation. And those
2 kind of good cement provides the hydraulic isolation.
3 If we have poor cement, that may create a pathway for
4 the fluid mitigation -- migration, sorry. So again,
5 the cement bond, variable density, and temperature
6 logs verify the cement quality before injection.

7 Next slide, please. So the last
8 portion under my testimony is the 19.15.43.9,
9 Section M, the injection well plugging. After we
10 complete the injection, we cease the operation,
11 there's a need for us to -- for the operator to plug
12 the well permanently. So purpose for plugging the
13 well is to protect -- to provide the protection
14 continues after the injection. And also these well
15 plugs is the final engineered barriers because after
16 the -- you complete the -- the operator finish the
17 injection, the -- the fluid is mainly from the tubing
18 and then you pull out the tubing and then the well
19 plugs, the -- the placement should be there and --
20 must be there to provide a final barrier for the
21 entire wellbore.

22 So from the reservoir to casing, this
23 connection portion we have cement placed. So the
24 injection zone from the bottom hole to the -- to the
25 wellhead, there also need a -- a plug -- a barrier.

1 That's the well plugs. And besides that, there are
2 some other mechanical barriers also going to be
3 included, like the bridge plugs and some other
4 techniques can be applied, okay.

5 So the well plugging -- injection well
6 plugging program requirements include three steps.
7 First, when the operator shall flush the buffer with
8 the buffer fluid to remove any existing CO2 stream in
9 the wellbore and near the wellbore. And then the
10 operator shall perform the pressure test to -- to
11 measure the bottom pressure and also perform the final
12 external -- mechanical integrity test for the
13 wellbore, okay.

14 And the plugging plan should include
15 the pressure and the mechanical integrity test. The
16 plan for that one, the procedure of the MIT, and the
17 procedure to remove the casing and tubing and plugging
18 placement design, how many plugs, what's the material
19 you going to utilize, and the cement formula for the
20 compatibility consideration with the casing with the
21 formation, okay. Also, the well plugging schematic
22 should be -- shall be included in the plugging plan.

23 Next slide, please. So to be -- to
24 summarize, so my testimony covers the two portion,
25 Section H and Section M, on the logging, sampling and

1 coring testing for the well construction and also the
2 well injection plugging. So all those -- all of those
3 rules that we proposed are going to provide a
4 comprehensive characterization that is going to reduce
5 uncertainty for the Class VI project in New Mexico.
6 All those kind of logging suite we proposed in this --
7 under these sections going to verify the well
8 construction. And the mechanical integrity testing
9 confirms the containment -- containment, okay. Proper
10 plugging protects the USDW, okay. The proposed rules
11 from applicant supports safe and science-based
12 Class VI operation, okay.

13 Next slide, please. Here's some
14 reference I quoted for this presentation, including
15 these two sections under the 19.15.43 -- 43.9, and
16 also from the federal -- the EPA Class VI program, the
17 40 CFR Part 146 Subpart H and 40 CFR 144.12. Also the
18 EPA Class VI guidelines gave me some reference to
19 prepare these slides and some Department of Energy
20 Carbon Storage Best Practice Manual.

21 That's all from my presentation. Thank
22 you.

23 MR. TREMAINE: Dr. Wang, are you
24 prepared to provide a summary of your rebuttal --
25 pre-filed written rebuttal testimony for the

1 Commission?

2 DR. WANG: Yes.

3 MR. TREMAINE: Please proceed.

4 DR. WANG: So I have one rebuttal
5 testimony from conservation about the testing and the
6 monitoring -- monitoring program. So they were -- let
7 me check this -- the statement right here. From the
8 conservation groups to prescribe implementation
9 details that are already addressed through the
10 project-specific testing and monitoring program.

11 So in my opinion, the language
12 currently contained in 40 CFR 146.9 and OCD's proposed
13 rules is sufficient to establish the operational
14 requirements for conducting testing and monitoring
15 during the Class VI injection operations. So retain
16 the existing proposed regulation language while
17 relying on the project-specific testing and monitoring
18 plans provides sufficient flexibility to address
19 site-specific operational conditions without imposing
20 additional statewide requirements that may be
21 unnecessary or redundant. So I disagreed with the --
22 the requests from conservation groups on that rebuttal
23 testimony. That's all I have.

24 MR. TREMAINE: Thank you.

25 Madam Hearing Officer, I have one

1 rebuttal question.

2 THE HEARING EXAMINER: Okay. Please go
3 ahead.

4 BY MR. TREMAINE:

5 MR. TREMAINE: So, Dr. Wang, have you
6 reviewed the rebuttal testimony submitted by
7 conservation -- the conservation groups related to
8 spontaneous potential?

9 DR. WANG: Yes, I did.

10 MR. TREMAINE: Okay. In the -- in the
11 conservation group's rebuttal testimony, what's
12 labeled as CG-476, the conservation groups are
13 responding to Dr. Harvey, Oxy's witness [sic], and
14 supporting inclusion of spontaneous potential in the
15 requirements. Do you agree with that
16 characterization?

17 DR. WANG: I agree, yes.

18 MR. TREMAINE: Okay. So we've heard in
19 Oxy's direct testimony the proposal to remove
20 spontaneous potential and in conservation group's
21 rebuttal testimony the recommendation to include it.
22 Dr. Wang, how do you respond to that testimony?

23 DR. WANG: So the -- the request from
24 Oxy to remove the SP logs is objective to the EPA
25 Class VI rules under 40 CFR 146. So from there, the

1 SP logs is required for surface section, intermediate
2 section, and the production section for the
3 long-string section, yeah. So SP logs also -- from
4 the technical point of view, SP logs is also very
5 important to assist the gamma ray and some
6 lithology -- and some other logs to identify the
7 lithology and provide some information on the residual
8 water saturation for the formation. So based on those
9 observation, I would -- would, you know, I would not
10 agree with Oxy's proposed request on the SP logs.

11 MR. TREMAINE: So just to sum up,
12 Dr. Wang, if -- if you -- if the Commission removed
13 spontaneous potential logs as proposed by Oxy, is it
14 your opinion that the rule promulgated by the
15 Commission would be less stringent than the EPA rule?

16 DR. WANG: Yes, I agree.

17 MR. TREMAINE: Okay. Is it your -- so
18 it is your opinion that spontaneous potential logs
19 should be included?

20 DR. WANG: It should be, yes.

21 MR. TREMAINE: Thank you. No further
22 questions.

23 THE HEARING EXAMINER: Thank you,
24 Mr. Tremaine and Dr. Wang.

25 DR. WANG: Thank you.

1 MR. TREMAINE: All right. Madam
2 Hearing Officer, we are moving right along quite
3 expeditiously. So our next witness is Mr. Matt Eales.

4 THE HEARING EXAMINER: Thank you.

5 Mr. Eales, would you spell your first
6 and last name, please?

7 MR. EALES: M-A-T-T. Last name, E-A-L-
8 E-S.

9 WHEREUPON,

10 MATT EALES,
11 called as a witness and having been first duly sworn
12 to tell the truth, the whole truth, and nothing but
13 the truth, was examined and testified as follows:

14 THE HEARING EXAMINER: Thank you.
15 Go ahead.

16 DIRECT EXAMINATION

17 BY MR. TREMAINE:

18 MR. TREMAINE: Good afternoon,
19 Mr. Eales. Where are you currently employed and what
20 is your title?

21 MR. EALES: Currently employed at Cool
22 Sky Energy Solutions as president and CEO.

23 MR. TREMAINE: All right. And are
24 you -- are you working as a subcontractor with the New
25 Mexico Institute of Mining and Technology to support

1 OCD's application for Class VI primacy?

2 MR. EALES: Yes.

3 MR. TREMAINE: Okay. And are you
4 testifying today on behalf of Oil Conservation
5 Division as a technical witness in this rulemaking?

6 MR. EALES: Yes.

7 MR. TREMAINE: Thank you. Mr. Eales,
8 have you prepared direct pre-filed written testimony
9 in preparation for this hearing, marked as OCD Exhibit
10 Number 12?

11 MR. EALES: Yes, I have.

12 (OCD Exhibit 12 was marked for
13 identification.)

14 MR. TREMAINE: Okay. Do you -- does
15 that testimony require any changes or corrections
16 today?

17 MR. EALES: No, it's correct.

18 MR. TREMAINE: And do you adopt your
19 pre-filed written direct testimony and your sworn
20 testimony today?

21 MR. EALES: Yes.

22 MR. TREMAINE: Okay. Did you also
23 prepare a -- a resume marked as OCD Exhibit Number 13,
24 outlining your experience and qualifications?

25 MR. EALES: Yes, I did.

1 (OCD Exhibit 13 was marked for
2 identification.)

3 MR. TREMAINE: Is this true and
4 accurate?

5 MR. EALES: Yes, it is.

6 MR. TREMAINE: Okay. Did you also
7 prepare a pre-filed direct -- or pre-filed written
8 rebuttal testimony marked as OCD Exhibit Number 25?

9 MR. EALES: Yes, I did.

10 (OCD Exhibit 25 was marked for
11 identification.)

12 MR. TREMAINE: Okay. And does the
13 pre-filed rebuttal testimony require any corrections
14 or changes today?

15 MR. EALES: Yes. I recommended
16 correction on the request from CBD to include caprock
17 assessment from a -- for a conversion from a two to
18 six in line with Dr. Schnaar's point. It's a good
19 point to raise that, but I would just change it from
20 caprock to confining zone as referenced earlier.

21 MR. TREMAINE: So to clarify, in your
22 rebuttal testimony, you indicated that you had
23 testified that you rejected the proposed change; is
24 that correct?

25 MR. EALES: That's correct.

1 MR. TREMAINE: With the language
2 proposal provided by Dr. Schnaar, you now support that
3 change?

4 MR. EALES: Yes.

5 MR. TREMAINE: Thank you. Are you
6 prepared to -- or do you adopt your pre-filed written
7 rebuttal testimony as your sworn rebuttal testimony
8 today?

9 MR. EALES: Yes.

10 MR. TREMAINE: Okay.

11 Madam Hearing Officer, I would move
12 admission of Exhibits 12, 13, and 25.

13 THE HEARING EXAMINER: Pause for a
14 moment in the event another party has an objection.
15 Twelve, thirteen, and twenty-five are admitted.

16 (OCD Exhibit 12, Exhibit 13, and
17 Exhibit 25 were received into
18 evidence.)

19 MR. TREMAINE: Thank you.

20 BY. MR. TREMAINE:

21 MR. TREMAINE: Mr. Eales, have you
22 prepared a demonstrative exhibit to facilitate
23 providing a summary of your direct testimony for the
24 Commission today?

25 MR. EALES: Yes, I have.

1 MR. TREMAINE: Is that the
2 demonstrative that I have on the screen right now?

3 MR. EALES: Yes.

4 MR. TREMAINE: All right. Please
5 proceed with your summary of your direct testimony,
6 and let me know if you need to change slides.

7 MR. EALES: Okay. Change slides,
8 please. Just a history on education and experience.
9 Went to University of Kansas, got a degree in Master
10 of Science in Environmental Engineering. I did 28
11 years of experience in various global oil field
12 operations for Schlumberger, Smith International,
13 primarily in the environmental health, safety, and
14 regulatory compliance arenas. I specialize now in
15 technical support for Class II UIC acid gas injection
16 well permitting, operations, and compliance.

17 I continue to participate in several
18 work groups within the American Petroleum Institute,
19 Society of Petroleum Engineers, and International Oil
20 and Gas Professionals and then the Groundwater
21 Protection Counsel, all related to injection control
22 UIC, same area, environmental health and safety. In
23 the last few years, I've worked with a greater team to
24 develop ten EPA-approved MRV plans, which define
25 operational requirements or monitoring requirements

1 for CO2 injection operations.

2 Next, please. So the purpose of my
3 testimony is to provide technical support to the OCD
4 for the proposed adoption of 19.15.41, 42, and 43 as
5 part of New Mexico's application for Class VI UIC
6 primacy. In general, I'll be addressing the technical
7 and regulatory compliance requirements that are
8 applicable to Class VI wells, and that's including the
9 construction operation and then safeguards for USDWs.

10 More specifically, I'll be getting into
11 detail related to injection -- injection well
12 construction requirements, operating requirements,
13 mechanical integrity, testing and monitoring,
14 reporting requirements, and emergency -- and emergency
15 and remedial response.

16 Next, please. So starting with
17 construction requirements. We've touched on a lot of
18 those points today, but getting into the details, the
19 Class VI regulation regulates the design of the well
20 with the general goal of ensuring wells are
21 constructed and completed to prevent movement of
22 fluids in or between USDWs or any other unauthorized
23 zones. They permit the use of testing devices and
24 workover tools and permit continuous monitoring of the
25 annulus space between the injection tubing and the

1 long-string casing.

2 It also regulates casing and cementing
3 of Class VI wells, including the requirement that
4 casing, cement, or other materials used in the
5 construction have structural strength and be designed
6 for the life of the project. It includes the
7 requirement for surface casing for all Class VI wells,
8 that they be set and cemented through the base of the
9 deepest known USDW aquifer, and must extend into an
10 underlining -- underlying confining unit. In
11 addition, it requires that at least one long-string
12 casing using a sufficient number of centralizers must
13 extend to the injection zone. And then continue on to
14 the next page, please.

15 Specific to cement, cement and cement
16 additives are required to be compatible with the
17 carbon dioxide stream and formation fluids. They have
18 to be a quality and quantity to maintain integrity
19 with the design life of that well. So considerations
20 to do that include depth to injection zone, injection
21 pressure, external and internal pressure, hole size,
22 size and grade of all casing strings, corrosiveness of
23 the carbon dioxide string, downhole temps, lithology
24 of the injection and confining zone, specified cement
25 type or grade, quantity, and composition and

1 temperature of the CO2 stream.

2 In addition, tubing and packer
3 requirements are specific, and they have to include
4 construction compatibility to the injectate fluid and
5 the appropriate packer depth. Operators are required
6 to submit the planned setting depth, characteristics
7 of their CO2, maximum proposed injection pressure,
8 maximum proposed annular pressure, proposed injection
9 rate, size of tubing and casing, as well as the tubing
10 tensile, burst, and collapse strengths.

11 Next. So moving on to well integrity
12 requirements. Within this section, the operator is
13 required to perform an initial annulus pressure test,
14 continuously monitor injection pressure, rate,
15 injected volumes, and pressure on the annulus between
16 the tubing and the long-string casing, as well as
17 track the annulus fluid volume. At least once per
18 year, the operator must use one of the following
19 methods to determine the absence of fluid movement,
20 and that can either be an approved tracer survey or a
21 temperature or noise log. The operator may also be
22 required to perform a casing inspection log. So
23 maintaining well integrity ensures that the casing,
24 cement, and tubing continues to prevent moving of
25 fluids into or between the USDWs or other unauthorized

1 zones.

2 Next, please. So within the emergency
3 and remedial response plan section of the proposed
4 rule, an emergency event is defined as any event in
5 which movement of the injection or formation fluids
6 may cause an endangerment to a USDW during
7 construction, operation, and post-injection site care.
8 The proposed program requires that operators maintain
9 and implement an approved plan, which is directly
10 enforceable, regardless of whether the requirement is
11 a condition of the permit.

12 The operator must conduct outreach with
13 communities within the AoR, or area of review, during
14 the development of that plan. This outreach must
15 identify the chain of command for notifying the public
16 in the event of an emergency and incorporate this
17 information in the plan, as well as develop protocols
18 for notifying the public about well-related issues
19 and/or emergencies. The operator must provide that
20 training for local emergency responders and include a
21 summary of community outreach activity -- activities
22 prior to the plan submittal.

23 Next, please. Along the same route of
24 emergency response, the operator -- if the operator
25 obtains evidence that the injected carbon dioxide

1 stream and associated pressure front may cause
2 endangerment to a USDW, they must immediately cease
3 injection, take all steps reasonably necessary to
4 identify and characterize any release, notify the
5 director in 24 hours, and implement the emergency and
6 remedial response plan.

7 The program can require additional
8 monitoring, testing, or corrective action in response
9 to emergency conditions, and the operator would be
10 required at that point to revise its emergency
11 remedial response plan and include additional
12 monitoring requirements. The proposed program can
13 modify operations or require shutdown of injection
14 activities if it deems the injection is a risk to a
15 USDW.

16 Next, please. So Class VI AoR meaning
17 and monitoring purpose. AoR is defined as the area
18 surrounding an injection well describing according
19 to -- described according to criteria set in 40 CFR
20 146.06, or in the case of an area permit is the
21 project area plus circumscribed area the width of
22 which is either a quarter mile or a number calculated
23 to 40 CFR 146.06. More specifically, it's the region
24 surrounding the geologic sequestration project where
25 USDWs may be endangered by injection activity.

1 The purpose for monitoring is to ensure
2 compliance with the standards, which requires no
3 operator shall construct, operate, maintain, convert,
4 plug, abandon, or conduct any other injection activity
5 in a manner that allows movement of fluid containing
6 any contaminant into drinking water.

7 Next, please. So the monitoring
8 requirements from the program include the following.
9 Operators are required to perform an analysis of the
10 carbon dioxide stream with sufficient frequency to
11 yield data representative of chemical and physical
12 characteristics. They're also required to install and
13 use during workovers continuous recording devices to
14 monitor pressure, rate, volume, as well as the
15 pressure on the annulus between the tubing and the
16 long-string casing and the annulus fluid volume added.

17 Corrosion monitoring of the well
18 materials must be performed on a quarterly basis to
19 ensure the well components meet the minimum standard
20 for material strength and performance. Quarterly
21 monitoring of the groundwater quality and geochemical
22 changes above the zone that may be a result of CO₂
23 movement through the zone is also required. The
24 demonstration of external mechanical integrity is
25 required at least once per year. Pressure fall-off

1 tests at least once every five years. Testing and
2 monitoring to track the extent of the plume and the
3 pressure or absence of elevated pressure is also
4 required. And then finally, seismicity monitoring is
5 required as part of the operational and post-injection
6 program.

7 Next, please. So the operational
8 pressure, one of the -- one of the key points is the
9 operator must ensure that the injection pressure does
10 not exceed 90 percent of the fracture pressure of the
11 injection zone. That ensures the injection does not
12 initiate new fractures or propagate existing fractures
13 into the injection zone. In no case may injection
14 pressure -- pressure initiate fractures or cause
15 movement of fluids that endanger the USDW. This is
16 achieved through a number of operational requirements,
17 including prohibition of injection between outermost
18 casing, protecting USDWs, and the wellbore, monitoring
19 the annulus between the tubing and the casing -- long-
20 string casing, maintenance of mechanical integrity,
21 and several other monitoring requirements.

22 Next. So pressure protection. It's
23 required to ensure that the injection pressure remains
24 below that point that I raised earlier. So it's still
25 protective of confined -- of the confining zone. It's

1 defined as the geological formation -- the confining
2 zone is defined as the geological formation, group of
3 formations, or part of the formation that's capable of
4 limiting fluid movement above the injection zone
5 through a number of means.

6 So one, during the construction of the
7 well, the program requires the operator take whole
8 cores or sidewall cores of the injection zone and the
9 confining system and formation fluid samples for the
10 injection zone. Operator must also submit a detailed
11 report prepared by a log analyst that includes well
12 log analyses, including the well logs, core analyses,
13 and formation fluid -- fluid sample information.
14 Operator must also record the fluid temperature, pH,
15 conductivity, reservoir pressure, and static fluid
16 level of the injection zone.

17 Operator must also calculate the
18 following information: fracture pressure, other
19 physical characteristics of -- and chemical
20 characteristics of the injection and confining zone,
21 physical and chemical -- chemical characteristics of
22 the formation of fluids in the injection zone, and
23 upon completion, the operator must conduct a pressure
24 fall-off test, a pump test, or an injectivity test.

25 Next, please. So operational controls

1 are required by the rule. The permit establishes
2 maximum injection volumes and pressures to assure that
3 fractures are not initiated in the confining zone, the
4 injected fluids do not migrate into any underground
5 source of drinking water, and the formation fluids are
6 not displaced into any underground source of drinking
7 water. Operators are required to install and use
8 during workovers continuous reporting devices to
9 monitor injection pressure rate, volume, and the
10 pressure on the annulus between the tubing and
11 long-string casing, and the annulus fluid volume
12 added.

13 Operators are required to use and
14 maintain continuous recording devices to monitor that
15 pressure, rate, volume, and mass, and the temperature
16 of that stream. They're also required to install
17 alarms and automatic shutoff systems in the systems or
18 at the discretion of the director, downhole shutoff
19 systems, check wells. All alarms are to be integrated
20 with an automatic shutdown system to ensure immediate
21 response to critical operating conditions. If that
22 shutdown is triggered, the operator must immediately
23 investigate and identify the cause. The operator
24 finally must immediately cease injection, take all
25 stop -- steps to determine whether there may have been

1 a release of injected carbon dioxide or formation
2 fluids, and notify the director within 24 hours.

3 Next, please. So the seismicity
4 requirements within the rule. Seismicity is defined
5 as the occurrence of frequency of earthquakes in a
6 region. The operator is required to design and
7 implement a site-specific seismic monitoring plan
8 capable of detecting and characterizing induced
9 seismicity. The design of that monitoring must be
10 based on the potential risk of disturbing the
11 confinement zone and endangering USDWs with the area
12 of review that was determined during the site
13 characterization phase.

14 Injection operations may -- can be
15 modified by reducing permanent volumes of pressure or
16 pressure up to and including the shutting of the well.
17 Operators required to periodically review the testing
18 and monitoring plan to incorporate the monitoring data
19 and then after review of the testing and monitoring
20 plan shall recur two years after injection begins and
21 that review cannot happen beyond four years. Based on
22 the review, the operator shall submit an amended
23 testing and monitoring plan or demonstrate to the
24 director no amendments of testing and monitoring is
25 needed.

1 Next, please. That is the end of my
2 testimony.

3 MR. TREMAINE: Mr. Eales, have you
4 prepared -- prepared to move through your
5 demonstrative exhibit to summarize your rebuttal
6 testimony?

7 MR. EALES: Yes.

8 MR. TREMAINE: Please proceed.

9 MR. EALES: Next, please. So in
10 response to recommendations from CBD, some were
11 existing, citing corrective action standards as
12 recommendations that were including prescribing
13 broader non-physical well review and public-space
14 siting/setbacks. These were calling out the potential
15 of not being able to find a record of a well in the
16 system and how there should be a greater prescriptive
17 nature to -- to spell out how to do that.

18 The response to that is that the OCD
19 online system is very robust, but even beyond that,
20 that the operator has the obligation and the
21 requirement within the rule to ensure that they have
22 identified all wells, through whatever means they need
23 to find, it is their obligation and their expectation
24 to find that. Therefore, it's not necessary in my
25 mind, my opinion, to add any further prescriptive

1 means of doing that because it is specified as a
2 construction -- a pre-construction requirement.

3 The other one was adding specific well
4 plugging language within the area of review, which is
5 similar to that point as well. And both of them
6 touched a bit -- or one touched more on setbacks and
7 one more on the availability of data. In my opinion,
8 public setbacks don't directly bear on containment or
9 USDW protection. And the existing AoR rules that I
10 talked about earlier already authorized site-specific
11 plugging, remediation, and other corrective actions.
12 So I recommend not addressing those or accepting
13 those.

14 So next. Another is sonic --the
15 recommendation for sonic and porosity measurements
16 within the logging tools, and I found those to be
17 acceptable. Those are good tools to use. They were
18 presented earlier in other demonstrations and -- and
19 witness. So that is a recommendation I would accept.

20 Another one was recommending best
21 available technology. And unfortunately, that one I
22 see is an unintended consequence possibility in
23 which -- and best available technology could be
24 something that's in experimental mode still and not
25 something that's proven technology, which could

1 prescriptively tighten up something that's not really
2 been proven yet. So I recommend not -- not doing
3 that.

4 Another one was a mandatory five-day
5 ramp up. Again, that could have those unintended
6 consequences, and it's much better to allow each of
7 the permits to be specific to the needs rather than
8 all permits seeing a five-day ramp-up in injection.

9 The other one is annual noise logs, and
10 it was requiring an annual noise log at a -- at a high
11 frequency. In order to perform those noise logs, it
12 would require shutdown of operations at that frequency
13 and would be disruptive to operations. Again, the
14 language that's in the current proposed rule covers
15 the ability to inspect and ensure that there's
16 integrity on the wellbore through other means, and it
17 does reference noise logs just at a lesser frequency
18 and something that's available if it's the right
19 solution.

20 So next, please. And then with this
21 one, repeated resistivity logging, permanent borehole
22 arrays, and ambient noise tomography. Again, not
23 something that's necessary to mandate. Very similar
24 to what I was saying earlier, most logs actually do
25 repeated resistivity as part of the suite that's

1 incorporated with them, but it may not be the right
2 tool. As well -- as was referenced earlier, the
3 logging itself is its own specialty. It's its own
4 technical, you know, solution, and so permanent
5 borehole arrays, ambient-noise tomography, those two
6 actually push into seismic data gathering. And again,
7 those are very prescriptive and kind of tightening you
8 into a corner.

9 The Bureau of Economic Geology for New
10 Mexico does a very nice job of defining the
11 terminology and what they expect from this -- experts
12 in seismography. So to try to build this into OCD
13 is -- it would, again, restrict the operator as well
14 as the BEG.

15 Isotopic identification of a CO2
16 source. This was referenced earlier, and what I'll
17 add is, right now, the rule does require surface CO2
18 monitoring to see if -- in several points of
19 monitoring CO2 to see if it's coming to surface or
20 it's coming to water wells. If you see that trigger
21 and you do see an increase in CO2, you have the
22 ability at that point to then go to isotopic
23 identification. So it's still something that's
24 available, but to go straight to isotopic would not be
25 as valuable as what we're recommending in the rule.

1 And again, access was recommended by
2 CBD to begin doing background testing in -- in the
3 full round of the AoR prior to a permit being issued.
4 The reality on the ground is area landowners and
5 operators are not going to be very open to allowing
6 everyone -- or sampling technicians to go on their
7 sites prior to knowing there's a permit and prior to
8 knowing that there's a reason to do it. So it's just
9 a recommendation that we don't accept this, again,
10 recommendation to begin before the permit is issued.
11 There's plenty of time once the permit is issued,
12 before injection activity begins, to do that
13 background sampling while people know that there is a
14 reason to ask for that access.

15 And then emergency response training
16 mandates that are specific. This was actually
17 something I learned in doing the outreach sessions
18 through the state. We had begun to do outreach,
19 telling the county commissioners, county emergency
20 responders, how to respond to CO2 and how to respond
21 to certain risks, and we heard very clearly in those
22 outreach sessions from all the sheriffs, deputies,
23 community responders that that's what they do and they
24 know how to do it well and just please tell us what
25 the risks are and give us your thoughts, but we will

1 take it from here.

2 So again, I think if we were to get too
3 prescriptive in the draft rule or the final rule, I
4 think it would slow down the progress of what we
5 learned New Mexico already has the experience in and
6 can incorporate the new risks associated with CO2.

7 Next. So the Class VI framework, we've
8 talked about caprock seal. This is the one I
9 recommend to correct and accept the language that
10 Dr. Schnaar said earlier, to change it to the
11 confinement zone. So the side on the right, the
12 self-insurance. I recommend we retain self-insurance
13 as an available financial responsibility mechanism.
14 And the reason for that is self-insurance may equal or
15 exceed third-party insurance protection for some large
16 entities and financially stable entities. So by
17 removing that, it may inadvertently reduce the ability
18 of an entity to even more thoroughly and more robustly
19 provide financial assurance.

20 Next. So monthly casing inspection
21 logs, although this is a great tool to determine
22 whether casing is maintaining its integrity,
23 performing a casing inspection log requires taking the
24 tubing out of the wellbore entirely, which could take
25 two weeks to do that. So every month, you would have

1 to remove the tubing over a two-week period and then
2 essentially put it back in after you logged in the
3 next two weeks. So recommend not accepting this
4 because there already are robust mechanical
5 integrity -- integrity testing methods in place that
6 allow the tubing to stay in place, and if you have a
7 concern that comes up through that suite of tools in
8 which you identify a concern, at that point, you can
9 always remove the tubing and run a casing inspection
10 model. So this one recommend not doing it.

11 And then the seismic network, there was
12 a recommendation that was specific to ownership of the
13 seismometer. Again, the Bureau of Environmental [sic]
14 Geology has its own system in place that doesn't
15 require public or even state ownership of the
16 seismometer. What it requires is a very robust
17 ability to meet their expectations. They have a two
18 to three-page document that defines the quality of the
19 seismometer placement and the means of getting it set
20 up where it's communicating into the public system
21 prior to your allowance to inject.

22 And then finally, the threshold metrics
23 that were spelled out. Also, the PGV and the PGA,
24 these are very specific terminology tied to
25 seismometers and -- and seismic protection. So these

1 are potential velocity and potential amplitude, and
2 the thresholds can be very rigid. And again, this is
3 something where the Bureau of Economic Geology is
4 the -- is the group that regulates how New Mexico --
5 doesn't regulate but identifies the -- the proper and
6 the best technology for New Mexico for its seismic
7 plan, so I recommend not accepting those.

8 Next, please. One other recommendation
9 was to report all malfunctions, and the term
10 malfunction could mean about anything, so recommend
11 not doing this. A malfunction within reporting could
12 be that a reporting gauge or meter lost cellular
13 communication for 30 seconds or 1 minute or some
14 period of time where it's not damaging from an
15 environmental or safety standpoint, but it could be
16 considered malfunctioning.

17 So the operator does have a
18 requirement, as I spelled out earlier in my -- in my
19 witness and my presentation, to ensure that they are
20 monitoring all of those data points and ensure that
21 those are recorded and reported. If those are not
22 done, then they're in violation; they're in non-
23 compliance. So don't recommend the word
24 "malfunction."

25 And then onsite staffing, I referred to

1 it earlier, and the rule also has a requirement for
2 automatic shutdowns. Automatic shutdowns just refers
3 to the robust systems that are in place now for
4 monitoring and alarms where there doesn't have to be
5 someone sitting at the well, watching the well or near
6 the well. The systems that are -- they're tied into
7 control rooms where operators can be at a safe
8 distance from the well and from operating. And again,
9 these systems will allow and it's required by the rule
10 to shut in automatically.

11 And so finally, a mandatory cessation
12 trigger. This was recommended and it's a good
13 recommendation; however, it's already in the rule
14 as -- as drafted, and that is that the director has
15 the authority to stop injection when necessary. So
16 that's already in place, in my opinion.

17 Next, please. And finally, the Oxy
18 proposals were a construction period to require the
19 construction of the well to begin in five years, not
20 two years. Recommend that we stay with the two years.
21 It's a reasonable start when you have the technical
22 information remaining current. Five years, the
23 technical information could change during that time
24 period, so recommending to stay in the two years.

25 Another recommendation was financial

1 responsibility to retain net working capital for
2 flexibility or to remove net working capital. But I'm
3 recommending we retain it there, and that's also a
4 minimum requirement within the EPA federal rules, so
5 striking that would make our rule less protective than
6 the EPA.

7 And then minor modifications. Don't
8 recommend that we add the undefined increased risk to
9 USDWs. There was a recommendation that minor
10 modification terminology could be used as long as it
11 didn't increase the risk to USDWs, and again, it's
12 very prescriptive and we just stay with the
13 site-specific framework.

14 And then finally, surface casing logs
15 to run spontaneous potential logs. If we were to
16 remove that, as noted earlier, we would be less
17 protective than the EPA minimum guidelines that are in
18 place, so we recommend we keep that in place.

19 And that is the end of my testimony.

20 MR. TREMAINE: Thank you.

21 Madam Hearing Officer, we can continue
22 moving right along. We're done with Mr. Eales. I
23 would -- could we have a five-minute break?

24 THE HEARING EXAMINER: Terrific. Thank
25 you. Let's take ten minutes, 2:10, please.

1 (Off the record.)

2 THE HEARING EXAMINER: We are back
3 after a short break. Mr. Tremaine.

4 MR. TREMAINE: Madam Hearing Officer,
5 if I may address a -- a housekeeping question or
6 proposal? So I haven't had the opportunity to address
7 any of the parties online, but I have both the parties
8 in the room. Given our pace of play today, I think we
9 are going to be done with the direct and rebuttal
10 testimony today, so I would propose, just looking at
11 the time, that whenever we end, we leave the record
12 open for a public comment at -- at four o'clock, as
13 you described, and reconvene at nine o'clock tomorrow
14 with the panels and begin cross tomorrow rather than
15 beginning today. I think we're just ahead of where we
16 expect it to be. So for the other party's benefit, as
17 well as my witnesses, I think starting tomorrow would
18 make more sense for the -- for the panel cross.

19 THE HEARING EXAMINER: All right. Let
20 me pause for a moment in the event there's anyone
21 online who would object to that plan. Sounds like a
22 good plan to me.

23 Commissioners, any objections from the
24 dais?

25 DR. AMPOMAH: I like it.

1 THE HEARING EXAMINER: He likes it.
2 Okay.

3 DR. AMPOMAH: No objection.

4 THE HEARING EXAMINER: Thank you very
5 much, Mr. Tremaine. That will be our plan.

6 MR. TREMAINE: So thank you, Madam
7 Hearing Officer. The OCD calls Dr. Hassan Khaniani.

8 THE HEARING EXAMINER: Dr. Khaniani,
9 would you please spell your first and last name?

10 DR. KHANIANI: My first name is Hassan.
11 My last name is Khaniani, K-H-A-N-I-A-N-I.

12 THE HEARING EXAMINER: Thank you.
13 WHEREUPON,

14 DR. HASSAN KHANIANI,
15 called as a witness and having been first duly sworn
16 to tell the truth, the whole truth, and nothing but
17 the truth, was examined and testified as follows:

18 THE HEARING EXAMINER: Thank you.
19 Go ahead.

20 DIRECT EXAMINATION

21 BY MR. TREMAINE:

22 MR. TREMAINE: Dr. Khaniani, where are
23 you employed?

24 DR. KHANIANI: I'm employed in New
25 Mexico Tech.

1 MR. TREMAINE: Okay. And what is your
2 title at New Mexico Tech?

3 DR. KHANIANI: I am assistant professor
4 of geophysics. I'm also a research scientist in
5 Petroleum Recovery Research Center.

6 MR. TREMAINE: Okay. And are you as
7 part of your duties at New Mexico Tech, are you
8 working with New Mexico Institute of Mining and
9 Technology to support OCD's application for Class VI
10 primacy?

11 DR. KHANIANI: Yes.

12 MR. TREMAINE: And today, are you
13 testifying as a technical witness in support of the
14 application for rulemaking?

15 DR. KHANIANI: Yes.

16 MR. TREMAINE: Okay. Thank you.
17 Dr. Khaniani, did you prepare pre-filed direct written
18 testimony for this case?

19 DR. KHANIANI: Yes.

20 MR. TREMAINE: Good. I will show
21 you -- all right. Is that marked as OCD Exhibit
22 Number 8?

23 DR. KHANIANI: Yes.

24 (OCD Exhibit 8 was marked for
25 identification.)

1 MR. TREMAINE: And does that direct
2 testimony require any corrections or changes today?

3 DR. KHANIANI: I think this is the
4 final version. I think there is no revision.

5 MR. TREMAINE: Okay. Thank you.
6 And -- and are -- will you adopt your pre-filed
7 written direct testimony as your sworn direct
8 testimony today?

9 DR. KHANIANI: Yes.

10 MR. TREMAINE: Okay. Also ask if you
11 have prepared a resume outlining your experience and
12 qualifications labeled as OCD Exhibit Number 9?

13 DR. KHANIANI: Yes.

14 (OCD Exhibit 9 was marked for
15 identification.)

16 MR. TREMAINE: Okay. Does that Exhibit
17 Number 9 require any corrections or changes?

18 DR. KHANIANI: No.

19 MR. TREMAINE: Okay. Did you also
20 prepare rebuttal test -- pre-filed written rebuttal
21 testimony, which is labeled as OCD Exhibit Number 23?

22 DR. KHANIANI: Yes.

23 (OCD Exhibit 23 was marked for
24 identification.)

25 MR. TREMAINE: Okay. Does your

1 rebuttal testimony require any corrections or changes?

2 DR. KHANIANI: No.

3 MR. TREMAINE: Okay. And do you adopt
4 your pre-filed written rebuttal testimony as your
5 sworn rebuttal testimony today?

6 DR. KHANIANI: Yes.

7 MR. TREMAINE: Thank you.

8 Madam Hearing Officer, I would move
9 admission of Exhibits 8, 9, and 23.

10 THE HEARING EXAMINER: All right. I'm
11 going to pause for a moment in the event there are
12 objections. Exhibits 8, 9, and 23 are admitted.

13 (OCD Exhibit 8, Exhibit 9, and
14 Exhibit 23 were received into
15 evidence.)

16 MR. TREMAINE: Thank you.

17 BY MR. TREMAINE:

18 MR. TREMAINE: Dr. Khaniani, have you
19 prepared a demonstrative presentation to facilitate
20 the summary of your direct testimony?

21 DR. KHANIANI: Yes.

22 MR. TREMAINE: Is that what I have
23 shared on the screen here today?

24 DR. KHANIANI: Yes.

25 MR. TREMAINE: Okay. Thank you.

1 Dr. Khaniani, please provide a summary of your direct
2 testimony for the Commission, not to exceed one hour.
3 Thank you.

4 DR. KHANIANI: Thank you.

5 Hello, everyone. My name is Hassan
6 Khaniani, and I'm going to support the testimony
7 related to Section 19.15.41.7, 42.11, 43.7, 43.9. And
8 those are related to injection zone, characteristic of
9 fault, area of review characteristics and
10 decision-making, and -- and the injection zone
11 property and characterization.

12 Go to the next. So this is my
13 professional background. I'm currently assistant
14 professor of geophysics from New Mexico Tech. I have
15 a joint appointment between Petroleum Recovery
16 Research Center and Department of Mineral Engineering.
17 My Ph.D. is Exploration Geophysics from University of
18 Calgary, bachelor's and master's degree in petroleum
19 engineering, and I have experience in performing MRV
20 plan, permitting technical support for Class VI for
21 subsurface modeling, seismic imaging, and inversion.

22 I have been doing fault slip
23 potential -- I'm going to explain about this
24 terminology -- geomechanics and subsurface monitoring.
25 I also be developing at New Mexico Tech the sensor

1 system but mostly based on the ultrasonic sensing
2 system for tomography imaging. That means that we
3 also develop petrophysical well logging, reservoir
4 monitoring, and we do research on underground
5 hazardous-environment sensing, such as distributed
6 acoustic sensing and PDR imaging by ultrasonic waves.

7 I have also teaching experience in
8 machine learning and geoscience and engineering,
9 geostatistic for subsurface monitoring, and also rock
10 mechanic. Then my relevant publication to this
11 hearing is CO2-EOR time-lapse monitoring, seismic
12 inversion, and underground mine hazard modeling and
13 decision making.

14 Can you go to the next. Okay. And we
15 need to -- in order to understand what problem we are
16 going to discuss, let me show you. In the right side,
17 you see a wellbore. We do injection into the
18 subsurface. We have some confining zone that has low
19 permeability that if you inject the -- your material
20 into the storage zone to injection zone, you are
21 expecting that the fluid to the gas incontinent
22 doesn't flow upward. Specifically, we are not
23 interested to pollute the USDW. I mean, we don't want
24 to make the water -- water polluted.

25 So -- so the problem is inject CO2 into

1 deep geological formation while protecting underground
2 source of drinking water. Okay. And we have to deal
3 with some risk issues. One is that if there is a
4 fault or fracture in the region, we have to analyze
5 that. We also need to understand the pressure that we
6 inject the fluid; there will be pressure buildup. How
7 this pressure buildup will affect the reservoir
8 condition and also if there is an existing fault, how
9 this pressure will affect.

10 Okay. Does it create a fault
11 activation? Maybe there is existing fault. Does it
12 make fault reactivation? If there is no fault, does
13 it create any new fracture? So also we need to
14 understand the -- as you can see in the red color,
15 it's called plume, and we want to understand how the
16 plume volume and also pressure-front migrate from the
17 injection well, you want to understand that, so
18 that -- that is what we discuss next.

19 Okay. So we want -- so in general,
20 performing, like, a Class VI well or Class II or other
21 similar injection scenario we have -- we have, like, a
22 large team of experts. It's not just geophysicists.
23 It's not just rock mechanic people. Also it needs
24 survey. It needs well design. It needs drilling.
25 Also it need reservoir engineers, geologists

1 specifically. They play important role. And all of
2 them combine a lot of data sets to make a good plan, a
3 good understanding of a subsurface.

4 Go to the next, please. So here is a
5 scenario. I just want to define what our -- the
6 definitions. So we have -- let's say we have CO2
7 plume and you want to understand that the -- the
8 beginning and you want to have some estimate and you
9 want to evaluate your reservoir condition and see how
10 much your front and as you can see in the red -- the
11 red dotted line on the right side, you can see that
12 that is how much of your underground environment are
13 affected by the injection of your fluid. That is
14 called -- I mean, you have to understand that and you
15 want -- you want to evaluate that for your area of
16 review. So that is one of the most factor in
17 understanding this.

18 Also you want to see in -- during the
19 time and then you will reach to the fault -- existing
20 fault in the model. And then how you want to write
21 your scenario to define that if the -- your pressure
22 front or plume front hit the fault. What type of
23 fault is that? And you want to understand those type
24 of -- you'll have a lot lots of question. And you
25 want to be as realistic as possible, and you want to

1 mitigate your risk. Why? Because when you reach your
2 fault, if your fault for any reason during the
3 geological time become transmissive, which means that
4 you -- it can carry the fluid. I mean, in the next
5 slide, I discuss about transmissive fault. But when
6 you reach to the fault, you want to ensure that it
7 doesn't reach to the USDW, I mean, your fresh water,
8 okay.

9 So -- so what we want to understand,
10 again, geology and structure. That is very important
11 because sometimes you are close to the fault, but your
12 structure is on the way that you have anticlines or
13 other structure that the fault doesn't create a
14 problem, so we need to have an understanding of a
15 subsurface.

16 We need also to have a good
17 understanding of porosity and permeability of your
18 injection zone and your confining zone, okay, your
19 seals. And then you need also to understand and
20 evaluate the mechanical property of the fault, okay.
21 I will discuss that in the next few slides, which is
22 called fault slip potential, okay, and fault slip
23 potential is understanding your regional stress. You
24 want to evaluate your fault, okay.

25 So key risk evaluated -- to be

1 evaluated is if the fault or fracture are
2 transmissive, your pressure buildup doesn't create new
3 fault or new fracture or which. It's important
4 because you don't want the freshwater be -- USDW be
5 affected, okay.

6 Go to the next slide. So I also want
7 to discuss about how we find the structural
8 subsurface. Usually one of the main method is using
9 the surface seismic data. It's also called active
10 source. Active source means that, for example, on the
11 right side, you have a vibroseis, and it -- it has a
12 controlled source. It sends the wave energy into
13 underground, and it reflects back on different layers
14 via the sensor, as you can see on the receivers.

15 So the receive -- received wave are
16 analyzed using back propagation of the wave and
17 analyzing the different imaging techniques. So you
18 can have the structure of subsurface and one of the
19 advantages of this method, the seismic, is that you
20 can have like a big picture of your -- your model.

21 And so I want to also mention that
22 there are several layers in subsurface because of the
23 different geological deposition and that creates
24 different elastic property. Elastic properties, such
25 as velocity, density, shear velocity, those are

1 different for each layer. That create a different
2 echo of the wave or reflection, and we are analyzing
3 that. And so what happens if we inject fluid, then
4 injection fluid also affect our elastic property. So
5 that's why several times the seismic can be repeated,
6 and you can evaluate, like, how your plume movement is
7 during the time.

8 So it supports the structural
9 interpretation and reservoir characterization and you
10 can have a good idea about your area of review
11 delineation and long-term confinement. You can use
12 the seismic method as a very effective and basically
13 the main tool for modeling of your subsurface, okay.
14 So basically, the seismic method are used to create
15 the model for reservoir simulation and other property
16 you want to get from the seismic data, so -- and this
17 is not the only one.

18 We are combining this seismic data. We
19 need geological information from different well log
20 data we have. We have the tops and we construct the
21 data from geology as well. And eventually we combine
22 these two. We have more, like, certainty about the
23 quality of the data and the model that you create for
24 subsurface simulation of the reservoir. Can you go to
25 the next slide?

1 So here -- here is several scenarios of
2 fault, okay. The fault can be barrier -- it can act
3 as a barrier. It can also act as potential pathway to
4 USDW, okay, because if it is transmissive, then the
5 fluid can move. When you inject the fluid, the -- the
6 pressure difference, the fluid goes toward the pathway
7 and it can reach to the USDW. And it can also be a
8 barrier. So the seismic data, we -- because this
9 change -- this change in contrast that you can see,
10 the seismic data hits this. It also create the
11 contrast in different angle. So the seismic data can
12 help you to identify location, orientation, geometry,
13 and also how the fault continues and how they are
14 extended on subsurface. And if you want to use that
15 for geological reservoir simulation, you can use the
16 seismic data.

17 So the other data source, as I
18 mentioned, one is using geologists. Also we have well
19 log data. We can do interpretation for regional
20 structure. And that -- that's the -- that's how we
21 develop our model.

22 Let's go next. Okay. So far, we have
23 been discussing about the structure surrounding the
24 injection zone. Here is the injection zone itself.
25 We need to also understand the properties of injection

1 zone and how the quality of the injection is. We use
2 other source of information when available. For
3 example, core data, laboratory testing, well log
4 analysis, seismic survey, we can -- we can do
5 inversion. We can get extension of the elastic
6 property on the reservoir, injection zone, and
7 regional well correlation, as we mentioned. And what
8 information we can expect from them is porosity,
9 permeability, and formation properties like thickness,
10 confining zone thickness as well.

11 So, next. Okay. So at this part,
12 let's say we have a reservoir. We are injecting. Now
13 we want to see how -- how much of the pressure we can
14 go, how much injection we can do. There are several
15 factor that we need to study. One of them is that we
16 need to study geomechanically on the region. So every
17 region, there are in-situ stress. This in-situ stress
18 are affected by several factors.

19 For example, one is the tectonic, the
20 regional -- for example, in New Mexico, we have
21 rifting and we are separating of the layer between Rio
22 Grande, we are having separation. We have motion of
23 the -- movement of the -- the, I mean, the -- the
24 surface and it creates tectonic stress. And the other
25 factor is the -- the density of the overlaying rock.

1 When you push layers together, then it push sideways
2 and it creates horizontal stresses as well. So we
3 have vertical stress and also horizontal stress.

4 We have other properties of reservoir;
5 it's called fracture pressure. It means that how much
6 pressure you can inject to the reservoir that doesn't
7 create secondary fractures. And that secondary
8 fracture can be dangerous because it can create
9 leakage toward the water resource or can be leakage to
10 the other unwanted area, unwanted zone.

11 So we need to also study rock strength,
12 fault orientation, and also we are also performing
13 reservoir simulation. It means that -- that means
14 that how much CO2 plume that you inject and in what
15 direction it moves and how it moves and what does the
16 pressure during the time, okay. So -- so we -- the
17 criteria is that the pressure should remain below
18 levels that could compromise containment. It doesn't
19 create leak or fracture, induce -- it doesn't create
20 fault slip -- slippage, I will explain in the next
21 slide, and then it doesn't open the, like, a closed
22 fracture. It doesn't affect the properties of the
23 existing pressure and doesn't create migration pathway
24 of the injection fluid.

25 So go -- next slide, please. So here

1 is about how fault slip potential means. Fault slip
2 potential is the -- the whole sequence of analytical
3 and numerical method to evaluate your existing
4 pressure on the porous space and on fault planes and
5 you want to evaluate what will be the next stress on
6 the fault plane. If -- if you see on Number 1 here,
7 we have in-situ stress, as we mentioned, due to
8 tectonic -- due to the density -- I mean, the
9 overlaying density of rocks and then you have minimum
10 horizontal and maximum horizontal stresses.

11 So let's say we have fault -- Number 2,
12 you have a fault, and you have this regional stress.
13 You want to see how much stress on the plane of this
14 fault are. So the -- the stress that you see on
15 Number 1 -- and you have on Number 1, you want to map
16 them on the fault plane, you want to see how much
17 shear -- shear stress you have as a result of the
18 present -- I mean, the current state of your fault.
19 You want to see how much vertical stress on the plane
20 you already have.

21 And then you calculate your pore
22 pressure. That pore pressure are done by reservoir
23 simulation. You can calculate that. And then you
24 will see how opening you can -- you can open this
25 fracture. When you open that, then basically you are

1 reducing the effective stress. That means that if
2 your two faults are on each other, if you reduce the
3 stress on each other, they can slide easier. That is
4 the principle of fault slip potential. The potential
5 that the fault can slip -- perform a slippage.

6 On the right side, we show you an
7 example of a fault plane. It's in a 3D space. In the
8 middle, it's a AGI well, and we have, like, a two --
9 two fault on the side. And we can calculate what is
10 the minimum stress needed to create the activation of
11 the fault, okay. And if you have that value, then you
12 have the reservoir simulation. You know, you
13 calculate the reservoir pressure and, you know, this
14 is below or above the safety factor. So everything we
15 can calculate based on the physics existed.

16 So -- and here is a figure on the right
17 bottom, you can see that it's called "Mohr Diagram."
18 As you can see, all of the fault system are below a
19 red line. The red line is a criteria for safety. So
20 we -- if we want to define a criteria of safety, there
21 is a science, and there is -- each site has a specific
22 factor for itself. This red line is different, okay.
23 So we need to specify that for any reservoir; how do
24 you want this fault to be, okay. There is no
25 universal value for all of this fault. Each fault has

1 its own property. Each region has its own
2 characteristic.

3 Next slide, please. Okay, so that's --
4 I want to -- that becomes ground for my rebuttal.

5 MR. TREMAINE: Thank you, Dr. Khaniani.
6 As we stop there, is there anything that -- anything
7 that you need to add to your summary of your direct;
8 otherwise, we can move right on, okay. I will keep
9 the slide up. Dr. Khaniani, please provide a summary
10 of your rebuttal testimony.

11 DR. KHANIANI: Thank you. So based on
12 what we mentioned in my testimony, I would like to
13 mention that we have been reviewing the -- the
14 technical sections, and I have some consideration for
15 rebuttal, and I want to discuss that. But I want to
16 say that most of the comment I have is based on -- it
17 should be based on project-specific geology,
18 geomechanic monitoring and modeling and implementing
19 the physics, okay, so -- because we need to study the
20 fault, fracture, injection-zone property, pressure
21 responses, plume and pressure-front behavior as we
22 should, and we -- we have to discuss that based on the
23 site specific. So we cannot have, like, a fixed
24 statewide requirement for each Class VI well. We have
25 to give the option to the director, the OCD, to

1 require additional safety guard, if needed.

2 So the first one, for example, is the
3 Center for Biological Diversity suggestion regarding
4 mandatory five-day ramp-up period and universal
5 spinner log requirement. I think previous testimony
6 already discussed about the -- the five-day ramp up.
7 But in my opinion, a mandatory five-day ramp up period
8 and universal spinner log requirement are unnecessary
9 for a statewide Class VI program. This operational
10 measure should be based on site-specific factor,
11 including fracture pressure, geomechanical condition,
12 confining zone integrity, and fracture
13 characterization, reservoir pressure response, and
14 monitoring data.

15 The Division should retain discretion
16 to require a staged ramp up, spinner logs, lower
17 injection pressure limits, or other measure where
18 warranted. But imposing them on every Class well is
19 not technically necessary and may not, meaning fully
20 improve USDW.

21 Here are example of alternative method,
22 okay. So for example, you can use pressure rate
23 monitoring, pressure falloff test that already has
24 been mandated. Temperature log, noise log. You can
25 use distributed temperature sensing, distributed

1 acoustic sensing. Maybe some -- some of the well
2 already have this information. We should give this
3 option to the director to make the decision if a
4 spinner log -- because a spinner log is based on the
5 rotation sensor in the well, and it can change when
6 there is a leakage. But there are other method that
7 you can detect the same. Maybe in each well log, the
8 well -- the situation is different.

9 Next. CBD proposal to reduce the
10 maximum injection pressure limit from 90 percent to
11 80 percent of fracture pressure. Okay, so as we
12 discussed about fracture pressure, I think the EPA
13 limit of 90 percent fracture limit is technically
14 appropriate. Let's keep it. And remains below the
15 fracture pressure and includes 10 percent margin
16 already. We have it.

17 Class VI has multiple safeguard. We
18 perform geomechanical evaluation, continuous pressure
19 injection monitoring, mechanical integrity testing,
20 pressure falloff testing, AoR modeling, and we have
21 evaluation. And also we have director authority to
22 require lower specific pressure. So if needed, we
23 have to evaluate the reservoir and then we should give
24 the authority to the director to make this decision.
25 If they want to make 80 percent limit or even lower,

1 that is not a standard. So putting a universal
2 80 percent limit is not technically necessary for
3 every project.

4 So there was, like, example of
5 Redbird #4. It was a Class II saltwater disposal
6 case, not a Class VI storage. It is important. It
7 reinforced the importance of monitoring, but it
8 doesn't necessarily give the conclusion that
9 80 percent is necessary for -- 80 percent of the
10 fracture pressure is necessary for all the classes, so
11 it's not -- it should not be mandated, in my opinion.

12 Next. There are some addition to the
13 mechanical integrity requirement. For example, it was
14 asked to have, like, alternative noise method. So
15 noise method basically means that if there is like a
16 leakage, then the noise can detect where the fluid
17 leaves or enters the -- the well. And that is
18 important for checking that you -- the fluid doesn't
19 move toward the USDW, so it can be effective, okay,
20 but they are not always the best method for external
21 mechanical integrity. Effectiveness depends on flow
22 rate, acoustic contrast, background noise, well
23 design, casing and cement condition. So they are
24 different for each well.

25 Other method may be equal or more

1 appropriate. For example, temperature -- temperature
2 log, tracer survey, cement evaluation, pressure tests
3 or other director-approved method. So our
4 recommendation is to keep it perform based, allow the
5 director to select the best method for each well. So
6 we shouldn't put a noise method as a check of the
7 integrity. Although it can be effective but in some
8 wells, it cannot be.

9 Next. The same for the tomography --
10 noise -- noise tomography -- ambient noise tomography,
11 or Hall plots. We have been reviewing Hall plot
12 analysis. Ambient noise can be useful, okay, but they
13 should be -- not be mandatory for Class VI. The value
14 depends on site-specific geology, monitoring design,
15 data quality, reservoir condition, and project
16 objective.

17 Hall plot analysis is basically the
18 plot of pressure versus cumulative pressure versus
19 time. And we want to evaluate the -- the slope. And
20 if the slope of pressure is high, it means that the
21 injection is difficult. You have problem with the
22 near-wellbore trend, okay. Or maybe there is some --
23 you -- you have less slope, then you have some
24 stimulation response. So -- but they -- they are
25 mostly related to near-wellbore analysis that you --

1 you measure the pressure based on the near-wellbore.

2 So it's not direct method for tracking
3 CO2 plume migration or the extent of the plume -- of
4 pressure front, so we should not replace pressure
5 monitoring. So we -- I mean, we already have pressure
6 monitoring, pressure falloff method testing, plume
7 modeling, or geophysical monitoring. Those are
8 already in the -- the -- in the mandating procedure,
9 so -- but this one should not replace those approach.
10 So the -- these type of data, like an injection
11 pressure, already are collected in Class VI
12 operational monitoring, so ambient noise tomography
13 and Hall plot should be used when they provide
14 meaningful technical value rather than required as
15 mandatory statewide monitoring method.

16 Next. Conservation group, addition to
17 the area of review and corrective action. So here, we
18 have third-party verification of modeling ensemble.
19 So they -- we can have mandatory third-party
20 verification -- verification, but it raises practical
21 issues. One -- some of the issues is that the --
22 okay, so if you want to, for example, I do evaluation
23 and somebody else does another evaluation with the
24 fault, and I evaluate the fault with slip -- I mean,
25 with transmissibility and somebody else says, no, this

1 fault is not transmissive. So it raises another issue
2 that the -- the reviewer, the -- the person, the
3 third-party that reviews, they have to have
4 qualification. And they have their own standard. And
5 so at the end, when we don't agree on our standard,
6 then we have to go to another third party to resolve
7 the disagreement, okay. So it will be a big problem.

8 So we know that OCD and EPA already
9 conduct technical permit review and public notice or
10 comment already allow outside technical review.
11 Better approach require a transparent record with
12 model software. We want to give more information. As
13 you can see on the right side, I put some example of
14 assumption and input. For example, modeling-approach
15 software, we use site characterization data,
16 geological framework, model assumption input parameter
17 that we use, reservoir pressure regime, formation
18 compressibility, a lot of factors. We provide that to
19 the public instead of asking a third party come and
20 verify the analysis. So do not require mandatory
21 third-party certification or a specific software.
22 Focus on transparency so qualified third party can
23 fully review the modeling. So that is one of the
24 challenges.

25 Next slide. Conservation group

1 addition to the public notice requirement with
2 additional third-party verification of modeling
3 ensemble. We already discussed about that. Can we go
4 to the next slide?

5 Are reservoir simulation model
6 inherently unreliable? In the -- some part of the
7 testimony, we observed this. I do not agree that
8 reservoir simulation models are inherently unreliable.
9 Model contain uncertainty. The data is uncertain.
10 Every measurement we make contain uncertainty but
11 doesn't mean they are unsuitable or unreliable.

12 Class VI models are built from
13 site-specific data. So it's like you have well log
14 data, seismic data, core and lab measurement, pressure
15 and fluid data. You already take sample from the
16 well, and you measure porosity and permeability from
17 some of the well. You perform geomechanical
18 properties and you obtain that data. And so the model
19 that we create, especially for Class VI, they are
20 evolved during the time by calibration of the sample
21 that you take and your reservoir simulation, okay.
22 They have this process. So they perform sensitivity
23 analysis. For example, if my porosity, how much that
24 create an error to my output. So those solution, the
25 reservoir engineers already have in place.

1 So general Class VI modeling is not a
2 one-time prediction. It is evolving during the time,
3 okay. So if you update your model and monitor
4 process, that is mandated. Field monitoring data are
5 used to compare prediction with actual performance.
6 And so that is, like, they perform the calibration.
7 So what is the recommendation? Use reservoir
8 simulation model as reliable engineering tools when
9 supported by site-specific data, monitoring, and
10 periodic AoR re-evaluation. During the time, you may
11 re-evaluate your AoR. Next, please. That's it.

12 MR. TREMAINE: Dr. Khaniani, I believe
13 that resolves your slides. Is there -- is there
14 anything else that you feel necessary to provide in
15 summary of your rebuttal?

16 DR. KHANIANI: No.

17 MR. TREMAINE: Okay. I think that
18 resolves Dr. Khaniani's testimony.

19 THE HEARING EXAMINER: Thank you very
20 much, Dr. Khaniani.

21 MR. TREMAINE: Madam Hearing Officer,
22 OCD would call our last witness, Ms. Jennifer Raney.

23 THE HEARING EXAMINER: Ms. Raney, would
24 you spell your -- sorry. Would you spell your first
25 and last name, please?

1 MS. RANEY: J-E-N-N-I-F-E-R R-A-N-E-Y.

2 WHEREUPON,

3 JENNIFER RANEY,

4 called as a witness and having been first duly sworn
5 to tell the truth, the whole truth, and nothing but
6 the truth, was examined and testified as follows:

7 THE HEARING EXAMINER: Thank you.

8 Go ahead.

9 DIRECT EXAMINATION

10 BY MR. TREMAINE:

11 MR. TREMAINE: Good afternoon,
12 Ms. Raney. Where do you work and what is the title of
13 your position?

14 MS. RANEY: I work at the Petroleum
15 Recovery Research Center at New Mexico Tech, and my
16 position is Deputy Director of the PRRC.

17 MR. TREMAINE: Okay. And as part of
18 that role, are you supporting the Oil Conservation
19 Division's development and application for Class VI
20 rule and Class VI primacy?

21 MS. RANEY: Yes.

22 MR. TREMAINE: Okay. And are you
23 testifying today on -- on behalf of the Oil
24 Conservation Division as a technical witness?

25 MS. RANEY: Yes.

1 MR. TREMAINE: Okay. Have you provided
2 or prepared pre-filed written direct testimony, which
3 we have labeled OCD Exhibit Number 14?

4 MS. RANEY: Yes.
5 (OCD Exhibit 14 was marked for
6 identification.)

7 MR. TREMAINE: Okay. Does that
8 testimony require any changes or corrections today?

9 MS. RANEY: No.

10 MR. TREMAINE: And are you prepared to
11 adopt your pre-filed written direct testimony as your
12 sworn direct testimony today?

13 MS. RANEY: Yes.

14 MR. TREMAINE: Okay. Have you also
15 prepared a resume outlining your qualifications and
16 experience in OCD Exhibit Number 15?

17 MS. RANEY: Yes.
18 (OCD Exhibit 15 was marked for
19 identification.)

20 MR. TREMAINE: And does this exhibit
21 require any corrections or changes today?

22 MS. RANEY: No.

23 MR. TREMAINE: Okay. I have three
24 other ones that I'd like to ask you about. Ms. Raney,
25 I'm going to point you to OCD Exhibit Number 18. This

1 one is EPA Guidelines on Community Engagement for
2 Geologic Sequestration Project Developers and Class VI
3 Permit Applicants. Sorry, I should say this is
4 labeled as. Are you familiar with OCD Exhibit 18?

5 MS. RANEY: Yes.

6 (OCD Exhibit 18 was marked for
7 identification.)

8 MR. TREMAINE: Okay. And to your
9 knowledge, is this a true and accurate copy of the
10 guidance?

11 MS. RANEY: Yes.

12 MR. TREMAINE: Okay. And is Exhibit 18
13 one of the guidance documents relied upon by the tech
14 and subcontractor team in development of the rules?

15 MS. RANEY: Yes.

16 MR. TREMAINE: Okay. Same questions
17 for Exhibit Number 19 here. This is labeled as the
18 World Research [sic] Institute Community Engagement
19 Guidelines. Are you familiar with this document?

20 MS. RANEY: Yes.

21 (Exhibit 19 was marked for
22 identification.)

23 MR. TREMAINE: And is this a document
24 that the New Mexico Tech team relied upon in helping
25 to prepare these rules and community engagement?

1 MS. RANEY: Yes.

2 MR. TREMAINE: And to your knowledge,
3 is this a true and accurate copy of the engagement of
4 the document -- of the source document?

5 MS. RANEY: Yes.

6 MR. TREMAINE: All right. And last, I
7 want to ask you about OCD Exhibit 20, which I have
8 shared on the screen again. This is labeled as the
9 Interstate Oil and Gas Compact Commission Model
10 Statutes. Are you familiar with this record?

11 MS. RANEY: Yes.

12 (OCD Exhibit 20 was marked for
13 identification.)

14 MR. TREMAINE: Okay. And again, is
15 this a record which the New Mexico Tech team relied
16 upon in helping to prepare the draft rules?

17 MS. RANEY: Yes.

18 MR. TREMAINE: And is this a true and
19 accurate copy of the model statute?

20 MS. RANEY: Yes.

21 MR. TREMAINE: Okay. Thank you.

22 Madam Hearing Officer, I would move
23 admission of Exhibits -- OCD Exhibit 14, 15, 18, 19
24 and 20.

25 THE HEARING EXAMINER: Thank you. I'll

1 pause in the event another party has objections.
2 Exhibits 14, 15, and 18 through 20 are admitted.

3 (OCD Exhibit 14, Exhibit 15,
4 Exhibit 18, Exhibit 19, and Exhibit 20
5 were received into evidence.)

6 BY MR. TREMAINE:

7 MR. TREMAINE: Ms. Raney, have you
8 prepared demonstrative slides to facilitate the
9 presentation of your summary of your direct testimony
10 today?

11 MS. RANEY: Yes.

12 MR. TREMAINE: Okay. I'm going to
13 share screen. Is -- is this your demonstrative?

14 MS. RANEY: Yes.

15 MR. TREMAINE: Good. All right. At
16 this time, Ms. Raney, I would ask you to proceed with
17 providing a summary of your direct testimony for the
18 Commission.

19 MS. RANEY: Absolutely. Thank you.

20 So for some of my qualifications, I
21 obtained my Master of Science in Environmental Science
22 and Engineering at the University of Kansas. I got my
23 undergraduate, my Bachelor of Science in Environmental
24 Science at Tulane University. I've worked over the
25 last 16 years on Class VI permitting or CO2

1 sequestration projects in some capacity, primarily
2 with the Department of Energy Grants.

3 The purpose of my testimony today is to
4 demonstrate the required public outreach and community
5 engagement was conducted during the development of the
6 proposed rules. OCD has made it clear that public
7 engagement and public participation was a priority
8 throughout this process, so OCD committed to go above
9 and beyond the standard requirements issued by the US
10 EPA at this time with Class VI regulations.

11 The rule publication and public comment
12 period was done with a lot of thought and intention
13 behind it. It was over a two-year process. A lot of
14 activity happened prior to releasing the draft
15 regulations and crosswalk, working with interested
16 parties, ones who might be advocates or maybe have
17 concerns about the proposed rules. So to the best of
18 their ability, they made sure to introduce this
19 concept to those parties and receive public comment.

20 Back in August 22, 2025, the New Mexico
21 OCD released the draft regulations and crosswalk for
22 public review and solicited formal public comment.
23 This was released with over a thirty-day required
24 public notice period, and all comments were sent
25 directly to EMNRD.

1 Also, in addition to this,
2 informational sessions and workshops occurred after
3 that. Registrations were always published in the New
4 Mexico OCD announcements page, which are commonly
5 known, but also e-mails were sent out directly to
6 relevant listservs of interested parties and also
7 shared via social media on New Mexico Tech's LinkedIn
8 page, and other opportunities. At all of these
9 sessions, translators were made available where the
10 respective local language was spoken.

11 Tribal consultation was a key element.
12 We are in New Mexico with a very diverse population,
13 and so tribal consultation was, once again, an
14 instance where New Mexico exceeded the obligations
15 with the effort that was given to contact the 23
16 tribal nations that are present in New Mexico.

17 Informational letters were sent out to
18 the heads of government for each of those tribal
19 nations, informing them of the intent in New Mexico to
20 obtain Class VI primacy, and also making ourselves
21 available and establishing points of contact should
22 there be any questions from each sovereign nation
23 about their own interests or relevance to the program.

24 We met with the director of the Navajo
25 Nation EPA, as well as the UIC director for the Navajo

1 Nation on two separate times in Window Rock to make
2 ourselves known, to introduce the concept of what
3 we're doing in the program, and also as a public
4 entity, share any lessons learned and information that
5 might be useful to their governments.

6 Briefing occurred with the Jicarilla
7 Apache Tribal Council, as well as their president, to
8 describe the status of our program, and once again,
9 inform them of any interests that might be useful to
10 their parties that could have questions on it, and
11 also make any of our documents, any of our lessons
12 learned available to them. Both of those were
13 successful and did show their support, especially the
14 Navajo Nation, which submitted a letter of support and
15 comments in the public comment section of the report.

16 There were also a number of focused
17 feedback sessions to make sure that we were
18 communicating closely and curating a narrative that
19 was unique to each given sector. So for instance,
20 NMOGA and IPANM are more industry focused, and so they
21 will have more technical content that will be relevant
22 to their sessions. And so those focused feedback
23 sessions were really informative to how we analyzed
24 the draft rule and what changes or proposed changes
25 might be included. Also the sister organizations at

1 the state office with the State Land Office and other
2 entities, they were contacted and shared information
3 throughout the process.

4 Environmental NGO meetings were also
5 very useful and informative, sharing what a variety of
6 stakeholders, what questions might come up, and very
7 unique considerations that might not have been
8 addressed before. A lot of that was carefully
9 summarized and analyzed in group meetings, which I
10 will get to.

11 Next slide, please. To guide this
12 process, as I have in the exhibits listed, the -- the
13 US EPA has drafted a number of incredibly useful and
14 detailed guidance documents, particularly some catered
15 to community engagement and public outreach. These
16 are developed over many years of lessons learned and
17 best practices, both within the states that have
18 already obtained primacy, but also from C -- CCS
19 projects from around the world and here in the United
20 States. So all of these lessons learned are built
21 into these programs and formulating these best
22 practices, which we'd like to follow.

23 This here is a diagram that's extracted
24 from one of those guidance documents. It follows a
25 pretty standard procedure, which needs to be unique to

1 each prospective site. So to begin with, you would
2 identify your decisions for input. What
3 considerations do the decision makers need to take
4 before proceeding whether or not a project may or may
5 not occur.

6 Next, you would like to identify or
7 analyze the communities that would be included. In
8 this consideration, you want to make sure that you're
9 contacting any parties or communities that would be
10 most impacted by a potential site. And also with
11 these requirements, you want to ensure that meaningful
12 participation occurs with those affected populations
13 within the decision-making process. An example of
14 this is doing a social characterization analysis where
15 you would survey government websites, any publicly
16 available information, county assessors to identify
17 pack -- taxpayers within the area of review,
18 identifying all those community members, and taking
19 into consideration what are their preferences, what
20 are their standard operating procedures, how to
21 communicate, that all comes into play. So first,
22 identifying who those community members are.

23 Next, you would go on and identify the
24 message or the narrative that you would want to convey
25 to those community members. A critical component of

1 this is also getting the right messenger in place.
2 Taking this dense technical information and converting
3 it into something that is digestible and easy to
4 understand is an essential way to make sure that
5 meaningful participation occurs. The information that
6 is provided to those community members needs to be
7 digestible and easy to understand. Typically, you
8 want to find a messenger who is local to that
9 community and knows that community through and
10 through. So ideally, a local and somebody who's grown
11 up or lives in that vicinity of that prospective
12 project.

13 Next, you would select the engagement
14 method that will be important for that community. New
15 Mexico is a largely rural state, so having one
16 instance of a public town hall might not be sufficient
17 to reach all the community members. You also might
18 have a lot of elderly populations that aren't as
19 familiar with electronic e-mail, so you would try to
20 do more of a spoken word approach or going door to
21 door. So you really need to curate your messaging and
22 your engagement for the populations that you've
23 identified.

24 And next in that process, you need to
25 prepare the materials specific to that population.

1 If, for instance, you're talking to a group of
2 industry professionals using more technical
3 information, using those scientific terms that they're
4 already familiar with, that would be appropriate.
5 That would convey the level of interest and
6 information that would be necessary to understand the
7 proposed project. However, you've got somebody who's
8 completely unfamiliar with geology or concepts and
9 doesn't have a scientific background, addressing the
10 information in a way that is more familiar to them is
11 going to be important. Again, a key component in this
12 diverse state, we want to ensure that the
13 communication methods are using the local languages
14 that are relevant to that population. So in the
15 instance of what we've done in our outreach, we ensure
16 that we had potentially a Spanish translator or
17 somebody who is a native Dine or Navajo language
18 speaker present and available at all these
19 communication events.

20 Next, you would implement the
21 engagement. This is going to happen prior to the
22 application, during the application process, and if
23 successful throughout the lifetime of the entire
24 project. This needs to be documented and done
25 effectively and with an approved engagement plan that

1 would be approved by the director. Throughout this
2 process, you would evaluate the success of that and
3 solicit feedback from the affected parties, making
4 sure to document that and possibly make adjustments
5 wherever needed if there's meaningful feedback that
6 could improve the whole process. Again, this whole
7 engagement process is ongoing and will occur
8 throughout the lifetime and after cessation of
9 injection and post-injection happens, and this is all
10 taken to the decision-making process.

11 Next slide, please. So in order to
12 demonstrate an example of how this would occur for a
13 potential site, the OCD and the team decided to
14 emulate what would happen for a proposed project,
15 giving some examples and highlighting what community
16 members might expect if a proposed project were to
17 happen or be presented in their area. We formulated a
18 workshop and informational sessions that would provide
19 the kind of information or input that they would see
20 at a proposed activity.

21 As you can see from this map, we
22 covered most of the state. In doing our initial
23 assessment and background knowledge over 20 years of
24 doing CCS research at New Mexico Tech, we were already
25 well aware of where Class VI projects were likely to

1 occur given the local geology, which would namely be
2 up in the San Juan Basin, up in the northwest, and
3 then down in the southeast in the Permian Basins.
4 However, we also wanted to address the higher
5 population centers looking at Albuquerque and Santa
6 Fe.

7 These events began early on prior --
8 prior to actually completing the draft rule. The OCD
9 conducted informational sessions in Santa Fe. These
10 were offered in person and also hybrid for those who
11 couldn't make it in person. They were very well
12 attended by a number of different ENG -- ENGO groups
13 that provided very good input -- input, had very
14 specific questions, and really formulated our
15 decision-making and how we went about the process.

16 Next, we moved on to Farmington up in
17 San Juan Basin, which again, which is more likely
18 where Class VI projects would occur. And going back
19 to how you have messengers and messaging and curating
20 that specific to the population, we worked with local
21 academic institution in San Juan College, which
22 actually trains and employs a lot of the local
23 workforce, and we used messengers people were familiar
24 at that time.

25 We then went down to Carlsbad where

1 industry professionals were present, but used a New
2 Mexico Tech facility, which is a public building,
3 public facility that people were familiar with, with
4 the National Cave and Karst Research Institute.

5 Then in Albuquerque, there was another
6 workshop where a number of different groups were there
7 for conferences, so we made sure to hit all of the
8 energy sectors that might have some questions or might
9 be unfamiliar with it. Hobbs was our next location
10 down in the southeast and that was held at New Mexico
11 Junior College, which is also a well-known entity as a
12 junior college. They train a lot of the workforce
13 that would conduct any elements of the emergency
14 response, any kind of monitoring or testing that might
15 occur in that area. So there was somewhat familiarity
16 with it, but they also helped distribute and advertise
17 the word of those workshops being available.

18 Then notably, we worked with the
19 Jicarilla Apache Tribal Council up in their building.
20 We met this. We spent about a half a day with them,
21 working with the entire tribal council and their
22 president, talking about the potential opportunities.
23 There were a lot of unique specific questions on the
24 geology where they lie, but luckily we had the
25 background that we were able to answer a lot of those

1 questions and there's been some follow-up discussions
2 since.

3 So it was a very useful model, and this
4 is supposed to emulate what would happen in a local
5 site if an interested party did have a prospective
6 permit. They would have to go and engage in a similar
7 manner where you would identify local public
8 institutions, key stakeholders, and find the
9 interested parties and present this information in a
10 neutral platform, potentially in a public institution
11 or academic institution that you see that we
12 identified here. Next slide, please.

13 So as we said and -- and EPA has
14 outlined in their best practices document, effective
15 engagement means translating information in a way that
16 is useful and catered to the actual population and
17 ensuring that you're identifying any potentially
18 affected parties. Opportunities or ways that you
19 could engage, it would include public or town hall
20 meetings, holding open houses and informational
21 sessions, and working meeting -- working meetings or
22 focus groups with more specific backgrounds, ones who
23 have more of a technical background or might be more
24 academic in nature.

25 If a site were closer to actually

1 implementing or constructing a well, you can conduct a
2 site visit or do tours of the respective facilities.
3 But ensuring that you're doing target engagement and
4 presenting material that is relevant to each different
5 party is going to be critical.

6 Local interest groups might be more
7 particularly interested in the safety and the quality
8 of the groundwater resources that are there, or maybe
9 the native wildlife. You might also have economic
10 development boards that are more interested in
11 workforce opportunities or the employment or jobs that
12 might be associated or potentially preventing any job
13 losses. Again, technical groups might want to know
14 what -- what they can do in their own businesses to
15 adhere to this or what kind of policies or regulations
16 might apply.

17 Translation services should always be
18 available, especially when we're talking about
19 disproportionately impacted communities, and we --
20 this is something that we did with all of our
21 workshops and informational sessions. Anything that's
22 distributed to anyone with non-technical backgrounds
23 should use non-technical language. As part of New
24 Mexico Tech and our -- our previous witnesses have
25 shown, education is our background, and so catering to

1 all audiences is something we do naturally, so making
2 sure that communities and professionals who are
3 conducting this and using them as messengers, they use
4 that language that is appropriate for the groups.

5 Over on the right, I highlighted some
6 of the photos of our workshops, what they should look
7 like, what you would expect if you're a community
8 member, what you might see. What we did is we had
9 some of our engineers and our geologists go out into
10 the field and talk with community members, talk with
11 first responders, and also local academic
12 institutions, showing them what this technical
13 information actually means and the nuts and bolts of
14 it. What does the simulation actually entail? What
15 do you take, what geological data goes into that model
16 to have that assurance and to make those predictive
17 models and those assessments that this can be done
18 safely and effectively without putting any risk to the
19 USDWs.

20 Also down at the bottom, you see that
21 we -- we contracted or we worked with San Juan
22 Community College School of Energy, who was already
23 quite familiar with a lot of groups who can implement
24 this work and can use this language and also talked
25 about some of the curriculum that they have available

1 to train the potential workforce, as well as the
2 regulators within the state of New Mexico to ensure
3 that this program is administered safely and
4 effectively. Next slide, please.

5 In going throughout this process, you
6 have a number of ways that you can distribute the
7 information. Fact sheets are going to be one of the
8 primary ways to introduce this, and especially in the
9 written medium. I'll go into a little more detail on
10 what is included as a fact sheet as an example within
11 this program, but other methods that you could use
12 will be television show -- or television commercials,
13 radio, daily newspapers. There are really a variety
14 of platforms that can be utilized throughout this
15 process. And again, it depends on the location in
16 which you are trying to permit a project.

17 In some instances, you might have more
18 of a larger landowner where fewer community members
19 are actually present or around the AoR. This is where
20 direct communication might be more appropriate.
21 Visits to their farm, visits to that -- the local
22 community and to sit down and talk face-to-face with
23 them on a routine and continued basis.

24 Printed advertising and press releases
25 should be done on a routine basis and updated over

1 time throughout the duration of this whole permitting
2 process. In talking and identifying new -- messengers
3 for this, news reporters would often be a good option
4 for who can communicate the details of a project to
5 the local community. Ensuring that the information of
6 a project is taken and adapted and presented in a way
7 that is easy to digest and understand is sometimes a
8 challenge for certain -- some of the experts. News
9 reporters typically have a background in
10 communications, and they are effective at
11 communicating with their local communities and also
12 knowing what is important to those local communities.
13 So that is an example. If you're not looking, let's
14 say, at an academic institution or a professor or
15 leadership, a news reporter has been shown to be
16 effective at doing this.

17 Social media tools are also really
18 useful to get the word out to different demographics.
19 More younger populations might have them, but you also
20 need to consider that not everybody has an Instagram
21 account or Facebook account, so expanding this to also
22 looking at podcasts and webcasts that might be a
23 little more accessible and transferrable and also easy
24 to share because word of mouth can be very helpful in
25 getting the word out as well.

1 Considerations, again, in this whole
2 process is that all information should be easy to
3 understand using the local language. And while we did
4 also require New Mexico, the OCD, not only to mail
5 notices out to individuals within the AoR or in
6 that -- that region, but e-mail as well, electronic
7 communication. However, there are many instances
8 where somebody might not have access to broadband, so
9 addressing what those availabilities are and what is
10 more effective to that individual is always part of
11 the process. Next slide, please.

12 So this is one example of the
13 communication that is required through the program,
14 which will be a fact sheet. Fact sheets have to be
15 distributed and shared to any interested member of the
16 public throughout any process. The director at any
17 time will maintain a list of interested parties who
18 want to be included on any updates. These fact sheets
19 will be mailed out, but of course, the priority will
20 be that anybody within the AoR or in the region who
21 wants information, the local community, they will have
22 access to this fact sheet.

23 The fact sheet itself is going to take
24 information on what the injected material would be,
25 what interested parties will be conducting this

1 project, how long this will be, when public notice
2 periods will be, how and when members of the public
3 can enter into their comments and enter any concerns.
4 And with this whole process, identifying the
5 individual that they can go to, to ask questions.

6 Prior to doing this, the responsibility
7 of the permittee or whoever is seeking the project,
8 you want to ensure that there is consistency with the
9 individuals that they can go to contact. Any
10 individual who is selected as the messenger or to
11 answer questions needs to be providing a consistent,
12 reliable message and be easy to identify. So making
13 sure that you have a community member or a local
14 stakeholder that is not going anywhere and will be
15 there throughout the duration of the project is going
16 to be key.

17 Thirty days' notice is what is required
18 in advance of any public meeting or public hearing,
19 however, that is minimum. It could always be extended
20 in the event that there might not be availability to
21 any party. But the federal rule requires at least
22 30 days, and so the OCD has stuck to that language.

23 In any case where there's more
24 stringency that was suggested, the guidance typically
25 might allow for more stringency, and so while New

1 Mexico OCD has intended to have more stringency and --
2 and more engagement requirements with community
3 outreach, in order to keep things more consistent with
4 the federal rule, this is where we defaulted to
5 language that was more familiar with the EPA to
6 alleviate some of the stringency evaluation concerns.

7 And I believe that is my last slide, is
8 my example. The rest is supplement -- yes. And that
9 is it.

10 MR. TREMAINE: Ms. Raney, is there
11 any -- any material we have -- I'm looking at -- we're
12 closing in on half an hour. If there's anything that
13 you feel in the additional materials that is
14 appropriate to present, now is the time, otherwise --

15 MS. RANEY: -- no.

16 MR. TREMAINE: That's the end? Great.
17 Okay. With that, Ms. Raney did not provide rebuttal
18 testimony.

19 So we -- Madam Hearing Officer, we are
20 done for the day.

21 THE HEARING EXAMINER: All right.
22 Thank you, Ms. Raney and Mr. Tremaine.

23 I had said during one of our
24 pre-hearing conferences that I would call on folks for
25 cross in the morning in reverse order, starting with

1 industry and then coming back to the environmental
2 protection groups. And I am putting in the first
3 position in each case the parties that are actually
4 presenting witnesses. So this is the order:
5 planning -- and you can comment if you'd like -- Oxy,
6 NMOGA, conservation groups, CBD, WildEarth Guardians,
7 and then back to the Division if in the event you have
8 redirect, obviously, and then to the Commissioners.

9 All right. Is there anything else we
10 can do before we take a break ahead of the four
11 o'clock public comment session?

12 MR. TREMAINE: Madam Hearing Officer,
13 just to clarify expectations for everyone, we will
14 present for cross-examination Dr. Sai Wang and
15 Dr. Hassan Khaniani first and then proceed to the
16 other four witnesses as a panel whenever we're done
17 with the -- with the first panel. But that's what
18 we're preparing for in the morning.

19 THE HEARING EXAMINER: Thank you so
20 much, Mr. Tremaine.

21 Anything else we can talk about before
22 we take a break ahead of the four o'clock public
23 comment session? No? All right. I'll be here at
24 four. See you in the morning.

25 (Off the record.)

1 THE HEARING EXAMINER: All right. We
2 are back after a break. Following the end of the
3 Division's witnesses, it's 4 p.m., so we turn now to
4 our first public comment session. This is an
5 invitation to anyone in the room or on the platform
6 who would like to offer non-technical public comment.
7 There will be several other public comment
8 opportunities from -- starting tomorrow. I'll issue
9 the invitation at nine o'clock each morning that we
10 are proceeding into hearing.

11 So let me ask if there's anyone in the
12 room who is here to offer public comment. I think I
13 recognize everyone in the room, so I don't see anyone.

14 Sheila, is there anyone on the platform
15 who would like to offer non-technical public comment?
16 I see Allison Marks has raised her hand. Ms. Marks, I
17 think you can unmute yourself.

18 MS. MARKS: Perfect. How's that?

19 THE HEARING EXAMINER: Oh, terrific.
20 You're coming through loud and clear.

21 MS. MARKS: Great.

22 THE HEARING EXAMINER: Would you spell
23 your first and last name, please?

24 MS. MARKS: Sure. Allison, A, double
25 L, I-S-O-N. Last name Marks, M-A-R-K-S.

1 THE HEARING EXAMINER: Thank you.

2 WHEREUPON,

3 ALLISON MARKS,

4 called as a witness and having been first duly sworn
5 to tell the truth, the whole truth, and nothing but
6 the truth, was examined and testified as follows:

7 THE HEARING EXAMINER: Thank you. Go
8 ahead.

9 MS. MARKS: Good afternoon, Madam
10 Hearing Examiner and members of the Commission. My
11 name is Allison Marks, and I serve as -- as the -- as
12 the Director of the Oil, Gas and Minerals Division at
13 the New Mexico State Land Office and provide this
14 comment on behalf of the SLO.

15 I've been a licensed attorney in the
16 state for over 20 years, devoting a significant
17 portion of that time focusing on environmental and
18 energy-related issues. At one point, I served as
19 counsel to the OCD before becoming deputy director of
20 that division. The SLO manages for the benefit of 22
21 designated beneficiaries, with the biggest being
22 common schools, nine million acres of surface estate,
23 and 13 million acres of subsurface estate.

24 The Bureau of Land Management, BLM,
25 manages about 13 and a half million acres of surface

1 estate in the state, along with millions of acres of
2 subsurface estate. The state receives 50 percent of
3 all BLM royalties and of BLM lease sales. BLM
4 certainly is an important agency for community
5 engagement.

6 In the history of my time working for
7 the state, I have never seen a rulemaking where
8 someone seeks to enact a partial rule or does not
9 contemplate all necessary parts of a rule. In this
10 case, the rulemaking seems to omit vital portions of
11 the rule and defer those portions to a later time.
12 SLO previously raised areas of concern regarding this
13 rule, but in the interest of time, I'm going to
14 address just a few.

15 Also while the BLM does not participate
16 in state rulemakings, there were shared areas of
17 concern between both the BLM and the SLO. For
18 example, the rule is silent about carbon sequestration
19 units. A sequestration unit should follow similar
20 processes utilized by both agencies when forming an
21 oil and gas unit. With such a process, the BLM and
22 SLO, if that state unit or the respective agency if
23 the unit does not encompass lands from both agencies,
24 first gives preliminary approval, then obtains an
25 order from the OCD approving the unit, and any

1 additional stipulations, and then obtains final
2 approval.

3 It is imperative to make clear in any
4 rule that SLO or BLM cannot be forced into a unit.
5 And while the SLO appreciates OCD's participation in
6 the oil and gas -- oil and gas unit process by
7 approving units, OCD does not, based on
8 representations from OCD personnel, enforce many
9 portions of a unit agreement, even when that agreement
10 is adopted as part of the order. Therefore, clear and
11 specific guidance in the form of a rule must include
12 clarity for permittees, state agencies, and other
13 stakeholders. This rule fails to do so with respect
14 to units along with other key topics.

15 Another matter of grave concern to the
16 SLO is the failure to protect mineral owners and
17 persons with the rights to extract minerals.
18 Effectively, the rule fails to protect the
19 beneficiaries and money the state obtains for mineral
20 extraction, which is about 48 percent of the state's
21 revenue, such as oil and gas, along with potential
22 monies from other subsurface leasing, such as
23 geothermal and helium leasing.

24 The rule pursuant to carbon
25 sequestration legislation noted -- notices the -- or

1 notes that surface owners may own the core space for
2 sequestration, but the proposed rule fails to
3 recognize crucial persons to whom notice must be
4 given, such as persons who own the minerals, including
5 government agencies, and persons who have leased such
6 lands or otherwise have a right to extract minerals
7 vis-a-vis contractual depth severances.

8 Allowing for sequestration without
9 sufficient notice could significantly increase
10 drilling costs or pose additional risks companies may
11 decide to avoid. This in turn decreases the royalty
12 money this state relies on and raises the potential
13 for mineral damage to a mineral owner or a lessee.

14 Finally, the SLO believes it must be
15 abundantly clear who has the liability to monitor or
16 otherwise take care of a sequestration unit in the
17 event an operator goes defunct or otherwise fails to
18 address their liabilities. The SLO feels very
19 strongly that the liability absolutely cannot be
20 shifted to the beneficiaries of the state land office.
21 The rule simply refers to, quote, the state, but this
22 is unclear who the state is or if the reclamation fund
23 would be used to address potential future problems.
24 Thank you.

25 THE HEARING EXAMINER: Thank you,

1 Ms. Marks.

2 Let me ask the commissioners if they
3 have any questions of you. I guess no?

4 MR. CHANG: For -- for public comment
5 or?

6 THE HEARING EXAMINER: Well, no. Just
7 in -- in the event -- because that was high level.
8 You know what I mean?

9 MR. CHANG: Oh. No -- no. Not at the
10 moment. I'm good. Thank you.

11 THE HEARING EXAMINER: All right.

12 MR. CHANG: I appreciate the comment.

13 THE HEARING EXAMINER: All right.

14 Thank you, Ms. Marks.

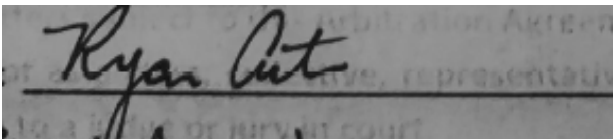
15 Is there anyone else on the platform
16 who has a -- has a statement as part of non-technical
17 public comment? There will be other opportunities.
18 This is your opportunity today. Anyone else at all,
19 please raise your hand or reach out to Ms. Apodaca
20 through the chat. No? Okay, in that case, we will
21 see you tomorrow morning at nine, and we'll begin with
22 the cross-examination of Dr. Khaniani and Dr. Wang.
23 Thank you.

24 (Whereupon, at 4:06 p.m., the
25 proceeding was concluded.)

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CERTIFICATE

I, RYAN AUTEN, the officer before whom the foregoing proceedings were taken, do hereby certify that any witness(es) in the foregoing proceedings, prior to testifying, were duly sworn; that the proceedings were recorded by me and thereafter reduced to typewriting by a qualified transcriptionist; that said digital audio recording of said proceedings are a true and accurate record to the best of my knowledge, skills, and ability; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this was taken; and, further, that I am not a relative or employee of any counsel or attorney employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

A rectangular box containing a handwritten signature in black ink. The signature appears to read "Ryan Auten". The background of the box is a light gray with some faint, illegible text visible.

RYAN AUTEN
Notary Public in and for the
State of New Mexico

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CERTIFICATE OF TRANSCRIBER

I, BROOKE CAZIER, do hereby certify that this transcript was prepared from the digital audio recording of the foregoing proceeding, that said transcript is a true and accurate record of the proceedings to the best of my knowledge, skills, and ability; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this was taken; and, further, that I am not a relative or employee of any counsel or attorney employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.



BROOKE CAZIER

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