STATE OF WYOMING

HEARING TO DISCUSS PROPOSED REVISIONS TO WATER QUALITY RULES AND REGULATIONS CHAPTER 24 AND UPDATE ON CHAPTERS 8, 9, 13, 16 AND 27 FOR REVIEW BY THE WATER AND WASTE ADVISORY BOARD AND UPDATE ON ELECTRONIC PUBLIC COMMENTS

TRANSCRIPT OF HEARING PROCEEDINGS

Transcript of Hearing Proceedings in the above-entitled matter before the Water and Waste Advisory Board, commencing on the 7th day of May, 2015, at 9:00 a.m. at the Oil and Gas Conservation Commission Building Hearing Room, 2211 King Boulevard, Casper, Wyoming, Ms. Marjorie Bedessem presiding, with Board Members Mr. Calvin Jones and Mr. Klaus Hanson in attendance and Board Member Ms. Lorie Cahn appearing via video-conferencing. Also present were Mr. Kevin Frederick, Mr. Bill Tillman and Ms. Gina Thompson from DEQ and Ms. Laura Ladd from Hewitt Ladd Consulting.

P R O C E E D I N G S

(Hearing proceedings commenced 9:00 a.m., May 7, 2015.)

CHAIRMAN BEDESSEM: Good morning, everyone. We're going to now convene the Water and Waste Advisory Board meeting. Start off with introducing the board members who are present today.

MR. HANSON: Klaus Hanson, Laramie.

CHAIRMAN BEDESSEM: Representing local governments?

MR. HANSON: Representing the municipal governments.

CHAIRMAN BEDESSEM: Marge Bedessem, representing the public.

MR. JONES: And I'm Cal Jones. I'm representing agriculture.

CHAIRMAN BEDESSEM: And Dave Applegate, our industrial representative, is not here. And then remotely --

MS. CAHN: Lorie Cahn, representing the public at large.

CHAIRMAN BEDESSEM: And first up this morning we have the Water Quality Division. Like to go ahead and have Administrator Kevin Frederick start off and introduce his staff and begin your presentation.

MR. FREDERICK: Thank you, Madam Chairman. Kevin Frederick, Water Quality Division administrator. Today we have with us Mr. Bill Tillman of our staff, Gina Thompson of our staff, and Ms. Laura Ladd with Hewitt Ladd Consulting. We're here today to present to you some proposed revisions to our Chapter 24 on Class VI UIC, or underground injection control wells. These are essentially wells for carbon sequestration projects.

The purpose of the proposed revisions that we're bringing forward today deal with essentially the remaining elements of the regulation that deal with financial assurance requirements for carbon sequestration projects. Financial assurance is similar to reclamation and mitigation bonds, for instance, that the Department requires for coal mines and things like that. In the event that there is a corporate default or the company that is actually doing the carbon sequestration is no longer in business and reclamation, mitigation work needs to be completed, financial assurance requirements are essentially intended to provide the resources that we could then use to complete those remaining requirements.

A little background. Interestingly enough, when the Wyoming state legislature began looking at carbon sequestration back in I believe 2008, if I'm not mistaken, we were actually a leader in the legislative

initiatives nationwide dealing with identification of pore space rights, for instance, pore space that would be used for carbon sequestration projects or storage of CO2 underground. And the legislature was pretty active there for a couple of years trying to set up the scheme that would provide for the regulatory oversight of carbon sequestration projects. That was occurring essentially simultaneously with the USEPA's development of a draft regulation, a proposed regulation for oversight of carbon sequestration projects.

Madam Chair, as you may recall, Water Quality Division then essentially used EPA's draft regulation as a model or a guide in developing our Chapter 24. The legislature took the initiative to essentially require in statute the formation of a work group to begin to look at financial assurance requirements for carbon sequestration projects in particular. They established the work group under the auspices of the director of DEQ, John Corra at the time, the Wyoming Oil and Gas Conservation supervisor, Don Likwartz at the time, and the state geologist, who I believe was Ron Surdam at the time.

The work group then -- by the way, Ms. Ladd was at that time a policy analyst in Governor Dave Freudenthal's office and participated on the working group on behalf of the governor's office, as well. Other

members of the working group included representatives from the coal mining industry, from the electric generating power industry. And I think Laura will probably touch on that a little bit more when she provides us a little presentation for you all to kind of understand some background on the development of the rules and regulations.

So, while we were developing our draft rule, Chapter 24, based upon the federal rule at the time, when the federal rule was finalized, there were actually some additional provisions in there associated with financial assurance requirements under EPA's rule that we then have to fold into our regulation. And the reason that's necessary is because, like with other underground injection control wells that are regulated under federal rules, the State of Wyoming is interested in obtaining a delegation or primacy to be able to administer the permitting and oversight and so forth of these carbon sequestration wells.

And in order to obtain primacy or be delegated that permitting authority, our regulations essentially have to very closely mirror the federal regulations. We have to be at least as stringent as the federal regulations in order to obtain primacy. Obtaining primacy is important because then that gives the State of

Wyoming the ability to work with permittees and so forth in implementing the regulations. And there's always been, I think, and rightfully so, a belief that we do a pretty good job of that at DEQ because we work pretty closely with the regulated community. We understand some of the unique Wyoming conditions that federal regulators out of Region 8 in Denver perhaps don't understand quite as well as we do. So that's one of the primary interests in obtaining primacy.

Moving back, then, to what we call the carbon sequestration working group that the legislature established, there was a series of meetings that the working group held over, gosh, probably perhaps as many as two years. We met I would say roughly quarterly as a group. And the outcome of that effort was essentially a report of the working group's efforts, what they looked at, what they considered, and what they recommended the legislature continue as setting a path forward for financial assurance requirements for carbon sequestration projects. So that essentially went then to the legislature through the director of DEQ.

Consequently, as a result of that, the following session -- and I can't tell you which year that was. It was I believe two thousand --

MS. LADD: Ten.

MR. FREDERICKS: 2010. Thank you, Laura.

In 2010 the legislature actually incorporated several of the recommendations of the working group in the statute. As a footnote, these recommendations were incorporated in the statute prior to EPA's finalization of the financial assurance requirements in their final rule. So we were essentially then faced with trying to accomplish two objectives in Chapter 24, not only to recognize and incorporate the requirements under the final federal rule, but also to recognize and incorporate the statutory requirements that resulted from the working group's recommendations.

And that is essentially a culmination of what we're bringing forth to you today. The proposed revisions accomplish both of those objectives. We're incorporating the federal requirements under the federal rule so we can meet the primacy delegation expectations when we take this package to EPA. And we hope to do that perhaps this time next year.

And we also then pulled in the statutory requirements and Wyoming statutes that were developed, as I said, as a result of the working group's efforts. Some of the requirements were very similar between the federal rule and the Wyoming statutes. And I think for the most part, there was a fair amount of duplication in terms of

the expectations. Not only the Wyoming legislature, but the federal requirements. Federal requirements got into a little bit more descriptive detail than the Wyoming statutory requirements did. That's not surprising. Nevertheless, that was essentially the result of the work today.

During the interim, over the last couple of years, both Ms. Ladd and myself have participated in two external working groups. One was essentially established I would say almost at a national level and was essentially comprised of energy industry representatives, power-generating representatives. There were I believe a couple of attorneys from Washington, D.C. that were very closely involved in development of the carbon sequestration regulations and so forth and whose clients definitely included energy and power industries.

The intent of that work group was really to take a look at how a financial assurance requirement structure could be developed and what it would look like. And Ms. Ladd is going to present you all with kind of an overview of that working group's effort. Ms. Ladd and myself were the only two state representatives, I believe, on that working group. And we participated on behalf of both DEQ and the governor's office in attending several meetings. The outcome of that effort was a

report. And Ms. Ladd will touch on that a little bit. But the report really helped serve as a substance, a framework, if you will, for us to start to begin to analyze and evaluate how do we set financial assurance expectations in looking at things like probabilities of events happening and risks associated with carbon sequestration and so forth? We'll touch on those a little bit.

On the risk analysis side of it, the Wyoming working group, carbon sequestration working group, actually did a very similar analysis. Their report was completed prior to this national work group effort. And the report's basis and risk assessment, risk identification and so forth that came out of Wyoming's working group is actually recognized and considered in the national work group effort. So there's some similarities there. We were I think generally quite pleased with the outcome of that effort.

Subsequent to that working group effort, the IOGCC, which is the national association of state oil and gas conservation commissions, essentially is what it is, also had an interest in exploring financial assurance requirements for carbon sequestration projects and established a work group and was primarily led by a representative of IOGCC who led the group. North Dakota

was represented because North Dakota is very interested in carbon sequestration projects primarily associated with enhanced oil recovery.

And I think most of us believe that in the short-term future, at least, the majority of the carbon, CO2 that's going to be injected is probably going to be used for enhanced oil recovery purposes, similar to what we see at Salt Creek. So Laura and I were invited to participate in that work group.

Was Kip Coddington part of that work group?

MS. LADD: He was.

MR. FREDERICK: Mr. Coddington was just recently named the director of -- just recently joined the University of Wyoming's School of Energy Resources in some executive capacity. I can't tell you for sure. But that was announced just last week. Mr. Coddington was on this work with us on the IOGCC side of things.

So, at the end of the day, that didn't seem to be quite as an analytical look at financial assurance requirements in that work group as much as had been undertaken in the national level working group, or perhaps even for that matter, in the Wyoming carbon sequestration working group. But we did gain some insight in working on the IOGCC work group, as well. The outcome of that was essentially guidance of

1 considerations for states that are interested in
2 developing carbon sequestration financial assurance
3 requirements, much more broad and general, I think, than
4 the outcomes of either the national work group or the
5 Wyoming carbon sequestration working group.
6 By the way, I mentioned North Dakota. North
7 Dakota is the first state that has submitted its
8 application to EPA to obtain primacy or delegation for
9 Class VI UIC wells. They submitted their application
10 several months ago. I understand it's still sitting on
11 the administrator's desk, waiting for her final
12 signature. And I think it's fairly safe to say that
13 North Dakota is a little bit frustrated that it's taking
14 so long. I suspect that Wyoming will probably be the
15 second state to submit its application. Other states
16 that are interested in considering this are Texas,
17 Oklahoma and Kansas. To my knowledge, there may be more.
18 There may be others. I'm not sure.
19 But nevertheless, that's kind of the background
20 on what DEQ has done in concert with others in trying to
21 craft financial assurance requirements that have, we
22 think, some reasonable basis. And in some cases, we
23 simply don't have much choice but to pull in the federal
24 requirements in order to meet the stringency
25 expectations. So we're kind of stuck with some of that.

But that's how we got here today.

And just for your information, EPA has worked with us to essentially develop what's called a crosswalk, federal regulation, state regulation crosswalk. And what it does, it goes through the federal rule line by line and the state rule line by line, and EPA essentially has done a preliminary analysis and said, okay, Wyoming, in looking at the stringency requirements, it looks like A, B and C here line up real well with A, B and C in the federal rule. But E, F and G need a little tweaking. You need to fix some things, because we just don't think you're as equivalent as our regulation is.

So that crosswalk has been essentially completed for us. We're looking at that now. And I think our expectation is once we resolve financial assurance regulatory requirements through the advisory board, we'll be coming back and making these final, final adjustments as recommended by EPA for the crosswalk stringency evaluation. I hope these are going to be fairly minor. I don't expect to see a lot of major changes. But we want to kind of keep that as a separate effort before the board so we don't get things any more confusing or complicated than they already are.

CHAIRMAN BEDESSEM: So my question is, are you going to then have two separate packages to the EQC

or one package to the EQC?

MR. FREDERICK: To the EQC?

CHAIRMAN BEDESSEM: Uh-huh. When it moves forward.

MS. CAHN: Excuse me. Kevin, can you repeat Marge's question? I couldn't hear Marge.

MR. FREDERICK: The question was whether or not we anticipate taking two packages before the Environmental Quality Council, similar to what we're proposing here to the advisory board, or just one. Did you catch that, Lorie?

MS. CAHN: Yes, I did. Thank you, Kevin.

MR. FREDERICK: I think, to an extent, it's dependent upon how quickly we can move financial assurance requirements through the advisory board. We have not recommended to the advisory board at this time of making a final decision today on moving the regulation before the EQC, although that's certainly the board's pleasure. We think we'll be prepared to -- we hope we'll be prepared to bring the crosswalk changes before the board at its next meeting.

And ideally, it would be my hope that at the next meeting, the board would essentially approve moving both financial assurance requirements, as well as the crosswalk modifications that we'll present at the next

meeting, to the EQC. So I think that's my plan. Then we would take one package to the EQC.

CHAIRMAN BEDESSEM: Makes sense to me.

MR. FREDERICK: Good. Thank you.

CHAIRMAN BEDESSEM: Less confusing.

MR. FREDERICK: So, Madam Chairman, I would like to provide an opportunity for Ms. Ladd to provide you with a little bit more background and detail on what I've tried to lay out here, and following that, an opportunity for questions and answers. Mr. Tillman here will take us a little bit more closely through the proposed revisions to the regulation, and we'll go from there.

CHAIRMAN BEDESSEM: Sounds good.

MR. FREDERICK: Thank you.

MS. LADD: Good morning, Madam Chair, members of the advisory board. Thank you for the opportunity to present to you today. It's a privilege to be here. And thank you, Director Frederick, for inviting me. Can you hear me okay?

CHAIRMAN BEDESSEM: Uh-huh.

MS. LADD: So I'd like to walk you through a series of slides that just provide a little bit of additional background and some of the detail particularly around the modeling language that's in the rule. And

Director Frederick certainly did a nice job of already addressing some of those issues, so I will probably be brief so as to try not to be redundant. But certainly feel free to interrupt me at any point in time if you have questions.

So, as Director Frederick mentioned, there really have been three components of --

MS. CAHN: Does the slide change? Because it's not changing on mine.

MS. LADD: Okay. Hi, Lorie. It did change on our screen. So our technology whiz, Gina, is trying to set it up.

MS. CAHN: Okay. Now it's online.

MS. LADD: I'll just go manually. No problem.

So there are three components to the background and efforts of the State that inform this rule. We've talked a little bit about some of the State of Wyoming's legislative efforts and the formation of this carbon sequestration working group. I'll go into that in a little bit more detail. Might be worth just pointing out that the findings of that working group and the statute that followed is what created the mandate for DEQ to create this rule and create the revisions to this rule that are proposed today.

And then as noted, we participated in these two additional studies. And I would maybe just add a couple of points around what we were hoping to seek, particularly in participation in the national study director Frederick mentioned, which was led by a group called Industrial Economics out of Boston. And Industrial Economics is really an expert in damages estimates and economic modeling, not infrequently testifying at congressional hearings on these types of issues.

And so, at the time that we had completed the working group, we still really had some difficulty thinking about how you were going to have a robust cost-estimation effort. You know, we could identify what types of financial assurance made sense for which pieces of a project, but the actual valuation work was something we wanted to better understand. So that was a variable in our decision to participate in that effort.

And then the IOGCC report, an effort that Director Frederick mentioned, certainly came later, which in some ways is also interesting, because there was -- it was shortly after EPA had released the Class VI rule. So there was I would say a little bit more of a political component to that effort, where folks were digesting that rule and trying to think about what that meant for them

and what they wanted to recommend as a result.

Nonetheless, we wanted to do our best efforts particularly around trying to put a financial assurance regime in place that addressed the latter stages of a project, particularly after the operations had ceased, and trying to understand what the costs and estimates needed to look like in the post closure and long-term liability phases of the project.

So, moving on to the next slide. And I won't read this. I want to just point out a few things. The effort started in 2007, I believe, really. And at that time I was working for Governor Freudenthal. I would paraphrase his interests as wanting to make sure that if and when the marketplace decided that geologic carbon sequestration or permanent sequestration became a viable solution that Wyoming was ready to serve, essentially, and that we had the foundation and framework in place to be able to do that in an effective way. And so this issue around liability and assumption of liability and estimation of liability was something -- was one of those building blocks that we wanted to work on.

And so behind that there were several bills that were completed in 2008 and 2009. And the bill in 2008 referenced, as Director Frederick did, the creation of this working group, the various three-party leadership

system, though I believe Director Corra largely led that effort, and then the focus on making sure we had all constituent groups in Wyoming represented in that effort, for a variety of reasons, but largely because they brought great expertise and varying perspectives to the issues at hand.

And so that mandate was to -- as you can see in that second bullet, was to make sure that we had adequate financial resources provided to pay for mitigation and reclamation costs that the state might incur in the event of a default by a permit holder and that that should be required through the post-closure care period of a project, and the group was asked to recommend the duration of what a post-closure care period should be. So that was, by statute, what the working group was requested to do.

And I've just highlighted the bottom of this line, a handful of other laws that were passed that I think Kevin's already touched on.

So, moving on to the next line, I'll just go through. There are about three slides here that summarize some of the efforts of the working group. And they may be particularly relevant, one, because they were the framework by which the statute in 2010 was passed, but also you'll see in the Chapter 24 rule that Bill will

speak about today, and the Appendix A of that rule lifts directly from the study that that working group published in 2009. So it has lived beyond that date.

So the first thing that we did was spend some time identifying what the phases of a project were and then the likely risks inherent to each of those phases, and then commensurate with that, what would be acceptable financial assurance tools in each of those phases based on those types of risks and based on the role of an operator?

So the one that I highlight here in particular is where something like self-insurance might make sense if you meet the financial tests demonstrating your capability to pay, that makes sense in an operating period of a project. It probably makes less sense in a post-closure period of a project, when the operator may or may not still be actively involved in any way.

So those are the kinds of issues that we explored. And you'll hear some further discussion also around these, what we call this long-term stewardship period which followed the post-closure period and is essentially after you have received a certificate of site closure, what we viewed to be probably a very nominal amount of risk that continued but not a nonexistent risk. So there was a separate period that, as you see, is

indefinite in duration but hopefully very nominal in exposure.

So, moving on to the next slide, this graph, I wanted to just include this to show -- give you a sense for the risk profile that corresponds with the different phases of the project. This is a piece that Sally Benson from Stanford University put together and is pretty widely referenced and accepted as a resource in this field.

And the two things to point out are certainly the ramp-up period around when most of the risk exposure exists, which is during operations and following the cessation of injection, and what I also just referenced, which is though a project may conclude, you'll see that the risk never goes completely to zero. So that chart was created I think to highlight those two things in particular.

And then the working group went through the effort of specifying what are the major risks that might present in a carbon sequestration project? And we really had some very, very good expertise and guidance in this effort from our industry representatives who are on the working group and concluded -- we've categorized them in four areas here, though they are further broken down in the appendix, I believe. But you've got contamination of

underground water resources, trespass issues, large atmospheric release and potential property damage. Those were the major buckets that the working group identified. And those, again, as I mentioned, show up in Appendix A of the proposed rule.

And then the last slide, I want to just highlight this issue around the post-closure care period and an added recommendation that the working group made. So the post-closure care period and, importantly, I think the criteria for closure was a widely discussed item. And I think we relied pretty heavily on our state geologist at that time to talk with -- to help -- as well as Mark Northam from the School of Energy Resources -- to help inform what are the types of criteria that would -- that you would need to see the evidence of site stabilization so that the plume had ceased migration of any sort.

And so we got comfortable that there needed to be a minimum period of time. In fact, it's not all that long a period of time. But in addition to that, within that period of time or whatever period of time, we needed to have three consecutive years of plume stabilization monitoring data to present to DEQ. And so that became the criteria and the recommended language for the post-closure period.

And then we discussed in some detail also who's going to pay for ongoing monitoring, measurement, verification of a project both during this post-closure care period and following the post-closure care period? And so the working group recommended the creation of a special revenue account that would be funded either through a per-ton injection fee or a fixed fee. That was not decided by the group. I think there was a preference that the funding mechanism be collected during the operating period of a project, or certainly prior to site closure, but that it be a privately funded and then publicly controlled fund. And so that too became language which was incorporated into our statutory recommendations.

So let me just pause, because I'm going to -- I'll just walk through a few things on the statute and ask if there are any questions on that. That was the main body of the work with the working group.

MR. HANSON: We can ask general questions later. Right?

CHAIRMAN BEDESSEM: Uh-huh.

MS. LADD: You're welcome to interrupt me at any time, Madam Chair.

MR. HANSON: Madam Chair, I don't have a specific question to this. Maybe to one aspect of this.

And I'm reading off the document where you highlight the new sections. And at the beginning -- you know, I'm coming from the municipalities, and we are dealing with an aquifer locally, et cetera. And the only thing that occurs to me is that there is a little bit of a fox guarding the henhouse aspect here, namely the injector -- injection company monitors things. And we've had this problem, of course, locally that we wanted a licensed geologist -- that goes into Madam Chairman's field here -- checking these things.

And that I don't -- I'm talking now from the level of municipalities and water supplies, which is expressed on the second page of the new regulations. To guarantee these things, I'd like to suggest that there be an outside licensed geologist evaluation, observation of this matter. Because otherwise, it's sort of the coal industry monitoring the coal industry or the injection industry monitoring the injection industry. And that's the aspect from a local perspective, because we've had this problem locally. That I'd like to see addressed.

Thank you, Madam Chair.

MS. LADD: Thank you, Madam Chair and Mr. Hanson. I appreciate the comment. And I don't know there's a direct question for me at this point, but my guess is that Mr. Tillman --

MR. HANSON: That's why I didn't know whether to address it now or later. I didn't know where it would fit.

CHAIRMAN BEDESSEM: We can get to it later.

MS. LADD: Madam Chair, if it's your pleasure --

CHAIRMAN BEDESSEM: Yes.

MS. LADD: -- we'll come back to that question.

MR. HANSON: I'm sorry. It probably was too early.

CHAIRMAN BEDESSEM: I think it's fine. This way he can mull it over.

MR. HANSON: All right. Mull it over now.

MS. LADD: So, highlighting the statutory requirements -- and Director Frederick did a very nice job of describing what I would call the ingredients that went into this rule. And you've got the ingredients by EPA that probably make up a large amount of the changes to this document. But the statute that was passed in 2010 is another ingredient that is incorporated here. And so you'll see that we address this issue of creation of the special revenue account. These were -- just for background, I was trying to remember the timing myself,

when Director Frederick was speaking. I believe we presented to the Joint Judiciary Committee in 2009, the fall of 2009. And in large part, the draft statute that was recommended by the working group was accepted unchanged and put forward by various legislators in that following session.

So we included in that recommended statute this special revenue account language, as well as -- and I'll just highlight these components to 35-11-313 which you will see also in this -- in the rule today. Certificate of insurance for personal injury and property damage, the authority to develop procedures for the type and amount of bonds to assure operator complies with rules and requirements and has adequate financial resources to pay for mitigation and reclamation in event of default, various reporting requirements, and as well as language that allows for adjustment of bonds or other financial assurance instruments, proof of compliance, replacement, substitution, forfeiture and release procedures.

And then you see that same language around not sooner than ten years and three years of site stabilization pertaining to post closure. And then I believe there's language requiring essentially communication with adjacent landowners that might be affected by a project. That is the affidavit language

noted here in this slide. And then repealing a portion of -- essentially repealing a portion of the prior statute.

So that summarizes the work of the working group. And I think we felt like we made pretty good headway, but we still had some questions. If you think about those requirements, for those of us that do math for a living, you're still sort of stuck saying, well, how do I go about trying to figure out how much money to require folks to put in? Or to Mr. Hanson's comment, if that recommendation is coming from a company, how do I know I should rely upon it, and how do I make sure there's a robust approach to -- and a fair one, but essentially a defensible process in place?

And so that's what some of these additional studies intended to do and I think did help us in that effort. I think I'd be wrong in saying that -- if I were to say that we've answered every question we ever had on the topic of how much money and exactly how much an operator needs to put in a special revenue account. But I think we have good information, particularly as a result of that valuation study, which is available.

I'm going to highlight a couple points in the project site that they did a study on. But if anybody would like to see the valuation study itself, it is quite

comprehensive. It's probably 120 pages or so. It's very helpful on financial assurance if anybody's interested.

MR. FREDERICK: That, by the way, valuation study was the outcome of that national working group, the IEC. IEC is Industrial Economics.

CHAIRMAN BEDESSEM: Is that available on the Web?

MR. FREDERICK: It is. I Googled it just yesterday, I believe.

MS. LADD: And Director Frederick did a nice job of describing the participants. I wanted to highlight a couple of others, particularly in that national effort, because it really actually was an international effort. There were representatives from Canada -- essentially, Australia and Canada, as you might guess, have a vested interest in these issues, as well. And so I think, in fact, the primary funder of that work effort was an organization called the Global CCS Institute based out of Australia. And so they, together with -- I want to say it was a policy group out of Toronto in particular that was involved in that project. And then in the IOGCC report -- or, work effort, I wanted to mention that I believe the Province of Alberta was also a contributing member. So we've had a great international flavor to some of this work, as well.

So, moving on, I wanted to -- so we've gone through the statute.

Sorry, Ms. Cahn. I realize I probably didn't keep up with my slides as I was speaking.

So the next -- the next slide is just a brief summary of EPA requirements in the Class VI rule. And I think the main thing I wanted to highlight here, which Director Frederick's already done, is if you seek primacy, which Wyoming understandably would like to do, there's not a lot of flexibility in adopting the Class VI permit rules as written. And certainly there's nothing that limits us from being more restrictive. And I've highlighted, for example, our language on the post-closure care period is more restrictive than EPA's language.

And then there's also a very useful guidance document that EPA put out that talked in great detail about different acceptable financial assurance mechanisms, when they can be used, how they can get reduced, how you can adjust them over time. And that's a very useful tool.

And the last point I want to just highlight is this issue of there is not specificity in the EPA document or in our proposed rule about liability which might still exist after the site has been closed. And I

think maybe I'd just comment that there's a lot of discussion in that IOGCC effort around whether or not all of the liability had been eliminated. And that remains a matter of discussion, I think. There's just no history to answer that question definitively. But from my standpoint, I think it's still an issue.

So the key takeaways from all of this work effort, which spanned more or less about four or five years, is, as I just mentioned, there are a limited number of geologic sequestration projects that even exist. So we would expect that the financial assurance approach process and the rules likely would need to evolve over time and with more experience. And I would certainly recommend that Wyoming continue to stay attuned to those efforts elsewhere, because it's entirely possible it will take place outside of our state boundaries. Our desire to seek primacy, we've talked about, and then a timeline for that, and the need to have a very clear set of guidelines for transitioning from an EOR operation to a permanent sequestration operation, so the Class II, Class VI permit issues.

One of the things in this next, really, three bullets were findings both in the working group efforts, as well as the valuation study that IEC did. You can't say enough about the value of good site selection. And

to that end also, what we found in this sample project was the purity of the CO2 stream. There's a lot of H2S in the CO2 stream. A potential for liabilities is increased significantly.

A second thing which you'll see incorporated into the rule and I'll speak a little more about is the importance of a robust modeling effort. And in our case we're recommending a Monte Carlo type of analysis or a probability-driven model as the proposed best effort. And then what we saw with this sample project was that post-injection site care. So, once the operation has ceased at a well-sited project, shouldn't cost more than about a dollar a ton for a 50-million-ton-per-annum project. So it gave us a good barometer for where you might start. If you had a project come forward and you wanted to set a recommended dollar amount, that would be a reasonable place to start.

And then the last thing I'll highlight, the working group report, which is also a pretty lengthy document, does spend some time talking about the potential creation of a trust fund that might look like privately funded but publicly controlled funds where -- where you are addressing the need to potentially cover catastrophic risk in a very long-term period of time. That issue was not taken up by the legislature and has

not been codified in any way.

So I wanted to spend just a couple minutes -- I can spend as much time or as little time on this topic as you'd like. But since the statute incorporates this language -- or, excuse me -- the rule incorporates proposed language, I'm using probability-driven modeling. I wanted to do a little bit of a refresher on what that is and why you do it. And I apologize. I'm sure you are -- you all are -- have probably scientific backgrounds and have looked at more probability distribution curves than I do or have. But I thought it might be useful to take five minutes to do that and then to share with you the sample results that came out of this one study that we did.

So the first thing to note is we've talked about the need to use something other than a -- a sort of simple tool. We'd like to recommend some type of a Monte Carlo probability modeling, that those cost curves should look at risk probabilities, potential outcomes and damages estimates in the creation of that model, which will generate a series of expected losses under a variety of events. And then that probability distribution, we have asked folks to estimate damages at 50th percentile, 95th percentile and 99th percentile. We have not said that you must set your financial assurance limit to be at

the 99th percentile, but I would certainly professionally recommend you not set it below 95th percentile. So, either way, what we wanted to do was show -- we'd like to see the data for what the distribution curve looks like at all three of those confidence intervals.

So a couple of -- again, I wanted you to have this information. I don't need to read through it all. But why do you use something like probability modeling? Typically because you've got a fair amount of uncertainty in projecting the future. And the best you can do is estimate the expected value.

And so inherent to that, you end up with a creation of a range of values, as opposed to a singular estimate. And by using a range of values instead of a single, you essentially can create a more realistic picture of what might occur in the future. This is somewhat different from a single forecasting model that you might develop, but it is certainly an industry-accepted, preferred way of estimating risk and cost estimates.

So the very simple example I've highlighted in the middle of the page, in a construction project, you might estimate the time it will take to complete a particular job based on some knowledge and the time it might take. And in the worst possible case, you might

look at minimum time -- or, the maximum time and then the minimum time. This would in a -- what you get by taking not just a singular point in time, is you end up with a range of values based on any number of those kinds of scenarios which could occur.

And on the next page, you see a -- what you end up with in a distribution curve is how likely the resulting outcomes are. And a typical analysis will model hundreds or thousands of scenarios. In this IEC effort we did, it was 100,000 runs of a set of inputs to that model. So it's just a much more robust potential set of outcomes that you might be trying to cover.

So, with that background, let me just show you the one sample project that we did and go through that, which was the -- the project that was selected was a rejected FutureGen site in Jewett, Texas. And the reason they selected that project was because, in fact, there was a fair amount of probability information that was submitted as just part of the FutureGen application. So there was a decent amount of data that you could use as a starting point.

Then we spent time identifying and discussing what are the relevant risk events? Not dissimilar from what the carbon sequestration working group did in identifying risk elements that are a part of Appendix A

now. Then we spent time talking about the magnitude of those events and the probability of those events. And so there were a couple of core issues that came up in that. For example, proximity to a population center had a very large bearing on potential risk outcomes and damages estimates, so health effects of the potential atmospheric release of some magnitude, for example.

And so we gathered that information. And then we looked at the potential costs of those impacts. So they had I believe damages estimates on health care costs under a variety of health scenarios. There's just a lot of actuarial data that is available to create a cost curve around damages related to human health. So those were used. And they ran a 100,000-model scenario.

Now, look, I'm sensitive to -- I do think most companies, if they're proposing a project of this magnitude, do have this capability in-house. But if not, you can still create -- you can follow the components of this recommended process even through a simple Excel model. I mean, you can do this yourself. So there's no reason -- it sounds a little complicated, but I think it's important, and it's pretty manageable.

And then we end up with this distribution curve. And as you'll see in this particular project -- and this is what I wanted to highlight in the chart -- is

the potential costs vary pretty significantly between the 50th percentile and the 95th percentile, and then they vary a reasonable amount further in the 99th percentile. And what we're saying is there is a -- take the 95th percentile. We're saying there is a five percent likelihood that total damages would be higher than that dollar amount. That's the conclusion. And so, if I'm a state regulator, I'm thinking about what is the dollar amount of financial assurance I'm going to ask to be covered to cover for these potential risks and to protect the constituents in the state of Wyoming and not impede business in a way that you wouldn't want to, either? But what's realistic to ask the folks?

So, in most cases, a 95 percent, which is sort of a confidence interval, two-time confidence interval, would be an accepted approach. But that's up to people smarter than me to decide, ultimately.

So I wanted to show this example. We really I think were pleased to have gone through this exercise. And that report is -- I think it's quite good and pretty illuminating. So I'd encourage you to look at that if you'd like to learn more.

And then I'd just sort of conclude these remarks by talking about what's next. Director Frederick talked about seeking primacy and the timing around that

and essentially just asking that folks provide a financial assurance calculation that follows these recommended -- this recommended approach as much as anything. And then I think that's -- I wanted to just summarize sort of our efforts to date. And I'm here as someone who can answer probably more questions on economic issues if there are any questions about that.

So thank you for the opportunity. And I'll turn it over to my colleague.

Bill, would you like to switch seats?

MR. TILLMAN: Thank you, Laura, for giving that background history on proposed changes to the regulation. And as Administrator Frederick has stated before, the majority of these changes that we're proposing with this chapter are to address financial assurance or financial responsibility, and they come from the Code of Federal Regulations 40 CFR 146.85. And so that is going to be the bulk of those changes. There are also some statutory changes that were added that maybe weren't addressed in the Code of Federal Regulations but were necessary, being from the working group, and therefore made into statute that we also wanted to address.

I'm looking at -- the version I'm looking at would be the strike-and-underline version. And to start,

just kind of walk through these. And I'm not going to read each and every condition. I'll try to highlight or at least let you know where the condition came from. Because, again, almost all of these come from federal regulations, so I can cite the statute and verse as to where it originated. And a lot of the language is basically straight out of the Code of Federal Regulations. So, if it's confusing, it's because the national regulations are confusing. But we tried to add some clarity where we could so that, again, we could understand what we're asking the regulated community to give us.

Starting on page 24-1 in Section 1, we added some language basically to address why the changes were made. And namely, these are rules and regulations to provide the financial assurance as codified in our state statute 35-11-13 -- or, 313.

Moving on to page 24-3, one of the things that the legislature asked us to define, and that was plume stabilization, because that's going to be a key component to releasing people from this financial assurance responsibility. And we took a stab at this definition. And again, on 24-3 we define plume stabilization as a carbon dioxide that has been injected subsurface that essentially no longer expands vertically or horizontally

and poses no threat to underground sources of drinking water, human health, safety or the environment.

And again, we said essentially doesn't move, because, again, there may be minimal movement that, from a geologist's standpoint or just from our administrator's standpoint, he can take that data and decide whether or not we have achieved plume stabilization, and that is a key component to release from financial assurance.

Moving on to page 24-5 in Section 3 on applicability, Section (b)(i). And basically this addresses a condition from CFR 146.81(c) and basically requires permits for Class I and Class V injection wells that would likely become carbon sequestration wells, the procedure that they must go through and information they must submit showing that the wells were engineered and constructed in compliance with what we would require for a Class VI carbon sequestration well.

In Part (c)(i), this comes from Code of Federal Regulations 144.19(b)(1) through (8). And these are basically things to consider when addressing the permitting of a Class VI well or people -- excuse me. Yes, consideration for a Class VI permit. And they go (a) through (i). And Part (c)(ii) comes from 144.19(a). And basically it says anyone that's a Class II well, wanting to become a Class VI well, needs to get a Class

VI permit when there's a threat to the underground sources of drinking water. Again, that comes from the Code of Federal Regulations.

Part (iii) is just a clarifying alternative operation for a Class II well. Because, again, if it's a Class II operation that doesn't threaten underground drinking water, we're allowing them to continue as a Class II operation. And later on, if they would like to become a Class VI well, that is their option.

Moving on to 24-17, at the bottom of the page, Part (c), this comes from state statute, which, again, requires public liability. And this public liability is in addition to the financial assurance. It's a separate insurance policy, again, as Ms. Ladd had referenced. This covers the event of personal injury or property damage that may be, I guess, collateral damage from a carbon sequestration project. And this comes, again, from state statute, which says we must have public liability insurance.

This language was borrowed from the Land Quality Division because, again, from the Land Quality coal operations, they have a similar public liability insurance policy. And I basically lifted that same similar language and incorporated it here in our chapter.

Part (iii), where we discuss actual dollar

amounts, I looked at what the coal industry, what they have in their chapter, and just moved it up. This is not an absolute. It was kind of a best guess at what we thought that dollar amount should be. Again, we haven't had any comment from industry. So, again, without any history, we're not really sure if that's more than enough, not enough. It's at least a start at, again, obtaining some public liability insurance, again, required by statute.

And again, on Part (d), it addresses the self-insurance. And again, if they're a large enough company where they can't self-insure, that again has to be demonstrated to the administrator and his satisfaction whether or not that would be an acceptable form of public liability.

Moving on to page 24-24, Section 10. This was added. This was not in the original chapter. And it's the injection depth waiver that was, again, later codified by the CFR, Code of Federal Regulations, that needed to be incorporated. And this is basically verbatim, CFR 146.95, front to back, basically federal language that if you would like an exception or to go past that depth waiver, all the requirements that you must comply with. And again, this is federal language. Nothing added. Nothing taken away from it.

And, Board Chairman, Mr. Hanson, again, your comment as far as that alternative view to monitoring of the injection site, most of the changes are federal language. Again, they're not -- they don't address that. But again, that's something we can consider and definitely take that comment into consideration and maybe have additional information -- or, excuse me -- an additional requirement to this chapter. We'll definitely consider your comment there.

Madam Chair?

CHAIRMAN BEDESSEM: Well, all the monitoring is submitted to the agency for your review.

MR. TILLMAN: Correct.

MS. CAHN: Bill, can you please repeat Marge's question or comment?

MR. TILLMAN: Marge said that basically all the information is submitted to the Division or to the Department for our review for approval. So this requirement for an outside party may be redundant. But again, it's something to consider.

Moving on to page 24-36, roughly middle of the page, (iv), this edition comes from State Statute 35-11-313(f)(ii)(M). And basically it's a notice to surface owners, mineral claimants, of closure of the site and just basically notification requirement through state

statute.

Part B is from 35-11-313(b)(i)(f). And it basically says that when you get this notice that it's site closure, that it's also a mechanism for requiring a public meeting if you would like or a public hearing if the owners of those entities would request one. And it was also a part of the statute that we give that opportunity.

The bulk of the changes, again, are in Section 19 on page 24-38. And it comes from CFR 146.85. And it outlines all the financial responsibilities. What I've also nested in there is from the working group that Ms. Ladd referred to. In Part (b), this was from the working group, and this is where we actually give them the basis to form their -- the how of how they're going to develop this cost estimate and the different phases of the project, and depending on where they're at, things they need to consider or the parts of the project that we deem important for them to consider.

Also from the working group, if you move to page 24-39(i), these are all the -- these are the things that the working group considered to be things to consider in the events that would drive that cost estimate. And again, this is from the working group. And I referred to the table Appendix B on (ii) -- or,

excuse me. Appendix A -- as the table. Again, it gives a little bit more detail of the activities associated with each of these -- or, excuse me -- more detail of activities associated with these, I guess, higher categories. But again, that comes from the working group.

And as Ms. Ladd also referred to on Part (iii), this is where we talk about the cost estimate, the multidisciplinary model using that Monte Carlo or probabilistic framework.

I'll refer to line numbers. I'm sorry. I'm kind of jumping around here. On line 1886 on page 24-39, that's, again, where we actually tell them the type of modeling that they need to use in developing this cost estimate that Ms. Ladd also referred to in her presentation.

On line 1895, Part (e), on 24-39, this comes from CFR 146.93. And this, again, addresses that special revenue account after site closure -- or, excuse me -- site post closure that they have to give us a cost estimate for the measuring, monitoring and verification of the sequestration. Again, this is our long-term monitoring that we, again, are trying to establish money to make sure that in the event something may happen down the road, that we still have financial assurance to

address that.

On page 24-40, on line 1902, we give, again, some of the qualifying instruments for financial assurance, again, coming from Code of Federal Regulations 146.85(a)(i), listing all the types of instruments that are acceptable. And again, we talk about continuation, the types of instruments that they need, how they need to be approved by the director, so on and so forth.

Do I need to go through in detail some of these other conditions? Because, again, they come straight from the Code of Federal Regulations and basically just address all the aspects of the financial responsibility.

On page 24-44, toward the end of the section, lines 2100 on down to 2121, we discussed are being released from financial responsibility. Part (m)(iii), which is on line 2112, was basically clarification because we're allowing -- being that the project -- sequestration project can be phased, once certain phases are completed, we give them the opportunity for partial release from some of their financial responsibility. And that is just, I guess, giving them an option if they would like to release some of that money that they have sitting out there for projects or part of the project that's passed and closed.

And on Part (n), following release of financial

assurance, it has to be, again, approved by the director and gives them, again, the chance to recertify or get a different level of financial assurance depending on where they are with the project.

And again, like I said, the bulk of these changes are straight from the Code of Federal Regulations. Some of them come from state statute. And again, there's maybe one or two that just added clarification to the information provided or that were requested.

MR. HANSON: Madam Chair, may I ask a question?

CHAIRMAN BEDESSEM: Yes.

MR. HANSON: Going back to 24-5, just a quick question. Under (c)(i), Section (c)(i), "After consultation," et cetera, there's this very tricky word in there, namely "may." Who determines what here when it says "may"? Because there's a whole list coming. And it's sort of open-ended. If you say "will," "shall," I like that. But "may" is sort of, well, maybe yeah, maybe no.

MR. TILLMAN: Again, that language is from Code of Federal Regulations. I think it gives the administrator the flexibility as to whether or not he deems those -- these aspects important or needs further

consideration in determining whether or not this permit is required. So the word "may" I believe is appropriate for that to allow that flexibility.

MR. HANSON: That's a bit wishy-washy.

MR. TILLMAN: Yes, sir. I admit that. But with purpose.

MR. HANSON: With purpose. Okay.

MR. FREDERICK: Let me elaborate on this a little bit. This is the issue of transitioning a Class II well to a Class VI well. And a Class II well, among other things, is used for enhanced oil recovery. In this case, it would be carbon dioxide for enhanced oil recovery.

But about a year and a half ago EPA published a guidance document on how they expect to see Class II wells transitioned to Class VI wells, or when. And they essentially identified these criteria on 24-5 beginning at line 233 -- I believe there's seven of them or nine -- as considerations that should be undertaken either by the operator or by the Class VI director, which is DEQ, to see whether or not, due to increased injection pressures and so forth, that there may now be a potential for leakage of the CO2 into an underground source of drinking water, which is an aquifer that contains less than 10,000 milligrams per total dissolved solids.

Several states, including Wyoming, expressed some concern with the guidance document's failure, I guess, to recognize that in many states, including Wyoming, while, indeed, Class II wells were EOR, regulated by a different agency, the Oil and Gas Conservation Commission, they're the agency that knows more about evaluating injection pressures into oil reservoirs than DEQ does.

And it was the State of Wyoming's opinion, at least as far as I know, and it was our opinion at DEQ that these types of analysis should be completed by the Oil and Gas Conservation Commission or the operator, not DEQ. But the rule as written seems to suggest that, well, it would be the Class VI director, it would be DEQ who would be the one that would be responsible for requiring that a Class II operation seek a Class VI permit. And so there's a little bit of a conundrum there.

And to the question why "may" required permit instead of "shall," in reference to the director of DEQ having that responsibility, I guess, we simply don't agree with EPA that that particular responsibility should be DEQ's. We try to recognize that we, being DEQ, can do that but only after consultation with the Oil and Gas Commission. Because, arguably, they're the experts in

evaluating whether this potential risk that would trigger a Class VI permit actually exists or not.

Furthermore, we also recognize that the way the federal rule -- final federal rule came out, there appears to be a little bit of a conflict in terms of distinguishing when a Class II EOR well requires a Class VI in the federal regulations, as opposed to what the Wyoming legislature says in our statutes. There's a question as to whether they align well enough. We think the question is significant enough that in anticipation of the State of Wyoming seeking to obtain primacy for the program and working with the governor's office, we've recommended that the issue be addressed through an interim study committee of the Wyoming legislature. And, indeed, that will be one of the topics they'll be looking at.

We'll be presenting the problem or potential problem, I guess, in our perspective, at least, at the minerals committee interim study meeting in Casper, I believe May 28th, for your information.

So, to the question again, this language here as currently written will certainly be something that will be discussed. I think there's a potential that -- I think it's most likely there won't be any suggested revisions to it now. I think it provides what we need to

satisfy the EPA requirement but also provides us the flexibility to make sure that that consultation with the Oil and Gas Commission does, indeed, occur before that permit is required.

And I would refer you to page 24-6 on line 253. I think it's fairly clear that there will be a requirement or there is a requirement for the operator to apply for a Class VI permit in the event there is an increased risk. So that requirement is in place. I think the -- it's conditioned with the expectation that DEQ doesn't in and of itself make that decision. Only makes that decision in consultation with the Oil and Gas Commission.

MR. HANSON: Madam Chair, the only suggestion -- that makes some sense, what you just said to me, was that may -- something like that. The director may, in his best estimate, or something of that nature, so it isn't so wishy-washy. So we have a statement, in their best estimate, they will -- they may require one or the other. Because there's no "or" in there, either. It's sort of, well . . .

MR. FREDERICK: So perhaps the director, in his opinion?

MR. HANSON: In his opinion or estimate or whatever, best estimate or something of that nature.

Thank you.

MR. FREDERICK: Thank you.

MR. HANSON: I'm sorry to hold us up here.

CHAIRMAN BEDESSEM: No problem.

MR. HANSON: That's what we're here for. Right?

CHAIRMAN BEDESSEM: That's why we're here. So I have a question.

MR. TILLMAN: Go ahead, Madam Chair.

CHAIRMAN BEDESSEM: So, in Ms. Ladd's presentation, on the last page, the summary and next steps, there's a bullet that says the proposed rule also identifies the need for calculation of cost of measurement, monitoring and verification costs of GS sites will be deposited into a special revenue account. So can you point out to me where anything about a special revenue account is mentioned?

MR. TILLMAN: Madam Chair, I don't think we call it out as a special revenue account. Maybe we could. But I believe I reference --

CHAIRMAN BEDESSEM: Because I see all this information requiring coming up with the cost estimate. I just don't understand the special revenue account and how that translates into the verbiage that you have in the document.

MS. CAHN: Can we turn up Marge's microphone? This is Lorie. I'm not hearing Marge's soft voice. It's muffled.

CHAIRMAN BEDESSEM: There it goes. If you want to go ahead and rephrase my question, that would be wonderful.

MS. LADD: I'd be happy to. It's nice to see your microphone is working. Madam Chair, Ms. Cahn, the question was, in the last -- this is Laura Ladd speaking. In the last slide, I talk about the fact that you incorporate the need to reference the special revenue account and create funding for that. The question was where does that actually show up in the rule? And I think Mr. Tillman is correct that the specific language of reference to a special revenue account is not included in this rule.

That said, the mechanism of what that entails, which is a cost estimate for an MMV activity, is referenced, as I see it, in 24-44, line 2118, that last section on there, the last part of Section 19. I believe what we are talking about there is providing a cost estimate for that specific purpose. But we don't reference specifically a special revenue account.

CHAIRMAN BEDESSEM: So all this is requiring is a cost estimate. It's not requiring the

deposit of monies anywhere or mechanism for collecting those monies.

MS. LADD: That's correct. At least that's my understanding. It doesn't specify what we're going to do with the money or where the money's going to go.

CHAIRMAN BEDESSEM: Or if it's being submitted. It just says the cost estimate.

MS. LADD: Fair point. And that would be collective, basically. Right? Madam Chair, is that what you're saying?

CHAIRMAN BEDESSEM: Where does it say it's collective?

MS. LADD: No. I'm just clarifying your point that there needs to be language that states that it is collective.

CHAIRMAN BEDESSEM: Or do you need statutory authority to create the special revenue account in order to do this? Because right now I'm seeing just a requirement for somebody to calculate the money but no actual submittal of monies at that point.

MR. FREDERICK: Ms. Cahn, did you hear that?

MS. CAHN: Poor, though.

MR. FREDERICK: The comment from the

chairman was that there's no mention of a special revenue account and a requirement to fund monitoring, measurement, verification, or MMV, during the post-closure period.

If we would turn to page 24-38, line 1833, there's a requirement for owners or operators of Class VI wells to demonstrate, maintain financial responsibility for all applicable phases, including complete site reclamation in the event of default. Phases of geologic sequestration are as follows: Line 1844, long-term care.

There's a nuance here that we need to recognize. And the nuance is essentially that in the post-closure phase, there's going to be monitoring to the point of demonstration that plume stabilization has occurred. At that time the operator is released from the financial assurance requirements. That's the nuance. However, in the regulation, we're saying that you have to maintain financial responsibility for all phases. So the idea is that the financial responsibility for the long-term-care phase that's going to be funded through the special revenue account will, indeed, be supplemented by this requirement that funds somehow be provided.

CHAIRMAN BEDESSEM: I'm confused as to where it says that the special revenue account exists and it's going to be doing that.

MR. FREDERICK: No, it doesn't.

CHAIRMAN BEDESSEM: And when it says applicable, if I was a permit applicant, I'd say, well, the documentation says that after I'm released, so I'm covered, I have to have financial assurance in post-closure care until the point where the plume is stabilized. Right? Is that correct? Then once the plume is stabilized, so after that, I'm off the hook, and I can say that it's not applicable anymore. So the word "applicable" -- I'm concerned about the word "applicable." Because, to me, it would say to me that, based on the other verbiage in the rule, that I'm not responsible for financial, you know, requirements in that long-term-care part because it doesn't define this other mechanism that we've talked about but isn't actually really in the rule.

MR. FREDERICK: Right. No. And I certainly understand just exactly what you're saying here. In part, that's why we're having this conversation, where there's obviously an opinion that we need further clarification on how that is going to work. There's been perhaps a little concern, on my part, at least, about getting into the details of how the special revenue account is going to be funded, or more precisely, what the requirement for funding that special revenue

account is going to be. And that's a discussion that still needs to be held not only within the agency, but also before the advisory board. And I don't intend to suggest that we're ready to have that conversation yet. I don't need to include that discussion in this regulation to have primacy, however.

CHAIRMAN BEDESSEM: Gotcha.

MR. FREDERICK: But I'm not ignoring that it needs to be addressed at some point in time. So I think to your point, some clarification is needed there. We'll certainly take care of that. My recommendation is going to be that we simply clarify that funding won't be directed to the special revenue account to provide for long-term monitoring, verification. Leave it as simple as that.

CHAIRMAN BEDESSEM: That would be fine, just so there's something. Because we're having this discussion about it. But if you read the rule and didn't have the discussion, I don't know that an applicant would know that that even exists and that was your intent at this point. But you don't need to have, for example, statute authority or something else to go on in order to establish the special revenue account?

MR. FREDERICK: Madam Chair, we do have statutory authority.

CHAIRMAN BEDESSEM: Just based generally on the Environmental Quality Act?

MR. FREDERICK: Yeah.

CHAIRMAN BEDESSEM: That's fine. I believe you, Administrator Frederick.

MR. FREDERICK: I can't put my finger right on it.

CHAIRMAN BEDESSEM: That's fine.

MR. FREDERICK: We do.

CHAIRMAN BEDESSEM: That was just one question I had, that I felt -- I understand what you were getting at, but then I couldn't find the corresponding thing in the rule to understand how that was going to be. Not necessarily the details, but that it was actually going to happen.

And then on page 24-39, and I don't know if this is verbatim from the CFR.

MR. TILLMAN: Yes.

CHAIRMAN BEDESSEM: I just am curious that "entrained contaminate releases" or "storage rights infringement" are in there like they're the name of something. They're capitalized. And they're not in the definitions. I'm not sure why they're capitalized when the other things in there are not.

MR. TILLMAN: Madam Chair, on page 24-39,

line 1856 through 1893, comes from the working group report. That is not CFR language. That is from the working group. And the fact that it's capitalized is just I capitalized it.

CHAIRMAN BEDESSEM: But it's not a title, so can it just be regular verbiage?

MR. TILLMAN: Yeah. That's not a deal. I just took it from their report. It was capitalized there. I capitalized it there.

CHAIRMAN BEDESSEM: For consistency, can we have it be regular? Because when I see that, I'm looking in the definitions to try to figure out what that is.

MR. TILLMAN: Absolutely. We can definitely address that.

CHAIRMAN BEDESSEM: But I think my main question to you, you already answered, and that was what I was most interested in.

Lorie or Calvin, do you have any additional questions for this group?

MS. CAHN: Yeah. While we're on -- Madam Chair, while we're on page 24-39, one of my questions is about the Appendix A, the risk activity matrix that's going to be used in the Monte Carlo simulations. Actually, let's talk about Monte Carlo simulations. How

readily available is this Monte Carlo model for the industry? What does it cost to run this model? I'm familiar with Monte Carlo simulations because I did my master's thesis on it. But that was many years ago. And at that time they were not readily available. So I'm just curious about that.

CHAIRMAN BEDESSEM: She's not letting on her age.

MS. LADD: Madam Chair, Ms. Cahn, thank you for the question. I think my answer to that is -- I would have two answers. One, you can create an Excel model using Monte Carlo simulation with some modest amount of effort to learn how to do something in Excel. It's more than the basic things we all probably do. But I think it can be learned in a few hours of time if a person wanted to do that. I tend to believe most of these companies have analysts and finance folks that are reasonably advanced in Excel and could use that tool.

That said, my preferred recommendation, anyway, would be that you engage -- that we would hope that a third-party economics firm might do this work for them so that there is some objectivity to the recommendation or some third-party analysis. And I think that work could cost something on the order of $50,000. Wouldn't be unusual for it to cost something like that, particularly

if a firm hired IEC or one of these other consulting firms.

I am aware, for example, that the folks in Alberta were keen to try to make sure there were multiple consulting firms that could do this work at a price that wouldn't be so onerous and had a couple other recommendations beyond IEC. IEC happened to be pretty expensive. So there is a marketplace for it. It's just a rough estimate, but I think it could cost $50,000 or something to do that work.

MS. CAHN: And then what about, you know, the model's only going to be as good as the data going into the model. And so how reliable are the PDFs, the functions, the probably distribution functions, going into the model? Is that just a flat --

MS. LADD: Madam Chair, Ms. Cahn, that is an excellent question. I think that the -- what you get out is only as good as what you put in. No doubt about it. I think that what DEQ would want to do, regardless of whether a third party or an in-house effort was completed, is to ask for a summary of the probabilities and the cost curves used and the assumptions used in the creation of that model to validate independently themselves whether that seemed reasonable and robust.

And wherever possible -- for example, in the

work that was done by IEC, wherever possible, you want to just use third-party information that's commonly known, like well failures and that kind of information. So you're looking for data that is an input to the model that is generated by a third party in similar activities.

I think, frankly, even in this study we struggled with -- I'm looking at Director Frederick if he wants to elaborate. But we struggled with the assumptions in two or three instances out of, I don't know, a dozen of the inputs. That's my sort of recollection. It's not that easy to -- it takes some thought to try to gather the best input you can. And it's probably -- at this stage, given the infancy of the industry, it's pretty good. You could expect something would be pretty good if they went through this effort, but it's not going to be perfect.

If you want to add anything . . .

MR. FREDERICK: Sure, just a little bit. We certainly recognize that, to a degree, we're breaking some new ground here. Unfortunately, there isn't a cookbook that's been developed that we can pull off the shelf and say, you know, we like this. This is what we're going to do here. So we certainly recognize that we need to move ahead. We think we've got a good basis building on the work that was done by the Wyoming working

group, by IEC, the national working group, perhaps a collection of the -- the most people that would be familiar at least in a sense of having an intelligent conversation and discussion about how to skin this cat. This is the state of the art today as we know it.

That's not to say that we recognize there certainly are some imperfections that can be improved upon. And I fully expect that someday when things get a little bit perhaps more clear or there's a better method out there, we'll be back before you. But we don't want to wait until that point in time. We want to move ahead. We think we've got a good process here. So that's kind of where we're at.

MS. LADD: Madam Chair, Ms. Cahn, I think I want to just add, when evaluated what kind of process to recommend, we were uncomfortable that estimating cost through a single data point or a single set of experiences was sufficient, given the uncertainty created by time and the nascency of this industry. So it's probably the best available alternative and not in an imperfect situation.

CHAIRMAN BEDESSEM: Additional comments, Lorie?

MS. CAHN: I guess I would be -- I appreciate what Kevin and Laura have said and agree with

them. I like Laura's suggestion to have this produced by an independent party. But I have another question for Kevin, and that is do you feel that you have enough people or the proper people on your staff that can evaluate the report that you'll get from -- if you get it from an independent? Whether you get it from an independent group or whether you get it from the companies proposing to do this, do you have the people on staff available to really assess the assumptions that went in, adequacy of the assumptions, (inaudible) functions?

MR. FREDERICK: Good question, Lorie. We don't at the time. However, there's no need at this time. And it's probably going to be some time. We don't know how long. Could be tomorrow. It could be next year. Could be further out in the future when we will need that type of expertise and talent.

But I can tell you this, that the legislature agreed with Director Corra's recommendation at the time that we did need that expertise specifically, and they agreed to essentially provide authorization to hire an individual to perform those functions for DEQ when the time came. So it's been recognized, and it's certainly available to us.

CHAIRMAN BEDESSEM: Any further questions,

Lorie?

MS. CAHN: I have some questions while we're on the section, similar to -- on line 1869 -- and I'm in the red-line strikeout -- I'm assuming that when you say storage rights infringement which is a form of mineral rights infringe, so I'm assuming that means it's a subset of mineral rights infringements?

MR. FREDERICK: Interesting question. As I understand it, as established by the Wyoming legislature, pore space actually falls within the estate of the surface owner, as opposed to the mineral owner. I think it reasonably can be viewed as a separate estate that can be severed from the surface estate if the surface estate owner wishes to sell it, for instance, or lease it.

So I don't think it's precise to say that it's a subset of the mineral estate, but I think it recognizes that both the mineral estate and the pore space are similar in that the -- the requirement of pore space availability is a requirement for each to have any type of value, essentially, at least as it relates to oil and gas development. Mineral development, perhaps not so much. But I don't think it's a subset, Ms. Cahn.

MS. CAHN: I guess I'm asking the question because I'm not sure about the language. I'm trying to

understand the difference between storage rights infringement and mineral rights infringement in this application. And do we need definitions? Do we need definitions of those, and do we need to address them as two separate issues? Right now my understanding is the way it's worded, if there were to be -- excuse me for a second. If there were to be a comma after storage rights infringement, then -- so it would be storage rights infringement, comma, which is a form of mineral rights infringement. Then are we only talking about the storage rights infringement, or do we also want them to address mineral rights infringement?

So I don't understand the differences. I guess I feel like we need some definitions. And, you know, you need to think about whether those need to be two separate things or one is a subset of another, or are you only talking about one and not the other? So the language is confusing to me.

MR. FREDERICK: Right. Thank you for the question. I agree. What we need to do, Ms. Cahn, is revisit the working group reports and report -- I should say their final report that talked about this, see if we can make a little bit more clarification on whether there's a distinction between storage rights infringement as a form of mineral rights infringement and simply

mineral rights infringement, which, as you pointed out, is already covered on 1861. We'll take another look at that. Thank you.

MS. CAHN: Thank you. And then I had a question on line 1896 with the use of the word "sites." It's not clear to me if that should be plural or possessive or both.

MR. TILLMAN: Ms. Cahn, that came from federal language direct. I'll take a look at that. That is from the Code of Federal Regulations, so we'll look at it.

MS. CAHN: Okay. Great.

MR. HANSON: Should have an apostrophe.

MS. CAHN: And then on line 1883, when you start talking about the risk activity matrix in Appendix A, it looks a little cryptic to me to just have that appendix and say you're going to have to use this, and not much in the way of any kind of guidance on how to do it. So I don't know if you're planning on a guideline to come out or later a worksheet or something that would help somebody with how to do this. To me, it was -- I don't know if it belongs in the regulation. But at some point, there needs to be some kind of information about how to go from this language to the appendix tables.

MR. TILLMAN: Ms. Cahn, the intent of

Table A or Appendix A was more detailed than what I was -- what I thought was necessary in the actual rule. And that's why I put it as an appendix. So it gave a lot more detail for each of those type of scenarios as to what should be possibly considered. And I thought that -- I guess I didn't consider that to be explained other than it's -- it's obviously more detailed and to be used in their evaluation of making their cost estimate. By all means, if there is some confusion -- we haven't had any comments from industry or from anybody, so those folks that would actually be doing this and making that cost estimate were not -- I would assume that they're comfortable with that table and how to apply it. If there needs to be further clarification, we can have a policy to address that.

MR. FREDERICK: Ms. Cahn, I think your point is that perhaps it needs to be a little bit more clearer as to what the purpose of Appendix A is and what our expectations were to use, maybe. Would it help to perhaps just make that a little bit more clear in terms of say, for instance, those risks identified in Appendix A shall be considered or evaluated during the risk assessment process?

MS. CAHN: That's correct.

MR. FREDERICK: Thank you.

MS. CAHN: And then if we jump to Table A, I had a lot of questions. I'll start with 1.4. After "Acts of God," it says "seismic event." And so my question there is, is that the only act of God that you want them to look at? So is this an e.g. or an i.e.? Is this a "such as," or is this a -- or is that a "that is"?

MR. TILLMAN: I'm confused.

CHAIRMAN BEDESSEM: Well, I think what Lorie's asking is that Item 1.4, "Act of God," in parentheses next to it is "seismic event." So are those synonymous, or are you looking at multiple different acts of God and an example is a seismic event?

MR. FREDERICK: As I recall, that was intended to be an example. However, I think, in my recollection -- Laura, correct me if I'm wrong -- that seemed to have been the most likely type of act-of-God event that might occur here in Wyoming that could be considered. Obviously other types of events associated with, quote, unquote, an act of God certainly may occur. But to try and anticipate what tornado damage, for instance, on an injection site might look like and whether or not that might touch an injection well and destroy it and thus require some type of financial assurance requirement to cover that event, you know, we start getting off into a little bit of the unpredictable.

So I think the focus was really let's at least specifically look at seismic events at a minimum, and whether or not we think there's a need to go beyond that, address that on a case-by-case basis.

Laura?

MS. CAHN: So my question -- go ahead, Laura.

MS. LADD: Thank you, Madam Chair, Ms. Cahn. I just want to highlight, if you look at Appendix A, in most of the major risk events that are outlined, you see act of God as a potential subset of that risk. And in the one, for example, under 5.3, it then says "Acts of God affecting storage capacity of pore space." So it's using a different example.

So the way I think about it -- and it's been some time since we created this chart. But the way I think about that is, what you're really talking about is, taking the first example of mineral rights infringement, these various things which could cause mineral rights infringement. So an act of God, like a seismic event which resulted in mineral rights infringement or trespass or an act of God, going down to the next example, that, probably from a seismic event, that caused water quality contamination. So just like, for example, the formation fluid impact would then cause mineral rights

infringement.

So it's ultimately examples of things which could occur that cause that nature of category to be triggered. So it's not -- I think the answer is you could, frankly, just delete -- you could just have it read "Act of God," because it's really --

CHAIRMAN BEDESSEM: Or you could say "such as a seismic event."

MS. LADD: "Such as a seismic event." That would be easy to do.

MS. CAHN: That was my only question, was whether it was i.e., or e.g., because they mean two different things. And I just thought it should have in front of it either the "such as," or as an example, or "that is," the "i.e."

MS. LADD: Yeah.

MS. CAHN: And so I think in every case where there's a parenthetical, it would be nice to just say, are you wanting to only address the one that's on there, or do you want to address other examples that are like that one? That's all. So it's just a general comment to clarify that.

CHAIRMAN BEDESSEM: And also, while we're in the vicinity of that 1.4 or 2.4 right in the -- the 2.3 --

MR. HANSON: 3.7.

CHAIRMAN BEDESSEM: Yeah. But in 2.3 can we just fix it so it says "contaminants," not "contaminates," so we've got the noun in there twice, as opposed to a verb? Thank you.

MS. CAHN: That also happens on line 7. Should be "contaminants," not "contaminate." And also on line 7.1, "concentrations of contaminant," not "contaminate." And also on line 5, "entrained contaminant gases," rather than "contaminate gases."

And while we're on -- and there's other things like font sizes and, for instance, on page A-2, risk activity table, it's a bigger font than the actual table itself and bigger font than the Appendix A, risk activity table. So there's a lot of font issues on here with just font size. And things like CO2, the 2 should always be a subscript. And that occurs in a number of places, so you could just do a search.

And then I'm confused about the second table, the table that's at the bottom of page A-2 for the compliance activities that will require financial assurance. I'm not sure where this has a reference in the main body or how that relates to -- I mean, it doesn't have a -- it doesn't have like this is Appendix A, Table 2, or -- so it's not clear how that those three

items relate to the proposed regulation.

MS. LADD: Madam Chair, Ms. Cahn, I'm guessing -- I can't remember exactly where that starts from. But, frankly, I would probably recommend, for purposes of where we're referencing Appendix A, that we delete that, because it's -- I'm looking at Bill.

MR. TILLMAN: It was a part of their risk matrix table, And so I just included it with it.

MS. LADD: I think it's covered. That's really why I suggested --

MR. TILLMAN: That's fine. We can delete that.

MS. LADD: But either way, we'll go back and review the genesis of that language and either have it be consistent with Appendix A that's there in terms of how it flows or remove it.

MS. CAHN: Okay. I think I felt like it was redundant. It was really already adequately covered and didn't need a separate sub table or whatever it is.

I have about two or three dozen examples of where "that" is -- "which" is used when "that" is meant that I didn't catch the first time around. So, rather than go through every line number, perhaps I can just send that to either Gina or Laura or Kevin or Bill or whoever you tell me to send that to.

MR. FREDERICK: Send that to Gina, Lorie. Thank you.

MS. CAHN: And then the next question I have is on page 24-16 in the red-line strikeout version, line 762. And this has to do with both line 762 and line 768. So the question I have is the proposed formation testing program. Is this proposed if results need to be in the application? And then on line 768, results of the formation testing program as required in paragraph -- that one above. So is this not in the application? Do you see what I'm saying? It's like one's referring -- seems like one's the cart before the horse and not -- so it's confusing.

MR. FREDERICK: Yeah. I see your point, Lorie. Let me take a look at that.

MS. CAHN: And then the next question I have is on line -- it's on page 24-19, line 890, and the wording -- the request for coverage under the individual permit, it just seems -- and I had this problem before. It just seems -- I don't follow the sentence, which reads, conduct any authorized injection activity in a manner that results in a violation of any permit condition or representations made in the application, comma, the request for coverage under the individual permit. And it just seems like what's in the clause

following the comma doesn't connect to the rest of the sentence.

MR. FREDERICK: Yeah. We agree with that, Lorie. I don't know if that's an artifact or what. But we'll take a look at that.

MS. CAHN: Thank you. Okay. On page 24-22, on line 1054 it says, "Permit continuous monitoring of the annulus space." And I'm just wondering what monitoring is going on and what are you envisioning, what specific parameter that would be continuous monitoring?

MR. FREDERICK: That's essentially annulus pressure.

MS. CAHN: So could we just add in "pressure"? Could we say, "Permit continuous monitoring of the pressure within the annulus space"?

MR. FREDERICK: We'll take a look at that.

MS. CAHN: The next set of comments that I have are on page 24-24. And I'm just quickly looking at how many comments I have to see if maybe we should have a ten-minute break. But I think I'm actually getting very close to the end of mine. And then I could maybe suggest we have a ten-minute break and then go on with the rest of the board comments if that would work. Or do people want -- we've been going a long time. I'm wondering if

we need a bathroom break.

CHAIRMAN BEDESSEM: I think after Lorie's comments, I don't think there will be very long after that. We can probably just wrap it up in about fifteen minutes.

MS. CAHN: I couldn't hear Marge.

CHAIRMAN BEDESSEM: I'm saying if you go through yours, I think we just have a very few short things after that, and we can probably wrap this up in about fifteen minutes. And then we'll take a ten-minute break and change topics. It's still water quality items, but we'll be done with this topic. So please go forward.

MS. CAHN: My next set of comments are on page 24-24. These are on the injection depth waiver requirements. I think in 1141 line number, it would be much simpler English if we could replace the first "the" with "each" and get rid of all the pluralizations. So it would read, "A demonstration that each injection zone is laterally continuous, is not a USDW, is not hydraulically connected to USDWs, does not outcrop within the area of review," et cetera. And the reason is, if we start with the "is/are" and "zone/zones," you have to carry that all the way through all the sentences, "do/does." And I just think that would just simplify the language.

MR. FREDERICK: Yeah, I think that's

reasonable, Lorie.

MS. CAHN: And then on line 1147, we're talking about the report shall contain the following. And then the second -- that sentence says, "The confining unit shall also demonstrate that they are free of transmissive faults." Well, confining units don't demonstrate anything. And since we say the report has to contain the following, I think it could just be a separate (iii) or part of that line just say, "a demonstration that units are free of transmissive faults and fractures."

CHAIRMAN BEDESSEM: And then also in that, for some odd reason, that subset (iii) --

MR. TILLMAN: We just caught that.

CHAIRMAN BEDESSEM: -- is not in the right spot.

MS. CAHN: We caught that on the last one. And for some reason it -- we talked about it last time. Didn't get fixed.

On my -- on page 24-26 on line 1237, the use of the word "first" in the "pressure in the first USDWs immediately above and below," I think it's confusing. And so I would suggest we took out the word "first." You've still got "immediately above and below." So I think it doesn't need to be there, and it would be more

clear to delete the word "first."

MR. FREDERICK: Okay, provided we can get it by EPA. It's their language.

MS. CAHN: Oh, is that EPA language?

MR. FREDERICK: Verbatim.

MS. CAHN: We can never -- I won't say anything. On page 24-36, on line 1729, (A), I would just delete "the" and delete "of" and just make it, "Publishing the notice of the application."

MR. FREDERICK: Yeah. You'd be correcting -- no. We can do that without offending any legislator.

MS. CAHN: This is not directly out of statute?

MR. FREDERICK: No. It's paraphrased.

MS. CAHN: On page 24-41 on line 1972, I think the word "remain" needs to be "remains." Because you have parentheses -- that should be "remain," parentheses, "S," parentheses, to follow the "instrument," parentheses, "S," parentheses.

On page 24-42, in this whole section there's some things that are bolded that it's not clear why they're bolded. So, for instance, on page -- or, line 2009, "by using one or multiple qualifying financial instruments" is bolded. On line 2037 "self-insurance" is

bolded, at least in my copy. On the next page, line 2053, "financial test" is bolded. So perhaps those don't need to be in bold.

MR. FREDERICK: Agreed.

MS. CAHN: And then there's some weird capitalizations in here, as well, as Marge was pointing out. So line 2039 we have "tangible net worth" capped, and in the next line, 2040, it's not capped. And those caps, I think it should just be lower case. Same with line 2040. The word "net" in "networking capital" is capped, but "net" is not capped and "tangible net worth." So I think just check through carefully for those kinds of things.

And that's all I have.

MR. FREDERICK: Thanks, Ms. Cahn.

CHAIRMAN BEDESSEM: And I have one question that's going back to our previous conversation. I'm sorry to go back to this with respect to that special revenue account. So I'm assuming that the reason why a reference to that wasn't included originally is because all the details have to be worked out and what's going to be done with that and how that mechanism would work. So, if you have kind of a generic thing in there that shows the intent to have the special revenue account and that money will be actually collected in that long-term-care

category for that purpose, then once a mechanism is worked out on how that would be charged, whether it be charged with throughput or permit or whatever it is, do you have to come back and change these rules at all, or can that be simply done via a guideline for that special revenue account?

MR. FREDERICK: If I understand the question, do we need to clarify how the -- how the funds actually are provided to the account and managed, essentially?

CHAIRMAN BEDESSEM: Well, I guess I'm just hoping you're going to tell me you can just do a guideline later and that you don't have to do any additional things.

MR. FREDERICK: That's just exactly what I was going to tell you, yes.

CHAIRMAN BEDESSEM: Thank you.

MR. FREDERICK: It doesn't need to be in the rule book. We can address it otherwise.

CHAIRMAN BEDESSEM: Calvin, Klaus, so you have anything that you want to add or comment?

MR. JONES: I don't. Most of my comments have already been covered.

MR. HANSON: Just to add a note of levity, at line 1877 on page 39, it strikes me like coming from

Planned Parenthood.

CHAIRMAN BEDESSEM: Thank you for that note of levity.

MR. TILLMAN: I believe that's under CYA.

MR. HANSON: It says "accident/unplanned events."

MS. LADD: They can be expensive.

MR. HANSON: They can be expensive. Right. Use precaution.

CHAIRMAN BEDESSEM: If there are no additional board comments, the public comment period, then, on this batch ends today. Correct?

MR. FREDERICK: That was the recommendation that we wanted to put before the board, yes, Madam Chair.

CHAIRMAN BEDESSEM: And considering there's only one other individual in the room, do you have any comments that you would like to submit on this particular topic?

MS. TAYLOR: Madam Chair, not on this issue, no.

CHAIRMAN BEDESSEM: Thank you very much. Just wanted to make sure we didn't neglect any kind of public comment, since those comments are to be taken through this board meeting today. Considering that there

have been no public comments up to this point, I don't imagine there is any need to extend this. Is there -- and from your discussion, you're going to move forward with making additional changes to accommodate your -- the checking between the federal rule and the cross-vending and come back with that.

So, at this point, the board has just essentially been educated and provided comments on what the changes have been to date, and then we will see this rule again in the next meeting that hopefully you will set or at least get the dates narrowed down at the end of today's meeting and expect to see that package at that time. Is that a correct summary, Administrator Frederick?

MR. FREDERICK: Yes, Madam Chair, I think that's correct. We will make those changes to this regulation that the board suggested we consider today and bring this back before the board for a recommendation and rule before the Council at the next meeting. I hope to also be prepared to also be able to present to the board then the crosswalk changes that we'll need to reconcile in order to move forward with the primacy. But I think I would prefer to handle those as two separate actions before the board. So I think that's what we'll do. We'll bring back the revisions here, and then we'll also

bring in proposed crosswalk changes.

CHAIRMAN BEDESSEM: Do you then have to public-notice the crosswalk changes?

MR. FREDERICK: Yes, ma'am.

CHAIRMAN BEDESSEM: And then you'll have -- you will suggest two separate actions, but then you'll have a combined version?

MR. FREDERICK: Ideally --

CHAIRMAN BEDESSEM: Ideally, if both are affirmative actions that you could present to EQC?

MR. FREDERICK: Yes, ma'am.

CHAIRMAN BEDESSEM: Any other comments from the board? I just wanted to thank all of you for a very excellent presentation and clarification.

MS. CAHN: I have a question.

CHAIRMAN BEDESSEM: Go ahead, Lorie.

MS. CAHN: I don't understand why we're going to have two separate actions. Is there no reason we can't combine the crosswalk table issues with the changes to this? So that's not clear to me why there are two separate actions and not one.

MR. FREDERICK: I can't anticipate what the board's reaction is going to be to the crosswalk changes when they come in. And I do feel somewhat comfortable that the board will be ready to move the

financial assurance requirements at the next meeting. At least I'm optimistic they'll be ready to do so. So I don't want to delay that simply because there may be issues with the crosswalk changes. They're a little bit -- they've got the potential to be a little stickier. So that's why I suggest or recommend two separate actions.

MS. CAHN: But the crosswalk changes are going to be part of Chapter 24. Correct?

MR. FREDERICK: Yes, ma'am.

MS. CAHN: So it seems funny to -- so you would want us to send part of Section 24 on to EQC without the other part of it and then -- I'm confused. And then have the crosswalk table changes then go separately and change it again to go to EQC?

MR. FREDERICK: No. My objective here is to keep things moving as expeditiously as possible. And certainly I believe you support that, as well. I minimize my risk in delay by separating these two actions. I have no problem taking the financial assurance regulation before the EQC and then having -- or, coming back before the EQC again with the crosswalk changes. That doesn't cause me any problem whatsoever.

MS. CAHN: So the issue basically of primacy is being addressed separately, and that would be

delayed?

MR. FREDERICK: Yep, exactly.

MS. CAHN: Okay. I understand. Thank you.

CHAIRMAN BEDESSEM: Anything else from the board?

(No response.)

CHAIRMAN BEDESSEM: Again, thank you for an excellent presentation on this particular topic, and we look forward to discussing it again at the next meeting.

MR. FREDERICK: Thank you, Madam Chairman. And I'd like to thank especially Ms. Ladd for participating in the presentation today. I didn't mention that Ms. Ladd has been involved in assisting us in developing these regulations and will continue to do so as a consultant to the Department, through the Council, to the governor.

CHAIRMAN BEDESSEM: And so is the next topic the update on the previous rules and their status? Why don't you give us that, and we'll take a ten-minute break. Because I'm assuming that will just be a couple of minutes.

MR. FREDERICK: The chapters that are described on the agenda here, Chapters 15 and 25, have

been before the advisory board and then moved to the Council. The Council will be hearing these on July 8th in Cheyenne. And just for your reference again, the board had requested that we also attach a letter to Chapter 25 to the Council -- or a memo, I should say -- that kind of explains in detail where the board did not achieve unanimous consent on certain sections of the regulations and our response to that. I think you've all seen a copy of that.

MS. CAHN: Excuse me. I don't think I've seen a copy of the letter that you ended up sending to EQC. So, if I could get a copy of that, I would appreciate it.

MS. THOMPSON: Hey, Lorie, it's Gina. We incorporated your edits as requested back in December or early January. And I hard-copied a -- or, I mailed a hard copy to each of you. You're on the cc'd list for that letter. So you should be receiving that within the next couple of days. Because it went out on the same date that the notice of intent went out to the Secretary of State, and the public notice was published in the Casper Star-Tribune, and our Listserv was sent out, as well. So the board should be receiving a copy of that memo. And it's also uploaded to the EQC's docket website for that particular docket. And I believe it's Docket

Number 15-3101. And all of the associated documents for that chapter are on the EQC's website.

MS. CAHN: And that's for Chapter 25?

MS. THOMPSON: 15 and 25. That is correct.

MR. FREDERICK: In the mail.

MS. CAHN: And the date of that EQC hearing is what?

MR. FREDERICK: July 8th in Cheyenne. That's also noticed on the EQC website.

Okay. Madam Chair, real quickly, Chapters 8, 9, 13, 16, these, again, are part of the rule reduction initiative of the governor to streamline rules and regulations. Essentially, these are UIC rules and regulations, one for Class V wells, one for Class VI wells. Did I say VI? I and V. And we're combining them into one chapter, Chapter 27. So that's going to be before the EQC on the 8th also.

MS. THOMPSON: We wanted to note that our original proposal included Chapter 9. But after further consideration, we've withdrawn our request to revise Chapter 9 with the rest of those revisions. So the notice to the Environmental Quality Council and the notice of intent excludes Chapter 9. It will remain as it is.

CHAIRMAN BEDESSEM: And why was that decided?

MR. FREDERICK: I'm glad you asked. You know, in retrospect, it occurred to me that 9, as well as 8, were essentially the primary fundamental regulations in place at the time that the State applied for primacy for the UIC program. Over the years, EPA has struggled with meeting the requirement that they stay abreast while the regulatory changes that were made to the state's primacy programs. So, rather than muddy the waters further, it's my recommendation and my decision, I should say, that we're going to leave 9 as it is.

So the discussion at some future time, which I'm sure will occur after I'm gone, EPA will be knocking on the door, saying, whatever happened to Chapter 9, and why did you repeal it, and shouldn't you have perhaps consulted with us more closely on that before you decided to do that? Because it's a fundamental document.

And also upon closer inspection, there's some key regulatory language in Chapter 9. Not a lot. But there is some what I think is critical language to maintain in place as a regulation that the Department can utilize primarily with respect to spills and releases. It's my opinion that there's regulatory language in there that allows us to essentially proceed with enforcement

actions for spills and releases. And these are oftentimes intentional. Without the need to collect the level of documentation and evidence that we normally are able to collect for spills and releases that are unintentional and are -- are those where operators are complying with notifying us of a spill and release and providing us information and so forth that we can then use to assess environmental damage. And the intentional spills and releases, we oftentimes get involved after the fact or during the act itself, oftentimes without necessary equipment we need to take a sample, whatever is being leaked out of a truck or we notice on the ground.

The language in Chapter 9 essentially says that a release to the vadose zone that has the potential to impact groundwater requires a permit. It's much more easier for us to document and take action on -- I should say it's easier for the Department to document that there has been a release to the vadose zone that may impact groundwater, as opposed to the alternative, that, indeed, the release is significant enough that an impact will occur. So I think there's some subtle differences there that are worth preserving and would like to relinquish those by reviewing Chapter 9.

CHAIRMAN BEDESSEM: Thank you much for that explanation. And then is -- this is material that's

moving forward, and your department is also working on changes to Chapter 12, I assume?

MR. TILLMAN: Yes.

CHAIRMAN BEDESSEM: Yes?

MR. TILLMAN: Yes.

CHAIRMAN BEDESSEM: That may be down the pike?

MR. TILLMAN: Madam Chair, yes. The water, wastewater section is currently revising Chapter 12. I'm in the middle of that, as well. And that's down the road. I can't say exactly when that will be done or ready to present to the board. Probably more like early next year. First quarter is my guess, somewhere in that neighborhood.

CHAIRMAN BEDESSEM: Thank you. Are we ready for break now? Okay. And then we'll discuss the electronics submissions after break.

(Hearing proceedings recessed 11:33 a.m. to 11:50 a.m.)

CHAIRMAN BEDESSEM: I'm calling to order again the Water and Waste Advisory Board meeting. We are -- on the agenda, we're up to Director Parfitt's response regarding the electronic submittal of comments. And Administrator Fred -- Frederick -- I'm having trouble with your last name today -- will speak regarding that

issue.

MR. FREDERICK: Thank you, Madam Chairman. I believe you all have had an opportunity to see Director Parfitt's response to the board's request for DEQ to consider taking electronic public comments on actions that the Department brings before the public. And as a reminder, that includes not only developmental promulgation of rules and regulations that the Department is interested in developing, but it also includes several types of different permits the Department issues that require public notification and an opportunity to comment. As related to today's conversation, those do include the majority of UIC permits for Class I wells, for Class V wells and for carbon sequestration Class VI wells, not to mention permits that are also issued by other divisions in DEQ; in particular, Air Quality Division.

I think Director Parfitt pointed out in his letter to the board members that DEQ issues approximately 140 different permits, individual permits for public notice and public comment each month on the average, so that perhaps recognizing again what the director noted in his letter, that DEQ probably is the singular agency with the heaviest lift in terms of providing opportunity for public comment on actions that the Department takes.

So it's something that obviously has a potential to affect not only the workload at the Department, and I'm talking specifically about taking electronic comments, but also may lead to the need for additional resources to support that effort. We simply don't know yet until we begin to get into this uncharted waters a little bit.

And I think fundamentally the director also pointed out that there's an important distinction between taking comments by e-mail, as opposed to providing the opportunity for the public to provide comments through an electronic format. And I think he articulated some of the issues with taking e-mail comments and why that's not the direction that we would recommend going down.

So, after our last meeting before the board, we certainly carried back the board's interest and concerns that we probably were not moving quickly enough in looking at opportunities for electronic comment delivery, despite the fact that it was something that was on our radar screen, and we had looked at it. We had been looking at it. But I think the prompt that we received from the board was a timely one, and I think we're responding accordingly.

So, that said and without further delay, we have developed an overview presentation that Gina

Thompson and Bill have developed regarding essentially the work that we've done in the interim to explore this issue and provide the board with an update on where we're at and our thoughts on how we're going to proceed.

Finally, I think it's our intent to try and initiate a test of this electronic comment delivery mechanism before the -- before the board at its next advisory board meeting relating to a rule-making package that I think Solid and Hazardous Waste is going to be presenting before the board. This will give us an opportunity to at least see how well the system works and also provide an opportunity to see if there's any issues and problems that arise. I think the director wants to make sure that we get this thing right and focus primarily on using it for rule development initially, and that will help better inform the decision as to how we would proceed with electronic delivery of comments on permits and things like that, other actions before the Department.

So, with that, I'll let Gina and Bill kind of explain where we're at.

MS. THOMPSON: Thank you, Madam Chair. Bill and I have been researching the use of electronic means for commenting with other state agencies. And the other agencies within the state have developed forms

using the Google platform Google Forms. One such agency in particular is the Office of the Game and Fish, and they take their public comments concerning guidance and rule-making proposals through their websites, where an interested citizen, an interested party, can visit the Game and Fish website, fill in the required information, such as their name, and manually type in a comment, hit a submit button, and the Game and Fish receives the comment electronically.

We developed a test of a similar form using their -- using their form as a template, and we distributed it to our rule-making team back at DEQ. The form included a required field such as first and last name, what is your address, and we made the manual comment box a required field, as well. These required fields are helpful because the commenter can't accidentally submit a blank comment if these are marked "required." They have to fill it out entirely and then hit "submit" or it doesn't really let them go any further. So it prevents a lot of weird confusion on their part and ours.

So we conducted a test with our rule-making team and had them send us feedback. And we noticed a number of limitations that DEQ would be interested in resolving that other agencies might not have the same

level of need.

MR. TILLMAN: One of the reasons why I guess the in-depth and across-the-board look at it is Director Parfitt wanted to make sure we had basically a single mechanism that can be used agency-wide. And there are certain groups, namely Air Quality and also the watershed group, their comments to proposed rule-making and policies and things like that get fairly detailed, and the comments involve charts and graphs and other tables and things like that. So there's some limitations to the basic forms and things that we noticed that the Game and Fish had used that we would need to incorporate again across our entire agency. So now we're looking at a means to address those needs.

And there's been two or three different options, some that cost money, some that didn't. Obviously we're looking for the least cost because we don't necessarily have the funding, at least presently, to put towards the additional resources. So, again, that's something that is necessary for other agencies, not necessarily for our agency. Again, our comments tend to be typically just text and not involve --

(Phone ringing.)

MR. TILLMAN: As I was saying, our comments tend to generally involve text, as opposed to

additional attachments. So, to make it more complete and robust, we're still doing some further research to make sure that, can we have something that can be used across the agency with slight variations, but the basic template would be the same? So, again, we're doing a little bit further research on that.

Madam Chair?

CHAIRMAN BEDESSEM: It seems like you would want to have an avenue where you can upload documents. Because if you've got a municipality, for example, where they want to have an official submittal where you know you have the appropriate representative and you have whatever attachments, because they've been approved, so they can upload the document, and it seems like that is something that every one of your divisions would need, regardless of whether there's -- it's a PDF and whether it has graphs or tables or whatever.

MR. TILLMAN: And like I said, our experience, or at least my experience, I haven't seen that from Water Quality. But again, from the watershed group, I know Air Quality, that is definitely a necessity that they need to have as a part of the electronic submittal or responses. So, again, we're trying to make sure that what we provide to Director Parfitt is something that's agency-wide useful and that, again,

costs the least amount of money and least amount of resources.

MS. THOMPSON: So our current status on this particular project is that we're working out details with ETS to determine if we can easily address the upload concern or if we are going to need to draft a work order and fund said work order. And we'll be continuing consultation with them and will probably have additional information for you when you're ready to launch this.

One of the -- one of the concerns with taking e-mail comments was the additional workload that it would potentially mean for us. And there were security concerns, as well, things such as our robust spam filter at the State preventing potential comments from getting through. And then on our side of it, we were very concerned that we would encounter a lot of spam, that it wouldn't be meaningful real comments but that it would be some sort of robotic spam launching.

And the direction that we seem to be headed is definitely a tie-in with Google Forms. The State currently operates on the Google platform. And we have forms easily available to us. So it doesn't require -- like the basic idea is that if we use that, we don't have to purchase additional software or licensing.

And there are a number of workflow perks to

using Google Forms, such as, when a commenter enters a comment or does -- you know, potentially down the road doesn't upload, Google translates all of that information into an Excel spreadsheet, a master spreadsheet, which would eliminate a lot of data entry on the part of DEQ staff, and it would also allow us to do some additional analysis. Especially for comment periods where we received a lot of comments, it would allow a little bit better analysis than working in a traditional paper/pen way allows.

So we're excited to pursue that. And again, we are continuing our competition with ETS. Because once we get these public comment issues resolved, we would like to potentially translate this form idea to other business that DEQ conducts that the function is the same but it might apply to a different program. So we're just -- we're excited that this is heading in the direction that it is. And it looks like it will be ready fairly soon and fairly smoothly.

MR. FREDERICK: I think optically what this would ultimately look like is the public would have an opportunity to go directly to our website. They would then see a link that would allow them to go directly to the comment form. We envision that, in all likelihood, it would be multiple opportunities to comment on

different rule-making activities or permits at the same time. So somehow we're going to have to distinguish and make sure that the comment on a particular rule or permit is directed to the appropriate form and so forth.

I think we also envision that the public notices that we post on our website and that we send out electronically to our mailing list would ideally contain a link that you could essentially click on, and then that would direct you right to either the website or the form or something like that. So we want to try and make this as efficient as possible. We're kind of excited about it. We're a little nervous about it, I guess, in terms of the change to the way we do business.

The spreadsheet opportunity that Gina was referring to provides search capabilities. I see some benefit in that in terms of trying to identify key issues or comments that are presented in the spreadsheet and for us to be able to more easily tease those out. I think it's also going to make it easier, perhaps, for us to develop a response to comments, because historically the approach had been that we have to enter all that response into a Word document or whatever, and now we should be able to cut and paste a lot of that. So I think there's some positives for us to gain from this, as well.

CHAIRMAN BEDESSEM: Before the board

comments on anything, is there -- are there any comments from the public regarding this electronic comment issue?

Come forward to the microphone.

MS. TAYLOR: Madam Chair, do you mind if I approach the table?

CHAIRMAN BEDESSEM: Yeah, that's fine. And announce your name and who you represent, please.

MS. TAYLOR: So my name is Megan Taylor, and I represent the Powder River Basin Resource Council. And to begin, I just want to thank the Water and Waste Advisory Board and the DEQ for taking on this important issue. We understand that there are hurdles that need to be overcome, but I can let the board know that the Powder River Basin Resource Council has filed a rule-making petition with the Environmental Quality Council to kind of spur the agency to look into electronic comments. We really want this conversation to happen in a public forum. We want the public to be fully engaged with this process, especially as the conversation turns towards electronic kind of options available to the DEQ. We also want other divisions of the agency to be involved in this conversation under the public eye.

So we noticed that the DEQ is favoring a Web-based form. And we just want to raise concerns we found with Web-based forms. Many Wyoming residents live

in rural areas that have slow Internet speeds. And also, some of these Web-based forms require software to be downloaded in order for that form to function properly. So this can be a barrier to public participation. And I just want to make sure that these public access concerns are addressed if the DEQ does decide to go with the Web-based form.

Also, we're happy to hear that you've actually considered the uploading of documents. That's very important to our organization and to our members. Sometimes their rule-makings are projects that require us to submit many exhibits. And we just want to make sure that the form has adequate space for us to submit those uploaded documents.

Also, we ask the agency to have the form where you can actually copy and paste into the text on the form, rather than typing into the form directly, just because it can be easier to format and spell-check and draft your comment in a word-processing program and then copy it over, rather than have to e-mail them separately and worry about things going wrong.

And we just had one question. We noticed in the letter DEQ sent to the Water and Waste Advisory Board that it was found to be cost-prohibitive for the agency to institute e-mail comments because you have to set up a

separate e-mail account for each project deserving of public comment. And we just wanted to know if the agency considered just having a separate e-mail account for each division, and if that was considered, why that option was discarded. That might help save on cost.

Thank you so much for allowing us to comment.

CHAIRMAN BEDESSEM: Thank you very much.

Anyone else?

(No response.)

CHAIRMAN BEDESSEM: Okay. Administrator Frederick, did you want to say anything with regard to those items other than --

MR. FREDERICK: The question that was asked on separate e-mail accounts, do we have anything to respond to that?

Madam Chair, if you wish further clarification on the concern that the previous speaker mentioned with respect to the need for more than one e-mail account for each division, that's something I would have to go back and investigate a little bit further. I can't provide a response to that right now.

CHAIRMAN BEDESSEM: I just wanted to mention that Megan listed a number of things that she thought were important to her constituents as far as options within the form. I belong to a number of groups

where I need to submit -- fill out forms and submit the forms. And one problem I always run into is the inability to print the form before I send it. And then I hit the "send" button. And if I don't get an e-mail response saying it's been received or whatever, I don't really know that they got it and what they got, and so to give the commenter the option to at least print the form so they know what they submitted on what date and that it had been received would be appreciated.

MR. TILLMAN: Madam Chair, one of the things with Google Forms that is -- one of the things that's good to have about that is that when someone from the public submits a comment, they will get a, "Thank you for your comment," so they know that it has been submitted. And Google Forms also has a way to track any submission. Whether it was submitted with a comment or not, we have a way of tracking that. So none of them get lost. So there is a way for the public to know that their comment was received. And we can demonstrate and we can show a listing of all the comments that have been received. So, again, if there's any discrepancy from the public saying, "Well, I sent it, and you guys didn't get it or didn't do anything," we can very easily document that with the Google Forms.

CHAIRMAN BEDESSEM: But also the ability

to print, as well, so that they know what it is that they sent.

MS. THOMPSON: Right. And I believe that since we are using -- our direction is to go towards using Google Forms as a browser-based form, that would allow you to print it within your browser. So you would be able to print the page that you're looking at using your browser menu. So that would be -- that would allow you to do that.

CHAIRMAN BEDESSEM: I just know that sometimes when there's a box and you scroll it in the box, if you're printing, you end up with a print screen. You end up with a quarter of the box. You don't actually know what it is that you submitted. So that's just a concern. Those are just minor details. I am just pleased that, rather than putting off any kind of electronic submission for years, that there is an effort being made toward getting this done. And we always will need to be able to receive paper comments because there are still lots of people who aren't -- you know, have slow Internet speed who are not on computers who have -- should have the ability to provide comments just as everyone does that has a computer. So there should always be all those avenues.

Any comments from board members? Klaus,

Calvin, Lorie?

Lorie, do you have any comments?

MR. HANSON: No. She's shaking her head. I can see her.

CHAIRMAN BEDESSEM: Okay. You can see her? Okay. It's hard to see body language on that.

Thank you very much. Very pleased to have this response as something that we can move forward. And Mr. Applegate let us know via e-mail that he was okay with this process. And so we look forward to hearing updates in the future on how that's going and seeing the first test with, I don't know, perhaps Chapter 2 revisions. I don't know. Depends on what Solid and Hazardous Waste --

MR. TILLMAN: Yeah. Madam Chair, I think they have a rule coming up shortly that we have an opportunity to test with that.

CHAIRMAN BEDESSEM: Sounds good. Thank you very much.

(Hearing proceedings concluded 12:16 p.m., May 7, 2015.)

C E R T I F I C A T E

I, RANDY A. HATLESTAD, a Registered Merit Reporter, do hereby certify that I reported by machine shorthand the proceedings contained herein constituting a full, true and correct transcript.

Dated this 26th day of May, 2015.

RANDY A. HATLESTAD
Registered Merit Reporter