

POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON

WASHINGTON STATE DAIRY FEDERATION,)
the WASHINGTON FARM BUREAU, PUGET)
SOUNDKEEPER ALLIANCE, COMMUNITY)
ASSOCIATION FOR RESTORATION OF THE)
ENVIRONMENT (CARE), FRIENDS OF) PCHB No. 17-016(c)
TOPPENISH CREEK, SIERRA CLUB,)
WATERKEEPER ALLIANCE, CENTER FOR)
FOOD SAFETY, and RESOURCES FOR)
SUSTAINABLE COMMUNITIES,)
)
Appellants,)
)
vs.)
)
STATE OF WASHINGTON, DEPARTMENT OF)
ECOLOGY,)
)
Respondent.)

HEARING
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Taken Before:

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1 BE IT REMEMBERED that on Tuesday,
2 May 22, 2018, at 1111 Israel Road SW, Olympia,
3 Washington, at 8:52 a.m., before ANDREA L. CLEVINGER,
4 CCR, RPR, the following proceedings were had, to wit:

5

6 <<<<<< >>>>>>

7

8 JUDGE FRANCKS: So in the last day or
9 this morning, I received information about the Reck
10 deposition transcript. From the dairy federation, I have
11 received deposition designations, and from PSA, I have
12 received a letter with objections to those designations.

13 So I will deal with that, but I'm not prepared to
14 deal with it right now, so the question for you all is:
15 Does -- when do we expect to be asking any witness about
16 the deposition?

17 MS. HOWARD: Your Honor, it's possible
18 we will do that during Mr. Jennings' testimony this
19 morning during cross.

20 JUDGE FRANCKS: Okay. So then I have
21 to do it, which means we delay this morning. All right.
22 Anything else that we need to talk about before we
23 commence this morning?

24 MS. HOWARD: Your Honor, do you want
25 me to respond to the filing last night?

1 JUDGE FRANCKS: Is that -- I thought
2 you had another issue.

3 MS. HOWARD: Oh, no.

4 MS. NICHOLSON: Just that one.

5 MS. HOWARD: That was our issue.

6 JUDGE FRANCKS: Okay. There you go.
7 I think I have enough information, so I -- unless you
8 have a solution, unless you have a proposal about the
9 designations.

10 MS. HOWARD: Well, so the
11 designations, we sent those to you yesterday by email,
12 but we have provided those all to the parties last week,
13 so that was just an oversight on our part that we hadn't
14 got that into your record. What you guys had was a clean
15 copy of the transcript.

16 JUDGE FRANCKS: Right.

17 MS. HOWARD: And then yesterday we had
18 talked about -- Ms. Barney and I talked about there's one
19 document that she had raised an objection to during the
20 deposition. We did speak about that during a break
21 yesterday, and I'm going to -- let me make sure I get
22 this correct, Ms. Barney.

23 So they would like to maintain their objection but
24 didn't object to designating that portion of the
25 transcript. So the designated transcript that you have

1 includes both our objection but also the section that
2 followed, that related to a particular document that she
3 objected to on foundation.

4 I'm probably giving you too much information and
5 making it too confusing, but I just wanted to make sure
6 that was clear, that we had conferred on that and we're
7 in agreement that that portion of the transcript would
8 still be designated.

9 JUDGE FRANCKS: Okay. So, Ms. Barney,
10 let me just ask you: So the portion that you were
11 concerned about is designated and you want it to remain
12 designated.

13 MS. BARNEY: Yes. That's fine as it
14 is.

15 JUDGE FRANCKS: Okay. That's what I
16 needed to know.

17 Okay. Do we know exactly what that is? That would
18 be helpful.

19 MS. HOWARD: Yeah. And I can find it
20 for you. It was with regards to an email from Sally
21 Fredwig (phonetic). I can just find it really quick. I
22 think it's on Page 67. It starts on Page 65, Line 11,
23 and goes through Page 67, Line 16. That's where we're
24 discussing that particular email.

25 And Ms. Barney's objection is on top of Page 66.

1 JUDGE FRANCKS: Okay. All right. So
2 Page 65, Line 11, to Page 67, Line 16?

3 MS. HOWARD: Correct.

4 JUDGE FRANCKS: All right.

5 MS. HOWARD: And then the only other
6 thing I think we would maybe add is -- we did share this
7 with Mr. Tebbutt when he raised this similar objection
8 last week, is that -- and I think this is obvious from
9 the transcript, so I apologize if it is -- that the
10 attorney for NRCS was present throughout the entire
11 deposition and was specifically ensuring that we stayed
12 within the scope of the purpose of Mr. Reck's testimony,
13 which was to address the NRCS Standard 313 and the basis
14 for it.

15 And there were a number of -- maybe a number of
16 times is too much, but there were a few times where she
17 specifically would stop the deposition and ensure that we
18 stayed within that scope.

19 So to the extent that there are objections being
20 raised related to whether we stayed within the scope of
21 the purpose of the testimony as determined by NRCS -- and
22 you repeated that as well on your ruling -- there was --
23 she was there specifically, obviously for other purposes
24 as well, to defend her client, but she very much was
25 paying attention to that, to ensure that we stayed within

1 those bounds throughout the deposition.

2 JUDGE FRANCKS: Okay. Yes. And I've
3 read the deposition. I just haven't -- I haven't had a
4 chance to line up the things that you were objecting to
5 and assess whether they fit within the scope of what I
6 ordered.

7 So that's what I'm going to do. So I would say
8 let's plan to begin at 9:30, and I will come back when
9 I'm done. So if it takes a little longer, that's because
10 I'm still doing it.

11 MS. HOWARD: Thank you, Your Honor.

12 JUDGE FRANCKS: And we're off the
13 record.

14 (Recess from 8:58 a.m. to
15 9:31 a.m.)

16 JUDGE FRANCKS: Let's go back on the
17 record.

18 So I have reviewed the Reck deposition, and I have
19 reviewed the objections submitted by PSA, and I have
20 looked at each and every entry that PSA objected to, and
21 I have concluded that those all relate to the basis for
22 Standard 313, which is what the issue is that NRCS is --
23 we needed their testimony about.

24 So I am going to leave the deposition designated the
25 way it is, but let me just check the logistical question.

1 So the hyperlink that we have is to just the blank
2 deposition -- not blank, but undesignated?

3 MS. HOWARD: That's correct, Your
4 Honor.

5 JUDGE FRANCKS: Okay. But I can have
6 Lynn take the designated version that I have now and fix
7 that.

8 MS. HOWARD: That's right. That's why
9 we emailed it. And we also provided you with binders,
10 and the binders are also not designated version, so I
11 apologize. It was a little bit of a fire drill, trying
12 to get that all together.

13 JUDGE FRANCKS: Okay. What I'm going
14 to do -- I'm not going to have her do that right now just
15 because that would delay us more, but -- so I think, if
16 we need to look at it before she has a chance to do that,
17 we'll just look at the undesignated version.

18 But I have the designated version in front of me, so
19 we can ascertain whether -- whatever we're talking about
20 has been designated or not.

21 Okay. So --

22 MR. SNYDER: Your Honor, just for
23 preservation purposes, I want to make sure that our
24 objection to this testimony as outlined in our letter is
25 on the record.

1 JUDGE FRANCKS: You filed it, so, yes,
2 it's on the record.

3 MR. SNYDER: Thank you.

4 JUDGE FRANCKS: All right. Let's go
5 off the record, and I will be back in one minute with the
6 board.

7 (Pause in the proceedings.)

8 (Board members enter.)

9 JUDGE FRANCKS: You may sit down here.
10 All right. We are back on the record. And we are
11 resuming Day 2 with Mr. Jennings on cross.

12 Ms. Matsumoto, you may proceed.

13 CROSS-EXAMINATION (Continuing)

14 BY MS. MATSUMOTO:

15 Q Thank you. Good morning. Good morning, Mr. Jennings.

16 A Morning.

17 Q I want to revisit a couple things from yesterday before
18 moving on to the new subject areas, and just I will note
19 for the record we also have Mr. Jennings on our witness
20 list, so it's sort of a combined direct and cross.

21 Yesterday you talked about phosphorus. Ms. Barney
22 asked you some questions. Do you remember that?

23 A Yes.

24 Q Okay. And was it your testimony yesterday that the
25 combined permit includes limitations based on phosphorus

1 for land application?

2 A Yes, I believe it was. I'd have to look at the record to
3 see my exact testimony.

4 Q Can we look at Exhibit A-6. Oh, and, again, you'll need
5 those binders behind you, definitely the two in the
6 middle.

7 JUDGE FRANCKS: Oh, Ms. Matsumoto, we
8 need a mic for the court reporter.

9 MS. MATSUMOTO: Sorry about that. My
10 apologies.

11 Q (By Ms. Matsumoto) Mr. Jennings, do you have A-6 in
12 front of you?

13 A Yes.

14 Q Okay. Could you tell us what that document is called?

15 A This is for consolidated case 07-016C, "Appellants Puget
16 Soundkeeper Et Al.'s First Set of Requests for Admission
17 to Washington State Department of Ecology and Ecology's
18 Answers Thereto."

19 Q Have you seen this before?

20 A Yes.

21 Q And could you turn to Page 20, please.

22 A Okay.

23 Q Could you read Request for Admission No. 47 and then the
24 response that continues on the following page. 47, I
25 believe, is at the bottom of Page 20.

1 A Okay. "Request for Admission No. 47: Admit the combined
2 state federal CAFO NPDES general permit does not limit
3 land application rates based on phosphorus."

4 Q And the answer on the following page is?

5 A The answer on the following page is "Response: Admit."

6 Q So wouldn't you agree, in written discovery, Ecology
7 represented that the combined permit, in fact, does not
8 limit land application based on phosphorus?

9 A I would disagree with that. Because the question here
10 was land application rates, which is different than a
11 nutrient budget. A nutrient budget is what would
12 actually determine the total amount of phosphorus that --
13 excuse me -- may be land applied.

14 The application rate is just the rate at which
15 manure or other materials is applied at one time.

16 Q But just looking at this request for admission that's
17 right in front of you, wouldn't you agree that, in
18 written discovery and under oath from I believe your
19 supervisor Bill Moore, Ecology admitted that the combined
20 permit doesn't limit land application based on
21 phosphorus?

22 You read the response. It says admit; is that
23 correct?

24 MS. BARNEY: Objection. Asked and
25 answered.

1 MS. MATSUMOTO: I don't believe I got
2 a clear answer, actually.

3 JUDGE FRANCK: I'm going to overrule
4 the objection. I think it was a different question.

5 A Okay. Can you repeat, please.

6 Q (By Ms. Matsumoto) I'm asking just what's in front of
7 you in written discovery and what was produced to us
8 throughout the course of this case, which is that RFA 47
9 states or asks Ecology to admit that the combined permit
10 does not limit land application based on phosphorus, and
11 the response is -- you just read to us -- says "Admit,"
12 does it not?

13 A The response in here is admit, yes.

14 Q You talked about tile drains yesterday, and Ms. Barney
15 was asking you some questions about tile drains in the
16 context of agricultural stormwater.

17 Do you remember that?

18 A Yes.

19 Q Okay. And you had testified that discharges from tile
20 drains into surface waters or other ditches would not be
21 agricultural stormwater; correct?

22 A I believe so, yes.

23 Q And the reason for that is that it bypasses the edge of
24 field practices that you talked about yesterday?

25 A Correct.

1 Q And so in that case, the permittee, if they're
2 discharging from tile drains, would not be in compliance
3 with the permit because those would be unauthorized
4 surface water discharges; isn't that right?

5 A If the discharge is from the activities taking place on
6 the land, that would not be an authorized discharge.

7 Q And there's no surface water monitoring required at tile
8 drains, is there?

9 A Well, there would be visual monitoring as part of the
10 field edge practices that's required as part of the
11 permit, visual inspections to make sure the practices are
12 working, but specifically for a tile drain, no.

13 Q That's right. No surface water monitoring at tile drains
14 to monitor for discharges; correct?

15 A To monitor what's coming out of the tile drain?

16 Q Yes.

17 A No. We don't have that monitoring.

18 Q And so, as you stated, there's a possibility that an
19 unauthorized discharge could be occurring from the tile
20 drains, and there's no monitoring required, so Ecology
21 won't be able to know whether surface water quality
22 standards are being impacted by those unauthorized
23 discharges from tile drains, will they?

24 A So we would not actually measure what is coming out of
25 the tile drain, no. The permit wouldn't require actual

1 monitoring what's coming out of the tile drain.

2 Q Okay. Could you turn to Exhibit A-58, please.

3 Oh, A-58. Sorry.

4 A Okay.

5 Q Do you recognize this document?

6 A I believe this is an email chain I was shown in my
7 deposition.

8 Q Could you just briefly tell us what it is.

9 A This is an email chain, it looks like, to Melissa
10 Gildersleeve from Ron Cummings, and this is an email
11 chain for an email that is expressing Ron's concerns
12 about some of the decisions that were made in the CAFO
13 permit.

14 Q And who's Ron Cummings?

15 A Ron Cummings is another Ecology staff member in the
16 watershed management section of the program.

17 Q Was he involved in drafting this permit?

18 A Yes. He did participate in some of the development
19 discussions.

20 Q Okay. Could you please read the second paragraph for us.

21 A So the one that starts with NRCS Tech Note 14?

22 Q Yes.

23 A Okay. NRCS Tech Note 14 specifically states that winter,
24 parentheses, October 1 to March 1, manure applications
25 are not allowed if the fall soil nitrate test is greater

1 than 60 pounds NO3 an acre, approximately 17 parts per
2 million.

3 Q That limitation isn't reflected in the permit, is it?

4 MS. HOWARD: Your Honor, we're going
5 to object on this just because Tech Note 14 isn't
6 actually before the witness, and so we're -- the witness
7 is being asked to comment on an email in an email chain
8 that he wasn't actually even involved in about a tech
9 note that isn't in front of him.

10 So that was a really long objection. I apologize,
11 but I think that's a foundation objection.

12 MS. MATSUMOTO: Mr. Jennings has
13 already stated that the center of the email is somebody
14 that he worked closely with in drafting the permit.

15 MS. BARNEY: Objection. Misstates his
16 testimony.

17 JUDGE FRANCKS: I'm going to sustain
18 that objection because I think it does misstate his
19 testimony.

20 But what was the question that you asked him?

21 MS. MATSUMOTO: I believe I had just
22 asked him to read the second paragraph and hadn't
23 asked -- oh, I actually asked if that -- what was in the
24 second paragraph was reflected in the combined permits.

25 JUDGE FRANCKS: I am going to sustain

1 the foundation objection. So let's move from there.

2 MS. MATSUMOTO: Just as a housekeeping
3 matter, I would like to move for admission of
4 Exhibit A-6.

5 JUDGE FRANCK: A-6 is admitted.

6 (Exhibit No. A-6 admitted.)

7 Q (By Ms. Matsumoto) Could you tell us the date of this
8 email, Mr. Jennings?

9 A Looks -- the sent date on this email is January 24th,
10 2017.

11 Q And you mentioned, when I first showed it to you earlier,
12 that it looks like it was something that was used in your
13 deposition?

14 A I believe that's where I recognize it from, yes.

15 Q So you've read this email before?

16 A Just during my deposition.

17 Q But the contents of it then aren't new to you, as we sit
18 here today? It was something that was used in your
19 deposition; is that correct?

20 A Yes.

21 Q Okay. Did you have any conversations with Mr. Cummings
22 about his concerns expressed in this email?

23 A Not that I recall.

24 Q Did you have any conversations with anybody about Tech
25 Note 14?

1 A Not that I recall either.

2 Q Did you have conversations with anybody about a different
3 winter application standard similar to what Tech Note 14
4 requires?

5 A During development discussions, we did discuss winter
6 land application, what may be appropriate controls on it,
7 but I don't remember the specifics of those discussions.

8 Q So you don't remember if using a fall soil nitrate level
9 as a standard for when to allow or to prohibit winter
10 applications was something that Ecology ever discussed
11 internally?

12 A I do not recall discussing that.

13 Q Okay. Could you look at Exhibit R-10.

14 A Okay.

15 Q Okay. And we looked at this yesterday; correct?

16 A NRCS Tech Note 23, correct.

17 Q Yes. One moment here. We're pulling it up on the
18 screen. Could you turn to Page 3, please.

19 And just could you remind us, Tech Note 23 is
20 referenced in the permit as part of the lagoon
21 assessment; correct?

22 A For existing lagoons, yes. Correct.

23 Q Okay. And Tech Note 23 isn't meant to provide a
24 quantitative analysis; is that correct?

25 A I believe it is mostly a qualitative assessment.

1 Q And isn't this designed to be used by trained personnel?

2 It's directed at NRCS personnel, is it not?

3 A Yes. It's directed at -- as NRCS guidance.

4 Q And yet this is something you expect farmers to be able
5 to complete on their own?

6 A My expectation is that the permittee has the assessment
7 completed if -- I believe that, if the permittee has the
8 expertise, they could complete it themselves, but if they
9 don't, they would be required to obtain the services to
10 help them complete it.

11 Q Could you read the bottom paragraph for us, starting
12 under the bolded word "Procedure."

13 A "Procedure. Through this procedure, NRCS personnel will
14 establish an overall assessment category of a WSP, waste
15 storage pond, according to observed factors that may
16 contribute to the risk of water resource degradation.
17 NRCS personnel will assign one of four rating categories
18 and corresponding subcategory."

19 Q So, again, Tech Note 23 contemplates that trained NRCS
20 personnel are completing the assessment and assigning
21 risk levels; correct?

22 A This statement here is that NRCS personnel will do the
23 work.

24 Q When you were developing the permit, did you evaluate
25 records either from WSDA or Ecology to determine how

1 likely it would be for a farmer to complete this
2 assessment on their own?

3 A No. I don't believe we discussed that.

4 Q Do you know if farmers have requisite records for lagoons
5 that in some cases may be decades old?

6 A I do not know if farmers will have all of the records.

7 Q Where in Tech Note 23 does it require a permittee to
8 measure depth to the seasonal high water table?

9 A I would have to look.

10 Q I believe Page 15 there should be a form or what looks
11 like a chart that says "Site Soils Report"?

12 A Okay.

13 Q Do you see that?

14 A Yes. I see the site soils report.

15 Q Okay. And then could you tell us in the bottom of that
16 bolded square -- it's kind of in small font -- what it
17 says?

18 A Oh, so the very --

19 Q The very last --

20 A -- bottom right-hand corner?

21 Q Yes.

22 A "Depth of the water table."

23 Q Right. And so this is all part of an assessment
24 requirement in the permit that is asking farmers to look
25 for the two feet vertical separation from the bottom of

1 the lagoon to the water table; is that right?

2 A So the permit does require the assessment, and part of
3 the assessment is determining if there's two feet from
4 the bottom of the outside of the lagoon liner to the
5 water table.

6 Q Okay. So how will a farmer measure that?

7 A I couldn't answer that. That's not really something that
8 I know. That may be a question better posed to Melanie.

9 Q Do you think a farmer will have the capability to do
10 that?

11 A Well, the permit requires the completion of the
12 assessment, and if they need technical assistance, it's
13 expected that the permittee would obtain the assistance
14 necessary to complete the assessment.

15 Q Is it a requirement that they have trained personnel
16 complete the assessment? It's just an option, isn't it?

17 A Well, it's required that the assessment is completed.
18 How -- we didn't specify in the permit who specifically
19 has to complete the assessment --

20 Q That's right.

21 A -- other than the permittee needs to have the assessment
22 completed.

23 Q Could you look at Page 28. And this is showing some
24 different risk categories; is that correct?

25 A Correct.

1 Q And are these the same risk categories that the permit
2 refers to?

3 A These are two of the risk categories that are referred
4 to.

5 Q Okay. Could you tell us what -- well, looking at
6 Categories 2B and 2C, you agree that the recommendation
7 for those two risk categories involves discontinued use
8 of the waste storage pond, does it not?

9 A Category 2B and 2C do state here, in part, that NRCS
10 recommends discontinued use until minor repairs or
11 improvements have been completed.

12 Q The permit doesn't require that lagoons in those
13 categories be dis- -- the use of those lagoons be
14 discontinued, though, does it?

15 A No, it does not.

16 Q And you consider that to be AKART?

17 A If the lagoon is in one of those categories after
18 assessment as part of the permit, then the existing
19 lagoon would be AKART for that facility.

20 Q Even though the permit doesn't actually require
21 discontinued use, where here in Tech Note 23 the
22 recommended protocol for the assessment recommends
23 discontinuing the use?

24 A Yes. Ecology made a different decision in the permit
25 than is provided in a guidance document.

1 Q Okay. Staying on the subject of lagoons, yesterday I
2 believe, when you were kind of describing the lagoon
3 assessment generally, you used the phrase that lagoons
4 seemed to be in good shape.

5 Do you remember that?

6 A I don't remember my exact statement, but I believe my
7 statement was to the effect of -- that we had heard
8 during discussions that -- and those were discussions
9 with industry -- that lagoons were in good shape.

10 Q So industry represented to you that lagoons were in good
11 shape, but Ecology didn't independently verify that?

12 A We did discuss lagoons with Washington State Department
13 of Agricultural, and that led us to -- well, that led --
14 that helped us make our decision.

15 Q So you accepted the industry's characterization of
16 their -- the quality of their own waste storage lagoons
17 without undertaking any independent assessment on your
18 own; right?

19 MS. NICHOLSON: Objection. Misstates
20 testimony.

21 JUDGE FRANCK: I'm not sure that it
22 misstated his -- I'm not sure it said anything about his
23 testimony. I think it's just a new question. So I'm
24 going to overrule that objection.

25 A So Ecology did not go out and assess all the lagoons

1 itself, no.

2 Q (By Ms. Matsumoto) So your statement that the lagoons
3 were in good shape is purely based on the conversations
4 you had with industry?

5 A I believe so, yes.

6 Q Okay. Could you open Exhibit A-69, please.

7 A Okay.

8 Q Okay. And we looked at this a bit yesterday, but just as
9 a refresher again, this is one of the comment letters,
10 and you said that you had read this comment letter in the
11 process of developing the permit; correct?

12 A Yes, I believe so.

13 Q Okay. Could you turn to Page 11, please. And,
14 Mr. Jennings, we touched briefly on the Cow Palace case
15 yesterday, and you're familiar with that litigation;
16 correct?

17 A A bit, yes.

18 Q Okay. Looking about halfway down the page, there is a
19 sentence and then a quote that starts with, "According to
20 U.S. District Court Judge Rice."

21 Could you just read that aloud, that section for us?

22 A Okay. So, "According to U.S. District Court Judge Rice,
23 the fact that lagoons leak is genuinely not in dispute.
24 Even assuming the lagoons were constructed pursuant to
25 NRCS standards, these standards specifically allow for

1 permeability and thus the lagoons are designed to leak.

2 "There can be no dispute that the lagoons are
3 leaking unless allowing nitrate to accumulate into the
4 soil and at rates possibly higher than 3 million gallons
5 per year."

6 Q And the quote ends with Footnote 44, where you see it's
7 referencing the order on summary judgment from the Cow
8 Palace litigation.

9 Do you see that at the bottom?

10 A Yes.

11 Q Okay. Do you agree that that description sounds like
12 lagoons are in good shape?

13 A I think that lagoons could be in good shape, but the --
14 what's stated here is that the NRCS design standards
15 essentially have a permeability and that permeability
16 allows seepage.

17 So a lagoon could be in good shape and performing as
18 intended, even though there is a seepage there.

19 Q Even 3 million gallons? Doesn't that sound like the
20 lagoon is not in good shape and not protective of
21 groundwater quality?

22 A Well, the statement here at least -- so it's not clear to
23 me from this statement here if it's meaning lagoons
24 across the state or a specific lagoon, but for me, with
25 the permit conditions being what they are and -- I

1 believe those conditions to be protective, even though a
2 discharge is being allowed from lagoons.

3 Q A discharge of that magnitude? You would still find that
4 to be protective?

5 A Well, this, I don't believe, would be a discharge from a
6 single lagoon. If it was -- so across the state, I
7 believe it would be protective.

8 Q If it were from a single lagoon or a single facility,
9 wouldn't you agree that that would not be protective of
10 groundwater quality?

11 A I don't have enough information here to say if, for a
12 particular lagoon, this would be -- this discharge would
13 be protective or not.

14 Q All right. I would like to talk about the Manure
15 Pollution Prevention Plan.

16 You testified yesterday that several dairies have
17 already applied for permanent coverage; correct?

18 A Yes. That is correct.

19 Q Okay. Have you received any Manure Pollution Prevention
20 Plans to -- as of today, sitting here?

21 A Yes. I believe we have received some. I don't know off
22 the top of my head which facilities those would be from,
23 no.

24 Q Do you know how many you've received?

25 A Not off the top of my head.

1 Q Have you reviewed them?

2 A I briefly looked at them, but I did not review them in
3 any detail.

4 Q I have -- so yesterday you went through that comparison
5 chart and some of the requirements of the CAFO rule, the
6 regulations compared to what the permit requires. And I
7 have an additional section of the CFR that I'd like to
8 direct you to, and I have hard copies as well.

9 All right. Mr. Jennings, could you -- I've
10 highlighted a section in front of you. We're looking at
11 40 CFR, Section 122.23(h)(1).

12 A Okay.

13 Q Could you read the highlighted portion out loud for us.

14 A So let's see. "Procedures for CAFO seeking coverage
15 under a general permit. CAFO owners or operators must
16 submit a notice of intent when seeking authorization to
17 discharge under a general permit in accordance with
18 Section 122.2AB.

19 "The director must review notices of intent
20 submitted by CAFO owners or operators to ensure that the
21 notice of intent includes the information required by
22 Section 122.21(i)(1) including the nutrient management
23 plan that meets the requirements of 122.42(e) and
24 applicable effluent limitations and standards including
25 those specified in 40 CFR -- 40 CFR Part 412."

1 Q And so this requires the nutrient management plan to be
2 submitted at the time of application for coverage;
3 correct?

4 A That's what this states, yes.

5 Q Okay. And the -- it also includes the provision
6 providing for the opportunity for public comment;
7 correct?

8 A Later on in this section, yes, it does.

9 Q And so under 40 CFR 122.23(h)(1), an application for
10 permit coverage is supposed to include the nutrient
11 management plan, which is all provided for public review
12 and comment before coverage is issued; correct?

13 A Yes. That's what it states here.

14 Q Could you get Exhibit -- I believe R-1 is the combined
15 permit. We'll just be referencing that a bit. I'd like
16 you to have it handy. And Section -- I think it's 7A.

17 A Page 35?

18 Q Yes. That's correct.

19 And could you, under S7.A, just take a look at that
20 and the time for submission of the MPPP is within six
21 months of coverage; is that correct?

22 A Yes. That is correct. The permit requirement.

23 Q And so Ecology will issue permit coverage to an applying
24 facility without actually receiving and reviewing the
25 Manure Pollution Prevention Plan; right?

1 A The Manure Pollution Prevention Plan is a requirement of
2 the permit, so we receive it after permit coverage.

3 Q But at the time that permit coverage is issued, Ecology
4 has not received or reviewed the MPPP; correct?

5 A That is correct.

6 Q Okay. And, similarly, the MPPP is then not available for
7 public comment prior to issuing permit coverage; right?

8 A That is correct.

9 Q Under the combined permit, the public doesn't ever
10 actually have the opportunity to comment on the MPPP;
11 right?

12 A Because the plan is just discussing how the -- how the
13 permittee is meeting permit requirements, no, there is
14 no -- not public comment on it.

15 Q And what about for updates to the manure prevention --
16 pollution prevention plan? In the handout that
17 Ms. Barney gave yesterday, 40 CFR 122.42(e)(6), do you
18 still have that from yesterday?

19 A I would need a copy.

20 Q Okay. Could you read 122.42(e)(6) for us, please,
21 starting with "Changes to a nutrient management plan."

22 A So, "Changes to a nutrient management plan. Any permit
23 issued to a CAFO must require the following procedures to
24 apply when a CAFO owner or operator makes changes to the
25 CAFO's nutrient management plan previously submitted by

1 the director."

2 Q And then looking down at Section 62, there are two
3 subsections there, A and B?

4 A Correct.

5 Q Do you see those? Okay. And in Subsection A, could you
6 just go ahead and read that for us, please.

7 JUDGE FRANCKS: Ms. Matsumoto, where
8 are you? I'm sorry.

9 MS. MATSUMOTO: 40 CFR 122.42(e)(6).

10 JUDGE FRANCKS: Okay.

11 MS. MATSUMOTO: Roman II, A and B.

12 JUDGE FRANCKS: So Page 266.

13 MS. MATSUMOTO: I've given my copy to
14 the witness.

15 THE WITNESS: Yes. That's -- I'm
16 looking at Page 266.

17 Q (By Ms. Matsumoto) So looking at II, A, Mr. Jennings,
18 could you read that for us.

19 A So, "A, if the director determines that the changes to
20 the terms of the nutrient management plan are not
21 substantial, the director must make the revised nutrient
22 management plan publicly available and include it in the
23 permit record, revise the terms of the nutrient
24 management plan incorporated into the permit, and notify
25 the owner or operator and inform the public of any

1 changes to the terms of the nutrient management plan that
2 are incorporated into the permit."

3 Q And then looking at Subsection B, I won't ask you to read
4 the whole thing because it's quite lengthy, but if you
5 could please read just the first sentence for us.

6 A "If the director determines that the changes to the terms
7 of the nutrient management plan are substantial, the
8 director must notify the public and make the proposed
9 changes and the information submitted by the CAFO owner
10 or operator available for public review and comment."

11 Q And so in either case, when changes are made, there's an
12 opportunity for the MPPP update to be made public, and in
13 one case the public actually has the opportunity to
14 comment; isn't that right?

15 A Well, the MPP is not the same type of document that is
16 referenced here. It's -- because it doesn't contain the
17 effluent limitations that are being referred to as part
18 of the nutrient management plan.

19 The CAFO permits -- the effluent limitation and the
20 nutrient management plan are the permit itself. They
21 aren't -- so we went through that public review process
22 as part of developing the permit.

23 The Manure Pollution Prevention Plan just describes
24 how the permittee on each site is meeting the performance
25 standards in effluent limitations in a permit, which is,

1 as I said, the nutrient management plan.

2 Q But doesn't the MPPP contain the site-specific and
3 field-specific information for how compliance is
4 achieved?

5 A It describes how -- yes, how the facility is meeting
6 permit requirements on-site, but other documents describe
7 things like the field-specific nutrient budgets, and so
8 those are submitted to Ecology.

9 Q The nutrient budgets aren't made available for public
10 review and comment, though, are they?

11 A So the nutrient budgets were -- how the nutrient budgets
12 are developed is laid out as a permit requirement. So
13 how those budgets are developed each year was available
14 for review and comment prior to issuing the general
15 permit.

16 Q But each facility's site-specific and field-specific
17 process for how they will comply with the terms is not
18 something that's made available for public review and
19 comment, correct, because that's part of the MPPP?

20 A So, yes, the -- the description of how the facility is
21 meeting permit requirements is not available for public
22 comment.

23 Q The site-specific and field-specific requirements; right?

24 A Correct.

25 Q But then doesn't that mean the permit isn't complying

1 with the rules because didn't we just look at a rule that
2 requires the field-specific and site-specific information
3 to be submitted at the time of application?

4 A So as I stated previously, we did that process as part of
5 developing the actual general permit. The actual general
6 permit, since it contains the effluent limitations that
7 all facilities have to comply with versus the model in
8 the federal rules where those effluent limitations are
9 contained in each site-specific nutrient management plan,
10 we've gone through the process of developing the permit
11 as the nutrient management plan and as -- and the
12 effluent limitations as they're required to be.

13 Q But a general permit cannot contain the field-specific
14 and site-specific application rates; right? Isn't that
15 something that has to be done on an individual basis?

16 A So the federal rule has two different options for those
17 particular practices: the linear approach and a
18 narrative approach.

19 Ecology, in developing the permit, chose to include
20 the narrative approach for those field-specific budgets,
21 for example, where the narrative approach is a
22 description of how budgets will be calculated each year.

23 Q Could you look at 40 CFR 122.42(e)(5), please. And in
24 bold, it should say, "Terms of the Nutrient Management
25 Plan."

1 Do you see that?

2 A On Page 264?

3 Q Again, you have my copy.

4 A Yes.

5 Q Okay. About halfway through the paragraph, there is a
6 sentence that says -- starts with the terms of the
7 nutrient management plan. Could you read that for us.

8 A So No. 5, the heading is "Terms of the Nutrient
9 Management Plan." Are you referring to a different
10 section?

11 Q That section, but just halfway through the paragraph,
12 there's a sentence starting with, "The terms of the
13 nutrient management plan." I just want to get into
14 specifically what they are.

15 A "The terms of the nutrient management plan with respect
16 to protocols for land application of manure, litter, or
17 processed wastewater required by Paragraph E1 Roman
18 numeral VIII of this section and, as applicable, 40 CFR
19 Section 412.4C must include the fields available for land
20 application, field specific rates of application,
21 properly developed as specified in Paragraphs E5I
22 through -- or Roman numeral I through Roman numeral II of
23 this section to ensure the appropriate agricultural
24 utilization of the nutrients in the manure, litter, or
25 processed wastewater, and any timing limitations

1 identified in the nutrient management plan concerning
2 land application on fields available for land
3 application."

4 Q Okay. So you would agree just, in looking at this
5 section, field-specific information is required such as
6 this, field-specific rates of application, fields
7 available for land application? That's what you just
8 read to us; correct?

9 A Yes. Field-specific information is required as part of a
10 nutrient management plan.

11 Q Okay. And this is 122.42(e)(5). Could you look back at
12 40 CFR 122.23(h)(1). It's from the handout that I just
13 gave you today.

14 And, again, I know you've already read this to us,
15 so as we've already discussed, 40 CFR 122.23(h)(1)
16 requires that, at the time of application, a nutrient
17 management plan meeting the requirements of that section
18 you just read to us in 122.42(e)(5) be submitted prior to
19 permit coverage; isn't that right?

20 A That's what it states here.

21 Q Okay. And the MPPP, which is the field -- has the
22 field-specific and site-specific application information,
23 the same contents of 122.42(e)(5), is not submitted at
24 the time of application; right?

25 A So the permit which contains that --

1 Q It's just --

2 A -- specific information --

3 Q -- a yes-or-no question.

4 A So yes. The manure prevention pollution plan is not
5 submitted until after coverage.

6 Q And so, again, doesn't this mean that the combined permit
7 in allowing for the field-specific and site-specific
8 application information to not be submitted at the time
9 of application for coverage, doesn't that mean the permit
10 doesn't comply with the rules?

11 A No. Because we developed the permit to include the
12 requirements in the federal regulations as the nutrient
13 management plan before we issue the permit, the general
14 permit.

15 Therefore, we've already included the nutrient
16 management plan requirements as part of the permit
17 conditions. So they are -- they have been submitted and
18 basically reviewed through the public process prior to
19 Ecology issuing coverage.

20 Q But, again, those are just general terms; right? That's
21 not each facility's site-specific information concerning
22 things like rates of application and fields available for
23 manure management?

24 A So it is --

25 Q It's just a yes-or-no question.

1 A So the description of how --

2 Q It's just -- Mr. Jennings, it's a yes-or-no question.

3 A So yes. The information comes in after we issue permit
4 coverage for a facility.

5 Q Could you turn to Exhibit A-68, please.

6 Okay. Do you have it up in front of you?

7 A Yes.

8 Q Okay. Do you recognize this document?

9 A No, I don't.

10 Q Okay. At the top it looks like an email chain; correct?

11 A Yes.

12 Q Okay. And are you a recipient of this email?

13 A It looks like I was on the last email chain, yes.

14 Q Okay. And could you just tell us, for the record, the
15 date that it was forwarded to you?

16 A Looks like the date is April 28th, 2009.

17 Q Okay. And it's, as you've said, a forward; right?

18 A Yes. That's what it appears to be.

19 Q Okay. So the second from the top email appears to be
20 something from Thomas Tebb. Do you see that part of the
21 way down the page?

22 A So an email sent April 24th, 2009? Is that the one
23 you're referring to here?

24 Q Yes.

25 MS. BARNEY: I'm going to object on

1 relevance.

2 MS. MATSUMOTO: I'm just establishing
3 foundation. It's -- has internal Ecology communications.

4 MS. BARNEY: But the relevance to the
5 issues in this case from 2009 email.

6 MS. MATSUMOTO: It has to go to the
7 ability of Ecology to protect groundwater and the -- you
8 can see from some of the contents of the email, which
9 hasn't been discussed yet, it's relevant to the issues of
10 the permit.

11 MS. BARNEY: But I don't believe it's
12 relevant to the issues before the board, which is the
13 constitution of the permit conditions here.

14 MS. MATSUMOTO: This is an email that
15 was sent after the appeals of the last permit cycle. And
16 so, again, it goes to Ecology's decision-making policy
17 processes involved for the permit and the ability of the
18 permit to protect groundwater.

19 JUDGE FRANCKS: I think it has
20 tangential relevance. I'm going to let you pursue this,
21 but I think we're very close to outside the scope.

22 Q (By Ms. Matsumoto) All right. Mr. Jennings, do you
23 remember yesterday discussing the 2006 permit?

24 A Generally, yes.

25 Q Okay. And you weren't involved in the drafting of that

1 permit, I believe that's what you said, but it was
2 something that you had reviewed and referenced as you
3 worked on the drafting of the current iterations of the
4 permit?

5 A I was not involved in developing the 2006 permit. I did
6 look at it as part of my job.

7 Q Okay. So, again, the email from Thomas Tebb, you see
8 where that is about a third of the way down the page?

9 A Yes.

10 Q Do you know Tom Tebb?

11 A Not personally. I met him and had a working relationship
12 with him briefly.

13 Q And who is he?

14 A At the time he was the director of Ecology central
15 regional office.

16 Q And just looking at some of the other recipients on the
17 email, do you see Kelly Susewind's name?

18 A Yes.

19 Q Okay. You know Kelly Susewind?

20 A Yes.

21 Q Okay. And Mr. Susewind was going to appear as a witness
22 in this case; isn't that correct?

23 A Yes, he was.

24 Q Okay. And Jay Manning, do you know who Jay Manning is?

25 A I know who he is, yes.

1 Q Who is Jay Manning?

2 A At the time he was one of Ecology's directors.

3 Q Okay. And so you haven't seen this correspondence before
4 today; is that correct?

5 A I don't recall seeing it before today.

6 Q Okay. But you're familiar with some of the Ecology staff
7 members listed there?

8 A Yes. I know their names.

9 Q Okay. This email was forwarded to you.

10 Do you know why you didn't read it?

11 MS. BARNEY: Objection. Misstates
12 testimony.

13 JUDGE FRANCKS: I'm going to sustain
14 that objection.

15 Q (By Ms. Matsumoto) You said you don't remember seeing
16 this document before; correct?

17 A No, I don't.

18 Q Okay. It was forwarded to you, as you can see from the
19 top of the email; right?

20 A Yes. I am on the forward.

21 Q Okay. And you said Jay Manning was the director of
22 Ecology at the time; is that right?

23 A At the time of this email, I believe so, yes.

24 Q Okay. Isn't this an email that, when it was forwarded to
25 you, seems like something you may have read as someone

1 who works on permits and is discussing a prior iteration
2 of the permit that you're working on?

3 A I do not remember if I did or not.

4 MS. MATSUMOTO: Okay. I'd like to
5 move to admit A-68.

6 MS. BARNEY: Objection based on
7 relevance and lack of foundation.

8 MS. NICHOLSON: Join.

9 MS. MATSUMOTO: Again, Mr. Jennings
10 has discussed having referenced the 2006 permit. The
11 contents of the email goes to subsequent events following
12 the appeals of the 2006 permit, and it's important for
13 the record.

14 JUDGE FRANCKS: I'm going to exclude
15 it. I don't think it's relevant to the issues that are
16 before the board today.

17 MS. MATSUMOTO: I just would like to
18 make an offer of proof for the record that, if we were
19 allowed to introduce this and further discuss it
20 including with additional witnesses, one of whom on the
21 email chain unfortunately is not able to appear, that the
22 relevance would become apparent.

23 Q (By Ms. Matsumoto) Mr. Jennings, you were present here
24 yesterday for the opening statements; correct?

25 A Yes, I was.

1 Q And you heard Mr. Tebbutt's opening statement?

2 A Yes.

3 Q And do you remember him describing a meeting with
4 Director Bellon that took place in July of 2013?

5 A Yes. I believe that was part of the opening.

6 Q And you were present at that meeting as well, were you
7 not?

8 A I believe I was.

9 Q So you remember being there in July of 2013 when Director
10 Bellon said that if citizen groups wanted her to take on
11 the industry, that they would have to give her a big
12 fucking stick?

13 MS. BARNEY: Objection. Relevance.

14 MS. MATSUMOTO: Mr. Jennings was
15 present at a meeting with the director of Ecology. It
16 was in the context of the Cow Palace litigation. Some of
17 our clients were also present, and our clients were
18 urging Ecology to take protective action to protect the
19 citizens of Washington State.

20 MS. BARNEY: If the content was the
21 Cow Palace litigation, that's not what's before the
22 board.

23 JUDGE FRANCK: I don't see how this
24 is relevant. We've heard it once, and it's not relevant
25 to the issues that are before the board today.

1 Q (By Ms. Matsumoto) Mr. Jennings, you mentioned multiple
2 times yesterday that Ecology, in making decisions about
3 what to include or exclude as permit terms and
4 conditions, considered cost to the industry.

5 Did you document those costs somewhere?

6 A I believe I stated that those were -- a lot of our
7 discussions were qualitative in nature about the
8 reasonability in terms of, is it reasonable. So we
9 didn't have documentation of those discussions.

10 Q So you don't have any type of actual quantitative
11 analysis of what the costs were that you referenced
12 yesterday?

13 A So for some costs we looked at, we're required to, as
14 part of developing a permit, have a small business
15 economic impact statement, but for -- beyond that, most
16 of our discussions were qualitative in nature. I don't
17 have documentation of that.

18 Q So you don't have any documents that actually would tell
19 us the cost to implement certain permit terms and
20 conditions then; is that correct?

21 A I believe the small business economic impact statement
22 has some discussion of the costs of implementing some
23 conditions, but I don't have the details off the top of
24 my head.

25 Q What about consideration of other costs, like external

1 cost to the public? Was that something that you
2 considered when drafting the permit?

3 A So could you tell me what you -- what kind of costs
4 you're referring to? Like --

5 Q Yes. You testified yesterday that you were aware of a
6 berm failure; isn't that correct?

7 A Yes.

8 Q Okay. And could you remind us where that occurred?

9 A I believe that was in Outlook, Washington.

10 Q Okay. Could you turn to Exhibit A-55, please.

11 Do you recognize this document?

12 A I -- I don't really recognize this, no.

13 Q It appears to be a form. Could you tell us what it says
14 at the top of the page.

15 A So this is Department of Ecology Environmental Report
16 Tracking System form.

17 Q And did you reference ERTS, or the Ecology report
18 tracking system, forms yesterday? I believe I was asking
19 you questions about how Ecology would be informed of some
20 problem that was perhaps occurring at a facility, and you
21 said this was one way that you could learn of problems or
22 discharges.

23 Do you remember that?

24 A Yes. The ERTS system is a way that complaints can be
25 submitted to Ecology.

1 Q So have you seen other ERTS forms reporting incidents in
2 the context of your work with Ecology?

3 A I have seen other ERTS reports, yes.

4 Q Okay. Could you look at the bottom portion of the page?
5 The font that's all in caps and boxed in, could you read
6 that for us?

7 A So the text in the "more information"?

8 Q Yes. That's correct.

9 MS. HOWARD: Your Honor, we're just
10 going to object on grounds of relevancy. It's not very
11 clear how this specific enforcement or complaint-related
12 issue relates to the CAFO permit that's before the board
13 at this time.

14 MS. MATSUMOTO: I'm asking about
15 costs, including cost to the public. Those costs could
16 involve cleanup costs or evacuation costs or cost to
17 health exposure.

18 And that's something that's reported potentially by
19 an incident report when a berm breaks as we're about to
20 see.

21 JUDGE FRANCK: I'm going to allow it,
22 but, again, I think we're on the edge of relevance.

23 MS. MATSUMOTO: Understood.

24 JUDGE FRANCK: So keep it short.

25 Q (By Ms. Matsumoto) Go ahead.

1 A Caller states that last night flooding occurred when
2 dairy berm broke, slash, failed and flooded approximately
3 12 homes in Outlook.

4 Caller states that residents were evacuated from
5 homes. Basements flooded but unsure if main floor of
6 residences were impacted.

7 Caller states concern that floodwaters had the smell
8 of cow urine. Caller states berm has been repaired and
9 also states that flooding spread to approximately 3,250
10 feet from berm. Approximately 90 acres of fields also
11 impact.

12 Q So when you asked for an example of the specific types of
13 cost to the public that I'm asking whether you
14 considered, it would be, for example, costs involved in
15 responding to a berm failure?

16 MS. BARNEY: Objection. There's no
17 indication here that this is related to the permit.

18 MS. MATSUMOTO: A berm is specifically
19 incorporated as an option for addressing risks to surface
20 water runoff and discharges.

21 Mr. Jennings testified yesterday that he was aware
22 that berms can fail. And, again, I'm inquiring about
23 cost to the public, and this is a specific example.

24 MS. BARNEY: But there's no indication
25 on this form that this is related to a berm that -- at a

1 facility that was under the permit or that was in any way
2 regulated by the permit conditions.

3 JUDGE FRANCKS: I'm going to sustain
4 that objection. I think you can ask him general
5 questions, but not related to this particular flood.

6 Q (By Ms. Matsumoto) In general, did you consider the cost
7 to the public that might be involved in a situation such
8 as this where some permit term or condition may fail and
9 the public could potentially be exposed to water that is
10 laden with urine or manure?

11 A In terms of assessing dollar amounts associated with
12 discharges, no, we did not do that.

13 Q And what about remediation costs? Did you consider the
14 cost to remediate contaminated aquifers like the Lower
15 Yakima Valley Aquifer, the Sumas Aquifer?

16 MS. HOWARD: Your Honor, again,
17 objection. The question makes statements about facts
18 that are not actually being introduced in as testimony in
19 this case.

20 JUDGE FRANCKS: I'm going to sustain
21 that objection. I think you can ask in general, but once
22 you get into specifics that aren't part of this case --

23 Q (By Ms. Matsumoto) Did you consider remediation costs
24 generally in the event that an aquifer ends up being
25 contaminated with groundwater discharges including

1 conditionally authorized discharges that are specifically
2 mentioned in the permit? Did you consider those costs to
3 remediate aquifers?

4 A No. Remediation costs were not part of our
5 consideration.

6 Q Yesterday you mentioned that you were aware that
7 shellfish beds have been closed due to high fecal
8 coliform levels and that fecal coliform is something
9 that's present in animal waste.

10 Do you remember that?

11 A Generally, yes.

12 Q So did you consider something like the lost value of not
13 being able to harvest from those shellfish beds in the
14 event that they are closed and contaminated due to high
15 levels of fecal coliform?

16 A That was beyond the scope of what we assessed for the
17 permit.

18 Q So no, you didn't consider that as a potential cost to
19 the public?

20 A No. That was -- that was beyond the scope of the permit
21 development.

22 Q Mr. Jennings, even if the financial investment in some
23 pollution prevention -- and, again, sounds like you do
24 not have a quantitative documentation of what that
25 financial investment is, but even if there's some

1 financial investment required from industry, should
2 Ecology just allow pollution to continue because there's
3 financial costs involved to the permitted entities?

4 MS. BARNEY: Objection. Assumes facts
5 not in evidence.

6 MS. MATSUMOTO: We've been discussing
7 cost. Mr. Jennings referenced cost yesterday and has
8 actually stated there's no quantitative documentation of
9 those costs.

10 MS. BARNEY: But allow pollution to
11 continue?

12 MS. MATSUMOTO: We've described many
13 examples of areas that are not only sources of pollution
14 from CAFO but potential high risk areas, and the permit
15 explicitly includes the conditionally authorized
16 discharges.

17 MS. BARNEY: Which is not pollution.

18 JUDGE FRANCKS: I'm going to sustain
19 the objection. I think that we're focused on the permit,
20 and we're focused on the issues before the board here.

21 And I think some of your questions are more like a
22 closing argument and less like a question of the permit
23 writer.

24 So I think you can ask these questions without
25 making assumptions about what the discharge is.

1 MS. MATSUMOTO: Well, that's fair,
2 Your Honor. Although Mr. Jennings yesterday did go into
3 some detail about areas that not only are potential for
4 discharges but would have conditionally authored
5 discharges under the permit.

6 Q (By Ms. Matsumoto) You're aware, Mr. Jennings, of
7 groundwater contamination in the Lower Yakima Valley and
8 the Sumas-Blaine Aquifer; correct?

9 A I am aware that there are nitrate impacts in those areas
10 generally.

11 Q Okay. And so you didn't develop -- as part of developing
12 the permit, you didn't consider the costs to the public
13 involved with having nitrate contamination problems in
14 the groundwater in those areas?

15 A So the permit is intended to protect water quality
16 equally across the state, but addressing impacts in a
17 specific area is beyond the scope of what a general
18 permit does.

19 Q So those costs weren't considered then; correct? Is that
20 what you're saying?

21 A That is correct.

22 Q Okay. And, Mr. Jennings, Ecology recognizes that dairies
23 are the largest source of contamination of those two
24 aquifers; isn't that correct?

25 A I think Ecology recognizes that they are a source. I

1 don't recall that we've ever said they are the largest
2 source.

3 MS. MATSUMOTO: Okay. I'm reserving
4 time for responses to board questions. That's all I
5 have.

6 JUDGE FRANCKS: Okay. Let's take a
7 ten-minute break and then we'll resume. So back at
8 10:55.

9 (Pause in the proceedings.)

10 JUDGE FRANCKS: Okay. Have a seat.
11 Okay. Ms. Howard.

12 MS. HOWARD: Yes, thank you, Your
13 Honor.

14 CROSS-EXAMINATION

15 BY MS. HOWARD:

16 Q Good morning, Mr. Jennings. I'm Elizabeth Howard here on
17 behalf of the Washington State Dairy Federation and
18 Washington Farm Bureau, and I just have a few questions
19 for you about your testimony from yesterday and today.

20 So let's start first by looking at the permit.
21 Let's look at R-1, which is the combined permit, and if
22 you could turn to Page -- let me try to find the page for
23 you to make this easier -- Page 21.

24 And you can see under Item 3(d)(vi), it references
25 T-sum 200.

1 Do you see that there?

2 A Yes.

3 Q And you testified about T-sum 200 in your testimony
4 yesterday, didn't you?

5 A Yes, I believe so.

6 Q When -- when Ecology considered using T-sum 200, did you
7 consider the application of T-sum 200 on both the west
8 and the east side of the state?

9 A Yes. I believe we discussed including it on both -- for
10 use on both -- excuse me -- both the east and west side
11 of the state.

12 Q So it was a methodology you intended to be applied on
13 both sides of the state; is that correct?

14 A Correct.

15 Q Did you do an evaluation about whether it would
16 appropriately be applied on both sides of the state? Do
17 you recall doing that?

18 A I do not recall a specific evaluation.

19 Q Okay. Really quickly, let me back up. Is this T-sum 200
20 also the methodology that was referred to in the
21 state-only permit?

22 A Yes. I believe that condition should be just the same.

23 Q And for the same purposes in the state-only permit?

24 A Yes. As the start date for land application and spring.

25 Q Great. Thanks for clarifying that.

1 Was this the only method that Ecology considered
2 when evaluating when land applications should occur in
3 the spring?

4 A Initially, under the draft permits, Ecology did try and
5 use descriptive language for when to start land
6 application, but the comments Ecology received on the
7 draft led us to looking for a tool to use in place of
8 that descriptive language to be more clear, and the
9 comments indicated that T-sum 200 was -- seemed to be the
10 preferred method of determining a start date.

11 Q And I think you had said yesterday that your
12 understanding was that it was generally accepted by
13 folks.

14 Who were you referring to when you made that
15 statement?

16 A So generally accepted by industry, so the folks that
17 would be permittees under the permit.

18 Q If there were another method that were more protective
19 than T-sum 200, would that be a method that Ecology would
20 have considered for purposes of determining when land
21 applications should occur?

22 MS. MATSUMOTO: Objection. Vague.

23 MS. HOWARD: That was pretty specific
24 actually.

25 JUDGE FRANCK: I'm going to overrule

1 that. I think that was specific.

2 A I think, if there were other methods that were available
3 that Ecology felt we could use, I think we have looked at
4 them.

5 Q (By Ms. Howard) Okay. Thank you. All right. Let's
6 move on to -- again, I'm going to try to give you a page
7 number. We're looking still in R-1 in the combined CAFO
8 permit, Page 18. And I'm going to be specifically
9 referring you to the fall soil sampling paragraphs, which
10 are the bottom of Page 18.

11 This fall soil sampling provision, is that the same
12 in both this state and the combined CAFO permits?

13 A I believe it is, yes.

14 Q Okay. Do you want to take a look at the state one just
15 to confirm that?

16 A Yes. Which exhibit? R-2?

17 Q Yes. I apologize. R-2. See if you can find it faster
18 than me. Let's see. How about Page 18 of the state-only
19 permit at the top there.

20 A So, yes, it looks -- they are the same condition.

21 Q Okay. Thank you. So specifically I'd like to talk about
22 the October 1st date in this provision, and that's in the
23 second paragraph back on R-1 on the bottom of Page 18.

24 And I think yesterday you testified that the purpose
25 for that date was to having these fall soil samples taken

1 prior to heavy rain. Is that a fair restatement of your
2 testimony yesterday?

3 A So I believe that, yes, I discussed October 1st as a date
4 we chose to be before generally before heavy rains.

5 Q That's perfect. And the fall soil sample, again, one of
6 the things that Ecology is looking for in that soil
7 sample is that it is taken prior to the heavy rains; is
8 that correct?

9 A Yes.

10 Q Do you recall any data or literature that you relied on
11 to determine that October 1st would be the date that
12 would get you to that place where you would be taking the
13 fall soil sample prior to heavy rains?

14 A So that was -- that information came from Melanie Redding
15 as part of discussions around -- I believe related to the
16 manure groundwater literature review.

17 Q Okay. And I'm not asking you to actually look at the
18 literature review, but just off the top of your head, if
19 you will, do you recall whether the October 1st date is
20 actually referenced specifically in the literature
21 review?

22 A I don't know specifically.

23 Q Okay. I'm just going to ask you to look at another
24 exhibit, and it's actually Ecology's Exhibit R-12.

25 Does this document in front of you look familiar to

1 you?

2 A Yes.

3 Q And can you just state for the record what it is.

4 A This is a post harvest soil nitrate testing for manured
5 cropping systems west of the Cascades, an Oregon State
6 University extension service publication.

7 Q Did Ecology rely on this document in developing the
8 permit?

9 A I believe it was one of the documents that I reviewed as
10 well as -- so, yes, I believe it's one of the documents
11 we used.

12 MS. HOWARD: We'd like to move for
13 admission of R-12.

14 JUDGE FRANCKS: R-12 is admitted.

15 (Exhibit No. R-12 admitted.)

16 Q (By Ms. Howard) Can I have you move to Page 15. Just
17 before we talk about -- did I just say Page 15? I meant
18 Page 5. You probably couldn't find a Page 15. Page 5.

19 Before we do that, is your understanding that this
20 particular document was developed by -- is an Oregon
21 State University publication?

22 A Yes. That's the -- states that it's an Oregon State
23 University publication.

24 Q And that this specific document is looking at the Pacific
25 Northwest and conditions in the Pacific Northwest in

1 drawing its conclusions. Is that a fair statement about
2 this particular document?

3 A That's my understanding.

4 Q Okay. And then on Page 5, just the -- just trying to
5 think of the best way to explain this. Actually, maybe I
6 can point up here.

7 You see where it starts "Table 1," the paragraph
8 that says "Table 1"?

9 A Okay.

10 Q Do you mind just reading that paragraph.

11 A So in the black box heading of the table?

12 Q No. The paragraph that starts by reading Table 1.

13 A Oh, left-hand column?

14 Q Perfect. Yes.

15 A Table 1 shows the average calendar date when cumulative
16 rainfall after September 1 reaches five inches at a
17 variety of locations.

18 For most locations, sampling prior to October 15 is
19 acceptable in an average year. In high rainfall areas,
20 parentheses, coastal areas in the cascade foothills,
21 close, plan to sample earlier.

22 A late October sampling date is usually acceptable
23 in lower rainfall areas of Southern Oregon, the Puget
24 Sound islands, Olympic Peninsula, or Vancouver Island.

25 Q So, again, would you agree that this particular document

1 doesn't seem to be referencing October 1st as a date
2 related to heavy rainfall when -- excuse me -- that
3 wasn't a good question -- a date when heavy rainfall
4 would begin to occur?

5 A So this -- that paragraph does not reference October 1st.

6 Q Fair enough. What date does it reference?

7 A So it would reference September 1st, October 15th, or,
8 depending on location, it could be -- could be earlier or
9 could be later.

10 Q And the middle paragraph there does say for most
11 locations sampling prior to October 15th is acceptable in
12 an average year. Would you agree that's what the
13 document says?

14 A Yes. That's what the document says.

15 Q Thank you. Can we turn back to R-1 and this same
16 language that we were just referring to for fall soil
17 samples.

18 The way that the permit reads right now, if you're
19 not able to take fall soil samples by October 1st, are
20 you kicked into Paragraphs 3 and 4 for purposes of the
21 soil samples you're required to take?

22 A Yes. That is correct.

23 Q And Paragraphs 3 and 4 require deeper soil samples; is
24 that correct?

25 A Correct.

1 Q So if your -- prior to October 1st or by October 1st,
2 your soil sample depth would be one foot?

3 A For heavy areas with greater than 25 inches of
4 precipitation, yes, the soil sampling depth would be one
5 foot.

6 Q Where does it say that in Paragraph 2 -- or excuse me --
7 in Subsection 2?

8 A So the fall soil sampling section here references
9 Paragraphs 3 and 4, which define the depths at which soil
10 samples must be taken in the fall, depending on the area
11 of the state that the operation is located in.

12 And then Sections 3 and 4, Section 3 is the depth of
13 soil samples in areas with 25 inches or less annual
14 precipitation, generally Eastern Washington.

15 Section 4 is the depth of samples in areas with more
16 than 25 inches of annual precipitation, generally Western
17 Washington.

18 And so for the heavy rainfall areas, as I was -- as
19 were mentioned, in Western Washington, the fall soil
20 samples have to be taken at the zero to 12 inch, so the
21 first -- the top foot depth, unless that sample is taken
22 after October 1st, in which case the depth of the
23 sample -- there's an additional sample that must be taken
24 for the 13-to-24-inch depth, so the second foot below the
25 surface.

1 Q And my question maybe wasn't very good, but that was
2 exactly what I was trying to ask, is that, if you're
3 prior to October 1st, the depth of the soil sample is in
4 that first foot range; correct?

5 A For -- generally Western Washington, yes.

6 Q And so when Ecology was picking the October 1st date, did
7 you take into account sort of a normal time frame when
8 annual crops would be harvested?

9 A So that date was picked out of discussions with Melanie
10 Redding, I believe, as part of the newer groundwater
11 literature review.

12 So my understanding from those discussions was there
13 were documents that she reviewed that generally
14 October 1st would be an acceptable date to pick.

15 Q Related to crop harvest?

16 A I don't know specifically which documents, so I would --
17 for crop harvest, I don't know specifically which
18 documents, but as I said, that was, I believe, taken into
19 account in the newer groundwater literature review, so
20 through my discussions with Melanie on that.

21 Q Can we turn to Exhibit I-56, Page 9, please.

22 And let's see. Line 11 there, it says, "Ecology
23 does not expect crops to be harvested at any particular
24 time."

25 Let's just lay a foundation for this document before

1 I ask you a question about it. How about that?

2 So if you don't mind looking at Page 1 of I-56, are
3 you able to find it? Sorry. It's at the very back of a
4 very big binder.

5 A Yeah. Took me a while to page there, but, yes, I'm
6 there.

7 Q Okay. Great. Are these Ecology's answers to the dairy
8 farmers' requests for admissions and interrogatories?

9 A So this is "Appellant Washington Dairy Federation Second
10 Set of Request for Admission Interrogatories and Requests
11 for Production Washington State Department of Ecology and
12 Ecology's Answers Thereto."

13 Q So my question was whether or not that's what these --
14 this document is.

15 Is that what this document is, Ecology's answers to
16 our requests for admissions and interrogatories and
17 production?

18 A Yes.

19 Q Okay. Thank you. Now let's turn to Page 9.

20 While you're doing that, do you recall reviewing
21 this document previously?

22 A Yes.

23 Q Okay. And, again, I was reading Line 11 there on Page 9.
24 Says, "Ecology does not expect crops to be harvested at
25 any particular time."

1 I read this to mean that Ecology didn't take into
2 account particular crop harvest. Is that your
3 understanding of what this response meant?

4 A Let me read it here just to --

5 Q Sure.

6 A -- refresh.

7 Q And you don't need to read it out loud. That's fine.

8 A So can you please repeat your question.

9 Q You bet. Yeah. My question is going back to whether
10 Ecology took into account dates that crops would be
11 harvested when you crafted -- or when you came up with
12 the October 1st date of the fall soil sampling.

13 A So --

14 Q And specifically my question related to this particular
15 statement which appears to indicate that Ecology didn't
16 expect crops to be harvested at any particular time.

17 A So as I think I said before, the October 1st deadline
18 came from my discussions with Melanie about generally
19 when, you know, heavy rains start and when generally
20 crops could be harvested.

21 But this isn't to say that crops have to be
22 harvested by October 1st. This is just a cutoff date for
23 when deeper soil sampling has to occur after harvest in
24 order to account for if there's been heavy rains and
25 potential leaching in the soil profile.

1 Q So looking back at the fall soil sampling requirement in
2 the permit, I'm just going to read to you the first
3 sentence of the second paragraph there under Sub 2.
4 Says, "Fall soil samples must be taken by October 1st
5 after harvest of annual crops and before heavy rains
6 begin in the fall or before any irrigation water is used
7 on the field after harvest."

8 Would you agree that that statement means that, if
9 you are not able to harvest your crops by October 1st,
10 you would not be able to comply with that particular
11 requirement, if you will, to take fall soil samples?

12 A No, I don't agree with that. Because you have to take
13 the permit condition as a whole, not just a single piece.

14 And so with this condition, yes, it starts with fall
15 soil samples must be taken by October 1st, but following
16 that, taking the condition down and following it through,
17 if a permittee is not able to do that by October 1st,
18 then they can take their soil samples later.

19 They just have to take the additional deeper sample,
20 and they would still be complying with the permit.

21 Q Thank you.

22 Yesterday you also testified about -- I think
23 Ms. Barney asked you a question about anti-backsliding
24 with regards to the soil samples. Yesterday seems like a
25 long time ago.

1 Do you recall that conversation?

2 A Yes. I believe there was a question about
3 anti-backsliding.

4 Q And I think it was in the context of moving from a
5 two-foot soil sample to a one-foot soil sample.

6 Do you recall that part of the questioning?

7 A For --

8 Q Yeah. Let me maybe ask -- provide a little more
9 foundation. You guys were talking about the 2006 CAFO
10 permit and that it had a two-foot soil sampling
11 requirement on the east side, and her question was
12 whether or not moving from a two-foot soil sample to
13 one-foot soil sample would be backsliding.

14 Does that ring a bell?

15 A Yeah. So for the east side, moving from a one-foot -- or
16 excuse me -- a two-foot sample to only requiring a
17 one-foot sample on the east side, would that be
18 backsliding, and I believe my answer was yes, I believe
19 it would be.

20 Q That's what I remember as well, yes.

21 And is that answer being driven by concerns about
22 water quality in the sense that you want to ensure that
23 you're collecting enough information from the soil sample
24 to ensure that the agronomic applications are providing
25 water quality protections?

1 A So I think the anti-backsliding piece is driven by --
2 we've had soil samples being taken in specific depth
3 during the previous iteration of the permit, and to
4 decrease that depth or moving closer to the surface would
5 basically not allow us to get the same information, so we
6 wouldn't know what the risk closer to the bottom of the
7 crop rooting zone would be.

8 So, yes, it would -- it would not allow us to assess
9 a potential risk to the environment.

10 Q If you could assess that risk using information from the
11 first foot of the soil sample, would you agree that that
12 would not be anti -- that would not be a backsliding
13 condition?

14 MS. MATSUMOTO: Objection. Calls for
15 legal conclusion.

16 MS. HOWARD: Your Honor, he was
17 testifying relating to the specifics on the permit, and
18 I'm trying to do the same, what terms in the permit would
19 not result in backsliding.

20 JUDGE FRANCKS: I think he can testify
21 about his knowledge.

22 A I -- generally, I understand, if there is enough
23 information to draw such a conclusion, Ecology may make
24 that decision, but I -- that wasn't a question that we
25 dealt with, so I don't know if it would -- would be

1 considered backsliding or not at this point.

2 Q (By Ms. Howard) Okay. All right. I'm going to actually
3 just direct your attention behind you to Table 3.

4 A Okay.

5 MS. HOWARD: And before we do that,
6 can I move for admission of I-56, please.

7 JUDGE FRANCKS: I-56 is admitted.

8 (Exhibit No. I-56 admitted.)

9 Q (By Ms. Howard) So Table 3, yesterday you talked about
10 this, and I believe you said that you -- these numbers
11 here are based on Washington Department of Agricultural
12 numbers.

13 Do you know if -- I'm just going to use the acronym,
14 WSDA -- Department of Ag has this same chart that it
15 uses?

16 A I do not believe Department of Agricultural uses the same
17 table that we have in the permit.

18 Q And do you know if they use these exact same ranges when
19 they're evaluating management activities that need to
20 occur?

21 A So when -- my understanding is, when Department of Ag is
22 doing an inspection, they use the same ranges as listed
23 in parts per million in this table as part of their
24 assessment of an operations fields.

25 Q Do they account for different types of crops when they're

1 applying those ranges? Do you know? Or -- and if you
2 don't know, that's fine, if you didn't have a discussion,
3 but if you do know, please --

4 A I do not know if they account for crops as part of that
5 assessment.

6 Q Okay. I'm going to point you back to R-12, which we were
7 talking about just a minute ago. And, yeah, let's look
8 at Page 6 and 7. And, again, this is the OSU
9 extension -- Oregon State University extension bulletin
10 that we were looking at earlier.

11 And looking at Page 6 -- I'm sorry. I keep on
12 saying the wrong page numbers. Page 7 and 8. I'm sorry.

13 Do you recall looking at these particular tables as
14 you were developing Table 3?

15 A I don't recall specifically looking at these --

16 Q Okay.

17 A -- as part of development.

18 Q Yesterday you were asked a question about -- a few
19 questions about groundwater monitoring, and I just want
20 to make sure I have straight in my head how Ecology is
21 looking at the permit terms.

22 So I think the questions were along the lines of, if
23 you don't have groundwater monitoring, would you be able
24 to know if there's a discharge occurring.

25 Do you remember those questions from yesterday?

1 A Generally.

2 Q Not from your counsel, from Appellant Puget Soundkeeper.

3 A Generally, yes, I recall there were questions about
4 groundwater monitoring.

5 Q When Ecology designed the permit, did you develop permit
6 terms that you believed would be, in and of themselves,
7 protective of groundwater?

8 A Yes. Our goal with developing the permit is to be
9 protective of water quality.

10 Q So if a permittee were complying with the terms of the
11 permit, would you anticipate that there would be harm to
12 the groundwater?

13 A Assuming compliance with the permit, I believe that any
14 discharges that are occurring would. Even though they
15 are occurring, the permit would still be protective.

16 Q Let's turn to another provision in the permit, if we can,
17 to -- let me give you a page number. Let's look at R-1,
18 and this is Page 13, S4.B. And I want to direct your
19 attention to actually kind of the last three sentences of
20 this permit provision, and this is talking about lagoons
21 and construction of lagoons.

22 And that -- hopefully folks can follow me on this.
23 It starts the middle of the third line from the bottom,
24 "And there must be a minimum of two feet of vertical
25 separation between the bottom of the lagoon measured from

1 the outside of the earthen liner and the water table
2 including seasonal high water table."

3 Do you see that there?

4 A Yes.

5 Q And do you recall that this particular language was in
6 the draft CAFO permits?

7 A This language was not specifically in the draft permits.
8 It was added, I believe, based on comments to the final
9 permit.

10 Q And do you recall what those comments were?

11 A Not specifically.

12 Q Do you know, in developing this particular permit
13 provision, was Ecology trying to do something similar to
14 NRCS's lagoon standard with regards to two feet of
15 separation -- vertical separation?

16 A No. This -- Ecology's position, as I understand it, has
17 always been, there needs to be two feet of separation
18 between groundwater and the bottom of the liner for at
19 least attenuation of the bacteria from lagoon seepage. I
20 believe that's always been Ecology's position.

21 Q So -- and my question was: Were you trying to do
22 something similar here to NRCS's standard? I think you
23 just said no. Did I understand you correctly?

24 A Correct. We -- Ecology made our decision based on what
25 our position has always been.

1 Q What do you mean, your position has always been? I guess
2 I'm not following you.

3 Your position on what has always been?

4 A So the -- our position on the vertical separation between
5 the groundwater table and the bottom of the lagoon liner.
6 Our position has always been there needs to be at least
7 two feet there.

8 And so in including this language, Ecology made our
9 decision, not based on NRCS, but what our agency position
10 has been.

11 Q In your -- this is Exhibit I-55, so I apologize again.
12 You're going to have to flip to the very back of our
13 binder. If you look at Page 1 --

14 A Okay.

15 Q -- this is -- it says, "Appellant Washington Dairy
16 Federation's First Set of Interrogatories Request for
17 Production to State Washington State Department of
18 Ecology and Ecology's Answers Thereto."

19 Have you seen this document before?

20 A Yes.

21 Q Let's look at Page 9, the middle of the page, and
22 actually, this -- let's back up for just a minute.

23 Interrogatory No. 3, which is -- actually starts on
24 Page 8, we are asking, "Describe the scientific or
25 technical basis supporting the following section of the

1 paragraph quoted in Interrogatory No. 3."

2 And then we specifically refer to Section 4B and
3 that same language that we've been referring to here.

4 Do you see that?

5 A I see that, yes.

6 Q And then Ecology's answer, if you can skim down into the
7 middle of Page 9, says, "NRCS technical guidance on
8 lagoon construction specify two feet between the bottom
9 of the lagoon and the top of the seasonal high
10 groundwater table."

11 So would you agree that Ecology's answer to our
12 request for scientific or technical basis for this
13 particular term in the permit was NRCS technical
14 guidance?

15 A As I understand it, looking here, that's only part of the
16 larger answer, and --

17 Q That's totally fair, but I would like to just talk about
18 what you've said was always your longstanding
19 interpretation, and we're referring specifically to the
20 two feet division here.

21 And in the answer from Ecology, you do mention two
22 feet, and that refers back to the NRCS technical
23 guidance.

24 So it appeared that that two feet separation is, in
25 fact, related to the NRCS technical guidance. Is that a

1 fair summary of the answer here?

2 A So my understanding came from my discussions with Melanie
3 at least about that separation, and while it is part of
4 the answer here, I believe that Ecology's longstanding
5 position was, again, from my discussions from work prior
6 to this, so --

7 Q Ecology's interpretation of the NRCS guidance was that
8 the two feet was from the bottom of the lagoon? Is that
9 what you're saying?

10 A No. I'm saying -- I was just reiterating that I believe
11 Ecology's position on the separation of -- from the
12 bottom of the lagoon liner to the groundwater table, that
13 my understanding from my discussions with Melanie is that
14 came prior to the NRCS -- the NRCS technical guidance
15 listed here.

16 Q Do you know what NRCS technical guidance's answer is
17 referring to?

18 A I believe that it would be referring to -- since it
19 doesn't specify, I believe it would be referring to an
20 engineering specification document that's, in short,
21 Appendix 10D of one of NRCS's design manuals.

22 Q Okay. Do you recall if Appendix 10D talks specifically
23 about two-foot separation?

24 A I do not recall specifically.

25 Q Okay. Would you agree that the NRCS standard for lagoons

1 is an industry standard?

2 A Could you define please what you mean by "standard"?

3 Q Well, let's look at the literature review, if you will,
4 which is Exhibit R-4.

5 What would -- before we do that, what would you
6 describe as an industry standard?

7 A So from the permitting perspective, a standard would be
8 an enforceable set of basically nonvoluntary language,
9 so, like, the surface water or groundwater quality
10 standards.

11 Q When you were testifying yesterday, you talked about
12 AKART, and you said one of the considerations you take
13 into account was that whether the technology was already
14 being used by industry; is that correct?

15 A That is correct.

16 Q And so in that particular situation, something that's
17 already being used by industry, would that be an industry
18 standard?

19 A In that context, yes, I believe so.

20 Q Okay. Let's look at the literature review, R-4. This
21 has already been admitted in as evidence, and can I point
22 you to Page 64.

23 And the second line in Paragraph 1 there says, "The
24 NRCS agriculture waste management field handbook, NRCS
25 2009 B, is the industry standard. It describes the

1 protocols and specifications for storage lagoons."

2 Does this seem to be indicating that the NRCS
3 standard for waste storage lagoons is the industry
4 standard?

5 A So, as it states here, the field handbook referenced is
6 the industry standard.

7 Q And do you know if that field handbook relates to waste
8 storage facilities?

9 A I believe it does, yes.

10 Q Do you recall ever having a discussion with industry
11 about how -- what Ecology's longstanding position was as
12 compared with the NRCS standard for waste storage
13 facilities?

14 A I don't recall such a discussion.

15 Q Do you recall receiving any comments related to a concern
16 about there being a distinction between Ecology's
17 longstanding interpretation and NRCS standard for waste
18 storage lagoons?

19 A No. I don't recall comments to that effect.

20 Q Let's turn to the document which, again, is Ecology's
21 Exhibit -- just a moment -- R-7.

22 MS. HOWARD: Your Honor, before we
23 move off of that, can I move for admission of I-55?

24 JUDGE FRANCKS: I-55 is admitted.

25 (Exhibit No. I-55 admitted.)

1 Q (By Ms. Howard) Does this document look familiar to you?

2 Let me point you to a specific page to try to help you
3 out. If you can turn back to what's called Appendix C.

4 A Okay.

5 Q It's towards the back. And it's Page 28, though I don't
6 know if those have page numbers on them.

7 A Okay.

8 Q And does this figure look familiar to you?

9 A Yes. This figure does.

10 Q All right. And let's just for the record establish this
11 is -- I'm just going to do a shortcut on the name of
12 this document because it's really long, but Technical
13 Note 716. Is that what your first page indicates?

14 A Yes. The cover page is South Technical Center
15 Engineering Series No. 716. It's a technical note.

16 Q Is this a document that Ecology has relied upon in order
17 to determine this two-foot vertical separation that's
18 referenced in the permit term?

19 A No, I do not believe so.

20 Q Is it a document that you referenced in your deposition
21 related to Ecology's longstanding interpretation of what
22 the two-foot separation needs to be?

23 A I believe in my deposition I referenced -- I did
24 reference this, though it was related to an agreement in
25 the definition of where to start the measurement of the

1 distance between the groundwater table and the lagoon
2 liner, the bottom of the liner.

3 Q And that is specifically the subject of this particular
4 permit term, correct, that we've been talking about?

5 A The distance between the bottom of the liner and the
6 groundwater table?

7 Q Correct.

8 A Yes.

9 MS. HOWARD: Okay. Your Honor, I'm
10 going to move for admission of this document. It's R-7.

11 MS. MATSUMOTO: Objection. Relevance.
12 It's from 1993 and lack of foundation.

13 MS. HOWARD: Your Honor -- and
14 Ms. Barney I think also included this in her exhibits,
15 but this particular document was also referred to by
16 Mr. Reck in explaining NRCS's distance, how they view the
17 distance in the liner.

18 And I believe we're going to get to it, that this
19 will help us to determine Ecology's interpretation within
20 the permit itself versus NRCS's standard, which, of
21 course, is a key issue for us in our case.

22 JUDGE FRANCKS: Okay. I think it is.

23 MS. MATSUMOTO: Preserve our objection
24 to having to do with Mr. Reck's testimony.

25 JUDGE FRANCKS: Okay. It's relevant

1 to Issue 19, and so I'm going to allow it.

2 (Exhibit No. R-7 admitted.)

3 Q (By Ms. Howard) I understand that you haven't had the
4 opportunity to review Mr. Reck's testimony yet, so just
5 bear with me, if you will.

6 It is Exhibit I-6, if you would like to look at it
7 in your binder.

8 Let's see. Let's look at Page 62 of his deposition,
9 and I was asking specifically a question about the same
10 document.

11 So my question begins on Line 20.

12 "And let me -- let's maybe try a visual so we can
13 try to explain where that is. I provided you with what
14 is labeled as Exhibit R-7, which is South National
15 Technical Center technical note in series 716. Are you
16 familiar with that document?"

17 To which he answers: "Yes.

18 "Does this document have any connection to Standard
19 313?"

20 And he answered: "It does, and that is a historical
21 document. This particular document is a predecessor of
22 Appendix 10D."

23 We then labeled the exhibit.

24 And then if you can skip down to the question,
25 Line 13: "And if you could turn back to Page 29 of

1 37" -- which he did -- "the top of that page, does it say
2 Appendix C?

3 "Yes."

4 You can see that here. And then Line 20: "For
5 calculation of hydraulic gradient.

6 "Perfect. Do you see the figure or diagram in the
7 middle of that page?

8 "Yes.

9 "Could you explain getting -- using that diagram
10 where the" -- I'm sorry. My questions were not great
11 here. Excuse me. Get the right terminology there --
12 "the impoundment bottom, right, the elevation?

13 "Yes. On that figure Appendix C."

14 And then we specifically were asking him: "Yes, if
15 you could look at the figure, there's two points that
16 are -- that are located. There's a Point 1. There's a
17 Point 2.

18 "Point 1 is the top of the clay liner and Point 2 is
19 the bottom of the clay liner." So this is Mr. Reck
20 explaining that.

21 And so then skipping down to Line 23, it says: "So
22 that Point 1" -- and just for reference, can you see
23 Point 1 on Appendix C?

24 A Sorry. I put that exhibit away. Which exhibit was that?

25 Q R-7.

1 A Okay. Thank you. Okay. Yes. Point 1.

2 Q Yeah. Do you see it on Exhibit R-7, Appendix C?

3 A Yes.

4 Q And is it at the top of what appears to be the lagoon
5 liner?

6 A Yes. In this diagram, there is a Point 1 at the top of
7 the impervious clay layer.

8 Q And I think Mr. Reck in his testimony referred to that as
9 the impoundment bottom elevation. Do you see that in --
10 again, we're flipping back and forth here; I apologize --
11 but I-6, Page 64, Lines 23 through 25.

12 So the question there is: "That Point 1 would be --
13 is that Point 1 what you would call impoundment bottom
14 elevation?"

15 To which he says: "Yes. Point 1 would be the
16 impoundment bottom."

17 Do you see that? Again, I'm looking at the bottom
18 of Page 64.

19 A Oh, okay. Yes.

20 Q Line 23: "So that Point 1 would be -- is that Point 1,
21 though, what you would call the impoundment bottom
22 elevation?"

23 To which he referred: "Yes. Point 1 would be the
24 impoundment bottom."

25 Do you see that testimony?

1 A I see it here.

2 Q Okay. And is Point 1 the -- what Ecology would refer to
3 as being the bottom of the lagoon liner?

4 A No, we would not.

5 Q Where would Ecology want to establish this two-foot
6 separation from, if you could, just using this particular
7 diagram in front of you?

8 A So on this diagram, below Point 1, outside the liner,
9 there should be a small No. 2 that is outside the
10 impervious clay layer as referred to, that would be the
11 point where we would start the measurement for the two
12 feet of vertical separation.

13 Q There should be a pointer next to you. Would it be
14 helpful? Could you just point that out on the diagram.

15 A I don't want to hit somebody in the face. So that should
16 be right there if my hand will hold still at all.

17 Q And typical liner, I think you said yesterday would --
18 you would expect to be about a foot in size; is that
19 correct?

20 A I don't believe I referenced a thickness of the liner.

21 Q What would be a typical thickness of a clay liner? What
22 would you expect in a lagoon?

23 A I think that's really going to depend on the soils that
24 are used in a location of the lagoon, so I don't have
25 a -- I don't have a standard thickness.

1 Q Would you agree, though, that Ecology's permit provision
2 for the distance between -- let me ask that better.

3 Would you agree that Point 1 and Point 2 are not in
4 the same location?

5 A Yes.

6 Q And so irregardless of the thickness of the liner, which
7 I believe is that space in between of Point 1 and
8 Point 2, would you agree with that on this diagram? That
9 is the liner?

10 A Yes. I believe that's -- that's labeled little D in this
11 diagram.

12 Q Perfect.

13 A The thickness of the liner.

14 Q Thank you. So irregardless of the space, would you agree
15 that where NRCS is looking for the separation between
16 groundwater and where Ecology is looking for separation
17 from groundwater and the permit terms are different?

18 A Based on this, yes, they are different.

19 Q Okay. And you haven't reviewed Mr. Reck's testimony; is
20 that correct?

21 A No. This is the first time I've seen it.

22 Q Okay. And do you recall, again, specifically having a
23 discussion with anyone about how Ecology interprets where
24 the separation -- vertical separation needs to be and
25 where NRCS lagoon standard looks for a vertical

1 separation?

2 A So the conversations I had about this were with Melanie
3 Redding about where Ecology -- basically Ecology's
4 longstanding position that -- of where to measure from
5 the outside of the lagoon liner to the top of the
6 groundwater table, and I believe discussion of the NRCS
7 practices came up during that.

8 Q This question is specific to permits related to animal
9 waste storage.

10 Are you aware of any permit that Ecology has issued
11 that includes this same language as the general permits
12 related to the two-foot separation?

13 A No. I'm not familiar with any permits that include --
14 there's lot -- Ecology has issued quite a few permits and
15 I'm not familiar with any of those enough to say whether
16 similar language is included.

17 JUDGE FRANCKS: Ms. Howard, it's
18 coming up to the noon hour, so I'm wondering how much
19 more you might have.

20 MS. HOWARD: I don't have anything
21 else. I am done.

22 JUDGE FRANCKS: How's that for timing.

23 MS. HOWARD: Oh, you know what? Let
24 me make sure -- I guess at this point, can we move to
25 admit Mr. Reck's testimony as an exhibit, Exhibit I-6?

1 Do we need to do that at this point? I think you've
2 already sort of ruled that it's in as an exhibit, but --

3 JUDGE FRANCKS: I have, but let's go
4 ahead and move for its admission.

5 MS. HOWARD: Move for admission of
6 I-6, which is the designated deposition transcript of
7 Mr. Reck.

8 MR. SNYDER: Your Honor, same
9 objections we've had previously. Late notice of the
10 deposition, unreasonable timing, undisclosed expert
11 testimony, and it's outside the scope, and finally the
12 objections contained in our letter all for preservation.

13 JUDGE FRANCKS: Yes. And I ruled
14 already that the deposition as designated is admitted.

15 With that, let us go to lunch and return at one
16 o'clock. Thank you. And we're off the record.

17 (Recess from 11:56 a.m. to
18 1:00 p.m.)

19 JUDGE FRANCKS: Have a seat. Okay.
20 Let's go back on the record. So, Counsel, are we at the
21 board questions stage or is there some sort of redirect
22 that needs to happen?

23 MS. BARNEY: I believe we're at the
24 board question stage.

25 JUDGE FRANCKS: All right. Board

1 members, who wants to go first? Who's ready?

2 EXAMINATION

3 BY MR. WISE:

4 Q Good morning. Good afternoon I guess it is.

5 I don't know a lot about manure lagoons. What keeps
6 the water in them, or the liquid?

7 A So manure lagoons, generally talking earthen lagoons,
8 which are essentially compacted earth and clay
9 structures, and it's the compaction of the earth or the
10 clay in many cases, the liner, that initially reduces the
11 permeability and causes it to retain liquid.

12 Q Is that just a natural occurrence or is there something
13 you put in the lagoon to keep it from leaking?

14 A So initially, when the lagoon is built, it's going to
15 be -- to have a permeability, and then there is some
16 additional sealing that takes place from the fine
17 particles from the manure that's contained in there, and
18 that additional sealing decreases permeability further
19 than from the initial design and construction.

20 Q So do operators normally ever put anything in if there's
21 leakage to stop the leakage?

22 A Not that I'm aware of.

23 Q Okay. So there's like -- there was testimony about these
24 artificial liners and all that. They -- the operators
25 don't use those?

1 A There are what I'll call geotextile or plastic liners
2 that can be used. There's, to my knowledge, very few
3 that are actually being used in Washington, but those
4 are -- those would be a liner that's put in when the
5 lagoon is constructed versus after the lagoon is already
6 in use.

7 Q So do they ever use bentonite?

8 A I believe that may be one material that's used and mixed
9 into the soils when the actual structure is being
10 constructed.

11 Q Is the lack of a liner primarily a cost consideration?

12 A The lack of the liner for the current lagoons or for,
13 say, new construction?

14 Q Well, new construction. I mean, why don't people put in
15 some kind of a liner?

16 A Generally, cost is a big factor of that. They are --
17 lagoons themselves are expensive to construct, and then
18 the additional of a plastic liner, if you will, adds a
19 significant additional cost.

20 Q Does Ecology consider some kind of a liner a requirement
21 under AKART?

22 A For new construction, we just consider the soil and
23 earthen liner, as long as it meets the one times ten to
24 the minus six centimeters second permeability, we would
25 consider that AKART for the newly constructed lagoons or

1 in the permanent refurbished lagoons if they're
2 rebuilding them.

3 Q So it sounds like even your standard allows some leakage.
4 That's not a concern?

5 A So, yes, our standard does allow some seepage from the
6 lagoon. That's part of the design. And I don't believe
7 that -- assuming the operation is in compliance with its
8 permit, I don't believe that's a concern.

9 Q If a CAFO was out of compliance with the permit, how
10 would you know?

11 A So that would really depend on the condition they're out
12 of compliance with, and largely that would be found
13 through inspections, the routine inspections, that
14 Department of Ag does for us.

15 Also it could be found through complaint response
16 or -- well, complaints that Ecology receives through our
17 complaint system, also through the reports that are
18 required to be submitted by the permittees. There's an
19 annual report that's required.

20 I believe, you know, also that, you know, there's
21 visual inspections that are required to be done by the
22 CAFO on -- depending on which part of the CAFO, you know,
23 there's visual inspections that have to take place on
24 either a daily or weekly or monthly basis, and then
25 records of that, which would be viewed during

1 inspections, or Ecology could also request those records.

2 Q You mentioned an annual report. Do the CAFOs self-report
3 on violations?

4 A They are required to, yes.

5 Q And if you suspected a violation at that point, would
6 there be some sort of sampling done to determine the
7 extent of the pollution?

8 A I think that would really depend on the circumstances of
9 the violation.

10 Q Okay. The NRCS technical notes that we've been looking
11 at, are those federal law? Are they legally binding?

12 A No, they are not. Those are guidance documents that are
13 used primarily during voluntary work with operations that
14 come in for technical assistance.

15 Q And can you explain to me the connection between the CFRs
16 we were looking at and the CAFOs? Are those federal
17 regulations binding on all the CAFOs?

18 A Yes. So the Code of Federal Regulations are the federal
19 rules that are in place for permitted CAFOs.

20 Q And Ecology considers their permits in compliance with
21 the CFRs?

22 A Yes.

23 Q You mentioned that an SBEIS was done. Is that correct?

24 A Yes.

25 Q And just for the record, what's the purpose of an SBEIS?

1 A So the small business economic impact statement or
2 analysis looks at the -- it's required by our permit
3 development code, and it looks at the potential impact to
4 small businesses from proposed permit conditions and
5 potential mitigations for those.

6 Small businesses in this case being businesses with
7 50 or fewer employees.

8 Q Do you remember if the EIS determined that there was a
9 disproportionate impact to small businesses?

10 A Yes. I believe for this, there was -- we did determine
11 there was a disproportionate impact. And so for small
12 businesses, we included different requirements for when
13 those businesses would need to apply for a permit.

14 There are additional steps Ecology would have to go
15 through before they're required to be permitted.

16 Q And that was to be mitigation for the disproportionate
17 impact?

18 A Yes.

19 Q Last question, was SEPA done on these permits?

20 A I believe that -- no. We don't have a SEPA
21 determination. I believe that SEPA -- the re-issuance of
22 the permit was exempt from that. I don't recall off the
23 top of my head the exact reasons for that exempt.

24 Q But it's under one of the categorical exemptions under
25 SEPA?

1 A I believe so, yes.

2 MR. WISE: Thank you.

3 EXAMINATION

4 BY MS. BROWN:

5 Q So just to follow up on Mr. Wise's question about the
6 manure lagoons and the liners and the -- you know, what
7 holds the water in without a liner, and I understand it's
8 compact earth or clay-type thing.

9 So now my question is: Well, so if you're measuring
10 where the bottom of that is, how do you know? How do you
11 tell where the bottom of an earthen thing is?

12 A I'm certainly not an expert on lagoons. Melanie may be
13 able to answer your question better.

14 Q Okay.

15 A But for my understanding, where you have a distinct clay
16 liner, as part of building a lagoon, that liner would be
17 measured, the thickness of it, as it's compacted into
18 place.

19 Q Okay. But it's still -- it's not like a separate piece
20 of material? It's just a different kind of dirt?

21 A Yes. It's not an artificial, like, plastic that's laid
22 down. It would -- when the lagoon embankments are
23 compacted into place, the -- then the clay for the liner
24 would be compacted on top of that.

25 Q Okay. Okay. So I have a note to myself, and I'm not

1 sure if I can recapture this at this point, but I noted
2 that you said that Ecology made a different decision than
3 where you would have been guided by that Tech Note 23 on
4 lagoons, the higher risk ones.

5 Does that question make sense?

6 A Okay. I believe that would be in reference to in Tech
7 Note 23, there are four categories which are outcomes of
8 the assessment, 1 through 4, and then other than
9 Category 4, Categories 1 through 3 have three
10 subcategories, if you will.

11 And for some of the subcategories for the main
12 Category 2 result, NRCS guidance in that document says
13 that they suggest that that lagoon should -- that that
14 lagoon should not be used until deficiencies noted in the
15 assessment are fixed.

16 That is the guidance that NRCS provides in that
17 document. Ecology chose not to follow that guidance.

18 Q Okay. That's helpful background. Thank you.

19 So I was wondering then, why did Ecology choose not
20 to follow the guidance? What was the reason?

21 A As I recall about discussions in Tech Note 23, the
22 deficiencies noted in Category 2 are what were considered
23 in the guidance minor, and so we felt that minor
24 deficiencies could be, you know -- we would focus on the
25 major ones instead --

1 Q Okay.

2 A -- because those would be of higher risk.

3 Q Okay. And then my last question: I'm getting the
4 impression that there are a lot of cattle, dairy,
5 particularly dairy operations out there that aren't
6 applying for coverage under the general permit. And I'm
7 sort of coming to the assumption that that's because they
8 don't have discharges.

9 Is that why -- why is there that difference?
10 Because I think it's something in the technical
11 definition of the CAFO who has to apply.

12 A Right. So for a facility to be defined as a CAFO, the
13 way it's laid out in the permit, we have a different
14 definition for a small CAFO versus just a CAFO.

15 For a CAFO, you have to have animals that are
16 confined for 45 days or more during a 12-month period in
17 an area where there's no crop residue or pasture
18 essentially, and then that facility has to have a
19 discharge.

20 Now, I can't speak for all the facilities out there.
21 However, I think, based on my experience, getting
22 facilities to apply for a permit is -- and the lack of
23 facilities applying for a permit, I think, is very much
24 probably similar to other permitting activities where
25 some folks do come in the door voluntarily. Some folks

1 do come in the door after discharge.

2 But, you know, there's going to be various groups
3 that don't come in the door unless, you know, Ecology
4 pursues them for a discharge.

5 Q Okay. So most of the other operations that are out
6 there, there's a lot of them that meet the requirements
7 for applying for CAFO except the question about whether
8 they have a discharge or not? That's the part where
9 they're saying they don't need to apply because they
10 don't have a discharge?

11 A I would say that, yes, I mean, to require a permit, there
12 has to be a discharge.

13 Q Okay.

14 A And so I'm -- I believe that there are facilities out
15 there that are not having discharges, and so they aren't
16 required to apply for a permit.

17 But, again, I think there are probably facilities
18 out there that may meet the definition because they've
19 had a discharge and that either they just haven't applied
20 or, you know, Ecology, you know, hasn't followed up with
21 them.

22 That said, there are a number of facilities that
23 Ecology is following up with that have had discharges to
24 get them under permit coverage for discharge.

25 Q So how many -- what was the numbers again about how many

1 are or have applied under this -- the new permit now?

2 A So there's approximately 23 permittees in the last time I
3 looked.

4 Q Okay.

5 A Roughly I would say half to two-thirds of those are new
6 since we've issued these new general permits in 2017.

7 Q Okay.

8 A And then we do have about ten to twelve operations that
9 we are in the process of getting to apply for a permit or
10 that are in the application process.

11 Q Okay. So do you have any idea of the numbers that are
12 out there that would meet everything, all of the other
13 requirements of the CAFO permit except the discharge
14 piece, assuming you can't tell that one way or the other?

15 I mean, are there a lot of operations that have
16 these types of numbers that would -- you know, numbers of
17 animals that would meet this requirement?

18 A So because there is a dairy program, we have a better
19 idea for dairy operations.

20 Q Okay.

21 A I think the last time I looked, there was roughly between
22 420, 450 dairy operations in the state. Those
23 operations, of course, are spread across small to large
24 facilities.

25 I think there were roughly -- in about 200

1 facilities -- maybe 2- to 250 facilities that we would
2 consider a CAFO under the permits just based on size --

3 Q Mm-hm.

4 A -- not that they've necessarily had a discharge, and then
5 the rest of those facilities would be small, which would
6 fall under the small CAFO definition if they'd had a
7 discharge and Ecology pursued that.

8 For nondairy operations, Ecology doesn't have a good
9 list of those facilities. Mostly we find out about those
10 through other work that Ecology is doing, say point
11 source work or through complaint response through
12 complaints that we've received.

13 Q Okay. And do you have very many of the nondairy people
14 that have applied for this permit?

15 A So let me see here. I believe we've had four. There
16 were four beef operations that were covered under the
17 2006 permit.

18 Since we've issued the 2017 permit, there is one
19 poultry operation that has applied for permit coverage
20 and also one heifer raising operation that's applied for
21 permit coverage.

22 There was a unique situation in the 2006 permit
23 where another poultry operation was covered by that 2006
24 general permit, as well as an individual permit. That
25 poultry operation has moved completely over to the

1 individual permit, so I'm no longer counting that under
2 the general.

3 MS. BROWN: Okay. Okay. That's
4 helpful. Thank you.

5 EXAMINATION

6 BY MS. MARCHIORO:

7 Q So in terms of the Table 2 of the combined permit, which
8 sets out the -- you don't need to look at it. I bet you
9 memorized it -- has to do with the sizing and what's a
10 small CAFO and what's the large CAFO? Where does that
11 information come from to create that table?

12 A Okay. So Table 2 is based upon the federal definitions
13 of a CAFO. I can't provide you the exact Code of Federal
14 Regulation off the top of my head, but the federal -- the
15 Code of Federal Regulation lays out a decision for three
16 different sizes of CAFO: small, medium, and large.

17 They very much mirror the -- well, the permit very
18 much mirrors the 45 days of confinement and basically
19 non-pasture non-field areas. And what we did is, we
20 simplified the definition down to two categories because
21 really the difference in the federal rules was animal
22 numbers.

23 So for a large or medium facility to be required to
24 get a permit, they have to have a discharge. The only
25 difference in the federal rules was that a large

1 facility -- which is just automatically classified as a
2 CAFO. A medium is not.

3 So a medium size facility would be classified as a
4 CAFO if it's -- has a certain number of animals and has a
5 discharge.

6 A large size facility would have been -- is
7 classified as a CAFO just based on the size -- the number
8 of animals alone, but even with that classification, it's
9 not required to -- such a facility is not required to
10 obtain a permit unless there's a discharge.

11 So because of the -- there really wasn't a
12 difference. In order to simplify terminology, we just
13 broke things into two categories.

14 Q So in terms of the discharge, if a lagoon is designed to
15 seep, is that not a discharge if it's -- where it would
16 eventually go is to the groundwater table?

17 A So if lagoon seepage does reach the groundwater table,
18 that would be a discharge that requires a facility to
19 obtain permit coverage.

20 Q And the way that would come to light would be someone
21 taking a groundwater sample and finding out that there's
22 nitrate -- let's use that as an example -- at high levels
23 in close proximity to a CAFO?

24 A Groundwater sampling, I believe, would be one way for
25 determining that.

1 I think in some of our permit implementation
2 discussions, we've talked about how you could also make
3 that determination based on a predominance of evidence in
4 terms of things like length of time that a lagoon has
5 been in place, what the known groundwater table is, other
6 soil characteristics.

7 But that's -- that's really an area where Melanie
8 would have to answer better than I could about what would
9 go into that.

10 Q So going back to the schematic of the lagoon, discussing
11 in terms of if it's two feet of separation -- let's just
12 say, for sake of argument, that where the Point 1 was and
13 there was the clay layer and there was Point 2, let's say
14 that clay layer is a foot, it makes a difference whether
15 you're measuring your two-foot separation from Point 1 or
16 Point 2, doesn't it?

17 A Yes, it does.

18 Q Okay. And can Ecology be more protective of groundwater
19 than, say, the NRCS?

20 A Yes, we can.

21 Q And then back to the -- when you decide to take -- when
22 the permit has requirements for the soil sampling, I'm
23 just trying to understand the timing question which seems
24 to be of interest.

25 If -- is that your understanding of the issue? Is

1 it that it's difficult to go out when a crop is still on
2 the ground to take a soil sample to meet the October 1st,
3 for example, or is it really more an issue of, if you go
4 when there's winter rains, that let say there's nitrates
5 on the surface, they'll end up going farther into the
6 soils, that might change the nutrient budget.

7 I'm just trying to understand what the concern is.

8 A So I think there's two concerns. One is that taking a
9 soil sample when a crop is on the field can lead to crop
10 damage because you have to take subsamples around a field
11 in order to form, based on the permit requirements, a
12 composite sample that represents the field.

13 So there is concern about the crop damage from that
14 equipment on to the field. In addition, for Ecology, our
15 concern is, yes, we want the sample taken prior to rain
16 starting because, in this example, nitrate would move
17 with that rainwater that's going down into the soil
18 profile and change the outcome of our fall report card
19 samples.

20 Q Would it possibly dilute them? Might be results so that
21 your feedback would be that there could be a higher
22 application rate the following year?

23 A Yes.

24 Q Okay. So EPA reviews the draft permits?

25 A Yes. EPA has an opportunity to review the draft permits

1 before they're issued.

2 Q Did EPA have any comments about the incorporation of the
3 nutrient management plan, those elements into the permit?
4 Did they have any commentary back to Ecology about that
5 approach?

6 A I don't recall comments to that effect.

7 MS. MARCHIORO: Thanks.

8 JUDGE FRANCKS: Okay. Follow-up to
9 board questions?

10 MS. BARNEY: None from Ecology. Thank
11 you.

12 MS. MATSUMOTO: We have a few.

13 JUDGE FRANCKS: Okay.

14 FURTHER EXAMINATION

15 BY MS. MATSUMOTO:

16 Q Mr. Jennings, Board Member Wise was asking you a bit
17 about liners in lagoons and some synthetic liners and
18 whether there were cost concerns.

19 Are you familiar with waste storage ponds and
20 lagoons that are used in other industries?

21 A No. That's -- I don't have familiarity with those.

22 Q You didn't ever consider what other industries do for
23 storage ponds when you were looking at storage ponds for
24 this permit?

25 A Other -- no. I mean, we were focused on the CAFO

1 industry.

2 Q And, similarly, there was a question about how would you
3 know if a facility was out of compliance with the permit,
4 and so specifically, if you wanted to know whether a
5 facility was exceeding groundwater effluent limitations,
6 how would you know that?

7 A So you're referring to the section of the permit that
8 references the groundwater quality standards; correct?

9 Q Correct.

10 A Okay. So to actually know what's in the groundwater, you
11 would need to sample -- sample that groundwater and have
12 it analyzed.

13 Q Okay. And there was -- I think you also mentioned that
14 one way Ecology might learn of compliance issues was
15 through the required annual report; correct?

16 A I see that as a potential avenue of finding out about the
17 compliance issues.

18 Q And those compliance issues could include discharges that
19 aren't authorized by the permit; correct?

20 A Yes. Well, I believe there is a section on the annual
21 report that is where a permittee is required to list the
22 discharges that have occurred throughout the year.

23 However, I think, if the discharge is actually
24 noncompliance with the permit, we should have found out
25 about it sooner. There's a noncompliance reporting

1 section of the permit where permittees are required to
2 report on noncompliance.

3 Q But since the annual report is a self-reporting
4 requirement, that only would apply to a CAFO facility
5 that actually has permit coverage; correct?

6 A Correct. The permit would only apply to those facilities
7 that have permit -- have been issued permit coverage.

8 Q And so when Board Member Brown was asking you just kind
9 of about the numbers of facilities in the state, total
10 numbers of CAFO, setting aside the question of whether or
11 not they've had a discharge, if there are any of those
12 facilities that qualify as a CAFO but don't have permit
13 coverage, they don't have to submit an annual report to
14 you about discharges to groundwater, for example, do
15 they?

16 A No. So any facility that doesn't have permit coverage is
17 not required to comply with its requirements.

18 Q Right. And as you said in response to the questions
19 about numbers, aren't there over 500 of those facilities
20 in the state?

21 A I don't know that there's that many. I think I
22 referenced around 430 to 450 dairies, and then we don't
23 have a good number for the other types of facilities.

24 Q Board Member Brown also was asking you some questions
25 about measuring the bottom of the lagoons, and in order

1 to -- you said that one way you might know where the
2 bottom of the lagoon was, was from some records about the
3 compaction when the lagoon was being put in; is that
4 right?

5 A Just based on the understanding I have that, yes, there
6 may be records from how the lagoon was built that would
7 tell you where the liner is.

8 Q Okay. And so that's information that can only be known
9 then if it's, say, a new lagoon that someone is present
10 and documenting the installation or if there are records
11 that actually exist to reflect any type of liner depth;
12 correct?

13 A So new lagoons may have that documentation, but
14 permittees, if they don't have that documentation, would
15 need to obtain it as part of their lagoon assessment, I
16 believe.

17 Q So if some of these lagoons have been around for many,
18 many years and it turns out the documentation doesn't
19 exist, how would a permittee be able to obtain that
20 measurement?

21 A That's not really my area of expertise. My guess is that
22 a permittee would need to hire a consultant that does
23 have expertise to determine that information.

24 Q And in terms of the number of facilities that are being
25 covered, you had kind of been making a distinction about

1 the question of whether or not a discharge exists kind of
2 as an additional question on top of whether the CAFO
3 numbers are satisfied. Board Member Marchioro was
4 directing you to Table 2 and the numbers listed there;
5 correct?

6 A Yes.

7 Q As we've also discussed and seen in various evidence,
8 Ecology has recognized and you've just stated a moment
9 ago about how every lagoon discharges; right? They're
10 designed to have some type of leakage rate?

11 A I believe I stated that lagoons, as they're designed,
12 have a seepage rate. I don't believe I stated that they
13 all discharge.

14 Q So if a facility has a lagoon and it's one of these
15 lagoons that is designed to leak, shouldn't they be
16 obtaining permit coverage?

17 A Again, that depends on whether there is actually a
18 discharge taking place. Yes, there is most likely
19 seepage, but my understanding is that seepage may not
20 always reach groundwater.

21 There may be circumstances where that seepage
22 doesn't reach groundwater, so we can't make a blanket
23 statement that all lagoons are automatically discharging.

24 Q So what are the circumstances where a lagoon that is
25 designed to have a leakage rate would be leaking and

1 there would not end up being a discharge to groundwater?

2 MS. HOWARD: Your Honor, I'm going to
3 object. The witness has testified a couple times this is
4 not necessarily in his area of expertise, and I think
5 he's -- there is a foundation for the question that's
6 being asked as a result.

7 JUDGE FRANCKS: I'm going to overrule
8 the objection. I'm going to let him answer that, but I
9 think we can probably move on.

10 A So generally, I think circumstances where you have a
11 lagoon, if it has seepage but groundwater is a very long
12 ways down, it's conceivable that that seepage may not
13 reach groundwater or, you know, a situation where I'm
14 thinking, you know, the lagoon was built and happened to
15 be over really high clay soils, which, you know, clay is
16 used to limit the permeability of the lagoon itself, so
17 in such a situation that -- that seepage may not actually
18 reach groundwater.

19 Q So where would it go in that case?

20 A That, I -- that, I don't really know.

21 MS. MATSUMOTO: Okay. That's it.

22 JUDGE FRANCKS: Ms. Howard.

23 MS. HOWARD: Thank you.

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FURTHER EXAMINATION

BY MS. HOWARD:

Q Just one quick clarification. With regards to liners, are clay liners a type of liner?

A Yes, I believe so.

Q And are clay liners a type of liner that is used in a lagoon in animal waste storage lagoon?

A Yes. They are one of the liner types.

Q Okay. So it's not necessarily correct to say that, without a clay liner, there is no liner in a lagoon?

A I believe I used clay liners to try and describe, but there are lagoons that are built just with soils that has been amended with clay to increase the clay content.

So I don't think -- so in those circumstances, I don't think there's a distinct clay layer that you would call a liner.

Q Is the area that you would call a clay liner a compacted area of soil?

A Generally, yes. I think the clay liner, that area, is compacted, and that's how the permeability is achieved as part of the structure.

Q And in order to achieve a certain permeability rate, would you also have to add bentonite, for example, in order to achieve a certain permeability if you weren't already achieving it with the natural soils?

1 A Yes. Clay -- the soils of the structure, clay would be
2 added to those, amended and mixed in order to increase
3 the clay content, which, when compacted, would lead to
4 the desired permeability.

5 Q Have you ever actually observed a clay liner on an animal
6 waste lagoon?

7 A Not that I -- not that I would -- had knowledge of.

8 Q So you said earlier that you didn't think that you could
9 discern the difference between a liner and the other
10 soils, but you actually haven't observed that yourself;
11 is that correct?

12 A I have not observed a clay liner as a component myself.
13 I'm going on -- based on diagrams that I've seen.

14 MS. HOWARD: No further questions.
15 Thank you.

16 JUDGE FRANCKS: Okay. Thank you very
17 much. You're excused.

18 Ms. Barney, do we have another witness?

19 MS. BARNEY: We do. Ecology calls
20 Melanie Redding.

21

22 MELANIE REDDING, having been first duly sworn
23 by the Certified Court
24 Reporter, testified as follows:

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DIRECT EXAMINATION

BY MS. BARNEY:

Q Good afternoon, Ms. Redding.

A Good afternoon.

Q Would you please say and spell your name for the court reporter.

A Melanie Redding, M-e-l-a-n-i-e, Redding, R-e-d-d-i-n-g.

Q And let's turn to Exhibit R-25. It will be in the green binders.

A Oh, there it is. Sorry.

Q It's all about binder management.

A Okay.

Q Do you recognize this document?

A I do.

Q Can you tell us what it is, please.

A It's my most current resume.

MS. BARNEY: Ecology moves for the entry of R-25.

MR. TEBBUTT: No objection.

JUDGE FRANCKS: R-25 is admitted.

(Exhibit No. R-25 admitted.)

Q (By Ms. Barney) We're going to review some of the aspects of your resume here.

Can you tell us what your educational background is.

A I have a bachelor of science in environmental geology.

1 Q And when did you gain that credential?

2 A 1986.

3 Q And where are you currently employed?

4 A Washington State Department of Ecology.

5 Q How long have you been at the Department of Ecology?

6 A 1991.

7 Q And what positions have you held there? You can start
8 with the earliest and move us forward.

9 A I've always been employed as a hydrogeologist. I started
10 off in the water quality program, and my first job was --
11 the groundwater standards had just been adopted, and I
12 was hired to write the implementation guidance for the
13 groundwater quality standards.

14 And then once that was completed, I moved down to
15 our Southwest Regional Office, and I assisted with permit
16 development on any kind of permits that had a groundwater
17 component to them.

18 And then about 15 years ago, I moved up into our
19 environmental assessment program, which is essentially
20 like our research part of the agency. And I've been
21 working on projects to help assist the rest of the agency
22 with science-based questions or issues.

23 Q Okay. So looking at the portion of your resume, about
24 the middle of the first page here, it says "significant
25 initiatives."

1 I think you just mentioned the implementation
2 guidance?

3 A Yes.

4 Q We'll talk a little bit more about that in a minute.

5 Could you tell us about Bullet Point No. 2, "Lead
6 responsibility for resolving program policy issues to
7 protect groundwater"?

8 A Yes. I took on -- I was actually designated in my
9 position description as an expert for land treatment
10 systems.

11 So I was involved with trying to manage issues
12 related to, like, food processors and how they were land
13 applying their wastes, on-site sewage systems and how
14 their disposal mechanisms were consistent with the
15 groundwater quality standards.

16 So I touched on a lot of different kinds of issues
17 that were related to groundwater quality in that
18 position.

19 Q Okay. Thank you. If we look at the top of Page 2 of
20 your resume, under "Selected Publications," the one on
21 the top there is titled, "Literature Review Manure and
22 Groundwater Quality"?

23 A Yes.

24 Q Could you please pull up Ecology's Exhibit E-4. It might
25 be in a different notebook than that one, one of the ones

1 behind you. I guess it's R-4. Sorry.

2 A Okay. Got it.

3 Q Can you take a look at the first page of that document.

4 A Yes.

5 Q Is that the -- is that the literature review you're
6 referring to?

7 A It is.

8 Q What was your responsibility with regard to writing this
9 literature review?

10 A At the time I was working for the environmental
11 assessment program, and we had a request from the water
12 quality program to look at some of the science behind
13 permitting CAFOs, specifically how manure relates to
14 groundwater quality.

15 Q And when did you begin your work on the literature
16 review?

17 A I believe it was proposed in 2011, and then I think it
18 got started about 2012.

19 Q And what specifically did your work entail?

20 A So as part of when they ask us to do something, they
21 prepare a scope of work, and they --

22 Q Just to clarify, when you say "they" --

23 A Oh, water quality program.

24 Q Okay.

25 A They told me specific issues that they were interested in

1 having a better understanding of the science and what the
2 literature said, so it had to do with, like, soil nitrate
3 values, land application. There was just sort of a list,
4 and pretty much those issues are reflected in this
5 document.

6 Q So what literature did you include in your review?

7 A There's a section called "Methodology" in the document,
8 but essentially what it is -- it's fairly early on.
9 Methods, Page 14. Essentially we looked at peer-reviewed
10 journals.

11 Q This will be Page 16 of the PDF, for people's
12 information.

13 A It says Page 14 on this document.

14 Q Oh, does it? Sorry. And you're right. Sorry. My
15 error.

16 A So essentially we looked at peer-reviewed journals. We
17 looked at scientific papers by other state agencies,
18 universities, or even information that came from
19 reputable sources like the NRCS, other kind of
20 institutions like that.

21 Q Were there -- was there literature that you found that
22 you ended up not including in the review?

23 A Yes. We did not include raw data. We did not include
24 personal opinion. We did not include incomplete studies.

25 And the direction that I was given was very clear to

1 me, was, we want to know what the science says. Plain
2 and simple. We want to know what the science says.

3 So that was my basis for moving forward with this
4 document.

5 Q Did the review itself undergo peer review?

6 A Yes. It went through a couple of internal reviews, and
7 then it also went through an external peer review.

8 Q And who were your external peer reviewers?

9 A So that's in the acknowledgment section, but it was
10 Pony -- or Charles Ellingson -- he also goes by the name
11 of Pony -- from Pacific Groundwater Group, and Ralph
12 Fisher with EPA.

13 Q And how many times did you undergo an internal peer
14 review with the document?

15 A So there was probably two rounds of internal peer review,
16 and then there was comments also designed on trying to
17 help improve the organization of the document,
18 readability, that kind of thing.

19 Q Did you incorporate comments that you received from your
20 peer review?

21 A Oh, absolutely.

22 Q Okay. So how long, approximately, from the start of your
23 publication until it was ready for publication by
24 Ecology? How many years?

25 A It was about four years.

1 Q Okay. Did you work at all on the 2006 CAFO permit?

2 A No, I did not.

3 Q Was producing the literature review the only involvement
4 you had with the permits that are under appeal?

5 A Well, that was -- that was sort of -- that was sort of
6 my -- that was what I was actually tasked to do, was to
7 write this document, to provide the science.

8 And beyond that initially, I was just providing
9 comments on the draft permits, but then after the final
10 draft permit, I believe it's called, after that went out
11 for review and we got all the comments back, Bill Moore
12 from water quality approached my supervisor and asked for
13 more time to help with response to comments from a
14 technical perspective and then help with revising permit
15 conditions to make sure that we got the technical aspect
16 in.

17 Q So did you participate in the development of any of the
18 specific aspects of the conditions that are in the
19 permits?

20 A Yes, I did.

21 Q Do you recall in what areas you provided or that you
22 worked on the development?

23 A Do you want me to go through permit piece by piece or
24 just in general?

25 Q Just in general.

1 A So I worked -- the adaptive management matrix, I provided
2 comments on that. The timing issue, provided comments on
3 that.

4 Boy, it seems like -- you know, the permit is -- it
5 all works together, so there was some different pieces
6 that I worked on that it's all -- it all kind of works
7 together, so that's kind of tough to say.

8 Q When you say you worked on aspects of it, did that
9 involve just commenting on documents you received or did
10 you actually have actual input?

11 A So it was a combination of both. And I did work fairly
12 closely with John and also Bill. And then after the
13 draft permit, after we got the comments back, then I was
14 working with John's internal work group, so --

15 Q Okay. Thank you.

16 Since you mentioned the adaptive management matrix,
17 let's start with the land application of manure as a
18 topic.

19 A Okay.

20 Q Let's see. Can you turn to Exhibit R-5, please.

21 A Got it.

22 Q Do you recognize this document?

23 A Yes, I do.

24 Q Can you tell us what this is?

25 A This is the Implementation Guidance for the Groundwater

1 Quality Standards.

2 Q And did you state earlier that this was one of the
3 documents that you authored for Ecology?

4 A Yes, it is.

5 Q And when, again, was that?

6 A It was 1996 that I completed this document.

7 Q Has it been updated since then?

8 A It was revised in 2005, but my recollection of this
9 document being revised was that they only revised
10 Appendix A essentially to update the criterion, though
11 the -- as those had been updated through EPA or
12 Washington State Department of Health.

13 And then I believe they also updated like the PQLs,
14 which are essentially the laboratory requirements about,
15 this is as low as we can detect when we're actually
16 looking for this constituent in water. So those kind of
17 things were updated.

18 Q So in terms of land application, what is the purpose of
19 land application?

20 A Land application, a better term for that are -- is really
21 land treatment. So it's when you're -- when you've got
22 material, and you're trying to treat it by use of either
23 a crop or the soils, that's considered land treatment.

24 Q How is it a treatment?

25 A So there's nutrients that are -- so let's say manure, but

1 it also holds true for food processing waste. There's
2 nutrients in that waste.

3 And it can be used to beneficially grow a crop. So
4 you're treating that waste. You're using those
5 nutrients, and you're also getting a crop out of it.

6 So it's kind of a nice win-win situation.

7 Q Could you turn to Page 14 of the document, please.
8 You'll see a diagram at the top.

9 A Okay.

10 Q Oh, it's Page 2 of the document. I'm sorry. It's
11 Page 14 of the exhibit.

12 A Okay. Got it.

13 Q Could you explain this document to us, please.

14 A So this is essentially, like, a cross section of what you
15 would see if you were to cut the earth open, and at the
16 very top you have the land surface, and you'd have a crop
17 and those are cats.

18 And so then you have -- beneath the land surface,
19 you have the root zone, and then part of the root zone is
20 also in the vadose zone. The vadose zone is essentially
21 the unsaturated zone.

22 Q And what does that mean?

23 A It means that you've got water that may be present in
24 there, but until it's saturated, it will only move
25 under -- through -- through gravity and matrix forces.

1 It won't actually move horizontally. That only occurs
2 once you've got saturated conditions.

3 So it's not considered groundwater unless you've got
4 saturated conditions.

5 Q What else can you tell us about this diagram?

6 A So the interesting thing about what you do with the land
7 surface, there's -- what you do at the land surface,
8 like, say if I were to apply potato processing wastewater
9 at the land surface today, whatever doesn't get used by
10 the root zone will take a while to move through the
11 vadose zone because it's moving very slowly, and it only
12 is -- like with nitrate, it's only moving with water.

13 So it's going to take a while to move through the
14 unsaturated zone until it reaches groundwater. Once it
15 reaches groundwater, it depends upon the conditions of
16 the aquifer as to how long it will actually take until it
17 gets to a monitoring well or a drinking water well.

18 So there's -- what we call is a lag time between
19 what you do at the land surface and when you see it in
20 groundwater.

21 Q So will that water always reach groundwater?

22 A So when you apply water, it's -- if it's in the root
23 zone, chances -- it's got an opportunity to be used by
24 the crops, by the roots uptaken by the plant.

25 And that's really what we want to see when we're

1 dealing with these land treatment systems. We want to
2 keep the water in the nutrients in the root zone so it's
3 available to the crop.

4 Once it goes beneath the root zone, at some point,
5 it's most likely that that water will reach groundwater.

6 Q And how long will that take?

7 A It's really site specific because it depends upon what
8 the media is in the unsaturated zone and in your aquifer,
9 so it's really a site-specific thing.

10 Q Are the land application areas of a CAFO significant in
11 their role as a treatment?

12 A I'm not sure I understand your question.

13 Q So a land application area on a CAFO --

14 A Mm-hm.

15 Q -- is that -- is that a significant area if you're
16 looking at the role of the land application as treatment?

17 A Oh, I see what you're saying. So the question is, is the
18 land application like a significant part of their -- what
19 they're doing on their -- on their operation?

20 And if we were to go back to the literature
21 review --

22 Q We can do that.

23 A Okay.

24 Q It's R-4.

25 A Thank you. So one of the things that we did -- I've done

1 some work up in Whatcom County in the Sumas-Blaine
2 Aquifer, and I found a document that was done by Almasri,
3 and -- where they looked at the loading from different
4 kinds of sources that was happening in the Sumas-Blaine
5 Aquifer, and that's on Page 21. Yeah. That's it.

6 So what these researchers did is, they looked at all
7 the sources, and they broke them out into percentages,
8 and there's even a table that breaks that down further on
9 the next page.

10 But the thing that I think is most important is,
11 they identified that dairy lagoons contribute 2 percent
12 of the nitrogen over the Sumas-Blaine Aquifer, and that
13 manure provides 65 percent of the potential nitrogen load
14 that's being applied to the land surface.

15 So land application or the land treatment part of
16 the facility is really a big part of a land treatment
17 system.

18 Q So just to clarify that, so dairy lagoons are storing
19 manure; correct?

20 A Correct.

21 Q And what this 65 percent we see here for manure, that's a
22 manure attributable to land applications?

23 A Correct.

24 Q Okay.

25 A And it's a loading, and there's a difference between

1 loading and what actually goes to groundwater. So this
2 is loading to the land surface.

3 Q So what is that difference then to what actually ends up
4 going to groundwater? What are the factors that would
5 affect that?

6 A Well, it really depends on what the crop doesn't use,
7 what is actually leached below the root zone and then
8 continues to migrate to groundwater.

9 Q Okay.

10 A And just to -- so if we go to the table on Page 22, this,
11 I think, also might help explain the difference in the
12 percentages between the lagoon area and the land
13 application area because the dairy lagoons the nitrogen
14 loading might be -- look like it's actually higher.

15 But when you do it in terms of acreage, what is the
16 amount of area that a lagoon covers compared to land
17 application? It's very, very small.

18 So that explains the difference between when we're
19 looking at lagoons and what are they contributing to the
20 environment versus a land application field.

21 Q So in order to be a proper treatment system, the plant --
22 the application has to be planned so the plants uptake
23 the majority of the nitrogen?

24 A Correct.

25 Q Is that how that goes? So what needs to be considered

1 when an operation is planning manure applications?

2 A So the NRCS has something called the four R's, and I know
3 I'm going to get this wrong, but some of them have to do
4 with the right amount, the right time, the right area. I
5 can't remember what the fourth R is.

6 But that really holds true when we're trying to
7 figure out, like, how to really maximize the land
8 treatment system so it's keeping the nutrients in the
9 root zone.

10 And I think one of the things that's really
11 important in the permit is, we have a nutrient budget
12 that is in the beginning of the -- that's taken in the
13 spring to actually tell the producer, the permittee, what
14 is available right now? And then using that to say,
15 well, what -- what do I need to amend it with? How much
16 can I apply?

17 Those are the kind of things that I think are really
18 important.

19 Q Could you look at Exhibit R-15.

20 A Got it.

21 Q Can you tell us what this document is.

22 A This is a document called "Nitrogen Dynamics at a Manure
23 Grass Field Overlying the Sumas-Blaine Aquifer in Whatcom
24 County."

25 It's an Ecology publication, but it was written in

1 conjunction with Joe Harrison, who is with the WSU.

2 Q And are you familiar with its contents?

3 A Yes.

4 Q Generally, what did this study look at?

5 A So this study -- this was a really good study. It was --
6 they looked at a manured field up in Whatcom County for
7 four and a half years, and they looked at not only the
8 inputs and outputs of nitrogen to this field so their
9 accounting for how much manure was applied, how much -- I
10 don't know if they considered if there was a commercial
11 fertilizer, but they considered all the inputs going onto
12 that field.

13 And then they looked at the output, so they were
14 measuring the crop -- the crop and telling how much
15 nitrogen was actually removed when they harvested the
16 crop.

17 They also were looking at soil nitrate values, and
18 they look at that year-round, and I believe it was weekly
19 during the fall, and they looked at groundwater
20 monitoring.

21 So this is really a comprehensive look at a manured
22 land application facility.

23 Q Could you turn to Page 25 of the exhibit. I believe it's
24 on Page 23 of the executive summary, so XX, three little
25 I's.

1 A Got it.

2 Q Do you recognize this illustration?

3 A I do.

4 Q Can you tell us what this says and is illustrating.

5 A So this is a graph with all the soil nitrate that they
6 collected over this four-and-a-half-year period.

7 And the green zones are the fall soil nitrate
8 concentrations. And the red line is the target that they
9 were shooting for, which would be 15 parts per million of
10 nitrate in the soil.

11 There's a couple of things that jump out to me when
12 I look at this graph, and one is, there's an awful lot of
13 variability in soil nitrate, not only throughout the
14 year, but also in that fall time frame when they might be
15 taking that report card sampling or that fall soil
16 nitrate.

17 The other thing that jumps out at me, too, is that
18 the spring -- if you tried to look at -- the dates are a
19 little bit hard to see, but if you look at anywhere
20 between the December and the March -- or the April
21 values, well, first of all, you can just look and see
22 that never at any time were there any spring soil nitrate
23 samples that were zero. There was always some soil --
24 there was always some nitrate present in the soils.

25 But there wasn't consistency in that springtime when

1 you look there either. So it wasn't a clearcut, the
2 spring always shows us a certain amount.

3 Q So what does that tell you about planning a nitrogen
4 budget for the coming year?

5 A I think it just reinforces how important that spring
6 summer soil is because, if you're doing a nutrient budget
7 and you really want to know how much nitrogen does my
8 crop need, having your starting point is really
9 important.

10 And there's a lot of variability that goes into what
11 is the spring soil nitrate because there's something that
12 happens over the wintertime -- well, it happens
13 year-round, but it's called mineralization.

14 And it's when you take organic nitrogen and it
15 slowly converts to ammonia, and that process -- we don't
16 really have a good sense of what that mineralization rate
17 will be from year to year.

18 And even when you go to some of -- some of the
19 documents like they're in the literature review, like
20 Barry 2000, he talks about that the mineralization rate
21 is unpredictable, and it might be anywhere from 40 to 70
22 percent of what you saw that was in the soil in the fall.

23 So not having a definitive we know what the number
24 is going to be in the spring based on the fall really
25 highlights the importance of knowing what's in the soil

1 before you start applying more nutrients.

2 Q Okay. Thank you.

3 So you also mentioned timing as another aspect
4 application? What needs to be considered when an
5 operator is --

6 MS. BARNEY: Well, before we leave
7 this, Ecology would move to enter Exhibit R-15.

8 MR. TEBBUTT: No objection.

9 JUDGE FRANCKS: R-15 is admitted.

10 (Exhibit No. R-15 admitted.)

11 Q (By Ms. Barney) What types of things need to be
12 considered when an operator is planning the timing of
13 manure applications?

14 A So it really has to do with providing nutrients when the
15 crop needs it, and there's a figure. It's on Page 49 of
16 the manure literature review. Oh, that would be R-4.

17 Q So I believe we're on 51 of the PDF, the figure at the
18 bottom there.

19 A So this is a very simplistic illustration, but I think
20 it's important because it shows the growth phase of a
21 crop and the cumulative nitrogen uptake by that crop.

22 So you see in the very beginning, the slope of that
23 line is very kind of flat, and that's when the crop is
24 just starting to grow. And then you see the line
25 steepens quite a bit, and that's rapid nitrogen uptake by

1 the crop.

2 So that's where you really want to be applying
3 nutrients because that's when the crop will take them up.
4 And then once the crop has matured to a certain point,
5 it's going to slow that nitrogen uptake.

6 So really timing the applications so they coincide
7 with a plant's growth needs is really important.

8 And I've done some work on looking at year-round
9 land application for these food processors, and one of
10 the things I've noticed -- I mean, one, there's a lot of
11 similarities with a land treatment system, whether it's
12 food processing waste or manure, but the year-round land
13 application, we saw an awful lot of groundwater
14 contamination.

15 And so that does -- when I start to think about
16 these situations, it really highlights to me that the
17 timing is a very critical piece to protect groundwater
18 quality.

19 Q So in putting together the literature review, did you
20 look at any tools to assist a producer with proper timing
21 for their application?

22 A I did. That was one of the issues water quality asked me
23 to look at.

24 Q And what tools did you look at?

25 A There were three -- well, I actually looked at four. One

1 of them was T-sum 200, which John talked about, and
2 that's present in the permit.

3 Q So are these in the literature review?

4 A Yes, they are. I'll bet that's in the same section.

5 Q Okay. Perhaps even the next page.

6 A So there were three tools that I found that I identified
7 that could possibly use to look at timing. One was the
8 Washington irrigation guide, and that deals more with
9 irrigation requirements of a crop rather than nutrient,
10 but it gets at when a crop is growing; the wetlands
11 climate guide, similar kind of tool; T-sum 200, which is
12 described on Page 55 of the literature review.

13 And then I also expressed some of the issues applied
14 with the application risk management also known as ARM.

15 Q And can you tell us a little bit about ARM?

16 A So applied risk management is a program that is proposed
17 out of the Whatcom County conservation district. They're
18 looking at finding windows of when it is okay to apply
19 manure during the nongrowing season. And they've looked
20 at essentially climate, when is it okay to apply.

21 When I've seen the proposal, one of the things that
22 I noticed was that their low risk times for surface water
23 runoff were high risk times for groundwater leaching, and
24 when it was low risk for groundwater, it was high risk
25 for surface water.

1 So that gave me some concerns, and Ecology had asked
2 EPA, who was giving Whatcom County conservation district
3 some money to study this, hired the U.S. geological
4 survey to conduct a groundwater study up in Whatcom
5 County.

6 And as it stands right now, the Whatcom CD produced
7 a report that on the front page cover says, "This
8 document has not been peer reviewed."

9 The USGS study saying whether or not water quality
10 was impacted by this practice, they have not released
11 those results yet, so, as yet, this is unproven
12 technology from my perspective.

13 Q So in terms of, as you mentioned, T-sum 200, Mr. Jennings
14 spoke about that yesterday and a little bit today was
15 incorporated into the permit, what are the aspects of
16 T-sum 200 as they relate to guiding a producer for
17 purposes of determining timing?

18 A It really looks at temperature units, and so it applies
19 regardless of where you're at. So it looks at -- from
20 January 1st, you take the average of the maximum
21 temperature and the average -- or the maximum temperature
22 and the minimum temperature, and it averages those and
23 that becomes your number.

24 And every day after January 1, it's a cumulative
25 count. And once you reach 200, the tool says you're good

1 to go and you can start -- you can start. The crops are
2 growing, so you can apply manure. That's the theory
3 behind it, and it seems to be widely accepted.

4 Q Did you look at any studies that reviewed T-sum 200?

5 A Off the top of my head, I don't know that I did.

6 Q Okay. Thank you.

7 So the spring soil sample, again, its purpose is
8 what?

9 A It's to document what's present in the soils, and its
10 purpose is to help guide the nutrient budget so all
11 subsequent manure applications or nitrogen applications
12 are based on crop needs.

13 Q Okay. Now, what does fall soil sampling accomplish?

14 A Fall soil nitrate is essentially a look backwards. It's,
15 how did we do? And John used the term "report card," and
16 that's actually fairly commonly used.

17 It's essentially, how did we do? And if -- you
18 know, we did all these different practices and then it's
19 a report card on how you did.

20 Q Could you look at Exhibit R-12, please.

21 A Got it.

22 Q We actually discussed this a little earlier today.

23 Do you recognize this paper?

24 A I do.

25 Q And did you review this as part of your review for the

1 literature review?

2 A I did.

3 Q And what -- what did you find in this paper with regard
4 to fall soil sampling dates?

5 A So Sullivan and Cogger, this is actually a really
6 comprehensive useful tool. And one of the things that
7 they recommend on Page 2 is, they use the October 1st
8 date there.

9 And it says, "Because the timing of fall rainfall is
10 unpredictable, the best strategy is to sample fields
11 before October 1st whenever possible."

12 Q And did you conduct -- did you also look at other aspects
13 of fall soil nitrate and draw some conclusions with
14 regards to those?

15 A I'm not sure I know what you mean.

16 Q Well, was that part of your -- was part of your
17 assignment to look at residual levels of nitrate in the
18 soil?

19 A That was actually my first task, was to look at fall soil
20 nitrate and what exactly does that mean.

21 And there was -- back in about 2011, 2012, people
22 were using fall soil nitrate as almost like a compliance
23 tool, but we really didn't know what that number meant.

24 And so one of the first things that water quality
25 asked me to do was, Can you give us a handle on exactly

1 what does this number mean and what is protective of
2 groundwater?

3 And so I looked at -- in the literature what was I
4 seeing from recommendations, from researchers, from some
5 of these soil scientists and agronomists like Sullivan
6 and Cogger, what were their recommendations?

7 And I actually came up with a table that's in the
8 literature review -- and I believe it's been projected
9 earlier -- that compiles these recommendations.

10 Q Would that be the table that's on Page 41 of the
11 literature review, or 43 of the PDF?

12 A Page 41.

13 Q Okay. In your compilation here, what did you determine
14 with regard to these threshold levels?

15 A So when I looked at these, what was presented in the
16 literature, that sort of gave me a starting place
17 because, like Sullivan and Cogger, when we were looking
18 at them, they would have specific recommendations that
19 applied to, this is for Eastern Oregon and Eastern
20 Washington, and it relates to either grass or corn.

21 So I just sort of compiled all of them. I'd never
22 found any one number that was across the board, This is
23 the number that you should meet.

24 The other thing that I noticed when I looked at
25 these researchers that gave these recommendations was

1 that it didn't -- I couldn't tell from their publications
2 whether these numbers were based on specific groundwater
3 quality or surface water quality studies.

4 It sounded to me like it was a compilation of their
5 experience, that they were making these recommendations.

6 So one of the pieces was, Okay, we've got this
7 information, but now how does that translate into what we
8 might expect to see in groundwater?

9 And so part of what I did for water quality then
10 was, assuming that if we need to take these numbers and
11 determine -- like, put them into a model and project what
12 we might see in groundwater, what would those kind of
13 numbers be?

14 And so I did that, and that's in the literature
15 review also. Trying to come up with ballpark, Is 15
16 okay? Is 45 okay? Is 100 okay?

17 We didn't have a clue, and this was sort of trying
18 to get at what soil nitrate values were acceptable and
19 what did we think would -- might happen.

20 Part of the problem also was, we didn't have a lot
21 of studies that I saw that were incredibly comprehensive
22 like the Kerry Harrison report that looked at four and a
23 half years on one field, looking at the soil nitrate and
24 groundwater.

25 So that -- trying to put all that together, we

1 started to see like we think this might be something that
2 actually works. And this is -- we both started to break
3 them out into these field risk levels.

4 Q So can you tell us a little bit more about your selection
5 process for the risk levels.

6 A So like Don said, the Washington State Department of
7 Agricultural already were using these numbers and sort of
8 these different categories. And then when we look at
9 what we saw in the literature, they started to sort of
10 fall into place also.

11 Now, the problem is, again, is coming down with
12 these soil nitrate values, are they hard-and-fast
13 numbers? We don't really feel like we have the evidence
14 to say that, if you're meeting this number in the soil,
15 what exactly that means.

16 We're still sort of trying to get a handle on that.
17 I think we've come a long way, looking at the literature
18 to determine what is a good soil nitrate value and maybe
19 what isn't so good, but that's sort of the basis for
20 developing this.

21 Q And did you also look at and have input into the adapted
22 management actions that are called for in this table?

23 A Yes, I did.

24 Q Can you tell us about your work on that.

25 A So initially a lot of the adaptive management practices

1 were already in the final draft report that Jonathan had
2 developed, and this was just sort of repackaged into a
3 table.

4 But then we went and looked at some of what, like,
5 Sullivan and Cogger 2003, this post harvest soil
6 nitrate -- okay. I'll give you -- I know I'm jumping
7 around, and I apologize.

8 R-12, they actually use, like, an adaptive
9 management matrix in that document. So Page 7 or Table 3
10 of document R-12 is essentially an adaptive management
11 matrix with -- when you have this soil nitrate value,
12 these are the actions that we recommend you take.

13 Q And did you look at other literature in addition to
14 Sullivan and Cogger?

15 A Yes, we did.

16 Q Okay. So are some of the other actions that you found
17 incorporated into the matrix?

18 A Yes. Yes. We tried to make it as comprehensive as
19 possible. We also tried to address -- we tried to allow
20 for some flexibility in this table because one of the
21 things that -- with the land treatment system is, if you
22 have a really bad year, whether it's climate or pests
23 come in and eat your crop, you can have -- your crop dies
24 and all the nitrogen that you applied is left on the
25 field.

1 So then that's still in the soils, but that's not
2 necessarily the permittee's fault. So allowing them,
3 Okay, you've had a bad year. How do you get back up into
4 a more acceptable range?

5 That's why we thought that having that three
6 consecutive year, the trend column, would give them the
7 flexibility to work on improving their soil nitrate
8 levels without having one of those catastrophes that you
9 can't control.

10 And that's part of the problem with the land
11 treatment system is, it's not like a wastewater treatment
12 plant, like ^ Mullot, where you have full control over
13 all the treatment of a treatment plant.

14 You're relying on climatic conditions, the soil, the
15 crop, in order to do your treatment. So there's a lot of
16 uncontrollable variables.

17 Q So just to look at some of the -- the figures in the
18 table, say taking the high risk category, for example,
19 the 31 to 45 parts per million of nitrate, is that -- if
20 you have a field that is within that range, does that
21 indicate nitrate is going to reach groundwater or it's
22 available to reach groundwater?

23 A No. It does not mean it's going to reach groundwater.
24 And typically when we're asking them to do the soil
25 nitrate samples, typically the idea is, it's in the one

1 foot or the two foot. We're having them take it in the
2 fall.

3 So especially in Eastern Washington, that soil
4 nitrate may still be there the following spring, and so
5 that may still be available for the next year's crop.

6 So we don't know exactly what's going to happen to
7 that fall -- the nitrate that we're seeing in the fall
8 soil sample. It may still be there and it may not.

9 Q In Western Washington where it's wetter, will all of that
10 be leached out through rainfall?

11 A So it's tough to know. I've heard people say that the
12 spring soil sample, it's essentially zero because it all
13 leaches out. The Kerry Harrison report with the nitrate
14 graph that was up there earlier demonstrates that it's
15 never at zero.

16 It may be reduced and some may have leached, but
17 some of it is still there, and whether that is from the
18 fall or whether that's been mineralized from organic
19 nitrogen that was applied the previous year, we don't
20 quite know.

21 Q Is -- so I guess that's why it's called a risk level
22 because there's a risk it could leach or it could remain?

23 A Correct.

24 Q Okay.

25 A And we stated in the permit that we really want fields to

1 be in the low or the medium category.

2 Q Do you support this adaptive management matrix?

3 A I do. I think it is a really good tool because what
4 we're trying to do is keep the nitrate in the soil in the
5 root zone. We want to make it available to the crops.

6 And I think the management practices give the
7 permittee an opportunity to be every year annually
8 refining their management practices so they can be
9 improving and really reducing their soil nitrate levels.

10 Q Thank you.

11 I'd like to talk about groundwater monitoring for a
12 while. Can we turn back to R-5, your implementation
13 guidance where we had the diagram of the cats.

14 A Oh, wait. I'm having a binder malfunction here. Yeah.
15 I see the diagram.

16 Q Okay. So under your -- the guidance that you wrote for
17 implementation of the groundwater standards, is
18 groundwater monitoring required for the CAFO permits?

19 A So there's two places where groundwater monitoring
20 occurs, and it's -- with the lagoon assessment, if there
21 is less than two feet of minimum vertical separation from
22 the outside of the bottom of the liner to water table,
23 then groundwater monitoring is required, and then in the
24 adaptive management matrix, it is an option.

25 And the option is either stop manure application or

1 demonstrate that you're not impacting groundwater, by
2 installing groundwater monitoring wells.

3 Q So the implementation guidance that you wrote under that
4 implementation guidance for applying the groundwater
5 standards --

6 A Mm-hm.

7 Q -- is groundwater monitoring required for the CAFO
8 general permits under your guidance or under Ecology's
9 guidance?

10 A So this document deals with applicability. Let me find
11 it. So the groundwater standards apply to any activity
12 that has potential to impact groundwater quality.

13 And what this guidance document talks about is,
14 there's lots of different vehicles to implement the
15 groundwater standards. It can be done through an
16 individual permit. It can be done through a general
17 permit. It can be done through an administrative order.

18 And -- okay. So Page 3, it talks about
19 implementation.

20 Okay. On Page 4, there is a section called General
21 Permits, 1.3.1.3. And it talks about, "A general permit
22 is developed by the water quality program within Ecology
23 for activities which are numerous, similar in nature, and
24 have the potential to impact water quality.

25 "The hydrogeologic study and monitoring plan are

1 waived for any activity which is regulated by a general
2 permit which includes groundwater protection provisions."

3 Q And do you consider the CAFO permits to contain
4 groundwater protection provisions?

5 A Absolutely.

6 Q So to be consistent with Ecology's guidance, is
7 groundwater monitoring required for the CAFO permits?

8 A No, it is not.

9 Q And how do the groundwater standards work? What are
10 the -- what components go into their implementation?

11 A So the groundwater standards have three basic mechanisms
12 to protect groundwater quality. They have the criterion
13 which --

14 Q Which are what?

15 A Which are -- they're, in essence, the threshold that we
16 never want to see groundwater go above. So for, like,
17 nitrate, that would be the drinking water standard, which
18 is 10 milligrams per liter.

19 So that's the criterion for nitrate in the
20 groundwater standards.

21 We also have AKART, which is all known available and
22 reasonable methods of prevention, control, and treatment.
23 And I think with land treatment systems, prevention and
24 control are the keywords there.

25 And then the third component is antidegradation.

1 And do you want me to explain a little bit about
2 antidegradation?

3 Q Please.

4 A It's a little bit of a hard concept to explain because I
5 can't tell -- it's very site specific. And I know, when
6 I first developed the guidance, I have people call me on
7 the phone and say, "Well, just tell me what is the number
8 I have to meet."

9 I'm like, "It depends. It depends on all the
10 site-specific conditions at your facility."

11 The idea is that, on one end of the spectrum, you
12 have background water quality, the quality that's flowing
13 in groundwater onto your property boundary.

14 And then you have the criteria for -- and so for
15 nitrate that would be 10. And so the idea behind
16 antidegradation is, you have to protect somewhere in that
17 zone, but we can't tell you exactly because "exactly"
18 depends upon AKART, and so AKART involves looking at all
19 the different treatment technologies.

20 So we want to keep it as close to background as we
21 possibly can, and we don't want to go above the
22 criterion.

23 So that's -- it's -- antidegradation is an important
24 concept, but it's really hard to articulate, and it's
25 really hard to implement in -- unless you're doing --

1 looking at site-specific conditions at a facility.

2 MS. BARNEY: At this time Ecology
3 would move to enter Exhibit R-5, the implementation
4 guidance.

5 JUDGE FRANCKS: I think you already
6 did. No. You're right.

7 MS. BARNEY: I'm not sure we did.

8 JUDGE FRANCKS: R-5 is admitted.

9 (Exhibit No. R-5 admitted.)

10 MS. BARNEY: Thank you.

11 Q (By Ms. Barney) Ms. Redding, could you look at
12 Exhibit R-17.

13 A Got it.

14 Q Do you recognize this document?

15 A Yes.

16 Q Can you tell us what it is, please.

17 A This is a 2004 Ecology document. It's called "Guidance
18 on Land Treatment of Nutrients in Wastewater with
19 Emphasis on Nitrogen."

20 Q And what is the purpose of this document?

21 A This document is essentially AKART for land treatment
22 facilities. And in the top paragraph, it specifically
23 says, "Currently Ecology approves as AKART the design and
24 operation and maintenance for land treatment systems that
25 includes, one, the application of wastewater and its

1 nutrients at rates times the duration that do not exceed
2 the crop's ergonomic rates."

3 Q So I'm going to stop you right there. That is what we
4 were talking about before with the land application
5 rates?

6 A Correct.

7 Q And do you -- is it your opinion that the land provision
8 provisions of the permit meet No. 1?

9 A Yes, they do.

10 Q Okay. Thank you.

11 A I do want to clarify too, that in the permit we never use
12 the word "agronomic rate." And the reason for that is,
13 there's a lot of definitions of agronomic rate out there,
14 and in the implementation guidance, when we're trying to
15 protect groundwater, we talk about maintaining a viable
16 crop with minimal leaching to groundwater and that's
17 vastly different than an agronomic rate that's trying to
18 maximize crop yields.

19 So we are careful in this permit not to use the term
20 "agronomic rates." We're talking about application
21 rates.

22 Q Okay. Thank you.

23 So could you continue where you were in that
24 paragraph.

25 A Yes. "No. 2, the storage of wastewater and properly

1 lined lagoons that is produced in excess of the crop's
2 requirements or outside of the growing season."

3 Q And what is a properly lined lagoon?

4 A Well, this is something that for the CAFO general permit
5 that we defined as a lagoon that has a liner with a
6 permeability of ten to the minus six centimeters per
7 second without consideration of manure sealing.

8 Q Okay. I'm going to dig into that a little bit because
9 we've talked some about permeability.

10 I think you are the person to tell us, what is
11 permeability?

12 A So permeability is the ability of or the capacity of a
13 media to transmit water. So, for instance, when you
14 notice, like, a -- when you're at the beach and you
15 notice that the water comes in on a wave and it
16 immediately goes into the sand, that's a very permeable
17 type of material.

18 But I'm sure you've also seen where you've got a lot
19 of mud, the permeability of -- is -- and you get water
20 and it sort of sits on top, that's a much lower
21 permeability, and the -- it doesn't have the ability to
22 transmit water as well as, say, coarse materials.

23 So Ecology has taken the permeability requirement to
24 control how a lagoon is constructed and what we view as
25 AKART.

1 And do you want me to talk about the ten to the
2 minus six and how we developed that?

3 Q Yes. Please.

4 A So back in 1993, I was asked to look at -- again, we've
5 got lagoons and we have different permeabilities, and
6 what exactly does that mean to groundwater quality?

7 So I used an analytical model back in 1993. It was
8 called "Random Walk," and I looked at a variety of
9 different scenarios looking at permeability and loading
10 to see what would be the projected impacts to groundwater
11 quality.

12 Q Before you go any further, what units are you talking
13 about when you talk about ten to the minus six? Ten to
14 the minus six what?

15 A That's an important point. Centimeters per second.

16 Q Okay.

17 A I'm sorry if I'm not using that fully. Yeah. The detail
18 about centimeters per second is important.

19 So I did this modeling exercise, and the results
20 validated what we were sort of seeing in the literature
21 and other recommendations that ten to the minus seven
22 centimeters per second was protective of groundwater.

23 So we used that information as we have moved forward
24 with looking at lagoons and what their potential impacts
25 to groundwater might be.

1 Q So two different figures. One is ten to the minus six.
2 One is ten to the minus seven.

3 What's the difference then?

4 A So the difference -- how we reduce that permeability --
5 and reducing means we're going from ten to the minus six
6 to ten to the minus seven -- is, there's something that
7 happens with manure.

8 It actually helps seal that liner. There's enough
9 of the fines in the manure and there's both biological
10 and physical and some even say chemical processes to act
11 to form that seal.

12 It's well documented in the literature, although
13 some people talk about, well, exactly how effective it
14 is, but that has been well documented, this manure seal
15 that you get.

16 MS. BARNEY: Okay. Thank you.

17 Ecology would move for the entry of Exhibit R-17.

18 JUDGE FRANCKS: R-17 is admitted.

19 (Exhibit No. R-17 admitted.)

20 Q (By Ms. Barney) Can I ask you to turn to R-6, please.

21 A Got it.

22 Q Do you recognize this document?

23 A I do.

24 Q Can you tell us what it is?

25 A This is Appendix 10D of the NRCS, Natural Resource

1 Conservation Service. Their agricultural waste
2 management system component design, and this is
3 Appendix 10D, and it's called "Design and Construction
4 Guidelines for Waste Impoundments Lined with Clay or
5 Amendment-Treated Soil."

6 Q And was this a reference you used with regard to your
7 work on the CAFO permits?

8 A Yes, it was.

9 Q And what is your understanding of the recommendations
10 here with regard to permeability?

11 A So the recommendations that I read in this document are
12 in line with what we have proposed in the CAFO general
13 permit.

14 Q Let's see. If we can look at Page 2 of the document --
15 of the text, I should say. It's Page 4 of the PDF. I'd
16 like to look at the bottom of the first column, the last
17 two lines beginning with the word "However."

18 "However, the NRCS no longer recommends basing
19 design decisions on the assumption that a full order --
20 full one order of magnitude reduction will be achieved
21 with regard to" -- the section relates I think to regard
22 to manure sealing?

23 Do you see that?

24 A I do.

25 Q Does this reduced reliance on a full order of magnitude

1 change your conclusions with regard to the productivity
2 of the ten to the minus six standard?

3 A No, it does not.

4 Q And why not?

5 A So this document is dated 2009, and if you look at the
6 2008 document before it was revised, they have a
7 recommendation of using a liner permeability of ten to
8 the minus six centimeters per second with one order of
9 magnitude reduction for manure sealing.

10 So that would essentially equate to one times ten to
11 the minus seven centimeters per second permeability.

12 So when I looked at those two documents and I look
13 at the references they use in these documents, they still
14 reference the same nineteen -- I believe it's 1987
15 research that documents that manure sealing occurs.

16 They do not include any new research in the 2009
17 revision. What they cite is that they had seen some
18 problems on a national level.

19 And when they describe those problems, those are
20 under coarser grain soils, which, if you look at the NRCS
21 specs about what soils are suitable for lagoons, you
22 wouldn't use coarse soils for a soil liner.

23 Q And why not?

24 A Because they're -- it's -- again, we'll go back to like
25 you're at the beach and you've got the sand. You can't

1 compact that sand in a way that it would actually make an
2 effective liner.

3 So the NRCS has very specific guidelines about what
4 types of soils are good for liners and which ones are
5 not, and we've actually taken those tables and included
6 them in the manure and groundwater literature review as
7 these are guidelines for when you're constructing a
8 lagoon. These, we think, are valuable tools.

9 So we would not see the coarse grain soils used as a
10 type of liner.

11 Q So what does groundwater monitoring tell us if we have
12 samples at a facility of the groundwater? What can that
13 tell us?

14 A Well, so groundwater monitoring can tell you what the
15 concentrations of certain constituents are when you take
16 that sample.

17 It won't tell you necessarily -- depending upon what
18 constituents, generally will not tell you when those
19 constituents, what time, when they were released, how
20 many years ago, and it won't tell you where those sources
21 of those came from generally, especially if you're only
22 looking for nitrate.

23 Q If you were to -- if there was a facility where you
24 wanted to conduct groundwater monitoring at that
25 particular facility, would you be able to sink one well

1 and monitor that and derive data that told you about the
2 condition of that particular facility?

3 A No. Generally, for looking at groundwater, you need to
4 understand what's upgradient and what's downgradient, and
5 so for that, you need at least three wells.

6 On a facility like when I've looked at these big
7 potato processors, they had sometimes up to like 40 wells
8 on their -- on their property because they had -- they
9 had lots and lots of acres, and they were land applying.

10 So I think I got myself off track.

11 Q No. Actually, I think you're right -- on the right
12 track.

13 A What was your question?

14 Q Well, what's -- was one well enough, and I think --

15 A No. Okay. No.

16 Q So if -- even in a system where you have -- you suggested
17 a minimum of three wells, if you were to take samples or
18 say you have four, two upgradient and two downgradient,
19 would that tell you necessarily if a facility in between
20 those two sets of wells was causing a groundwater
21 problem?

22 MR. TEBBUTT: Objection. Leading.

23 A So there's a couple of --

24 JUDGE FRANCKS: I'm going to overrule
25 that.

1 THE WITNESS: Oh, I'm sorry.

2 JUDGE FRANCKS: I'm going to let her
3 answer.

4 THE WITNESS: I was used to the
5 deposition where -- okay.

6 MR. TEBBUTT: Just ignored the lawyers
7 there; right?

8 A I will not comment. So you've got me off track.

9 So groundwater monitoring -- so if we're looking at
10 nitrate -- and that's the primary contaminant of concern
11 that we're talking about here. I mean, there's other
12 contaminants also.

13 If we're looking at nitrate, nitrate is the most
14 prevalent contaminant that we find in groundwater. It
15 comes from so many different sources.

16 Anytime you have animal including human waste,
17 you're going to find high levels of nitrogen in that
18 waste. It also comes from commercial fertilizer, and it
19 can actually be naturally occurring.

20 So identifying where nitrate came from when you're
21 looking at groundwater quality concentrations from a well
22 is really challenging to do. So that's one problem.

23 The other problem is this lag time that I talked
24 about before. So between when you do something at the
25 land surface, by the time it actually makes it to

1 groundwater and then moves laterally to your groundwater
2 well may be a long time.

3 So when I'm sampling today for this -- from this
4 groundwater well, I'm not necessarily knowing that that
5 happened the previous season. That may have happened
6 years ago.

7 And, again, that's based on site-specific conditions
8 about what that travel time is from the contaminant at
9 the land surface to when we see it in groundwater.

10 So if a facility came in and, you know, had
11 management practices that left a lot of soil nitrate but
12 then they improved, taking a groundwater sample might be
13 reflective of when they had less good management
14 practices, and then if they improved their management
15 practices, that might not be reflected in the groundwater
16 monitoring that we see.

17 So as we're looking at groundwater monitoring,
18 trying to be very thoughtful about what information is
19 that going to tell us and how does that help the seasonal
20 going back and making improvements to the land treatment
21 system each and every year.

22 Q Can you tell us what some of the factors are that
23 contribute to that time lag?

24 A Well, it's site specific, so --

25 Q But take -- if you were to look at a site, what are the

1 types of aspects of that site that would be important for
2 you to analyze what might be causing a time lag?

3 A So the soils -- depending on how permeable those soils
4 are will really dictate how freely the water moves
5 through there. And another big thing, too, is
6 precipitation or irrigation.

7 So with nitrate, water is really the driver that's
8 going to move that nitrate from the root zone down to
9 groundwater.

10 So if you've got -- if you're in an area where
11 there's a lot of precipitation or where somebody is
12 irrigating a lot, you can move that nitrate down through.

13 Q Okay. Thank you.

14 JUDGE FRANCKS: Ms. Barney, might this
15 be a good time for a ten-minute break.

16 MS. BARNEY: This is a perfect time.

17 JUDGE FRANCKS: All right. Let's take
18 a ten-minute break. Come back at 3:01.

19 (Recess taken from 2:51 p.m. to
20 3:02 p.m.)

21 JUDGE FRANCKS: Have a seat. Let's go
22 back on the record.

23 Ms. Barney?

24 MS. BARNEY: Thank you, Judge Francks.

25 ////

1 DIRECT EXAMINATION (Continuing)

2 BY MS. BARNEY:

3 Q Ms. Redding, we can speak about storage lagoons for just
4 a minute.

5 So if a storage lagoon is either constructed or as
6 existing meets the ten to the minus six permeability
7 standard, does Ecology consider that AKART?

8 A Yes.

9 Q Does -- when we think about that ten to the minus six,
10 what does -- does that easily translate into -- strike
11 that.

12 We've had some discussion about -- with Mr. Jennings
13 about the two-foot separation between the bottom of a
14 lagoon and the high water table or groundwater.

15 How does Ecology measure that two-foot separation?
16 And we can look at one of the diagrams we had up earlier
17 if that would be helpful.

18 A That would be good. The diagram from NRCS 716, I think,
19 is a good diagram.

20 Q Okay. So that would be Exhibit R-7, and I believe it is
21 Page 29 of the PDF.

22 A Appendix C, if I can -- oh, there it is.

23 Q We're just going to see if we can make it a little bit
24 bigger there on the screen.

25 A Oh, that's helpful.

1 Q So when Ecology refers to the bottom of the lagoon, where
2 is Ecology referring to?

3 A Ecology considers the little No. 2 to be the bottom of
4 the lagoon, and in the permit it specifically says the
5 bottom of the outside of the lagoon.

6 Q So does it matter what the lagoon is lined with where the
7 measurement takes place?

8 A No, it doesn't. Because the minimum vertical
9 separation -- the reason why Ecology has that in there is
10 for pathogen treatment.

11 In animal waste or even human waste, you have
12 bacteria and viruses that can remain viable in -- not
13 only in the subsurface but in groundwater for long
14 periods of time.

15 And having an unsaturated zone of two feet is really
16 important for the attenuation, the treatment, to allow
17 those pathogens to die before they reach groundwater.

18 So that's really pretty critical.

19 Q So if you had -- if this was a synthetically lined
20 lagoon, you would be measuring from the bottom of the
21 liner, the undersurface of the liner?

22 A Correct. It doesn't matter whether it's a clay lined
23 lagoon or a synthetically lined lagoon. If manure is
24 getting through and it has pathogens in it, you need the
25 two feet of minimum vertical separation for -- to deal

1 with, to attenuate, to kill those pathogens.

2 Q And is it your understanding that NRCS disagrees with
3 that --

4 A Yes. They disagree with that.

5 Q -- interpretation? Okay.

6 What if a lagoon had a two-foot liner?

7 A So the problem with the NRCS interpretation -- and I
8 understand that they may have different reasons for
9 having their designation where they do, but ours is from
10 a water quality perspective and the pathogen treatment.

11 So say we were to use the 1, the sub 1 as our
12 measurement point from a water quality perspective. If
13 that liner was two feet thick, you would have no
14 unsaturated zone conceivably, and you would have --
15 liners are often saturated because you've got all this
16 water in the lagoon that's providing head or pressure,
17 and it's making that liner saturated.

18 So you would have essentially no unsaturated zone
19 for pathogen treatment.

20 Q Are you familiar with the document Tech Note 23?

21 A I am.

22 Q Can you tell us why it was used in the permit?

23 A So originally the final draft permit had a provision in
24 there for a lagoon assessment. And the idea behind that
25 was, Ecology doesn't have access to a lot of lagoon

1 specifications around the state because -- for a variety
2 of reasons.

3 And so this lagoon assessment was essentially
4 designed to prioritize the lagoons, get a handle on how
5 they're constructed by having that be a permit
6 requirement.

7 Q And is that -- do you feel that that's a protective
8 aspect of the permit?

9 A The Tech Note 23 is more of an informational gathering
10 component of the permit, trying to understand exactly how
11 these lagoons are constructed.

12 And I think part of the problem is, we've heard a
13 lot of the different anecdotal information about lagoon
14 construction, and so it's hard for us to know exactly
15 what is the state of lagoons in Washington State. So
16 this is kind of an attempt for us to get a better handle
17 on that.

18 Q Okay. We heard a little bit from Mr. Jennings yesterday
19 about the pen and corral areas of CAFOs.

20 Are you familiar with aspects of pens and corrals
21 where the animals are confined?

22 A Yes.

23 Q So what can you tell me about those areas with regard to
24 risks for groundwater?

25 A So that was one of the things that I was asked to look at

1 in the literature review, and unfortunately there's not a
2 lot of information on pens and corrals.

3 And I think, as I was reading what limited research
4 there was on it, I began to understand why. So a pen
5 area is where they keep the animals.

6 And the manure that's dropped there gets compacted,
7 and it actually forms this thick black organic layer that
8 one researcher actually stated that the permeability was
9 one times ten to the minus ninth.

10 So with the manure and the compaction, it really
11 creates this organic barrier. And so when researchers
12 were looking at soil samples, they found that in the top
13 uppermost part of the soil, they found elevated soil
14 nitrate, but then it quickly dropped off to background
15 concentrations.

16 And so one of the researcher's theory was that
17 initially, as this thick organic layer is getting
18 developed, that you would have some infiltration of the
19 soil, the nitrate that was moving into the soil.

20 But then once you have that -- essentially ten to
21 the minus ninth is pretty impermeable, and you don't have
22 the hydraulic head in a pen/corral area like you do in a
23 lagoon.

24 The hydraulic head is the liquid, and that provides
25 this pressure that drives the liquid through that liner

1 lagoon -- the liner of the lagoon.

2 But in a corral area, you don't have nine feet of
3 liquid manure driving water through that possibly ten to
4 the minus ninth centimeters per second black organic
5 layer.

6 So the literature I saw wasn't suggesting that this
7 was a significant source of nitrate from dairies.

8 Q Do you consider that a risk area at a CAFO?

9 A I consider it to be a potential source of contaminants.

10 Q Would it be greater or less than the land application
11 area?

12 A If I had to rate them, I would say land application area
13 provides the greatest risk. There's the highest amount
14 of loading there. Next would be the lagoon.

15 And then I know people have talked about some other
16 areas, but I think those are less of an issue because you
17 don't have hydraulic head, and you don't have the loading
18 to the land surface like you do with the lagoons or land
19 application.

20 Q An additional area we talked about yesterday was a
21 composting area.

22 Did you find literature addressing that?

23 A I was not asked to address compost, so I did not look at
24 that.

25 Q Okay. Thank you.

1 Do you consider this permit to be protective of
2 water quality for surface water and groundwater?

3 A I do.

4 MS. BARNEY: Subject to reserving the
5 right to recall Ms. Redding as necessary on rebuttal --
6 whoops. I need to move to enter an exhibit, please.
7 Exhibit R-6.

8 JUDGE FRANCKS: R-6 is admitted.

9 (Exhibit No. R-6 admitted.)

10 MS. BARNEY: Thank you. But, again,
11 just subject to reserving the right to recall Ms. Redding
12 as necessary for redirect and for rebuttal, that's all I
13 have.

14 JUDGE FRANCKS: Okay.

15 MR. TEBBUTT: Just take a second to
16 reorganize.

17 CROSS-EXAMINATION

18 BY MR. TEBBUTT:

19 Q Ms. Redding, good afternoon. I'm Charlie Tebbutt. We've
20 met a number of times, haven't we?

21 A Yes, we have. Good afternoon.

22 Q Good afternoon.

23 I'm just going to kind of go through some of the
24 issues that Ms. Barney raised and just talk to you about
25 some of those before we revisit AKART.

1 A Okay.

2 Q But there were a number of questions that Ms. Barney
3 asked that I think need some revisit. Let's start off
4 with where she started, the water quality program.

5 You said you were asked to do a literature review by
6 the water quality program?

7 A Correct.

8 Q You said "they." Who are "they"? Who are those people
9 in the water quality program that asked you to do that?

10 A The specific names?

11 Q Sure.

12 A So Ron Cummings was the first person that initiated this.
13 Ron talked to me about doing a literature review to help
14 develop the science behind developing a general permit.

15 So the processes -- he puts together a form that
16 says what he wants done. It gets submitted to my
17 program, but it has to go through the water quality
18 program management team to be evaluated in terms of, is
19 it a priority and then --

20 Q Let me stop you there. I'm asking who was on the
21 program, not the whole history of what you did, but who
22 were the people that asked you to do that.

23 Ron Cummings was one. Who else?

24 A So what I'm trying to explain is, Ron developed the
25 additional request, and then it has to go get approved by

1 the water quality program management team.

2 Q Okay. Who is that?

3 A So that would include the program manager and --

4 Q And who is that? I want a name. We don't want just the
5 bureaucrats. We want the names of the people that are
6 making decisions here.

7 A Okay. It's a little tough for me to know exactly who was
8 on the program management team back in 2011-2012. I
9 would have to go back and look at an organizational chart
10 to tell you specifically and accurately who those people
11 were.

12 Q Does it change that often? The organizational chart
13 changes pretty often?

14 A If I'm giving you an answer, I want to be accurate.

15 Q That's not my question. Does the organizational chart
16 change very often?

17 A I think with any position, sometimes people leave and new
18 people hired.

19 Q Okay. You don't remember who Ron Cummings' boss was at
20 that time?

21 A No, I don't.

22 Q Okay. Why didn't you include the Yakima Valley cluster
23 litigation information as part of your literature review?

24 A So Ecology is required by the legislature to use credible
25 data to make policy decisions. And so when I developed

1 the literature review, I have a section in there that
2 talked about -- previously about methodology, about what
3 data could be used and what couldn't.

4 And so the data that -- if data comes to me in a
5 peer review journal or has -- somebody can show that they
6 have a report where they had a quality assurance project
7 plan that looked at the data and determined that that --
8 those data are accurate and then reviewed the data and
9 analyzed it and drew conclusions, that was something that
10 I included in the literature review.

11 Q Okay.

12 A But data that's collected without that, again, falls into
13 it's a work in progress. It's raw data or data that has
14 not been collected with a quality assurance project plan.

15 Q Okay. Let's stop right there.

16 A Okay.

17 Q The -- you've reviewed some of the Cow Palace data;
18 correct?

19 A Yes. I've read the Cow Palace expert report and
20 decision.

21 Q Okay. And you read Mr. Erickson's report?

22 A I have.

23 Q Correct? And did you read Dr. Shaw's report as well?

24 A I don't --

25 Q The soil scientist.

1 A I don't recall.

2 Q Okay. Did you read Mr. Erickson's report?

3 A Yes.

4 Q Have you also reviewed the annual reports submitted by
5 the dairy's consultants?

6 A From Cow Palace?

7 Q From the Cow Palace cases that have been going on for
8 years.

9 A No, I have not.

10 Q Why not?

11 A I --

12 MS. HOWARD: Your Honor, I'm just
13 going to object. I don't think this is a relevant line
14 of questioning at this point.

15 MR. TEBBUTT: Couldn't be more
16 relevant, Your Honor. This is the real life. This isn't
17 the theory of sitting in an office, writing a permit.
18 This is what's happening in the field. And if she
19 doesn't know about this data -- I'm just inquiring about
20 why she didn't, why she hasn't included that.

21 JUDGE FRANCKS: What issue does it
22 relate to.

23 MR. TEBBUTT: It relates to
24 groundwater monitoring. It relates to field application.
25 It relates to all the different sources that contribute

1 to groundwater contamination.

2 JUDGE FRANCKS: Okay. I'm not
3 familiar with the Cow Palace litigation, so --

4 MR. TEBBUTT: I'll lay a little more
5 foundation.

6 JUDGE FRANCKS: Yeah. Lay a little
7 more foundation.

8 Q (By Mr. Tebbutt) Are you aware that as part of the Cow
9 Palace litigation and consent decrees, that annual
10 reports are required to be done by the dairies and sent
11 to EPA?

12 A Yes. I am aware of that.

13 Q And are you familiar that those reports include quality
14 assurance/quality control measures built into those?

15 A I wasn't aware of that.

16 Q So you haven't looked at the information carefully enough
17 to determine that there is QA/QC in there; correct?

18 MS. HOWARD: Objection, Your Honor.
19 Misstates testimony.

20 JUDGE FRANCKS: I'm going to sustain
21 that objection.

22 MR. TEBBUTT: It's a simple question,
23 Your Honor, that was just trying to elicit whether she
24 looked at it or not.

25 JUDGE FRANCKS: But you characterized

1 her testimony, so --

2 Q (By Mr. Tebbutt) Did you look to determine whether
3 quality assurance/quality control was done in that
4 particular -- in the Cow Palace and -- well, in the Cow
5 Palace litigation cases?

6 A I did not look at the data, so I don't know if there was
7 quality assurance done for it or not.

8 Q You state you didn't look at the data. Which data? Are
9 you referring to the annual reports?

10 A So I stated that I looked at Mr. Erickson's expert
11 witness report, and I looked at the court decision, and
12 so I've looked at that.

13 Q Okay. Are you aware that some 32 monitoring wells have
14 been installed around the Cow Palace, Bosma, and DeRuyter
15 facilities as part of EPA's administrative order on
16 consent and the CARE consent decrees?

17 A I knew that monitoring wells went in. I did not know the
18 number was 32.

19 Q Have you looked at any of the data that has shown what's
20 come out of those monitoring wells?

21 A No, I have not.

22 Q Why not?

23 A Because I have a very full work plan.

24 Q And the data was started to be collected in 2013. That
25 was while you were doing the manure literature review;

1 correct?

2 A Correct.

3 Q So why didn't you look at the 2013 and 2014, 2015, 2016
4 data as part of your literature review?

5 A I did not know that those reports were out there, and I
6 specifically included Ralph Fisher with the EPA on my
7 peer review.

8 And one of my specific questions to my external peer
9 reviews -- and the other one was Charles Ellingson with
10 Pacific Groundwater Group -- was: Is there any other
11 literature that I have missed that I should be
12 considering for this report?

13 And my guess is that one or both of them, if they
14 were aware of that and thought it relevant, they would
15 have brought that to my attention, but they did not.

16 Q But you were aware of the data, weren't you?

17 A No, I was not. I was aware that sampling was occurring,
18 but I was not aware of those reports.

19 Q Weren't you told by the environmental appellants in
20 meetings that the data was available?

21 A So when somebody says data is available, that's different
22 than there's a report that has quality assurance and peer
23 reviewed. That's different.

24 Q Okay. Well --

25 A So maybe --

1 Q Did you read any of the comments submitted by the
2 environmental appellants in these cases?

3 A What specifically are you referring to?

4 Q Two particular exhibits. Let's pull one up. While we're
5 looking for it, here's the first one, Exhibit No. A-8.
6 Let's look at the cover page.

7 A A-8, is that in a binder?

8 Q It is, yeah. Right behind you.

9 Have you seen this document before, A-8?

10 A No, I have not.

11 Q So you didn't read the comments from the environmental
12 appellants in this case?

13 A I have not seen this document.

14 Q Okay. How about A-69? Have you seen that before?
15 Probably in the second binder.

16 A No. I have not seen this document.

17 Q Okay. So as part of your job as -- you were involved in
18 the drafting of the final permit; correct?

19 A Correct.

20 Q Did you review any of the comments from any of the
21 commenters?

22 A Yes, I did.

23 Q Which ones?

24 A So Ecology had a process for dealing with close to 4,500
25 comments, and we had a very short time frame to turn

1 those around.

2 So we didn't -- there were certain staff that took
3 all the comments and grouped them not by, "This is from
4 this commenter," but grouped them by topics.

5 And so when I was reviewing comments and responding
6 to them, I didn't necessarily know who made the comment.
7 I was looking at a group of comments, and we were
8 responding to that.

9 So, for instance, if there was a group of comments
10 on the timing, they would be all grouped together, and
11 then we would work on responding to those comments.

12 Q Okay. Let me stop you. Did you work on the comments on
13 hydrogeology and the movement of contaminants from
14 surface to groundwater on the comments?

15 A Movements of --

16 Q Contaminants from surface to groundwater.

17 A Yes.

18 Q And so wouldn't those comments have involved a number of
19 the comments made by the environmental appellants in
20 those cases?

21 A I don't know what the -- okay. So let me try to clarify
22 for you.

23 Q Well, let me help because I think I'm getting at it.

24 So you didn't -- you didn't know the source of the
25 comment each time? Was it just categorized by issue --

1 A Correct.

2 Q -- rather than who sent it?

3 A Correct.

4 Q Okay. You were asked about Exhibit R-5, which was a
5 document about land application that you authored
6 originally in 1996; correct? Ms. Barney asked you about
7 that?

8 A The Implementation Guidance for the Groundwater Quality
9 Standards?

10 Q Yes.

11 A Yes. I authored that.

12 Q Okay. And that was revised -- you said just
13 Appendix A --

14 A Correct.

15 Q -- to that was revised in 2005; correct?

16 A Correct.

17 Q So you talk about the nutrients and how they can move and
18 be handled in land application, but what about the
19 bacteria and other pathogens? Those aren't treated
20 before they're applied to the land, are they?

21 A So because of the process of when they're land applied
22 and then they are present in the soil for a significant
23 amount of time, they're exposed to a much larger area of
24 unsaturated zone, so they theoretically would be treated.

25 Q So the treatment then is just laying it out on the land?

1 A No. The treatment occurs in the unsaturated zone, or it
2 can also -- if it's at the land surface, a lot of
3 pathogens -- sunlight will kill them.

4 Q Okay. If the manure is laid on thick, though, it won't
5 kill all the pathogens; right?

6 A You know, I don't know. I can't speak to that. I
7 haven't looked at that personally.

8 Q Okay. So you're not a microbiologist then?

9 A No. Unfortunately.

10 Q Okay. But there are threats to -- of the bacteria and
11 other pathogens running off to surface water if manure,
12 for instance, is applied to surface lands; correct?

13 A I can't speak to that.

14 Q Why can't you?

15 A That wasn't an area that we -- so you're talking about
16 runoff --

17 Q Correct.

18 A -- to surface water.

19 Q Right. Runoff to surface water. So you can't speak to
20 that?

21 A No.

22 Q Is that out of your area of expertise?

23 A I would say so.

24 Q Okay. How about percolation of bacteria to groundwater?
25 Can that occur under certain circumstances?

1 A Yes, it can.

2 Q Okay. And under what circumstances would there be a risk
3 of bacteria or other pathogens moving to groundwater?

4 A So anywhere that you have -- you don't have that
5 unsaturated zone, you run the risk of having pathogens
6 because pathogens like cold, wet environments. So I
7 think those would be the conditions.

8 Q So, for example, I think you testified earlier that
9 lagoons can cause a mounding under them sometimes? You
10 can -- saturation under a lagoon can cause the water
11 table to rise and get closer to the bottom of the lagoon?

12 A I did not say that.

13 Q You didn't?

14 A No, I did not.

15 Q Okay. I apologize.

16 Are you familiar with the concept of mounding?

17 A Yes, I am.

18 Q Okay. Can you describe what that is under a lagoon?
19 What's the concept of mounding under a lagoon?

20 A Why don't I talk about the concept of mounding, in and of
21 itself, because actually -- actually, I haven't really
22 looked at mounding under a lagoon.

23 Q Okay. Well, then, I think --

24 A I don't have direct experience with that.

25 Q Okay. Then we'll pass on that.

1 A Okay.

2 Q You talked about how water will move from the surface
3 through the vadose zone. Let's take a look at R-5,
4 Page 14.

5 A I don't think it's 14. Is it Page 2?

6 MS. BARNEY: It might be 14 of the
7 PDF.

8 A I think it's Page 2 of the document.

9 Q (By Mr. Tebbutt) I think that's correct because that's
10 the 14th page in the PDF version.

11 So you talk about the unsaturated zone being the
12 vadose zone?

13 A Correct.

14 Q Is that a fair assessment?

15 A Correct.

16 Q Okay. And you talked about the water moving down until
17 it hits groundwater; right?

18 A Correct.

19 Q It can hit some other less permeable soil and move
20 laterally, couldn't it?

21 A Correct.

22 Q Because water will find the path of essentially least
23 resistance; correct?

24 A Correct.

25 Q And gravity will drive it down to groundwater; correct?

1 A Correct.

2 Q And it will eventually reach groundwater? Any water that
3 gets below the root zone will eventually reach
4 groundwater; correct?

5 A No. I would not say that.

6 Q That would be a very unusual circumstance when that
7 doesn't happen, wouldn't it?

8 A So, technically speaking, you can have water that's bound
9 in the soils that's not moving, so that water is very
10 hard to move, and that water may not make it to
11 groundwater.

12 You can have water that -- that essentially is
13 evaporated, comes out of the soils under dry conditions,
14 and that would not make it to groundwater.

15 Q Right. But if you have continuously farmed land with
16 irrigation and manure application, you'll have a
17 continual source of water driving the water down, won't
18 you?

19 A Well, it depends upon their irrigation and manure
20 management practices, if that's continual.

21 Q Right. But any water that goes below the root zone is
22 going to keep going down, isn't it, by forces of gravity?

23 A Correct.

24 Q Let's take a look at Page 21 of R-5, please. Actually,
25 we'll return to that one.

1 Let's get into the issue of lagoons for a minute.
2 And let's look at R-6, Appendix 10D, just for reference.
3 And I believe you testified earlier that the question
4 from Ms. Barney that a lagoon with the permeability of
5 one times ten to the minus six constructed, one times ten
6 to the minus six permeability, is, in your opinion,
7 AKART; correct?
8 A That's not what I stated.
9 Q Okay. What did you state?
10 A My statement was, the permit says that for lagoons in the
11 permit, it's -- the permeability is ten times -- one
12 times ten to the minus six centimeters per second without
13 consideration for manure sealing.
14 Q Okay. And that's the -- that's the AKART standard for an
15 as-built facility; right? And then you add manure to
16 make one times ten to the minus seven?
17 A No. That is not correct.
18 Q So what is the as-built for a lagoon? What's the
19 permeability level that is acceptable under AKART?
20 A For new or refurbished lagoons, the AKART standard is one
21 times ten to the minus six centimeters per second
22 permeability without consideration of manure sealing.
23 Q Okay. So you believe then that there's another order of
24 magnitude so-called sealing effect of the manure --
25 A Correct.

1 Q -- based on the literature?

2 A Correct.

3 Q You ever seen any empty lagoons in real life?

4 A No, I have not.

5 Q So you haven't seen the cracks in them apparently; is
6 that correct?

7 A I haven't seen an empty lagoon.

8 Q In real life. Okay.

9 Have you seen pictures of the erosional features in
10 lagoons?

11 A Yes, I have.

12 MS. NICHOLSON: Objection. That's
13 assuming facts not in evidence.

14 JUDGE FRANCK: What facts are we
15 assuming.

16 MS. NICHOLSON: He's assuming there's
17 erosions. He's assuming that there's cracking. We
18 haven't established that.

19 JUDGE FRANCK: Sustain that.

20 MR. TEBBUTT: She just said she's seen
21 pictures of erosional features in lagoons.

22 What's wrong with asking the question about that?

23 JUDGE FRANCK: Well, you asked it
24 before she answered. So you can ask her about pictures,
25 sure. She said she hadn't seen any.

1 Q (By Mr. Tebbutt) Have you seen pictures of erosional
2 features in lagoons?

3 A Yes.

4 Q And wouldn't those erosional features reduce the
5 permeability level of the lagoon in that particular
6 eroded area?

7 A So I believe the erosional features that I saw were more
8 in the side walls of the lagoon, and it was used as a
9 demonstrative purposes about how to maintain a lagoon.

10 Q Okay. Did you make any calculations about how that would
11 affect permeability of the side walls?

12 A No, I did not.

13 Q Okay. Have you ever seen any erosional features go down
14 to the bottom of a lagoon, any pictures going down to the
15 bottom?

16 A Not that I can recall.

17 Q Okay. You were asked about nitrate generally, and I
18 think you made a statement that, among other things, you
19 know, there are lots of sources of nitrate in the world;
20 correct?

21 A Correct.

22 Q And one of them being natural sources?

23 A Correct.

24 Q Correct? Natural sources of nitrate are very low levels;
25 right?

1 A Correct. In most circumstances.

2 Q Right. It would be in the single, like a one part per
3 million-ish area; right?

4 A I'd say ballpark.

5 Q Right. So have you read the Cow Palace decision by Judge
6 Rice?

7 A I already stated that, yes, I did.

8 Q And you read the part where the judge said that, even if
9 a lagoon is built to NRCS standards and used a
10 conservative estimate of one times ten to the minus
11 seven, the Cow Palace lagoons themselves would discharge
12 over three million gallons per year.

13 Do you recall that?

14 A I don't recall that. I mean, when I read the decision,
15 it was a while ago.

16 Q Uh-huh.

17 A So I don't remember -- I remember that there was a
18 statement similar to that.

19 Q Okay. Would it help if you saw that statement to refresh
20 your recollection or would you accept my factual
21 statement that there are three million gallons a year
22 lost from the Cow Palace lagoons?

23 MS. HOWARD: Your Honor, we're going
24 to object to this line of questioning. As we stated
25 before, we have some concerns with bringing the Cow

1 Palace conversation in and how exactly it's relevant to
2 the permit.

3 But on top of that, we don't have the facts in front
4 of us of the Cow Palace case and the basis for Judge
5 Rice's decision, so there's just some concern here with,
6 again, relevance and also just foundation for this line
7 of questioning.

8 MR. TEBBUTT: But we will have it in
9 front of you when we have Mr. Erickson on the stand.
10 We're calling this witness to try to get her on and off
11 the stand once so we don't have to call her again.

12 And so, if you bear with me, we can get this done a
13 lot faster. Otherwise, we're going to have to recall
14 Ms. Redding.

15 MS. HOWARD: We don't -- if she can
16 establish those facts in order to answer the questions,
17 that's one thing. And Mr. Tebbutt can obviously do that
18 through his own witness, but to continue to ask along
19 this line of questions when clearly this witness doesn't
20 have that information does, again, raise question of
21 foundation under relevance at least at this time.

22 JUDGE FRANCKS: Okay. I am going to
23 allow you to do a couple more questions, but you need to
24 be honing in on something that she knows.

25 Q (By Mr. Tebbutt) Okay. Let's assume, for the purposes

1 of this question, Cow Palace lagoons discharge three
2 million gallons a year based on a finding that they were
3 built to NRCS specifications and the extra manure sealing
4 was in place such that the lagoons performed at a
5 permeability of one times ten to the minus seven
6 centimeters per second. Okay?

7 A Okay.

8 Q All right. That was -- that would be -- all right.
9 Let's just stop there.

10 If the permeability were an order of magnitude
11 lower, one times ten to the minus six centimeters per
12 second, that would mean the discharge would be about
13 30 million gallons a year, correct, or a magnitude
14 greater?

15 A Correct.

16 Q Okay. And so that would mean that there would be
17 approximately or even conservatively a hundred thousand
18 gallons a day of manure water being leaked from the
19 lagoons, correct, at 30 million gallons a year?

20 A I can't answer that because I don't know what the surface
21 area of the lagoons are that we're talking about.

22 So if -- for instance, if we were to look at
23 Appendix 10D, the NRCS document, and they talk about,
24 here is a permeability of, say, ten to the minus six
25 centimeters per second, they do it per unit area of

1 seepage, and they estimate, okay, under these conditions,
2 ten to the minus seven, you would have 1,000 gallons per
3 day per acre.

4 And then we could talk about, what does that mean in
5 inches per day, or we could talk about it in terms of how
6 many gallons per year per acre. But not knowing the size
7 of the lagoon makes it impossible for me to tell you, is
8 that value correct or not.

9 Q Okay. Great. I'm not asking whether it's correct or
10 not. I'm just asking you to assume the hypothetical that
11 it was proved that three million gallons was discharged
12 from the lagoons per year, and that was using a one times
13 ten to the minus seven centimeters per second
14 permeability.

15 So if the order of -- if the permeability was an
16 order of magnitude less, that would make the discharge
17 30 million gallons a year, wouldn't it?

18 MS. HOWARD: Objection, Your Honor.
19 It's incomplete hypothetical. The witness has just
20 testified she cannot answer this hypothetical because she
21 doesn't have sufficient information.

22 JUDGE FRANCKS: I'm going to sustain
23 that one.

24 Q (By Mr. Tebbutt) Can you not answer that question with
25 that information?

1 MR. TEBBUTT: I think it's up to the
2 witness to know whether she has enough information or
3 not, not a lawyer in the back room.

4 MS. HOWARD: Objection, Your Honor.
5 Same objection.

6 JUDGE FRANCKS: I sustained the
7 objection. I think you got the answer that she could
8 answer.

9 Q (By Mr. Tebbutt) The two-foot separation that you talked
10 about between the bottom of the lagoon and groundwater --
11 correct?

12 A Correct.

13 Q Necessary standard in the ecology permit; is that
14 correct?

15 A Correct.

16 Q That two-foot separation deals with pathogens, treatment
17 of pathogens?

18 A Correct.

19 Q Doesn't deal with treatment of nitrates, does it?

20 A No, it does not.

21 Q Now, Ms. Redding, have you been part of the groundwater
22 management area in the Lower Yakima Valley?

23 A Yes.

24 Q So you participated in some of those meetings?

25 A Yes, I have.

1 Q And gotten information about some of the problems over in
2 the Yakima Valley?

3 A Yes. I'm aware of those.

4 Q Okay. And you agree that there is a serious
5 contamination of the aquifer in the Lower Yakima Valley?

6 A Yes. That's why the GWMA was formed, to address the
7 groundwater contamination problem.

8 Q And is Ecology's position that the majority of the
9 contamination in the aquifer in the Lower Yakima Valley
10 comes from the dairies?

11 A Can you restate that? What --

12 Q Yes. Is it Ecology's position, your -- well, your -- is
13 it your understanding that a large majority -- or let's
14 just say a majority of the pollution in the Lower Yakima
15 Valley aquifer is coming from the dairies that are
16 operating in the Lower Yakima Valley?

17 A Well, I don't know that information. I can't make that
18 statement.

19 Q Have you reviewed the EPA study that was done from Lower
20 Yakima Valley 2010 to 2012?

21 A Yes, I have.

22 Q Okay. And have you reviewed the conclusions in that
23 study that the dairies are the most significant source of
24 contamination in the Lower Yakima Valley?

25 A That is not the conclusion from that report. That

1 misstates that.

2 Q What do you believe the conclusion is of that report?

3 A The conclusion is, EPA looked at a variety of sources,
4 and they said that dairies are contributing to nitrate
5 contamination of the aquifer. They also identified other
6 sources that are contributing to nitrate contamination of
7 the aquifer.

8 Q Did in the EPA study say a majority of the contamination
9 was coming from the dairies?

10 A No. The report did not state that.

11 Q Let's take a look at A-17.

12 A Is A your binder?

13 Q Yes.

14 A Okay. Okay.

15 Q Have you seen this document before?

16 A This is a document that was shown to me in my deposition.

17 Q Okay. So have you read it?

18 A I did during my deposition.

19 Q And is this a document that was produced as part of the
20 groundwater management area?

21 A This is an email from Kirk Cook, who at the time worked
22 for Department of Agricultural, to Vern Redifer, who is
23 the public works director for Yakima County.

24 Q Okay. Have you inquired about the content of this
25 document at all with anyone?

1 A So I am not on the distribution list of this document,
2 but I did see this during my deposition.

3 Q Okay. And have you inquired with anyone as to the
4 accuracy of the information that's contained in this
5 document?

6 A So -- Kirk Cook was working on something called a
7 nitrogen loading assessment for the Lower Yakima Valley,
8 and we'd been using the term GWMA, but it's groundwater
9 management area.

10 And I did a peer review, along with others, on his
11 report, so I do know that while what Kirk has said with
12 the numbers, what he states in here about the leaching of
13 nitrogen to groundwater, that was not within his scope.

14 And so I don't know how he can make that statement
15 because he did not look at groundwater to make that -- to
16 do that assessment.

17 Q Okay. But you're familiar with the numbers in this
18 report, and you've referred to them in other work that
19 you've done?

20 A At the time -- and I think it might have been two years
21 ago -- I did a peer review on this document.

22 Q Uh-huh.

23 A And when Kirk was involved, there was some serious
24 issues, and since then, Kirk moved on, and Department of
25 Agricultural has revised that document.

1 So I have not taken the time to go back and look at
2 this email to verify because I know that the report that
3 he generated before he left had a lot of issues in it.

4 Q Okay. Do you know whether it overestimated or
5 underestimated the loadings of nitrogen from the four
6 sources that are identified here?

7 A All I know is, there were severe problems with the report
8 the first time I saw it, so I can't remember if it was
9 over or under or just plain wrong.

10 Q Okay. Have you referred to any kind of later document
11 that has more accurate numbers in it in any of your work?

12 A Well, the Department of Agricultural has been and Yakima
13 County have been working on that document, and I'm not
14 sure where it's at right now.

15 I've read a peer review, and that was, I don't know,
16 maybe a year, 18 months ago. It's been a while since
17 I've looked at this document. It's not finalized yet.

18 Q So animal pens, the potential of discharge from animal
19 pens has not been covered at all in the -- to
20 groundwater; that is, has not been covered at all in the
21 permits that are at issue in this case, has it?

22 A I disagree with that statement.

23 Q Where has it been covered?

24 A So I believe John in his testimony pointed out the
25 specific areas of the permit where it was covered.

1 Q Didn't that all deal with potential surface runoff?

2 A I'd have to go back and look at his testimony.

3 Q Compost, in any of the compost areas indicate -- well,
4 let me ask you this. Ms. Barney asked you some questions
5 about animal pens and whether they were a potential
6 source of contamination.

7 Do you believe that they are a potential source of
8 contamination?

9 A I believe they're low risk --

10 Q Okay.

11 A -- for the reasons that I stated previously.

12 Q And you said you did review Mr. Erickson's report in Cow
13 Palace; correct?

14 A I did.

15 Q And did you look at the soil borings that were done in
16 the animal pens in Mr. Erickson's report?

17 A I did.

18 Q And did you see Mr. Erickson's opinions about whether the
19 animal pens were a contributing source of pollution to
20 groundwater?

21 A I'm not disputing Mr. Erickson's observations or findings
22 in his expert report, but I think that it -- when you're
23 developing a general permit that applies to all CAFO
24 statewide, that you can look at one CAFO and see that
25 there might be some issues, but taking that one CAFO and

1 extrapolating it to all CAFOs statewide, that goes beyond
2 the scope of a general permit.

3 That would be more suited to an individual permit,
4 which Ecology has the authority to do, if there's a
5 problem, is to take that CAFO, put them under an
6 individual permit, and then write site-specific
7 conditions for them, that facility.

8 Q Have you seen any other data on animal pens, actual data
9 in the state of Washington on animal pen contribution
10 to -- to below surface contamination other than the Cow
11 Palace data?

12 A No, I have not.

13 Q Please get in front of you Exhibit A-11, Page 14.

14 A What is this document?

15 Q This is the draft permit.

16 A It's the preliminary draft?

17 Q Yes. And were you part of the preliminary draft?

18 A No. As I stated before, I was not.

19 Q Okay. So anything having to do in here, you were not
20 involved with whatsoever?

21 A No.

22 Q Okay. Well, I guess we can move on then.

23 Let's take a look at R-4 of the manure literature
24 review. Let's take a look at the soil application
25 information.

1 A What page?

2 Q Pages 42 -- 41 through 45 we'll talk about.

3 A Okay.

4 Q Is there anywhere in the manure and groundwater
5 literature review that says 45 parts per million of
6 application is safe?

7 A Boy, off the top of my head, I don't know. It's not in
8 this table.

9 Q Actually, before getting to this area, I think earlier
10 you testified that compost is fairly dry; is that right?

11 A No, I didn't. I did not testify on compost except to say
12 that I did not review any literature on that.

13 Q Okay. Do you remember being asked in your deposition
14 whether compost is dry?

15 A No.

16 Q Have you ever tested the moisture content of manure
17 composted at dairy?

18 A No, I have not.

19 Q So you're not familiar with the water content of
20 manure at a compost facility?

21 A No, I am not.

22 Q When it's first brought to the facility and applied to
23 compost area, you're not familiar with the moisture
24 content?

25 A I believe I just answered that.

1 Q All right. And then what about moisture content when
2 it's been sitting for a while?

3 A I believe I answered that also.

4 Q And you said you don't have any information about that?

5 A That's what I've said.

6 Q Okay. Do you believe that compost areas are a possible
7 source of contamination?

8 A It's a potential source.

9 Q The charts that you put together for land application of
10 manure, I believe you've said that fall nitrate levels
11 were anywhere from 5 to 24 parts per million; correct?

12 A Are you talking about this table here?

13 Q Yes.

14 A Okay. And what was question again?

15 Q That fall nitrate residuals should be no higher than 5 to
16 24 parts per million; correct?

17 A Who made that statement?

18 Q I believe that's what you say, isn't it, in this chart?
19 Isn't this chart done by you?

20 A That chart is a compilation of literature, but I don't
21 say that fall soil nitrates should be between 5 and 24.
22 What I'm doing is, I am summarizing and synthesizing the
23 literature. These are researchers that have made
24 recommendations about fall soil nitrate.

25 Q Okay. Do you agree or disagree that, at 15 to 30 parts

1 per million, there will be an increased risk of
2 contamination to groundwater?

3 A That's -- I can't say that off the top of my head.
4 There's many factors that go into what happens with a
5 soil nitrate concentration versus when it will be an
6 issue for groundwater.

7 And I think I testified earlier that these are
8 recommendations that I found in the literature. They're
9 based on soil scientists and agronomists. So that's -- I
10 don't have a clear definition of what would and wouldn't
11 impact groundwater quality.

12 Part of my job with doing this was to try and get a
13 better handle on what these soil nitrate values mean,
14 what the ballpark is, but I can't say for sure what any
15 particular soil nitrate concentration, what that would be
16 for groundwater.

17 Q You would agree, would you not, that nowhere in the
18 literature supports the notion that fall soil nitrate
19 tests of 45 parts per million would be protective of
20 groundwater, don't you?

21 A I have not seen that statement in the literature, no.

22 Q And you haven't seen any literature that supports the
23 notion that soil nitrate ranges above 45 parts per
24 million are protective of groundwater, have you?

25 A I have not seen that statement in the literature, no.

1 Q Have you seen any statements in the literature that
2 applications above 30 parts per million are protective of
3 groundwater?

4 A So I think what you're confusing here is when you --
5 you're confusing what you see in the soils with
6 groundwater contamination.

7 Q No. I'm talking about risks to groundwater. That's what
8 your report talks about, doesn't it?

9 A But I've also testified previously that when you have a
10 fall soil nitrate value, that there's a lot of
11 site-specific information that goes into projecting what
12 would be an impact to groundwater because what you have
13 in the soils doesn't necessarily mean that that's what's
14 going to be in groundwater.

15 There's a lot of factors in play. So these
16 statements that you're -- these questions that you're
17 asking me, I can't say one way or the other.

18 Q Okay. So what are the factors in play? Let's take a
19 fall nitrate test at 30 parts per million on the west
20 side in Washington and were tested after harvest. What
21 happens -- at 30 parts per million, what's going to
22 happen to the -- that 30 parts per million nitrate?

23 A So you have to know what the bulk density of the soil is.
24 You have to know what the recharge is. You have to know
25 what the aquifer materials are, what kind of -- what the

1 permeability of the aquifer is. You have to know what
2 the hydraulic gradient is.

3 So there's a lot of things that you have to know for
4 me to answer those questions.

5 Q Well, what are the things that you -- that's what I'm
6 trying to get at.

7 What are those other things that you have to know?
8 You just talked about some of them.

9 A Correct.

10 Q But on the west side, it rains a lot; right?

11 A It does.

12 Q And so if there's 30 parts per million in the soil on the
13 west side, say, in Whatcom County, you know the soil
14 types. You've done the Sumas-Blaine work up there. You
15 know the soils are medium permeability generally; right?

16 A Correct.

17 Q So what's going to happen to that soil when it rains --
18 or the soil nitrate when it rains of 30 parts per
19 million? Is it going to go to groundwater?

20 A Well, there's a risk that some of it will go to
21 groundwater, but I can't say for sure how much or how --
22 where or when.

23 Q And what's the purpose of doing your evaluation if you
24 don't make determinations? You didn't review the
25 literature about what the risks were from that?

1 A I think I explained earlier that, to get to these
2 numbers -- is this what you're getting at?

3 Q Yes.

4 A How we got to these numbers?

5 Q Yes.

6 A -- that we were looking for -- these are not -- these are
7 not -- these are not compliance points. These are --
8 when you reach this benchmark, you have to take these
9 specific actions.

10 So based on what we found in the literature and
11 based on looking at what would be a potential impact to
12 groundwater, we got a better sense of what's in the
13 ballpark and who's out of the ballpark kind of
14 information.

15 But we don't have specific criteria that says, if
16 you have this soil nitrate value, what it will mean to
17 groundwater. We have a better idea, but I can't say
18 definitively what that impact would be.

19 Q But you would agree, wouldn't you, that there's no
20 scientific literature saying that 30 parts per million is
21 protective of groundwater?

22 A What I compiled is what the researchers stated, and some
23 of them talked about -- so, for instance, Sullivan and
24 Cogger in this table, in the very top one, they felt that
25 if you had a soil nitrate of 15 to 20 parts per million,

1 that that was an acceptable level for corn -- oh, no.
2 Wait. It was based on a crop type in Western Washington
3 or Oregon, and if you go back to that document, it talks
4 about corn and grass.

5 So this is an attempt to get an idea of what the
6 researchers are saying, knowing that, like, Sullivan and
7 Cogger is talking about Western Washington, and they're
8 talking about specific crops.

9 But when you start to pull all this together, you
10 start to get an idea, but these -- we don't have enough
11 information to say these are hard-and-fast compliance
12 numbers, and that's why they're used as benchmarks in the
13 adaptive management matrix.

14 Q But you do agree that excessive category would be
15 30 parts per million or higher; correct?

16 A What we've determined, based on what we've seen in the
17 literature, is -- and our goal with this permit, is to
18 try and keep soil nitrate to 30 parts per million or
19 less.

20 Q So if continued applications at 30 parts per million or
21 more would cause concern for continued discharge
22 groundwater, wouldn't it?

23 A Well, based on our required actions in the adaptive
24 management matrix, we're directing them, and if they
25 don't follow these required actions, then it would be a

1 permit violation.

2 So, again, going back to applying the right amount
3 at the right time to the specific crop. So ideally, if
4 they're doing that, they're going to have lower soil
5 nitrate values.

6 So all of those adaptive management actions are
7 designed to put them into a low or medium risk category.

8 Q I'm going to go back to the lagoons for a moment.

9 Have you ever reviewed a lagoon study that shows
10 that manure lagoons don't leak?

11 A I've reviewed studies on manure lagoons, some of which
12 look at leakage and some of them looked at impacts to
13 groundwater.

14 So just clarifying, so you're specifically asking me
15 if I have ever seen a study that said there was no
16 leakage from a lagoon?

17 Q Correct.

18 A No. I have not seen that.

19 Q Okay. And the preponderance of the evidence shows that
20 manure lagoons impact groundwater; correct?

21 A So there was one study that we looked at that did not
22 show impacts, but all the rest of the studies that I
23 looked at did show impacts.

24 Q All right. And the one study was one lagoon and a study
25 of four lagoons; correct?

1 A Well, they were individual studies, but, yes, it was --
2 they -- then Dennis Erickson compiled those into one
3 report, but they were also standalone individual reports.

4 Q Okay. And you would agree that once liquid escapes a
5 lagoon, it has only one place to go, down to groundwater?

6 A Primarily.

7 Q And that the only way to determine whether impacts exceed
8 groundwater quality standard is to do groundwater
9 monitoring; correct?

10 A Well, so part of what Ecology has done in the past was to
11 try and determine from lagoon permeability what would be
12 an acceptable leakage rate that would be in compliance
13 with the groundwater quality standards.

14 And so part of the rationale for doing that modeling
15 work was so that we -- when we put something like a
16 permeability in a general permit, we would have a fairly
17 high level of confidence that if a lagoon was built to
18 those standards, that it would be meeting the groundwater
19 quality standards.

20 So we feel confident that what we have in this
21 general permit will meet groundwater quality standards.

22 Q Were you involved in reviewing any of the surface water
23 monitoring information for the permit?

24 A No, I was not.

25 Q Okay. Let me just show you A-51.

1 Have you ever seen this document before?

2 A No, I don't believe I have.

3 Q All right. Are you familiar with the concept of tile
4 drains?

5 A Vaguely.

6 Q Okay. Are you familiar with how they're used in farming
7 practices?

8 A Yes. Yes.

9 Q Okay. And they're used to drain soil?

10 A Yes.

11 Q Okay. And have you ever tested any soil drains, seen any
12 soil drain -- tile drain -- sorry -- tile drains in
13 practice?

14 A No, I have not.

15 Q Do you agree that remediation of nitrate contamination is
16 very difficult and expensive?

17 A Yes, I do.

18 Q And have you ever made an assessment of what it would
19 cost to remediate the Sumas-Blaine Aquifer?

20 A For the Sumas-Blaine, I don't believe I have.

21 Q Would it be in the millions of dollars? Tens of millions
22 of dollars? Hundreds of millions of dollars? Do you
23 have any idea?

24 A I couldn't say.

25 Q But certainly in the millions?

1 A I couldn't say.

2 Q Do you believe that in order to be degrading water
3 quality, that you would have to be violating water
4 quality standards?

5 A Can you say that again?

6 Q Yes. In order to be degrading water quality, do you
7 believe that the -- a discharge or an impact has to be
8 above the water quality standards?

9 A I guess that depends on your definition of degradation.

10 Q Well, that's what I'm asking you. Is degradation
11 anything over background?

12 A So I typically use the word when something has been
13 contaminated versus impacted. So I use the word
14 "contaminated" for when it exceeds a standard.

15 Q Okay. Let's use the word "impact."

16 A Okay. No. You can -- it does not have to exceed any
17 groundwater standard to have an impact.

18 Q To be impacted. Okay. And so that would be a
19 degradation of the beneficial use if it would impact it?

20 A Oh, I see what you're saying. Okay. So, yeah, degrading
21 a beneficial use means that beneficial use is no longer
22 available. So, yes, that would be contamination.

23 Q That would be contamination above the water quality
24 standard?

25 A Yes.

1 Q That particular situation?

2 A Yes.

3 Q But you could still be impacting groundwater without
4 violating a water quality standard; correct?

5 A Correct.

6 Q Okay. Let's take a look at Exhibit A-10, please.

7 And you have that in front of you?

8 A I do.

9 Q Is that a document that you created?

10 A Tech Note 23 was created by the NRCS.

11 Q Okay. I think we have the wrong --

12 A What document did you say?

13 Q Yeah. We have the wrong document. A-10.

14 A Oh, I have R-10.

15 Q That's all right. It happens.

16 A Okay. Same one as you now.

17 Q And is that a document you created?

18 A No.

19 Q Do you know who created this document?

20 A I have no idea.

21 Q Have you ever seen this document before?

22 A You know, it may have been shown to me at my deposition,
23 but I can't recall.

24 Q Is this -- isn't this entitled "Draft Manure and
25 Groundwater Literature Review"?

1 A Yes, it is.

2 Q And was this not something that you used in preparation
3 of your manure and groundwater literature review?

4 A No, I did not. I've never seen this document before but
5 maybe at my deposition.

6 Q Okay. Let's take a look at A-13. Is this a document
7 that you're familiar with?

8 A No, it is not.

9 Q Were you involved in the preparation of the answers that
10 appear in this document at all?

11 A No, I was not.

12 Q You weren't asked by Bill Moore or John Jennings for help
13 in answering these questions?

14 A No, I was not.

15 Q Okay. Okay. Let's take a look at A-15.

16 Have you seen Exhibit A-15 before?

17 A I'm not positive. I'm trying to read it right now.

18 Q Okay. Take your time.

19 A Okay. What's your question?

20 Q Yes. Are you familiar with this document?

21 A I just read it.

22 Q For the first time?

23 A I don't know if I've seen it before. It doesn't -- I
24 don't recall seeing it.

25 Q Okay. And so you don't think you drafted it?

1 A No. I did not draft it. I know that.

2 Q Have you ever had a discussion within Ecology of what the
3 definition of impact to groundwater is?

4 A I don't know that I have.

5 Q All right. Let's take a look at A-16.

6 A Okay.

7 Q This might be something you're familiar with?

8 A Yes. I recognize this one.

9 Q This one has your name on it?

10 A Yes, it does.

11 Q All right. So you drafted this, of course?

12 A Yes. I wrote this paper.

13 Q All right. And let's take a look at Page 3.
14 Is this an original composition of yours?

15 A You know, I may have had input from some of the other
16 hydrogeologists in the water program at that time, so I
17 can't say for sure that it was all me. I can't remember.

18 Q But you were the primary author?

19 A Yes, I was.

20 Q Okay. And on Page 3, you talk about microbial pathogens;
21 correct?

22 A Yeah. The top paragraph?

23 Q Yes.

24 A Mm-hm.

25 Q And the conclusion is, "Therefore" -- if you can read

1 that sentence to us, please?

2 A The third paragraph?

3 Q Yes.

4 A "Therefore, if microbiological pathogens are not removed
5 or treated in the unsaturated zone and they are allowed
6 to migrate to groundwater, they can be transported great
7 distances potentially contaminating groundwater and
8 affecting drinking water wells, surface water bodies, and
9 shellfish habitat."

10 Q Okay. Are you familiar with some lagoons in Whatcom
11 County that are built into the groundwater table?

12 A No, I am not.

13 Q Okay. You haven't seen any information that indicates
14 that?

15 A No, I haven't.

16 Q If a lagoon were to be built into the groundwater
17 table --

18 A Mm-hm.

19 Q -- would that cause the concerns that you just read in
20 that sentence?

21 A Absolutely.

22 Q Are you familiar with the '94 Erickson study? Dennis
23 Erickson; right?

24 A Yeah. Dennis Erickson.

25 Q Few Ericksons at play here so want to make sure we get

1 them right.

2 A Which study exactly was '94? Off the top of my head, I
3 can't remember. Oh, I have it here.

4 Q R-11, yeah.

5 A Oh, R-11. Oh, not A-11. Okay.

6 Q Okay. So you're familiar with that Erickson study?

7 A Yes.

8 Q And didn't that study discuss lagoons that were in
9 Whatcom County that were built right into the groundwater
10 table?

11 A That's not what I call -- recall from this study, but
12 that may be the case.

13 MR. TEBBUTT: While we're waiting, I
14 move into evidence A-16.

15 JUDGE FRANCKS: A-16 is admitted.

16 (Exhibit No. A-16 admitted.)

17 A I don't believe that report -- I mean, I'm reading the
18 executive summary, and it doesn't state that, so --

19 Q (By Mr. Tebbutt) Let's take a look at Table 1 in R-11.

20 A What page would that be on?

21 Q 41.

22 A Okay. Good. Okay.

23 Q And do you see the table talking about, the right-hand
24 column, separation distance in feet of the lagoons?

25 A Yes.

1 Q So does that indicate whether lagoons are built into the
2 groundwater table or not?

3 A Yes. That's what it says.

4 Q Okay. Does that familiarize yourself then that some
5 lagoons in Whatcom County are built into groundwater
6 table?

7 A That's -- that's my impression from this table.

8 MR. TEBBUTT: Okay. I'd like to move
9 into evidence R-11.

10 JUDGE FRANCKS: R-11 is admitted.

11 (Exhibit No. R-11 admitted.)

12 Q (By Mr. Tebbutt) So the lagoon assessments that the
13 permit requires, some of them aren't really necessary,
14 are they, because there's information that would show
15 that a lagoon is discharging to groundwater?

16 A You're asking me if lagoon assessments are unnecessary?

17 Q In certain circumstances, where a lagoon is built into a
18 water table, you don't need to do a lagoon assessment, do
19 you? You would know that there's a problem?

20 A Well, I think the idea behind Tech Note 23 is to get a
21 full assessment on the lagoon, and that's a requirement
22 of a permit. So I don't think that we would be waiving
23 that requirement.

24 Q Right. But what I'm saying is, you don't need to do that
25 if you know that a lagoon is built into a water table;

1 correct?

2 A If we know that the seasonal high water table intersects
3 the bottom of the lagoon, that that would be an issue,
4 yes, that would be an issue.

5 Q All right. Take a look at Page 7, please.

6 A 7 of --

7 Q A-16, same document.

8 Now, dairy lagoons -- do you have it in front of
9 you? I'm sorry. A-16, Page 7.

10 A This is R. Sorry.

11 Q I know there's a lot of stuff there.

12 A A-16, Page 7.

13 Q Yes.

14 A Okay. I'm on the same page.

15 Q Okay. Dairy lagoons are the only lagoons, wastewater
16 impoundments, in the state that don't require synthetic
17 liners; correct?

18 A No, that is not correct.

19 Q What other wastewater impoundments do not require
20 synthetic liners?

21 A I know there's other types of impoundments, and there's
22 various different conditions based on the type of
23 industry.

24 And I think Bill Moore would be able to speak to
25 that better about specifically what the different kinds

1 of requirements are because, in his job, he managed a lot
2 of different kinds of permitted activities.

3 Q Okay. You authored A-16; correct?

4 A Yes.

5 Q And if you would please read where it says "Additional
6 concerns," the second bullet point, out loud.

7 A Okay. "There's a discrepancy between the construction
8 standards for dairy lagoons, and those standards are
9 required for all other waste impoundments.

10 "In order to obtain equal protection for groundwater
11 and to comply with 173-240 WAC, manure lagoons should be
12 designed construct and installed consistent with the
13 requirements for other waste impoundments."

14 Q And doesn't that include synthetic liners or other waste
15 impoundments?

16 A But that doesn't say that all other waste impoundments
17 have synthetic liners.

18 Q Most of them do, don't they?

19 A I can't characterize it like that.

20 Q Isn't that what the discrepancy is? Don't dairy lagoons
21 have a much lower threshold for construction and
22 operation than other wastewater impoundments in other
23 industries?

24 A I would have to go back and read the document more fully
25 to understand what exactly the discrepancy is, but it's

1 not clear from this paragraph. And I wrote this back in
2 2002.

3 Q Okay. Why don't you read it then.

4 A Okay.

5 Q Just let me know when you have enough context to answer
6 the question.

7 A I believe it's related to -- well, the title of the
8 document is "Construction of Dairy Lagoons Below the
9 Seasonal High Groundwater Table."

10 So on Page 3, there's a paragraph titled
11 "Consistency with Washington State's Regulatory
12 Philosophy," and it talks about lagoons being constructed
13 below the seasonal high water table.

14 So my assumption is, that's the issue at hand, and
15 that's what we're talking about. In fact, if you turn
16 the page, on Page 4 it talks about the underground
17 injection control program, reclaimed water standards,
18 Department of Health on-site sewage systems, and Ecology
19 stormwater manual, and it talks about the minimum
20 vertical separation with the water table.

21 So I believe that's the discrepancy that this last
22 paragraph is talking about.

23 MR. TEBBUTT: Okay. Your Honor, may
24 we just break for the day. We'll get going in the
25 morning again.

1 JUDGE FRANCKS: That would be fine.

2 MR. TEBBUTT: All right. Thank you.

3 JUDGE FRANCKS: All right. So we'll
4 start again at 9:00 and don't touch those clocks. We are
5 off the record.

6 (Proceedings adjourned at
7 4:40 p.m.)

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C E R T I F I C A T E


I, ANDREA L. CLEVINGER, a Certified Court Reporter in and for the State of Washington, residing at Olympia, authorized to administer oaths and affirmations pursuant to RCW 5.28.010, do hereby certify;

That the foregoing proceedings were taken stenographically before me and thereafter reduced to a typed format under my direction; that the transcript is a full, true and complete transcript of said proceedings consisting of Pages 200 through 409;

That I am not a relative, employee, attorney or counsel of any party to this action, or relative or employee of any such attorney or counsel, and I am not financially interested in the said action or the outcome thereof;

That upon completion of signature, if required, the original transcript will be securely sealed and the same served upon the appropriate party.

IN WITNESS WHEREOF, I have hereunto set my hand this 18th day of June, 2018.


(Court Reporter, CCR No. 3041)

