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I N D E X

<u>WITNESSES</u>	<u>DIRECT</u>	<u>CROSS</u>	<u>REDIRECT</u>	<u>RECROSS</u>
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For the Complainant:

Sandra Doty (Resumed)	518		591 654	642
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P R O C E E D I N G S

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2 THE ADMINISTRATIVE LAW JUDGE: We are, today
3 being Wednesday, the 17th of September, on day three,
4 and we're continuing with the cross-examination of
5 Ms. Doty.

6 Okay. And you're all set and you understand
7 you're still under oath?

8 THE WITNESS: Yes, I do.

9 THE ADMINISTRATIVE LAW JUDGE: I trust you
10 spoke to no one about the case at all since I last
11 saw you?

12 THE WITNESS: That's correct.

13 THE ADMINISTRATIVE LAW JUDGE: Can we go off
14 the record for a second, please.

15 (Discussion off the record.)

16 THE ADMINISTRATIVE LAW JUDGE: Back on the
17 record.

18 Go ahead, Mr. McAfee.

19 MR. McAFEE: Thank you, Your Honor.

20 SANDRA DOTY,
21 called as a witness by the Complainant, having been
22 previously first duly sworn by the Administrative Law
23 Judge, was further examined and testified as follows:
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CROSS-EXAMINATION (Resumed)

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BY MR. McAFEE:

Q. Good morning, Ms. Doty.

A. Good morning.

Q. We will proceed with cross-examination, and I would like to just--I realized yesterday that during the early part of my cross-examination of your testimony, I had made a note I wanted to ask you about something, and then I didn't get back to it. And that was I believe you testified yesterday, in response to one of my questions, that the model, and I believe you're referring to APEX, that it moved the cattle around between pens. Did I understand that right?

A. Yes, it does move them around the pens.

Q. What do you mean by that?

A. I'd have to, you know, go look at the manual for a direct quote on what it does, but you specify areas that the cows can be in, and the cows are allowed to move around those areas.

Q. Within the area, or does the model allow them to move from area to area?

A. Yeah. I had, I think, seven pens specified--I'm not sure how many. Definitely--of course they move around the area they're in. I'd

1 have to check on that.

2 Q. Okay. I'm sorry to interrupt. I don't mean
3 to do that. If you would turn to Figure 9 in your
4 report, which I believe is Exhibit 43.

5 MR. McAFEE: And, for the record, that's
6 page 25 of Exhibit 43.

7 A. Page 25?

8 BY MR. McAFEE:

9 Q. Yes. I believe it's a handwritten number on
10 those pages; is that correct?

11 A. Yes.

12 Q. And is that Figure 9?

13 A. Yes, it is.

14 Q. And is that the figure that you've provided
15 in your report as to the subareas under the APEX
16 model?

17 A. Yes.

18 Q. Okay. And this also shows the pens, doesn't
19 it?

20 A. Yes, it does.

21 Q. Okay. And, again, I just wanted to
22 understand, to the best you can tell me, when you
23 said the model moves cattle around--you might suspect
24 that caught my attention. Does--and maybe you
25 answered this, but I want to look at this exhibit and

1 have you tell me, to your knowledge does it move it
2 from subarea to subarea, such as there's a subarea B
3 here and subarea C? Does the model move them between
4 subareas?

5 A. I need to refer to what's written about
6 that. You specify the number of animals within a pen
7 when you put the input into the model, and it's my
8 understanding that the cattle move around. I'm not
9 positive that they--you know, that they do or they do
10 not change pens. I'd have to go ask about that.

11 Q. Okay. As you can see in Figure 9, the pen
12 boundaries do not line up exactly with the subarea
13 boundaries; is that correct?

14 A. That's correct.

15 Q. So when you input that into the model and
16 the number of head in a certain pen--is that how you
17 put it in?

18 A. Right, and--

19 Q. Go ahead.

20 A. Sorry. Go ahead.

21 Q. Okay. What I was going to ask you was if
22 the boundary of a subarea includes--you know, if it
23 splits a pen, how does the model deal with that? Do
24 you know?

25 A. The model--you put in the number of cows

1 that's really--it's more of a density. You tell the
2 number of cows based on the area of the subarea. So
3 you have a constant density in these areas that I
4 defined that had cows, A, B, C, D, E, F, and G.

5 Q. And I won't belabor the question, but you
6 indicated to know exactly what the model is doing as
7 far as moving cattle around, you would have to check
8 the model?

9 A. Yes. I do know if they are moving between
10 subareas, you're maintaining the same density.

11 Q. The same density in what?

12 A. You have the same number of cattle per acre,
13 same density--

14 Q. Okay.

15 A. --of animals in the pens.

16 Q. Okay. There was one other issue I wanted to
17 double-check with you on, and then we'll get into
18 moving forward here.

19 As we look at Figure 9, you see subareas D
20 and E. Do you see those?

21 A. Yes.

22 Q. When you were there on July 1 during your
23 visit, did you notice whether there were--whether
24 those pens--and I realize subareas aren't exactly
25 coinciding with the pens, but did you notice whether

1 those pens existed that are at least close to being
2 represented by subareas D and E?

3 A. We didn't walk over there, but it was my
4 understanding that the pens on that side had been
5 removed.

6 Q. Okay. So when you--if it was your
7 understanding those pens on that side had been
8 removed, did you change the model to reflect that?

9 A. No. It was my understanding that all of the
10 pens as shown were there between 2002 and 2006.

11 Q. Okay. So you're looking at that period of
12 time?

13 A. Only.

14 Q. Yeah. Okay.

15 THE ADMINISTRATIVE LAW JUDGE: What were
16 those years again? 2000 what?

17 THE WITNESS: 2002 through 2006.

18 THE ADMINISTRATIVE LAW JUDGE: Okay. Thank
19 you.

20 BY MR. McAFEE:

21 Q. But you did note that those pens had been
22 removed, as far as maybe any of your observations on
23 the discharge paths on the day you were there?

24 A. Yes. I did not go over there. I was just
25 told that they weren't there.

1 Q. And who told you that?

2 A. Steve.

3 Q. Okay. By that you mean Mr. Pollard?

4 A. Mr. Pollard.

5 Q. Okay. Thank you.

6 What I'd like to do now, if we could, is go
7 through Exhibit 43, your report, and I just want to
8 go through that not line-by-line, but we'll start at
9 the beginning, and I have some questions as we go
10 through. And we've already been through some of this
11 in my examination yesterday, but I want to go through
12 it today.

13 So my first question I have for you would
14 pertain to page 4. The last paragraph, again,
15 discusses the empirical models and process-based
16 models. I know we talked a lot about this yesterday,
17 and I'm not going to go back over that again, except
18 to ask you, as I looked at this again, if you read
19 the very last sentence--it's a fairly long sentence.
20 Would you please read that for the Court? And if you
21 would, for the court reporter, don't go too fast,
22 please.

23 THE ADMINISTRATIVE LAW JUDGE: Is this the
24 sentence that begins "In this study"?

25 MR. McAFEE: Yes.

1 A. "In this study, the Soil and Water
2 Assessment Tool, SWAT and the Agricultural
3 Policy/Environmental Extender, APEX, models are used,
4 which combine the two modeling approaches to simulate
5 flow, sediment, and nutrient movements on the ground
6 surface and through subsurface soil layers."

7 Q. What I want to be clear, it was my
8 understanding from your testimony yesterday that
9 neither of these models used the empirical approach.
10 The report, as I read and understand that sentence,
11 says the two models--I want to make sure I understand
12 they do combine the two model approaches. Can you
13 help me with that?

14 A. Yes. After I wrote this report, I got
15 clarification on that from the developer of the APEX
16 model, and he said it is sort of a relative term, but
17 that APEX and SWAT are process-based models. So
18 that's my understanding of it.

19 Q. Okay. So that--your testimony would clarify
20 what's in your report?

21 A. Yes.

22 Q. Okay. Thank you.

23 Moving to page 5, this is where you give us,
24 in Section 3.1, an overview of the SWAT model. And I
25 don't have any specific questions here that we

1 haven't already covered, I don't believe, other than
2 to ask you yesterday you talked about validation of a
3 model; right?

4 A. Right.

5 Q. And I believe your testimony yesterday was
6 about validation of APEX, if I remember correctly?

7 A. Right.

8 Q. Did you perform a validation of the SWAT
9 model as you used it in this case?

10 A. I did not have any flow data to do a
11 validation with USGS flow gauges; an ungauged
12 watershed, so, no.

13 Q. Help me out here again. It was my
14 understanding, and I may be incorrect, that
15 validation was the process of pretty much using the
16 information the model has itself, kind of an internal
17 process, and then maybe you remove or change one
18 piece and then see how it performs.

19 A. That's sensitivity analysis.

20 Q. Okay. But validation, is it not using--just
21 using the information the model has to make sure it
22 performed it correctly, or do you need external data
23 to validate a model?

24 A. You don't have to have external data to
25 validate a model. You can look at your input

1 parameters and output parameters to determine if
2 they're reasonable in terms of checks, and I did do
3 that process.

4 Q. And what did you determine?

5 A. That the results are reasonable.

6 Q. And would that have been using the
7 information you had in Appendix B-1 and B-2?

8 A. The--I went and looked at that last night to
9 figure out what the issue was, and there was--those
10 are not the appropriate tables to have in the text;
11 that when they were printed, there was an error made
12 in terms of the printing.

13 And so the first reach was repeated
14 throughout the years instead of providing the reaches
15 that are representative of the main unnamed
16 tributary. And I brought a corrected version, if
17 you're interested in seeing it. I just printed out
18 the correct--the version that should have been in
19 there.

20 Q. Well, I believe I'll let your counsel handle
21 that on redirect. All I can do is go by what you've
22 provided us and what I've had an opportunity to
23 review. And, again, that was my question, was how
24 could you have validated the model when the
25 information that we were provided as model output

1 was, according to your testimony yesterday,
2 incorrect?

3 A. That is not the model output, that's not the
4 direct model output, which is what I'd look at for
5 validation. That's a reduction of it, and--because
6 the model output is way too long to print out,
7 although I could, if you wanted.

8 Q. Again, all I can go by is what was in your
9 report, what we were provided. And you're saying to
10 validate the model you used information that we
11 didn't have in the report; is that correct?

12 A. Yes. The report is just a summary of what
13 was done. It does not provide all the input and
14 output that the model provides to me.

15 Q. Okay. You may have testified to this
16 yesterday, but I didn't have it in my notes. I think
17 you said--I do remember you said that APEX, this is
18 the first time you've used it in a case like this.
19 WinAPEX, I believe is the term you used, W-i-n APEX.

20 A. It's the first time I've used it in a
21 hearing, but I have used the model at several other
22 CAFO sites in the United States, yes, prior to this
23 one.

24 Q. What I wanted to ask you was--this is where
25 I may not remember your testimony yesterday--how many

1 times have you used SWAT in a hearing such as this?

2 A. I have not used SWAT in a hearing, either,
3 although I've used it in other sites.

4 Q. And have you used SWAT more than you've used
5 APEX?

6 A. Yes, I have.

7 Q. And have you run into the problem that we
8 had yesterday or--in your report about the data
9 printed out being incorrect?

10 A. No. Actually not that I'm aware of. I
11 haven't had that issue before.

12 Q. Okay. Do you know was SWAT developed with
13 the intent to be used as you're using it in this
14 case, to--for enforcement purposes in a case like
15 this?

16 A. SWAT was developed to determine flow,
17 sediment yield, and nutrients from watersheds, and
18 that's what I'm using it for.

19 Q. Okay. You realize that it's being used in
20 an enforcement action against my client for a
21 violation of the Clean Water Act? Is that--you
22 understand that?

23 A. I do.

24 Q. To your knowledge has--was the model
25 developed with that intent? I'm just asking.

1 A. Yes.

2 Q. Pardon me?

3 A. Yes, according to the developer it was.

4 Q. It was used for that. And who is the
5 developer?

6 A. Both--well, Jimmy Williams is one, and Jeff
7 Arnold is another.

8 Q. And how do you know that--maybe I better
9 rephrase that.

10 Have they published that statement that you
11 just gave me, that it was developed with this intent?

12 MR. RYAN: Objection. I'm not sure what
13 "this intent" is just based on the question; vague.

14 THE ADMINISTRATIVE LAW JUDGE: If the words
15 expressed--if the intent is expressly stated. So do
16 you want to ask that question again?

17 MR. McAFEE: Sure, Your Honor.

18 THE ADMINISTRATIVE LAW JUDGE: I would like
19 you, counsel--and this is no direct criticism of you,
20 Ms. Doty--but sometimes when you ask a very basic
21 question, there's a very lengthy answer. And what I
22 would prefer is that when there's a simple question
23 asked that really calls for a "yes, this was correct
24 to include," or "incorrect," answer it that way
25 first. And then--I'm not trying to restrict you at

1 all--then elaborate, as opposed to sometimes you
2 elaborate, and then I'm not sure at the end whether
3 you actually came back to, except inferentially,
4 answering the question.

5 I want you, counsel, to persevere on that,
6 demand your simple answer, and then you won't be
7 restricted at all in terms of elaborating. I'm not
8 trying to close a door, I just don't want to forget
9 the basic initial answer that's required by a
10 question. One of your answers might be "I can't
11 answer your question yes or no," and then explain
12 why, all right?

13 THE WITNESS: Okay. Thank you.

14 THE ADMINISTRATIVE LAW JUDGE: Why don't you
15 try and restate that question about whether there was
16 an express intent by the developers of this software
17 or program.

18 MR. McAFEE: Yes. Thank you, Your Honor.

19 BY MR. McAFEE:

20 Q. My question is, Ms. Doty, has this expressed
21 intent that you've indicated that you are aware of by
22 the developers, to have this SWAT model used as it's
23 being used in this case, to prove a violation of the
24 Clean Water Act, have they published that intent?
25 Have they published that so we all know that's what

1 they have said?

2 A. I have not read every publication that is
3 out there, so, no, I can't answer the question.

4 Q. But I'm asking you do you know? Have you
5 seen it in a publication?

6 A. No. I have asked the developers. I have
7 not read every publication. No, I haven't.

8 Q. Okay. Again, I can only ask you what you're
9 aware of, and you're not aware of any publication
10 that states that intent; is that correct?

11 A. Can you tell me exactly what you mean by
12 "intent"?

13 Q. The intent I've been talking about.

14 A. The wording I'm supposed to see in a paper?

15 THE ADMINISTRATIVE LAW JUDGE: I have to
16 stop you again. What happens is the proceeding sort
17 of comes apart, the wheels come off. This is not
18 something where there's a conversation. I know
19 that's not the way life works, but in this courtroom,
20 and all courtrooms, the procedure is a question is
21 asked, and then a response, not a question back.

22 THE WITNESS: Okay. Sorry.

23 MR. McAFEE: Thank you, Your Honor.

24 BY MR. McAFEE:

25 Q. I just want to make sure I understand--maybe

1 I can ask it this way: How are you aware that the
2 developers' intent is for the--that they intended for
3 the model to be used for enforcement purposes, as it
4 is in this case, under the Clean Water Act? How are
5 you aware of that intent?

6 A. I had a discussion with a developer and told
7 them that was the intent, and he said--you know, I
8 asked him if it was appropriate, and, yes, it was
9 appropriate.

10 Q. Okay. You've had that discussion. Was it a
11 telephone conversation?

12 A. Yes--well, yes, it was.

13 Q. You used the term "the developer." Are you
14 referring to a Jimmy Williams?

15 A. Yes.

16 Q. Okay. Without me having a conversation with
17 Mr. Williams, to your knowledge is there any way I
18 could ascertain that intent from the published
19 literature? Again, just to your knowledge.

20 A. No. I haven't read all the papers.

21 Q. I understand you haven't read them all, but
22 of the ones you've read, have you seen that intent
23 published?

24 A. No.

25 Q. Thank you.

1 Now, Ms. Doty, at the bottom of page 5 you
2 now give an overview of the APEX model, and it goes
3 on over to page 6 of your report. I guess my first
4 question here is SWAT gave us an output regarding
5 each subarea, right, in the SWAT model?

6 A. Yes.

7 Q. And I understand you've testified that what
8 was in Appendix B-1 and B-2 is not correct, but that
9 was to represent the output of the SWAT model; right?

10 A. Yes.

11 Q. Is there anything in your report that gives
12 us the same thing, an equivalent to Appendix B for
13 APEX, subarea by subarea?

14 A. No.

15 Q. All right. So it's not in your report; is
16 that correct?

17 A. That's correct.

18 Q. Does it do that and it's just not in the
19 report?

20 A. Yes. The model is capable of doing that,
21 but in this case I didn't include the stream system
22 in the APEX model. I modelled down to the stream
23 system.

24 Q. Okay. Let's go to Figure 9.

25 THE ADMINISTRATIVE LAW JUDGE: And that's on

1 page 25, right, counsel?

2 MR. McAFEE: Yes. Thank you.

3 BY MR. McAFEE:

4 Q. Page 25, do you have that, Ms. Doty?

5 A. Yes.

6 Q. Now, as I understand it, and please correct
7 me if I don't understand, these subareas in APEX are
8 represented by the letters on this Figure 9; is that
9 correct?

10 A. Yes.

11 Q. And if I understand how SWAT was done, there
12 were corresponding subareas which were--which
13 corresponded to reaches in the stream; correct?

14 A. SWAT?

15 Q. Yes.

16 A. Yes. Yes.

17 Q. What I'm trying to understand is here under
18 APEX we have these subareas, and I understand they
19 don't coincide with the stream reach, but they are
20 subareas that you've testified are separated that way
21 for purposes of uniformity in each subarea; is that
22 correct?

23 A. Yes.

24 Q. My question is, does APEX give us an output
25 for each subarea?

1 A. Yes. It generates many tables.

2 Q. And do you use that output in your final
3 conclusion? And maybe that's not the right term, but
4 what I see as, I believe it was, Table 3, where you
5 tell us 45 events?

6 A. Yes. In that table I report the runoff from
7 the sub--actually that leaves all the subareas and
8 enter the stream at the outlet.

9 Q. Okay. So that table represents this--all of
10 these subareas; is that correct?

11 MR. RYAN: Objection. Vague. Which table?
12 I don't know which table he's talking about.

13 THE ADMINISTRATIVE LAW JUDGE: I think he
14 mentioned the table a minute ago.

15 You want to restate?

16 BY MR. McAFEE:

17 Q. The only table I've talked about in the past
18 two questions, Table 3.

19 A. Is it Table 2 on page 10? That's the table
20 I'm referring to.

21 Q. No. We were talking about Table 3.

22 A. Oh. Okay.

23 Q. Which also pertains to APEX; is that right?

24 A. Yes. That shows the surface runoff on a
25 daily--or on the dates that there was runoff to the

1 unnamed tributary.

2 Q. Yes. Does Table 3--let's take Table 3 for a
3 minute.

4 A. Okay.

5 Q. Does Table 3 represent information, if you
6 will, from all of these subareas in Figure 9?

7 A. Yes.

8 Q. And now my question is, then, does APEX give
9 us information that you used to generate Table 2?
10 Does it give us information from each subarea?

11 A. Oh, yes, it does.

12 Q. But we don't have that information in your
13 report, do we?

14 A. No, because my intent--I thought it was
15 confusing to have that in there. I took it out
16 because my intent was to just show what makes it to
17 the unnamed tributary, which is the outlet of that
18 model.

19 Q. And I guess my intent in all these questions
20 about this is wouldn't that data help us double-check
21 your model so we could make sure there was no
22 mistakes made in that information like were made in
23 what was in Appendix B for the SWAT model?

24 A. I certainly can provide it. Yes, it's
25 another piece of information. Yes, I think it might

1 help you.

2 Q. Well, at this point with your report it was
3 not provided; is that correct?

4 A. No. I didn't think it added anything.

5 Q. But my question was--

6 A. Yes.

7 Q. --it was not provided; correct?

8 A. Correct..

9 Q. Now I would like to ask you about APEX, very
10 similar question as I asked you about SWAT about your
11 knowledge of the intent of its creation and use for a
12 purpose such as we have in this case, an enforcement
13 action under the Clean Water Act.

14 So, No. 1, have you talked to the developers
15 of APEX?

16 A. Yes.

17 Q. And who is that?

18 A. Jimmy Williams.

19 Q. So Jimmy Williams was a developer of SWAT
20 and also of APEX?

21 A. Yes, he was.

22 Q. Does he go by Jimmy Williams as a name that
23 he would use in published literature?

24 A. Yes, he does.

25 Q. Okay. And--maybe you've testified to this--

1 where is he from?

2 A. He's at the AgriLife Center. It's a
3 research arm of Texas A & M. He's in Temple, Texas.

4 Q. Okay. Is he with the University or is
5 it--well, you go ahead.

6 A. He's associated with the University--

7 Q. Okay.

8 A. --somehow.

9 Q. I'm sorry. I need to practice what I always
10 tell witnesses, don't interrupt. I apologize.

11 Do you know him?

12 A. Yes, I do.

13 Q. How do you know him?

14 A. I've met him on a couple of occasions and
15 I've spoken with him many times.

16 Q. Okay. So you spoke with him about the APEX
17 model, and did you ask him was it intended to be used
18 in a case like this for enforcement under the Clean
19 Water Act?

20 A. Yes.

21 Q. And his answer was?

22 A. That it was--yes, that it was an appropriate
23 tool to use for this purpose.

24 Q. Now I'll have the same question of if I were
25 to try and ascertain that from any of the published

1 literature, that you are aware of, would I find that
2 stated intent?

3 A. This is yes and no. I don't know if the
4 exact wording is in the published literature, but
5 when I read the papers, the intent is to determine
6 flow, sediment yield, and nutrient yield from small
7 ungauged watersheds that have livestock facilities or
8 farms--you know, that have farm management associated
9 with them. That's how we're using this model.

10 THE ADMINISTRATIVE LAW JUDGE: And when
11 you've looked at information like you just referred
12 to, have you noticed the word "enforcement" at all
13 when you were reading that at all, if you recall?

14 THE WITNESS: No, I haven't.

15 BY MR. McAFEE:

16 Q. And, Ms. Doty, that--my question would
17 be--again, all I'm asking for is what you've seen.
18 I'm not asking you to speculate.

19 MR. RYAN: Your Honor, he's asked this
20 question seven times. She's answered no; asked and
21 answered.

22 THE ADMINISTRATIVE LAW JUDGE: Overruled.

23 BY MR. McAFEE:

24 Q. The published literature that you have read,
25 have you seen anything where it says to--where it

1 says that it is appropriate to use the APEX model for
2 enforcement purposes under the Clean Water Act?

3 A. No, not that I can recall.

4 Q. Thank you. I would now like to go to page 6
5 of your report. At the bottom of page 6 there is a
6 Section 3.3 that says "Data input parameters and
7 assumptions." Do you see that?

8 A. On the bottom of page 6?

9 Q. Yes.

10 A. Yes, I do.

11 Q. Okay. There's a fairly lengthy sentence at
12 the beginning--the very first sentence of that
13 paragraph following that heading. And, of course, it
14 is in the record. What I want to have clarification
15 on is it makes the statement, referring to
16 parameters in both models, that describe the site-
17 specific climate, soil properties, vegetation
18 conditions, topographic properties, and then it has
19 in parentheses, "gradient, length, and width," end of
20 parentheses, "management conditions, and nutrient
21 values for each scenario."

22 What I want to know, Ms. Doty, is the term
23 "site-specific" appears in front of all of
24 those--that list of terms, right?

25 A. Yes, it does.

1 Q. Does that term, "site-specific," did you
2 intend for that to qualify all of those--that whole
3 list?

4 A. The intent of--should I say yes and no? Yes
5 and no; the intent of "site-specific," as I intended
6 it here, was to refer to the best available data for
7 that particular geographic location.

8 Q. I understand. But that's not my question.
9 My question is, does "site-specific" mean site-
10 specific climate? Does it mean site-specific soil
11 properties? Does it mean site-specific vegetation
12 conditions? Does it apply to each one of those
13 terms, the qualifier, "site-specific"?

14 A. Yes, it does.

15 Q. Okay. I just want to make sure I understood
16 how you had worded that.

17 Now let's go to the next page, please, page
18 7. Is this the site-specific information you were
19 referring to on the previous page?

20 A. Yes, it is.

21 Q. Okay. First of all, you refer to climate
22 data at the top of page 7, and at the end of that
23 paragraph do you not say in this report, "Graph 1
24 shows the magnitudes of the precipitation events that
25 occurred between January of 2002 and 2007"?

1 A. Yes, it says that.

2 Q. Okay. Can we look at graph 1. I believe it
3 is page 16. Okay?

4 THE ADMINISTRATIVE LAW JUDGE: Just for
5 clarification, ask her to read what--or you can ask
6 her if she agrees with Graph 1, and then read what it
7 says, just for clarification of the record that this
8 is the page, we're all talking about the same page
9 16, okay?

10 MR. McAFEE: Sure. Thank you.

11 BY MR. McAFEE:

12 Q. Would you please read the heading of the
13 graph on page 16?

14 A. "Graph 1. Precipitation values, February
15 2003 through 2007."

16 Q. Now, I believe you testified yesterday
17 that--in response to a question from Mr. Ryan, I
18 believe you stated that--and I've used the word
19 "believe" a couple of times here, and as I recall
20 your testimony--I don't want to misstate the record.
21 As I wrote it down, you were asked, "Is this data
22 from LaMars?" And I believe you said you believed
23 so. Do you recall that?

24 A. Yes, I do.

25 Q. And since then have you had a chance to

1 check? Do you believe that this data is from the
2 LaMars station?

3 A. It's from the Sioux City station. I looked
4 at it last night. I ran the model on using both
5 stations, and because they're very similar, I just
6 put one in.

7 Q. Okay. And clarifying for the record here,
8 your testimony today is that that Graph 1 is not from
9 the LaMars station, it's from the Sioux City station?

10 A. Yes, it is, and I have the input data for
11 that, if you'd like to look at it, the data that I
12 put into the model.

13 Q. Again, I'll leave that up to your counsel on
14 redirect. I'm just going by the information I have,
15 and I just wanted to clarify because I checked also
16 and--let me ask you, is the data from LaMars
17 different from the precipitation data presented here?

18 A. Yes, it is. Yes.

19 Q. Thank you.

20 THE ADMINISTRATIVE LAW JUDGE: You're doing
21 better.

22 THE WITNESS: Thank you.

23 THE ADMINISTRATIVE LAW JUDGE: Again, the
24 intent is not to restrict what you say, just to have
25 a clear--where a clear answer can be made, do that

1 first, and then elaborate.

2 THE WITNESS: Okay. Thank you.

3 THE ADMINISTRATIVE LAW JUDGE: If you didn't
4 elaborate sufficiently, I'm sure Mr. Ryan or
5 Mr. Breedlove will pick that up on redirect.

6 THE WITNESS: All right.

7 BY MR. McAFEE:

8 Q. Would you please look at the bottom of page
9 7, then, under "nutrient values." And I'm referring
10 to page 7 of the report where, again, we're looking
11 at the site-specific information you have referred to
12 in your report; is that correct?

13 A. Yes.

14 Q. Okay. Do you have that heading there of
15 nutrient values?

16 A. Yes.

17 Q. Following the heading it says, the first
18 sentence, and I'll read it, "In both models, a manure
19 generation rate of nine pounds per day per animal was
20 assumed to be distributed evenly over the 40-acre
21 feedlot area (ASAE, 2005)." Do you see that?

22 A. Yes.

23 Q. My question is, based on your testimony
24 yesterday, what--how would the manure generation per
25 animal, the nine pounds per day, be used in SWAT?

1 A. I didn't use it in SWAT. I didn't put in
2 any management in SWAT. I was just looking at flow
3 from the watershed.

4 Q. Okay. And that was my understanding from
5 your testimony. But when I read your report again,
6 when it says "in both models," which models are you
7 referring to?

8 A. That's my error. It should just say "in the
9 APEX model." Sorry.

10 Q. Okay. This is what I need to know to
11 understand your report.

12 I'd now like to have you go to page 9 of
13 your report. I believe the reason I'm taking a
14 little bit here, I believe I've asked you some of
15 these questions already, but in the second paragraph
16 you talk about the APEX model and the subareas, and
17 I've asked you quite a bit about what I wanted to
18 cover there, but in the middle of that paragraph,
19 yeah, it's about mid-way down, there's a sentence
20 that says, "The northern pasture area was designated
21 subarea J." Is that a pasture area? And if you need
22 to refer to Figure 9, please do, which is page 25.

23 A. In the model I designated area J as a summer
24 meadow. It's a pasture.

25 Q. Where did you get the information to

1 designate that as a pasture?

2 A. I looked at it when I was at the site.

3 Q. And it was a pasture or a meadow?

4 A. It was a meadow, to my recollection.

5 Q. Okay. I understand. But you prepared your

6 first report--I forget the exhibit number. We're

7 dealing with Exhibit 43 here, but you prepared your

8 first report, which had a March date on it; right?

9 A. Yes, it did, March 25th.

10 Q. You prepared that before you visited the

11 site; is that correct?

12 A. Yes, I did.

13 Q. And I think you've testified there were no

14 differences in your reports, other than the function

15 of manure scrape?

16 A. Yes, I did.

17 Q. So you would have designated that subarea J

18 as a pasture area prior to visiting the site; is that

19 correct?

20 A. I recall that--I'll say yes, but I recall

21 that I did not, and that I--when you asked me that

22 question, I didn't recall that I had also changed

23 that.

24 Q. You changed that to pasture after your

25 visit?

1 A. I used--I just remember I used the summer
2 meadow for that option in this report.

3 MR. McAFEE: Okay. Rather than take the
4 Court's time now, if I could, I would like to
5 double-check that first report. Could I do that
6 during redirect?

7 THE ADMINISTRATIVE LAW JUDGE: Yes.
8 Absolutely.

9 MR. McAFEE: Thank you.

10 THE ADMINISTRATIVE LAW JUDGE: I don't have
11 to explain my rulings, but for the benefit of the
12 EPA, this is a cornerstone of the EPA's case, and it
13 is Respondent's perspective there are cracks in that
14 cornerstone, so I'm going to allow Mr. McAfee to have
15 full and robust cross-examination. You can raise
16 your objections, I'm not suggesting you can't, but
17 that's where I'm coming from.

18 MR. McAFEE: Thank you.

19 BY MR. McAFEE:

20 Q. Ms. Doty, on page 9 there's a paragraph that
21 we discussed extensively yesterday about manure
22 scraping, and it's right above the heading "3.5
23 Results." That's the heading. And it's the
24 paragraph immediately above that, and I don't mean to
25 go through all that again, but my question is your

1 model also--I shouldn't use the term "your model"--
2 the model you used, the APEX model, that has a manure
3 scraping function, also looks at runoff from snow as
4 a precipitation event, in addition to rain; right?

5 A. Yes, it does.

6 Q. Okay. If a livestock producer, such as
7 Mr. Vos, when a snow event occurred, if part of his
8 management was to immediately remove that snow--I use
9 the term "immediately." Probably relative. But if
10 that snow is removed following the snowfall before
11 runoff could occur, if that is done, how would that
12 affect your model--the model, the APEX model, and how
13 would it affect the results you came up with in this
14 case?

15 A. On that--if the snow removal is complete,
16 and there was no runoff associated with the fact that
17 all the snow was gone on that particular day, then
18 you wouldn't see snow melt.

19 Q. Okay. And there would be no runoff from
20 that precipitation event; correct?

21 A. Yes, if the snow was gone.

22 Q. I apologize. I interrupted you. I meant to
23 add to my question "from the feedlot." I didn't want
24 to misrepresent anything here.

25 A. Yes.

1 Q. Okay. And that would affect some of your
2 conclusions, then, would it not, as to runoff from
3 the feedlot from that precipitation event?

4 A. Yes. In the case where there was a runoff
5 event to the unnamed tributary, yes.

6 Q. Maybe I should clarify by "affecting them,"
7 I mean, and I think you've said this--I'll say it a
8 little different way and see if you agree. In
9 effect, when you remove the snow before it can run
10 off, haven't we, in effect, eliminated the
11 precipitation event from the model, or--from actual
12 practice, and the model has no way of knowing that?
13 That's my question?

14 A. Yes.

15 Q. Section 3.5 talks about--this is the results
16 section, and this talks about Table 2, which you've
17 testified to extensively, and I asked you a similar
18 question about Table 3, but I want to make sure I ask
19 about Table 2. Is there an output sheet associated
20 with Table 2 that would show the flow volumes from
21 each subarea?

22 A. Yes, that can be generated.

23 Q. Okay. And would that be the same output
24 sheet, I'll call it, that would be used to generate
25 Table 3, which is a storm-by-storm event?

1 A. No. Table 3 shows the runoff from the
2 watershed on a daily basis, just the dates when there
3 was runoff or snow melt. And that is--all of those
4 numbers in the surface runoff, that's the quantity
5 that made it to the outlet of the watershed. In
6 other words, the entrance into the unnamed tributary.

7 Q. Okay.

8 A. And the subareas, when you look at the
9 subarea output, you're looking at the movement of
10 water runoff between the subareas. It's not
11 representative of what actually exits the watershed.
12 That's a separate output, it's a--you can--it's a
13 separate table, what's leaving the model and what's
14 moving around within the model.

15 Q. Okay. But to get that information as to
16 what's leaving the--or entering the unnamed
17 tributary, according to the model, don't you--that's
18 all based on the information that starts with the
19 subareas, is it not?

20 A. It's a separate output parameter. All these
21 are separate output parameters. I don't look at
22 what's moving around within the model when I create a
23 table like this, I only look at what the model tells
24 me is leaving the model.

25 You can select what parameters you want to

1 create a table with. I only look at the watershed
2 parameters when I'm creating a table like this.

3 Q. Okay. Does the model start with the subarea
4 information to generate what we have in Table 2?
5 Does it all begin with the subareas?

6 A. Yes, it does.

7 Q. Okay. So the model would have to, if I
8 understand it right, would have to put those subareas
9 together at some point and then do what a model does
10 to come up with Table 2; is that correct?

11 A. Yes. The model routes flow.

12 Q. Okay. That's what I wanted to make sure I
13 understood.

14 And similar to Table 3, we don't have the
15 information that the model used to generate Table 2,
16 as far as the subareas; is that correct?

17 A. Yes. I could have created a separate table
18 that had those output parameters in it, but that
19 wasn't the intent of this report. I was only
20 interested in the runoff to the unnamed tributary.
21 That was my objective.

22 Q. I understand. For us to double-check for
23 errors, similar--as we were able to do with the SWAT
24 model in that Appendix B, we would need that
25 information, wouldn't we, for the APEX model for

1 Table 2?

2 A. That could be something you could look at,
3 yes.

4 Q. And we don't have that?

5 A. No, you do not.

6 Q. Okay. Thank you. I apologize. I need to
7 have you go back to page 9, and I have a very
8 detailed question, so look at the last paragraph of
9 page 9, and it's the second to the last sentence, so
10 you'll have to read--it's the sentence that has at
11 the very end "Appendix B" in bold. That's the
12 sentence I want to ask you about. I'll read it. The
13 sentence says, "The daily flow rates in the unnamed
14 tributary reaches between the feedlot and Elliot
15 Creek (SWAT reaches 1, 3, 4, 5, and 8) are shown in
16 Appendix B."

17 My question is you use the term there in
18 that sentence "between the feedlot and Elliot Creek,"
19 is that correct?

20 A. Yes, I did.

21 Q. Do you mean from the physical--actually the
22 physical location of the feedlot and Elliot Creek,
23 that's what that data in Appendix B tells us?

24 A. That would be reach 1, and I agree with you,
25 that's not clear from this sentence.

1 Q. Okay. Can you clarify that sentence for me,
2 please.

3 A. I would just delete "between the feedlot and
4 Elliot Creek" for clarity because other reaches are
5 also shown in Appendix B.

6 Q. Okay. I believe you testified to this
7 yesterday, and I don't mean to replot this ground, so
8 to speak, but I want to make sure I understand. Is
9 any of the SWAT model output that we saw as Appendix
10 B--I understand your testimony that was not correct,
11 but is any of that SWAT model output used in APEX?

12 A. No, it's not.

13 Q. Is any of the same information as is
14 represented by Appendix B, is any of that same
15 information used in APEX?

16 A. Yes, in terms of input parameters to the
17 model, such as the having observed or looked at the
18 national land cover database information or the soil
19 survey. Is that what you're referring to?

20 Q. Well, that would be one thing. I think you
21 went back a little further than I intended you to.
22 I'm looking at--what does Appendix B give us?
23 Appendix B gives us daily flow rates, right?

24 A. Yes, it does.

25 Q. In each reach?

1 A. Yes, it does.

2 Q. That's fine. Go ahead.

3 A. To clarify that, it gives you the flow
4 that's either running off from that particular
5 subwatershed area or sublateral flow, or end
6 sublateral flow to the reach.

7 Q. Is any of that same type of information used
8 in APEX?

9 A. The general input parameters are. No, I
10 didn't use an input file from SWAT to APEX.

11 Q. The daily flow rates that are in Appendix B,
12 are they used in APEX?

13 A. No.

14 Q. Okay. I just wanted to make sure I
15 understood.

16 A. Okay.

17 THE ADMINISTRATIVE LAW JUDGE: Are you okay?

18 THE WITNESS: Yeah. I'm just trying to
19 understand the question. Sorry.

20 THE COURT: Just checking.

21 BY MR. McAFEE:

22 Q. I'd now like to turn to page 11 of your
23 report and look at Table 3. And I'm really--I have
24 several questions about this table, but I want to
25 start with three rather specific questions, and they

1 refer to three specific dates. As I looked at this
2 table, and looking at the column on Soluble N in
3 runoff--you see that's the next to the last column?

4 A. Yes.

5 Q. As I look down through there, looking at the
6 values that were generated by APEX, two stood out to
7 me--three, actually, but two really stood out, and
8 that would be--the very first one, February 18th of
9 2002. It has a value of 3.01 pounds per acre, and as
10 I look down through there--and I guess I would ask
11 you, would you say, does that look quite a bit higher
12 than most of the rest?

13 A. Yes. It's at the upper end.

14 Q. Well, please take a minute and see if it's
15 not the highest.

16 A. It might be. Soluble N in runoff?

17 Q. Yes, that's the column.

18 A. Yes, it is.

19 Q. And, for instance, what's the next entry in
20 that column for the next date, which is May 10th of
21 2002, what is that entry?

22 A. Point--0.13.

23 Q. And the one we're talking about is 3.01?

24 A. Right.

25 Q. Quite a difference. Would you go down.

1 to--well, it's March 15th of 2003. What is the entry
2 for soluble N in runoff, pounds per acre, for that
3 date?

4 A. 2.19.

5 Q. And what is the entry just before and just
6 after?

7 A. 0.03 and 0.02.

8 Q. I just ask you to do that--this table will
9 be in the record to show all the values. I'm not
10 trying to misrepresent anything, I'm just trying to
11 get a feel for what stood out to me when I looked at
12 this.

13 If you look at--let's go back to February
14 18th, 2002. If you look at--you've included the
15 first column to that date as precipitation; is that
16 right?

17 A. Correct.

18 Q. Why do you have the precipitation column in
19 this table?

20 A. For completeness.

21 Q. Sure. And isn't precipitation what really
22 determines if there is a runoff event?

23 A. A runoff event is either going to occur from
24 precipitation or snow melt.

25 Q. I understand. So precipitation is one of

1 the factors?

2 A. It is one of two factors. They don't have
3 to occur together.

4 Q. I understand. So for this date, then, would
5 you agree that there was no precipitation, according
6 to your table?

7 A. Yes, I would.

8 Q. Okay. So the other factor I need to look
9 at, then, is there snow melt?

10 A. Yes.

11 Q. Can we determine--being in February, that
12 could be very important. Is it in this table?

13 A. No, it's not.

14 Q. Where would we go to find that? Would that
15 be--let me restate that.

16 Was the LeMars weather data used by APEX to
17 generate this table?

18 A. Yes, it was.

19 Q. Okay. Let's go to Exhibit 46. That's the
20 detailed weather data. Do you have Exhibit 46
21 available?

22 A. Yes, I do.

23 Q. I'm sorry. Take as much time as you need.

24 A. I'm fine.

25 Q. Do you have it available there now?

1 A. Yes, I do.

2 MR. McAFEE: Your Honor, may we go off the
3 record a minute?

4 THE ADMINISTRATIVE LAW JUDGE: Yes.

5 (Discussion off the record.)

6 THE ADMINISTRATIVE LAW JUDGE: Let's go back
7 on the record.

8 Mr. McAfee?

9 MR. McAFEE: Thank you, Your Honor.

10 BY MR. McAFEE:

11 Q. Ms. Doty, we're back on the record after a
12 short break, and I believe you have Exhibit 46; is
13 that correct?

14 A. Yes, I do.

15 Q. And do you have it open to the LeMars
16 weather data?

17 A. Yes.

18 Q. And could you find the data for February
19 18th, 2002?

20 THE ADMINISTRATIVE LAW JUDGE: And then
21 you're going to be noting the page for me,
22 Mr. McAfee.

23 MR. McAFEE: Yes, I will, Your Honor.

24 BY MR. McAFEE:

25 Q. Have you found that?

1 A. Yes.

2 Q. Now, as with yesterday, we have to keep our
3 thumb on the first page of this exhibit to know what
4 the headings mean, right?

5 A. You have to tell me.

6 Q. All right. So the first page of this
7 exhibit for the LeMars weather data gives headings,
8 and what would you look for to determine--I believe
9 your testimony was that you would look for--well,
10 what would you look for here in this weather data to
11 determine if a runoff event occurred? Is that what
12 you'd look for?

13 A. A snow melt event. There's a difference
14 between a runoff event and snow melt event in terms
15 of how the model looks at these things.

16 Q. Okay.

17 A. And I wouldn't look at this data.

18 Q. What would you look at?

19 A. The model uses the average monthly data to
20 determine whether snow melt occurs. It uses a normal
21 distribution around the mean value. It does not use
22 actual temperature data. Therefore, you wouldn't
23 expect to see snow melt on a specific day.

24 Q. So when the model tells us in Table 3--don't
25 lose you're place there, please. I don't mean to

1 instruct you what to do.

2 A. I already lost it.

3 THE ADMINISTRATIVE LAW JUDGE: Just let me
4 have that. Obviously I can follow along later with
5 the transcript, but I'd like to be looking at it at
6 the same time.

7 MR. McAFEE: I have not marked it yet, Your
8 Honor.

9 THE ADMINISTRATIVE LAW JUDGE: Also for the
10 benefit of Mr. Ryan and Mr. Breedlove, just make sure
11 we're all on the same page. It's important, okay?

12 MR. RYAN: I'm there.

13 MR. McAFEE: Your Honor, we located the same
14 page.

15 THE ADMINISTRATIVE LAW JUDGE: Okay.

16 BY MR. McAFEE:

17 Q. Ms. Doty, you've--you're looking at Table 3,
18 and the model generated a soluble N in runoff pounds
19 per acre for February 18th of 2002 of 3.01; is that
20 correct?

21 A. Yes.

22 Q. And are you telling me we don't look at the
23 actual weather data to see if that could have
24 occurred on that day?

25 A. Yes.

1 Q. That's what you're telling me?

2 A. That's what I'm telling you.

3 Q. So going to that data from LeMars for that
4 day, which I think we will still go back and look at
5 that, but you're telling me the model didn't use
6 that--

7 A. No.

8 Q. --specific data?

9 A. No. I'm trying to explain the model uses
10 the monthly mean from that weather station for that
11 temperature when it's a snow melt event.

12 Q. Tell me what you mean by the monthly mean.
13 Let's start with that.

14 A. Back at the same exhibit, No. 46--

15 THE ADMINISTRATIVE LAW JUDGE: You mean page
16 46?

17 THE WITNESS: Not page 46, but Exhibit 46.

18 MR. McAFEE: If I could, Your Honor?

19 THE ADMINISTRATIVE LAW JUDGE: Yes, please.

20 MR. McAFEE: In Exhibit 46, I believe the
21 witness is referring to--

22 BY MR. McAFEE:

23 Q. This is the LeMars weather data. There must
24 be a mean temperature?

25 A. Correct.

1 Q. So could we find that, please?

2 A. Yes. That's on--mine's cut off, but I think
3 it says 2 of 35.

4 THE ADMINISTRATIVE LAW JUDGE: It says what,
5 Ms. Doty?

6 THE WITNESS: It's page 2 of 35.

7 THE ADMINISTRATIVE LAW JUDGE: Oh, page 2 of
8 35, for Exhibit 46?

9 THE WITNESS: Yes.

10 MR. McAFEE: Your Honor, may we go off the
11 record for a minute?

12 THE ADMINISTRATIVE LAW JUDGE: Yes.

13 MR. McAFEE: Thank you.

14 (Discussion off the record.)

15 THE ADMINISTRATIVE LAW JUDGE: We'll go back
16 on the record.

17 BY MR. McAFEE:

18 Q. Ms. Doty, we are now looking at Exhibit 46
19 under the tab "LeMars," and it's actually the second
20 page of data in that tab. And in the lower left-hand
21 corner you've indicated--it's partially cut off, but
22 it has--appears to say 2 of 35; is that correct?

23 A. Yes.

24 Q. And you wanted to tell me something about
25 the data located on this page?

1 A. Yes. There are two sets of data that are
2 applicable. One is under--along the line of 1991,
3 01/30 as a date, and a little past halfway down the
4 page there's another one at 1991, 02/28 for a date.
5 You will see there are numbers filled in on the
6 right-hand side of the page where there aren't any on
7 the other lines.

8 If you flip back to the page before it, that
9 tells you that's the monthly temperature data.
10 There's a mean maximum, a mean minimum.

11 Q. Okay.

12 A. That's the data that's used in the model
13 to--

14 Q. Go ahead. Is that the data for what month?

15 A. For the--for the applicable month. That's
16 the monthly data.

17 Q. Okay.

18 A. So the first one is for the month of
19 January, and the second set is for the month of
20 February.

21 Q. Okay. But I need to back up, and maybe it's
22 my confusion here. That page on page 2 of 35, that
23 row of data you just referred to, what month does
24 that apply to?

25 A. The first row applies to January of 1991.

1 Q. Okay.

2 A. I'm just--I just flipped to give you an
3 example. In the model it looks at every--it looks at
4 this data throughout the month that's applicable.

5 Q. I understand that now. I want the record to
6 be clear that you weren't testifying that that is the
7 data that applies to the date we're talking about.

8 A. That's correct, I'm not.

9 Q. You're just giving an example?

10 A. Exactly.

11 Q. Now, where do we need to go to look at the
12 data applied--the model used?

13 A. What was the date? Can you remind me? 2002
14 something.

15 Q. February 18th of 2002.

16 A. So page--I don't have a page number.

17 Q. I understand. We'll mark that. Let's just
18 describe it a little bit. Are you on the page that
19 actually has entries for the date of February 18th,
20 2002?

21 A. Yes, I am.

22 Q. Okay. So we're on that page. Then I assume
23 you want to describe some data for me that is not the
24 exact data for that date. What date is the data
25 associated with in that exhibit on that page?

1 A. The data that would have been used by the
2 model--

3 Q. Yes.

4 A. --is shown under 2002, 02/28. The last day
5 of February it reports the monthly mean temperature,
6 highs and lows.

7 Q. Okay. So on this page, then, we look to the
8 right-hand side of this page, as you've previously
9 described, for a date in 1991, we look at the data on
10 that line, and that gives us--and that line being
11 2002, 02/28; correct?

12 A. Yes.

13 Q. And that data is over on the right-hand
14 side, and you're saying that information--I'm using
15 the term data--is for the entire month of February?

16 A. Yes, those are the means for that month.

17 Q. Okay. And describe for me how the model
18 uses this, then.

19 A. It takes that data and it determines a
20 normal distribution around that data, and then it
21 selects a value to use on each day of the month when
22 it's running the model to determine snow melt.

23 In other words, there's a certain percentage
24 of time when it will be above freezing, and on those
25 days it will potentially generate snow melt,

1 depending on the other conditions, other processes
2 that are working at that point.

3 Q. Okay.

4 MR. McAFEE: May we go off the record for a
5 minute, Your Honor?

6 THE ADMINISTRATIVE LAW JUDGE: Yes. We're
7 off the record.

8 (Discussion off the record.)

9 THE ADMINISTRATIVE LAW JUDGE: We're going
10 to go back on the record.

11 BY MR. McAFEE:

12 Q. Ms. Doty, for purposes of clarification in
13 the record, and I know these lines are kind of hard
14 to read across, so please use a piece of paper or
15 whatever you need to, I'll leave that up to you, but
16 would you read each entry on that line where you're
17 getting the mean data, I think you've called it, for
18 the month of February in 2002?

19 A. Yes. 2002, 02, 28, 36, 5, 5, 21, 0, 44, 0,
20 0, 0, 26.1, 37.8, 14.4, 61, -9, 0, 1084, 0.55, 9.0.

21 Q. Thank you.

22 THE ADMINISTRATIVE LAW JUDGE: Thank you.

23 BY MR. McAFEE:

24 Q. Now, don't lose your place there. On that
25 page--and I understand your testimony, what the model

1 does, I just want to take a look at what, in my
2 words, according to the data, actually occurred.

3 Could you look at the second line on that
4 page that you just read from, the second line that
5 has the date 2002, 02/18?

6 A. Yes. 2002--read the whole line?

7 Q. No. No need to, unless you feel the need
8 for yourself, but I just want to at least discuss
9 with you a little bit about what was occurring that
10 date, according to these records, for weather
11 conditions. And for this we need to be able to flip
12 back to the headings.

13 The first number is a 54. What does that
14 represent?

15 A. That's in degrees Fahrenheit, 54 degrees
16 Fahrenheit, and I believe that's the maximum
17 temperature on that day.

18 Q. Okay.

19 A. We're looking at 2002, 02/18?

20 Q. Correct, because that is the first date in
21 your Table 3 that we are examining here, okay?

22 A. Right.

23 Q. So 54 degrees Fahrenheit at LeMars was the
24 high temperature; is that correct?

25 A. Yes.

1 Q. Would you expect snow melt to occur on a day
2 at 54 degrees?

3 A. Yes. Snow melt occurs anytime it's over 32
4 degrees, potentially.

5 Q. Okay. And you can quote any other numbers
6 here we need to look at, but, I guess, to me the next
7 important thing to look at is--well, is there any
8 snow on the ground to be melted that day? Does this
9 exhibit tell us that?

10 A. This temperature data?

11 Q. No, this exhibit.

12 A. Oh, I see. It does have a column for rain,
13 melted snow, et cetera.

14 Q. Okay, you're reading, of course, from the
15 headings that are on the very first page of this
16 section, and there's a heading that says rain, melted
17 snow, et cetera. Is that what actually occurred on
18 that day, what fell out of the sky, so to speak?

19 A. Yes. That's what's recorded at the station.

20 Q. Okay. And what is there--flipping back to
21 February 2nd--excuse me--February 18th, did anything,
22 quote/unquote, in my words, fall out of the sky that
23 day?

24 A. I'm just trying to-- No. I believe that's
25 a zero in that column.

1 Q. Okay. Now, the next column, what does it
2 say, the next column to the right?

3 A. "Snow, ice pellets, inches in tenths."

4 Q. Okay. Now flip back to February 18th of
5 2002. Did any of that fall out of the sky that day?

6 A. No, it did not; zero.

7 Q. Now, of course I think what we need to look
8 at is--was there anything on the ground that could
9 have been melted that day that had fell previously.
10 Would that be correct?

11 A. Yes, that would be correct.

12 Q. And does the next column tell us that?

13 A. Yes, it does.

14 Q. Was there any snow, ice pellets, hail, ice
15 on the ground?

16 A. No. Zero.

17 Q. Okay. Now, to be fair, wouldn't we want to
18 see--maybe it all melted that day. I don't know when
19 they take that reading, do you?

20 A. No, but I do know the model doesn't use that
21 data.

22 Q. I understand. I understand.

23 A. Just so we're still on the same page.

24 Q. Yeah. There's a lot of pages to be on total
25 here. No, I understand your testimony, ma'am. I

1 just want you to testify what's in the exhibit here.

2 So it seemed to me, if we were looking at
3 what actually occurred, according to this weather
4 data, we would also want to make sure was there any
5 snow on the ground the previous few days. Would you
6 agree we might want to look at that?

7 A. Yes.

8 Q. Okay. So what about the day before? And I
9 know the paper punch removed, I think, the last
10 number there, but we can, I think, make a pretty
11 valid assumption that that's February 17th, the very
12 top line.

13 A. Yes. Yeah, mine is--yes. Sorry. It's
14 there.

15 Q. Okay. Now--and, unfortunately, the paper
16 punch has taken out the column for snow on the
17 ground.

18 A. Yes.

19 THE ADMINISTRATIVE LAW JUDGE: That's the
20 last column on the right?

21 MR. McAFEE: Yes.

22 THE WITNESS: Yes, it has.

23 BY MR. McAFEE:

24 Q. All right. Let's go to the day before.
25 It's at the bottom of the previous page.

1 A. Yes.

2 Q. And look at February 16th, in the very
3 right-hand column. Is there any snow on the ground
4 that day?

5 A. No.

6 Q. And is there--flipping back now to the next
7 page, did any snow fall on either one of those days?
8 Those days--I'm sorry. I want to be clear. Either
9 February 16th or 17th, did any snow fall out of the
10 sky on those two days?

11 A. No.

12 Q. So it didn't put any snow on the ground in
13 between those days, those days being from February
14 16th to February 18th, no snow fell; is that correct?

15 A. That's correct.

16 Q. And on February 16th, there was no snow on
17 the ground?

18 A. Correct.

19 Q. Okay. So I guess my purpose in going
20 through all this is to determine that based on the
21 information available to us from the LeMars reporting
22 station, there was no snow on the ground to be melted
23 on February 18th; is that correct?

24 A. Yes.

25 Q. Now, I think we're done with that exhibit.

1 I could go--I was going to go through the date--the
2 data for March 15th of 2003 in your Table 3 because
3 it's the second highest number for soluble N in
4 runoff. To me it seems to stick out, but I think the
5 record has this information, and your testimony
6 today, I guess, has changed my course a little bit
7 here. I'm sorry for this long narrative, but your
8 testimony is the model doesn't look at these days
9 individually; is that correct?

10 A. Yes. It looks at the monthly means for snow
11 melt.

12 Q. So for purposes of your modelling that you
13 did with APEX here, for us to go through these days
14 and look at the days before, and snow on the ground,
15 what we just did, is really not--I want to be careful
16 with my words here, but can I use the term "not
17 relevant"? If that's not correct, please correct me.

18 A. It's not applicable to the output.

19 Q. Okay. Then I won't take you through that
20 exercise, okay?

21 All right. I would now like to go to page
22 10 of the report. We're back to--it's Exhibit 43.
23 Are you there?

24 THE ADMINISTRATIVE LAW JUDGE: I'm not. I'm
25 making a notation. Just give me a second, counsel.

1 Okay. Now, what page, counsel, are you
2 talking about?

3 MR. McAFEE: We're on page 10 of Exhibit 43,
4 which is Ms. Doty's report.

5 THE ADMINISTRATIVE LAW JUDGE: Okay. Page
6 10 of 42? Did you say 42?

7 MR. McAFEE: Exhibit 43, page 10.

8 THE ADMINISTRATIVE LAW JUDGE: I'm sorry.

9 MR. McAFEE: That's fine.

10 THE ADMINISTRATIVE LAW JUDGE: Okay.

11 MR. McAFEE: Thank you.

12 BY MR. McAFEE:

13 Q. I would now like to talk about Section 3.6,
14 the accuracy of the predictions. I know you
15 testified to this fairly extensively on direct
16 examination yesterday, and I guess my first question
17 is, is the information in Table 2, is that subject to
18 the plus or minus 50 percent accuracy prediction? Is
19 that what you're talking about when you say, "Plus or
20 minus 50 percent accuracy prediction"?

21 A. Yes, and you're asking me if the information
22 in Table 2 is subject to it? Yes, the information
23 that's listed as tons and pounds is subject to it.

24 Q. Okay. And I didn't mean to be redundant
25 there, I know your report describes that, but I just

1 wanted to make sure I understood that.

2 Now, my next question is we've talked fairly
3 extensively here this morning about Table 3, the
4 "Storm-by-Storm Nutrient Transport Predictions by the
5 APEX Model." That's the heading?

6 A. Yes.

7 Q. Is the information in that table subject to
8 a plus or minus 50 percent accuracy prediction that
9 you note on page 10?

10 A. Yes. The information that's reported in
11 pounds per acre is.

12 Q. Is subject to that plus or minus 50 percent?

13 A. Yes, it is. Yes, it is.

14 Q. Now, as I understand it, Table 3 has--does
15 it have 45 entries in it?

16 A. Yes, to my knowledge, it does. I did count
17 them.

18 Q. And that 45 entries is to correspond with
19 your statement on page 10 at the end of the first
20 paragraph where you predict--the model predicted
21 discharges during 45 storms events; correct?

22 A. Yes.

23 Q. Is the number 45 discharge events subject to
24 the plus or minus 50 percent accuracy prediction?

25 A. I would say no, and the reason I would say

1 no is because if you take plus or minus 50 percent of
2 these numbers, in at least some of those columns you
3 still have a number greater than zero; therefore, you
4 still have the discharge.

5 Q. When you're referring to those columns--

6 A. I'm referring to the four applicable
7 columns, sediment transported N from watershed, N
8 mineralized from stable organic matter, soluble N in
9 runoff, and Soluble P in runoff.

10 Q. You're referring to Table 2?

11 A. I'm referring to Table 3. I thought I was
12 supposed to be referring to Table 3. I'm sorry.

13 Q. I just wanted to make sure which table
14 you're referring to, that's why I asked.

15 You were referring to Table 3?

16 A. Yes.

17 Q. Which is fine, and you just testified as to
18 why you believe the plus or minus 50 percent--

19 A. Oh--yeah.

20 Q. --the plus or minus 50 percent accuracy
21 prediction does not apply to the number of discharge
22 events?

23 A. What I was trying to get across that maybe
24 wasn't clear was that I still think there would be 45
25 days of discharge because the four columns that I

1 just referred to, if you took plus or minus 50
2 percent of them, you'd still have a number greater
3 than zero in some of those columns; therefore, you
4 would still have a discharge.

5 Q. Of whatever those columns referred to?

6 A. Correct.

7 Q. Okay. So if I understand your testimony
8 correct, when it comes to whether there was a
9 discharge of a pollutant, as represented by this
10 Table 3--is that correct?

11 A. Yes.

12 Q. --even if you take plus or minus 50 percent,
13 you're always going to have--if there's a number
14 there, minus 50 percent of a number is still going to
15 be a number?

16 A. Correct.

17 Q. It will not get you to zero so there would
18 not be a discharge; correct?

19 A. Yes, it is not going to get you to zero, so
20 you would still have a discharge.

21 Q. Okay. What is the basis for--let me start
22 over. I'm sorry.

23 As far as the actual number of events, the
24 45, you've said the plus or minus 50 percent accuracy
25 prediction does not apply to that, as to whether

1 there were actually 45, and you've testified as to
2 why; is that correct?

3 A. I would say no, okay? Maybe I've said yes,
4 but that's not my intent. This data does--I counted
5 these days and came up with 45 days, and on all of
6 these days I believe there would be a discharge if it
7 was plus or minus 50 percent of the numbers reported
8 in the last four columns.

9 Q. I guess what I'm trying to ascertain is what
10 is the basis for your statement that--and maybe
11 you've given it to me, but what is the basis for your
12 conclusion that the model can be--not be subject to a
13 plus or minus 50 percent on the number of days--on
14 the number of discharges, as to whether even a
15 discharge occurred?

16 A. Yeah. The plus or minus 50 percent is
17 referring to the predictions that have been made by,
18 you know--that's within a normal bounds if you were
19 taking these measurements out in the field. And
20 these measurements that we're talking about are the
21 quantities of material that are being picked up by
22 the runoff and moving down the slope, and that's what
23 the last four columns are in Table 3, and in the last
24 five columns--or six columns in Table 2.

25 So this accuracy prediction is with

1 reference to the material that's picked up and moved
2 down the slope.

3 Q. And what--the authority that you cite for
4 that, is that given here on page 10 of your report
5 under the Section 3.6?

6 A. Yes, it is.

7 Q. I guess I just want to make sure I
8 understand that, for instance, and I think there are
9 several examples of this in Table 3. Just so I'm not
10 speaking in the abstract, go to March 31st, 2006, and
11 if you go to the soluble N in runoff, pounds per
12 acre, is that .01?

13 A. Excuse me? Did you say March 27, 2006? I
14 missed that.

15 Q. I think--I meant to say, if I didn't, March
16 31st.

17 A. March 31st. Okay. Thank you.

18 Q. You're welcome.

19 A. And go to which?

20 Q. Soluble N?

21 A. Soluble N.

22 Q. Is that .01?

23 A. Yes, it is.

24 Q. So if I understand your testimony correct,
25 once the model gives us a .01, which as I look at

1 this table is the lowest value you can get and not be
2 zero--is that right?

3 A. This table does report the numbers to two
4 significant figures.

5 Q. So once it reports it to .01, even though
6 it's a plus or minus accuracy of 50 percent of that
7 number, that's going to be a discharge in the model's
8 eyes no matter what?

9 A. Yes, that's a discharge in the model's eyes.

10 Q. Okay. Back to page 10 to your accuracy of
11 your predictions section in your report. I should
12 say, does this plus or minus 50 percent apply to SWAT
13 also?

14 A. Yes, it does.

15 Q. And I believe in italicized--

16 A. Excuse me.

17 Q. I'm sorry. Go ahead.

18 A. It doesn't apply to what I did here with
19 SWAT. The SWAT model would work the same way if I
20 was recording the discharges from that model, but I'm
21 not, I'm only using SWAT to look at flow.

22 Q. So with the information SWAT has reported to
23 us in your report in Appendix B and B-1, putting
24 aside the errors, you're saying that information is
25 not subject to the plus or minus 50 percent?

1 A. Oh, I take it back, yes it is. I do report
2 a flow prediction accuracy range, I do. Yes, it is
3 applicable.

4 Q. Okay. This italicized language you have in
5 Section 3.6, is that--and that's a published
6 authority; is that correct?

7 A. Yes.

8 Q. And it does say in that language, right,
9 right at the beginning it refers to any model?

10 A. Yes, it does.

11 Q. So this is not anything specific to SWAT or
12 APEX; is that correct?

13 A. Yes, that's correct.

14 Q. So a pretty general statement of plus or
15 minus 50 percent; is that right?

16 A. Yes, but, of course, it does--it does say,
17 "At best, any predicted runoff or erosion value." So
18 that's a subset of any model that he's referring to
19 there. Any model that would predict runoff or
20 erosion is what he's referring to.

21 Q. I just have some general questions for you
22 about modelling, and then I think I might be done,
23 wrapped up here.

24 I don't know that you've used this term in
25 your testimony, but it has been used previously in

1 this proceeding, the term "ground truthing." Are you
2 familiar with that term?

3 A. Yes, I am.

4 Q. What does that term mean to you?

5 A. It means looking at the actual conditions at
6 the site, being physically present at the site and
7 noticing the soil conditions, land cover conditions,
8 the kind of conditions that are applicable to models.

9 Q. And did you do ground truthing in this case?

10 A. Yes, I did.

11 Q. Does the definition that you just gave
12 me--your definition maybe isn't the right word, but
13 your explanation of ground truthing, is that one that
14 is recognized in the scientific community as to what
15 is ground truthing?

16 A. Yes.

17 Q. Okay. And, therefore, what you did on July
18 1st of 2008, is that what you're referring to as
19 ground truthing?

20 A. That is what I'm referring to, yes.

21 Q. And it's your testimony that that would be
22 recognized by the scientific community as ground
23 truthing of the two models used in this case?

24 A. Yes.

25 Q. Okay. I do have a specific question there.

1 You testified yesterday that when you were there on
2 July 1st, you observed the soils at the area of
3 Mr. Vos' feedlot, and that it was consistent with the
4 soil maps. That is what you testified to yesterday.
5 And it's my understanding pretty much the extent--
6 correct me if I'm wrong--that the extent of your
7 visit and what you walked was the flow path; is that
8 right? And if you did more, please tell me.

9 A. I did more in that I looked at the area
10 north of the flow path area, that goes north into the
11 unnamed tributary, and along the road at the--the
12 flow path that goes west down to the unnamed tributary.

13 Q. Did you walk all areas of the feedlot?

14 A. I walked through the feedlot. I did not
15 look--I did not walk into every pen.

16 Q. Okay. Or subarea, as is used in the APEX
17 model?

18 A. Correct.

19 Q. And what about the soils, you know, around
20 the feedlot, you know, in the fields? Did you walk
21 those fields regarding observation of soils?

22 A. I observed the soils in the vicinity of the
23 flow path that we walked.

24 Q. What do you mean by "vicinity"?

25 A. On both sides of it.

1 Q. Did you walk out of the flow path into the
2 standing corn?

3 A. Yes. We walked along the fence--well, we
4 came down a ways and followed a gully that paralleled
5 the fence line to the east in addition to just the
6 one that we discussed in my testimony yesterday.

7 Q. Okay. When you were walking the flow path
8 that goes southwest from the--south and west from the
9 feedlot, did you walk out into the cornfield at all
10 to observe soils?

11 A. Only--yes. Only a small area, though. I
12 did not go through the whole cornfield.

13 Q. Okay. Thank you. Are you familiar in, I
14 guess, modelling circles of the term "error terms"?
15 And I'll spell that so I said that correctly.
16 E-r-r-o-r, error terms. Is that a term used?

17 A. Yes.

18 Q. What does that mean?

19 A. Can you put it in context for me, maybe?

20 Q. I'd love to. I'd love to, but I--

21 THE ADMINISTRATIVE LAW JUDGE: Let's
22 not--please, don't do that.

23 A. Error, it's deviation from what you think is
24 the best number.

25

1 BY MR. McAFEE:

2 Q. Okay. And what is the significance of
3 having an error term of zero?

4 A. What is the significance of it?

5 Q. If you can tell me.

6 A. It means that there is zero error. Is that
7 what you're--what is the significance?

8 Q. I'm just asking if you know.

9 A. Is that a percent error that you're
10 referring to?

11 THE ADMINISTRATIVE LAW JUDGE: You have to
12 stop doing that.

13 BY MR. McAFEE:

14 Q. I apologize. I'll try and do a better job
15 of asking questions.

16 Did you have any error terms used in the
17 APEX model that you did?

18 A. I don't understand. Could you please--I
19 don't understand what you're asking me.

20 Q. Okay. Maybe I'm not doing a good job of
21 asking that, so if that doesn't make sense to you the
22 way I'm asking it, I'll probably just need to move
23 on. But, again, my question, as I have phrased it,
24 you can't answer it; is that correct?

25 A. No. I don't understand, with it being out

1 of context, what you're referring to specifically.

2 Q. Okay. That's fair.

3 Ms. Doty, is the modelling that you did,
4 both the SWAT model and the APEX model, enough for
5 you to conclude that a pollutant from the Lowell Vos
6 feedlot reached Elliot Creek?

7 A. Yes.

8 Q. Would any additional information be helpful
9 to you to come to a different--I won't ask it that
10 way. I apologize.

11 Let me ask it this way: If you had a water
12 sample analysis report that showed a pollutant from
13 the Lowell Vos Feedlot was in Elliot Creek after one
14 of these 45 storm events shown in Table 3, how would
15 you use that in your model, if at all?

16 A. I would look at the analysis that was done,
17 the water sample, in terms of the content of
18 nutrients and other pollutants, and I would note it
19 as a reference check. But it's not enough data to
20 influence the results of the model. It's one point
21 in time. It's not a significant--statistically
22 significant number that I would weigh against what
23 the model is seeing.

24 Q. Okay. Is that the kind of information that
25 if you had enough of it, would be considered

1 calibration?

2 A. Yes. If you had enough of it, yes.

3 Q. Now, let me ask you this: If you had a
4 water sample analysis that showed no pollutant from
5 the Lowell Vos Feedlot in Elliot Creek after one of
6 these 45 storm events shown in Table 3 that did show
7 a discharge, if you had a water analysis report that
8 showed no pollutant in Elliot Creek, how would you
9 use that in your model?

10 A. I would use it the same way. I would look
11 at the results and I would use it as a data check,
12 but I would not change the results of the model based
13 on one number that I had.

14 Q. Can--I'm going to switch gears here a little
15 bit. Can SWAT be used to model discharges of
16 pollutants to a water body, such as the unnamed
17 tributary? Can SWAT be used to do that?

18 A. Yes, it can.

19 Q. But you didn't use it for that purpose, did
20 you?

21 A. No, I did not, and I can explain that I did
22 not because I was interested in--principally in the
23 movement of manure from the feedlot down to the
24 stream system, and the APEX model has a manure
25 equation that is appropriate for use in that case.

1 The SWAT model does not at this point in time.

2 Q. I want to come back to the literature for a
3 minute now. I'm not asking you the same question I
4 asked you previously for--a while back, but does any
5 of the literature that you cite or that you know of
6 using SWAT or APEX--I'm sorry. I need to restate
7 that. I apologize.

8 Does any of the literature that you cite or
9 that you know of support using SWAT or APEX to prove
10 that a single discharge event of pollutants to a
11 water body actually occurred?

12 A. I have not read the whole body of
13 literature. I can't answer that question.

14 Q. But the question was any literature you know
15 of.

16 A. Any--can you repeat the question because I'm
17 not positive I heard it all?

18 Q. I understand.

19 A. Sorry.

20 Q. It's a long question, but I'll be glad to
21 repeat it. Does any of the literature that you cite
22 or that you know of--so I'm talking about what you
23 cited in your report or that you're aware of--support
24 using SWAT or APEX to prove that a single discharge
25 event of pollutants to a water body actually

1 occurred?

2 A. I'd have to say that I do not know the
3 answer to that question.

4 Q. Can you tell me why you do not know?

5 A. Primarily because I cite Gassman 2006, which
6 cites I don't know how many, but many, many articles,
7 and I have not read them all.

8 Q. Okay, ma'am, I think you're misunderstanding
9 my question. I'm asking are you aware of it, are you
10 aware of any of that that answers my question? I'm
11 just asking what you're aware of.

12 A. That you can use--I can't answer the
13 question.

14 Q. Okay. I will try and rephrase it, okay?

15 Does any of the literature that you are
16 aware of support using SWAT or APEX to prove that a
17 single discharge event of pollutants to a water body
18 actually occurred?

19 A. I'd have to say no.

20 Q. Ms. Doty, I think you may have testified to
21 this, but let me ask this, I want to clarify: Are
22 models ever wrong?

23 A. Yes. Models can be inappropriately used.

24 Q. Okay. Do you consider your use of the
25 models in this case to be appropriate?

1 A. Yes, I do.

2 Q. Could the models, as you've--I'll start
3 over. I apologize.

4 Could the models, as you have used them in
5 this case, could they be wrong?

6 A. I would say no, that I looked at--I followed
7 the validation procedure. I believe my inputs are
8 reasonable, and I believe the outputs are reasonable
9 as well.

10 Q. So I guess my follow-up question to all that
11 is, when you state in your report that there were 45
12 discharge events from the Lowell Vos Feedlot to the
13 unnamed tributary, and you used APEX to determine
14 that number, it is your testimony that that could not
15 be wrong?

16 A. It is my testimony that I'll say--okay. I'm
17 trying to say "yes" or "no." I'll say no. It's my
18 testimony that that's a best estimate based on the
19 modelling results; but it's also my testimony that
20 because there's variation in all of these processes
21 that are very complicated in terms of their
22 interactions, that situations at the site definitely
23 could have occurred that were not predicted by the
24 model or, you know--that were not predicted by the
25 model, I guess I would say. So, yes, the model could

1 be wrong.

2 MR. McAFEE: Thank you. I have no further
3 questions, Your Honor.

4 THE ADMINISTRATIVE LAW JUDGE: Okay. And
5 we're going to take another break. We'll go off the
6 record.

7 (Short recess.)

8 THE ADMINISTRATIVE LAW JUDGE: Let's go back
9 on the record. And we're ready for redirect,
10 Mr. Ryan or Mr. Breedlove.

11 MR. RYAN: For the record, Your Honor,
12 Ms. Doty referred to some documents she had printed
13 off last night during her testimony this morning. I
14 saw them for the first time about ten minutes ago. I
15 had our paralegal run out and copy them. I've given
16 a copy to the three--the purpose of the data, which
17 we'll go through here shortly--to Mr. McAfee, and I
18 also left a copy for you up on the stand there.

19 THE ADMINISTRATIVE LAW JUDGE: Is this my
20 copy (indicating)?

21 THE WITNESS: This is (indicating).

22 THE ADMINISTRATIVE LAW JUDGE: Thank you.
23 Thank you.

24 MR. RYAN: Give me just one second, Your
25 Honor.

REDIRECT EXAMINATION

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BY MR. RYAN:

Q. Ms. Doty, we spent a lot of time this morning and yesterday afternoon talking about models and how trustworthy they are and the like. Now, when water falls out of the sky, which direction does it typically run?

A. Downhill.

Q. Have you ever seen water not run downhill?

A. No, sir.

Q. Is that a general principle of hydrology?

A. Yes, it is.

Q. And is it below the Vos feedlot--is it a long distance from the feedlot to the unnamed tributary?

A. That's a relative term. It's less than a mile.

Q. So it's relative that--the feedlot is relatively close to surface water?

A. Yes.

Q. And is--I think there was testimony that this feedlot is on top of a hill?

A. Yes.

Q. And in your experience working in this area as an hydrologist, do feedlots contain pollutants, in

1 general?

2 A. Yes, they do.

3 Q. So when the cattle are out there doing what
4 they do, doing their business on the ground, if water
5 falls out of the sky, in general what happens to that
6 cow manure?

7 A. Portions of it get picked up and transported
8 with the runoff.

9 Q. And if there's nothing to prevent the runoff
10 from leaving the feedlot, where does it go?

11 A. It goes downhill.

12 Q. Now, you did a modelling exercise here to
13 estimate the number of days of discharge. I believe
14 you testified on direct those are conservative
15 estimates. Do you recall that?

16 A. Yes.

17 Q. And you--and these events all occurred in
18 the time frame 2002 to 2006; is that correct?

19 A. Yes.

20 Q. Okay.

21 A. Excuse me. 2002 through 2006.

22 Q. Yes, that's correct.

23 A. Including 2006.

24 Q. That's what I meant. And you stopped your
25 calculations at the time Mr. Vos reduced his herd

1 size below a thousand; is that right?

2 A. Yes.

3 Q. So you weren't there actually during that
4 time period 2002 through 2006 to watch and see if
5 these were coming off, were you?

6 A. Correct.

7 Q. Were you aware of anyone who was out there
8 watching it every single day for those five years?

9 A. No.

10 Q. In your experience as a hydrologist, is it
11 reasonable for people to be sitting out in a field
12 watching, say, a feedlot to see if it discharges
13 every day?

14 A. No, it's not reasonable.

15 Q. Do you know of any other way other than
16 modelling to show when these discharges occur?

17 A. No, I don't.

18 Q. Has Respondent, to your knowledge, provided
19 any information about discharges?

20 A. (No response.)

21 Q. Would you like me to rephrase the question?

22 A. Yes, please.

23 Q. Has Mr. Vos ever said, "I've got data
24 showing I never discharged"? Have they provided us
25 with any of that?

1 A. Not that I'm aware of.

2 Q. So any photos showing the unnamed tributary
3 dry, for example, have you seen any of that?

4 A. No.

5 Q. Okay. So Respondents have not come forward
6 with any information, to your knowledge, to show this
7 feedlot on top of a hill is not discharging to the
8 unnamed tributary?

9 A. Yes.

10 Q. They have also not come forward, to your
11 knowledge--have they come forward, to your knowledge,
12 with any information to show that the unnamed
13 tributary runs dry?

14 A. No, they have not come forward with any
15 knowledge.

16 Q. With any information?

17 A. With any information.

18 Q. Okay. So let's, starting from that general
19 principle, let's start--let's go through all the data
20 we've looked at. And during your direct examination
21 yesterday on the modelling, we talked about--you talk
22 about variations in the data, and you typically
23 expect to see variations in the data. Do you recall
24 that?

25 A. Yes.

1 Q. Now, let's look at, for example, the NRCS
2 soil data, soil survey data. I believe you were
3 asked yesterday on cross-examination, and again it
4 was referenced this morning, as to whether there is
5 any variabilities in that data?

6 A. Yes, there are.

7 Q. And is that accounted for in the model?

8 A. Yes. If--I'm going to say no. Let's see.
9 There is a database associated with each soil type,
10 and there are specific numbers in that database that
11 are used for that soil type, but they do have some
12 ranges, ranges of clay content, ranges of silt
13 content, et cetera. So there's some variability
14 there.

15 Q. Let's be more specific. Let's look at the
16 soil map that you relied on in your expert report.
17 Do you have your Exhibit 43 in front of you, your
18 expert report?

19 A. Yes.

20 Q. And let's look at figure No. 6, which would
21 be at page 22 of your expert report. Do you see
22 that?

23 A. Yes.

24 Q. And there are different soil types. I
25 believe those different colored areas, it was your

1 testimony yesterday, represent different soil types?

2 A. Yes.

3 Q. And are those--how would you characterize
4 those different soil types? Are they wildly
5 different? Are they relatively similar?

6 A. There are two soil types at the site here,
7 and one is the Monona silty clay loam, and one is the
8 Monona silt loam. They're very similar in the
9 databases that are generated from the NRCS data, the
10 parameters are similar except that the clay content
11 varies by 6 percent.

12 Q. So if one of these areas showing the Monona
13 silty clay loam was off by ten feet right or left,
14 would that make a difference in your output of your
15 results?

16 A. No. I ran a sensitivity analysis on that.
17 In other words, I brand the model using the Monona
18 silty clay loam, and the model using the silt loam,
19 and the results are essentially identical, very
20 similar.

21 Q. Now, we talked this morning on cross-
22 examination about your visit to the site and whether
23 you had walked everywhere on the site. And I believe
24 you testified you walked through the pens, you
25 didn't visit every single pen, and that you had

1 walked--you'd looked at the discharge point to the
2 north, and you looked at the discharge point to the
3 west, and flow path to the south. Do you recall that
4 testimony?

5 A. Yes.

6 Q. And the questions to you on cross-
7 examination, did you really walk everywhere where
8 there was corn, you said no, you walked just along
9 the fence. Based on your observation at the site,
10 would it have been necessary for you to walk all four
11 corners of Mr. Vos' property to reach a conclusion as
12 to whether your model was consistent with your
13 observations?

14 A. No. At that point I knew the soil types of
15 the site, and I knew that they were uniform.

16 Q. And were the soil types that you saw with
17 your eyeballs consistent with what you--what the maps
18 predicted would be there?

19 A. Yes.

20 Q. Now, we talked about modelling in general at
21 the very end of your cross-examination, and whether
22 you can prove on any one day whether something
23 occurred. So let's talk about the whole idea of
24 modelling.

25 As we discussed a moment ago, if no one was

1 there to actually see these discharges back in 2002,
2 2003--we're talking about APEX now, we're talking
3 about discharges. We'll get to the SWAT calculations
4 later. Given there was no one there to actually see
5 and measure these things, and I believe you
6 testified--did you testify there is no gauge station,
7 for example, by the USGS on the unnamed tributary?

8 A. Yes, I did.

9 Q. No one is out there measuring these things
10 over the years, I believe you testified to that;
11 therefore, the only way to know with any kind of
12 scientific certainty what happens is to model; is
13 that correct?

14 A. Yes.

15 Q. So is--from a scientific standpoint, looking
16 at the models, what do you ask yourself? When you're
17 determining whether this is a scientifically
18 justifiable result--I mean, how do you come to that
19 conclusion?

20 A. I follow the validation procedures, which is
21 an approach to looking at numbers that are input and
22 output of the model, and based on the properties at
23 the site you can determine what's reasonable.

24 Q. And when you say it's reasonable, talk
25 about--let's break it in two parts. Looking at the

1 APEX model, you testified your results are reasonable
2 based on all the different data sets that you looked
3 at.

4 Is it more likely than not that the 45
5 discharges that you identified in Table 3 of your
6 report, which is page 11 of your report, is it more
7 likely than not that those discharges occurred as you
8 predicted with the model?

9 A. Yes.

10 Q. Is it more likely than not, based on your
11 professional opinion as a hydrologist, and having run
12 these models--these types of models for years, that
13 pollutants were discharged from this site to the
14 unnamed tributary?

15 A. Yes.

16 Q. And going--switching now to the work you did
17 using the SWAT model on the unnamed tributary, in
18 your professional opinion is it more likely than not
19 that the unnamed tributary flows through and connects
20 up with the Elliot Creek?

21 A. Yes.

22 Q. And that it does so on a perennial basis?

23 A. Yes.

24 Q. And we'll get to some of those details in a
25 minute.

1 These conclusions that you just reached, are
2 these reached to a reasonable degree of scientific
3 certainty?

4 A. Yes, they are.

5 Q. So let's look at--we spent quite a bit of
6 time yesterday talking about Exhibit B-1 at the very
7 end of the day. Do you recall that?

8 A. Yes.

9 Q. And that would be--sorry. I said Exhibit
10 B-1. I meant Appendix B-1 to your report, which
11 would be Exhibit 43.

12 MR. RYAN: May I go off the record for just
13 one moment?

14 THE ADMINISTRATIVE LAW JUDGE: Yes. Go off
15 the record.

16 (Discussion off the record.)

17 THE ADMINISTRATIVE LAW JUDGE: We'll go back
18 on the record.

19 MR. RYAN: Thank you.

20 BY MR. RYAN:

21 Q. So looking at Exhibit B-1, and you were
22 asked the question, "Are these numbers we saw in
23 Exhibit B-1," which is the--excuse me--Appendix B-1
24 to your expert report, "Are these numbers"--"do these
25 match"--"do these numbers match up to the graphs in

1 B-2?" And I believe your testimony at the time was
2 you didn't know, and you had to take a look at it.

3 A. It's true, and last night I looked at it,
4 and, no, they don't.

5 Q. So I, for purposes of the record, we
6 have--well, could you tell us-- You have in front of
7 you a document which I believe--did you label--it's
8 not in the prehearing exchange, it's not in the
9 exhibits, but it has the same title, "Appendix B-1.
10 Daily Flow Rates in the Unnamed Tributary to Elliot
11 Creek." You handed this to me this morning, didn't
12 you?

13 A. Correct. I do not have it up here. It's at
14 the table over there.

15 MR. RYAN: May I, Your Honor?

16 THE ADMINISTRATIVE LAW JUDGE: Yes.

17 Although I do want you to think about, Mr. Ryan,
18 about potential confusion in the record because we
19 apparently--I assume you're going to at some point
20 have these introduced, perhaps, or maybe counsel for
21 Respondent will, I don't know, but we have now two
22 exhibits which have the same identification.

23 MR. RYAN: I will clean it up, Your Honor.
24 I'm not moving them into evidence at this time, Your
25 Honor, but just for purposes of identification--

1 THE ADMINISTRATIVE LAW JUDGE: That's my
2 point, though; for purposes of identification, do we
3 have something that's going to be the same? I'm
4 thinking about confusion down the line. I have an
5 "Appendix B-1, Daily Flow Rates in the Unnamed
6 Tributary to Elliot Creek" which is the Appendix to
7 Complainant's Exhibit 43. Now I have a second one in
8 front of me, potentially.

9 MR. RYAN: Yes, Your Honor. For purposes of
10 identification I would like to have this marked as
11 Complainant's Exhibit 51.

12 THE ADMINISTRATIVE LAW JUDGE: Fifty-one?

13 MR. RYAN: Fifty-one.

14 THE ADMINISTRATIVE LAW JUDGE: Okay.

15 MR. RYAN: And for purposes of
16 identification, Complainant's Exhibit 51 is entitled
17 "Appendix B-1, Daily Flow Rates in the Unnamed
18 Tributary to Elliot Creek," and was handed to me this
19 morning by Ms. Doty.

20 BY MR. RYAN:

21 Q. Is it your testimony you printed this off
22 last night?

23 A. Yes.

24 MR. RYAN: And also for purposes of
25 identification we have a set of graphs which are

1 similar to the graphs found in Appendix B-2 to
2 our--excuse me--to Ms. Doty's expert report, and I
3 would like to have those marked as Complainant's
4 Exhibit 52.

5 THE ADMINISTRATIVE LAW JUDGE: For purposes
6 of identification, okay.

7 MR. RYAN: Thank you.

8 BY MR. RYAN:

9 Q. So, Ms. Doty, so we're clear that we're
10 talking about these documents sitting in front of you
11 right now, let's not refer to them as Appendix B-1
12 and B-2. Let's refer to them as Complainant's 51 and
13 Complainant's 52.

14 A. Okay.

15 Q. So tell me what you did last night when you
16 went back and relooked at the model outputs, and tell
17 me what we're looking at here in 51 and 52.

18 A. I went back last night and reviewed the
19 Appendix B-1 and B-2 and compared that with the
20 output from the model that I had and with the
21 precipitation records and concluded that the tables
22 were not prepared, you know--were not in agreement
23 with what I anticipated they would be, and that the
24 year 2002 had been repeated for other times in this
25 data set.

1 Q. Okay. So we're clear, did you rerun the
2 SWAT model last night?

3 A. No, I did not.

4 Q. Okay. So did you change the results that
5 you have in your expert report regarding the SWAT
6 model, which would be that--on page 9-- Could you
7 please turn to page 9 of your expert report, and
8 we'll get back to C-51 and 52.

9 Bottom of page 9 of your expert report, the
10 very last sentence you say, "Thus, the SWAT modelling
11 results indicate that during runoff-generating storm
12 events, the majority of flow entering the unnamed
13 tributary would have joined the existing flow within
14 the channel and continued to flow down gradient to
15 the confluence with Elliot Creek." Do you see that
16 sentence?

17 A. Yes, I do.

18 Q. Was that sentence, was that based on your
19 running the SWAT model?

20 A. Yes.

21 Q. Is it your testimony today you did not rerun
22 the SWAT model?

23 A. I did not rerun the SWAT model.

24 Q. Is your testimony still this morning that
25 the SWAT model supports that statement on the bottom

1 of page 9 of your report?

2 A. Yes, it does.

3 Q. Now, let's go back to Complainant's Exhibits
4 51 and 52. I think you just testified that the SWAT
5 model didn't change. What changed?

6 A. I actually have run quite a few iterations
7 of the SWAT model doing sensitivity studies, and what
8 changed was the--the file that I had in the Appendix
9 was not the file that was last run. And so I went
10 back and I printed out the results from the model
11 from the last run, which was the model I'm referring
12 to in the report.

13 Q. And is that what is reflected in
14 Complainant's Exhibit 51 and Complainant's Exhibit
15 52?

16 A. Yes.

17 Q. Now, just so we're clear, these two
18 exhibits, 51 and 52, do these reflect the output of
19 the model that you ran that was the basis of your
20 expert opinion at the bottom of page 9 of your
21 report?

22 A. Yes.

23 Q. And have you changed these output numbers in
24 any way since you testified yesterday?

25 A. Yes. This is a different result of a

1 different output file.

2 Q. I guess my question is, did your output from
3 the model change in any way?

4 A. Oh, no, because I didn't rerun the model.
5 No. I looked at existing output from the last run.

6 Q. So is it fair to say that Exhibit 51 and
7 Exhibit 52 are an accurate representation of the
8 model you ran prior to coming into this hearing?

9 A. Yes.

10 Q. And is it fair to say that based on your
11 testimony this morning, that the Appendix B-1 and
12 Appendix B-2 in your expert report failed to
13 accurately reflect what your modelling did?

14 A. Yes.

15 MR. RYAN: Your Honor, I'd move to have
16 Complainant's Exhibits 51 and 52 entered.

17 (Complainant's Exhibits 51 and 52
18 were offered in evidence.)

19 MR. McAFEE: Your Honor, I object. Your
20 Honor, for--I have given this careful thought. On
21 behalf of the Respondents, we are always, I think the
22 record will show, we have been--we want the correct
23 information in front of this Court to make a
24 determination, but this information being presented
25 to us at this time is prejudicial to the defense of

1 our case.

2 The Respondent--excuse me. The
3 Complainant's expert has had the ability to
4 double-check everything in her report starting on
5 March 25th when it was first prepared. And now, at
6 this late date, to change critical information in the
7 model is prejudicial to us and to the defense of our
8 case. And for that reason, I object to their
9 admission as an exhibit.

10 THE ADMINISTRATIVE LAW JUDGE: You want a
11 response to that, Mr. Ryan?

12 MR. RYAN: Yes, Your Honor. During her
13 cross-examination yesterday she attempted to offer up
14 the--an explanation and Respondent's counsel
15 refused--said, "No, I don't want to hear it. I just
16 want to talk about what's in your report." We think
17 it's clearly to the benefit of the tribunal and to
18 fairness and justness that the appropriate data gets
19 into the record; that she's testified this morning
20 that this data is, in fact, the data that was
21 generated by the model, that the model was not rerun,
22 she made no changes, that it is--I think subsequent
23 testimony will show it is substantially similar to
24 the data that was, in fact, in the record. And,
25 therefore it's not prejudicial to Respondent.

1 If he would like some time during lunch to
2 look at it prior to his recross, I'd be more than
3 happy to accommodate that, but I think in the
4 interest of justice this should come in.

5 THE ADMINISTRATIVE LAW JUDGE: I would like
6 to hear one more time, Mr. McAfee, then I'll make my
7 ruling. Do you have a response to that, anything to
8 add?

9 MR. McAFEE: My response to that is, again,
10 the Respondent is interested in the correct
11 information in front of this tribunal. We do not
12 take this lightly, that we are objecting to this.
13 It's just that this--I can't see a valid reason for
14 us being presented with this at such a late date by
15 the Complainant's expert. It's inexcusable that that
16 report was submitted to this Court with the incorrect
17 information.

18 To present it now, yes, I may go through it
19 at noon, but my expert has had no time to review
20 this, and I don't want to be put in the position of
21 not being able to have a full and adequate
22 opportunity to review all of this information to be
23 able to examine this witness.

24 THE ADMINISTRATIVE LAW JUDGE: My ruling is
25 I sustain the objection.

1 MR. RYAN: Thank you, Your Honor.

2 BY MR. RYAN:

3 Q. Ms. Doty, moving--let's look at
4 Complainant's Exhibit 43, your expert report. And
5 there was some discussion yesterday--let's look at
6 Appendix B-2, which are the graphs showing the flow
7 in the unnamed tributary. And as we did--as we
8 established yesterday, it's broken up into segments,
9 segment 1, so first page of Appendix B-2 is segment
10 1, 2002, 2003, et cetera.

11 And you were asked some questions about
12 gallons per day, and you--I think at some point
13 during your cross-examination you said "It would be
14 helpful to me if these were in cfs," which is--what
15 does cfs stand for?

16 A. Cubic feet per second.

17 Q. Okay. So--

18 MR. RYAN: I was a scientist in my former
19 life, Your Honor, and I took the liberty to do some
20 math last night. I'll ask her if she can confirm it.

21 BY MR. RYAN:

22 Q. Is one million gallons per day, is that
23 equal to 1.5 cfs?

24 A. Yes, it is.

25 Q. So looking at the first chart on page 1 of

1 Appendix B-2, we see that the top line says one
2 million gallons per day--

3 A. Yes.

4 Q. --the top line is ten million gallons per
5 day. The next line down on the vertical axis flow
6 rate is one million.

7 THE ADMINISTRATIVE LAW JUDGE: Just tell me,
8 Mr. Ryan--I'm making some notes about something that
9 happened a few minutes ago. You're on what page now?

10 MR. RYAN: I'm on--excuse me--Appendix B-2
11 of the expert report, which is Exhibit 43.

12 THE ADMINISTRATIVE LAW JUDGE: Exhibit 43,
13 right?

14 MR. RYAN: Yes. Page 1 of Appendix B-2,
15 which would be the charts.

16 THE ADMINISTRATIVE LAW JUDGE: Page 1 of
17 B-2, right?

18 MR. RYAN: Yes.

19 THE ADMINISTRATIVE LAW JUDGE: Would you
20 just pause for a second, please.

21 Okay. Thank you. I'm ready.

22 BY MR. RYAN:

23 Q. Okay. Ms. Doty, looking at the first chart
24 on Appendix B-2--now, you just testified a few
25 minutes ago that this is not an accurate depiction of

1 the output from the SWAT model that you ran; is that
2 correct?

3 A. Correct.

4 Q. Is it a close approximation?

5 A. Yes, it is.

6 Q. Okay. I mean, are the flow rates that
7 you--the SWAT model generated off by orders of
8 magnitude from what's shown here?

9 A. No.

10 Q. Now, let's look at--looking at this first
11 chart on the top of page 1 of Appendix B-2, you
12 confirmed a minute ago that one million gallons per
13 day is equal to 1.5 cfs. Do you recall that?

14 A. Yes..

15 Q. Now, you looked at a lot--have you looked at
16 a lot of streams over your years of being a
17 hydrologist?

18 A. Yes, I have.

19 Q. Do you have a decent eye for gauging cfs?

20 A. Yes.

21 Q. And if one million gallons per day is 1.5
22 cfs, looking at this chart, what would, just
23 eyeballing it, what would 10,000 gallons per day be
24 in cfs.

25 A. .15.

1 Q. 0.15 cfs?

2 A. Yes.

3 Q. And one thousand?

4 A. One thousand?

5 Q. Yes, the next line down on the vertical
6 axis, one thousand gallons per day, how many cfs
7 would that be.

8 A. .015.

9 Q. Is .015 cfs a big or a small flow?

10 A. It's a small flow.

11 Q. Is that .015 cfs, is that consistent with
12 what you saw when you were at the site?

13 A. Yes.

14 Q. Let's look at Complainant's Exhibit 28.

15 THE ADMINISTRATIVE LAW JUDGE: 28?

16 MR. RYAN: Yes.

17 THE ADMINISTRATIVE LAW JUDGE: Okay.. And
18 you don't mean 28 Pollard, you mean 28?

19 MR. RYAN: Let's look at 28 Pollard since
20 that's the one we've looked at the most. And let's
21 please look at photo No. 2.

22 For the record, this photo was taken on
23 March 11th, 2008.

24 BY MR. RYAN:

25 Q. Now, I understand you weren't at the site

1 that day, but this is a photo of the unnamed
2 tributary taken by Mr. Pollard on March 11th, 2008.
3 Are you at photo 2 in Exhibit 28 Pollard?

4 A. Yes, I am.

5 Q. Okay. And the flow you see there on that
6 day on March 11th, is that flow consistent with the
7 numbers that you have generated from your SWAT
8 modelling?

9 A. Yes, it is.

10 Q. Okay.

11 MR. McAFEE: Your Honor, excuse me. I'm
12 giving this careful thought again, too, but I
13 question--I guess I'll state my objection.

14 I object to this line of questioning as
15 being outside the scope of direct. These photos were
16 not used, to my knowledge, not used with the witness
17 during direct examination. And I understand what
18 counsel is attempting to do here, but I object to the
19 use of these photos in this line of questioning.

20 THE ADMINISTRATIVE LAW JUDGE: I'm going to
21 allow the questions. Overruled.

22 BY MR. RYAN:

23 Q. Let's look at--the same exhibit, 28 Pollard.
24 Lets look at photo No. 4, which, again, for the
25 record, is a photo of the unnamed tributary taken on

1 March 11th.

2 Is that flow that we see in photo No. 4 of
3 28 Pollard, is that flow also consistent with the
4 results you obtained from running the SWAT model?

5 A. Yes, it is.

6 Q. And let's look at photo No. 30 in Exhibit 28
7 Pollard. This is a little bit further downstream, as
8 the record will show, in the unnamed tributary.
9 Looking at that flow there, would that--is that flow
10 in approximately the neighborhood of 0.015 cfs?

11 A. No. That's higher than that.

12 Q. How high would you say that is,
13 approximately?

14 A. Maybe 1 cfs, maybe.

15 Q. But is the flow that you see there
16 consistent--generally consistent with the output
17 results you saw running the SWAT model for the
18 unnamed tributary?

19 A. Yes.

20 Q. Let's turn to Exhibit 24. Keep your finger
21 on this picture, Exhibit 28, photo 30. Let's flip
22 back to Exhibit 24, photo 3. Do you have Exhibit 24,
23 photo 3 in front of you?

24 A. Yes.

25 Q. And I believe, correct me if I'm wrong, the

1 same fence post is visible in the right-hand side of
2 the Exhibit 24, photo 3, and in Exhibit 28 Pollard,
3 photo 30, which would put them in approximately the
4 same location?

5 THE ADMINISTRATIVE LAW JUDGE: Are you
6 testifying, Mr. Ryan?

7 MR. RYAN: I'm sorry, Your Honor.

8 BY MR. RYAN:

9 Q. Can you see that, Ms. Doty, can you see that
10 fence post in those two pictures?

11 A. I see it in photo No. 3. What's the other
12 photo?

13 Q. 28 Pollard, photo 30.

14 THE ADMINISTRATIVE LAW JUDGE: He's asking
15 if you can say that that's the same fence post.

16 A. I didn't keep my finger on the other one,
17 I'm sorry.

18 BY MR. RYAN:

19 Q. Let's move on. Let's look at Exhibit 24,
20 photo No. 3. Do you have that in front of you?

21 A. Yes.

22 Q. This is another picture by Mr. Pollard taken
23 on December 11th, 2006, of the unnamed tributary. Is
24 that flow consistent with the results that you
25 obtained from your SWAT modelling?

1 A. Yes.

2 Q. Okay. Let's go back to Appendix--one more
3 exhibit. Let's go to Exhibit 42, photos 11 and 12.
4 That would be the July 1st, 2008, site visit. Let's
5 look at photo No. 12.

6 I'm sorry, this would be Complainant's
7 Exhibit 42, photo No. 12. This is, again--well, do
8 you recognize this photograph?

9 A. Yes, I do.

10 Q. Were you there the day this was taken?

11 A. Yes.

12 Q. And the flow that you see there, based on
13 your professional experience as a hydrologist, would
14 you say that flow you see there is consistent with
15 the modelling results you got from the SWAT model?

16 A. Yes.

17 Q. So we have--what we just looked at are
18 photos from three different time periods, from March
19 of '08, from November of '06, and then from July of
20 '08.

21 What does that tell you as a hydrologist
22 looking at the amount of flow you see in the unnamed
23 tributary over those three time periods?

24 A. That low flow conditions occur there.

25 Q. Does it matter what time of year it is?

1 A. Yes.

2 Q. Let's go back to your charts in Appendix
3 B-2. This would be Complainant's Exhibit 43,
4 Appendix B-2. We were talking about the first chart
5 there on the top of page 1 of Appendix B-2. And
6 there is a large black area, lower half of the chart,
7 peaking at it looks like about 10,000 gallons a day.
8 And then there are some spikes, do you see, that run
9 along off the black area below? Do you see that?

10 A. Yes.

11 THE ADMINISTRATIVE LAW JUDGE: Which page
12 are you on for B-2?

13 MR. RYAN: Page 1.

14 THE ADMINISTRATIVE LAW JUDGE: Page 1?

15 MR. RYAN: Yes.

16 THE ADMINISTRATIVE LAW JUDGE: Okay.

17 MR. RYAN: We're on page 1 of B-2. We're
18 looking at the top chart, which is the flow in
19 channel segment 1, year 2002.

20 THE ADMINISTRATIVE LAW JUDGE: Thank you.

21 BY MR. RYAN:

22 Q. If you leaf quickly through the other charts
23 here, they all look more or less similar. We have a
24 large black area at the bottom with spikes coming off
25 the top?

1 A. Yes.

2 Q. And each one of these charts looks at a
3 one-year time period; is that correct?

4 A. Yes, it does.

5 Q. So, for example, the top chart on page 1 of
6 B-2 is just 2002 data?

7 A. Correct.

8 Q. And you looked at flow data, or at least
9 your SWAT model modelled flow data for--was it a
10 five-year time period, approximately?

11 A. Yes.

12 Q. And if I've done my math correctly, five--in
13 five years--there's 365 days in a year, so multiply
14 it by five, that would be 1,825 days in that
15 five-year time period. Does that sound right?

16 A. Yes.

17 Q. Now, we're looking--is it accurate to say
18 we're looking at 1,825 individual daily data points
19 for each stream segment?

20 A. Yes.

21 Q. In your work as a hydrologist, do you
22 frequently work with large data sets?

23 A. No. Well, I work with layers that have a
24 lot of data on them, yes. I guess I could say yes
25 from that perspective.

1 Q. And is data always consistent?

2 A. No.

3 Q. Do you often--is it unusual to see data
4 points which don't seem to work with the rest of the
5 data, or don't seem consistent with the rest of the
6 data?

7 A. Is it unusual to see those?

8 Q. Yes--

9 A. No.

10 Q. --in general, looking at data sets?

11 A. No. You typically see a little bit of that
12 going on.

13 Q. For example--and I can pull it out if we
14 want to look at it. But when we were looking at the
15 weather charts before, there were a number of columns
16 that just said 9999?

17 A. Correct.

18 Q. That doesn't indicate that 9,999 inches fell
19 that day, does it?

20 A. No.

21 Q. What does it indicate?

22 A. It indicates missing data on that day.

23 Q. Is it common to have some missing data
24 points in a data set?

25 A. Yes.

1 Q. So when you're--as a hydrologist, when
2 you're looking at data sets such as this-- Let's
3 assume for purposes of this testimony right now that
4 this chart No. 1 on page 1 of Appendix B-2 is
5 accurate. And you've already testified it's not
6 accurate, but it's close. Let's assume for sake of
7 argument that it is accurate. And we have some high
8 spikes here, and we see those high spikes in a number
9 of these charts. Some of them seem anomalous and go
10 quite high. How do you interpret those?

11 A. A flashy sort of scenario, where you had
12 runoff on that day; and, therefore, you had more flow
13 in the unnamed tributary.

14 Q. So if--well, when you're looking at it as a
15 hydrologist in trying to arrive at a conclusion
16 regarding flow in a creek, which part of this chart
17 do you focus on?

18 A. I look at the base flow.

19 Q. And how would we know what the base flow is
20 looking at this top chart on page 1 of Appendix B-2?

21 A. It's the black area below where it gets
22 spiky.

23 Q. And if you look at most of these charts in
24 Appendix B-2, most of them have a top number of ten
25 million. A few of them go up much higher. Can you

1 explain why that would be?

2 A. That's in response to a significant
3 precipitation event. There's more runoff on that
4 day.

5 Q. So, for example, let's look at page 7 of
6 Appendix B-2, "Flow in Channel Segment 4, Year 2004,"
7 top graph. This one, suddenly the top number is ten
8 million.

9 A. Uh-huh.

10 Q. Is that right?

11 A. Uh-huh.

12 Q. Oh, I'm sorry. I've chosen a bad example.
13 Let's go to page 12 of Appendix B-2, top chart, "Flow
14 in Channel Segment 8, Year 2004." The top number
15 there is one hundred million. Do you see that?

16 A. Yes, I do.

17 Q. Now, that's a significantly larger number
18 than we see elsewhere, in most of these other charts.
19 Did you use a program to generate this graph, like
20 a--

21 A. Yes, I did.

22 Q. What did you use?

23 A. Excel.

24 Q. Excel spreadsheet?

25 A. Yes.

1 Q. Does Excel decide how the graph should
2 be--what the top line should be?

3 A. Yes, it does.

4 Q. So if there's, for example, approximately,
5 around October 1st, 2004, looking at this top graph
6 on page 12, if that number just ever so slightly
7 bumped over ten million, would it automatically put
8 it at a hundred million the next line?

9 A. Yes.

10 Q. The bottom is one, next line is 10, next
11 line is 100. Is this a logarithmic scale?

12 A. Yes, it is.

13 Q. So, again, looking at this from a
14 hydrologist's standpoint, do the spikes determine
15 whether--for you whether this is a perennial stream,
16 or what you've testified already, does the base flow
17 determine to you whether it's a perennial stream?

18 A. The base flow.

19 Q. There was quite a bit of talk yesterday
20 about segment 5.

21 THE ADMINISTRATIVE LAW JUDGE: About what,
22 counsel?

23 MR. RYAN: Segment 5.

24 BY MR. RYAN:

25 Q. We're talking again about the application of

1 the SWAT model to the unnamed tributary, and we see
2 that on pages 8 and 9 of your Appendix B-2. Do you
3 have that in front of you.

4 A. Yes, I do.

5 Q. Appendix--on page 8, start with that one,
6 the bottom. It's the first channel segment--the
7 first graph you show for segment 5, the year 2002,
8 and the base flow there seems to go away for a short
9 period. You tell me what it shows you.

10 A. It does show me that there was no flow,
11 basically, between April and June of 2002 in segment
12 5.

13 Q. And is that consistent with what you--with
14 the actual output from your SWAT model?

15 A. Yes, it is, but I wanted to clarify the
16 point that I made earlier today, is that this flow is
17 representative of the flow from that specific
18 watershed subarea, that it's not representative of
19 the cumulative flow that would exist in the unnamed
20 tributary.

21 Q. Okay. We'll come back to that point in a
22 minute, and I think I'll have you approach the
23 LitePro to look at the subdrainage map. But before
24 we get there, let's talk about--let's look at some of
25 the stream segments before and after stream segment

1 5. Why don't you turn to the previous--well, the top
2 of that page 8 it says "Flow in Channel Segment
3 4"--I'm sorry. Let's look at the same year.

4 Let's find page 8, bottom chart, it says,
5 "Flow in Channel Segment 5, Year 2002." Could you
6 find for me the flow in channel segment No.
7 4--whatever the immediate upstream segment is for
8 2002?

9 THE ADMINISTRATIVE LAW JUDGE: I didn't hear
10 the last thing you said. You trailed off. Can you
11 find the flow for in what?

12 MR. RYAN: The immediate upstream segment in
13 2002.

14 A. That would be in--the flow in channel
15 segment 4.

16 BY MR. RYAN:

17 Q. What page are we on?

18 A. For 2002 we're on page 6.

19 Q. So is the flow we see in--the base flow we
20 see in channel segment 4, 2002, on the top of page 6
21 of Appendix B-2, where would that flow go after it
22 left segment 4?

23 A. It would go into segment 5.

24 Q. So looking at segment 5 in 2002, is there
25 any anomaly for not having any flow there?

1 A. It's not anomalous because if you were
2 looking at cumulative flow, you would be adding the
3 flow in Reach 1 plus 3 plus 4 to the results that
4 you're looking at in segment 5 here, if you want to
5 look at total flow running through that segment.

6 Q. So is it fair to say that the absence of
7 black lines on the bottom graph on page 8 of segment
8 5 for 2002, does that represent whether there was
9 flow in the unnamed tributary in that segment, or
10 not?

11 A. It is not representative of whether there is
12 flow in that segment if you went and stood on the
13 bank and looked down. That's not what I'm talking
14 about in these graphs.

15 Q. Okay. What do these graphs show?

16 A. These graphs show the runoff and any
17 sublateral flow that moves into the segment 5 as
18 shown on Exhibit 5, the diagram.

19 Q. So does it mean--we saw base flow in segment
20 4, and I think if we look at the next segment,
21 segment 8, same year base flow, we show base flow
22 upstream and downstream. Was there still flow, in
23 your opinion, in the middle?

24 A. Yes, there was.

25 Q. Let's--I'm going to ask you now--we're going

1 to pull out the subdrainage base map you used
2 for--which would be figure 5.

3 MR. RYAN: If you would like, Your Honor, if
4 I may turn on the LitePro and have her approach?

5 THE ADMINISTRATIVE LAW JUDGE: That's fine.
6 Tell me which number is Figure 5.

7 MR. RYAN: Figure 5 from the expert report,
8 Exhibit 43.

9 THE ADMINISTRATIVE LAW JUDGE: Okay.
10 BY MR. RYAN:

11 Q. You want to bring this up?

12 A. This is not Exhibit 43, it's 43-A.

13 Q. That's the one you marked. We'll talk about
14 that.

15 THE ADMINISTRATIVE LAW JUDGE: Were you
16 reporting that?

17 THE COURT REPORTER: Yes.

18 MR. RYAN: I apologize.

19 THE ADMINISTRATIVE LAW JUDGE: That's fine.
20 I expect you to do that unless I tell you we're off
21 the record.

22 MR. RYAN: As soon as this warms up, we'll
23 get going, Your Honor.

24 THE ADMINISTRATIVE LAW JUDGE: When it warms
25 up, we're on Complainant's Exhibit 43, Figure 5?