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Attachment 13

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1	NON-CERTIFIED ROUGH DRAFT OF	
2	City of Marina versus RMC Lonestar, Case	08:03:25
3	Number 20CV001387	
4	April 1, 2026.	08:08:00
5	THE COURT: Good morning, everyone. Welcome	08:30:00
6	back.	08:30:05
7	We're back in the City of Marina versus RMC	08:30:05
8	Lonestar, Case Number 20CV001387.	08:30:08
9	Mr. Leffler is still on the stand, still under	08:30:08
10	oath, and need not be re-sworn.	08:30:12
11	Mr. Betz, as soon as Mr. Leffler is in place,	08:30:12
12	you can resume.	08:30:18
13	Mr. Berggren, if you need to come back to deal	08:30:19
14	with the witness's computer screen, you may do so.	08:30:22
15	MR. BETZ: Thank you. And good morning.	08:30:32
16	<u>CONTINUED DIRECT EXAMINATION</u>	08:30:37
17	BY MR. BETZ:	08:30:37
18	Q. Good morning, Mr. Leffler.	08:30:38
19	A. Good morning.	08:30:39
20	Q. I'd like to turn back to your third opinion	08:30:40
21	to clean something up.	08:30:43
22	MR. BETZ: And with that, Mr. Terry, can you	08:30:44
23	please show us Exhibit 844, Page 4, and highlight Row 3d.	08:30:46
24	BY MR. BETZ:	
25	Q. And first, let's go to the top of this	08:31:03

1	page, which sets forth your actual opinion.	08:31:06
2	MR. BETZ: I'm sorry. Mr. Terry, can you go to	08:31:13
3	the top of the page, Page 4.	08:31:15
4	BY MR. BETZ:	08:31:26
5	Q. Can you remind us, Mr. Leffler, what was	08:31:26
6	your third opinion?	08:31:29
7	A. The third opinion is that the two aquifers	08:31:30
8	in the project will extract from our not a source of water	08:31:36
9	supply or water storage for anyone in the area of the	08:31:39
10	project.	08:31:42
11	Q. Thank you.	08:31:43
12	Now let's turn to Row 3d, please, on	08:31:43
13	Exhibit 844, Page 4.	08:31:52
14	As one of your bases you identify, "Salinas	08:31:57
15	Valley GW usage; November 2021."	08:32:01
16	My question is: What is that?	08:32:05
17	A. That is a document prepared by the Water	08:32:08
18	Resources Agency.	08:32:14
19	Q. Okay. And you rely upon a certain section	08:32:14
20	in that document; is that correct?	08:32:17
21	A. Well, I highlighted some of the, yeah, key	08:32:19
22	pages that I rely on.	08:32:23
23	Q. Let's turn to that exhibit.	08:32:27
24	MR. BETZ: And, Your Honor, we would like to	08:32:28
25	mark Exhibit 633. Last Monday we realized there was an	08:32:30

1	error. We realized that Exhibit 633 is a copy of	08:32:35
2	Exhibit 636.	08:32:39
3	We would like to replace what is currently in	08:32:41
4	the books as Exhibit 633 with a new exhibit, which is the	08:32:44
5	true and intended 633.	08:32:48
6	THE COURT: All right.	08:32:51
7	MR. BETZ: I understand we would need leave from	08:32:52
8	the Court to do so. I respectfully request that.	08:32:54
9	THE COURT: That's granted.	08:32:57
10	MR. BETZ: Thank you.	08:32:58
11	BY MR. BETZ:	08:33:00
12	Q. With that, let's take a look at	08:33:00
13	Exhibit 633.	08:33:02
14	My first question is: What is Exhibit 633?	08:33:02
15	A. So it's a document prepared by Monterey	08:33:06
16	County Water Resources Agency in November 2021 on Salinas	08:33:10
17	Valley groundwater usage over a 25-year period.	08:33:15
18	Q. Okay. Let's look at 633, Page 10,	08:33:20
19	Bates-stamped 10, which is Page 4 of the document. But	08:33:27
20	for our trial, it's Bates-stamped 633.0010.	08:33:31
21	MR. BROCHARD: Your Honor, we object to the	08:33:36
22	document. I do not believe this is one of the documents	08:33:38
23	that was admitted in the AHO proceedings.	08:33:40
24	There's no foundation. The document itself is	08:33:42
25	hearsay. It says, "Draft" on it. And to the extent he's	08:33:45

1	relying on it -- if you go past the first page, it says,	08:33:49
2	"Draft."	08:33:53
3	To the extent he's relying on it for the truth	08:34:00
4	of the matter asserted, then, you know, we assert hearsay	08:34:04
5	and Sanchez grounds.	08:34:08
6	THE COURT: The expert can rely on it for the	08:34:09
7	truth of the matter asserted. The document cannot be	08:34:11
8	introduced for the truth of the matters asserted, unless	08:34:15
9	it meets some hearsay exception.	08:34:18
10	Mr. Betz?	08:34:20
11	MR. BETZ: We are asking the expert to rely upon	08:34:21
12	it for the truth of the matter, not for the document to be	08:34:23
13	admitted at this time.	08:34:25
14	THE COURT: All right. Well, the expert may	08:34:27
15	rely upon it or may explain the basis for his relying upon	08:34:32
16	it. On cross-examination, of course, the issue of whether	08:34:44
17	it's a matter upon, which an expert may reasonably rely,	08:34:52
18	can be addressed in view of the word "draft" that is	08:34:57
19	stamped on portions of the document.	08:35:08
20	But neither the document, nor testimony about	08:35:11
21	its contents, are admitted for the truth of the matters	08:35:19
22	that are contained therein.	08:35:23
23	BY MR. BETZ:	08:35:27
24	Q. With that, turning to 633.010. There's a	08:35:27
25	sentence that begins with, "Additionally," comma, "there	08:35:32

1	is a fourth." That full sentence is on the screen. I'm	08:35:34
2	going to read that full sentence.	08:35:41
3	It provides, in part, "Additionally, there is a	08:35:43
4	fourth aquifer unit," comma, "the shallow aquifer," comma,	08:35:46
5	"which is located near the ground surface, but is	08:35:50
6	laterally discontinuous and is limited in both the	08:35:53
7	quantity and quality of water available."	08:35:56
8	Do you see that?	08:35:58
9	A. Yes.	08:35:59
10	Q. Please explain that and how that supports	08:35:59
11	your opinion.	08:36:02
12	A. So it's referring to, basically, that	08:36:04
13	there's no pumping from the shallow aquifer in this area,	08:36:09
14	which supports the opinion that -- because that's one of	08:36:17
15	the units that's the slant well screen. So there's no	08:36:22
16	pumping from or extraction from that shallow aquifer unit.	08:36:26
17	Q. We've used the term shallow aquifer a lot.	08:36:30
18	What is --	08:36:34
19	MR. BROCHARD: Objection, Your Honor; move to	08:36:34
20	strike.	08:36:36
21	That's not -- doesn't appear to be what the	08:36:37
22	document states. The document speaks for itself, and	08:36:40
23	there's certainly been no explanation as to tie his	08:36:43
24	interpretation to what's on the page.	08:36:48
25	THE COURT: You're referring to the statement,	08:36:56

1 "There's no pumping from" -- "extraction from that shallow
2 aquifer unit."

3 MR. BROCHARD: Yes. That's what Mr. Leffler
4 said. This document just talks about an aquifer being
5 discontinuous.

6 THE COURT: If Mr. Leffler is testifying that
7 that is his opinion, based on the content of it, that's
8 one thing. But the document thus far has not been shown
9 itself to contain such a statement.

10 BY MR. BETZ:

11 Q. Please explain the justification for your
12 bases, as you just described.

13 A. Yes.

14 I think if we were to scroll through the
15 remaining pages that I've highlighted in the summary
16 opinion sheet, I think I could speak to that.

17 But, in summary, it describes pumping from the
18 180-foot aquifer, the 400-foot aquifer, and the deep
19 aquifer, and there's no discussion of pumping from the
20 shallow aquifer.

21 Q. Let's do some definitions again.

22 What you say, "Shallow aquifer" in this context,
23 what do you mean?

24 A. So, yeah. So there's a lot of different
25 names for the shallow aquifer in this area. And in the

1 project area, we have -- first of all, we have the coastal
2 Dune Sand Aquifer, which is where the CEMEX property is
3 located and, you know, areas to the north and south, which
4 is, essentially, you know, the coastal portion of the
5 shallow aquifer.

6 And then, as you move inland, as you get to the
7 edge of the FO-SVA, the shallow aquifer there is on top of
8 the FO-SVA clay layer. And that has various names. I
9 refer to it as the perched/mounded aquifer. Others --
10 Fort Ord refers to it as the A aquifer, the landfill with
11 35-foot aquifer.

12 As we move to the north, and along the Salinas
13 Valley area, and into the 180 -- further into the 180/400
14 sub-basin, the shallow aquifer is referred to as the
15 perched A aquifer. And so they have different names, but
16 they're all connected to some extent. Well, particularly,
17 the coastal Dune Sand Aquifer and the perched A aquifer.

18 Q. Sticking with the same document, please,?

19 MR. BETZ: Mr. Terry, turn to 633.0018. And can
20 you now go to the next page and show Mr. Leffler the next
21 page, which is 633.19. And then can you show Mr. Leffler
22 633.020.

23 BY MR. BETZ:

24 Q. Have you just looked through these three
25 pages, sir?

1	A. Yes.	08:40:03
2	Q. Please explain them and how they support	08:40:03
3	your third opinion, specifically, the bases we've been	08:40:08
4	discussing.	08:40:11
5	A. So they describe the groundwater	08:40:12
6	extractions from the 180-foot aquifer, the 400-foot	08:40:14
7	aquifer, and the deep aquifer. But there's no discussion	08:40:17
8	of pumping from the shallow aquifer.	08:40:22
9	Q. So what's the relevance of that?	08:40:24
10	A. Well, if there were pumping from the	08:40:25
11	shallow aquifer, they would describe that in here, because	08:40:28
12	it's describing pumping in the basin.	08:40:32
13	MR. BROCHARD: Objection; move to strike;	08:40:34
14	speculation.	08:40:37
15	THE COURT: Overruled. But bearing in mind,	08:40:49
16	this is Mr. Leffler's opinion.	08:40:51
17	BY MR. BETZ:	08:40:56
18	Q. Now let's go to where we left off on	08:40:56
19	Monday, which was your fourth opinion.	08:40:59
20	MR. BETZ: Mr. Terry, can you turn to Page 5.	08:41:01
21	Let's just revisit the opinion, the middle of the page.	08:41:08
22	BY MR. BETZ:	
23	Q. To orient us, please remind us of your	08:41:13
24	fourth opinion.	08:41:16
25	A. So the fourth opinion is that there will be	08:41:16

1 no drawdown injury to MCWD's groundwater supply or wells 08:41:19
2 caused by the project. 08:41:22

3 Q. Now, let's go to Bases 4h. 08:41:24
4 You reference -- 08:41:29

5 MR. BETZ: Sorry, Mr. Terry. Can you show us 08:41:33
6 the entire fourth -- 08:41:35

7 BY MR. BETZ:

8 Q. On 4h you reference Kincaid slides, Kincaid 08:41:40
9 transcript. 08:41:43

10 To what are you referring? 08:41:44

11 A. So the slide referenced there is one of 08:41:46
12 the -- the summary slide sets prepared by Dr. Kincaid. I 08:41:53
13 believe that would have been for Phase 2 of the AHO 08:41:58
14 proceeding. 08:42:04

15 And then there is also reference to a 08:42:04
16 transcript. So, during the AHO proceeding, as the 08:42:09
17 witnesses testified, they would keep a transcript. And so 08:42:15
18 there's an excerpt from Dr. Kincaid's transcript. 08:42:19

19 Q. Let's look at it. Let's turn to 08:42:22
20 Exhibit 170 first. 08:42:25

21 Is this the portion of the slides to which 08:42:34
22 you're referring? 08:42:38

23 A. Yes. This is the title page for the slide 08:42:39
24 package. 08:42:41

25 Q. Okay. Let's take a look at Exhibit 170, 08:42:42

1 Page 52.

08:42:46

2 Please explain what on this slide you're
3 referring to and how it supports your opinion.

08:42:52

08:42:55

4 A. So it's the last bullet that says, "0.5 and
5 one-foot of drawdown will harm MCWD due to loss of
6 protective head."

08:42:57

08:43:03

08:43:06

7 Q. Okay. Again, how does that support your
8 opinion?

08:43:10

08:43:13

9 A. So this is the only reference to the
10 drawdown and how it will harm MCWD, and so it's referring
11 to the loss of protective head.

08:43:13

08:43:16

08:43:22

12 Q. What is a protective head again?

08:43:24

13 A. So a protective head is the -- what, in
14 theory, should be the groundwater level -- groundwater
15 elevation along the coast to prevent seawater intrusion.

08:43:26

08:43:32

08:43:38

16 Q. Is there any such protective head?

08:43:42

17 A. No, there's no protective head, in my
18 opinion, at the coast.

08:43:44

08:43:51

19 Q. How do you know that?

08:43:51

20 A. Because we have seawater intrusion at all
21 the aquifers.

08:43:52

08:43:54

22 Q. And then, how does this support your
23 opinion?

08:43:55

08:43:57

24 A. So that bullet is referring to a potential
25 groundwater quality impact. And that's not what's being

08:43:57

08:44:04

1	addressed under this opinion. It's strictly about	08:44:07
2	drawdown injury to say the quantity of water that would be	08:44:10
3	available to pump.	08:44:13
4	So there's no -- nothing in here that describes	08:44:14
5	any kind of injury due to -- or that we relate to this	08:44:18
6	opinion.	08:44:22
7	Q. So, again, how does that support your	08:44:23
8	opinion? Is it a lack of evidence from the other side?	08:44:25
9	What are you saying?	08:44:28
10	A. Yeah, they're not claiming any harm to	08:44:28
11	their wells from the drawdown in terms of quantity.	08:44:32
12	Q. And you base that on his summary slides?	08:44:35
13	A. Well, the summary slides and the	08:44:37
14	transcript.	08:44:39
15	Q. Okay. Let's look at the transcript.	08:44:40
16	That's AHO transcript at Page 1737, and that specifically	08:44:42
17	comes from December 14, 2022. And specifically, we go to	08:44:50
18	Pages 1830 to 1832.	08:45:03
19	THE COURT: Is this -- the transcript is not	08:45:23
20	itself in evidence as a marked exhibit; is that correct?	08:45:31
21	MR. BETZ: That's correct. It's not a marked	08:45:35
22	exhibit. But at some point, we'll figure the proper way	08:45:37
23	to submit it.	08:45:40
24	But I would make an offer of proof this is from	08:45:41
25	the December 14, 2022, transcript. The transcripts were	08:45:43

1	Bates-stamped at some point in time, Your Honor, and the	08:45:46
2	Bates-stamp on this page is 1830.	08:45:49
3	Having said that, it's on the transcript,	08:45:52
4	Pages 94 through 96. You'll see in the top right, we have	08:45:56
5	the page numbers. So it's transcript page numbers 94	08:45:58
6	through 96, but Bates-stamped 1830 to 1832.	08:46:03
7	I'm sorry, Your Honor. Does that answer your	08:46:09
8	question?	08:46:12
9	THE COURT: Yes.	08:46:13
10	BY MR. BETZ:	08:46:13
11	Q. Let's now look at, specifically, Page 1832,	08:46:14
12	Lines 1 through 7. If we could blow that up.	08:46:18
13	In that -- there's testimony that reads, in	08:46:24
14	part, "But that is, dash, I just want to throw that out as	08:46:30
15	a clarification," period. "Our concern isn't that .5 or	08:46:34
16	.2 feet of drawdown at MCWD's wells themselves," comma,	08:46:38
17	"but it is in this, dash, in the, dash, a drop in what	08:46:43
18	would be the protective head that currently allows there	08:46:51
19	to be freshwater to be extracted there.	08:46:54
20	Do you see that?	08:46:57
21	A. Yes.	08:46:58
22	Q. And how does that support your opinion?	08:46:59
23	A. So, again, he's saying that he's really not	08:47:03
24	concerned about the drawdown at the MCWD wells in and of	08:47:07
25	itself and is only concerned as about the drop in	08:47:11

1	protective head.	08:47:16
2	Q. As it relates to the second portion, do you	08:47:18
3	disagree with that?	08:47:21
4	A. Yes, I do.	08:47:22
5	Q. For the reasons you just articulated?	08:47:22
6	A. Yes.	08:47:25
7	Q. Let's now go back to 844, Page 6, Row 4i.	08:47:25
8	Under 4i is another bases for your fourth	08:47:34
9	opinion. You say pumping lift costs increase tables.	08:47:38
10	What are you referring to, and how does that	08:47:41
11	support your opinion?	08:47:43
12	A. So this refers to an analysis of -- based	08:47:45
13	on the information that's in the two MCWD exhibits cited	08:47:51
14	there -- of evaluating for the predicted drawdown at the	08:47:57
15	MCWD production wells, how much would that change the cost	08:48:04
16	of pumping that water.	08:48:09
17	Q. Cost to whom?	08:48:10
18	A. Cost to MCWD.	08:48:12
19	Q. And you're relying on two MCWD exhibits?	08:48:14
20	A. Yes.	08:48:18
21	Q. Okay. Let's look at exhibit -- you're	08:48:18
22	referring to the AHO exhibits that you talked about here,	08:48:25
23	Exhibit 8 and AHO Exhibit 116; is that correct?	08:48:29
24	A. Yeah. So those provided the input data to	08:48:32
25	the analyses.	08:48:36

1	MR. BETZ: Okay. And let's go back -- I'm	08:48:37
2	sorry, Mr. Terry. Stick with that page.	08:48:39
3	BY MR. BETZ:	
4	Q. Please read your comments and explain how	08:48:44
5	that supports your opinion or what you are concluding.	08:48:46
6	A. So it reads, 0.01 to 0.04 dollars per hour,	08:48:50
7	semi-colon, about \$250 per year.	08:48:58
8	Q. Meaning what?	08:49:02
9	A. And so meaning that the increased costs of	08:49:04
10	pumping due to the half-foot of drawdown is .01 to 0.04	08:49:08
11	cents per hour, and added up over the course of a year	08:49:13
12	would be about \$250.	08:49:18
13	Q. How did you come up with that analysis?	08:49:21
14	A. So I worked with -- well, first of all, I	08:49:23
15	worked with -- as I mentioned before, we have engineers at	08:49:27
16	our company, and they helped with an analysis. But the	08:49:30
17	bottom line of it all was it can be simplified to the	08:49:37
18	amount of drawdown that occurs versus the total pumping	08:49:45
19	lift, and it's a proportional -- it's proportional to	08:49:51
20	that.	08:49:55
21	And you multiply that times the cost per hour of	08:49:55
22	pumping.	08:50:00
23	Q. And the underlying data came from the MCWD	08:50:01
24	exhibits to which you referred?	08:50:04
25	A. Yes.	08:50:06

1	Q. Let's look at Exhibit 8 in this trial,	08:50:06
2	which happens to also be Exhibit 8 from the AHO.	08:50:10
3	What is this document, and what are you relying	08:50:13
4	upon?	08:50:16
5	A. So this document provides how much water	08:50:16
6	they pump from their various wells.	08:50:19
7	MR. BETZ: Turn to the next page, Mr. Terry,	08:50:22
8	please.	08:50:24
9	BY MR. BETZ:	
10	Q. What does this page tell us?	08:50:28
11	A. So this, for example, tells us -- you see	08:50:30
12	the wells identified -- I guess what I'm referring to is	08:50:33
13	MCWD 29, 30, and 31, or referred to there as A-29, B-30,	08:50:37
14	C-31.	08:50:45
15	And then it gives the monthly pumping amounts.	08:50:46
16	Q. Are there other pages on which you relied	08:50:50
17	from this document?	08:50:52
18	A. Well, so this gives the overall, you know,	08:50:53
19	pumping through the years.	08:50:59
20	Q. You mean this table we're looking at?	08:51:00
21	A. Yes.	08:51:02
22	Q. Okay. Is there anything else in this	08:51:02
23	document that you relied upon?	08:51:04
24	A. No.	08:51:06
25	Q. Okay. Let's then look at Exhibit 117.	08:51:07

1	Is this the other document on which you relied?	08:51:11
2	A. Yes.	08:51:17
3	Q. And what is it?	08:51:17
4	A. Well, this provides a lot of different	08:51:19
5	information on their pumps in the wells and some pump	08:51:23
6	efficiency tests that were conducted. So it was primarily	08:51:29
7	the pump efficiency test data that I was extracting from	08:51:34
8	this document.	08:51:40
9	Q. Let's please look at Page 48.	08:51:41
10	Is Page 48 the underlying data on which you	08:51:44
11	relied?	08:51:48
12	A. Yeah. So this is for one particular well.	08:51:48
13	And so some of the main data that we rely on here is,	08:51:53
14	first of all, the total lift, Item Number 6.	08:51:59
15	Q. What does total lift mean?	08:52:04
16	A. So total lift would be a combination of the	08:52:07
17	depth to water below ground surface. Let's say, for	08:52:11
18	example, that's 150 feet. And then it would be adding the	08:52:18
19	discharge pressure, because, when you pump, you have to	08:52:22
20	pump into a water system. And so that pressure can be	08:52:26
21	converted to feet. So let's say that's a hundred feet of	08:52:31
22	discharge pressure. So the total lift would be 250 feet.	08:52:38
23	Q. And again, please conclude by telling us	08:52:42
24	how you calculated the dollars or pennies that you	08:52:44
25	identified in your opinion or bases.	08:52:49

1 A. So, if the drawdown is half a foot, then 08:52:53
2 the total lift in this case might go from 248.0 to 248.5. 08:52:56
3 So that's an increase in the lift. And if you divide that 08:53:06
4 .5 by the 248, and then you can multiply that by the cost, 08:53:13
5 say the cost to pump a million gallons or the cost per 08:53:19
6 hour, that gives you the increase in cost. 08:53:23

7 Q. Okay. Turning back to Exhibit 844, Page 6, 08:53:28
8 Row 4j. 08:53:35

9 This is another bases for your fourth opinion; 08:53:36
10 correct? 08:53:40

11 A. Yes. 08:53:40

12 Q. And here you rely on what? 08:53:40

13 A. This is the final report of the AHO board 08:53:42
14 of referee. 08:53:47

15 Q. Let's please take a look at Exhibit 822, 08:53:48
16 Page 105 -- or Bates-stamped 105. 08:53:52

17 And you're relying upon the sentence in Section 08:54:02
18 6.7.4; is that correct? 08:54:08

19 A. Yes. 08:54:20

20 Q. Okay. And how does this support your 08:54:21
21 opinion? 08:54:25

22 A. Basically -- so this is speaking to the 08:54:25
23 quantity of groundwater, and it's saying that the proposed 08:54:28
24 draw from the slant wells will not affect the amount of 08:54:33
25 water physically available to MCWD for extraction. 08:54:36

1	Q.	So that conclusion supports your opinion?	08:54:41
2	A.	Yes.	08:54:43
3	Q.	Okay. As it relates to your fourth	08:54:44
4		opinion, as I've asked before, how certain are you?	08:54:45
5	A.	I'm -- I'm quite certain of that opinion.	08:54:49
6	Q.	Meaning what?	08:54:52
7	A.	That -- well, as certain as I can be within	08:54:53
8		my profession.	08:54:56
9	Q.	Okay. Turning to your fifth opinion back	08:54:57
10		on Exhibit 844. I think it's 844 on Page 7.	08:55:01
11		Can you please tell us and the Court what is	08:55:09
12		your fifth opinion?	08:55:12
13	A.	There will be no quality injury to MCWD's	08:55:13
14		groundwater supply or wells caused by the project.	08:55:18
15	Q.	And once again, what do you mean by quality	08:55:22
16		injury?	08:55:25
17	A.	Referring to primarily the salinity or, you	08:55:27
18		know, TDS or chloride levels.	08:55:32
19	Q.	What do you mean by groundwater supply?	08:55:35
20	A.	Groundwater supply, the potable groundwater	08:55:38
21		supply that could be extracted by wells in the basin.	08:55:42
22	Q.	So, to be specific, your opinions will be	08:55:45
23		no quality injury in the 180-foot aquifer and the SVGB?	08:55:48
24	A.	Yes.	08:55:53
25	Q.	And same with the 400-foot aquifer?	08:55:53

1	A. Yes.	08:55:57
2	Q. And the deep aquifer?	08:55:57
3	A. Yes.	08:55:59
4	Q. Let's take a look at Row 5c.	08:55:59
5	In 5-C, you again reference the SWIM Model 2024;	08:56:06
6	correct?	08:56:13
7	A. Yes.	08:56:13
8	Q. That's the same model we discussed a lot on	08:56:13
9	Monday; correct?	08:56:16
10	A. Yes.	08:56:16
11	Q. To be clear, do you find that to be well	08:56:16
12	calibrated?	08:56:19
13	A. Yes.	08:56:19
14	Q. Why do you say that?	08:56:20
15	A. Because I looked at the calibration of that	08:56:21
16	model, and it's well within the standards for our	08:56:24
17	profession.	08:56:28
18	Q. What are those standards?	08:56:29
19	A. Well, for example, the percent RMSE, you,	08:56:31
20	typically, want to see that less than 10 percent.	08:56:38
21	Q. What does RMSE mean?	08:56:42
22	A. Root Mean Square Error.	08:56:48
23	Q. Say that again.	08:56:51
24	A. Root Mean Square Error.	08:56:52
25	Q. And you say that's supposed to be less than	08:56:53

1	10 percent?	08:56:56
2	A. Yeah.	08:56:57
3	Q. Let's go back. What do you mean by Root	08:56:57
4	Mean Square Error?	08:57:03
5	A. It's basically -- so you compare your	08:57:03
6	observed groundwater level data to your model data, and	08:57:07
7	you look at the difference. You know, like if it's the	08:57:10
8	modeled elevation is 5 feet, but the observed is 4,	08:57:17
9	there's a difference of 1 -- 1 foot.	08:57:21
10	And then -- then there's a formula. You take	08:57:23
11	the square and then the root of that, and then you compare	08:57:27
12	that to the range of elevations. So you get sort of a	08:57:33
13	net, you know, average value, and then you compare it to	08:57:40
14	the range to get the percentage.	08:57:43
15	Q. And I'm sorry. You want it under 10	08:57:46
16	percent?	08:57:49
17	A. Yeah, you generally want to see that under	08:57:49
18	10 percent.	08:57:51
19	Q. And what was it for this model?	08:57:52
20	A. I believe it was -- it was less than 5	08:57:55
21	percent. I believe it was in the order of 2 to 3 percent.	08:57:59
22	Q. I'm not going to retread all the models we	08:58:06
23	looked at on Monday, but do you find those were all well	08:58:08
24	calibrated?	08:58:12
25	A. Yeah, I found that to be well calibrated.	08:58:14

1	Q. I'm sorry. So we went through 22 to 23	08:58:19
2	models on Monday. Do you recall that?	08:58:23
3	A. Yes.	08:58:25
4	Q. Okay. Did those meet the RMSE standard to	08:58:25
5	which you referred?	08:58:30
6	A. Yeah. I don't -- I don't recall all the	08:58:33
7	numbers on those, but I think -- yeah, they -- to my	08:58:37
8	recollection, they, generally, met the standards.	08:58:40
9	Q. Sticking, specifically, with this 5c	08:58:43
10	opinion. In Row 5c, you reference the SWIM 2024 model;	08:58:47
11	right?	08:58:54
12	A. Yes.	08:58:54
13	Q. Specifically, Table 2?	08:58:54
14	A. Yes.	08:58:56
15	Q. Let's talk about the comments briefly.	08:58:56
16	Read your comments and tell us what you mean.	08:58:59
17	A. Well, so the comments are the -- what's	08:59:03
18	being reported here is for wells MCWD 29, 30, and 31.	08:59:06
19	Q. Let's please take a look at Exhibit 908,	08:59:14
20	which is Table 2 to the SWIM Model we're referring;	08:59:19
21	correct?	08:59:24
22	A. Yes.	08:59:24
23	Q. Okay. Did you create this table?	08:59:24
24	A. Yes.	08:59:25
25	Q. For what purpose?	08:59:26

1 A. To show what the change in chloride would 08:59:27
2 be at of these three wells in those two aquifers with the 08:59:32
3 slant wells pumping versus not pumping. 08:59:38

4 Q. What data was used to support this table? 08:59:40

5 A. This is -- so taking the model results from 08:59:43
6 the seawater intrusion model 2024. And so doing a run 08:59:51
7 with no slant well pumping, and then doing a run with 08:59:55
8 slant well pumping and comparing those two. 09:00:00

9 Q. And what does this table tell us? 09:00:02

10 A. So this is in percentage. So it's showing 09:00:04
11 us if -- if it's zero, then there's no change. If it's a 09:00:08
12 negative number, that means there's a decrease. And then 09:00:13
13 in they were a positive number, which there's not, then it 09:00:16
14 would be an increase. 09:00:19

15 Q. So MCWD Well 29 says, "Minus 17," slash, 09:00:20
16 "0." 09:00:25

17 What does that mean? 09:00:25

18 A. So the minus 17 applies to the 180-foot 09:00:27
19 aquifer, and the 400 -- and the zero applies to the 09:00:32
20 400-foot aquifer. 09:00:37

21 Q. And this is saying there will be a decrease 09:00:38
22 in chloride? 09:00:40

23 A. In the 180-foot aquifer. 09:00:41

24 Q. And it had zero change in the 400? 09:00:44

25 A. Yes. 09:00:46

1	Q.	As it relates to MCWD Well 29?	09:00:46
2	A.	Yes.	09:00:50
3	Q.	Okay. And tell us the conclusions reached	09:00:50
4		here from MCWD Well 30.	09:00:52
5	A.	So that was minus 26 percent in the 180 and	09:00:57
6		minus 14 in the 400.	09:01:02
7	Q.	As a result of the project?	09:01:03
8	A.	Yes.	09:01:05
9	Q.	Meaning the project pumping?	09:01:06
10	A.	Yes.	09:01:08
11	Q.	Okay. And tell us the conclusion reached	09:01:08
12		concerning Well 31.	09:01:11
13	A.	That's minus 29 percent, and then no change	09:01:13
14		in the 400.	09:01:18
15	Q.	And that supports your opinion that there	09:01:23
16		will be no quality injury to MCWD's groundwater supply or	09:01:25
17		wells caused by the project?	09:01:29
18	A.	Yes.	09:01:31
19	Q.	Okay. Ultimately, what did this model	09:01:32
20		estimate the water quality change to be caused by the	09:01:34
21		project at MCWD Wells 29, 30, and 31? Is that summarized	09:01:40
22		here?	09:01:46
23	A.	I'm sorry. Can you repeat that.	09:01:46
24	Q.	So this chart summarizes your findings?	09:01:47
25	A.	Yes.	09:01:50

1	Q.	Okay. What about water quality at the	09:01:50
2		other MCWD wells not referenced here?	09:01:54
3	A.	So there basically is no change at those	09:01:58
4		wells.	09:02:04
5	Q.	Why do you say that?	09:02:04
6	A.	Because they're either further away, or	09:02:05
7		they're, you know, deeper wells that are not -- I mean, so	09:02:09
8		no change in those wells, because they're less -- just	09:02:14
9		further away, or deeper and separated by aquitards.	09:02:19
10	Q.	Turning back to Exhibit 844, Page 7, Bases	09:02:22
11		5f.	09:02:28
12		What is your Bases 5f?	09:02:31
13	A.	So the 5f is the AHO report, the final	09:02:36
14		report.	09:02:43
15	Q.	Let's go right to it. Let's look at	09:02:44
16		Exhibit 822, Page 107, meaning Bates 107.	09:02:47
17		And are you relying upon, I presume,	09:02:58
18		Section 6.7.5?	09:03:03
19	A.	Yes.	09:03:06
20	Q.	We have on the screen the first sentence	09:03:13
21		highlighted.	09:03:19
22		Can you read it and tell us how it supports your	09:03:19
23		opinion.	09:03:22
24	A.	So it reads, "Based on the parties' model	09:03:23
25		results, the proposed draw of Cal-Am's slant wells is	09:03:26

1	unlikely to cause significant or unreasonable impacts to	09:03:31
2	the quality of water drawn from MCWD's Wells 29, 30, 31,	09:03:34
3	or 35, and the quality of water drawn from those wells	09:03:40
4	will remain suitable for municipal use."	09:03:45
5	Q. And you're saying that that conclusion	09:03:49
6	supports your fifth opinion?	09:03:50
7	A. Yes.	09:03:52
8	Q. Given the years of work that went into the	09:03:53
9	AHO proceedings?	09:03:56
10	A. Yes.	09:03:56
11	Q. Okay. Let's turn to Opinion 6, please,	09:03:59
12	which can be found on Exhibit 844, Page 6.	09:04:03
13	Please tell the Court what your sixth opinion	09:04:15
14	is.	09:04:19
15	A. "There will be no injury to MCWD's	09:04:21
16	groundwater supply or wells caused by any cross-border	09:04:25
17	flows into or out of the Monterey sub-basin."	09:04:30
18	Q. And your definition of no injury to MCWD's	09:04:34
19	groundwater supply is the same as we discussed in the	09:04:39
20	prior opinion?	09:04:42
21	A. Yes.	09:04:43
22	Q. Okay. And please explain: What do you	09:04:45
23	mean by "cross-border flows"?	09:04:47
24	A. So cross-border flows here is referring to	09:04:50
25	groundwater flow across a sub-basin boundary.	09:04:55

1	Q. Explain that a little bit more to us.	09:04:59
2	A. So, for example, cross-border flows cross	09:05:02
3	the boundary between the Monterey sub-basin and the	09:05:05
4	180/400 aquifer sub-basin.	09:05:09
5	Q. And your first -- let's go to the bases,	09:05:13
6	please, which can be found in Row 6a.	09:05:16
7	Here I don't see documents, I just see comments.	09:05:26
8	So please read your comment and tell us how that supports	09:05:29
9	your opinion.	09:05:32
10	A. Well, the comment reads, "No impacts to GW	09:05:33
11	supply, slash, wells, from cross-border flows because no	09:05:37
12	physical impact, slash, injury to supply, slash, wells, as	09:05:41
13	described above."	09:05:47
14	And "GW" means groundwater.	09:05:49
15	Q. What do you mean by that? And how does	09:05:50
16	that support your opinion?	09:05:52
17	A. So, basically, what it's saying is that,	09:05:53
18	you know, we've looked at the potential impacts to the	09:05:59
19	water supply and wells within the Monterey sub-basin.	09:06:04
20	And, you know, throughout the 180/400-foot sub-basin as	09:06:12
21	well.	09:06:18
22	But there's no -- we find no physical impact or	09:06:18
23	injury, so there's -- you know, there's no indication that	09:06:22
24	whatever that change in cross-border flows may be as	09:06:26
25	having any impact.	09:06:30

1	Q.	Because there's no injury to the basins in	09:06:30
2		the first place?	09:06:33
3	A.	Right.	09:06:35
4	Q.	Okay. Let's now turn to 6c.	09:06:36
5		To support your sixth opinion, you're also	09:06:46
6		relying upon the FEIR; correct?	09:06:48
7	A.	Yes.	09:06:51
8	Q.	Okay. And please read your comment and	09:06:52
9		explain what that means.	09:06:54
10	A.	So the comment reads, "MPWSP benefits	09:06:55
11		Seaside basin." And MPWSP means Monterey Peninsula Water	09:07:02
12		Supply Project.	09:07:08
13	Q.	Please explain that and how it supports	09:07:08
14		your opinion.	09:07:11
15	A.	So if the project is approved, and it goes	09:07:12
16		forward, it would allow Cal-Am to repay some water that	09:07:20
17		it's taken from the Seaside basin over the years. It has	09:07:30
18		an obligation to sort of repay that.	09:07:33
19	MR. BROCHARD:	Objection; lacks foundation.	09:07:35
20	THE COURT:	It will need to be explained, the	09:07:51
21		basis for what that is.	09:07:55
22	BY MR. BETZ:		09:07:57
23	Q.	You're relying on a document to explain	09:07:58
24		that?	09:08:00
25	A.	Well, if we want to go to Page 1-5 to 1-6.	09:08:00

1	Q. Why don't we do it slowly.	09:08:04
2	Are you relying upon a document to state that	09:08:05
3	opinion?	09:08:07
4	A. So I've --	09:08:08
5	Q. Just yes or no. Let's start with that.	09:08:08
6	Maybe -- strike that.	09:08:13
7	You referenced the FEIR. Are you relying, in	09:08:15
8	part, on the FEIR?	09:08:18
9	A. Yes.	09:08:19
10	Q. Okay. Let's turn to that document. That's	09:08:19
11	Exhibit 901.	09:08:22
12	Is this a portion of the FEIR upon which you	09:08:29
13	rely?	09:08:31
14	A. Yes.	09:08:31
15	Q. Okay. Is this -- at the top styled,	09:08:32
16	"Chapter 1, Introduction and Background." What's your	09:08:35
17	understanding of the introduction and background?	09:08:38
18	A. So it, basically, describes the project,	09:08:41
19	the lead agencies, and, you know, a little bit about	09:08:44
20	project setting, and just the overall background for this	09:08:47
21	project and this -- and the purpose of this document.	09:08:52
22	Q. And what do you understand this chapter to	09:08:56
23	address?	09:08:58
24	A. It just sort of gives an overview of what	09:09:00
25	the project is, and what the objectives are, and the	09:09:05

1	environmental review process.	09:09:10
2	Q. Let's look at, specifically, 901, Page 5.	09:09:12
3	And there's a section styled, "Project	09:09:24
4	Objectives." Do you see that?	09:09:27
5	A. Yes.	09:09:28
6	Q. Okay. And please, explain how this section	09:09:28
7	supports your opinion. And specifically the bases to	09:09:30
8	which you just referred.	09:09:36
9	A. So let's see. It looks a little funky on	09:09:44
10	my screen.	09:09:47
11	THE COURT: The letters are pretty flat.	09:09:49
12	MR. BETZ: I think we show two pages together,	09:09:53
13	but let's go one page at a time, please.	09:09:57
14	THE WITNESS: Okay.	09:10:01
15	MR. BETZ: So let's start with the first page.	09:10:02
16	I think it's Page 5. Then can you now show Page 6,	09:10:04
17	Mr. Terry. Maybe we'll try it that way.	09:10:09
18	BY MR. BETZ:	
19	Q. How does Pages 5 and 6 support your	09:10:15
20	opinions?	09:10:19
21	A. Okay. So -- well, from the previous page,	09:10:19
22	this is the project objectives section. So it says,	09:10:23
23	"Based on the information in Cal-Am's application to the	09:10:28
24	CPUC, the primary objectives of the proposed Monterey	09:10:31
25	Peninsula Water Supply Project are to," and then it lists	09:10:37

1 these different items.

09:10:39

2 Now, if we go to the second page.

09:10:40

3 Q. What in here supports your opinion?

09:10:46

4 A. So Item Number 2, it says, "Develop water
5 supplies to enable Cal-Am to reduce pumping from the
6 Seaside basin from approximately 4,000 to 1,474 acre-feet
7 per year consistent with the adjudication of the
8 groundwater basin with natural yield and with the
9 improvement of groundwater quality."

09:10:48

09:10:51

09:10:54

09:11:01

09:11:04

09:11:07

10 And then if we go to Item 3, it says, "Provide
11 water supplies to allow Cal-Am to meet its obligation to
12 pay back the Seaside groundwater basin by approximately
13 700-acre-feet per year over 25 years, as established by
14 the Seaside groundwater basin Watermaster."

09:11:10

09:11:20

09:11:24

09:11:28

09:11:33

15 Q. Is that a portion of your bases for your
16 sixth opinion as laid out in Row 6c?

09:11:38

09:11:41

17 A. Yes.

09:11:44

18 Q. Anything else you wish to add?

09:11:44

19 A. Well, I don't -- I think that's the main
20 basis for it. But I've had other involvement with looking
21 at work in the Seaside basin where they talk about the
22 need to do this. And I know there's been modeling work
23 done in the Seaside basin to look at this.

09:11:47

09:11:52

09:11:56

09:12:02

09:12:05

24 Q. Now, let's take a look at Row 6d from
25 Exhibit 844, Page 8.

09:12:11

09:12:14

1	In support of your sixth opinion and Row 6d,	09:12:22
2	please read the document on upon which you rely.	09:12:29
3	A. So this is the -- it says, "180," slash,	09:12:32
4	"400 PE," open parentheses, "regarding brackish GWFS,"	09:12:37
5	close parentheses.	09:12:44
6	So the PE means periodic evaluation, and then GW	09:12:45
7	is groundwater, and FS is feasibility study.	09:12:54
8	Q. Please explain how that supports your	09:12:57
9	opinion.	09:13:00
10	A. So, if we go to the comments section, it	09:13:00
11	says that the 180/400 BW restoration project changes	09:13:03
12	cross-border flows and results in reduction in SWI area	09:13:08
13	and increase in freshwater area.	09:13:14
14	And just for acronyms, the BW is brackish water.	09:13:17
15	SWI is seawater intrusion.	09:13:23
16	Q. So what specific document are you relying	09:13:26
17	on?	09:13:30
18	A. It's these Appendix 4A from the	09:13:30
19	180/400-foot aquifer sub-basin periodic evaluation.	09:13:33
20	Q. Let's look at that. It is Exhibit 815-B.	09:13:39
21	Do you know what section on which you were	09:13:48
22	relying?	09:13:50
23	A. Yeah, we'd have to scroll through that. I	09:13:53
24	highlighted . . .	09:14:02
25	MR. BETZ: Please indicate, Mr. Terry --	09:14:10

1	THE WITNESS: Well, back up. Let's see.	09:14:14
2	So, if we can enlarge Section 3.1. At the top,	09:14:21
3	it says, "The concept for this project is to establish a	09:14:32
4	string of extraction wells across the mouth of the aquifer	09:14:35
5	near the coast to capture seawater on the coastal side of	09:14:39
6	the wells and to start pulling back intruded seawater from	09:14:44
7	the inland side of the wells."	09:14:47
8	BY MR. BETZ:	
9	Q. Okay. And how does that support your	09:14:50
10	opinion?	09:14:53
11	A. So just, basically, that, if you put wells	09:14:53
12	near the coast, that you would capture seawater and pull	09:14:59
13	back existing intruded seawater from the inland side of	09:15:07
14	the wells.	09:15:11
15	Q. And again, this comes from what document?	09:15:15
16	A. This is from the periodic evaluation for	09:15:17
17	the 180/400-foot aquifer sub-basin.	09:15:20
18	Q. Anything else you wish to add as it relates	09:15:25
19	to Bases 6d?	09:15:28
20	A. I don't think so.	09:15:33
21	Q. As it relates to your sixth opinion, in	09:15:35
22	conclusion, how certain are you?	09:15:41
23	A. Yeah. I am -- I'm very certain, as certain	09:15:42
24	as I can be in the -- within the standards of my	09:15:46
25	profession.	09:15:49

1	Q. Now, turning to your seventh opinion, which	09:15:52
2	can be found on Exhibit 844, Page 8.	09:15:54
3	Please tell the Court what your seventh opinion	09:16:00
4	is.	09:16:03
5	A. The project will reduce seawater intrusion	09:16:04
6	in the Salinas Valley Groundwater Basin even under	09:16:08
7	long-term elimination of landward gradients.	09:16:12
8	Q. Let's turn to the first bases of your	09:16:16
9	opinion, under 7-C. You write "spatial distribution"	09:16:19
10	under the reference.	09:16:23
11	My first question is: What do you mean by that?	09:16:24
12	A. So I'm -- I'm referring to the spatial	09:16:27
13	distribution of the seawater -- along the	09:16:32
14	seawater-intrusion front and where we see, you know,	09:16:40
15	inland migration of that.	09:16:44
16	Q. What does spatial distribution mean?	09:16:47
17	A. Just spatial distribution meaning looking	09:16:51
18	along the seawater-intrusion front and looking at -- well,	09:16:55
19	specifically, as it points out under the comments, looking	09:17:05
20	at the distribution of some of the older wells.	09:17:10
21	And basically -- so there's an importance -- I	09:17:16
22	think we talked about before, if we see the project	09:17:23
23	causing some slight inland migration along the	09:17:26
24	seawater-intrusion fronts, it's important where that's	09:17:29
25	occurring.	09:17:31

1	Q.	You may have answered this, but can you	09:17:32
2		give us a better explanation of just the phrase "spatial	09:17:34
3		distribution."	09:17:37
4	A.	It's -- it's sort of, if you look at it in	09:17:38
5		plan view, like from above, the spatial distribution of	09:17:42
6		the -- if you look at the seawater-intrusion front and,	09:17:49
7		say, look at differences between two scenarios of where	09:17:52
8		it's, say, retreating versus where it's maybe moving	09:17:56
9		forward.	09:18:00
10	Q.	And you rely here on, you say, Cal-Am 187;	09:18:01
11		is that correct?	09:18:05
12	A.	Yes.	09:18:05
13	Q.	Let's take a look at what was Cal-Am 187 in	09:18:06
14		the AHO proceedings, which is Exhibit 789 in this case.	09:18:12
15		Referencing Exhibit 789, what is 789?	09:18:22
16	A.	So this exhibit is the Phase 3 from the AHO	09:18:25
17		proceedings, the solute transport modeling work that was	09:18:32
18		done by the Cal-Am experts.	09:18:37
19	Q.	And you're a signatory to -- is this a	09:18:40
20		technical memorandum?	09:18:43
21	A.	Yes.	09:18:45
22	Q.	Of which you are a signatory, along with	09:18:45
23		Dr. Yeh?	09:18:47
24	A.	Yes.	09:18:49
25	Q.	Okay. Let's please take a look at 789,	09:18:49

1	Page 23. And if we look at the sentence that begins	09:18:54
2	"increases in TDS."	09:19:01
3	MR. BETZ: Thank you, Mr. Terry.	09:19:08
4	BY MR. BETZ:	
5	Q. I will read the entire sentence slowly.	09:19:10
6	It provides, "Increases in TDS concentrations	09:19:12
7	and the migration of the seawater-intrusion front south of	09:19:18
8	the capture zone are minor," comma, "generally restricted	09:19:22
9	to undevelopable coastal areas," comma, "and are not	09:19:26
10	anticipated to affect beneficial use."	09:19:31
11	Do you see that?	09:19:34
12	A. Yes.	09:19:36
13	Q. Please explain that and how it supports	09:19:36
14	your opinion.	09:19:38
15	A. So in the -- along the southernmost portion	09:19:39
16	of the seawater-intrusion front, the WBSSM models were	09:19:43
17	showing a very slight inland migration with the proposed	09:19:48
18	project wells pumping. But that's an area of the basin	09:19:51
19	that is effectively undevelopable; meaning you cannot put	09:19:59
20	extraction wells in there, because, if you do, they're	09:20:05
21	going to immediately pull in seawater intrusion.	09:20:08
22	Q. Okay. And in other areas, there is a	09:20:11
23	decrease in seawater intrusion?	09:20:13
24	A. Yes.	09:20:14
25	Q. Okay. And we've heard you say, in the end,	09:20:15

1	therefore, there is a net benefit?	09:20:18
2	A. Correct.	09:20:21
3	Q. So can you again explain how this sentence	09:20:21
4	and your net benefit supports your opinion.	09:20:25
5	A. Yeah. So this -- this small area where	09:20:28
6	this is occurring, again, is an area where there's no	09:20:32
7	production wells; although, we'll see, as we go into the	09:20:36
8	next exhibit, that there used to be production wells	09:20:42
9	there. But it's, basically, an area that you cannot put	09:20:47
10	production wells now going forward.	09:20:52
11	And so the fact that there's a little bit of	09:20:56
12	migration there is not causing any harm. But, in the	09:20:58
13	areas where there are existing production wells or you	09:21:01
14	could put future wells, there's a -- either no impact, or	09:21:04
15	the seawater-intrusion front is moving back with the	09:21:11
16	implementation of the slant well project.	09:21:14
17	Q. Going back to Exhibit 844, Page 8, Row 7c.	09:21:17
18	You refer to, also, MCWRA SWI maps showing old Marina,	09:21:24
19	slash, Fort Ord, FO, wells.	09:21:33
20	What do you mean by that?	09:21:37
21	A. First of all, just for acronyms, MCWRA is	09:21:38
22	Monterey County Water Resources Agency. SWI is seawater	09:21:43
23	intrusion. FO is Fort Ord.	09:21:46
24	And so we would need to go to those figures.	09:21:49
25	Q. Let's do so. If we can please take a look	09:21:55

1	at 906, Page 3 and 4.	09:21:58
2	Is this what you're referring to?	09:22:04
3	A. Yes.	09:22:05
4	Q. Let's look at maybe the first page of	09:22:06
5	Exhibit 903 -- I'm sorry -- 906. 906.	09:22:10
6	A. So --	09:22:14
7	Q. Hold on. Hold on.	09:22:15
8	What is Exhibit 906? Let's start there.	09:22:17
9	A. So these are the Monterey County Water	09:22:22
10	Resources Agency's historical seawater intrusion maps.	09:22:28
11	Q. We've looked at them from time to time	09:22:32
12	throughout this case. Now let's look at 906, Page 3.	09:22:34
13	First of all, what is 906, Page 3?	09:22:40
14	A. So this is taking those maps from the	09:22:44
15	Monterey County Water Resources Agency and adding some	09:22:50
16	abandoned well locations. It has three active well	09:22:58
17	locations.	09:23:02
18	MR. BETZ: May I respectfully request the Court	09:23:02
19	provide Mr. Leffler with the laser pointer. If not, I	09:23:05
20	have one.	09:23:08
21	Thank you.	09:23:14
22	BY MR. BETZ:	
23	Q. With that, can you please point to where	09:23:15
24	the abandoned wells are to which you just referred.	09:23:17
25	A. So maybe just first, by way of quick	09:23:22

1	explanation, the orange dots -- the legend in the upper	09:23:25
2	right, so the orange dots are abandoned MCWD wells. The	09:23:29
3	purple dots are abandoned Fort Ord wells, and then the	09:23:39
4	green dots are active MCWD production wells.	09:23:43
5	Q. Okay. That's what we can see on this	09:23:51
6	chart? That's what's being depicted?	09:23:53
7	A. Yes.	09:23:55
8	Q. And how does that support your seventh	09:23:55
9	opinion?	09:23:58
10	A. So would it maybe be possible to enlarge	09:23:58
11	that lower left portion where the dots are?	09:24:01
12	Okay. So this is showing the -- as I mentioned,	09:24:10
13	the purple and the orange dots are abandoned wells.	09:24:17
14	Historical wells, generally, are abandoned due to the	09:24:23
15	occurrence of seawater intrusion.	09:24:28
16	And so the area where there's a slight inland	09:24:30
17	migration with the proposed wells is in the southern	09:24:36
18	portion here (indicating). And so you can see there's	09:24:42
19	been historical wells installed in that area that had to	09:24:46
20	be abandoned due to pulling in seawater intrusion.	09:24:50
21	And so you really -- you cannot do further	09:24:55
22	groundwater development in this area because you would	09:25:00
23	just pull that in again or -- well, it's already in. But	09:25:03
24	you would pull it in further; whereas, the green dots,	09:25:08
25	which is in an area where the project provides improvement	09:25:12

1	or no impact on the seawater-intrusion front is where the	09:25:19
2	existing wells are located.	09:25:23
3	And not that it would be a good idea to put more	09:25:28
4	wells in this aquifer. If you were, they would have to be	09:25:37
5	back in this area (indicating).	09:25:40
6	So it's basically -- this area here is basically	09:25:40
7	an undevelopable area for future wells.	09:25:46
8	Q. What determines the pace of seawater	09:25:52
9	intrusion?	09:25:58
10	A. Well, it's determined by the gradient and	09:25:58
11	the hydraulic connectivity.	09:26:03
12	Q. Using the maps that we've looked at, can	09:26:06
13	you track the pace of seawater intrusion?	09:26:09
14	A. And actually, I should say, also, the	09:26:11
15	effective porosity would be a third variable.	09:26:14
16	Q. Let me try my question again with the	09:26:17
17	clarification. Thank you.	09:26:20
18	With that, using these maps, can we track the	09:26:21
19	pace of seawater intrusion?	09:26:24
20	A. Yes.	09:26:26
21	Q. How?	09:26:27
22	A. So you could look at -- so this map	09:26:28
23	shows -- well, maybe first of all, we might want to	09:26:34
24	enlarge and go to the lower left legend.	09:26:36
25	So what this map is showing is seawater-intruded	09:26:44

1	area by year. So the different colors, as we can see	09:26:50
2	here, represent different years between 1944 and 2023.	09:26:53
3	So if we go back to the map and maybe zoom in	09:27:01
4	again on the area we're looking at.	09:27:08
5	So you could look at, you know, where the	09:27:10
6	seawater-intrusion front is in a given year and, you know,	09:27:15
7	look at the distance between, say, from one year to the	09:27:21
8	next. Then you can take that distance and divide by the	09:27:25
9	number of years that transpired, and that would give you a	09:27:32
10	rate of movement.	09:27:35
11	Q. So because you have distance and time, you	09:27:36
12	can calculate the speed of seawater intrusion?	09:27:38
13	A. Yes.	09:27:40
14	Q. Okay. Turning back to Exhibit 844, Page 9,	09:27:41
15	your Bases 7d.	09:27:50
16	You refer to the SWIM Model. Do you see that?	09:27:53
17	A. Yes.	09:27:56
18	Q. That's the same SWIM Model you relied on in	09:27:57
19	a prior bases?	09:28:01
20	A. Yes.	09:28:04
21	Q. And you, specifically, referenced	09:28:09
22	Figures 11-A, 11-B, 12-A, and 12-B; correct?	09:28:12
23	A. Yes.	09:28:16
24	Q. And we'll look at those in a minute. But	09:28:17
25	can you describe generally what those are.	09:28:19

1	A.	So those are figures that -- showing the	09:28:22
2		results of the seawater-intrusion model -- simulation of	09:28:29
3		the seawater-intrusion front with and without slant well	09:28:37
4		pumping and then also with and without accounting for	09:28:41
5		density.	09:28:45
6	Q.	Please read your comment and explain what	09:28:47
7		that means.	09:28:50
8	A.	So it says, "Supportive of 7-A," slash,	09:28:52
9		"7-B, with and W," slash, "O, density." W, slash, O means	09:28:56
10		without.	09:29:04
11	Q.	What does that mean? And how does that	09:29:04
12		support your opinion?	09:29:06
13	A.	So -- well, we'd have to look at the	09:29:07
14		figures, I guess, to see the -- essentially, the results	09:29:11
15		show that, first of all, with density, the	09:29:17
16		seawater-intrusion front that we get with slant well	09:29:25
17		pumping is -- is generally neutral to the beneficial. And	09:29:31
18		we get the same result if we do the simulation without	09:29:38
19		density.	09:29:42
20	Q.	Let's turn to the figures. Maybe we try --	09:29:45
21	THE COURT:	It's 9:30. We can take our first	09:29:49
22		recess of the morning at this time.	09:29:51
23		(Recess taken from 9:29 a.m. through	09:44:19
24		9:44 a.m.)	09:44:20
25	THE COURT:	Okay. We're back on the record.	09:44:20

1	Mr. Leffler is still on the stand, still under	09:44:23
2	oath, and need not be re-sworn.	09:44:28
3	You can resume.	09:44:28
4	BY MR. BETZ:	09:44:30
5	Q. Turning back to your seventh opinion and	09:44:30
6	the bases set forth in Row 7d. You're referring to	09:44:32
7	several figures. Let's look at those.	09:44:36
8	MR. BETZ: Mr. Terry, can you please pull up	09:44:39
9	909, Page 1, which is Figure 11-A.	09:44:42
10	BY MR. BETZ:	
11	Q. My question is: Did you create this	09:44:45
12	figure?	09:44:47
13	A. Yes.	09:44:48
14	Q. Based on what data?	09:44:48
15	A. So this is -- well, first of all, it's	09:44:51
16	showing a number of well locations and -- that are	09:44:59
17	described in the upper right legend. And then it's	09:45:04
18	showing some blue -- oh a blue solid line and a dashed	09:45:07
19	blue line. And that reflects output from the seawater	09:45:14
20	intrusion model.	09:45:18
21	Q. Okay. I'm sorry. So the underlying data	09:45:19
22	comes from where?	09:45:23
23	A. The blue lines come from the seawater	09:45:24
24	intrusion model.	09:45:28
25	Q. And tell us, in general, what is this	09:45:30

1 figure showing us? 09:45:34

2 A. So, first of all, in the lower right 09:45:36

3 legend, the blue solid line shows the seawater-intrusion 09:45:42

4 front with slant well pumping, and the dashed blue line 09:45:52

5 shows seawater intrusion without slant well pumping. 09:45:58

6 And let's see. Also, I believe, if we -- oh, 09:46:03

7 okay. 09:46:10

8 Well, it shows layer five. So that's the lower 09:46:11

9 180-foot aquifer in that lower right legend. And so 09:46:15

10 the -- so what we see if we look at the blue line, we see 09:46:25

11 the solid blue line as being, essentially, either the same 09:46:30

12 as the dash line or slightly seaward. 09:46:37

13 And so that is showing that with slant well 09:46:43

14 pumping, this model shows neutral to beneficial impacts on 09:46:47

15 the seawater-intrusion front from the slant well pumping 09:46:55

16 in the 180-foot aquifer. 09:46:58

17 Q. And how does that support your opinion that 09:47:04

18 the project will reduce seawater intrusion in the SVGB 09:47:07

19 under long-term elimination of the landward gradients? 09:47:12

20 A. Well, this doesn't speak to the long-term 09:47:18

21 elimination of the landward gradients. But this is 09:47:22

22 speaking to, you know, under current conditions, that the 09:47:27

23 project would help to -- well, it's either neutral or it 09:47:33

24 would help to improve the location the seawater-intrusion 09:47:39

25 front given that, again, it's either -- the line is the 09:47:46

1	same or the line with the salinity of groundwater pumping	09:47:50
2	is slightly seaward.	09:47:52
3	MR. BROCHARD: Your Honor, it's my understanding	09:47:54
4	this this issue is being used as a demonstrative. That's	09:47:56
5	why I'm not going to object to the figure now.	09:48:00
6	But can I get just clarification as to he's	09:48:02
7	referenced seawater intrusion model a number of times.	09:48:04
8	And on Monday I think they identified four different	09:48:07
9	seawater intrusion models. So can we just get	09:48:11
10	clarification on what model we're talking about.	09:48:13
11	THE COURT: I think that would be helpful.	09:48:16
12	MR. BROCHARD: And what time period the	09:48:20
13	simulation is run for.	09:48:21
14	THE COURT: Well, the diagram indicates SWI 2024	09:48:23
15	layer five in the legend in the lower right-hand corner.	09:48:29
16	So, Mr. Leffler, is this from your modification	09:48:34
17	of the so-called SWIM Model with modifications for both	09:48:45
18	slant well and other modifications?	09:48:54
19	THE WITNESS: Yes. So this is the seawater	09:48:57
20	intrusion model from Montgomery and Associates with the	09:49:00
21	slant wells added, and with the modification that I made	09:49:06
22	to the FO-SVA extent on the western side.	09:49:10
23	THE COURT: Okay. Thank you.	09:49:17
24	Did that clarify for you, Mr. Brochard?	09:49:18
25	MR. BROCHARD: That helps for the -- what model	09:49:20

1	they're using. I'm still not sure as to what the time	09:49:25
2	period that he's depicting here, but we can do that on	09:49:28
3	cross.	09:49:31
4	THE COURT: All right. Fine. Thank you.	09:49:31
5	BY MR. BETZ:	09:49:33
6	Q. Over what time period?	09:49:33
7	A. So it's a 36-year time period.	09:49:34
8	Q. Starting from the inception of pumping over	09:49:37
9	36 years?	09:49:40
10	A. So it's -- yeah, turning on the slant	09:49:41
11	wells, and then running for 36 years with the slant wells	09:49:45
12	pumping.	09:49:49
13	Q. Okay. Let's next look at Figure 11-B,	09:49:51
14	which we can find at Exhibit 909, Page 2.	09:49:57
15	I'm sorry. That first figure we looked at, what	09:50:01
16	aquifer is it referring to?	09:50:04
17	A. So, yeah, if we blow it up.	09:50:05
18	Q. That's 11-A. Let's go back to Page 909 --	09:50:08
19	Page 1. That's Exhibit 909, Page 1, Figure 11-A.	09:50:13
20	What aquifer is this referring to?	09:50:18
21	A. So can we blow up the figure to see the	09:50:21
22	whole -- okay. So in the lower part there refers to the	09:50:23
23	lower 180-foot aquifer.	09:50:30
24	Q. Thank you.	09:50:33
25	Now let's go back to 909, Page 2, Figure 11-B.	09:50:33

1	What aquifer are we referring to?	09:50:38
2	A. So this is the 400-foot aquifer.	09:50:40
3	Q. Okay. And I won't ask you this every time	09:50:42
4	for each of the following figures. But for clarification	09:50:44
5	here, did you create this figure?	09:50:47
6	A. Yes.	09:50:49
7	Q. Okay. And this was based on the SWIM 2024	09:50:50
8	model as modified as just discussed?	09:50:53
9	A. Yes.	09:50:56
10	Q. Okay. And what does this figure explain or	09:50:56
11	show? And how does that support your opinion?	09:50:59
12	A. So the line representations are the same.	09:51:02
13	The solid blue line represents the width slant well	09:51:12
14	result, and then the dashed line represents the without	09:51:16
15	slant well result.	09:51:22
16	And so, again, we see, as we look along that	09:51:24
17	line, they either overlies each other. So you really -- in	09:51:29
18	that case, you can't really see the dashed blue line. Or	09:51:34
19	the solid blue line is a little bit seaward of the dashed	09:51:39
20	blue line.	09:51:48
21	Q. And, again, what time period?	09:51:50
22	A. This, again, for the same 36-year time	09:51:53
23	period of slant well pumping.	09:51:56
24	Q. Please turn to Exhibit 909, Page 3, which	09:51:58
25	is Figure 12-A.	09:52:04

1	To what aquifer does this refer?	09:52:08
2	A. Okay. Just to back up to the -- so the	09:52:10
3	previous two figures were run with the accounting for	09:52:13
4	density.	09:52:19
5	Q. What do you mean by that?	09:52:20
6	A. Variable density.	09:52:21
7	Q. What do you mean by that?	09:52:22
8	A. So it accounts for the density of when	09:52:24
9	water has a higher TDS, it's more dense than freshwater.	09:52:27
10	And so that can have a little bit of an affect on how the	09:52:32
11	water moves, and what it sees as its sort of effective	09:52:36
12	head.	09:52:41
13	Q. Okay. With that explanation, how does that	09:52:42
14	impact what we're looking at now, meaning Exhibit 909,	09:52:46
15	Page 3, Figure 12-A?	09:52:51
16	A. So what we're looking at now is the --	09:52:53
17	everything being the same as in this case, Figure 11-A for	09:52:57
18	the 180-foot aquifer, but it was run without density,	09:53:04
19	without accounting for density.	09:53:10
20	Q. Why?	09:53:11
21	A. To determine if there would be any	09:53:14
22	difference in the result of the simulation.	09:53:17
23	Q. What does Figure 12-A tell us in response	09:53:23
24	to?	09:53:27
25	THE COURT: Figure 12-A deals with the lower	09:53:27

1	180-foot aquifer?	09:53:31
2	THE WITNESS: Yes.	09:53:33
3	THE COURT: Okay. Thank you.	09:53:34
4	MR. BETZ: And to be clear, Mr. Terry, can you	09:53:35
5	show us the whole document.	09:53:36
6	BY MR. BETZ:	
7	Q. If we were to go back to Figure 11-A, 11-B,	09:53:42
8	12-A, or -- and slowly -- we'll next turn to 12-B --	09:54:00
9	(Court reporter clarification.)	
10	MR. BETZ: Sure.	
11	BY MR. BETZ:	
12	Q. If we were to go back after this case is	09:54:01
13	over and we want to Figure 11-A, 11-B, 12-A, and 12-B and	09:54:02
14	determine what aquifer refers to, do we look at the very	09:54:02
15	bottom of the page?	09:54:05
16	A. Yes.	09:54:07
17	Q. So looking, again, at the figure on the	09:54:07
18	screen, which is Exhibit 909, Figure 3, this refers to the	09:54:10
19	lower 180-foot aquifer?	09:54:14
20	A. Yes.	09:54:16
21	Q. Okay. Thank you.	09:54:17
22	I'm sorry. Please continue to explain how this	09:54:20
23	supports your opinion.	09:54:24
24	A. So the -- again, just to reconfirm the	09:54:28
25	legend, the solid line is with slant wells pumping and the	09:54:31

1 dash line is without.

09:54:41

2 And so looking along that line, again, you can
3 see it's either overlapping or you see that the solid line
4 is a little bit seaward of the dashed line, indicating
5 either a neutral impact or a slightly beneficial impact of
6 the slant well pumping on the seawater-intrusion front
7 without accounting for density.

09:54:43

09:54:49

09:54:56

09:55:03

09:55:09

09:55:14

8 THE COURT: For purposes of clarity in the
9 record, the solid and dashed lines that you're referring
10 to show the projected seawater intrusion are the blue
11 solid and blue dashed lines on Exhibit 12-A?

09:55:16

09:55:19

09:55:25

09:55:29

12 THE WITNESS: Yes, Your Honor.

09:55:34

13 THE COURT: Okay. Thank you.

09:55:35

14 Go ahead.

09:55:36

15 MR. BETZ: Thank you.

09:55:37

16 BY MR. BETZ:

09:55:37

17 Q. That same analysis applies to Figure 11-A,
18 11-B, 12-A, and eventually when we'll look at 12-B;
19 correct?

09:55:39

09:55:42

09:55:47

20 A. Yes.

09:55:47

21 Q. Okay. Anything else you wish to explain
22 regarding Figure 12-A that supports your opinion?

09:55:48

09:55:53

23 A. No. I think that covers 12-A.

09:55:57

24 Q. Now let's look at Figure 12-B, which is
25 found on Page 909, Page 4.

09:56:02

09:56:06

1	What aquifer does this refer to?	09:56:14
2	A. So this is the 400-foot aquifer.	09:56:17
3	Q. Okay. Please explain what this figure	09:56:21
4	shows.	09:56:24
5	A. So, if -- we can zoom back out.	09:56:28
6	So this figure is showing, similar to the	09:56:33
7	previous figures, the seawater-intrusion front derived	09:56:40
8	from the model simulation without accounting for density	09:56:45
9	with slant well pumping versus without. And it shows the	09:56:51
10	same -- it uses the same legend in the lower right with	09:56:56
11	the solid being with slant well and the dashed being	09:57:02
12	without.	09:57:06
13	Q. How is that different from the prior	09:57:06
14	figures we looked at relating to the 400-foot aquifer?	09:57:08
15	A. So this simulation is without accounting	09:57:11
16	for density.	09:57:15
17	Q. And, again, why did you do that?	09:57:19
18	A. So the reason I did this -- and, actually,	09:57:21
19	which is one of the primary purposes of utilizing this	09:57:25
20	model, was because in the work that had been done	09:57:28
21	previously with other models, there were comments and	09:57:33
22	criticisms from the opposing experts for MCWD and Marina	09:57:40
23	that most of those models did not account for density in	09:57:44
24	their simulations, and that, therefore, you know, the	09:57:53
25	results were potentially unreliable.	09:57:59

1	And, you know, that would you know potentially	09:58:03
2	make a difference in the major impact issues we were	09:58:07
3	looking at.	09:58:10
4	So I wanted to utilize a model developed by an	09:58:11
5	independent party to take a look at that effect of what	09:58:15
6	the density would have on the main model results or	09:58:21
7	potential impact issues that we were working on.	09:58:24
8	THE COURT: At the risk of oversimplification,	09:58:27
9	perhaps, the ultimate concern being that the density of	09:58:31
10	the seawater would affect the rate of intrusion?	09:58:37
11	THE WITNESS: Well, I think the concern --	09:58:44
12	you're correct. It actually would affect the rate of	09:58:47
13	intrusion. But I think the concern was more how that	09:58:50
14	would affect the end result of a simulation of with and	09:58:56
15	without slant well pumping.	09:59:04
16	I guess, for example, if -- you know, so say for	09:59:06
17	these model results, if we were just looking at the no	09:59:09
18	density first and it showed that there was a neutral to	09:59:13
19	beneficial impact to slant well pumping, that somehow if	09:59:16
20	we did have an accounting for density, that that result	09:59:24
21	might flip and that you would see that there is a more	09:59:27
22	inland migration of the seawater-intrusion front	09:59:30
23	throughout the area with slant well pumping once we	09:59:35
24	accounted for variable density.	09:59:43
25	THE COURT: Thank you.	09:59:48

1	MR. BETZ: Does that answer Your Honor's	09:59:49
2	question?	09:59:51
3	THE COURT: It does.	09:59:51
4	MR. BETZ: Thank you. You can take that down,	09:59:52
5	Mr. Terry.	09:59:55
6	BY MR. BETZ:	09:59:55
7	Q. Your seventh opinion is the project will	09:59:56
8	reduce seawater intrusion in the SVGB.	09:59:59
9	My question to you now is, is there a way to	10:00:01
10	tell whether your opinion or predictions are correct?	10:00:04
11	A. Yes.	10:00:06
12	Q. How?	10:00:06
13	A. You would install -- or utilize existing	10:00:11
14	monitoring wells or potentially add some additional wells,	10:00:15
15	monitoring wells, in certain areas in the project area.	10:00:20
16	Q. What areas?	10:00:23
17	A. Areas around the -- within and around the	10:00:25
18	CEMEX property where the slant wells would be located and	10:00:30
19	then areas between the slant wells and the MCWD wells and	10:00:35
20	also in areas between the coast and the MCWD wells.	10:00:45
21	Q. Let's please look at Exhibit 909, the first	10:00:51
22	page again, briefly.	10:00:56
23	Can you --	10:00:59
24	MR. BROCHARD: Your Honor, I'm going to object	10:01:00
25	to the last response. Undisclosed expert opinion.	10:01:02

1 MR. BETZ: The response is, this relates to his 10:01:07
2 seventh opinion, which he has always had. And he was not 10:01:11
3 asked anything more about it in his deposition other than 10:01:14
4 a question or two about it. They never explored that. 10:01:17
5 But this relates directly to his seventh opinion. 10:01:20
6 THE COURT: Well, to the extent that the 10:01:24
7 testimony you're objecting to is simply he's saying you 10:01:32
8 can check whether my opinions and predictions are right or 10:01:36
9 wrong by putting in monitoring wells, do you even need an 10:01:41
10 expert to testify to that? 10:01:44
11 MR. BROCHARD: If you want testimony as to the 10:01:46
12 specifics of what the monitoring would need to be in order 10:01:49
13 to test the hypothesis, then, yes, I think it would need 10:01:51
14 to be disclosed expert opinion. If it's just stated for 10:01:56
15 the purpose of you can test things, then I don't have an 10:02:00
16 objection. 10:02:05
17 But I do have an objection if they're trying to 10:02:05
18 lay groundwork for what will become some physical solution 10:02:09
19 that they -- 10:02:20
20 THE COURT: I haven't heard testimony yet. 10:02:22
21 BY MR. BETZ: 10:02:25
22 Q. In general -- I'm not asking specifics 10:02:25
23 about the monitoring wells. But you talked about the area 10:02:27
24 of some monitoring wells. Can you show us on this 10:02:29
25 Page 909.001 the general area to which you referred. 10:02:33

1	A. Yes.	10:02:39
2	So the area around the -- so the slant wells are	10:02:40
3	in this figure right here. And so the area kind of around	10:02:48
4	that, where you see some existing monitoring wells. And	10:02:52
5	then the MCWD Wells 29, 30, and 31 are here. So between	10:03:01
6	the purple area here and these wells here, so sort of in	10:03:06
7	this general area. And then also between the MCWD wells	10:03:12
8	and if we go sort of perpendicular to the coast. So sort	10:03:17
9	of in this general area here in between (indicating).	10:03:22
10	Q. Turning back -- I'm sorry. Did you finish	10:03:33
11	your statement?	10:03:37
12	A. Yes.	10:03:38
13	Q. Okay. Turning back to Exhibit 844 -- let	10:03:39
14	me strike that.	10:03:49
15	Just to clarify, also, when you talk about	10:03:49
16	monitoring wells, monitoring wells for what aquifers?	10:03:52
17	A. So that -- you'd want to focus on the	10:03:56
18	aquifers -- well, the Dune Sand Aquifer, the 180-foot	10:04:00
19	aquifer, and the 400-foot aquifer.	10:04:07
20	Q. Okay. Going back to Exhibit 844, Page 9,	10:04:10
21	Bases 7f.	10:04:22
22	What is your reference that you were referring	10:04:25
23	to, please?	10:04:27
24	A. So the 180-foot/400-foot aquifer periodic	10:04:30
25	evaluation and, again, relating to the brackish	10:04:44

1 groundwater feasibility study, which is Appendix 4A. 10:04:48

2 Q. And that's the same appendix I think we 10:04:55

3 looked at earlier, meaning the summary memo of brackish 10:04:58

4 groundwater restoration project feasibility study? Is 10:05:01

5 that what you're referring to? 10:05:04

6 A. Yes. 10:05:05

7 Q. Okay. I think we looked at that earlier. 10:05:07

8 A. Yes, we did. 10:05:11

9 Q. Okay. We'll go to the document in a 10:05:12

10 minute. 10:05:14

11 But can you read your comment and please explain 10:05:14

12 how that supports the opinion. 10:05:17

13 A. So the concept for this project is to 10:05:19

14 establish a line of extraction wells across the mouth of 10:05:23

15 the aquifer near the coast to capture seawater on the 10:05:25

16 coastal side of the wells and to start pulling back 10:05:30

17 intruded seawater from the inland side of the wells. 10:05:33

18 Q. And that's a quote from the summary memo? 10:05:36

19 A. Yes. 10:05:39

20 Q. Let's please take a look at the summary 10:05:39

21 memo and the quote to which you refer, which can be found 10:05:42

22 on Exhibit 815-B, Page 7. 10:05:45

23 And the sentence you quote, I think, is in the 10:05:51

24 first sentence under 3.1; is that correct? 10:05:54

25 A. Yes. 10:05:56

1	Q.	Is that the same sentence we looked at	10:05:57
2		earlier?	10:05:59
3	A.	Yes, it is.	10:05:59
4	Q.	How does that support your opinion seven?	10:06:00
5	A.	So basically, this -- so the concept of	10:06:05
6		this project is to include extraction wells near the coast	10:06:10
7		to effectively stop additional seawater intrusion from	10:06:17
8		getting past those wells. And then -- so that's on the	10:06:22
9		seaward side of the wells.	10:06:29
10		So seawater that was normally coming inland and	10:06:32
11		going past where, say, this line of extraction wells would	10:06:36
12		be -- would no longer continue to go inland, it would be	10:06:41
13		pulled into these extraction wells. So you're effectively	10:06:44
14		stopping current and future seawater intrusion from	10:06:48
15		happening or at least getting past the extraction wells.	10:06:54
16		And then at the same time, for the seawater	10:06:58
17		that's landward of the extraction wells, or the	10:07:04
18		seawater-intrusion front, it would help to start pull that	10:07:11
19		back towards the ocean.	10:07:18
20	Q.	Can you remind us all: What is this	10:07:19
21		document that you're relying upon?	10:07:22
22	A.	This is the brackish water restoration	10:07:24
23		project, which is a Project in Management Action, or PMA,	10:07:26
24		that the 180/400-foot aquifer sub-basin GSP is evaluating.	10:07:33
25	Q.	Okay. We've heard a lot about that in this	10:07:41

1 case. 10:07:43

2 So you're not referring to the Monterey 10:07:43

3 Peninsula Water Supply Project, but rather, the brackish 10:07:51

4 extraction well project that's been discussed earlier? 10:07:52

5 A. Yes, the brackish ground -- I think they 10:07:55

6 call it the brackish groundwater restoration project. 10:07:57

7 Q. "They," being who? 10:08:02

8 A. The 180-foot/400-foot aquifer sub-basin 10:08:03

9 GSP -- or the GSA for that GSP. 10:08:11

10 Q. It was one of the potential project 10:08:13

11 management actions? 10:08:16

12 A. Yes. 10:08:18

13 Q. Okay. And you're using that project 10:08:18

14 management action to support your conclusions here? 10:08:20

15 A. Yes. 10:08:24

16 Q. Okay. Let's turn to Exhibit 844, Page 9, 10:08:25

17 bases 7h. 10:08:35

18 Your reference is "project shutdown," slash, 10:08:39

19 "halfway." 10:08:43

20 What do you mean by that? 10:08:44

21 A. So the -- okay. I guess some background. 10:08:45

22 So one of the concerns that's been raised by the 10:08:52

23 opposing experts for MCWD and Marina is that the project, 10:08:55

24 the slant well pumping, could occur for a period of years, 10:09:08

25 like, say, 25 years or some other period of time, and then 10:09:13

1	it may cease operations for some reason. And if that were	10:09:18
2	to happen, that that would have a detrimental impact on	10:09:25
3	the basin because the project had stopped.	10:09:30
4	Q. Okay. In formulating the opinion that	10:09:36
5	would respond to that, you, again, would rely on the SWIM	10:09:39
6	Model; correct?	10:09:43
7	A. Yes.	10:09:43
8	Q. And for clarification, that's the SWIM 2024	10:09:43
9	model, which includes the project and other adjustments;	10:09:46
10	correct?	10:09:52
11	A. Yes.	10:09:52
12	Q. Okay. And your comment on the far right	10:09:55
13	side, does that explain what you just said?	10:09:57
14	A. Yeah, it's explaining that the slant wells	10:09:59
15	operate for a period of time, and then they turn off.	10:10:03
16	So in this case -- well, in this particular	10:10:12
17	model simulation, they operate for 18 years, and then they	10:10:16
18	turn off for 54 years.	10:10:20
19	Q. We'll get to the bases. But give us the	10:10:27
20	punch line. Do you find that, if the project shuts off,	10:10:30
21	it will create any type of harm and/or increase seawater	10:10:32
22	intrusion?	10:10:35
23	A. No, the finding is that it does not.	10:10:35
24	Q. And when you say "the finding," the finding	10:10:38
25	in the document that you referred to?	10:10:41

1	A. Yes.	10:10:43
2	Q. Okay. Let's look at that.	10:10:44
3	You reference -- let's take a look at	10:10:50
4	Exhibit 910.001. That's Exhibit 910, Page 1, Figure 13-A.	10:10:56
5	What is this, and how does that support your	10:11:06
6	opinion?	10:11:09
7	A. Well, maybe we can back up to the -- okay.	10:11:09
8	So this is for the lower 180-foot aquifer showing the	10:11:14
9	seawater-intrusion front after the project shuts down.	10:11:18
10	Q. Okay. And how does this support your	10:11:28
11	opinion that shutting the project down will not cause any	10:11:30
12	injury, much less seawater intrusion increases?	10:11:34
13	A. So maybe we could start with the legend on	10:11:37
14	the lower right.	10:11:43
15	And so generally speaking, the solid lines,	10:11:49
16	again, are with slant wells. The dashed lines are without	10:11:54
17	slant wells. And then the red solid line shows where we	10:12:01
18	would be after 36 years, and then the green line will show	10:12:16
19	us where we are after another 36 years.	10:12:28
20	So --	10:12:34
21	Q. One moment.	10:12:36
22	A. Okay.	10:12:38
23	THE COURT: Go ahead.	10:12:41
24	MR. BETZ: I was just going to say, we have the	10:12:42
25	legend on the screen. Can we now look at the actual	10:12:44

1	exhibit.	10:12:47
2	THE COURT: Before you do that, when you say	10:12:48
3	that, for example, red solid line shows where it would be	10:12:53
4	after 36 years, you're saying 36 years after stopping	10:12:59
5	pumping?	10:13:02
6	THE WITNESS: Yeah.	10:13:02
7	THE COURT: Okay. And then --	10:13:03
8	THE WITNESS: Actually, sorry, Your Honor. That	10:13:05
9	needs a little more explanation.	10:13:09
10	So the 36 years means that it was pumping for	10:13:10
11	18 years and already off for 18 years.	10:13:15
12	THE COURT: Okay. So the 36-year reference	10:13:19
13	refers to 18 years of pumping followed by 18 years of	10:13:25
14	shutdown; is that correct?	10:13:29
15	THE WITNESS: Yes.	10:13:31
16	THE COURT: All right. And then the 54 years	10:13:32
17	refers, again, to 18 years of pumping followed by 36 years	10:13:36
18	of shutdown?	10:13:42
19	THE WITNESS: So it's -- the second red line	10:13:45
20	would be 18 years of pumping, plus 18 years of no pumping,	10:13:48
21	plus another 36 years of no pumping. So it's a total of	10:13:52
22	54 years of no pumping.	10:13:58
23	THE COURT: Okay. I understand.	10:14:02
24	THE WITNESS: It's a little confusing, because	10:14:06
25	the reality was, when I originally did this, you know, we	10:14:10

1	had -- basically, the model has a 36-year period to work	10:14:14
2	with. And so we just divided that in half, and we said,	10:14:17
3	okay, let's do 18 years of pumping and 18 years of no	10:14:21
4	pumping.	10:14:26
5	So that was the original model simulation that	10:14:27
6	we did. But then I decided, well, let's -- let's just let	10:14:31
7	it run for another 36-year period to see where we're at to	10:14:35
8	see if it shows anything different.	10:14:42
9	Another -- sorry. Another 36-year period with	10:14:45
10	no pumping, so just adding on to it.	10:14:48
11	THE COURT: Okay. Thank you.	10:14:51
12	Mr. Betz.	10:14:52
13	MR. BETZ: Thank you. Anything further?	10:14:54
14	Because that was very helpful.	10:14:56
15	BY MR. BETZ:	10:14:58
16	Q. Turning to Exhibit 910.001. Let's take	10:14:59
17	down the legend.	10:15:04
18	What was the result? What does this show us?	10:15:04
19	A. So, yeah, if we could zoom in a little bit.	10:15:07
20	So the -- so first, let's look at the red line.	10:15:12
21	So, again, the red line showing with the slant wells	10:15:18
22	having pumped for 18 years, and then 18 years off, and	10:15:23
23	then the dashed -- I guess it's a blue line with no slant	10:15:30
24	well pumping at all for the 36-year period.	10:15:36
25	So what you can see here is they generally	10:15:41

1	overlap. You can see a little bit of a difference around	10:15:46
2	it, the MW-6 label, just sort of on to the top of it. You	10:15:51
3	can see that the red line is a little bit seaward of the	10:15:57
4	dashed line. And then, if you sort of follow that around	10:16:02
5	up to the north, you can see just maybe a very slight	10:16:07
6	difference between the red line being a little bit seaward	10:16:14
7	of the dashed line.	10:16:18
8	So that's where we were at that 36-year period.	10:16:23
9	And then, with the added time of -- of no -- no	10:16:27
10	pumping, we see that -- and the green line -- so it's	10:16:34
11	further inland. But the difference between having pumped	10:16:42
12	those wells for 18 years versus not having pumped them for	10:16:49
13	18 years, that difference dissipates a little more.	10:16:58
14	So, like, for example, if you look at the area	10:17:01
15	around MW-6, whereas we saw a little bit of a difference	10:17:04
16	in the red line to its dash line, we don't see any	10:17:08
17	deference in the green, because the -- you can't see the	10:17:14
18	dash line in the green because it's being overline by the	10:17:19
19	green solid line.	10:17:26
20	THE COURT: And for clarity in the record, as	10:17:27
21	with the prior figures, the solid line indicates with	10:17:30
22	pumping, and then the dashed line shows without?	10:17:38
23	THE WITNESS: Yes. With slant well pumping for	10:17:44
24	the solid line and without slant well pumping for the	10:17:47
25	dashed line, Your Honor.	10:17:51

1	THE COURT: All right. So the model would show,	10:17:52
2	for example, in the 18 years pumping and 18 -- followed by	10:18:00
3	18 years of no pumping, the dashed portion of the red line	10:18:05
4	contour, for want of a better word, would be purporting to	10:18:15
5	show where that intrusion would exist without the slant	10:18:26
6	wells pumping at all; is that correct?	10:18:33
7	THE WITNESS: Yes; that's correct, Your Honor.	10:18:35
8	THE COURT: The solid line would show the	10:18:36
9	contour of where seawater intrusion would be in the event	10:18:38
10	of 18 years of pumping followed by 18 years without	10:18:43
11	pumping?	10:18:47
12	THE WITNESS: Yes; that's correct.	10:18:48
13	THE COURT: All right. Thanks. I thought it	10:18:50
14	better to get on the same page right now than wait and try	10:18:51
15	to figure it out later.	10:18:55
16	Okay. Thank you.	10:18:56
17	BY MR. BETZ:	10:18:59
18	Q. So the seawater intrusion line would be the	10:18:59
19	same with or without the project?	10:19:03
20	A. Yes. Well, except for there's a little bit	10:19:09
21	of a benefit in some cases with the red line.	10:19:12
22	Q. A little bit of benefit of having the	10:19:14
23	project pumping?	10:19:16
24	A. Right.	10:19:18
25	Q. And for what aquifer does this refer?	10:19:20

1	A.	So, yeah, again, if we could back up. It's	10:19:23
2		the lower 180-foot aquifer, which I think is at the	10:19:28
3		bottom.	10:19:32
4	Q.	Let's next turn to Exhibit 910, Page 2,	10:19:33
5		Figure 13-B.	10:19:37
6		This refers to the 400-foot aquifer; correct?	10:19:40
7	A.	Yes.	10:19:45
8	Q.	Please explain what this tells us.	10:19:46
9	A.	So just to confirm with the legends in the	10:19:50
10		lower right, so it's the same as the previous figure with	10:19:54
11		the red line and the green line at the different -- after	10:20:01
12		the different time periods.	10:20:06
13	Q.	Okay. With that, what does this show us?	10:20:12
14	A.	So what this shows us is -- so let's start	10:20:19
15		with the red line.	10:20:23
16	Q.	Which is what?	10:20:24
17	A.	So the red line would be with 18 years of	10:20:25
18		pumping -- slant well pumping followed by 18 years of no	10:20:30
19		slant well pumping.	10:20:38
20	Q.	What does this figure show the result to	10:20:38
21		be?	10:20:42
22	A.	So in the red line, you can see -- again,	10:20:42
23		kind of in that area around MW-6 -- actually, a little bit	10:20:45
24		on to the south of it, or below it, and a little bit above	10:20:53
25		it, the label and that dot. You can see the dashed line	10:20:59

1 is a little bit inland of the solid line. 10:21:08

2 Q. And the dashed line represents what? 10:21:14

3 A. The dashed line represents without slant 10:21:16

4 well pumping. 10:21:20

5 And so you see, again, a little bit of a benefit 10:21:22

6 in that area. And then, in other areas, those two lines 10:21:27

7 are just overlaying each other. And so you sometimes 10:21:31

8 can't even see the -- the dashed line because they're on 10:21:35

9 top of each other. So there's no difference. 10:21:39

10 Q. Go ahead. 10:21:45

11 A. Then for the green line -- looking through 10:21:49

12 that. I don't think you see any difference. You can't 10:21:54

13 see the dashed line because they're overlying each other. 10:21:58

14 So there's -- there's no difference at all for, you know, 10:22:02

15 after that time period. 10:22:06

16 Q. So, in sum, if the project is run for a 10:22:11

17 period of time, as indicated in these two figures, and 10:22:16

18 then shut off for a period of time, as indicated in these 10:22:19

19 two figures, it would not affect seawater intrusion? In 10:22:22

20 fact, if anything, it would help reduce it? 10:22:26

21 A. Yes, that's what this shows. 10:22:28

22 Q. And this is based on the independent 10:22:30

23 Montgomery 2024 model with the revisions that you've 10:22:34

24 identified; correct? 10:22:38

25 A. Yes. 10:22:39

1	Q. Let's turn back to the summary opinion --	10:22:45
2	or Bases 7j.	10:22:49
3	You, as the bases for your seventh opinion, your	10:22:58
4	reference is, "SGMA reverse gradient," semicolon, "SWI	10:23:02
5	Model."	10:23:09
6	I think by now we know what the SWI Model is; is	10:23:09
7	that correct?	10:23:14
8	A. Yes.	10:23:14
9	Q. It's the same model SWIM Model from 2024	10:23:16
10	we've been discussing?	10:23:19
11	A. Yes.	10:23:20
12	Q. Okay. What do you mean by, "SGMA,"	10:23:20
13	S-G-M-A, "reverse gradient"?	10:23:21
14	A. So, this is -- well, first of all, SGMA	10:23:25
15	refers to Sustainable Groundwater Management Act.	10:23:28
16	So this is an example for reversing the	10:23:33
17	gradient. And, you know, if there were a project and	10:23:42
18	management action that were to reverse the gradient,	10:23:45
19	although as we'll kind of get into, this is sort of a very	10:23:47
20	extreme unlikely example. But it's versing the gradient	10:23:51
21	so it's flowing seaward.	10:23:59
22	Q. That's what you mean by this?	10:24:01
23	A. Yeah. So instead of -- basically, instead	10:24:03
24	of an inland gradient, as we've been looking at with the	10:24:05
25	other model simulations, this is a seaward gradient in	10:24:09

1 the -- like, the 180-foot/400-foot aquifers. 10:24:17

2 Q. And I believe you testified you found that 10:24:21
3 to be extreme? 10:24:23

4 A. Well, this -- so this model -- so this 10:24:24
5 model simulation eliminates all pumping in the model 10:24:37
6 domain except for the slant well pumping. 10:24:42

7 Q. When you say, Eliminates all pumping, all 10:24:46
8 pumping where? 10:24:52

9 A. So the model has pumping for, like, 10:24:52
10 agriculture, and municipal uses. You know, whatever 10:24:55
11 groundwater pumping is occur. 10:25:01

12 Q. And so -- I'm sorry. 10:25:03

13 When you say, It's extreme to assume that would 10:25:04
14 happen, you mean you think it's extreme to assume that all 10:25:08
15 agricultural pumping and municipal pumping would occur? 10:25:12

16 A. Would be eliminated. That it would stop 10:25:15
17 completely. 10:25:18

18 Q. And you think that's extreme? 10:25:19

19 A. Yes. 10:25:20

20 Q. You think it's extreme in this County that 10:25:25
21 agricultural pumping would stop? 10:25:27

22 A. Well, yeah. I mean, again, this assumes 10:25:31
23 that all of it would stop. 10:25:34

24 Q. Okay. Please continue. 10:25:36

25 On the far right side, you say, "No pumping in 10:25:38

1 model domain." That's what you mean? 10:25:41

2 A. Yes, that's what the comment means. 10:25:44

3 Q. Okay. And then you refer to some figures 10:25:47

4 here. Where does that come from? 10:25:49

5 A. Those are figures that I created from 10:25:56

6 output from the seawater intrusion model. 10:25:59

7 Q. Okay. Let's take a look at that. That's 10:26:01

8 Exhibit 911.001, known as Figure 14-A. 10:26:06

9 So let's start by some definitions. 10:26:10

10 What aquifer does this refer to? 10:26:14

11 A. So this is referring to the lower 180-foot 10:26:15

12 aquifer. 10:26:19

13 Q. And what does this figure show us? 10:26:19

14 A. Okay. So, you know, we'll need a little 10:26:22

15 more explanation here on the legend. 10:26:27

16 Q. Please do so slowly. 10:26:31

17 A. Okay. So, I guess -- so starting at the 10:26:34

18 top, we have the solid, I guess, gold line. And so that's 10:26:44

19 with slant well pumping. And so there's a year stated 10:26:54

20 there. So we're dealing with a 36-year period of time in 10:27:03

21 the model that they've set up. So I'm using increments of 10:27:10

22 36 years to do this simulation. 10:27:16

23 And so, due to the time to look at, you know, 10:27:22

24 how long it would take for the seawater-intrusion front 10:27:27

25 under this extreme scenario of eliminating all pumping to 10:27:30

1	migrate back, you know, close to the coast, I ended up	10:27:34
2	running it out to the year 2200. So, you know, basically,	10:27:39
3	almost 200 years.	10:27:51
4	So that's what the gold line represents.	10:27:53
5	And then the next one down -- so that's a	10:27:58
6	different timestamp at 2128, the year 2128. So, roughly,	10:28:03
7	you know, a hundred year period. And that's the purple.	10:28:15
8	And so those two solid lines are with slant	10:28:20
9	wells.	10:28:32
10	And then we have the third one down, the dashed	10:28:32
11	gold line that's without slant wells. And so, again,	10:28:38
12	that's for the year 2200. And then the next line down is	10:28:44
13	the dashed purple, and that's at the year 2128.	10:28:50
14	And then the last one down without slant wells,	10:29:00
15	the dashed line is for the year 2020 without slant wells.	10:29:04
16	Q. With those explanations, let's go back to	10:29:15
17	the figure.	10:29:17
18	What does this depict and how does it support	10:29:18
19	your opinion?	10:29:20
20	A. Okay. So, yeah, if we could enlarge it a	10:29:21
21	little bit.	10:29:26
22	So starting with the furthest inland line, so	10:29:26
23	that's the red dashed line. So that's basically our	10:29:32
24	starting point for this particular simulation. And	10:29:39
25	then -- so what happens is -- is, you know, that's where	10:29:47

1	we start. And then we turn off all the pumping in the	10:29:51
2	model.	10:29:55
3	And we -- so we're running two different	10:29:58
4	simulations at this point. We run one -- so both of them	10:30:03
5	have all the agricultural and municipal well pumping	10:30:09
6	turned off. And then one simulation also does not have	10:30:13
7	the slant wells pumping, and one simulation has the slant	10:30:19
8	wells pumping.	10:30:24
9	And then -- so the next -- so if we move towards	10:30:25
10	the coast, the next one -- so the purple line. So the	10:30:29
11	purple line -- so that's where we are after, you know,	10:30:38
12	approximately a hundred years of no pumping in the basin.	10:30:42
13	And so we have a -- you know, we've developed a seaward	10:30:50
14	gradient.	10:30:56
15	And so the purple line, you could see, is, you	10:30:58
16	know, similar to or generally seaward of the dashed line.	10:31:05
17	So, you know, for example, if we, you know, look	10:31:11
18	in the area around MW-7, you see some difference in the	10:31:16
19	dashed line and the solid line. Or even if you look up	10:31:24
20	more to the north, in the Castroville area, you see a	10:31:29
21	slight difference there as well.	10:31:35
22	And so what this is showing is that, under a	10:31:38
23	reverse gradient after a hundred years, with the slant	10:31:45
24	wells pumping, we're still seeing a neutral to beneficial	10:31:52
25	result with the slant wells pumping.	10:32:00

1 Q. Why did you run this scenario? 10:32:04

2 A. So the reason I ran this scenario is the -- 10:32:07
3 the other -- the opposing experts for MCWD and Marina have 10:32:10
4 been saying throughout the AHO proceedings that, you know, 10:32:20
5 we need to look at what, you know, conceivably could 10:32:24
6 happen under SGMA with a reduction in pumping. 10:32:29

7 So even though, in my opinion -- and what 10:32:34
8 they're really spending their efforts on is more of the 10:32:37
9 extraction-barrier-related project and management action, 10:32:41
10 this is another potential management action that, you 10:32:47
11 know, is listed and demand management. 10:32:50

12 Although, again, I want to be clear. This is a 10:32:54
13 very extreme version of that, because it eliminates all 10:32:57
14 pumping. So things are happening much faster than they 10:33:00
15 would with -- you know, if you only reduced pumping 10 10:33:04
16 percent or 30 percent, you know, it wouldn't happen this 10:33:08
17 quickly in terms of the migration back towards the coast. 10:33:13
18 But I wanted to use an extreme example to look at this. 10:33:17

19 So, yeah -- so going back to -- we're roughly at 10:33:29
20 a hundred years under this extreme example, and it's 10:33:33
21 showing that, again, the project slant well pumping would 10:33:37
22 have a neutral to beneficial impact. 10:33:40

23 Q. For the upper 180? 10:33:45

24 A. Yeah. So this is for the upper 180 -- 10:33:49
25 sorry -- the lower 180-foot aquifer. 10:33:52

1	Q. My apologies.	10:33:56
2	Let's look at Exhibit 911.002, Figure 14-B.	10:33:57
3	A. Actually, we didn't --	10:34:03
4	Q. You want to go back?	10:34:05
5	A. Yeah.	10:34:06
6	Q. Okay. Let's go back at 911, Page 001.	10:34:06
7	What would you like to say, sir?	10:34:11
8	A. So the -- so the gold line represents, you	10:34:14
9	know, where we are after, approximately, 200 years with	10:34:21
10	the slant well -- with or without the slant wells.	10:34:28
11	Q. If someone is reading this transcript	10:34:35
12	200 years from now, what do they conclude from that?	10:34:39
13	A. So it's just -- again, it's showing that	10:34:42
14	you generally have a -- well, at this point, we -- there's	10:34:46
15	some areas where we start to see that it's a little bit	10:34:55
16	further inland with the slant well pumping. But at this	10:35:00
17	point, the seawater intrusion has gotten back so close to	10:35:04
18	the coast that most of the basin has freshwater to pump	10:35:08
19	now.	10:35:12
20	And again, this is sort of an extreme scenario	10:35:13
21	after 200 years. And so it's basically showing that, you	10:35:17
22	know, the project is not going to have a detrimental	10:35:29
23	effect on the basin.	10:35:32
24	Q. May we now go to Figure 14-B, found on 911,	10:35:32
25	Page 2?	10:35:40

1	A. Yes.	10:35:41
2	Q. This figure shows the same analysis, but as	10:35:41
3	it relates to the 400-foot aquifer?	10:35:44
4	A. Yes.	10:35:45
5	Q. With that, what does this tell us?	10:35:46
6	A. So it's similar -- if we -- yeah, so the	10:35:50
7	legend is the same in terms of the -- what I had described	10:35:59
8	earlier in terms of what the different colors represent,	10:36:09
9	the solid lines, the dashed lines, and the timestamps on	10:36:13
10	each.	10:36:17
11	Q. Okay. Let's go back to the main figure.	10:36:19
12	So, again, what does this tell us would happen	10:36:23
13	over a certain passage of time with the reverse of the	10:36:26
14	gradient?	10:36:29
15	A. So, again, we're starting with the -- the	10:36:32
16	red dashed line being, you know, where we are as our	10:36:38
17	starting point, and then the purple line shows us where we	10:36:45
18	are about, you know, a hundred years in.	10:36:53
19	And so, again, we're -- you know, you're	10:36:59
20	generally seeing the solid line seaward of the dashed line	10:37:02
21	or the same.	10:37:08
22	And then the gold is, again, about 200 years	10:37:11
23	down the road.	10:37:17
24	Q. So whether -- after 200 years or some	10:37:20
25	shorter period of time, the project will not cause any	10:37:25

1	detrimental effects as it relates to seawater intrusion if	10:37:28
2	the gradient is reversed? Is that the punch line?	10:37:30
3	A. Yeah. And again, it's -- it's a very	10:37:34
4	extreme example of, you know, all this -- because, if	10:37:37
5	there were pumping reductions in the basin, they obviously	10:37:44
6	wouldn't, you know -- it wouldn't be all the pumping. So	10:37:47
7	this is making things happen even faster than they would	10:37:51
8	otherwise happen.	10:37:56
9	Q. Let's assume that all the pumping isn't	10:37:57
10	shut off, but just a portion of it. How would that affect	10:38:00
11	your analysis?	10:38:04
12	A. So it, basically -- you'd get the same	10:38:06
13	general results. They would just happen more slowly.	10:38:09
14	Q. Did you hear Ms. Nelson's testimony about	10:38:15
15	the seawater intrusion model predicting seawater intrusion	10:38:19
16	at MCWD's wells?	10:38:23
17	A. Yes.	10:38:25
18	Q. Okay. She testified about that in court.	10:38:25
19	Do you recall that?	10:38:32
20	A. Yes.	10:38:32
21	Q. First of all, does that change any of your	10:38:32
22	opinions?	10:38:35
23	A. No.	10:38:35
24	Q. Do you agree with her?	10:38:35
25	A. Well, I don't agree with exactly how she	10:38:41

1	described it and what the implications of that would be.	10:38:43
2	Q. What do you think she said, and what do you	10:38:45
3	disagree with?	10:38:48
4	A. Well, basically, she said that there was	10:38:49
5	seawater intrusion, that the -- so the seawater intrusion	10:38:51
6	model that I'm applying here shows seawater intrusion in	10:38:54
7	the MCWD wells, you know, under current conditions, like	10:38:59
8	as of today.	10:39:02
9	Q. And do you agree with that?	10:39:04
10	A. But the -- well, I have to finish what she	10:39:06
11	said.	10:39:12
12	So she said that the model shows seawater	10:39:12
13	intrusion in the MCWD wells as of today, and therefore,	10:39:20
14	it's basically not useful for any of the model runs and	10:39:26
15	simulations and analyses that I'm doing.	10:39:31
16	And so, first of all --	10:39:34
17	MR. BROCHARD: Objection; move to strike;	10:39:37
18	nonresponsive.	10:39:40
19	The question was: Do you agree with that?	10:39:40
20	THE COURT: He also said he had to finish what	10:39:42
21	she said -- meaning the premise -- before he could answer	10:39:46
22	that.	10:39:49
23	So it was -- basically, he was telling counsel	10:39:51
24	you're interrupting me. Let me finish. So this is in	10:39:54
25	response to the prior question.	10:39:58

1	BY MR. BETZ:	10:40:02
2	Q. Thank you for saying it much nicer,	10:40:02
3	Mr. Leffler.	10:40:04
4	But have you articulated the comment that you're	10:40:04
5	going to agree or disagree with?	10:40:07
6	A. Yes.	10:40:08
7	Q. Okay. With that, do you agree or disagree	10:40:09
8	with it?	10:40:11
9	A. I disagree.	10:40:12
10	Q. Why?	10:40:13
11	A. Okay. So, first of all, the -- so we have	10:40:13
12	three wells in particular we're talking about here,	10:40:21
13	MCWD 29, 30, and 31. And then we have the two main	10:40:26
14	aquifers, the 180-foot aquifer and the 400-foot aquifer.	10:40:32
15	And the only seawater intrusion that we have is shown in	10:40:38
16	one of the wells that's closest to the seawater-intrusion	10:40:46
17	front in the 180-foot aquifer.	10:40:49
18	So that's only -- first of all, only one of the	10:40:51
19	three wells is showing seawater intrusion, and only one of	10:40:56
20	the two aquifers that it's screened in.	10:40:59
21	Q. Which ones?	10:41:04
22	A. It's the 180-foot aquifer.	10:41:05
23	Q. Please continue.	10:41:08
24	A. And so I -- I need to back up and talk a	10:41:10
25	little bit about the model itself and what it's	10:41:13

1	simulating.	10:41:18
2	So the seawater intrusion model is calibrated to	10:41:19
3	both groundwater levels and the seawater-intrusion front	10:41:24
4	and how that seawater-intrusion front migrates over time.	10:41:29
5	So in any model calibration and comparison,	10:41:34
6	you're not going to match your targets exactly.	10:41:42
7	So, for example, with groundwater levels, the	10:41:46
8	model might simulate an elevation of 5 feet above mean sea	10:41:50
9	level, but the observed data says it's 4 feet.	10:41:57
10	So there's a slight difference.	10:42:00
11	And so -- but that's just -- that's the way it	10:42:03
12	works. And as long as that difference is relatively	10:42:07
13	small, the model's considered well-calibrated.	10:42:10
14	So specific to this is their calibration to the	10:42:14
15	seawater-intrusion front, and most specifically, to their	10:42:20
16	calibration to the seawater-intrusion front under current	10:42:23
17	conditions.	10:42:25
18	And if you look at that, it's actually quite	10:42:26
19	well-calibrated to the seawater-intrusion front, meaning,	10:42:32
20	the observed seawater-intrusion front compared to the	10:42:35
21	model simulated seawater-intrusion front under current	10:42:38
22	conditions.	10:42:42
23	However, there are differences. So in some	10:42:43
24	areas, the model may be simulating the seawater-intrusion	10:42:50
25	front under current conditions being a little further	10:42:53

1 inland, and in other areas, it may simulate it as being a 10:42:55
2 little bit more seaward, and in some areas, it may 10:42:59
3 simulate it exactly. 10:43:03

4 But overall, if you look across that comparison, 10:43:05
5 it's -- it models the overall seawater-intrusion front 10:43:10
6 pretty well. 10:43:14

7 And in the area of the MCWD wells, the 10:43:15
8 seawater-intrusion front is fairly close to those wells 10:43:20
9 under the current conditions, like within, I think, a 10:43:24
10 quarter to a half-mile or so. 10:43:29

11 And so the fact that, you know, the 180-foot 10:43:31
12 aquifer seawater-intrusion front just kind of encompasses 10:43:38
13 one of those MCWD wells does not mean it's poorly 10:43:42
14 calibrated. It's just -- in that particular area, it's a 10:43:48
15 little further inland than the observed data indicate. 10:43:51

16 So, first of all, I just want to clarify that it 10:43:56
17 doesn't mean the model's not well-calibrated. In fact, 10:44:01
18 the model is well-calibrated to the seawater-intrusion 10:44:04
19 front. 10:44:08

20 And then the second point is that what I am 10:44:08
21 using the model for is the relative difference between a 10:44:16
22 simulation with the slant wells and without the slant 10:44:21
23 wells. 10:44:25

24 So, whether a well starts with, say, a chloride 10:44:25
25 concentration of 600 milligrams per liter, which puts it 10:44:30

1	within the seawater-intrusion front, or, say,	10:44:35
2	400 milligrams per liter, which would put it outside the	10:44:38
3	seawater-intrusion front, does not impact my use of the	10:44:44
4	model and my purpose in looking at the relative difference	10:44:49
5	of, you know, where do we end up with the slant wells	10:44:53
6	versus without.	10:44:58
7	And so her comment was that, you know, it	10:45:00
8	somehow affects the reliability or use of the model	10:45:07
9	because of this occurrence.	10:45:10
10	But, in my opinion, it doesn't really affect it	10:45:12
11	at all because I am interested in the relative difference	10:45:17
12	of two scenarios.	10:45:22
13	Q. Thank you.	10:45:23
14	Going back to Exhibit 844 after the break.	10:45:24
15	THE COURT: It's 10:45. It's an appropriate	10:45:31
16	juncture at which to take our second midmorning break.	10:45:34
17	(Recess taken from 10:45 a.m. through	
18	10:59 a.m.)	10:59:41
19	THE COURT: Okay. Back on the record.	10:59:41
20	It appears all counsel are present.	10:59:42
21	Mr. Leffler is still on the stand, still under	10:59:44
22	oath, and need not be re-sworn.	10:59:50
23	Mr. Betz, you can resume.	10:59:50
24	MR. BETZ: Thank you.	10:59:52
25	////	

1	BY MR. BETZ:	10:59:52
2	Q. Turning back to Exhibit 844, on Page 10, I	10:59:53
3	wish to discuss your bases for opinion seven as listed in	10:59:57
4	Row 7k.	11:00:11
5	First, let's talk about the document on which	11:00:11
6	you relied. What is it?	11:00:13
7	A. So this document -- well, under the	11:00:15
8	reference, it says "SGMA reverse gradient Weiss 2020-SS."	11:00:17
9	And so, again, in terms of acronyms, SGMA is	11:00:21
10	Sustainable Groundwater Management Act, and then SS,	11:00:27
11	steady state.	11:00:33
12	Q. That's a document we just looked at before	11:00:34
13	the break? Or this morning?	11:00:37
14	A. Actually, no. This is a new -- I don't	11:00:43
15	think we've looked at this one this morning.	11:00:46
16	Q. And describe. What is that document?	11:00:47
17	A. So this is the -- so Weiss and Associates	11:00:50
18	are the independent hydrogeologic consultants retained by	11:00:56
19	the California Coastal Commission. I think we did talk	11:01:04
20	previously about the fact that they did some modeling work	11:01:06
21	on behalf of California Coastal Commission, and this	11:01:10
22	document refers to their report.	11:01:16
23	Q. I got it.	11:01:17
24	So, when you talk about the SGMA reverse	11:01:18
25	gradient, that's what we just discussed?	11:01:20

1	A.	Right. It addresses that, right.	11:01:23
2	Q.	Can you please read your comment and tell	11:01:27
3		us what you mean by that.	11:01:30
4	A.	So this is a quote, and it reads, "Decades	11:01:32
5		or a few centuries," end quote, to achieve stated OWP	11:01:41
6		under reverse gradient in 1-A.	11:01:48
7	Q.	That comes from a document you're referring	11:01:51
8		to?	11:01:53
9	A.	Yes.	11:01:53
10	Q.	Let's take a look at it. That's	11:01:53
11		Exhibit 608.	11:01:56
12	THE COURT:	Which document that you're referring	11:01:57
13		to, the Weiss study?	11:01:59
14	THE WITNESS:	Yes, this is the Weiss 2020	11:02:00
15		modeling study.	11:02:04
16	THE COURT:	Thank you.	11:02:10
17	BY MR. BETZ:		11:02:10
18	Q.	And that document is our trial Exhibit 608,	11:02:11
19		the first page of which is on the screen; is that correct,	11:02:14
20		sir?	11:02:17
21	A.	Yes.	11:02:17
22	Q.	Dated July 10, 2020?	11:02:17
23	A.	Yes.	11:02:19
24	Q.	Let's look at the Page to which you refer,	11:02:24
25		which I believe is Page 608, Page 21.	11:02:27

1	Is this the page you're referring to?	11:02:31
2	A. Yes, it looks like it.	11:02:37
3	Q. I think the reference bleeds over to the	11:02:38
4	second page, meaning 608, Page 21 and 22.	11:02:41
5	A. Yes.	11:02:45
6	Q. Okay. And you're referring to Section 4.3;	11:02:46
7	is that correct?	11:02:52
8	A. Yes.	11:02:52
9	Q. Okay. I'm going to read this slowly,	11:02:52
10	starting from Page 21, and then we'll go over to 22.	11:02:59
11	It reads, in part, "However, the 74.9 value	11:03:02
12	generated by the steady-state model would not be seen for	11:03:10
13	many decades, or even centuries, in real world conditions,	11:03:14
14	period. The steady-state model does not consider the	11:03:19
15	large volume of saline water in storage in the 180-foot	11:03:22
16	aquifer," open parentheses, "Layer 4," close parentheses,	11:03:27
17	"that would have to be replaced by freshwater before the	11:03:31
18	OWP at the pumping well field would begin to decrease,"	11:03:35
19	comma, "and approach the 74.9 OWP calculated by the	11:03:39
20	model."	11:03:44
21	MR. BETZ: Please turn to the next page,	11:03:46
22	Mr. Terry.	11:03:48
23	BY MR. BETZ:	
24	Q. The top of which reads as follows,	11:03:49
25	"Assuming that SGMA could create a flat gradient or even a	11:03:51

1	pronounced seawater" -- strike that. Let me start from	11:03:58
2	the top again.	11:04:05
3	It provides, "Assuming that SGMA could create a	11:04:05
4	flat gradient or even a pronounced seaward gradient,	11:04:09
5	comma, for the initial decades after this condition is	11:04:13
6	achieved, the project pumping wells would capture the	11:04:16
7	existing saline water in the 180-foot aquifer," open	11:04:20
8	parentheses, "Layer 4," close parentheses, "and the OWP	11:04:23
9	would likely be at or close to the 72" -- "92.7 baseline	11:04:28
10	value," period.	11:04:35
11	"After many decades, or a few centuries, when	11:04:37
12	the 180-foot aquifer becomes filled with freshwater, this	11:04:40
13	water would flow out to sea under non-pumping conditions	11:04:44
14	or would be captured by the pumping well field if	11:04:48
15	operating, period. Only under these conditions would the	11:04:54
16	74.9 OWP occur."	11:04:58
17	Do you see that?	11:05:01
18	A. Yes.	11:05:02
19	Q. Okay. Summarize, how does that support	11:05:02
20	your opinion?	11:05:04
21	A. So, I guess, just to back up and relate it	11:05:06
22	to the previous item, so the seawater intrusion model is a	11:05:11
23	transient model. So you're able to simulate -- you know,	11:05:16
24	it incorporates time. And you can look at what's	11:05:21
25	happening at different -- you know, certain time steps in	11:05:25

1 your model simulation. 11:05:28

2 So, say, after 36 years, or 50 years, or a 11:05:29

3 hundred years, a steady-state model, which Weiss is using 11:05:32

4 here, you don't have that time element, so you don't -- 11:05:38

5 you just don't have that. 11:05:44

6 So what they are talking about here is, you 11:05:46

7 know, their estimate of, you know, essentially talking 11:05:53

8 about if you're under a reverse gradient -- 11:05:55

9 THE COURT REPORTER: I'm sorry. "If you're 11:06:03

10 under a" --

11 THE WITNESS: Reverse gradient -- sorry. 11:06:05

12 Reverse gradient, meaning, changing from landward to 11:06:06

13 seaward; that, basically, it would take a long time. And 11:06:08

14 they characterize it as decades to centuries to see 11:06:12

15 certain changes; in this case, in the OWP. 11:06:18

16 BY MR. BETZ: 11:06:22

17 Q. Any other way does that support your 11:06:22

18 opinion? 11:06:27

19 A. Yeah, it just further supports that, you 11:06:27

20 know, the project won't -- you know, won't have a 11:06:30

21 detrimental effect on the basin. 11:06:33

22 Q. Given the discussion of SGMA here, do you 11:06:37

23 believe the project will interfere with the seawater 11:06:39

24 intrusion barrier project you discussed earlier? 11:06:42

25 A. No. 11:06:45

1 Q. Why? 11:06:46

2 A. So I think we've heard previous testimony 11:06:48
3 in this court hearing from I think it was -- it may have 11:06:52
4 been Mr. Tietze, that the slant well pumping would 11:06:59
5 interfere with the extraction barrier or the brackish 11:07:04
6 water restoration project. 11:07:09

7 And, in reality, it will work well in 11:07:13
8 conjunction with that project. And I think he had cited 11:07:17
9 one of the reasons -- I think he said that the -- so the 11:07:24
10 extraction barrier project, or the brackish water 11:07:30
11 restoration project, will be pumping from the 180 and 11:07:33
12 400-foot aquifers. 11:07:36

13 And he made a statement that this project would 11:07:39
14 only -- would not pump from the full extent of the 11:07:44
15 180-foot aquifer. But, in fact, this project will pump 11:07:46
16 from the full extent, meaning, the full thickness or 11:07:52
17 saturated thickness of the 180-foot aquifer. 11:07:55

18 And so, in my opinion, what would happen is that 11:07:59
19 brackish water restoration project has a line of wells a 11:08:05
20 little bit inland of where these slant wells would be for 11:08:09
21 the Monterey Peninsula Water Supply Project. 11:08:13

22 And to the extent that those wells, the line of 11:08:17
23 wells that are screened in the 180-foot aquifer, I believe 11:08:21
24 they would actually be able to reduce the number of wells 11:08:25
25 they needed because of the slant wells would extract that 11:08:28

1	water from the 180-foot aquifer, and they would not need	11:08:33
2	to put in one or two of their wells in the 180-foot	11:08:37
3	aquifer that they're currently planning on because of this	11:08:42
4	project.	11:08:45
5	So, again, it would -- actually, not even would	11:08:46
6	it not be detrimental to the brackish water restoration	11:08:50
7	project, it would be beneficial to it.	11:08:54
8	Q. Will the Monterey Peninsula Water Supply	11:08:59
9	Project interfere with the proposed demand management	11:09:05
10	actions you heard about?	11:09:08
11	A. No.	11:09:09
12	Q. Why not?	11:09:10
13	A. Because, again, the -- the slant wells will	11:09:11
14	serve to -- similar to the extraction barrier wells	11:09:17
15	planned by the GSA, on the one hand they would help to	11:09:22
16	prevent existing seawater intrusion from coming in. And	11:09:26
17	then the other hand, they would help to pull back the	11:09:31
18	seawater-intrusion front, as described, I think, in one of	11:09:34
19	the documents we looked at earlier.	11:09:41
20	Q. And what is your level of certainty as it	11:09:43
21	relates to the seventh opinion?	11:09:46
22	A. Very certain. And within -- you know, the	11:09:49
23	standards of our profession and how certain we can be.	11:09:55
24	Q. I now wish to turn to opinions you've had	11:09:58
25	about vernal ponds.	11:10:01

1	Were you asked to formulate opinions about	11:10:03
2	vernal ponds and the project's alleged effect on vernal	11:10:06
3	ponds?	11:10:11
4	A. Yes.	11:10:11
5	Q. Okay. Have you formulated such opinions?	11:10:11
6	A. Yes.	11:10:14
7	Q. Okay. And have you similarly created a	11:10:14
8	chart that sets forth your opinions with the bases?	11:10:18
9	A. Yes.	11:10:22
10	Q. Okay. Let's take a look at Exhibit 898.	11:10:22
11	Is this the first page of your summary of	11:10:31
12	opinions concerning vernal ponds?	11:10:37
13	A. Yes.	11:10:38
14	Q. Okay. I want to take you to look at	11:10:38
15	another exhibit, which is Exhibit 902.	11:10:40
16	Is that the same exhibit, except with trial	11:10:43
17	exhibit reference numbers?	11:10:49
18	A. Yes.	11:10:50
19	Q. Please tell the Court, what is your opinion	11:10:52
20	as it relates to vernal ponds? Or your first opinion.	11:10:55
21	A. "The seven wetlands," slash, "ponds	11:11:00
22	described in the Formation Environmental TM, dated	11:11:05
23	April 13, 2020, are hydrogeologically disconnected from	11:11:09
24	the coastal Dune Sand Aquifer that will be screened in the	11:11:14
25	MPWSP slant wells."	11:11:19

1	Q. Let's start.	11:11:21
2	What is the Formation Environmental TM dated	11:11:22
3	4/13/2020? And why did you reference it here?	11:11:26
4	A. Because that's the document prepared by	11:11:29
5	Mr. Tietze that describes the seven ponds that he had	11:11:33
6	indicated were of concern with regard to this issue.	11:11:43
7	Q. Under Row 1a, you state your first bases.	11:11:48
8	Please tell us what your first bases is, and explain it.	11:11:52
9	A. So the first bases is that, "The	11:11:56
10	development of the paleosols, evaporative deposits, hard	11:11:59
11	pan, and/or cattle grazing have created restrictive low	11:12:04
12	permeability layers" -- "layer or layers in the wetlands,"	11:12:07
13	slash, "pond areas."	11:12:11
14	Q. What do you mean by that?	11:12:12
15	A. So --	11:12:18
16	THE COURT: Paleosols -- for the court reporter,	11:12:18
17	paleosols is P-A-L-E-O-S-O-L-S.	11:12:21
18	MR. BETZ: Yes.	11:12:29
19	THE COURT: Okay. Thank you.	11:12:30
20	BY MR. BETZ:	11:12:33
21	Q. What is a paleosols?	11:12:33
22	A. That's an old soil deposit. In geologic	11:12:39
23	time, it was formed thousands or even a million years ago,	11:12:44
24	that then subsequently becomes sort of buried, and so is	11:12:49
25	existing in the shallow subsurface.	11:12:55

1	Q. What are evaporative deposits?	11:12:56
2	A. So evaporative deposits are when you have	11:13:01
3	standing water that has constituents in it. So total	11:13:07
4	dissolved solids. And that water evaporates and it leaves	11:13:12
5	the salts behinds. Those are evaporative deposits.	11:13:20
6	Q. What is hard pan?	11:13:23
7	A. So hard pan is a -- can be a common	11:13:24
8	occurrence in different places in California. So, again,	11:13:31
9	it's a shallow subsurface layer that do -- and this,	11:13:33
10	again, occurs over geologic time over many years where	11:13:42
11	water seeps down and leaves deposits of constituents, that	11:13:45
12	it then sort of hardens and becomes very low permeability	11:13:51
13	in the subsurface.	11:13:58
14	Q. Okay. Now, please explain how your first	11:13:59
15	bases supports your opinion.	11:14:03
16	A. So we have these pond areas. And then	11:14:12
17	within each of these ponds you have, you know, one or more	11:14:14
18	of these processes operating to create a low permeability	11:14:22
19	or restrictive layer in the shallow subsurface. So it	11:14:27
20	might be, you know, three feet down, or four feet down, or	11:14:34
21	five feet down.	11:14:38
22	You know, so it's in, like, say, the upper ten	11:14:39
23	feet, but it may or may not be right at the surface. It	11:14:42
24	could be, you know, at the surface or it could be a few	11:14:47
25	feet down.	11:14:53

1 Q. So, again, tell us -- or explain to us, 11:14:54
2 how does that relate to your opinion? 11:14:56

3 A. So the way it relates to the opinion is 11:14:58
4 that this shallow restrictive low permeability layer that 11:15:08
5 forms, when rainfall occurs or run off goes into these 11:15:12
6 sort of depression areas or these pond areas, it basically 11:15:17
7 holds the water there, and it doesn't seep vertically 11:15:20
8 downward. So then it, basically, holds the water in that 11:15:28
9 pond area. 11:15:33

10 Q. So how does that relate to the project and 11:15:33
11 whether it will effect vernal ponds or not? 11:15:35

12 A. So, if -- and I'm not necessarily saying 11:15:40
13 this is the case at all these ponds. But -- so beneath 11:15:44
14 this layer, if you have the -- say the coastal Dune Sand 11:15:51
15 Aquifer where pumping is occurring from the proposed slant 11:15:56
16 wells, you may see a certain amount of drawdown within 11:16:00
17 that coastal Dune Sand Aquifer that's underneath of this 11:16:05
18 shallow restrictive low permeability layer. 11:16:12

19 And if this layer is present, then the pond 11:16:17
20 water, or the very shallow water that's maybe just beneath 11:16:23
21 the surface of the ponds in that very shallow soil, won't 11:16:27
22 see the effect of that drawdown because of this layer. 11:16:31

23 Q. And you say, If the layer is there. Do you 11:16:33
24 believe the layer is there? 11:16:36

25 A. Yes. 11:16:37

1	Q.	That's your opinion?	11:16:37
2	A.	Yes.	11:16:38
3	Q.	Okay. And that's based on the number of	11:16:39
4		documents listed under the reference; is that correct?	11:16:41
5	A.	Yes.	11:16:44
6	Q.	Okay. Let's just briefly look at them.	11:16:45
7		Can we take a look at the first one,	11:16:47
8		Exhibit 612.	11:16:51
9		Just tell us: What is Exhibit 612?	11:16:51
10	A.	So this is a document prepared by two	11:16:58
11		consulting firms, GeoScience and AECOM, about looking at	11:17:01
12		data to -- looking at how the subsurface aquifer drawdown	11:17:07
13		we're talking about may or may not influence surface water	11:17:16
14		in wetlands.	11:17:21
15	Q.	Specifically, I think you relied on	11:17:22
16		Pages 14 and 15 and 34 and 35?	11:17:24
17	A.	Yes.	11:17:26
18	Q.	Okay. Let's go back to the documents you	11:17:30
19		relied on to support Bases 1a.	11:17:33
20	MR. BETZ:	Sorry, Mr. Terry. Can you go back to	11:17:38
21		that.	11:17:40
22		Exhibit 616, can we turn to that, please.	11:17:45
23	BY MR. BETZ:		
24	Q.	What is 616, and how did you rely upon it?	11:17:51
25	A.	So this is a summary of some initial	11:17:57

1	results for evaluation of hydrogeologic conditions at the	11:18:03
2	Armstrong Ranch Ponds.	11:18:09
3	Q. Okay. So what does this tell us that you	11:18:11
4	relied upon?	11:18:13
5	A. So this is the -- these are the ponds that	11:18:14
6	are closest to the proposed slant wells, and there's, I	11:18:19
7	think, certain pages in this document that speak to the	11:18:25
8	shallow restrictive soil layer.	11:18:28
9	Q. Are those Pages 10, 11, and 12?	11:18:33
10	A. Yes.	11:18:35
11	Q. Okay. Moving back to Exhibit 902.	11:18:36
12	You also relied upon Exhibit 622; is that	11:18:44
13	correct?	11:18:48
14	A. Yes.	11:18:48
15	MR. BETZ: Mr. Terry, can you please go to	11:18:49
16	Exhibit 622.	11:18:52
17	BY MR. BETZ:	
18	Q. Is this the document you relied upon as	11:19:02
19	well?	11:19:04
20	A. Can we go to the next page?	11:19:04
21	Q. You bet.	11:19:07
22	A. Or next page.	11:19:08
23	MR. BETZ: Mr. Terry, can you please do so.	11:19:10
24	THE WITNESS: Okay. Yes.	11:19:12
25	BY MR. BETZ:	

1 Q. Okay. I'm sorry. 11:19:15

2 So this is -- what are you relying upon as it 11:19:15

3 relates to Exhibit 622 to support your opinion in the 11:19:18

4 bases set forth in 1a? 11:19:24

5 A. So, again, there's certain portions of this 11:19:26

6 document that speak to the occurrence of these -- of the 11:19:29

7 restrictive low permeability layer. 11:19:36

8 Q. Let's take a look at 622, Pages 5 and 6. 11:19:39

9 This is the table of contents of this document; 11:19:45

10 correct? 11:19:49

11 A. Yes. 11:19:49

12 Q. Okay. Is there anything specific that you 11:19:50

13 relied upon in this document we should look at? 11:19:52

14 A. Well, I believe there are some pages 11:19:56

15 referenced in the summary table from this document. 11:20:01

16 Q. Let's take a look briefly at Page 8. 11:20:06

17 What summary table are you referring to? 11:20:12

18 A. Well, this is the table of contents. I 11:20:19

19 think I may have been referring to -- I don't know if it 11:20:26

20 could be actual Page 8 of the document. 11:20:31

21 Q. We'll come back to it. 11:20:40

22 MR. BETZ: And the last -- let's go back to the 11:20:46

23 summary, Mr. Terry. That's Page 902. 11:20:47

24 BY MR. BETZ:

25 Q. You also relied upon Exhibit 644; is that 11:20:53

1	correct?	11:20:59
2	A. Yes.	11:20:59
3	Q. Okay. What is exhibit --	11:20:59
4	THE COURT: You said Page 902. Is it	11:21:01
5	Exhibit 902 or Page 902?	11:21:05
6	MR. BETZ: I was referring to Exhibit 902.	11:21:08
7	Thank you.	11:21:11
8	THE COURT: Okay.	11:21:11
9	BY MR. BETZ:	11:21:12
10	Q. Which lists your summary of opinions and	11:21:12
11	bases for vernal ponds.	11:21:14
12	And specifically, as it relates to your first	11:21:16
13	bases, I understand you also relied upon Exhibit 644;	11:21:19
14	correct?	11:21:24
15	A. Yes.	11:21:24
16	Q. Okay. Let's turn to Exhibit 644.	11:21:24
17	What is Exhibit 644, and how did you rely upon	11:21:31
18	it to support Bases 1a?	11:21:34
19	A. So this is a report prepared by GeoScience	11:21:37
20	which describes the results of the aquifer test at the	11:21:43
21	Armstrong Ranch Ponds. And again, there are some pages	11:21:49
22	within this document that speak to the occurrence of a	11:21:53
23	restrictive low permeability layer.	11:21:57
24	Q. Let's go back to Exhibit 902.	11:22:00
25	To the extent you relied on specific pages in	11:22:05

1 any of the documents we referenced, are those pages listed 11:22:08
2 in your summary? 11:22:12

3 A. Yes, they are. 11:22:13

4 Q. Concluding section, 1a, you also relied on 11:22:17
5 something called Rains, et al., 2005; is that correct? 11:22:21

6 A. Yes. 11:22:24

7 Q. Let's turn to it. Please go to 11:22:24
8 Exhibit 904. 11:22:29

9 What is this document, and how did you rely upon 11:22:31
10 it? 11:22:34

11 A. So this is a journal article that was 11:22:35
12 written by the professors that are listed there, and I 11:22:43
13 think there's a certain portion of this document that I 11:22:51
14 referred to that's listed in the summary table. 11:22:58

15 Q. If we can turn back to Exhibit 902. In 11:23:02
16 support of your opinion, let's look at 2b. 11:23:11

17 Please tell us your second basis to support your 11:23:18
18 opinion as summarized in opinion bases 2b, which we will 11:23:21
19 show in a moment. I'm sorry. 1b. 1b. These state your 11:23:25
20 second bases as identified in Row 1b. 11:23:38

21 A. So this 1b -- so under the Comments column, 11:23:41
22 it says, "Aquifer test results show no influence on 11:23:45
23 shallow perched zone from pumping," slash, "drawdown, in 11:23:49
24 underlying coastal Dune Sand Aquifer at Armstrong Ranch 11:23:54
25 Ponds." 11:24:01

1 Q. What do you mean by that, and how does that 11:24:01
2 support your opinion? 11:24:03

3 A. So the -- there was a pumping test 11:24:06
4 conducted -- well, I guess -- maybe back up a little bit. 11:24:10

5 So in the Armstrong Ranch Ponds, which, again, 11:24:15
6 is the pond -- of the seven ponds, it's the ones that's 11:24:19
7 closest to the slant wells. And so, as part of the 11:24:24
8 investigation, they installed several wells or piezometers 11:24:29
9 to measure water levels and water quality, and then they 11:24:36
10 put in a pumping well. So, basically, a larger diameter 11:24:41
11 well that you could put pump in. 11:24:47

12 And then they conducted an aquifer test, which 11:24:51
13 is, basically, you put a pump in the well, and you pump 11:24:56
14 it, in this case, for several days, and then you observe 11:25:00
15 how the water levels change in the different zones. 11:25:04

16 And then, from review and analysis of that data, 11:25:09
17 you can, you know, make a conclusion or determination on 11:25:14
18 how pumping from, in this case, the underlying coastal 11:25:18
19 Dune Sand Aquifer, which is the same aquifer the slant 11:25:24
20 wells would pump from, and how that influences or changes 11:25:28
21 groundwater levels in the -- within and above this 11:25:33
22 restrictive layer. 11:25:38

23 Q. Okay. And how does that support your 11:25:40
24 opinion? 11:25:43

25 A. Well, the end result of this analysis was 11:25:43

1 that when they -- and this pumping well is located right 11:25:47
2 at the ponds or right beneath the ponds, so it pumps them 11:25:52
3 right beneath the ponds. And what the finding was is that 11:25:56
4 there was no drawdown observed in the -- there were 11:26:01
5 multiple-level piezometers above the coastal Dune Sand 11:26:06
6 Aquifer within that pond area. 11:26:16

7 And they did not observe any drawdown within 11:26:17
8 those piezometers, which indicates the effectiveness of 11:26:20
9 this restrictive low-permeability layer in preventing 11:26:24
10 communication between the coastal Dune Sand Aquifer and 11:26:33
11 the overlying pond perched layers -- perched zones. 11:26:35

12 Q. Did you say the underlying perched zones? 11:26:47

13 A. Okay. Maybe let me restate it. 11:26:50

14 So it indicates that pumping from the underlying 11:26:52
15 coastal Dune Sand Aquifer is not impacting the 11:26:58
16 groundwater -- the shallow perched groundwater in the 11:27:07
17 restrictive and layers above that, beneath the ponds. 11:27:11

18 Q. Please turn back to Exhibit 902. 11:27:18

19 As it relates to your second bases, you rely on 11:27:24
20 a document called GeoScience 7722, otherwise marked here 11:27:28
21 as Exhibit 644; correct? 11:27:31

22 A. Yes. 11:27:35

23 Q. Please show Exhibit 644. 11:27:35

24 What is this document? 11:27:43

25 A. So this is the report prepared by 11:27:44

1	GeoScience documenting the results of the pumping test or	11:27:51
2	aquifer test.	11:27:54
3	Q. Please go back to 902.	11:27:55
4	Again the pages on which you relied for the	11:28:01
5	referenced exhibits are listed in the column captioned	11:28:03
6	"Pages"; correct?	11:28:09
7	A. Yes.	11:28:10
8	Q. Please go to opinion Bases 1c.	11:28:18
9	What is your bases 1c? Please read it, and	11:28:26
10	please explain to us how it supports your overall opinion.	11:28:28
11	A. So 1-C states that "Rainfall, fog, and	11:28:35
12	surface water runoff, open parentheses, from natural,	11:28:40
13	urban, and agricultural sources, close parentheses,	11:28:43
14	provide sufficient water to maintain wetlands and pond	11:28:47
15	vegetation."	11:28:52
16	Q. Explain that to us. How does that --	11:28:54
17	please explain that to us. How does that support your	11:28:57
18	opinion?	11:29:01
19	A. Yes.	11:29:01
20	So backing up maybe a little bit is -- so the	11:29:02
21	fundamental issue here is whether we have a	11:29:09
22	groundwater-dependent ecosystem. And more specifically,	11:29:14
23	whether the plants in these ponds are relying on	11:29:20
24	underlying groundwater from the coastal Dune Sand Aquifer	11:29:27
25	or whether they are relying on other sources of water.	11:29:32

1	And so what this basis states is that, if you	11:29:38
2	look at the available water from rainfall and fog and	11:29:46
3	surface water runoff within the sort of watersheds of	11:29:51
4	these pond areas, that that provides sufficient water to	11:30:00
5	maintain the wetlands and pond vegetation. Therefore, it	11:30:04
6	doesn't need to, and doesn't rely on, groundwater to	11:30:12
7	support it.	11:30:14
8	Q. Groundwater that the project may or may not	11:30:15
9	affect?	11:30:18
10	A. Well, when I say groundwater, I mean	11:30:18
11	groundwater in the underlying coastal Dune Sand Aquifer.	11:30:21
12	Just to be clear, in this case, there's --	11:30:26
13	beneath the ponds, you have perched groundwater that's	11:30:32
14	separated from the underlying coastal Dune Sand Aquifer	11:30:36
15	groundwater. So, therefore, you know, there's -- this	11:30:39
16	vegetation may rely on either surface water in the ponds	11:30:48
17	or water that's just below the surface of the ponds	11:30:51
18	within, say, the upper, you know, 2 to 3, 4 feet or so.	11:30:55
19	But that's, you know, perched shallow	11:31:01
20	groundwater just right beneath the ponds as opposed to the	11:31:04
21	underlying Dune Sand Aquifer.	11:31:11
22	Q. In support of your Bases 1c, you rely on	11:31:12
23	Exhibits 612 and 644, which we looked at a few minutes	11:31:16
24	ago?	11:31:20
25	A. Yes.	11:31:27

1	Q.	Again, you list the pages on which you	11:31:27
2		relied?	11:31:29
3	A.	Yes.	11:31:30
4	Q.	Let's turn to Bases 1d.	11:31:30
5		Please explain your Bases 1d and how it supports	11:31:39
6		your opinion.	11:31:42
7	A.	So this 1d states that "Groundwater	11:31:43
8		elevations measured in coast Dune Sand Aquifer at MW-4S	11:31:49
9		and MW-7S fluctuate above Armstrong Ranch pond bottoms yet	11:31:55
10		do not correlate with pond stage."	11:32:02
11	Q.	What does that mean, and how does that	11:32:04
12		support your opinion?	11:32:06
13	A.	So, if ponds -- if the water in the ponds	11:32:09
14		or right beneath the ponds were directly from the coastal	11:32:17
15		Dune Sand Aquifer -- I have to back up a little bit.	11:32:26
16		So MW-4S is a clustered monitoring well that	11:32:30
17		we're talking about, the shallow one here, located on the	11:32:38
18		east side of the CEMEX property. And then MW-7S is	11:32:41
19		another monitoring well located a little further inland.	11:32:47
20		So these are the two closest wells to the	11:32:50
21		Armstrong Ranch Ponds.	11:32:55
22		And so they looked at the -- so the groundwater	11:32:57
23		elevations fluctuate a little bit over time with season	11:33:04
24		and year. And when you look at those elevations in those	11:33:08
25		monitoring wells and you compare them to the pond bottom	11:33:15

1 elevations, you could see that they -- they fluctuate and 11:33:19
2 may, at times, you know, intersect the pond bottoms. 11:33:26

3 And so, if the -- that perched shallow 11:33:34
4 groundwater that we see in those ponds were related to the 11:33:40
5 coastal Dune Sand Aquifer, you should see some 11:33:44
6 relationship between the fluctuation and these two 11:33:47
7 monitoring wells which reflect the coastal Dune Sand 11:33:53
8 Aquifer and the pond bottoms. But you don't see that. 11:33:58

9 Q. How do you know that? 11:34:02

10 A. From -- from looking at the available data 11:34:03
11 that's summarized on the report, on the pages that are 11:34:07
12 described here. 11:34:11

13 Q. The report in Exhibit 16 -- sorry. The 11:34:11
14 report referenced in Exhibit 612? 11:34:17

15 A. Yes. 11:34:21

16 Q. Okay. Anything else you wish to add 11:34:21
17 regarding Bases 1d? 11:34:24

18 A. No. 11:34:26

19 Q. Let's now look at Bases 1e. Please explain 11:34:27
20 your Bases 1e and how it supports your opinion. 11:34:34

21 A. So as sort of stated in the comments there, 11:34:39
22 it reads, "Groundwater level elevation fluctuations in 11:34:42
23 coastal Dune Sand Aquifer at MW-4S, MW-7S and AR PZ-1A, 11:34:46
24 slash, 2-A, do not correlate with groundwater level 11:34:57
25 fluctuations in the shallow perched zone beneath Armstrong 11:35:03

1 Ranch Ponds."

11:35:10

2 Q. What does that mean? And how does that
3 support your opinion?

11:35:10

11:35:12

4 A. So, I need to back up a little bit and
5 explain a little bit of background. So we talked about
6 MW-4S and 7-S are monitoring wells installed back in 2015
7 for the Monterey Peninsula Water Supply Project.

11:35:12

11:35:16

11:35:27

11:35:36

8 And then as part of the investigation of the
9 Armstrong Ranch Ponds, several piezometers were installed
10 at different depths. And so what we're referring to here
11 with AR PZ-1A and 2A are monitoring wells in those ponds
12 that are installed at the deeper depths, or relatively
13 deeper depths, such that they screened the underlying
14 coastal Dune Sand Aquifer.

11:35:39

11:35:43

11:35:48

11:35:51

11:36:02

11:36:05

11:36:10

15 And then at those same locations of PZ-1A and
16 2A, there were another level of piezometers installed, 1-B
17 and 2-B, above the coastal Dune Sand Aquifer in this
18 restrictive low permeability layer. And then above --
19 above that there was a 1-C and a 2-C installed even
20 shallower above that. So right beneath the pond bottoms.

11:36:14

11:36:18

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11:36:29

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11:36:39

21 So they collected data over a period of several
22 months to maybe a couple years. And you look at the
23 fluctuations in the groundwater levels in the coastal Dune
24 Sand Aquifer, and you compare that to the fluctuations of
25 groundwater levels in the B series piezometers, and the C

11:36:46

11:36:52

11:36:58

11:37:04

11:37:07

1	series piezometers that are screened in zones above that.	11:37:13
2	And they don't match up. They don't correlate with each	11:37:18
3	other.	11:37:21
4	Q. What do you mean by, They don't correlate	11:37:21
5	or match up?	11:37:24
6	A. So they -- they're at different elevations.	11:37:24
7	So you get different elevations of the water levels in	11:37:31
8	those piezometers. And the sort of seasonal trend of	11:37:37
9	whether they're rising or falling, they -- they tend to	11:37:42
10	not correlate.	11:37:46
11	Q. So what? How does that help your opinion?	11:37:47
12	A. So, if the restrictive layer were not	11:37:52
13	present, and you had communication between those zones,	11:37:58
14	you should see similar elevations and similar fluctuations	11:38:03
15	in all of -- all of the wells, meaning, the series of	11:38:12
16	wells in the coastal Dune Sand Aquifer, these B-series	11:38:15
17	wells that are in the restrictive low permeability layer,	11:38:20
18	and then the C-series wells that are right beneath the	11:38:23
19	pond bottoms. You should see those at similar elevations,	11:38:27
20	and, you know, rising and falling in a similar way.	11:38:33
21	THE COURT: It would be helpful to the Court if	11:38:42
22	at this point you could revisit and describe the various	11:38:45
23	layers that you're talking about.	11:38:49
24	The Dune Sand Aquifer layer is pretty obvious.	11:38:58
25	The surface layer in the pond is fairly obvious. But	11:39:01

1	between those two zones, or levels, of groundwater, it is	11:39:06
2	not clear to the Court at this point whether you're	11:39:09
3	indicating there is one or two levels beneath them.	11:39:12
4	Can you explain that.	11:39:15
5	THE WITNESS: Yes, Your Honor.	11:39:16
6	So, you know, the depths may be slightly	11:39:18
7	different than what I describe. But I think, generally	11:39:26
8	speaking, when you drill at the ponds, if you drill down	11:39:29
9	to about seven or eight feet below the surface or the pond	11:39:37
10	bottom surface, you will hit this -- the very top of the	11:39:42
11	coastal Dune Sand Aquifer.	11:39:46
12	So that is, I think, generally a brown sand type	11:39:49
13	of unit.	11:39:54
14	And then the next level up, which, you know, may	11:39:58
15	start at, you know, maybe something on the order of four	11:40:03
16	feet, is a different unit. I think it's more of a gray	11:40:08
17	sand unit, silty sand unit. And that is actually where	11:40:16
18	this restrictive layer is located, which I'll come back to	11:40:25
19	in a minute.	11:40:29
20	And then above that, you have, you know, kind of	11:40:30
21	more of the recent soil unit that may be comprised of, you	11:40:35
22	know, different types of materials. But I think that unit	11:40:42
23	is, you know, more permeable than the underlying	11:40:48
24	restrictive layer.	11:40:59
25	THE COURT: Is that what would be, to a	11:41:01

1	layperson, perhaps associated with the bottom of the pond	11:41:03
2	itself, the surface of the pond bottom?	11:41:06
3	THE WITNESS: So the -- I guess, the top of the	11:41:10
4	top unit would be, like, the surface of the bottom of the	11:41:16
5	pond.	11:41:18
6	THE COURT: Okay.	11:41:19
7	THE WITNESS: And then -- yeah, then we kind of	11:41:20
8	go from there.	11:41:23
9	THE COURT: All right. And the next one,	11:41:24
10	four feet down. And that's the one you're referring to as	11:41:28
11	a restrictive layer?	11:41:31
12	THE WITNESS: Right.	11:41:32
13	THE COURT: And beneath that, is the Dune Sand	11:41:34
14	Aquifer layer?	11:41:38
15	THE WITNESS: Yes.	11:41:39
16	THE COURT: All right. Thank you.	11:41:39
17	MR. BETZ: May I respectfully have the witness	11:41:41
18	draw that out?	11:41:44
19	THE COURT: Yes.	11:41:47
20	MR. BETZ: May I approach with a piece of paper	11:41:48
21	and a pen?	11:41:50
22	BY MR. BETZ:	11:41:58
23	Q. Mr. Leffler, can you please draw what you	11:41:58
24	just described.	11:42:02
25	A. Okay.	11:42:03

1	MR. BETZ: In fact, does the Court have a	11:42:06
2	whiteboard by any chance?	11:42:08
3	THE COURT: Pardon?	11:42:10
4	MR. BETZ: Does the Court have a -- is that a	11:42:10
5	whiteboard behind Mr. Leffler?	11:42:11
6	THE COURT: Yeah, I think. Jeff, can you open	11:42:13
7	that up. We so rarely use it. Everybody just --	11:42:16
8	MR. BETZ: I was going to bring a foam board,	11:42:19
9	but --	11:42:23
10	THE COURT: -- screens these days.	11:42:23
11	We have a whiteboard. There's probably an easel	11:42:25
12	with paper.	11:42:28
13	One person at a time, please.	11:42:30
14	There's probably an easel with white paper on it	11:42:32
15	as well.	11:42:35
16	Yes, Madam Clerk.	11:42:36
17	THE CLERK: I was just going to say, they may	11:42:38
18	want to use a large notepad if they want to retain it,	11:42:38
19	because the whiteboard is only by pen or chalk.	11:42:42
20	THE COURT: All right. Jeff, do you know what	11:42:46
21	we have behind the doors there? Do we have a pad?	11:42:48
22	THE BAILIFF: I've got one, Your Honor.	11:42:52
23	THE COURT: With an easel.	11:42:53
24	MR. BETZ: One moment, Mr. Leffler. Please	11:43:06
25	stop.	11:43:08

1	THE BAILIFF: Where do you want it set up?	11:43:42
2	THE COURT: Right next to the witness. Facing	11:43:44
3	the witness, I think, once it's set up.	11:43:46
4	MR. BETZ: Okay. May I respectfully ask	11:44:39
5	Mr. Leffler to draw this on it?	11:44:45
6	THE COURT: Sure.	11:44:49
7	BY MR. BETZ:	11:44:49
8	Q. Mr. Leffler, would you be kind enough to	11:44:50
9	draw what you just discussed on the pad that's been	11:44:52
10	provided. And we'll mark that as an exhibit when you're	11:44:54
11	done.	11:44:57
12	A. Okay.	11:44:57
13	THE COURT: While Mr. Leffler is drawing that,	11:46:31
14	Madam Reporter, a few lines above the Court, where the	11:46:34
15	Court's questioning is, the rough real-time transcript	11:46:40
16	indicates the Court saying, "All right. And the next one	11:46:46
17	14 feet down," that's the one you're referring to as a	11:46:50
18	restrictive layer. I believe it was four feet down.	11:46:52
19	Any disagreement, Counsel? Everybody agree	11:46:57
20	that's what the question was?	11:46:59
21	MR. BETZ: No disagreement.	11:47:01
22	MR. SPAULDING: No, Your Honor.	11:47:03
23	THE COURT: Okay.	11:47:03
24	THE COURT: Mr. Brochard?	11:47:06
25	MR. BROCHARD: No disagreement.	11:47:08

1	BY MR. BETZ:	11:47:18
2	Q. Mr. Leffler, are you done drawing?	11:47:19
3	A. Yes, I believe so.	11:47:21
4	Q. You may be one of the first scientists that	11:47:22
5	has legible handwriting, so thank you.	11:47:25
6	MR. BETZ: As a matter of formality, may I	11:47:27
7	please mark that next in order as Exhibit 912?	11:47:29
8	THE COURT: Sure.	11:47:35
9	BY MR. BETZ:	11:47:36
10	Q. We'll do that maybe during the break.	11:47:37
11	A. Okay.	11:47:39
12	Q. Please describe what you just drew in	11:47:40
13	Exhibit 912.	11:47:43
14	A. Okay. So the top line would be the pond	11:47:48
15	bottom, and then the next line down is between what I'm	11:47:54
16	calling the upper soil unit and restrictive --	11:47:59
17	(Court reporter clarification.)	
18	THE WITNESS: The upper soil unit and the	11:48:04
19	restrictive layer. And then the third line down is the	11:48:07
20	boundary between the restrictive layer and the coastal	11:48:11
21	Dune Sand Aquifer.	11:48:16
22	And the vertical lines are the different	11:48:17
23	piezometers that have been installed, which I believe	11:48:22
24	they've -- it's a little confusing, I think, because they	11:48:27
25	labeled the deepest one A, the A-series, and the	11:48:30

1	shallowest one, the C-series, and then the middle one is	11:48:34
2	the B. And then the horizontal lines on the vertical	11:48:39
3	lines would be where the well screens would be in the	11:48:45
4	piezometers.	11:48:49
5	And then don't hold me to the depths, but it's,	11:48:50
6	you know, something on the order of, say, you know, with	11:48:55
7	zero being the pond bottom and, you know, roughly, I think	11:48:57
8	seven to eight feet to hit the coastal Dune Sand Aquifer,	11:49:01
9	and then about around four feet for the restrictive layer.	11:49:05
10	BY MR. BETZ:	11:49:12
11	Q. Thank you.	11:49:12
12	Turning back to Bases 1e as it relates to vernal	11:49:13
13	ponds, you relied on Exhibit 616, 622, and 644, and the	11:49:23
14	pages identified in your summary; is that correct?	11:49:31
15	A. Yes.	11:49:32
16	Q. Turning to Bases 1f.	11:49:32
17	Please explain your Bases 1f.	11:49:37
18	A. So this bases says, "Groundwater quality,"	11:49:42
19	open parentheses, "electrical conductance," which is a	11:49:47
20	measure of salinity, close parentheses, "is different in	11:49:50
21	the underlying coastal Dune Sand Aquifer compared to the	11:49:55
22	shallow perched zone beneath the Armstrong Ranch Ponds."	11:49:57
23	Q. What does that mean? And how does it	11:50:02
24	relate to your opinion?	11:50:04
25	A. So what we find is that -- so by having	11:50:06

1	these piezometers or wells, we can measure both water	11:50:15
2	levels and water quality.	11:50:20
3	And when we measure the water quality in the	11:50:22
4	Dune Sand Aquifer versus the layers above, we find a	11:50:27
5	significant difference in the electrical conductance,	11:50:34
6	which, again, is a measure of salinity, where the -- we	11:50:38
7	have lower electrical conductance in the coastal Dune Sand	11:50:46
8	Aquifer, and significantly higher electrical conductance	11:50:51
9	in the overlying units.	11:50:55
10	If I recall correctly, it might be on the order	11:50:57
11	of three to four times higher in the overlying shallow	11:50:59
12	units.	11:51:07
13	THE COURT: Mr. Leffler, can you indicate on	11:51:07
14	Exhibit 912, the drawing which you just made, perhaps in a	11:51:11
15	different color marker than the black one, which you used,	11:51:15
16	where the shallow perched zone that you're referring to is	11:51:21
17	located.	11:51:25
18	THE WITNESS: (Indicating.)	11:51:52
19	MR. SPAULDING: Your Honor.	11:52:01
20	THE COURT: Yes.	11:52:02
21	MR. SPAULDING: One request after Mr. Leffler is	11:52:03
22	done with the drawing: Can we take a picture of it?	11:52:06
23	THE COURT: Sure.	11:52:09
24	MR. SPAULDING: Okay.	11:52:11
25	THE COURT: And maybe during the noon recess, as	11:52:12

1	soon as we break, you can do it.	11:52:17
2	MR. SPAULDING: Thank you.	11:52:18
3	BY MR. BETZ:	11:52:19
4	Q. Please explain what you just drew in	11:52:20
5	response to the Court's question.	11:52:22
6	A. Yeah. So, basically, we see water within	11:52:27
7	those two upper units that is part of the shallow perched	11:52:39
8	zone.	11:52:43
9	Q. So what? How does that support your	11:52:49
10	opinion?	11:52:52
11	A. So -- well, I guess going back to what	11:52:52
12	we're describing in this 1-F, is that in the A piezometer,	11:52:57
13	so in the coastal Dune Sand Aquifer, we see, again, low --	11:53:06
14	low TDS. And in the B and the C piezometers, we see much	11:53:12
15	higher TDS.	11:53:18
16	And so, if -- if you don't -- if you do not have	11:53:21
17	a restrictive layer and you had free communication between	11:53:25
18	the coastal Dune Sand Aquifer and the overlying layers,	11:53:29
19	you should have a similar water quality in terms of the	11:53:35
20	salinity.	11:53:40
21	But we don't see that. We see a very different	11:53:41
22	salinity.	11:53:45
23	THE COURT: So, if you saw some filtering effect	11:53:47
24	from the restrictive and upper soil unit layers, would you	11:53:51
25	expect lower salinity rather than the higher salinity you	11:53:54

1	found?	11:53:59
2	THE WITNESS: Yes. So that's a -- that's a good	11:54:00
3	question, Your Honor.	11:54:05
4	So we would expect to see higher salinity in the	11:54:06
5	upper units. And the reason for that is that when the --	11:54:10
6	so when surface water comes into the ponds in the rainy	11:54:14
7	season, and then it -- so it's ponded there, and it stays	11:54:19
8	there for a long time, and it slowly evaporates, or the	11:54:23
9	plants transpire it. And so that water level -- so it	11:54:32
10	slowly goes down until the water's gone.	11:54:38
11	And then any mineral constituents that are in	11:54:42
12	that water -- so salts -- get left behind, and then they	11:54:48
13	will, you know, seep down into those shallow units in the	11:54:58
14	C and B piezometers.	11:55:02
15	THE COURT: Okay. Whereas, if there were	11:55:05
16	hydrogeologic connectivity between the coastal Dune Sand	11:55:09
17	Aquifer and those upper layers, would you expect to see a	11:55:14
18	lesser degree of salinity in the shallow perched zone?	11:55:17
19	THE WITNESS: Yes. Because, if this water in	11:55:21
20	the coastal Dune Sand Aquifer were freely flowing up here,	11:55:29
21	you know, they would interact. And that water moves, so,	11:55:33
22	yes, you'd have some salts coming down, but then it would,	11:55:37
23	you know, continue to migrate away. So you would expect	11:55:43
24	to see, you know, pretty similar salinity in the different	11:55:45
25	units if they were all connected.	11:55:49

1	THE COURT: Thank you. Okay.	11:55:51
2	BY MR. BETZ:	11:55:53
3	Q. As it relates to Bases 1f, you, again, rely	11:55:53
4	upon Exhibit 616, 622, 644, and the pages you've	11:55:59
5	identified?	11:56:04
6	A. Yes.	11:56:06
7	Q. And for all the bases we've looked at so	11:56:06
8	far, you also rely upon your extensive background, skill	11:56:08
9	and experience?	11:56:13
10	A. Yes.	11:56:14
11	Q. Turning to Bases 1g.	11:56:14
12	Please explain your comments and how that	11:56:25
13	supports your opinion.	11:56:30
14	A. So under Comments, it says, "Tidal	11:56:33
15	fluctuations occur in the coastal Dune Sand Aquifer, but	11:56:36
16	not in the shallow perched zone."	11:56:39
17	Q. First of all, how do you know that?	11:56:41
18	A. Well, this is based on monitoring well data	11:56:45
19	and -- I mean, also just generally what you would expect	11:56:51
20	to occur when you have a shallow aquifer connected	11:56:54
21	directly to the ocean.	11:56:59
22	Q. How does that support your opinion?	11:57:01
23	A. So we know we have tidal fluctuations in	11:57:06
24	the shallow coastal Dune Sand Aquifer, and these ponds, or	11:57:10
25	at least several of them, are fairly close to the	11:57:16

1 shoreline. And so that tidal fluctuation effect extends 11:57:19
2 inland a ways. 11:57:26

3 So, for example, at the Armstrong Ranch Ponds, 11:57:30
4 we would expect that those are close enough that they 11:57:33
5 would see some tidal fluctuation effect from the coastal 11:57:36
6 Dune Sand Aquifer. 11:57:43

7 So, you know, we see that in the underlying -- 11:57:43
8 the monitoring wells screened in the coastal Dune Sand 11:57:50
9 Aquifer, but we're not seeing it in the shallow perched 11:57:55
10 zones. 11:58:02

11 Q. So how does that support your opinion? 11:58:02

12 A. So, again, if you had a free communication 11:58:04
13 between the coastal Dune Sand Aquifer and, you know, up to 11:58:06
14 the pond bottom, you should see those fluctuations in 11:58:11
15 those shallow zones as well. 11:58:14

16 Q. In this day and age, can you please explain 11:58:17
17 what you mean by free communication? 11:58:21

18 A. So if -- well, basically, if you didn't 11:58:22
19 have the restrictive layer and -- well, let's just say the 11:58:27
20 whole coastal Dune Sand unit went all the way up to the 11:58:35
21 pond bottom, so these other units didn't even exist. Then 11:58:38
22 you would see those tidal fluctuation -- and -- sorry. 11:58:41
23 Let me back up. 11:58:47

24 Let's say we had this drawing, but these two 11:58:48
25 upper units were not there. And so the drawing is just a 11:58:51

1	line of the pond bottom, and then everything beneath it is	11:58:54
2	the coastal Dune Sand Aquifer.	11:58:56
3	But let's say I still put in these piezometers	11:58:58
4	at these different depths. I put in the C, the B, and the	11:59:02
5	A. So I'm still monitoring that same depth zone, but now	11:59:07
6	I'm in the coastal Dune Sand Aquifer.	11:59:11
7	And then I have the tidal fluctuations. I would	11:59:15
8	see it in all three of these piezometers, because all	11:59:19
9	three of them are in the coastal Dune Sand Aquifer.	11:59:22
10	THE COURT: I think it's an appropriate time to	11:59:31
11	take the noon recess, and any of you who want to take a	11:59:32
12	photo of that exhibit may do so.	11:59:38
13	We'll resume at 1:30 time.	11:59:40
14	(Recess taken from 11:59 a.m. through	13:27:12
15	1:27 p.m.)	13:27:12
16	THE COURT: Okay. We're back on the record in	13:27:12
17	the matter of City of Marina versus RMC Lonestar.	13:27:14
18	Counsel are are present.	13:27:15
19	Mr. Leffler is still on the stand, still under	13:27:17
20	oath, and need not be re-sworn.	13:27:19
21	Once he's taken the stand, Mr. Betz, you can	13:27:19
22	resume.	13:27:23
23	MR. BETZ: Thank you.	13:27:23
24	BY MR. BETZ:	13:27:28
25	Q. Good afternoon, Mr. Leffler.	13:27:29

1	A.	Good afternoon.	13:27:30
2	Q.	No more drawing at this point.	13:27:31
3	A.	Thank you.	13:27:33
4	Q.	Let's go back to your summary of opinions	13:27:34
5		as it relates to vernal ponds. That would be Exhibit 902.	13:27:37
6		If we can turn to 902, Page 2, 1h.	13:27:55
7		Can you please read your bases under 1h and	13:28:03
8		explain how it supports your opinion.	13:28:07
9	A.	So what it states is that "Wetland," slash,	13:28:10
10		"Pond Areas 1 through 5 and 7 are located one or more	13:28:13
11		miles away from slant wells and have minimal drawdown of	13:28:19
12		about one foot or less and some combination of the	13:28:24
13		following characteristics: Significant differences in	13:28:27
14		pond water quality versus underlying coastal Dune Sand	13:28:32
15		Aquifer groundwater quality show the presence of	13:28:36
16		restrictive layers, major urban surface water inputs	13:28:38
17		overlie the FO-SVA and not the coastal Dune Sand Aquifer,	13:28:43
18		lack tidal influence."	13:28:49
19	Q.	What do you mean by that, and how does that	13:28:53
20		support your opinion?	13:28:57
21	A.	So, first of all, the Armstrong Ranch Ponds	13:28:59
22		are referred to as Pond 6. So this refers to the other	13:29:05
23		ponds that are further away from the slant wells.	13:29:09
24		And it refers to that there's a combination of	13:29:14
25		characteristics -- I think most of which, we've touched on	13:29:18

1 a little bit -- that lead to the conclusion, basically, 13:29:22
2 that they're not connected -- hydraulically connected to 13:29:28
3 the coastal Dune Sand Aquifer. 13:29:35

4 Q. Okay. So how does this relate to that 13:29:35
5 opinion, your overall opinion? 13:29:38

6 A. Well, so the overall opinion is that the 13:29:40
7 seven ponds are not hydrogeologically connected to the 13:29:43
8 coastal Dune Sand Aquifer where the proposed slant wells 13:29:50
9 would be pumping. 13:29:53

10 And this particular item is more about Ponds 1 13:29:54
11 through 5 and 7 as opposed to the Armstrong Ranch pond. 13:29:59
12 It's covered in other bases. 13:30:05

13 Q. So the prior bases that we talked about, 13:30:08
14 letters A through G, in bases that you had there, support 13:30:11
15 the other ponds as well? Is that what you're saying? 13:30:18

16 A. Well, so some of those are particular to 13:30:24
17 the Armstrong Ranch Ponds, and some of them are more 13:30:28
18 comprehensive of all the ponds. 13:30:32

19 Q. Which of the other opinions or bases 13:30:33
20 support the other ponds? 13:30:36

21 A. Well, could we go back to the -- we have to 13:30:36
22 go back to the opinion sheet. 13:30:41

23 Q. Please. Let's do so. 13:30:42

24 And while Mr. Terry is doing so, when we talk 13:30:44
25 about vernal ponds, are they all characterized as GDEs, 13:30:47

1	meaning groundwater-dependent ecosystems?	13:30:53
2	A. Yes.	13:30:56
3	Q. Exhibit 902.	13:31:01
4	So which of your bases apply to ponds other than	13:31:04
5	the Armstrong Ranch pond?	13:31:08
6	A. So that would be 1a, and then let's see.	13:31:11
7	It is 1 -- 1b and 1c were some analyses that were specific	13:31:24
8	to the Armstrong Ranch Pond.	13:31:32
9	If we could scroll?	13:31:39
10	Q. Next page, please. Thank you.	13:31:39
11	A. Then the -- I'm just going to look through	13:31:41
12	them real quick here.	13:31:44
13	So D -- 1d and 1e, those are specific to	13:31:53
14	Armstrong Ranch Ponds. Then 1f would apply to some of the	13:32:00
15	other ponds as well as Armstrong Ranch. 1g would apply to	13:32:07
16	some of the other ponds as well as Armstrong Ranch. That	13:32:17
17	takes us to 1h.	13:32:23
18	Q. As it relates to 1h, you rely upon	13:32:24
19	Exhibit 612, which we discussed; correct? Or we showed	13:32:29
20	you?	13:32:33
21	A. Yes.	13:32:33
22	Q. And Exhibit 905, let's take a look at	13:32:33
23	Exhibit 905.	13:32:37
24	We have seen this a few times, I think, through	13:32:42
25	these proceedings, but how are you relying upon	13:32:44

1 Exhibit 905 to support your opinion or bases in 1h? 13:32:47

2 A. So this is a map of the drawdown taken from 13:32:51

3 the Cal-Am WBSSM updated recharge model for Scenario B-2, 13:32:58

4 which is the 11.6 MGD pumping. 13:33:07

5 So B-2 minus B-1, that means, basically, with 13:33:12

6 and without slant wells, you run that. That gives you the 13:33:16

7 drawdown contours that are depicted here. 13:33:19

8 And then the blue lines show those drawdown 13:33:22

9 contours, and then they're labeled with 1, 2, 3, 4, and 13:33:26

10 5-foot contours. And then the ponds are then in purple. 13:33:34

11 We see the Armstrong Ranch pond number 6 closest 13:33:46

12 to the slant wells, which are near, say, MW-1S. And then 13:33:52

13 we look to the south, and we see Ponds 1 through 5 and 7. 13:34:00

14 And we can see that those ponds are, generally, at or 13:34:08

15 around one foot of drawdown or less. 13:34:13

16 Q. How do you know that from this document? 13:34:16

17 A. Because the blue line -- the outermost blue 13:34:18

18 line that's labeled "1" goes through the area of those 13:34:23

19 ponds, meaning Ponds 1 through 5 and 7. 13:34:29

20 THE COURT: I'm not following that. 13:34:50

21 So let's start with explaining B-2 minus B-1. 13:34:53

22 THE WITNESS: Yes. 13:34:57

23 So in the AHO proceedings, we had a series of 13:34:59

24 scenarios, and so we had the B scenarios. We had a B-1, a 13:35:02

25 B-2, and a B-3. And those were the existing condition 13:35:11

1	runs that the AHO based most of their analyses on in their	13:35:19
2	report.	13:35:26
3	And so B-1 is a scenario with no slant well	13:35:28
4	pumping. B-2 is a scenario with the slant wells pumping	13:35:33
5	at 11.6 million gallons per day, or MGD.	13:35:40
6	And B-3 is a scenario with the slant wells	13:35:46
7	pumping 15.5 MGD.	13:35:50
8	And so when we say -- on this figure, where it	13:35:53
9	says B-2 minus B-1, means that basically we run both of	13:35:57
10	those models, so we run the model without slant well	13:36:04
11	pumping, and we get the groundwater elevations. And then	13:36:09
12	we run the B-2 scenario with 11.6 MGD of slant well	13:36:12
13	pumping, and we get the groundwater elevations from that	13:36:19
14	model run.	13:36:22
15	And then we, basically, compare them and	13:36:23
16	subtract them. So we're comparing B-1 and then to B-2.	13:36:25
17	And it's the difference -- it's the difference between	13:36:31
18	those two model runs. It's depicted here as these	13:36:34
19	contours of drawdown.	13:36:41
20	THE COURT: How is that differential reflected	13:36:46
21	by these blue lines? I'm missing that link.	13:36:51
22	THE WITNESS: So, for example, we could look	13:36:54
23	at -- so, first of all, I guess they're not explicitly	13:36:59
24	shown on here, but the slant wells themselves would be	13:37:03
25	just to the south of MW-1S, right along the shoreline	13:37:08

1 there, where the contours are all bunched together. 13:37:16

2 And so you see a "5", a sort of a circle with 13:37:20

3 the numbering of "5". Actually, maybe I could use a 13:37:28

4 pointer to help. 13:37:34

5 Maybe if we could blow up that area around sort 13:37:38

6 of in the middle where the, like, three, four, and five 13:37:42

7 contours are with MW-1 and MW-3 paragraph. 13:37:45

8 So this sort of oval area, so that's a 13:38:06

9 continuous sort of oval labeled five. So that means, if 13:38:08

10 we compare those two modeled runs, and we look exactly -- 13:38:12

11 you could take different points along that blue line 13:38:20

12 that's labeled five. And it would show that the B-2 13:38:23

13 scenario groundwater elevation is five feet lower than the 13:38:26

14 B-1 scenario groundwater elevation. 13:38:32

15 So as an example, if the B-1 -- well, just 13:38:36

16 picking some numbers, but let's just say we're picking a 13:38:42

17 point on this blue line right near the five. And let's 13:38:47

18 say that the B-1 scenario showed a groundwater elevation 13:38:52

19 of eight feet above mean sea level. Then that means that 13:38:56

20 the B-2 scenario showed a groundwater elevation of three 13:39:02

21 feet above mean sea level. So we take the eight minus the 13:39:08

22 three, and that gives us five. 13:39:12

23 And so, basically, it's the -- kind of 13:39:14

24 comparison and subtraction of the groundwater elevations 13:39:17

25 from these two scenarios throughout the extent of the 13:39:21

1 figure to get those numbers. 13:39:26

2 THE COURT: So does the number five in this 13:39:27
3 particular diagram reflect the number five that is the 13:39:30
4 difference, or is that just assigning a designation to 13:39:42
5 that particular contour line? 13:39:45

6 THE WITNESS: So that is -- it stands for five 13:39:50
7 feet. 13:39:52

8 THE COURT: Okay. 13:39:52

9 THE WITNESS: So five feet of drawdown all the 13:39:53
10 way along that contour line. 13:39:56

11 And I guess to explain further, if you were to 13:40:01
12 move inside, so say we go from the five to in this 13:40:04
13 direction, then you would have something greater than five 13:40:10
14 feet. And if we move out from the five, then we start to 13:40:14
15 decrease in elevation. 13:40:18

16 THE COURT: Okay. Thank you. 13:40:22

17 BY MR. BETZ: 13:40:24

18 Q. So Pete -- I'm sorry. Mr. Leffler, how 13:40:24
19 does this Exhibit 904 support your ultimate opinion that 13:40:28
20 the seven wetlands ponds described in the Formation 13:40:34
21 Environmental TM -- 13:40:44

22 (Court reporter clarification.)

23 BY MR. BETZ:

24 Q. -- described in the Formation Environmental 13:40:45
25 TM dated April 13th, 2020, are hydrogeologically

1	disconnected from the coastal Dune Sand Aquifer?	13:40:55
2	A. So this figure is -- it's not necessarily	13:41:00
3	speaking directly to the hydrogeologic connection, or lack	13:41:06
4	thereof. It's speaking to -- actually, can we blow it up	13:41:13
5	again a little bit and look at the bigger picture.	13:41:17
6	Q. What would you like blown up?	13:41:23
7	A. Yeah, that's fine.	13:41:25
8	So it's just meant to show that aside from the	13:41:28
9	Armstrong Ranch ponds, which is number six, that all of	13:41:33
10	the other ponds are relatively far away, and have a	13:41:37
11	minimal drawdown occurring in the underlying coastal Dune	13:41:41
12	Sand Aquifer.	13:41:50
13	Q. Okay. Now, turning back to Exhibit 902,	13:41:50
14	Page 3, Bases 3 -- or Bases 1i, can you please read that	13:41:58
15	bases and explain how that supports your opinion.	13:42:08
16	A. So it states that, "Some wetland," slash,	13:42:10
17	"pond areas are near or overlies the FO-SVA. Wetland,"	13:42:14
18	slash, "pond areas overlying the FO-SVA are underlaying,	13:42:21
19	in part, by a perch," slash, "mounded aquifer that is	13:42:26
20	different from the coastal Dune Sand Aquifer screened in	13:42:30
21	proposed MPWSP slant wells."	13:42:33
22	Q. So, again, so what? How does that support	13:42:37
23	your opinion?	13:42:40
24	A. Okay. So, in terms of the shallow	13:42:41
25	aquifers -- so we've been talking about the coastal Dune	13:42:47

1 Sand Aquifer. And then, as you go -- as you go to the 13:42:50
2 east, as you move inland, you eventually get to the point 13:42:53
3 where you encounter the FO-SVA. And the FO-SVA causes 13:42:56
4 this perched/mounded aquifer to occur further to the east. 13:43:03
5 And so what we have is, because this aquifer is 13:43:09
6 perched, slash, mounded, when it gets to the edge of the 13:43:13
7 FO-SVA, you'll have very steep contours of groundwater 13:43:17
8 elevation where it drops. So it drops from a higher 13:43:24
9 elevation of, say -- you know, I'm just picking some 13:43:28
10 numbers -- but, like, 25 feet to, say, 10 feet over a 13:43:32
11 relatively short distance. 13:43:35
12 And the reason that's important is in terms of 13:43:37
13 pumping from the coastal Dune Sand Aquifer, when you pump 13:43:45
14 from the coastal Dune Sand Aquifer it's going to have a 13:43:50
15 much more limited effect on that perched/mounded aquifer 13:43:58
16 than you would otherwise expect. 13:44:02
17 And the best analogy I think I can give would be 13:44:04
18 if you went to a waterfall, say, like, at Yosemite Park. 13:44:07
19 And you -- so you're looking at a waterfall, and you see 13:44:14
20 the water flowing over the cliff. And if you were to pump 13:44:16
21 water from the lower part of that, where the waterfall 13:44:21
22 ends or drops the water into, in the lower part of the 13:44:25
23 river, if you were to pump water from that, it would not 13:44:28
24 affect how much water is on top of the waterfall and going 13:44:35
25 over the cliff. 13:44:37

1	You would have the same amount of water flowing	13:44:38
2	over the cliff and tumbling down vertically into the	13:44:41
3	waterfall pool at the bottom where you might be, say,	13:44:46
4	pumping water from that stream. So it wouldn't effect	13:44:49
5	that upper portion of the waterfall.	13:44:52
6	Q. And how does that show that the wetlands	13:44:55
7	are hydrogeologically disconnected?	13:45:01
8	A. So irrespective of the shallow restrictive	13:45:06
9	layer, if a pond or vernal pool is located on that upper	13:45:09
10	part of the waterfall, your pumping at the lower end of	13:45:18
11	the waterfall is not going to effect it, even if there is	13:45:22
12	no shallow or restrictive layer there.	13:45:25
13	Q. Got it. Thank you.	13:45:28
14	MR. BETZ: You could take that down, Mr. Terry.	13:45:30
15	BY MR. BETZ:	
16	Q. Did you listen to Mr. Tietze's testimony	13:45:34
17	with respect to vernal ponds and GDEs?	13:45:41
18	A. Yes, I did.	13:45:44
19	Q. The very end of his direct testimony he	13:45:45
20	opined about how GDEs may or may not be affected as it	13:45:46
21	relates to the project.	13:45:50
22	Are you with me?	13:45:51
23	A. Yes.	13:45:52
24	Q. Did you agree with his testimony?	13:45:52
25	A. No.	13:45:55

1 Q. What do you believe he testified to? And 13:45:55
2 what do you disagree with? 13:45:58

3 A. Well, it would be a number of things, but I 13:46:01
4 want to focus on a few. 13:46:06

5 So there was a lot of discussion and testimony 13:46:07
6 that he gave about the shallow restrictive layer. And he 13:46:11
7 talked about looking at the soil lithologic logs, and that 13:46:19
8 those do not describe this restrictive layer. 13:46:25

9 But what he didn't do was talk about other 13:46:32
10 things that are written in the report, two things in -- 13:46:38
11 primarily. The fact that, when the drilling occurred, 13:46:42
12 there was a much denser solar encountered in that 13:46:46
13 restrictive layer zone. 13:46:50

14 And number two was that, when the boreholes were 13:46:53
15 drilled, there was no free water flowing into the 13:47:00
16 boreholes until you got into the underlying coastal Dune 13:47:03
17 Sand Aquifer. 13:47:10

18 And the importance of both of those items is 13:47:10
19 they're very indicative of a restrictive low permeability 13:47:20
20 layer that is occurring in that area of the subsurface. 13:47:25

21 Q. Anything else? 13:47:29

22 A. Well, he talked about the Ghyben-Herzberg 13:47:33
23 principle, and accounting for water quality differences at 13:47:42
24 a couple of ponds near the coast. 13:47:47

25 Q. And you disagree with that? 13:47:49

1	A. Yes.	13:47:51
2	Q. Why?	13:47:51
3	A. Because those ponds are very close	13:47:52
4	together. And when you have a seawater-intrusion front,	13:47:55
5	you get a very diffuse zone with a gradual change in	13:48:02
6	salinity. And, you know, by virtue of that being the	13:48:07
7	case, that explanation can't really apply there because	13:48:12
8	those ponds are so close together. They're not going to	13:48:17
9	have this dramatic contrast in the salinity. If -- if --	13:48:20
10	if the coastal Dune Sand Aquifer were, you know, connected	13:48:26
11	to those ponds.	13:48:31
12	Q. In conclusion, as it relates to your	13:48:32
13	opinion about vernal ponds, how certain are you?	13:48:35
14	A. I'm very certain. As certain as I can be	13:48:41
15	within the standards of my profession.	13:48:44
16	Q. Speaking of which, is there ever 100	13:48:46
17	percent certainty as it relates to your profession?	13:48:49
18	A. No.	13:48:52
19	Q. Okay.	13:48:52
20	Q. In conclusion, Mr. Leffler, under penalty	13:48:57
21	of perjury, do you really believe 100 percent that the	13:49:00
22	Monterey Peninsula Water Supply Project will cause no harm	13:49:04
23	to MCWD, Marina, their groundwater supply, as previously	13:49:09
24	discussed, and/or anyone who relies upon that supply as it	13:49:16
25	relates to your profession at the level and certainty	13:49:21

1	that's accepted?	13:49:25
2	A. Yes, I do.	13:49:26
3	Q. And why is that, Pete -- Mr. Leffler?	13:49:26
4	A. Well, it's a -- it's a combination of	13:49:30
5	things, starting with all the studies that have been done	13:49:34
6	over the last 15-plus years, including all the fieldwork,	13:49:37
7	the aquifer testing, the building of a full scale	13:49:44
8	production well, and testing that for three years, and	13:49:47
9	then the series of models that have been constructed over	13:49:54
10	the years by different consultants, and different types of	13:49:58
11	models, and different model inputs in aquifer parameters	13:50:02
12	that have gone into that. And all leading to the same	13:50:13
13	conclusions on the four major points we've been	13:50:16
14	discussing.	13:50:19
15	I don't think I've ever had a project that I've	13:50:19
16	worked on that has had that scale of study go into it in	13:50:22
17	terms of, again, the fieldwork, building a full-scale	13:50:28
18	pilot well, and all this modeling work by different	13:50:33
19	consultants and different types of models. I mean, this	13:50:38
20	is -- this is the most study that I've ever seen go into a	13:50:42
21	project, and it keeps leading to similar conclusions with	13:50:47
22	these various studies.	13:50:54
23	Q. Those conclusions being?	13:50:55
24	A. This will be no harm caused by this	13:50:56
25	project.	13:51:00

1	Q. Thank you. I have no further questions.	13:51:04
2	THE COURT: All right. Cross-examination.	13:51:05
3	MR. SPAULDING: Yes, Your Honor. I'll be going	13:51:08
4	first.	13:51:11
5	THE COURT: Okay.	13:51:12
6	<u>CROSS-EXAMINATION</u>	13:51:13
7	BY MR. SPAULDING:	13:51:14
8	Q. Good afternoon, Mr. Leffler.	13:51:17
9	A. Good afternoon.	13:51:19
10	Q. As you know, my name is Skip Spaulding, and	13:51:20
11	I'm an attorney for the City of Marina.	13:51:24
12	I'm going to start with a few background	13:51:30
13	questions.	13:51:34
14	Isn't it true that you are not an expert	13:51:35
15	biologist?	13:51:42
16	A. Yes.	13:51:43
17	Q. And isn't it true that you are not an	13:51:43
18	expert plant ecologist?	13:51:46
19	A. Yes.	13:51:51
20	Q. And isn't it true that you are not a	13:51:51
21	wetland delineator?	13:51:58
22	A. I -- in terms of wetlands, I have expertise	13:52:02
23	in hydrogeology that goes into sometimes defining	13:52:08
24	wetlands. I've worked with biologists to -- on the	13:52:16
25	hydrogeologic aspects of -- on wetlands, and defining --	13:52:19

1 helping to define them. 13:52:22

2 Q. So you have experience in evaluating the 13:52:25

3 interaction of groundwater and surface features, but you 13:52:30

4 don't actually have experience as a wetland delineator; 13:52:37

5 correct? 13:52:44

6 A. Not in terms of the biological aspects of 13:52:44

7 that. 13:52:48

8 Q. All right. How many large desalination 13:52:48

9 projects have you worked on? 13:52:53

10 A. I have -- I have not worked on other large 13:53:00

11 desalination projects. 13:53:03

12 Q. This is your first then? 13:53:04

13 A. Yes. 13:53:06

14 Q. All right. Let's talk about AEM for a few 13:53:08

15 minutes, which is Airborne Electromagnetic studies. 13:53:12

16 Now, you are aware, aren't you, that 13:53:18

17 Dr. Rosemary Knight of Stanford and a team of researchers 13:53:21

18 conducted AEM studies of the CEMEX area; correct? 13:53:27

19 A. My understanding is that the first study -- 13:53:34

20 the first AEM study that was conducted in the Marina area 13:53:37

21 was conducted by Dr. Knight with a graduate student and 13:53:41

22 some MCWD consultants. 13:53:46

23 Q. And did Dr. Rosemary Knight conduct any 13:53:51

24 studies? 13:53:56

25 A. Yeah, she was part of the first AEM study 13:53:56

1 that was done. 13:53:59

2 Q. All right. Thank you. 13:54:00

3 Now, you would agree that AEM is a physical -- 13:54:04

4 geophysical technique to image the subsurface; correct? 13:54:08

5 A. It -- I wouldn't characterize it as 13:54:17

6 imaging, per se. You get data from the AEM. A signal 13:54:21

7 goes into the subsurface, and you get some data back. And 13:54:28

8 that requires a hydrogeologic interpretation to get the 13:54:32

9 so-called image or characterization of the subsurface. 13:54:37

10 Q. Isn't it true that AEM is being widely used 13:54:43

11 these days to investigate the extent of groundwater 13:54:49

12 containing different concentrations of saline water? 13:54:53

13 A. It is used to some extent in that capacity. 13:55:01

14 Q. Isn't it true that the US Geological Survey 13:55:07

15 uses it often to determine the extent of groundwater 13:55:13

16 across the oil-producing regions of California? 13:55:18

17 A. I -- I don't -- I don't think I've looked 13:55:30

18 at AEM data that USGS -- or studies that they've done in 13:55:35

19 the oil-producing regions. 13:55:41

20 Q. So you don't know? 13:55:42

21 A. I can't confirm that. 13:55:43

22 Q. All right. So you don't know one way or 13:55:45

23 the other? 13:55:47

24 A. Correct. 13:55:47

25 Q. All right. Isn't it true that many 13:55:49

1 groundwater sustainability agencies use AEM for their 13:55:52
2 basins? 13:55:57

3 A. It's -- well, there's been a lot of studies 13:56:00
4 that have been led by DWR for different groundwater basins 13:56:06
5 providing data to -- providing AEM data and 13:56:13
6 interpretations of that data to GSAs. 13:56:17

7 Q. And in subbasins that you have worked in, 13:56:21
8 including Madera and Chowchilla, AEM has been used to 13:56:26
9 evaluate the extent of TDS underground; correct? 13:56:32

10 A. Not to -- not to evaluate TDS. 13:56:39

11 Q. What have they been used for? 13:56:44

12 A. To evaluate the lithology of the 13:56:47
13 subsurface. 13:56:50

14 Q. And the lithology is basically the location 13:56:51
15 of aquifers and aquitards and those sorts of features; 13:56:57
16 correct? 13:57:05

17 A. Yes. 13:57:05

18 Q. Now, has an AEM been used widely elsewhere 13:57:06
19 in the world to look at the salinity of groundwater and 13:57:12
20 offshore aquifers? 13:57:18

21 A. Yes, it has been used in other places 13:57:23
22 around the world for -- for that purpose. 13:57:25

23 Q. And hasn't the USEPA used AEM often to 13:57:27
24 determine the depth of underground sources of drinking 13:57:34
25 water for injection wells? 13:57:39

1	A. For -- I'm sorry. Can you repeat the	13:57:48
2	question.	13:57:51
3	Q. Sure.	13:57:51
4	Isn't it true that EPA often uses AEM to	13:57:52
5	determine the depth of underground sources of drinking	13:57:59
6	water in connection with their underground injection	13:58:03
7	control program, if you know?	13:58:08
8	A. I'm not familiar with those studies.	13:58:13
9	Q. All right. So isn't it fair to say that at	13:58:15
10	this point, AEM has become an accepted geophysical	13:58:23
11	technique for determining the concentrations of TDS in	13:58:27
12	groundwater?	13:58:34
13	A. I would say it's, primarily, used to	13:58:39
14	determine lithology in areas of relatively low TDS, but it	13:58:42
15	is also used to look at coastal areas and salinity as	13:58:51
16	well.	13:58:56
17	Q. So it's not an experimental technique, is	13:58:56
18	it? It's a well-understood and often-used technique;	13:59:01
19	correct?	13:59:07
20	A. That's correct. It is -- I wouldn't	13:59:07
21	characterize it as an experimental technique.	13:59:10
22	Q. You would or would not?	13:59:14
23	A. Would not.	13:59:16
24	Q. All right. Now, isn't it also true that	13:59:17
25	there are now accepted methods to process AEM data so that	13:59:20

1	they are well-calibrated to existing well and geophysical	13:59:26
2	logs?	13:59:32
3	A. I would say that there are methods that are	13:59:35
4	used to do that, but they're always subject to the	13:59:39
5	hydrogeologic interpretation of the individual doing that	13:59:45
6	work.	13:59:49
7	Q. And those methods were used by Dr. Knight	13:59:52
8	and other researchers in the AEM work for the CEMEX area;	13:59:55
9	correct?	14:00:06
10	A. Yes, they used such techniques.	14:00:06
11	Q. And has that data processing for TDS and	14:00:09
12	salinity used by SVBGSA to interpret lithology in the	14:00:17
13	Salinas Valley Groundwater Basin?	14:00:24
14	A. Yes. There were some -- and again, I	14:00:29
15	believe DWR led studies in the Salinas Valley Basin to	14:00:33
16	look at delineation of lithologies.	14:00:40
17	Q. Now, in your direct testimony, you	14:00:45
18	mentioned that there are some constraints that need to be	14:00:50
19	kept in mind in connection with using AEM; is that	14:00:54
20	correct?	14:01:01
21	A. Yes.	14:01:01
22	Q. And one of the constraints that you	14:01:01
23	mentioned was, I guess, what I would call how far down	14:01:05
24	into the ground can you go and get reliable AEM data. Is	14:01:10
25	that one of the constraints that you identified?	14:01:18

1	A. Yes.	14:01:20
2	Q. But that wasn't a factor, was it, for the	14:01:22
3	AEM work done for the CEMEX area?	14:01:27
4	A. Actually, it wasn't a factor. It was a	14:01:30
5	very important factor.	14:01:34
6	Q. And in what way?	14:01:35
7	A. Because the -- so what they call it is a	14:01:37
8	depth of investigation, or DOI, which is, basically, how	14:01:42
9	far down can you see with the AEM technique in a certain	14:01:46
10	area. That depth that you can see down is much more	14:01:57
11	limited when you have higher salinity.	14:02:00
12	So, for example, at the coast, with the elevated	14:02:03
13	salinity that we have here, you're limited to about -- I	14:02:07
14	think it's about 50 meters or about 150 feet, 160 feet	14:02:10
15	down that you can see.	14:02:15
16	So in this case, at the coast, you know, that	14:02:19
17	would allow you to see, say, the Dune Sand Aquifer and	14:02:22
18	maybe down into the 180-foot aquifer, but not into the	14:02:28
19	400-foot aquifer.	14:02:33
20	But as you move inland, where the salinity is	14:02:34
21	less, then you can see further down into the 400-foot	14:02:37
22	aquifer.	14:02:43
23	Q. So were the AEM researchers for the CEMEX	14:02:45
24	property area not able to go beyond the 180-foot aquifer?	14:02:53
25	Are you saying they weren't able to image the 400-foot	14:02:59

1	aquifer?	14:03:05
2	A. So, right at the coast, they did. They	14:03:05
3	show data that show they interpreted as being from the	14:03:08
4	400-foot aquifer. But, in my opinion, that data or that	14:03:15
5	interpretation is not valid strictly from a limitation on	14:03:19
6	the depth of investigation at that particular location.	14:03:22
7	Q. But you agree that the researchers felt	14:03:25
8	they had enough data to image the 400-foot aquifer?	14:03:30
9	A. Well, I -- I believe that within those	14:03:34
10	studies, there is some discussion of this issue and that	14:03:42
11	limitation on the depth.	14:03:46
12	That being said, at least, some of the people	14:03:49
13	who were involved in it -- I know in the second study that	14:03:54
14	AGF did, they claim to be able to do that, and they show	14:03:59
15	those images, but I think that, if you look at it	14:04:04
16	altogether, you would see that there's this limitation at	14:04:09
17	the coast.	14:04:15
18	Q. Let's move to talk about Ocean Water	14:04:15
19	Percentage, or OWP.	14:04:21
20	You are aware that the CPUC approved the Return	14:04:26
21	Water Settlement Agreement; correct?	14:04:32
22	A. My understanding is that that is part of	14:04:34
23	the project and required to be implemented as part of the	14:04:39
24	project.	14:04:42
25	Q. And you understand they approved it?	14:04:42

1	A. Yes.	14:04:45
2	Q. All right. Isn't it true that CPUC's	14:04:46
3	approval was based on return water deliveries within the	14:04:52
4	OWP range contained in the 2017 HWG report?	14:04:58
5	MR. BETZ: Objection; beyond the scope.	14:05:06
6	THE COURT: How is that within the scope of this	14:05:18
7	witness, Mr. Spaulding?	14:05:20
8	MR. SPAULDING: I'm sorry, Your Honor?	14:05:21
9	THE COURT: How is that within the scope of this	14:05:22
10	witness's testimony? In other words, you're asking about	14:05:23
11	CPUC's approval.	14:05:31
12	MR. SPAULDING: Yes, Your Honor. Because the	14:05:34
13	CPUC approval was based on a 96 to 99 percent OWP, and I	14:05:38
14	wanted to give that background and talk about it in light	14:05:47
15	of the OWP numbers that we were seeing now.	14:05:52
16	And of course, OWP is a fulcrum of the greater	14:05:56
17	or less than 500-acre-foot per year question.	14:06:01
18	MR. BETZ: I -- may I respond? May I respond?	14:06:05
19	THE COURT: Sure.	14:06:09
20	MR. BETZ: I have no problem cross-examination	14:06:10
21	on OWP. But the Return Water Settlement Agreement and the	14:06:12
22	inner workings of OWP there was not touched on on direct	14:06:15
23	examination. That's my issue.	14:06:20
24	MR. BROCHARD: Your Honor, if I may real quick?	14:06:23
25	In the Document 844, the opinion bases that	14:06:25

1	we've been looking at, he references the Return Water	14:06:30
2	Settlement Agreement at 1k with Mr. Leffler's signature	14:06:32
3	and initials next to it.	14:06:37
4	THE COURT: Can we put that up on the screen for	14:06:44
5	a moment.	14:06:46
6	Does somebody have relatively quick access to	14:06:48
7	that document?	14:06:51
8	I'm going to allow the question subject to a	14:07:32
9	motion to strike.	14:07:35
10	The Return Water Settlement Agreement was	14:07:42
11	referenced as a basis for Opinion Number 1. The CPUC's	14:07:44
12	condition of approval is potentially relevant as long as	14:08:05
13	we don't get into legal conclusions.	14:08:17
14	So overruled.	14:08:19
15	BY MR. SPAULDING:	14:08:24
16	Q. Mr. Leffler, do you remember the question?	14:08:24
17	A. Could you repeat it, please.	14:08:28
18	MR. SPAULDING: Madam Court Reporter, could you	14:08:30
19	reread it.	14:08:32
20	(Record read.)	14:08:55
21	THE WITNESS: So that is not my understanding.	14:08:58
22	My recollection is that the FEIR evaluated the different	14:09:00
23	Ocean Water Percentages down to 88 percent, and I think,	14:09:08
24	if I'm recalling correctly, they looked at, like,	14:09:16
25	different percentages, like 88, 91, 94, 97, something like	14:09:20

1	that.	14:09:26
2	But I know they looked at Ocean Water	14:09:27
3	Percentages down to 88 percent in the Environmental Impact	14:09:31
4	Report.	14:09:38
5	BY MR. SPAULDING:	14:09:38
6	Q. Let's go to Exhibit 311. 311.	14:09:38
7	Mr. Leffler, this is a copy of the	14:09:50
8	September 2018 CPUC decision. You can see the cover.	14:09:53
9	And I'd like to go to Page 153, please. And if	14:10:00
10	we could highlight the first full paragraph. Further up.	14:10:11
11	Thank you.	14:10:20
12	Let me just read to you. It says, "Second, as	14:10:21
13	discussed above, in approving the return water settlement,	14:10:25
14	we are doing so with the understanding that Cal-Am's	14:10:30
15	annual return water obligation deliveries will be within	14:10:33
16	the range estimated and will be calculated and based on	14:10:37
17	the methodology set forth in the FEIR."	14:10:42
18	And it's in Appendix D of the return water	14:10:48
19	settlement.	14:10:54
20	It then goes on to say that "The HWG hydrologic	14:10:54
21	investigation technical report," paren, "HWG report,"	14:10:59
22	close paren, "dated October 2, 2017, provides the	14:11:03
23	following major conclusions of the OWP analytical	14:11:09
24	modeling."	14:11:15
25	And then if we could go to the next segment.	14:11:16

1 And it goes on to say, "The primary conclusion 14:11:21
2 of this study is that the long-term equilibrium OWP is 14:11:27
3 estimated to range from 96 to 99 percent." 14:11:31
4 Do you see that? 14:11:39
5 A. Yes, I do. 14:11:40
6 Q. And then let's go further down the page to 14:11:42
7 Footnote 401, which states, "As discussed in Section 4.4, 14:11:55
8 Groundwater Resources, the HWG analysis estimates that the 14:12:03
9 long-term amount of freshwater within the source water, 14:12:07
10 stabilizing over the first several years of project 14:12:14
11 operations, would be within 1 and 4 percent." 14:12:16
12 Now, does all of that -- all of that information 14:12:20
13 on this page of the PUC decision refresh your recollection 14:12:27
14 as to whether the CPUC identified a 96 and 99 percent OWP 14:12:32
15 that was needed? 14:12:43
16 MR. BETZ: Objection. There's no memory to 14:12:43
17 refresh -- there's nothing to refresh. I don't think he 14:12:46
18 denied any memory of anything. 14:12:48
19 THE COURT: Well, he did qualify his answer 14:12:51
20 previously by saying if he recalled correctly. 14:12:55
21 A greater concern to the Court is that the 14:12:58
22 portions that are being read are only part of what the 14:13:00
23 CPUC report states. It talks about short-term and 14:13:03
24 long-term percentages, and I'm not really sure what the 14:13:06
25 relevance is to this witness's testimony. You know, 14:13:16

1 whatever the CPUC assumed, it assumed. And this witness
2 testified about what -- the methods of computing Ocean
3 Water Percentage.

4 MR. SPAULDING: Well, Your Honor --

5 THE COURT: I'm not sure where his testimony
6 relates to the CPUC decision.

7 MR. SPAULDING: Your Honor --

8 THE COURT: But I'm open to hearing.

9 MR. SPAULDING: Your Honor may be correct that
10 he's not the best witness for that.

11 The context is that the PUC said if that 96 to
12 99 percent amount is not met, Cal-Am has to pay the cost
13 of any return water above that amount. And I'm not asking
14 his opinion of that.

15 But I did want him to identify that figure,
16 because he referred to the report, so we can then go on to
17 discuss the State Water Board report.

18 THE COURT: Well --

19 MR. SPAULDING: Your Honor, I can withdraw the
20 question.

21 THE COURT: I really don't know what this
22 witness has to lend on that topic. I mean, he's discussed
23 the computation of Ocean Water Percentage. But in terms
24 of the conclusion about what legal obligations that would
25 trigger, I don't know what this witness testimony would

1 have to offer. 14:15:20

2 I suppose conceivably it could be relevant on 14:15:20
3 the issue of bias or influence. But he's basically 14:15:24
4 indicated that he wasn't aware of that number. So I'm 14:15:32
5 just -- I'm not sure where it would go. 14:15:35

6 MR. SPAULDING: Your Honor, I'll withdraw the 14:15:37
7 question. 14:15:39

8 THE COURT: Okay. 14:15:41

9 BY MR. SPAULDING: 14:15:42

10 Q. Why don't we move on. 14:15:42

11 Isn't it true that the State Water Board 14:15:47
12 concluded that an OMP of 90 to 92 percent, that represents 14:15:54
13 a reasonable approximation of the project's anticipated 14:16:01
14 Ocean Water Percentage? 14:16:07

15 MR. BETZ: Sorry. Objection. 14:16:09

16 So we have a clean record, I think Counsel said 14:16:11
17 OMP. 14:16:14

18 THE COURT: He did. I think we all 14:16:15
19 automatically thought OWP. But, yeah, it's probably best 14:16:17
20 to clarify that. Is it OWP or OMP? 14:16:22

21 MR. SPAULDING: Oh, I'm sorry. OWP. I'll ask 14:16:26
22 it again. 14:16:30

23 THE COURT: Okay. 14:16:30

24 BY MR. SPAULDING: 14:16:33

25 Q. Isn't it true that the State Water Board 14:16:34

1 concluded that an OWP of 90 to 92 percent is -- represents
2 a reasonable approximation of the project's OWP?

3 A. So I don't remember the exact words they
4 used offhand in terms of reasonable approximation, but I
5 do remember their finding of 90 to 92 percent.

6 Q. And isn't it also true that that percent
7 range was one that applied after the initial transition
8 period?

9 MR. BETZ: Objection; vague as to "transition
10 period."

11 THE COURT: I think I know what the question
12 means, but it could be clarified. If he's talking about
13 after initial pumping once the project reaches the stage
14 of equilibrium, I suppose the question could be clarified
15 somewhat as to that.

16 BY MR. SPAULDING:

17 Q. Why don't we look at Exhibit 822, PDF Page
18 75 -- actually, 76, please, and the first full paragraph.

19 First sentence says, quote, "The parties'
20 estimated OWPs represent the percentage of water
21 originating from offshore sources and -- as opposed to
22 onshore sources after this initial transitional period."

23 Do you see that?

24 A. Yes, I see that.

25 Q. And didn't the State Water Board also say

1	that the transition period is so that the groundwater	14:18:35
2	systems' response to pump project pumping stabilizes?	14:18:40
3	A. Well, again, I don't remember the exact	14:18:48
4	language. I hardly define that transitional period	14:18:52
5	offhand.	14:18:56
6	Q. Let's go to PDF Page 73. First sentence of	14:18:57
7	the first paragraph.	14:19:07
8	It says, quote, The source of water drawn by the	14:19:08
9	proposed slant wells can also be described by the location	14:19:13
10	of the origin of the water following an initial	14:19:16
11	transitional period in which the groundwater system's	14:19:21
12	response to project pumping stabilizes, end quote.	14:19:25
13	Does that refresh your memory as to what the	14:19:30
14	State Water Board intended?	14:19:34
15	A. Yes, I see that.	14:19:38
16	Q. Do you agree then that the State Water	14:19:41
17	Board adopted a 90 to 92 percent OWP, which represents	14:19:44
18	their calculation of the project's OWP after the	14:19:51
19	transition period occurs?	14:19:55
20	A. That is my understanding, that they had	14:20:00
21	that finding based on the technical analyses provided by	14:20:03
22	both -- both sides' experts.	14:20:11
23	Q. And that is the conclusion they came to;	14:20:15
24	correct?	14:20:21
25	A. Yes.	14:20:21

1	Q.	Do you agree with that conclusion?	14:20:22
2	A.	No.	14:20:26
3	Q.	All right. While we were looking at the	14:20:30
4		OWP calculations here, let's review quickly the State	14:20:34
5		Water Board's calculations of the resulting quantity of	14:20:39
6		non-ocean water that the project would involve during	14:20:43
7		operation.	14:20:50
8		Isn't it true that the State Water Board	14:20:50
9		concluded that the amount of water could be as high as	14:20:53
10		1,389 acre-feet per year?	14:20:58
11	A.	Well, again, I don't remember the exact	14:21:04
12		figure offhand.	14:21:08
13	Q.	All right. Let's go to Page 70 -- PDF	14:21:10
14		Page 76, first full paragraph.	14:21:15
15		The second sentence states, quote, We	14:21:23
16		approximate the amounts drawn by the proposed slant wells	14:21:26
17		from sources other than the ocean, based on the higher end	14:21:31
18		approximation of OWP of 92 percent, to be approximately	14:21:34
19		1,039-acre-feet for the 11.6 MGD alternative and	14:21:41
20		1389-acre-feet for the 15.5 MGD alternative, close quote.	14:21:49
21		Does that refresh your memory on that subject?	14:21:55
22	A.	Yes.	14:22:01
23	Q.	Now, in connection with the AHO	14:22:02
24		proceedings, did you estimate the three dimensional space	14:22:09
25		size that there is directly beneath the CEMEX property?	14:22:14

1 A. I'm sorry. Can you repeat the question. 14:22:20

2 Q. Sure. 14:22:27

3 In connection with your work for the AHO 14:22:28

4 proceeding, isn't it true that you estimated the size of 14:22:34

5 the three dimensional space existing directly beneath the 14:22:38

6 CEMEX property? 14:22:44

7 A. I recall doing a calculation that may have 14:22:55

8 included that. 14:23:02

9 Q. Let's look at Page 75 of this document at 14:23:05

10 the very bottom. It says, quote, Cal-Am technical expert, 14:23:10

11 Mr. Leffler, estimated this space -- that this space would 14:23:22

12 yield approximately 11,100 acre-feet of water. And 14:23:29

13 there's a site to the transcript. And that most of that 14:23:37

14 water would likely be extracted after, roughly, a year of 14:23:40

15 project pumping during the transitional period in which 14:23:44

16 the groundwater system's response to project pumping 14:23:50

17 stabilizes, close quote. 14:23:54

18 Does that refresh your memory as to whether you 14:23:57

19 made that calculation? 14:23:59

20 A. Yes. 14:24:03

21 So I remember doing a calculation of a volume of 14:24:03

22 water, which I think is a little bit different than the 14:24:07

23 question you first asked me. And so this -- you know, 14:24:11

24 this was sort of done on the spot. And, you know, I did 14:24:18

25 that calculation. So, yes, I remember doing that 14:24:22

1	calculation.	14:24:27
2	Q. All right. And you believe it's accurate?	14:24:28
3	A. I mean, I think, in terms of the volume of	14:24:33
4	water, that would be accurate; although, I mean, I haven't	14:24:37
5	gone back to sort of follow-up and double-check it and,	14:24:42
6	you know, refine it at all.	14:24:46
7	I think the -- you know, the timeframe of	14:24:49
8	removing that is a little more challenging question to	14:24:53
9	have done on the spot. So that would probably need maybe	14:24:58
10	a little more work to update and refine. But I do recall	14:25:02
11	saying that at the time when I was testifying.	14:25:07
12	Q. And are you saying that perhaps it could be	14:25:10
13	longer or shorter of a time?	14:25:14
14	A. Yeah. I mean, I didn't have the benefit of	14:25:18
15	doing any detailed analysis. It was just my initial	14:25:21
16	estimate.	14:25:25
17	Q. Could it be over a two- to three-year	14:25:25
18	period?	14:25:32
19	A. Yeah, it could be longer or shorter.	14:25:32
20	Q. Now, didn't the State Water Board then find	14:25:35
21	that this water will be replaced by water drawn into the	14:25:41
22	aquifers from the ocean and sources other than the ocean;	14:25:45
23	correct?	14:25:57
24	A. I see that's what it says there at the	14:25:57
25	bottom.	14:25:59

1	Q. Let's talk about freshwater for a few	14:26:10
2	minutes.	14:26:12
3	You are aware of the State Water Board drinking	14:26:13
4	water policy in Resolution 8863; correct?	14:26:19
5	A. Yes.	14:26:25
6	Q. And what is your understanding of what that	14:26:25
7	policy provides?	14:26:28
8	A. It -- it provides -- I believe it talks	14:26:36
9	about potential beneficial uses and TDS water quality.	14:26:39
10	Q. All right. I would like to read some	14:26:49
11	testimony --	14:26:52
12	MR. SPAULDING: Your Honor, trial testimony,	14:26:54
13	that Mr. Leffler testified to on March 27th. And I want	14:26:57
14	to make sure I get it right, because I have a couple of	14:27:04
15	questions to him about it.	14:27:08
16	With Your Honor's permission, I'd like to pull	14:27:10
17	up that page in testimony.	14:27:14
18	MR. BETZ: May I respond?	14:27:16
19	THE COURT: You may.	14:27:17
20	MR. BETZ: First of all, State Water Board 8863	14:27:18
21	and issues related thereto appear to be beyond the scope.	14:27:22
22	Two, I'm not sure for what purpose testimony's	14:27:25
23	being read right now.	14:27:28
24	THE COURT: Well, with respect to State Water	14:27:30
25	Board Policy Resolution 8863, I think there was testimony	14:27:40

1	from Mr. Leffler about water quality standards on direct.	14:27:43
2	So I believe this would be relevant on that topic.	14:27:51
3	Now, I'm not sure what the purpose of addressing	14:27:55
4	the earlier testimony from the rough transcript would be.	14:28:16
5	But, if it's simply to set the stage for some questioning	14:28:27
6	to show the scope of direct examination, then it would be	14:28:30
7	permissible.	14:28:34
8	So I'll allow it subject to a motion to strike.	14:28:34
9	MR. SPAULDING: Thank you, Your Honor.	14:28:38
10	MR. BETZ: I'm sorry. Page and line.	14:28:40
11	MR. SPAULDING: Mr. Berggren, can we bring that	14:28:42
12	page up. And perhaps, you know, focus in.	14:28:44
13	I'm going to read a --	14:28:47
14	MR. BETZ: May I please read it.	14:28:47
15	Okay. Go ahead.	14:29:01
16	THE COURT: You may.	14:29:02
17	MR. SPAULDING: All right. Thank you, Your	14:29:06
18	Honor.	14:29:08
19	Starting with -- and I'll say that this is in	14:29:09
20	the context of an AGF study of an AEM, and there were	14:29:12
21	questions about what is freshwater.	14:29:21
22	So the question from Mr. Betz was:	14:29:23
23	"As an aside, what did AGF -- what did the AGF	14:29:28
24	study define as freshwater?	14:29:33
25	"ANSWER: They generally define freshwater as	14:29:35

1 3,000 milligrams per liter. 14:29:38

2 "QUESTION: Are you aware of 3,000 milligrams 14:29:40

3 per liter constituting freshwater in the basin? 14:29:43

4 "MR. BROCHARD: Objection; calls for legal 14:29:48

5 conclusion. 14:29:51

6 "THE COURT: Not necessarily. Overruled. 14:29:52

7 "THE WITNESS: No. I've not heard of, in this 14:29:55

8 basin or elsewhere, anything near 3,000 milligrams per 14:30:00

9 liter TDS being defined as freshwater." 14:30:04

10 Mr. Betz's question: "Anywhere on this planet 14:30:07

11 have you heard that? 14:30:12

12 "ANSWER: No, I've not heard that." 14:30:13

13 BY MR. SPAULDING: 14:30:17

14 Q. So, with that as context, are you aware of 14:30:17

15 the Department of Conservations onshore well program? 14:30:21

16 A. I'm not sure what you're referring to. 14:30:31

17 Q. It's a program that regulates California's 14:30:36

18 oil and gas industries, and it is -- relates to 14:30:41

19 underground injection. Is that something that you've 14:30:48

20 worked with at all? 14:30:51

21 A. No, I don't believe I have. 14:30:55

22 Q. And are you aware that under that program, 14:30:57

23 freshwater is defined as water with a TDS concentration of 14:31:02

24 greater than 3,000 milligrams per liter? 14:31:07

25 A. I am not familiar with that program. 14:31:12

1 Q. At all? You've had nothing to do with it? 14:31:17

2 A. No. 14:31:23

3 THE COURT: Is this a regulation under what used 14:31:24
4 to be called the Department of Gas Regulation, DOGR was 14:31:26
5 the acronym? Does this have to do with injecting water 14:31:31
6 for the purpose of extracting? 14:31:39

7 MR. SPAULDING: Yes, Your Honor. 14:31:42

8 And it was partly adopted in connection with 14:31:43
9 fracking, which involved injecting water into the 14:31:46
10 subsurface. 14:31:51

11 THE COURT: It sounded familiar. I had a case 14:31:52
12 that challenged the anti-fracking ordinance in the state, 14:31:54
13 and we had extensive testimony about that, which had -- I 14:31:58
14 don't recall -- or as I recall, rather, that standard 14:32:08
15 defining freshwater did not deal with potable water. I 14:32:14
16 could be mistaken, but I would invite some further 14:32:18
17 discussion or showing about that. 14:32:26

18 Thank you. 14:32:28

19 MR. SPAULDING: Your Honor, I have a copy of the 14:32:29
20 regulation with the definitions for the program, and I 14:32:32
21 could introduce it to show this and show the witness. 14:32:35

22 THE COURT: I think that would be helpful. 14:32:44

23 And I recall now the name of the entity which 14:32:46
24 has since been changed, which is the Department of Gas and 14:32:49
25 Geothermal Resources of the State of California. 14:32:53

1	And I have some concern about what the relevance	14:32:56
2	of freshwater in that context would be compared to that of	14:32:59
3	drinking water, but I encourage you to present something	14:33:03
4	on that issue.	14:33:10
5	It's about 2:33 right now. We've been going	14:33:13
6	about an hour.	14:33:17
7	We'll take a 15-minute recess.	14:33:18
8	(Recess taken from 2:33 p.m. through	14:34:11
9	2:47 p.m.)	14:47:51
10	THE COURT: Okay. We're back on the record.	14:47:51
11	And Mr. Leffler is still under oath.	14:47:53
12	And you may resume, Mr. Spaulding.	14:47:55
13	MR. SPAULDING: Thank you, Your Honor.	14:48:00
14	We have copies of the regulation we just	14:48:01
15	introduced for the Court.	14:48:06
16	THE COURT: All right. Is this a State of	14:48:08
17	California department regulation? A federal regulation?	14:48:09
18	MR. SPAULDING: State of California, Your Honor.	14:48:15
19	THE COURT: Okay. So I've been handed a copy of	14:48:17
20	14 CCR 1720.1.	14:48:28
21	MR. SPAULDING: And we have marked this as	14:48:36
22	Exhibit 460.	14:48:38
23	(Plaintiffs' Exhibit No. 460, marked for	
24	identification.)	14:48:49
25	THE COURT: Okay. Exhibit 460.	14:48:49

1	That starts off by saying, "The following	14:48:52
2	definitions are applicable to this subchapter."	14:48:55
3	MR. SPAULDING: Correct.	14:49:06
4	THE COURT: That deals with what?	14:49:07
5	MR. SPAULDING: Then, if we go to subsection --	14:49:10
6	the definitions, Your Honor, deal with the onshore well	14:49:13
7	regulation program, which is the program -- one of the	14:49:16
8	programs we've been talking about. You can see that	14:49:21
9	indicated at the top.	14:49:27
10	And it's a regulation adopted by the Department	14:49:29
11	of Conservation.	14:49:32
12	THE COURT: Yes. Subchapter 1, "Onshore Well	14:49:40
13	Regulations."	14:49:55
14	All right. And this appears to deal with cyclic	14:49:55
15	steam injection wells that -- an injection well that	14:50:04
16	injects steam into an underground formation and then	14:50:06
17	subsequently produces hydrocarbons, and C, a disposal	14:50:10
18	injection well means an injection well into which fluid is	14:50:15
19	injected, primarily, for purposes of disposal rather than	14:50:18
20	enhancing recovery of hydrocarbons.	14:50:22
21	And freshwater, for purposes of this subchapter,	14:50:26
22	means water that contains 3,000 milligrams per liter TDS	14:50:29
23	or less.	14:50:34
24	Okay. I understand. It's been marked. You can	14:50:37
25	question.	14:50:46

1	MR. SPAULDING: Thank you, Your Honor.	14:50:47
2	BY MR. SPAULDING:	14:50:54
3	Q. Mr. Leffler, you testified that you don't	14:50:55
4	know anyone on this planet or anyone anywhere who defines	14:50:56
5	freshwater as water with a TDS of less than	14:51:03
6	3,000 milligrams per liter; correct?	14:51:07
7	MR. BETZ: Objection; misstates the testimony.	14:51:10
8	THE COURT: It's pretty close to what he	14:51:19
9	testified to, I think. The real issue is the relevance of	14:51:21
10	this regulation.	14:51:26
11	But you can ask him whether he testified to that	14:51:30
12	or not. That's permissible. It doesn't assume that he	14:51:36
13	did.	14:51:41
14	So the objection's overruled.	14:51:41
15	BY MR. SPAULDING:	14:51:44
16	Q. Mr. Leffler, you can answer.	14:51:44
17	A. So when I -- I made that statement, I was	14:51:48
18	referring to the context of groundwater supply for typical	14:51:52
19	municipal and agricultural uses.	14:52:00
20	Q. After you have seen how the State of	14:52:07
21	California defines freshwater for this particular program,	14:52:10
22	do you still believe that nowhere has anyone defined	14:52:17
23	freshwater to be less than 3,000 milligrams per liter TDS?	14:52:20
24	MR. BETZ: Objection; irrelevant.	14:52:25
25	This statute refers to oil and gas drilling.	14:52:27

1	If you look at 14 -- CCR, I think, 1712 tells us	14:52:31
2	the purpose for which these definitions arise, and it	14:52:37
3	deals with oil and gas.	14:52:41
4	THE COURT: Do you have available or can you	14:52:43
5	state for the record the provisions of Section 1712 of	14:52:46
6	Title 14 of the California Code of Regulations.	14:52:53
7	MR. BETZ: May I read it, Your Honor?	14:52:55
8	THE COURT: Yes.	14:52:56
9	MR. BETZ: It says, "These regulations shall be	14:52:57
10	statewide in application for onshore drilling," comma,	14:53:00
11	production and injection operations," period. "All	14:53:05
12	onshore prospect," comma, "development and service wells	14:53:09
13	shall be drilled and operated in accordance with these	14:53:12
14	regulations," comma, "which shall continue in effect until	14:53:14
15	field rules are established by supervisor" -- "by the	14:53:20
16	supervisor pursuant to Section 1722(k)," period. "If	14:53:24
17	field rules are established," comma, "oil and gas	14:53:29
18	operations shall be performed in accordance with those	14:53:33
19	field rules."	14:53:35
20	THE COURT: Well, I'll allow the question. I	14:53:38
21	think the problem, really, is it's got serious weight	14:53:40
22	problems even if admissible.	14:53:46
23	So let's see.	14:53:53
24	Mr. Leffler can answer the question.	14:54:11
25	THE WITNESS: I'm sorry. Can we repeat the	14:54:20

1	question.	14:54:21
2	THE COURT: We can have the court reporter read	14:54:22
3	it back.	14:54:25
4	(Record read.)	14:54:46
5	THE WITNESS: So, in the -- I'm not familiar	14:54:46
6	with this document or the context for this; although I	14:54:52
7	understand it's related to oil and gas.	14:54:58
8	My context for my statement of defining	14:55:00
9	freshwater, again, is for groundwater supply for your	14:55:04
10	typical municipal and agricultural uses.	14:55:08
11	I wasn't thinking about or referring to oil and	14:55:12
12	gas-related work.	14:55:17
13	BY MR. SPAULDING:	14:55:20
14	Q. Thank you.	14:55:20
15	Let's go to Exhibit 844, please.	14:55:23
16	This is your list of opinions.	14:55:28
17	I'm going to ask you questions about your first	14:55:31
18	opinion in which you state the project will extract	14:55:38
19	predominately seawater, probably 93 percent to 95 percent,	14:55:41
20	but at least 90 percent.	14:55:47
21	Now, in this, looking at Page 1 of the document,	14:55:55
22	if we could pull back out, you have testified to six	14:55:59
23	entries off this chart where you are the, quote, lead	14:56:05
24	expert. And you've talked about each of those, and I'd	14:56:12
25	like to go through them quickly to make sure that we have	14:56:21

1	the right context for the opinions you're giving.	14:56:25
2	Let's start with opinion -- excuse me --	14:56:26
3	Basis 1c, if we could highlight that row.	14:56:30
4	Now, you identify the model that you relied on	14:56:35
5	as the SWIM 2024. But, in fact, the one I think you were	14:56:39
6	referring to is the SWIM 2024 plus the slant wells plus	14:56:47
7	the other adjustments; is that correct?	14:56:54
8	A. Yes, just with the clarification that	14:56:58
9	the -- it -- there's the addition of the slant wells and	14:57:00
10	one other adjustment. So it's not adjustments. It's	14:57:04
11	really just one.	14:57:09
12	THE COURT: Can we make sure the record is clear	14:57:10
13	about what has been identified as SWIM 2024.	14:57:14
14	Is SWIM 2024 referring to the Montgomery and	14:57:19
15	Associates report in its unadulterated form, or is SWIM	14:57:30
16	2024 the Montgomery and Associates model with your	14:57:35
17	changes?	14:57:39
18	THE WITNESS: So, in the context of these	14:57:42
19	opinions, it would be the Montgomery SWIM Model 2024 with	14:57:46
20	my adjustments or modifications.	14:57:53
21	THE COURT: Okay. So Montgomery did do a SWIM	14:57:55
22	Model 2024?	14:57:59
23	THE WITNESS: Yes, they -- they have their	14:58:00
24	version of it.	14:58:03
25	THE COURT: Okay. Thank you.	14:58:04

1	I apologize for the interruption.	14:58:06
2	MR. SPAULDING: Actually, I was about to go	14:58:08
3	there.	14:58:10
4	BY MR. SPAULDING:	14:58:11
5	Q. This model was created by Montgomery and	14:58:11
6	Associates; correct?	14:58:14
7	A. Yes. So the original SWIM Model 2024 was	14:58:16
8	created by Montgomery and Associates.	14:58:21
9	Q. But Montgomery and Associates did not run	14:58:22
10	any OWP calculations; correct?	14:58:28
11	A. Not to my knowledge.	14:58:34
12	Q. Instead, you revised the model by revising	14:58:36
13	the aquitard location, the FO-SVA, you turned off the	14:58:40
14	variable density feature, and then you did sensitivity	14:58:47
15	runs; correct?	14:58:53
16	A. I don't think that entirely captures what I	14:58:54
17	did.	14:58:57
18	Q. Please correct it.	14:59:02
19	A. So, again -- so what's referred to here as	14:59:04
20	the Seawater Intrusion Model 2024 -- so specific to this	14:59:08
21	opinion, 1c. So it's using the seawater intrusion model	14:59:13
22	2024 with the slant wells added, because Montgomery did	14:59:18
23	not insert the slant wells or the proposed slant wells.	14:59:24
24	And it does include the modification of the FO-SVA extent	14:59:28
25	that we extracted from Montgomery Seawater Intrusion Model	14:59:33

1	2025.	14:59:36
2	And then this particular run is accounting for	14:59:38
3	density. And so this particular run doesn't have the	14:59:43
4	without-density calculation. And it also doesn't have	14:59:49
5	some of the other things. It's just strictly -- it's just	14:59:58
6	strictly that model with the slant wells and the changed	15:00:01
7	FO-SVA extent and then running it.	15:00:04
8	Q. And you only ran it for an 11.6 MGD plant;	15:00:10
9	correct?	15:00:19
10	A. Correct.	15:00:19
11	Q. You didn't run it for the full 15.5 MGD	15:00:19
12	plant?	15:00:23
13	A. Correct. What I'm presenting here is the	15:00:24
14	11.6 MGD run.	15:00:27
15	Q. Did you run it for the 15.5 MGD plant and	15:00:33
16	not produce it, or you never made that run?	15:00:37
17	A. I know I ran it for the 2023 version for	15:00:46
18	the AHO proceedings. I think I focused on the 11.6 for	15:00:49
19	the Seawater Intrusion Model 2024.	15:00:56
20	Q. So, after making these changes to the	15:00:58
21	model, you ran it, and you ended up with a 95 percent OWP;	15:01:02
22	correct?	15:01:13
23	A. Yes, as a sort of a rough average. It	15:01:13
24	varied a little bit above and below that. But 95 was kind	15:01:18
25	of in the middle.	15:01:21

1 Q. Let's go to Row 1e. And these calculations 15:01:22
2 are based upon the Weiss 2020 model. 15:01:28
3 But, again, you didn't run the original Weiss 15:01:33
4 2020 model, did you? 15:01:37
5 A. So what we're -- 15:01:41
6 Q. That's a yes-or-no question. If you 15:01:42
7 wouldn't mind answering "yes" or "no" first. 15:01:47
8 A. I'm sorry. Can you repeat the question. 15:01:50
9 Q. Sure. 15:01:53
10 You didn't -- the results that you have here are 15:01:54
11 not based on running the original Weiss program; correct? 15:02:00
12 A. That's correct. 15:02:08
13 Q. And, in fact, Weiss ran -- ran his model 15:02:11
14 and came up with a wide range of OWP, some as low as 75 15:02:16
15 percent; correct? 15:02:25
16 A. Well, again, I don't remember the exact 15:02:27
17 numbers on the low end, but, you know, ballpark, that's -- 15:02:30
18 yes, they had a wide range for all -- when you consider 15:02:34
19 all the scenarios that they ran. 15:02:39
20 Q. So the data you are reporting here resulted 15:02:41
21 from the changes that you made to the model? 15:02:45
22 A. So I think -- so we used -- it was 15:02:53
23 essentially the same underlying model, but we made those 15:03:03
24 changes ourselves. We did not take what Weiss ran exactly 15:03:08
25 and run it ourselves. 15:03:15

1	We had their scope of work before they did their	15:03:16
2	work, and so we did our best to take the underlying model	15:03:19
3	and do those simulations ourselves.	15:03:23
4	Q. But you made some important changes, for	15:03:26
5	example, to the hydraulic conductivity assumptions;	15:03:35
6	correct?	15:03:39
7	A. So not exactly.	15:03:40
8	So my recollection is that -- so there was an	15:03:41
9	underlying model that had been used for the FEIR that had	15:03:44
10	been calibrated by HydroFocus.	15:03:49
11	Then Weiss came out with a scope of work that	15:03:55
12	said they wanted to do certain things, different	15:03:59
13	gradients, you know, maybe some change to see hydraulic	15:04:04
14	connectivity in certain zones. So we took that scope of	15:04:12
15	work, and we tried to implement that ourselves. So the	15:04:16
16	idea of what we were doing is to mirror what Weiss was	15:04:19
17	going to do, or simulate, because we wanted to see, you	15:04:22
18	know, for ourselves what type of results we would get.	15:04:26
19	Q. So you did change the hydraulic	15:04:29
20	conductivity values; correct?	15:04:36
21	A. Only in accordance to what the Weiss scope	15:04:38
22	of work said they were going to do.	15:04:41
23	Q. You also changed the recharge inputs, did	15:04:42
24	you not?	15:04:48
25	A. I believe we used -- so Weiss said they	15:04:50

1 wanted to create certain gradients, like in the Dune Sand 15:05:05
2 Aquifer. So we put in recharge to try to create those 15:05:08
3 gradients. So we -- the changes we made were to try to 15:05:18
4 simulate the different tasks and the different gradients 15:05:24
5 that the Weiss scope of work had outlined. 15:05:29

6 Q. And as you testified earlier, isn't it 15:05:35
7 correct you made changes that you personally felt were 15:05:38
8 reasonable to make? 15:05:43

9 A. So we made the range of changes that Weiss 15:05:46
10 had suggested, including the ones that I felt were 15:05:52
11 unreasonable, in my opinion. 15:05:57

12 So we made those simulations, and they're 15:05:59
13 included in the report. 15:06:02

14 What I show here for the end result of 93 to 98 15:06:04
15 comprises just the simulations that, in my opinion, had 15:06:13
16 reasonable model inputs. 15:06:15

17 Q. You didn't work with Weiss on this, did 15:06:18
18 you? He was not a part of this revision; correct? 15:06:21

19 A. No, except that we took their scope of work 15:06:28
20 and tried to implement it. 15:06:31

21 So, in that sense, they were part of it, because 15:06:34
22 they said, "This is the scope of work. This is what we're 15:06:37
23 going to do." And we had that. And that was the basis 15:06:39
24 for this work. 15:06:43

25 Q. So, after making all of these changes, you 15:06:44

1 came up with a 93 to 98 percent OWP? 15:06:49

2 A. So the changes we made to try to simulate 15:06:57
3 the Weiss scope of work, or duplicate the Weiss scope of 15:07:02
4 work, resulted in the estimate that I'm presenting here. 15:07:08

5 Q. Let's go to Row 1f, please. 15:07:11

6 The reference here is Weiss 2020 had 15:07:19
7 superposition model, I believe. 15:07:23

8 Which model are we talking about here? Are we 15:07:27
9 talking about the original Weiss model or a Leffler 15:07:31
10 tweaked model? 15:07:39

11 A. So the model -- so Weiss obtained the model 15:07:42
12 that HydroFocus had created for the FEIR, and they -- 15:07:48
13 starting with that model and their scope of work, they 15:07:57
14 made some -- well, I would call them more sensitivity 15:08:03
15 runs. 15:08:08

16 So they took that original model, and they made 15:08:08
17 a long series of sensitivity runs where they changed 15:08:10
18 certain model inputs for a given run. And then they used 15:08:15
19 it to calculate the Ocean Water Percentage. 15:08:19

20 Q. So I'm not sure you've answered my 15:08:24
21 question. 15:08:27

22 Did you use the original Weiss model, or did you 15:08:27
23 revise it? 15:08:31

24 A. Well, I guess I'm a little confused, 15:08:34
25 because we moved on to the Weiss work, the work that Weiss 15:08:36

1 did that I had no involvement with. 15:08:40

2 Q. That's my question, I guess. 15:08:49

3 Are you saying, then, that you took the original 15:08:50

4 Weiss model, made no changes to it, and came up with 91 to 15:08:53

5 99 percent OWP? 15:09:00

6 A. No, that's not what I'm saying. 15:09:05

7 Q. Well, please correct it. 15:09:08

8 A. So opinion Basis 1f is referring to the 15:09:11

9 work that Weiss Associates conducted with no involvement 15:09:16

10 from myself. And so it's just the Weiss work, their own 15:09:23

11 work. 15:09:29

12 Q. And what's -- you're saying Weiss -- in 15:09:31

13 Weiss's report came up with 91 to 99 percent of all their 15:09:36

14 scenarios? 15:09:42

15 A. No. What I'm saying is that, if you look 15:09:43

16 at the Weiss report and all their results, and you look at 15:09:46

17 what, in my opinion, were the scenarios of the sensitivity 15:09:51

18 runs that they played that had reasonable model inputs, 15:09:57

19 that the range of Ocean Water Percentage you would derive 15:10:01

20 as between 91 and 99 percent. 15:10:05

21 Q. So does that mean that you threw out and 15:10:07

22 did not use the neutral gradient, 0.00, as part of your 15:10:12

23 reasonable calculations? 15:10:21

24 A. There was no neutral or flat gradient 15:10:23

25 simulation that Weiss conducted. 15:10:28

1	Q.	Was there a .004 gradient calculation that	15:10:29
2		Weiss used?	15:10:35
3	A.	Yes.	15:10:38
4	Q.	And did you throw that out?	15:10:39
5	A.	No.	15:10:41
6	Q.	You kept that? I thought your testimony	15:10:41
7		was that you didn't believe that was reasonable.	15:10:45
8	A.	I included the .0004 gradient. Now, there	15:10:51
9		were some -- so there's a combination of inputs here. So	15:11:01
10		under the .0004 gradient, they ran -- I don't know, maybe	15:11:07
11		15 -- ten to 15 different -- so it's, like, a second	15:11:13
12		variable that they modified under the .0004 gradient.	15:11:18
13		So, for example, recharge. So they took the	15:11:24
14		.0004 gradient, and let's say they added 15 inches of	15:11:27
15		recharge to that. So I did not include that one. So it's	15:11:31
16		under .004 gradient, but it had 15 inches of recharge.	15:11:38
17		But, on the other hand, they had a .0004	15:11:44
18		gradient where they ran it with five inches of recharge.	15:11:47
19		And I included that one, because I thought, you know, that	15:11:50
20		was, at least, a relatively reasonable -- or within the	15:11:52
21		realm of reason for recharge.	15:11:55
22	Q.	So is it fair to say that you selected	15:11:59
23		certain of the Weiss scenarios that you felt were	15:12:04
24		reasonable, and used those to come up with a 91 to 99	15:12:09
25		percent OWP?	15:12:17

1	A. Yes.	15:12:17
2	Q. Let's go to Row 1i. The reference here is	15:12:27
3	to the HWG 2017 report.	15:12:39
4	Is that the report and the model that was	15:12:42
5	utilized for the CPUC approval?	15:12:48
6	A. Well, that's -- that is the reference of	15:12:56
7	the report that you showed earlier in that document.	15:13:02
8	Q. All right. We've already discussed that.	15:13:10
9	That resulted to a 96 to 99 percent OWP; correct?	15:13:13
10	A. Yes.	15:13:16
11	Q. Let's go to 1j. In 1j, you refer to the	15:13:21
12	test slant well groundwater quality data. And in that	15:13:27
13	row, you are referring to the OWP results that came out of	15:13:33
14	the three-year full production test slant well run;	15:13:39
15	correct?	15:13:48
16	A. Yes.	15:13:48
17	Q. Let's pull up Exhibit 676, please.	15:13:59
18	Mr. Leffler, can you explain to us what this	15:14:10
19	chart is.	15:14:20
20	A. This chart is showing -- on the left-hand	15:14:20
21	side we have a month and a day. Then we have the monthly	15:14:25
22	average OWP, or Ocean Water Percentage. So I guess this	15:14:27
23	particular chart is -- so it's kind of split in half. So	15:14:35
24	the two left-hand columns go together, and go from April	15:14:40
25	'15 to September 2016. Then we jump up to the top on the	15:14:48

1 right-hand side, we have October 2016 to February 2018.

2 So it gives the monthly averages for the Ocean
3 Water Percentage.

4 Q. And it ended up with an average of 90.5
5 percent; correct?

6 A. Yes, that's what it says.

7 Q. And this resulted from a three-year run
8 simulating the operation of a 15.5 MGD plant; correct?

9 A. This resulted from the operation of the
10 test slant well for three years at 2,000 gallons per
11 minute.

12 Q. And was that meant to mimic what the
13 production would be of the full plant when built?

14 A. So, as we talked about, this is one of,
15 perhaps, five or so full scale production wells. And the
16 idea was to, you know, get an indication from field data
17 as to what the Ocean Water Percentage might be, with
18 consideration that, as I've discussed earlier, this was a
19 particular three-year period that was wetter than normal,
20 and had a influence from the percolation pond that made
21 these Ocean Water Percentage numbers a little bit lower
22 than would otherwise be expected.

23 Q. Well, wouldn't any operating plant have
24 periods of heavier rain, and periods -- dry periods, and a
25 lot of other conditions? So there's no reason to believe

1 that this average 90.5 percent is too low or too high for 15:16:46
2 a full production plant, is there? 15:16:52

3 A. Well, so first of all, there's no 15:16:55
4 expectation that there's going to be a percolation pond 15:16:58
5 next to the slant wells in the future. 15:17:03

6 And then number two is that if you look at the 15:17:08
7 rainfall for this three-year period, it was well above 15:17:12
8 average. So it overall does not reflect an average period 15:17:16
9 of rainfall. It's just reflecting an above average period 15:17:20
10 of rainfall. 15:17:24

11 And generally speaking, you'll see some 15:17:26
12 fluctuations in Ocean Water Percentage with rainfall. 15:17:29

13 Q. In any case, you are relying on these 15:17:32
14 results to support your expert opinion on OWP; correct? 15:17:36

15 A. Yes. It's supporting the -- I believe it's 15:17:41
16 the last portion of it where it says at least 90 percent, 15:17:44
17 because it builds in some conservative factors being the 15:17:47
18 effect of the percolation pond and the above average 15:17:54
19 rainfall. 15:17:58

20 So it's part of that last portion of the 15:17:58
21 opinion. 15:18:01

22 Q. Let's quickly look at the sixth and last 15:18:04
23 entry that you testified to. That's 1k, which refers to 15:18:07
24 the Return Water Settlement Agreement. 15:18:16

25 And you have cited there a sentence from that 15:18:20

1 report. 15:18:23

2 But stepping back from these six entries. You 15:18:28

3 have testified that these results all are consistent and 15:18:32

4 support Cal-Am's position; correct? 15:18:37

5 A. No, it's not Cal-Am's position. It's my 15:18:42

6 position of -- 15:18:44

7 Q. I'm sorry. 15:18:45

8 A. -- my opinion -- 15:18:46

9 Q. I meant your position. Thank you. 15:18:47

10 A. -- of what the Ocean Water Percentage would 15:18:49

11 be. 15:18:56

12 Q. All right. Well, let me rephrase it. 15:18:56

13 Is it fair to say that you believe these results 15:18:58

14 are consistent and fully support your OWP estimate? 15:19:00

15 A. Yes. In my opinion, these bases that are 15:19:10

16 listed here support my overall opinion and range that I 15:19:12

17 provide. 15:19:16

18 Q. Isn't it true that these results are, 15:19:18

19 really, all over the place? They range from 90.5 percent 15:19:21

20 to 99 percent. Don't you consider that quite a broad 15:19:27

21 range? 15:19:32

22 A. I, actually, consider that a fairly narrow 15:19:33

23 and consistent range in terms of an analysis like this. 15:19:36

24 Because it's looking at it in many different ways with 15:19:45

25 different groundwater models and an analytical approach 15:19:49

1	and field data. So, really, there's sort of three broad	15:19:55
2	methodology types that were applied here and including	15:20:00
3	some work by other consultants.	15:20:07
4	So I don't know. I think of it as actually a	15:20:09
5	fairly narrow range.	15:20:12
6	Q. Isn't it true that the expert opinion that	15:20:14
7	you've offered here is based on three studies that are	15:20:18
8	based on a model that you prepared and ran based on	15:20:25
9	modifying someone else's model, and on a quote from the	15:20:30
10	Return Water Settlement Agreement, and on one model whose	15:20:36
11	data you selectively took and lastly on test slant well	15:20:42
12	OWP data that is at 90.5 percent; correct?	15:20:49
13	MR. BETZ: Objection; compound; unintelligible.	15:20:54
14	THE COURT: Overruled.	15:21:01
15	The question, basically, seeks to summarize the	15:21:02
16	bases that were articulated for the opinion, and asks	15:21:10
17	whether, in fact, that is correct.	15:21:14
18	So overruled.	15:21:16
19	THE WITNESS: So my opinion is, based on all of	15:21:20
20	the bases listed here, including those that will be	15:21:23
21	testified to by others.	15:21:30
22	So, again, it's, again, other wide variety of	15:21:32
23	studies with different models that all leads to a fairly	15:21:35
24	narrow range of estimated Ocean Water Percentage.	15:21:41
25	////	

1	BY MR. SPAULDING:	15:21:46
2	Q. Do you agree or not agree with my	15:21:47
3	characterization?	15:21:49
4	A. I don't agree with the way you	15:21:54
5	characterized some of that. I think it's fair to say	15:21:56
6	whether a model input is reasonable or not. In my	15:22:01
7	opinion, I don't see how 15 inches of recharge is	15:22:04
8	reasonable when we know that the total average annual	15:22:07
9	rainfall is 14.3.	15:22:10
10	And so I -- you know, in reviewing -- reviewing	15:22:15
11	that information from, say, that study, I would	15:22:19
12	characterize it as not -- not being selective, per se, but	15:22:25
13	just using reasonable, you know, inputs to get a range.	15:22:33
14	You don't want to use an unreasonable input.	15:22:38
15	Q. And so if I understood what you mentioned a	15:22:42
16	minute ago, you are relying not just on the six categories	15:22:46
17	that you testified you were relying on, but you're relying	15:22:52
18	on other things as well; is that correct?	15:22:57
19	A. Well, I'm relying on the studies and	15:22:59
20	results that are listed here to make this opinion.	15:23:04
21	Q. Let's turn now to vernal ponds.	15:23:12
22	Now, isn't it true you were not originally	15:23:17
23	designated as an expert on vernal ponds; correct?	15:23:23
24	A. I -- I don't recall what my original -- I	15:23:40
25	don't recall the specifics of my original designation.	15:23:44

1	Q.	Were you designated after the trial	15:23:49
2		started?	15:23:53
3	A.	No, I don't -- I don't think there was a	15:23:56
4		change in my designation. I guess, first of all, I'm not	15:23:59
5		sure exactly what you mean by designation.	15:24:03
6	Q.	The attorneys in every case and in this	15:24:07
7		case had a deadline by which to designate experts, and	15:24:13
8		those expert designations are shared with the other	15:24:17
9		parties. And then there are depositions that take place	15:24:24
10		thereafter.	15:24:27
11		Is it fair to say that you were not part, to the	15:24:28
12		best of your knowledge, of the original designation of	15:24:32
13		experts, and you were not deposed as part of that round of	15:24:37
14		expert depositions, if you know?	15:24:41
15	A.	So in my first -- the time leading up to my	15:24:46
16		first deposition, I was not asked to provide an opinion on	15:24:51
17		vernal ponds at that time.	15:24:58
18	Q.	And you were asked at a later time,	15:25:01
19		obviously; correct?	15:25:04
20	A.	Yes.	15:25:06
21	Q.	You have not, personally, visited any of	15:25:07
22		the vernal ponds, have you?	15:25:10
23	A.	I have not.	15:25:14
24	Q.	Thank you.	15:25:18
25		You haven't physically walked any of the ponds?	15:25:19

1	MR. BETZ: Sorry, Your Honor. I don't think he	15:25:23
2	was finished answering the question.	15:25:25
3	THE COURT: If you had not completed answering	15:25:26
4	your answer, you can complete it, Mr. Leffler.	15:25:31
5	THE WITNESS: I have not, personally, walked	15:25:33
6	them. I've driven by some of them, but I have not	15:25:35
7	personally walked them.	15:25:41
8	BY MR. SPAULDING:	15:25:42
9	Q. You haven't taken any samples out of the	15:25:42
10	ponds, have you?	15:25:47
11	A. I have not.	15:25:48
12	Q. You haven't personally observed the	15:25:50
13	vegetation, have you?	15:25:54
14	A. Again, not other than, you know, driving by	15:25:58
15	some of them.	15:26:02
16	Q. But you have not analyzed it personally in	15:26:03
17	any more depth than that, have you?	15:26:06
18	A. No, I have not.	15:26:09
19	Q. And you're not a biologist, are you?	15:26:10
20	A. No, I am not.	15:26:15
21	Q. Let's turn to Exhibit 902, which is your	15:26:19
22	supplemental opinion basis relating to the vernal ponds.	15:26:27
23	And I want to ask you some questions about the	15:26:33
24	first entry, which is 1a.	15:26:35
25	You mention in the Comments section that your	15:26:43

1	opinion basis here is: "The development of paleosols,	15:26:47
2	evaporative deposits, hard pan, and/or cattle grazing have	15:26:57
3	created restrictive low permeability layers in the	15:26:59
4	wetlands/ponds areas."	15:27:02
5	Is that correct?	15:27:07
6	A. Yes.	15:27:08
7	Q. Now, did you base your finding of paleosols	15:27:15
8	on the boring logs in the GSS reports?	15:27:20
9	A. No.	15:27:28
10	Q. You did not base it on the boring logs?	15:27:29
11	A. No.	15:27:32
12	Q. Have you looked to the boring logs?	15:27:32
13	A. Yes.	15:27:34
14	Q. Is it fair to say that they do not reflect	15:27:37
15	any kind of paleosol or impermeable layer?	15:27:41
16	A. That's correct. The boring logs themselves	15:27:47
17	do not reflect the restrictive layer.	15:27:49
18	Q. Those boring samples were taken from the	15:27:52
19	Armstrong Ranch Pond; correct?	15:27:56
20	A. Yes.	15:27:59
21	Q. There were no boring samples taken at any	15:28:04
22	of the other six ponds, were there?	15:28:06
23	A. I don't believe so.	15:28:08
24	Q. Would you agree that, in evaluating	15:28:17
25	borehole logs, an abrupt buried erosional surface would be	15:28:19

1 evidence of paleosols? 15:28:26

2 A. Well, it's hard to necessarily see an 15:28:39

3 erosional surface in a boring log sometimes. You may see 15:28:42

4 it, or you may not. 15:28:49

5 Q. Are you done? 15:28:50

6 A. Yes. 15:28:51

7 Q. Would you agree that in evaluating borehole 15:28:53

8 logs, the presence of organic materials is evidence of 15:28:56

9 paleosols? 15:29:02

10 A. It could be. 15:29:06

11 Q. And is it also -- well, let me -- just 15:29:14

12 taking those two together, it's fair to say that in the 15:29:17

13 boring logs for -- that were taken by GSS, there was no 15:29:21

14 evidence of an abrupt buried erosional surface or the 15:29:27

15 presence of organic materials; correct? 15:29:35

16 A. I believe that's correct. 15:29:37

17 Q. Would you agree that in evaluating borehole 15:29:45

18 logs, the presence of bioturbation is evidence of 15:29:47

19 paleosols? 15:29:53

20 A. It could be. 15:29:57

21 Q. Can you explain what bioturbation is? 15:29:59

22 A. It's, basically, when you have, I'll say, 15:30:07

23 critters in the soil that are burrowing into the soil and 15:30:10

24 kind of leave behind a sign of that. 15:30:15

25 Q. And isn't it true that the boring logs here 15:30:19

1	do not show any evidence of bioturbation?	15:30:24
2	A. I don't recall that they, specifically,	15:30:32
3	listed that, no.	15:30:36
4	THE COURT: Can you spell that word for the	15:30:37
5	record, please.	15:30:39
6	MR. SPAULDING: Yes. B-I-O-T-U-R-B-A-T-I-O-N.	15:30:40
7	BY MR. SPAULDING:	15:30:49
8	Q. Would you agree that, in evaluating	15:30:49
9	borehole logs, the presence of soil horizons is evidence	15:30:51
10	of paleosols?	15:30:55
11	A. It could be.	15:31:03
12	Q. And there wasn't any evidence of soil	15:31:04
13	horizons in these particular borehole logs, were there?	15:31:06
14	A. I don't recall that that was noted.	15:31:12
15	Q. Would you agree that in evaluating borehole	15:31:15
16	logs, the presence of weathering is evidence of paleosols?	15:31:18
17	A. Yes, it could be.	15:31:26
18	Q. And what is weathering?	15:31:27
19	A. Weathering is when a soil is exposed at the	15:31:32
20	surface, and it's subject to the air and rainfall, and	15:31:36
21	that starts to break down the particles. Like you might	15:31:42
22	have a larger sand particle that gets broken down into	15:31:47
23	smaller particles. And so it's basically sort of the	15:31:51
24	breakdown of the soil particles due to that weathering.	15:31:56
25	Q. So, in summary, is it fair to say that	15:32:02

1	these GSS boring logs don't show evidence of an abrupt	15:32:07
2	buried erosional surface, the presence of organic	15:32:16
3	materials, the presence of bioturbation, the presence of	15:32:25
4	soil horizons, or the presence of weathering; correct?	15:32:29
5	A. I think that's correct that they were not	15:32:33
6	noted on the soil logs.	15:32:36
7	Q. Did you, actually, look at the soil cores	15:32:38
8	themselves?	15:32:42
9	A. No, I did not.	15:32:44
10	Q. You agree, do you not, that the borehole	15:32:50
11	logs do not show the existence of an impermeable layer;	15:32:54
12	correct?	15:33:00
13	A. The borehole logs in and of themselves do	15:33:00
14	not give an indication of that.	15:33:04
15	Q. Let's turn to cattle grazing.	15:33:09
16	Your opinion is that cattle grazing in the	15:33:12
17	vicinity of the vernal ponds could have contributed to the	15:33:20
18	creation of a restrictive layer; correct?	15:33:23
19	A. Yes.	15:33:25
20	Q. Let's go to Exhibit 622, PDF 19, please.	15:33:26
21	This is the -- one of the GSS reports.	15:33:34
22	If we could just flip back quickly to the first	15:33:40
23	page.	15:33:47
24	This is the May 12, 2021, GSS report.	15:33:47
25	And now let's turn to the page which has a	15:33:53

1	photograph, which is Figure 3-4, which we are showing	15:34:02
2	here.	15:34:08
3	And this is PDF Page 19.	15:34:10
4	What does this picture depict?	15:34:14
5	A. So this picture depicts sort of the -- you	15:34:18
6	can see sort of all the -- the paths here and sort of the	15:34:25
7	trampling of the soil. You see the different colors	15:34:34
8	there.	15:34:39
9	And so I think it's a combination of the -- sort	15:34:39
10	of the linear lines that you see and the overall	15:34:46
11	differences in color are an indication of cattle grazing.	15:34:50
12	And I think it's -- beyond this picture, it's known that	15:34:55
13	there was cattle grazing in this area for a period of	15:35:01
14	time.	15:35:04
15	Q. Is this a picture or part of Armstrong	15:35:04
16	Ranch?	15:35:11
17	A. That's what it says.	15:35:11
18	Q. And in the foreground, there appears to	15:35:13
19	be -- I don't know. But it appears to be a water surface.	15:35:21
20	And then around it, to the north and the east,	15:35:25
21	there appear to be those cattle.	15:35:28
22	Do you understand those are cattle in the	15:35:32
23	picture?	15:35:34
24	A. Yes, they could be.	15:35:38
25	Q. I think you had mentioned that you had	15:35:43

1 relied on a photograph for your belief that cattle grazing 15:35:46
2 might have been occurring in this area. 15:35:51

3 Is this the photograph you were thinking of? 15:35:53

4 A. I don't think I was relying strictly on a 15:35:56
5 photograph. I believe there's text in this report that 15:35:59
6 discusses that further. 15:36:02

7 Q. Oh, I see. You weren't, specifically, 15:36:04
8 relying on this photo? 15:36:06

9 A. Well, I think this is part of it. But 15:36:08
10 there's further discussion in this report. 15:36:12

11 Q. Now, are the Armstrong Ranch Ponds in the 15:36:14
12 background part of them? 15:36:19

13 A. Yeah, that's what it looks like. 15:36:24

14 Q. In the green area in the back? 15:36:26

15 A. Yes. 15:36:29

16 Q. Do you have any personal knowledge of 15:36:31
17 whether cattle ever grazed in the Armstrong Ponds? 15:36:34

18 A. I do not have personal knowledge. 15:36:40

19 Q. Do you believe that cattle have grazed in 15:36:43
20 these ponds? 15:36:46

21 A. Based on my review of the documents, it's 15:36:52
22 my opinion that that was a likely occurrence. 15:36:55

23 Q. Why do you say only likely? 15:36:58

24 A. Because cattle will -- because, based on 15:37:02
25 what it says in here, there was cattle grazing in the 15:37:05

1 area, and cattle will tend to go to water sources to drink 15:37:07
2 water. And so this would have been a seasonal water 15:37:14
3 source with the Armstrong Ranch Ponds for them to go to. 15:37:18
4 So I've -- you know, I've done a lot of hiking 15:37:22
5 in areas where there's cattle grazing, and I know they -- 15:37:26
6 they need to have water to drink. 15:37:30
7 Q. The cattle here are not near the ponds, are 15:37:32
8 they? 15:37:35
9 A. You can't tell from this picture if -- I 15:37:39
10 think because it's way in the background, if there are 15:37:43
11 cattle at the ponds. But, yeah, there's nothing I can 15:37:47
12 point to that there's a -- in this picture. 15:37:50
13 Q. All right. Thank you. 15:37:55
14 Let go to the next page, please, PDF 18. 15:37:56
15 Now, is this a paragraph -- it's numbered 3.2 on 15:38:21
16 PDF Page 18. That says, "Impacts of Historical Cattle 15:38:26
17 Grazing." 15:38:32
18 Is this text that you are relying on for your 15:38:32
19 opinion relating to cattle? 15:38:38
20 A. It would be at least part of it. I'd have 15:38:40
21 to review the whole document and what I provided to see 15:38:43
22 the full extent of it. 15:38:48
23 Q. Do you see a reference here to fencing 15:38:50
24 around the pond area? 15:38:53
25 A. Yes. 15:38:58

1	Q.	What's your understanding of whether or not	15:39:00
2		it was -- they were fenced in?	15:39:04
3	A.	So it describes that fencing around the	15:39:12
4		pond area can be observed on aerial photographs from 2007	15:39:19
5		and then goes on to say that the photograph below, showing	15:39:25
6		the pond area and the land surrounding Armstrong Ranch	15:39:36
7		Ponds, were used for cattle grazing until at least 2013.	15:39:42
8		And that fencing is not visible in the 2013 aerial	15:39:45
9		photograph.	15:39:50
10	Q.	Now, you see the next sentence, which	15:39:51
11		states, "Duripan" -- "duripan," D-U-R-I-P-A-N -- let me	15:39:58
12		start over.	15:40:01
13		"Duripan development," comma, or "soil	15:40:02
14		compaction," comma, "can result from the use of the area	15:40:05
15		as pasture for cattle."	15:40:09
16		What is duripan?	15:40:14
17	A.	So duripan is, basically, a development of,	15:40:18
18		again, a lower permeability restrictive layer that can	15:40:25
19		form from some combination of soil compaction, or sort of,	15:40:34
20		like, hard pan where you have sort of rainfall and mineral	15:40:39
21		constituents that get deposited in the shallow subsurface.	15:40:45
22	Q.	And it's your opinion that cattle grazing	15:40:51
23		can cause duripan soil?	15:40:54
24	A.	It can contribute to it with some	15:41:00
25		additional compaction.	15:41:02

1	Q.	Is it your opinion that the vernal ponds	15:41:04
2		are underlaine by duripan soil?	15:41:07
3	A.	It's my opinion that there's a restrictive	15:41:13
4		layer that, depending on where you are, may form from	15:41:16
5		different processes, but that there is some combination of	15:41:22
6		different types of restrictive layers.	15:41:31
7	Q.	And is it your testimony you believe there	15:41:34
8		is a duripan layer under the ponds?	15:41:43
9	A.	So whether it's a duripan layer or a	15:41:46
10		paleosols, or another method, my testimony is that there's	15:41:50
11		a low permeability restrictive layer that developed from	15:41:57
12		one of these processes.	15:42:04
13	Q.	But it's not detectible in the borehole	15:42:06
14		logs; correct?	15:42:09
15	A.	It is not described, specifically, in the	15:42:10
16		borehole logs in and of themselves.	15:42:15
17	MR. SPAULDING:	Your Honor, I don't know if this	15:42:22
18		is a good time to take a break.	15:42:23
19	THE COURT:	Sure. We can take the second	15:42:26
20		mid-afternoon recess at this time for 15 minutes. It's	15:42:28
21		3:42.	15:42:32
22		(Recess taken from 3:42 p.m. through	15:57:51
23		3:57 p.m.)	15:57:53
24	THE COURT:	Okay. We're back on the record in	15:57:53
25		the City of Marina versus RMC Lonestar.	15:57:55

1	All counsel are present.	15:57:57
2	Mr. Leffler is still on the stand, still under	15:57:58
3	oath, and need not be re-sworn.	15:58:03
4	You can resume, Mr. Spaulding.	15:58:03
5	MR. SPAULDING: Thank you, Your Honor.	15:58:05
6	BY MR. SPAULDING:	15:58:07
7	Q. In your direct testimony, you referred to	15:58:07
8	an article by Rains and a number of other authors. I'd	15:58:11
9	like to pull that up quickly. It's Exhibit 904.	15:58:17
10	You've read this entire article, have you not?	15:58:27
11	A. Yes, I've read this article.	15:58:32
12	Q. And it's from 1994 -- excuse me -- 2004;	15:58:36
13	correct?	15:58:49
14	A. I see dates of 2005 and '06. There, I see	15:58:49
15	received 2004.	15:58:55
16	Q. I think I misstated it too. Received in	15:58:56
17	2004, accepted 2005.	15:58:59
18	Now, is it fair to say that the article does not	15:59:01
19	specifically analyze vernal ponds in Marina?	15:59:06
20	A. Yes, it -- yes.	15:59:11
21	Q. Where were the vernal pools that were	15:59:13
22	analyzed in this article located?	15:59:18
23	A. It refers to the Central Valley.	15:59:21
24	Q. And that's not a coastal area, is it?	15:59:25
25	A. No, it is not.	15:59:30

1	Q.	Do you have an opinion as to whether the	15:59:31
2		vernal ponds in Marina have similar geological	15:59:34
3		characteristics to vernal pools in the Central Valley?	15:59:40
4	A.	Well, you'd have to look at the specifics	15:59:50
5		in terms of the sediments and the geology of the area.	15:59:52
6		But there may be differences. I believe the quote I was	15:59:58
7		extracting from here was just a more general -- relating	16:00:01
8		to a more general discussion of vernal pools overall.	16:00:07
9	Q.	So do you know or not know whether the	16:00:12
10		vernal pools in the Central Valley discussed in the	16:00:14
11		article have a similar geological characteristic to the	16:00:21
12		Marina ponds?	16:00:26
13	A.	I -- yeah, I don't recall the specifics of	16:00:29
14		that.	16:00:32
15	Q.	Do you know whether the geology of the	16:00:34
16		Central Valley includes alfisols?	16:00:42
17	THE REPORTER:	Sorry?	
18	MR. SPAULDING:	A-L-F-I-S-O-L-S.	16:00:46
19	THE WITNESS:	Yeah. I don't -- don't recall.	16:00:54
20	BY MR. SPAULDING:		16:00:57
21	Q.	What are alfisols?	16:00:57
22	A.	That's a particular type of soil. I	16:01:06
23		couldn't give you the specific definition of it.	16:01:08
24	Q.	You don't really know?	16:01:11
25	A.	Yeah, I don't recall that specific term.	16:01:13

1	Q.	Do you know whether the geology of the	16:01:18
2		Marina Coast line includes alfisols?	16:01:20
3	A.	I don't recall.	16:01:26
4	Q.	You don't know or you don't recall?	16:01:30
5	A.	I don't recall.	16:01:32
6	Q.	You mentioned in your opinion Basis 1-B	16:01:37
7		that there were pump tests conducted by GSS in late 2022;	16:01:40
8		correct?	16:01:50
9	A.	I think it was before late 2022, but, yeah,	16:01:50
10		I'm referring to the pump tests that they conducted.	16:01:58
11	Q.	At some point. I think the report was	16:02:01
12		dated in 2022.	16:02:05
13	A.	The report is dated July of 2022. That's	16:02:06
14		why I say I think it was before late 2022.	16:02:09
15	Q.	Isn't it true that there was substantial	16:02:12
16		rainfall during the tests?	16:02:16
17	A.	I think the rainfall, primarily, occurred	16:02:21
18		before and in between the tests that were conducted. And	16:02:25
19		I think there may have been rainfall on the first day of	16:02:34
20		the second test, but the majority of the rainfall occurred	16:02:37
21		I think before and in between the two tests.	16:02:44
22	Q.	In any case, the rainfall stopped the tests	16:02:48
23		for a period of time?	16:02:51
24	A.	So it -- I believe that the first test that	16:02:52
25		was run they did -- they did stop it because of	16:02:59

1 anticipation of a big -- of some big rainfall. 16:03:05

2 Q. And wasn't there ponded water around one of 16:03:09

3 the piezometers? 16:03:18

4 A. I believe there was. 16:03:19

5 Q. Wasn't it around a nested cluster of the 16:03:20

6 piezometers? 16:03:24

7 A. Yes, I believe it was. 16:03:25

8 Q. Let's go to some maps that you identified 16:03:35

9 in connection with your opinion basis 1h. And if we could 16:03:41

10 pull up Exhibit 905, please. 16:03:48

11 This is a two-page exhibit. And as you 16:04:02

12 described earlier, these maps show drawdown; correct? 16:04:04

13 A. Yes. 16:04:12

14 Q. But they don't show drawdown from the full 16:04:12

15 15.5 MGD project, do they? And we can look at both. 16:04:16

16 Maybe flip over to the second page, please. 16:04:25

17 A. So the -- it does not show the drawdown 16:04:38

18 from the 15.5 MGD project. 16:04:41

19 Q. And you determined that you wanted to show 16:04:44

20 the 11.6 project rather than the 15.5 project; true? 16:04:49

21 A. Yes, that's what these maps show. 16:04:56

22 Q. And you decided that you didn't want to 16:04:59

23 show that drawdown; correct? 16:05:01

24 A. I just decided to show the drawdown from 16:05:05

25 the coastal commission approved project. 16:05:09

1	Q.	Isn't it true that the full 15.5 MGD	16:05:16
2		project would show a greater amount and extent of drawdown	16:05:21
3		than these two figures?	16:05:28
4	A.	Yes.	16:05:35
5	Q.	And, sir, one of the subjects that you	16:05:44
6		brought up during the water quality portion of your	16:05:46
7		opinion bases had to do with the amount of salt that was	16:05:53
8		found in the upper layers of the pond areas. And I think	16:05:57
9		you said something along the lines of the amount of salt	16:06:04
10		was three to four times the amount of salt in deeper	16:06:08
11		layers.	16:06:14
12		Is that what you testified to?	16:06:15
13	A.	Generally, I think I was referring	16:06:21
14		specifically to electrical conductivity or TDS as a	16:06:24
15		measurement of, basically, dissolved solids in the water.	16:06:32
16	Q.	And it did characterize correctly your	16:06:35
17		opinion that the levels were three to four times higher	16:06:44
18		than were detected at lower levels?	16:06:46
19	A.	Yes, I believe that's correct.	16:06:54
20	Q.	Is it your opinion that you would not	16:06:55
21		expect that the Dune Sand Aquifer were hydraulically	16:06:58
22		connected with the ponds?	16:07:04
23	A.	Yes.	16:07:07
24	Q.	And can you explain again why.	16:07:09
25	A.	Because, if the -- if the coastal Dune Sand	16:07:13

1 Aquifer, for example, were to extend all the way to the 16:07:23
2 bottom of the ponds so that you had no restrictive layer, 16:07:28
3 then, to the extent that you had surface water coming in 16:07:33
4 to the ponds, and that evaporation of that surface water 16:07:41
5 would sort of concentrate a little bit, the salts that 16:07:45
6 would then seep into the underlying groundwater, they 16:07:49
7 wouldn't stay there. They would generally flow. With 16:07:57
8 groundwater, they would move away. So you wouldn't build 16:08:01
9 up a higher concentration. 16:08:04
10 Q. Isn't it true there could be many other 16:08:09
11 reasons why there would be higher salt in these surface 16:08:11
12 layers? 16:08:24
13 A. I think with -- if it were connected, that 16:08:24
14 you would not -- I would not expect to see that type of a 16:08:30
15 difference. 16:08:35
16 Q. I'm sorry. The type of? 16:08:39
17 A. A difference. 16:08:41
18 Q. A difference. 16:08:42
19 Now, isn't it true that plants absorb water and 16:08:42
20 groundwater and leave behind salt and minerals? 16:08:47
21 A. Yes, they could. 16:08:54
22 Q. Now, you work in basins where there is an 16:08:55
23 agricultural use, do you not? 16:09:07
24 A. Yes. 16:09:09
25 Q. And are you familiar with the term of 16:09:12

1	over-irrigation?	16:09:16
2	A. Yes.	16:09:19
3	Q. And what does over-irrigation mean?	16:09:19
4	A. So, generally speaking, if you have an	16:09:25
5	agricultural soil and you're irrigating with it, you may	16:09:31
6	have a buildup of salts in the soil in that vadose zone in	16:09:37
7	the soil. And in order to not have those build up too	16:09:45
8	much, you might over-irrigate so that you can flush those	16:09:50
9	salts down so that your soil where your plants are	16:09:56
10	growing, because you don't want it to be too salty. So it	16:10:01
11	helps to flush down the salts.	16:10:04
12	Q. So the concept is to put more water on the	16:10:07
13	ground in order to flush out the salts, and the nitrates,	16:10:13
14	and other contaminants?	16:10:16
15	A. Yeah. I mean, I don't think they're too	16:10:20
16	worried about nitrates. Well, I know we're all worried	16:10:23
17	about nitrates. But, from a plant standpoint, they like,	16:10:26
18	generally, the nitrates. So I don't think the nitrates is	16:10:30
19	as much of the problem. It's more the salts that can be a	16:10:34
20	problem for the plants.	16:10:39
21	Q. So is there agricultural uses? Are there	16:10:39
22	agricultural uses on the Armstrong Ranch?	16:10:43
23	A. Yes, there are some -- there are some	16:10:48
24	agricultural uses in the area, yes.	16:10:51
25	Q. And isn't it possible, if not likely, that	16:10:54

1 they would have contributed to the salt detected in the 16:10:58
2 surficial layers of the vernal ponds? 16:11:03

3 A. No, I don't think -- I wouldn't expect that 16:11:11
4 to be a contributing factor. 16:11:13

5 Q. Why? 16:11:16

6 A. Because their -- the agriculture is not 16:11:18
7 happening right at the ponds. It's a little bit of a 16:11:23
8 distance away, and I wouldn't expect the shallow salts to 16:11:26
9 possibly could be associated with that irrigation area to 16:11:33
10 migrate that far laterally. 16:11:37

11 Q. Couldn't there be surficial flow that would 16:11:39
12 carry it to the ponds? 16:11:45

13 A. Well, there could be -- there could be -- 16:11:54
14 just with any surface water runoff, you would expect a 16:11:56
15 little bit of dissolved solids with that. 16:12:00

16 So you would have to really look at that in 16:12:05
17 detail in terms of the watershed area for the ponds versus 16:12:07
18 where the agriculture is occurring to see. But I don't 16:12:12
19 think -- from my recollection, I don't think that would be 16:12:18
20 a significant contribution. 16:12:21

21 Q. Isn't it fair to say you don't really have 16:12:25
22 any evidence of what could be causing the surficial layers 16:12:28
23 to have more salt than they would otherwise have? 16:12:32

24 A. So I don't think it's actually that 16:12:40
25 important what the source of the salts is. I think the 16:12:42

1 greater point is that you do have some -- some level of 16:12:46
2 salts in the surface runoff. And then it comes into the 16:12:52
3 ponds, and then the water evaporates. 16:12:58

4 And, you know, we're talking about this 16:13:03
5 happening over many, many, many years. Tens, even 16:13:05
6 thousand years. And so the -- so you do have this 16:13:08
7 concentration of salts in the shallow subsurface as the 16:13:16
8 pond evaporates. 16:13:21

9 But, again, it's more about what happens from 16:13:23
10 there, because if the -- again, say the coastal Dune Sand 16:13:26
11 Aquifer is fully connected with the bottom of the ponds, 16:13:34
12 then you would expect that that salt would be dissolved 16:13:37
13 into that water and then flow away, because groundwater 16:13:41
14 moves. 16:13:50

15 But when you have a restrictive layer, it limits 16:13:50
16 the ability of those salts to migrate away. 16:13:53

17 Q. How old are the dune sands in Marina? 16:14:03

18 A. How old are they? 16:14:09

19 Q. Yes. 16:14:10

20 A. Well, I guess, first of all, are we talking 16:14:15
21 about the older Dune Sand complex? 16:14:17

22 Q. Yes. 16:14:20

23 A. Okay. So I think in geologic time, that 16:14:20
24 would probably go back to at least the Pleistocene. I'd 16:14:32
25 have to double-check on the exact age of them, but, you 16:14:36

1 know, they're quite old. 16:14:40

2 I mean, in our human terms, they're very old as 16:14:41

3 opposed to, you know, on the beach, you can get, you know, 16:14:45

4 sand coming down a river, and then it flows along the 16:14:50

5 shore, and then it gets washed up on the beach. And then 16:14:54

6 the wind blows it into the dunes, like, without the 16:14:58

7 vegetation. That can be very recent deposits. 16:15:01

8 Q. So you mentioned the Pleistocene era. 16:15:05

9 What's that era, generally? 16:15:11

10 A. So that is an era that started -- I believe 16:15:14

11 it was before 10,000 years ago or so. 16:15:20

12 Q. Was -- 16:15:27

13 A. And --

14 Q. I'm sorry. Go ahead. 16:15:27

15 A. Sorry. Yeah. 16:15:29

16 So again, I'd have to go back and refresh my 16:15:30

17 memory on the geologic time scale, but it's -- you know, 16:15:33

18 in geologic time, it's a pretty recent period, but, you 16:15:38

19 know, it was -- in human terms, it was many thousands of 16:15:43

20 years ago. 16:15:47

21 Q. And how old are the soils that underlie the 16:15:47

22 Armstrong Ponds? 16:15:54

23 A. Well, I don't know. So the soil -- so 16:15:58

24 basically you would have a geologic deposit that might be 16:16:05

25 of a certain age, and then a soil may form on top of that 16:16:11

1 deposit in more recent times. 16:16:19

2 So, generally -- the current soils that's 16:16:24
3 sitting on the surface would have, you know, developed in, 16:16:26
4 you know, over the last, you know, maybe hundreds of 16:16:34
5 years. 16:16:37

6 And so it's -- there's sort of the original 16:16:39
7 deposit that occurs, that gets laid down, and then there's 16:16:44
8 the weathering that subsequently forms the soils. 16:16:49

9 Q. Well, how about soils further down, the 16:16:53
10 ones that aren't quite so new? How old are those soils? 16:16:58

11 A. I don't -- I don't recall if they had 16:17:03
12 specific age-dating of those soils. I just -- I don't 16:17:10
13 recall how old they are. 16:17:15

14 Q. You mentioned earlier there was a category 16:17:16
15 of soils that were hundreds of thousands, if not millions, 16:17:20
16 of years old. What were those types of soils? 16:17:25

17 A. I don't -- I guess I don't recall saying 16:17:30
18 that exactly. 16:17:35

19 Q. I think it was in your direct testimony. 16:17:36
20 But it seemed like -- you don't recall mentioning that? 16:17:42

21 A. Yeah, I guess I don't recall that specific 16:17:51
22 testimony. 16:17:53

23 Q. But you had mentioned that impermeable 16:17:57
24 layers could be developed in those kinds of soils over 16:18:02
25 literally millenia. I was wondering if those are the kind 16:18:05

1	of soils that you would expect here or whether we have	16:18:10
2	newer soils that you think are creating an impermeable	16:18:15
3	layer.	16:18:22
4	A. Yeah, I just don't know on the age of the	16:18:37
5	soils. I guess I'm not recalling my specific testimony on	16:18:40
6	the age of the soils.	16:18:48
7	I guess I'm not sure how to answer your	16:18:55
8	question; or you might have to repeat it.	16:18:58
9	Q. Right.	16:19:03
10	I don't have the transcript in front of me. I'm	16:19:03
11	sorry. I can't go back to it.	16:19:06
12	So we'll leave it where it's at on that subject.	16:19:07
13	Do the Armstrong ponds overlie the FO-SVA?	16:19:18
14	A. I believe that some of them do.	16:19:23
15	Q. Which ones?	16:19:25
16	A. I'd probably have to look at the map to	16:19:28
17	confirm, but I want to say it's maybe two and three for	16:19:32
18	sure, and then I think one and seven are on the edge of	16:19:38
19	it.	16:19:45
20	Q. No. I'm sorry. I apologize if I wasn't	16:19:46
21	clear.	16:19:50
22	I was asking about the Armstrong Ponds, not all	16:19:50
23	seven of the vernal ponds.	16:19:55
24	A. Yes. Sorry.	16:19:57
25	So the Armstrong Ranch, I don't believe overlies	16:20:01

1	the FO-SVA.	16:20:04
2	Q. So they would not have that intermediate	16:20:07
3	perched layer that you referred to then?	16:20:12
4	A. Well, they would not be underlaying by what	16:20:24
5	I referred to as the perched/mounded aquifer that overlies	16:20:26
6	the FO-SVA.	16:20:30
7	Q. The last thing I wanted to ask you about	16:20:40
8	was the Ghyben-Hertzberg principle.	16:20:43
9	And I wonder if you would explain why the ponds	16:20:48
10	being close together would somehow change the application	16:20:55
11	of the Ghyben-Hertzberg principle.	16:21:00
12	And I apologize if that's not a perfect	16:21:05
13	question, but I'm trying to understand how you mentioned	16:21:08
14	it at the end of your direct testimony.	16:21:12
15	And perhaps, you could repeat the point you were	16:21:15
16	making about the Ghyben-Hertzberg principle.	16:21:19
17	A. So, as I understand the -- what Mr. Tietze	16:21:24
18	had explained, he was referring to the Ghyben-Hertzberg	16:21:33
19	principle, which is essentially something one might use to	16:21:37
20	try to take a look at where a seawater intrusion wedge is	16:21:44
21	occurring in the subsurface.	16:21:47
22	And as I understood it, he was saying that, in	16:21:51
23	applying that principle, that he concluded that the --	16:21:59
24	sort of the geometry of the wedge was such that the one	16:22:06
25	pond that had the higher salinity was in that portion of	16:22:14

1 the wedge that -- you know, that had high salinity, and 16:22:20
2 that the other pond next to it was in the portion of the 16:22:24
3 wedge that had a much lower salinity. 16:22:29

4 And there was a big contrast in those salinities 16:22:32
5 and those two ponds, which were literally right next to 16:22:38
6 each other. And I think it was -- one was like -- 16:22:42
7 something like 16,000, and the other one was like 300 or 16:22:46
8 something like that. 16:22:49

9 And so I'm not sure whether that principle would 16:22:52
10 even explain it, if there were a sharp interface where you 16:22:57
11 go from -- so what I mean by sharp interface is, along 16:23:02
12 that wedge, the boundary between the seawater and the 16:23:08
13 freshwater is -- is very sharp. It's very dramatic. You 16:23:13
14 go from, say, 30,000 TDS to 300 TDS. 16:23:18

15 And so I'm not -- I'm not even sure that, 16:23:25
16 because of the geometry of those ponds and the coast, that 16:23:28
17 that would even necessarily explain it, if that were the 16:23:31
18 case. 16:23:34

19 But, clearly, that's not the case. 16:23:34

20 You have a diffuse boundary, you know, where you 16:23:36
21 have seawater and freshwater. You don't have this sharp 16:23:42
22 interface. So you have a gradual transition from, say, 16:23:46
23 the 30,000 TDS to the 300 TDS, and that -- that is going 16:23:49
24 to occur over some significant distance that's, basically, 16:23:57
25 much greater than the distance between the two ponds, 16:24:01

1 which are right next to each other. 16:24:06

2 So I think that's the best way I can think to 16:24:08

3 explain it. I guess I'll conclude with that. 16:24:13

4 Q. Thank you, Mr. Leffler. 16:24:15

5 MR. SPAULDING: I have no more questions, 16:24:17

6 Your Honor. 16:24:19

7 THE COURT: All right. Thank you. 16:24:19

8 Well, let's see, Mr. Brochard. Would you like 16:24:24

9 to use the next six minutes to commence your questioning? 16:24:26

10 MR. BROCHARD: I just got kicked off the 16:24:28

11 internet. Does it make sense to just start fresh 16:24:30

12 tomorrow? 16:24:35

13 THE COURT: That's fine if you promise to turn 16:24:35

14 your mic on, yes. 16:24:42

15 MR. BROCHARD: Yes, I will turn my mic on. 16:24:45

16 THE COURT: All right. With that commitment, we 16:24:48

17 will adjourn until 8:30 tomorrow morning. 16:24:50

18 (Time noted: 4:24 p.m.) 16:24:55

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