SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SANTA CLARA

ANTELOPE VALLEY GROUNDWATER CASES,	) Santa Clara) Case No.) 1-05-CV-049053) VOLUME III

TRIAL TESTIMONY OF JOSEPH SCALMANINI

WEDNESDAY, JANUARY 12, 2011

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2000, we analyzed the yield -- it doesn't vary very much, but we analyzed the yield under prevailing land use conditions immediately prior to the filing of this adjudication, and/or the first action in this adjudication, and for periods of times since then. 10:37:04

Q. Mr. Scalmanini, if I could, please, could I direct your attention to the exhibit now premarked as Exhibit No. 55.

(Whereupon, Scalmanini Exhibit 55 was introduced for identification.) 10:37:15

THE WITNESS: Sure.

MR. DUNN: And, for the record, Exhibit No. 55 is one of the exhibits for which there is now a substitute of the exhibit from what was originally in the exhibit packets that were provided to the counsel. 10:37:24

So Exhibit No. 55 is marked "Appendix D-3: Table 4, Applied Crop Water Duties and Irrigation Efficiency Values." 10:37:47

BY MR. DUNN:

Q. Mr. Scalmanini, do you have Exhibit No. 55 before you?

A. Yes.

Q. Who prepared Exhibit No. 55? 10:37:52

A. Our office did.

Q. From what information -- or where does the information come from for Exhibit No. 55?

A. And not to pick on you, but I think I walked through all this yesterday afternoon; but I'll go through it again. 10:38:10

MR. KUHS: Asked and answered.

MR. ZIMMER: He did. That was the last one we discussed, Counsel.

MR. DUNN: Thank you, Counsel. 10:38:26

I'll withdraw that question.

BY MR. DUNN:

Q. Mr. Scalmanini, how does the information in Exhibit No. 55 convey your analysis for your opinions in this case? 10:38:34

MR. ZIMMER: Same objections we discussed with the Court.

THE WITNESS: Well, the -- I guess extracted from this exhibit by itself, the biggest, you know, single use going forward is to extract from the -- the ninth column, the total applied water on a crop-by-crop basis expressed both in inches and in feet in order to in effect take the historical agricultural land uses and not really convert them, but to utilize them as a basis for 10:38:51 10:39:24

estimating how much water was applied to those ag lands over time, most notably from the time period 1970 to the present which is the period for which we had the detailed crop reports that I described with regard to an earlier exhibit yesterday. 10:39:45

I can go back and dig out that exhibit number if you'd like.

BY MR. DUNN:

Q. And why was this information gathered?

A. Well, it was gathered for the exact 10:39:54 purpose that I just described as well as what I was saying in response to your earlier question, which is that there is no record of metered applied water use or agricultural land uses.

And so to get to an estimate of how much 10:40:12 water was applied to that widely varying, you recall that, you know, in the -- or by the 1950s that agricultural land use had ramped up to about 60,000 acres, stayed in that ballpark for several decades; like about three decades, then rather significantly 10:40:31 declined down to around 12,000 acres by 1989, 1990, or thereabouts, and climbed back up, you know, to about twice that from, say, 12,000 to around 25,000 acres, and it has been in that ballpark for the last decade or decade and a half. 10:40:47

So I think I said that, you know, logically water use or applied water would tend to track a similar shape of a curve, and to get to that, whether it exactly tracks the same shape or not, we utilized, you know, these derived applied water duties on a per-crop basis to multiply times the crop acres of specific crops and specific years to come up with an estimate of what agricultural applied water was. And that's why I say the ninth column was useful in that regard. 10:41:09 10:41:30

Q. And, for the record, can you just describe the label at the top of that column for us, please.

A. Yeah. The label is "AWt" for total applied water.

Q. And as indicated, there are two columns and one column is what on the left? 10:41:47

A. On the left it's the applied water expressed in inches per year, and on the right it's the equivalent in feet per year. So the right-hand side is simply the left-hand side divided by 12. 10:42:03

Q. If I could direct your attention, please, to the next exhibit marked in order which is Exhibit No. 56.

(Whereupon, Scalmanini Exhibit 56 was introduced for identification.) 10:42:19

MR. DUNN: For the record, Exhibit No. 56 is a substitution of an earlier premarked exhibit. I'll identify Exhibit No. 56 as follows: "Appendix D-3: Table 5 Crop Coefficients and Growth Stages California High Desert." 10:42:43

BY MR. DUNN:

Q. Mr. Scalmanini, do you have Exhibit No. 56 before you?

A. I do.

Q. And what is Exhibit No. 56? 10:42:48

A. Well, it's a copy of a table prepared by the University of California Cooperative Extension Service to list just what it says; you know, crop coefficients for the so-called high desert, which would include the Antelope Valley. It also 10:43:15 includes -- well, the crop coefficients are on the left-hand side and the crop water use estimates, which is a product of crop coefficients times reference evapotranspiration for the same crops, is listed on the right-hand side of that table. 10:43:35

It is prepared by the Cooperative Extension in 2004, and we relied on it and it is -- the values for crop coefficients are in effect the -- I'll call it the foundation for the values that are listed as crop coefficients in Exhibit 52. 10:43:55

They're the same numbers.

Q. And if I could, please, Mr. Scalmanini, direct your attention to Exhibit Number, which has been premarked, 57.

It is labeled "Appendix D-3: Table 6 Return Flow Rates Utilized with Crop Acreages Reported for 1970-2009," and below that it's parenthetically noted "(developed from Appendix D-3 Table 4)."

(Whereupon, Scalmanini Exhibit 57 was introduced for identification.)

BY MR. DUNN:

Q. Mr. Scalmanini, do you recognize Exhibit -- or strike that.

Where did -- did you prepare Exhibit No. 57? 10:44:56

A. Yes. My office did.

Q. Where did you obtain the data for Exhibit No. 57?

A. Well, the data that's reflected in table 57 is mostly derived from the series of tables that begin with Exhibit 52 and come forward from there. 10:45:07

I think I introduced yesterday as we got into this sequence that in effect, you know, such as 10:45:42

Exhibit 52 is a table 1 and Exhibit 53 is a table 2 and Exhibit 54 is a table 3, that there was a sequence of calculations that went from Exhibit 52 to 53 to 54.

So for the most part what's reflected in -- hang on one second. Not for the most part, in its entirety. The data, if you want to call it that, the numbers, the values that are reflected in Exhibit 57 derive from -- in someplace the exhibits that precede it. 10:46:08 10:46:39

Q. And those exhibits would be exhibits 52 through 56; is that correct?

A. Well, 52 through 55 to be, you know, rigorous. 56 is -- Exhibit 56 is support for the foundation for the values that are reflected in Exhibit 52. 10:46:58

Q. Exhibit --

A. One more thing about Exhibit 57 is that the last column, such as there are one, two -- a total of seven columns, then the return flow calculation is the one new piece that doesn't derive or isn't repeated from earlier tables but rather as a result of calculations that are reflected in the arithmetic in Exhibit 57. 10:47:17

Q. On Exhibit No. 57 the final column on the 10:47:31

right-hand side that's labeled "Return Flow," do you see that?

A. Yes.

Q. Does that column reflect the associated return flows from the applied crop water duties indicated on Exhibit 57? 10:47:44

A. Yes. That -- I just had to think about the way you phrased the question. That ultimately is intended to reflect the amount of water expressed either in inches or in feet. That after being applied in some form or another to crop acreages, it deep percolates past the root zone and produces return flows that will deep percolate back to the saturated zone in the aquifer system at depth. 10:48:05

Q. And, Mr. Scalmanini, why -- why is -- why is there a -- in Exhibit No. 57 as part of your analysis for the estimated yield of the basin? In other words, what component of Exhibit No. 57 is part of that analysis? 10:48:28

MR. ZIMMER: Same objections. 10:48:42

THE WITNESS: Okay. Can you give me a second to flip back --

BY MR. DUNN:

Q. Sure.

A. -- through the exhibits? 10:48:49

If you go back to Exhibit 12, there's a schematic illustration that's labeled "Sustainable Yield," but can equally be labeled "Safe Yield," and it reflects how in this case natural recharge, unquantified, this is just a schematic, you know, enters the basin, and it can be captured by pumping a single well, in this case illustrated in the middle of the diagram. 10:49:21

And that pumping is typically used for in this basin municipal-type uses and agricultural-type uses. And when used for either of those, some of the water is consumptively used which is reflected by the arrows pointing upward and labeled "CU." And some of the applied water is not consumptively used and deep percolates back to the groundwater basin and is a form of, what you might say, recharge called "return flows." But it goes back to the groundwater basin. 10:49:40 10:50:05

So ultimately to compute yield one needs to have some knowledge of what the natural recharge is as well as what the return flow contributions are from the use of natural recharge when it's pumped out of the groundwater basin. 10:50:22

So the significance of the last column in Exhibit 57 is that it provides input to 10:50:35

estimating how much return flow would result from the application of some amount of water that when combined with natural recharge is going to produce no change in groundwater storage; in other words, be a safe or sustainable level of groundwater pumping. 10:50:56

Q. Mr. Scalmanini, I'd like to direct your attention, please, to the next exhibit premarked as Exhibit No. 58, please. It is labeled "Summary of Applied Crop Water Duties Antelope Valley Area of Adjudication."

(Whereupon, Scalmanini Exhibit 58 was introduced for identification.)

BY MR. DUNN:

Q. Do you have Exhibit No. 58 before you?

A. Yes. 10:51:21

Q. Who prepared Exhibit 58?

A. My office did.

Q. What does Exhibit No. 58 show?

MR. ZIMMER: Same objections.

THE WITNESS: Exhibit 58 is simply 10:51:31 a summary of values extracted from preceding exhibits, and specifically such as there are really three columns; a list of crops, a list of evapotranspiration of applied water, and a list of total applied water. So evapotranspiration of 10:51:55

applied water, or abbreviated ETaw, is extracted from Exhibit 54, and total applied water, or AWt, is extracted from preceding Exhibit 57.

So it's just a summary of values that were subsequently used in -- again, "converting" is the wrong word, but utilizing agricultural land use acreages as a basis for then estimating how much water was associated with the irrigation of those lands over time. 10:52:45

BY MR. DUNN: 10:53:01

Q. And does Exhibit No. 58 show the total applied water as well as the evapotranspiration of the applied water?

A. Yes, it does.

Q. And how is the information illustrated on Exhibit No. 58 important to your analysis? 10:53:11

MR. ZIMMER: Same objection.

THE WITNESS: Well, not to give you a smart aleck answer, but I've tried to say it two or three times. That we're trying ultimately to get to an estimate of how much water was used in the Antelope Valley area of adjudication for irrigation of crop lands. 10:53:32

Those lands have varied in total from as high as about 60,000 acres to a low as about 10:53:45

12,000, 12,500 acres to, I'll call it, a resurgence up to about 25,000 -- or the better part of 25,000 acres in recent times. But those are just acreages, and there are a number of different crops that are utilized to add up to those total acreage. 10:54:05

So to -- I guess I will succumb and use the word "convert," but to convert those land uses for various crops into amounts of water that were applied from different sources at different points in time that -- how much water was applied, then 10:54:21 these applied water duties, which are expressed either in inches or feet per year, but ultimately we used feet per year times the number of acres to get acre feet per year. So there's simple multiplication of these applied water duties times 10:54:38 acreages of specific crops to estimate how much water was applied to those crops at various points in time.

BY MR. DUNN:

Q. I'd like to direct your attention, please, 10:54:48 to the next exhibit marked in order which is Exhibit No. 59. It is labeled "Estimated Early Historical Agricultural Water Requirements Antelope Valley Area of Adjudication."

(Whereupon, Scalmanini Exhibit 59 was 10:55:06

introduced for identification.)

BY MR. DUNN:

Q. Mr. Scalmanini, do you have Exhibit No. 59 before you?

A. I do. 10:55:13

Q. Who prepared Exhibit 59?

A. Our office did.

Q. What information was used for the preparation of Exhibit 59?

A. Exhibit 59 was based on a combination of 10:55:20 the unit water duties, summarized in Exhibit 58, and the historically reported acreages of various crops as graphically illustrated in Exhibit 39 and as tabulated in exhibits 41, 42, 43, and 44.

Q. What does Exhibit No. 59 show? 10:56:01

MR. ZIMMER: Same objections.

THE WITNESS: Exhibit 59 shows the amount of water which we -- you know, called water requirements for irrigated agriculture versus time in approximately the first half or a little beyond 10:56:46 the first half of the 20th century when the -- I'll call it the agricultural land use was building up as reflected in Exhibit 39.

So you might recall that when we illustrated kind of like the historical record of 10:57:04

land use that was available through about 1960; or specifically 1961, there were reports by either Snyder or the State Department of Water Resources, depending on points in time, that reflected cropping patterns and amounts of acreage devoted to various crops. And so we reflected that in Exhibit 39. 10:57:27

And what's shown in Exhibit 59 then is a reflection of what the applied waters were as either reported by Snyder or as estimated using crop water duties for the acreages that were reported back in time. 10:57:55

There is, I should point out, some linear interpolation of intervening years in the time period of the 1950s, between the points in time that were specifically reported by one or the other of those; Snyder or DWR. 10:58:11

BY MR. DUNN:

Q. And so on Exhibit No. 59, the dark small triangles there, those are the information points or data that was provided either by Snyder or DWR? 10:58:24

A. No. That -- through 51 it reflects the data points from Snyder, and then there are data points in 1957 and '61 from DWR, and there's interpolation between '51 and '57, and then again between '57 and '61. 10:58:46

Q. Mr. Scalmanini, from the time period beginning in 1950 through approximately 1960, approximately how much water was used or estimated as used for agricultural requirements?

A. Well, as you can see, it varied a small amount, but it was around 350,000 acre feet per year. 10:59:15

Q. If I could direct your attention to the next exhibit marked in order which is Exhibit premarked Exhibit 60. It is labeled "Estimated Historical Agricultural Water Requirements Antelope Valley Area of Adjudication." 10:59:28

(Whereupon, Scalmanini Exhibit 60 was introduced for identification.)

BY MR. DUNN: 10:59:37

Q. Do you have Exhibit No. 60 before you?

A. Yes.

Q. Who prepared Exhibit No. 60?

A. Our office did.

Q. And what does Exhibit No. 60 depict? 10:59:47

A. Well, basically Exhibit 60 extends the record reflected in Exhibit 59 from 1961 to the present that, as I hopefully described thoroughly, with regard to land use that beginning in 1970 the Los Angeles County Agricultural Commissioner has 11:00:15

since provided annual crop water reports -- excuse me -- crop acreage reports for Los Angeles County, and subsequent to 1994 the Kern County Agricultural Commissioner had done the same thing for the Kern County portion of the Antelope Valley. 11:00:41

And so in this case using the crop water duties reflected in -- or summarized really in Exhibit 58 but also reflected in some preceding exhibits, the product of those crop water duties and the acreages for various crops reported are then 11:01:01 reflected for the time period on a year-to-year basis from 1970 to the present.

Q. And did you draw any conclusions about a peak in agricultural water use through the 1950s and '60s as well as declines in agricultural water use 11:01:25 through the 1980s?

A. Sure. As I think I said yesterday, that -- going back to Exhibit 40, when you look at the -- I don't know, the historical picture of agricultural land use, that one would logically 11:01:45 expect that water requirements for irrigation of those lands would follow a somewhat comparable trend.

And when looking at Exhibit 60, one finds that, you know, in fact, water requirements did 11:02:04

follow, you know, a similar trend. The two curves are not exactly parallel because there are different crops with different water -- individual water duties at different points in time. But in general shape they're about the same. 11:02:18

So the answer to your question is that in the 19, say, 50s and continuing into the '60s was a period of highest agricultural water use historically. We just talked about the '50s being around 350,000. Over the 20-year period of 50s and 11:02:37 60s it was pretty consistently between about 300,000 and about, say, 360,000 acre feet per year.

Then you asked about decline. So, you know, water use for agriculture in the 1970s was smaller, it fluctuated somewhat widely, but around 11:02:57 250-, 260,000 acre feet, plus or minus, say, 30- or 40,000 acre feet per year.

And then commencing in the late 1970s, or arguably, you know, at 1980, then there was, for all practical purposes, a linear decline through the 11:03:20 1980s that would track that same type of decline in land use reflected in Exhibit 40 to where agricultural water requirements declined, you know, into the range of about 70,000 acre feet. So it declined from, say, you know, in the 1970s, 250-, 11:03:37

-60,000, all the way down to 70,000 acre feet per year, followed in turn by an increase as reflected by land uses in Exhibit 40, back up into the range of about 110- to 140,000 acre feet for agriculture in the decade since -- or the first decade of the 21st century. 11:04:01

Q. Mr. Scalmanini, let's look now at what's been premarked as Exhibit No. 61.

(Whereupon, Scalmanini Exhibit 61 was introduced for identification.) 11:04:09

MR. DUNN: And, counsel, Exhibit No. 61 is an exhibit for which there's a substitution in the original counsel -- exhibit packet provided to counsel.

I'll identify it as follows: "Table D.3-1 Historical Agricultural Water Requirements by Investigator and Calculation Parameters Antelope Valley Area of Adjudication," and parenthetically it's noted "(all values in acre feet)." 11:04:20

BY MR. DUNN: 11:04:38

Do you have Exhibit 61 before you?

A. Yes.

Q. Did you prepare -- who prepared Exhibit 61?

A. Our office did. 11:04:49

Q. And what was the source of information for Exhibit 61?

A. Well, the sources I think are all footnoted so they came from a combination of the same places when it comes to historical values; for example, Snyder's report in 1955 that was referenced earlier. That in other years or current calculation parameters then the crop water duties that are reflected, notably on the right-hand side of this exhibit, derived from the work that evolved through exhibits -- I think it's 52, -3, 54, 55, 57. 11:05:09 11:05:43

So ultimately the calculated values are -- selected values for plotting purposes which are reflected in Exhibit 60 are tabulated on the right-hand side of Exhibit 61. 11:06:35

Q. What does Exhibit 61 show?

A. Well, it shows the --

MR. ZIMMER: Same objections.

THE WITNESS: -- the amounts of applied water at various points in time, I'll call it, discontinuously until 1970 and then continuously on an annual basis from 1970 to the present. 11:06:50

So when you asked me, for example, about, you know, the amounts of pumping in the 1960s, and I said from examination of exhibits 59 and 60 that the 11:07:14

values looked like they were on the order of -- they fluctuated around 150- -- excuse me -- 350,000 acre feet per year. And you can look in this table and see values on the right-hand side in the 1950s that were 347,700, 362,500, 334,400, 357,400, from -- for the years 1950, '51, '57, and '61 respectively. 11:07:33

BY MR. DUNN:

Q. So Exhibit No. 61 shows in table format historical agricultural water requirements over time? 11:08:15

A. Yes.

Q. Mr. Scalmanini, you've testified about agricultural water requirements. Did you also look at municipal and industrial water requirements for the Antelope Valley? 11:08:25

A. Yes, of course.

Q. I'd like to have you look at the next marked in order which is Exhibit No. 62, please. It is labeled "Historical M&I Water Requirements, Antelope Valley Area of Adjudication." 11:08:40

(Whereupon, Scalmanini Exhibit 62 was introduced for identification.)

BY MR. DUNN:

Q. Do you have Exhibit 62 before you?

A. Yes. 11:08:46

Q. Who prepared Exhibit 62?

A. Our office did.

Q. What is the source of information for Exhibit 62?

A. For the most part, it's records provided by the various municipal-type water purveyors in the Antelope Valley and as far as I know, you know, from metered records of their pumping or other water supply. 11:08:56

And the exceptions to that would be the mutual water companies and rural residential -- rural residential water users for which there are no records, as far as I know; or if they are -- if they exist, we didn't have them. And so we went through an effort to estimate what those were. They're a small fraction, but they're reflected in this as well. 11:09:18 11:09:36

Q. What does the black line represent on Exhibit 62?

MR. ZIMMER: Same objections. 11:09:49

THE WITNESS: Well, there are a couple black lines, but I assume you're asking about the uppermost one?

BY MR. DUNN:

Q. Yes. 11:09:54

A. Which is also symbolized with some triangles to show data points from year to year to year.

That reflects total water requirements for municipal-type uses versus time, increasing from, I don't know, I'll say somewhere down around 10,000 acre feet per year at about the end of World War II or, you know, the mid 1940s, and then increasing, you know, somewhat linearly into the range of, say, about 30,000 acre feet per year by the late 1970s. 11:10:06 11:10:30

And then as was evident yesterday, if I can get back there --

Q. Which exhibit are you referring to?

A. I'm just flipping some pages. Give me a second. 11:10:49

Q. All right.

A. So on Exhibit 50 there's a track of --

Q. I'm sorry, Mr. Scalmanini. Did you say 5-0?

A. 5-0. I did. 11:11:02

Q. Just one moment please.

A. Sure.

Q. Thank you.

A. Okay. And so population was tracked, you know, and reported to somewhat, you know, linearly 11:11:12

grow into the 1980s and then significantly increase by 1990; about double from the mid to late '80s up to 1990. And so water use for municipal purposes, as tracked in Exhibit 62, rather significantly increased from about 30,000 acre feet per year in the early 1980s to about 70,000 acre feet per year by the late 1980s, then a bit of a downturn in the early '90s which reflects what I'd call a consistent pattern with many other places in California that was experiencing dry conditions through the late 1980s and early 1990s. 11:11:36 11:12:00

And following 1992, then a -- the end of that dry cycle there's been a, you know, progressive increase in municipal-type water requirements such that, you know, prior to a couple of dry years recently that it climbed up into the 120 or so thousand acre foot per year water requirement range by about 2006 or '7. 11:12:17

Q. And would you take a moment and please explain the legend below there for the various other trend lines as depicted. 11:12:36

A. Sure. There are several, some of which, you know, overlie one another just because of the -- I'll call it the common amounts, but there are individual trackings for L.A. County Waterworks 11:12:57

District 40, which is a blue line with squares to indicate the individual data points. That's the -- I'll call it the second highest curve or the largest individual component of the collective municipal-type water purveyors or water suppliers for municipal purposes. 11:13:19

There's a red line below that also with squares to indicate individual data points that reflects municipal-type water use for Palmdale Water District. 11:13:42

There is a set of somewhat overlying data points that are a collection of black circles and, you know, black Xs which reflect either -- I'll call it a conglomerate. These would be the black circles now of small municipal-type users; Littlerock Creek Irrigation District, Rosamond Community Services District, Antelope Valley Water Company, Palm Ranch Irrigation District, Desert Lake Community Services District, Boron Community Services District, and Edwards Air Force Base all combined together. It's collectively a relatively smaller piece compared to Palmdale and L.A. Waterworks District 40. 11:14:10 11:14:36

And then somewhat, you know, almost overlying that collection is a combined estimate for the mutual water companies and rural residential 11:14:51

water users over time. And then finally the Quartz Hill Water District is the lower most curve reflected in green with circles instead of symbols to show the trend in water requirements at Quartz Hill. 11:15:09

MR. ZIMMER: Motion to strike based on objections previously stated, also relevance to this phase.

BY MR. DUNN:

Q. Mr. Scalmanini, if I could direct your attention, please, to the next exhibit marked as Exhibit No. 63. 11:15:19

MR. DUNN: And, counsel, this is a replacement exhibit for 63 in the counsel-provided packet of exhibits. 11:15:32

It is labeled as "Table D.3-3 Historical M&I Water Requirements Antelope Valley Area of Adjudication (acre-feet per year)."

BY MR. DUNN:

Q. Mr. Scalmanini, do you have Exhibit 63 before you? 11:15:54

A. I do.

Q. Who prepared it?

A. Our office did.

Q. Where is the -- what source of information 11:16:00

was used -- or where does the information come from, rather, for Exhibit 63?

A. Well, for the left, I'll say, you know, two-thirds of this, the columns 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11, for L.A. Waterworks District 40, Palmdale Water District, Littlerock Creek Irrigation District, Quartz Hill Water District, Rosamond Community Services District, Antelope Valley Water Company, Palm Ranch Irrigation District, Desert Lake Community Services District, Boron Community Services District, and Edwards Air Force Base, the numbers reflected in the table and summarized in the next column called "Main M&I subtotal" all came from those respective individual entities and records they provided of their historical water supplies -- or "water deliveries" is a better word. 11:16:18 11:16:44 11:17:05

Q. And I believe you've already mentioned as to the mutual and private water companies, the estimated use for those entities; is that correct?

A. Yes, they are estimated. 11:17:21

Q. Okay. And there's also a column immediately to the right labeled "Rural Residential," and that was estimated as well?

A. Yes, sir.

Q. Okay. The column to the right of "Rural 11:17:30

Residential" is indicated "ASR Project LACWW 40." What does that refer to?

MR. ZIMMER: Same objections. Also relevance.

THE WITNESS: In, I'll say, recent years; 11:17:49
2005, 2006, 2007, L.A. Waterworks undertook what you might call some fieldwork to -- I don't know, "experiment" might be not totally a fair word, but I will use that -- to experiment with the possibility
of taking surplus-available treated imported water 11:18:12
and injecting it into the aquifer system for augmentation of natural or other recharge.

And so the column heading "ASR" is a common abbreviation for aquifer storage and
recovery. And so this column reflects waters that 11:18:33
could be considered a requirement; meaning that they were utilized from the system for a municipal-type purpose, but in this case as contrasted to delivering to the customers, those waters were
injected into the aquifer system in the years 11:18:52
reflected; as I said 2005, '6 and '7.

BY MR. DUNN:

Q. For groundwater storage; is that correct?

A. Yes.

MR. ZIMMER: Same objections. 11:19:01

MR. KUHS: Objection. Relevance.

BY MR. DUNN:

Q. Exhibit No. 63, Mr. Scalmanini, is the information depicted in table format as contrasted with the previous exhibit, Exhibit No. 62? 11:19:14

A. Well, I don't know about the contrasted part, but what's plotted in Exhibit 62 is tabulated in Exhibit 63.

Q. Thank you.

Mr. Scalmanini, are there other other -- 11:19:46 strike that.

Are there other water uses in the Antelope Valley besides agricultural and M&I uses?

A. Yes, there are.

Q. What are the other water uses? 11:19:58

A. Well, we've chosen as part of this analysis to call them environmental and open space-type water requirements. One could argue that in some respects some of it is a means for disposal; in this case of treated municipal wastewater. But 11:20:14 regardless, it contributes to a certain amount of environmental-type landscaping or land utilization and so you could call them environmental and open space water requirements.

Q. I'd like to direct your -- 11:20:34

MR. ZIMMER: Motion to strike for the reasons discussed with the Court.

BY MR. DUNN:

Q. I'd like to direct your attention, please, to the exhibit premarked 64. It is labeled "Tabulated Environmental and Open Space Water Requirements Antelope Valley Area of Adjudication." 11:20:43

(Whereupon, Scalmanini Exhibit 64 was introduced for identification.)

BY MR. DUNN: 11:20:51

Do you have Exhibit 64 before you?

A. Yes.

Q. Who prepared Exhibit 64?

A. Our office did.

Q. Where did the information come from? 11:21:00

A. Records of water deliveries or discharges, you can kind of choose your word, to open space-type or park-type settings from the -- I'll say the supplier of that water which would be Los Angeles County Sanitation Districts 14 and 20. 11:21:29

Q. And what is depicted or shown here on Exhibit 64?

MR. ZIMMER: Same objections.

THE WITNESS: Well, there are two, I'll call it, targets or places where those 11:21:40

environmental-type water uses are in place. You know, as tabulated here, the second and third columns refer to so-called Piute Ponds Wildlife Refuge, which is an area on the Rosamond Dry Lakebed where treated municipal wastewater is discharged and supports, I don't know, plant growth that is a wildlife refuge. 11:22:05

And so the amount of water that's been delivered or discharged to that location over time; you know, beginning in the mid 1970s with a little less than a thousand acre feet per year, increasing to as much as almost 10,000 acre feet per year by 2005, and then declining to around 7,000 acre feet per year recently is reflected in tabular form there. 11:22:23 11:22:42

There's also a small collection of lakes in a county park in Lancaster called Apollo Lakes, and those lakes are maintained by the delivery of treated recycled water; you know, nominally a couple hundred acre feet per year, and that's tabulated in the third column. And the total, which is the sum of the two, is tabulated on the right-hand side. 11:23:03

MR. KUHS: I'm going to object to both exhibits 63 and 64 and the testimony as hearsay except to the extent it's offered simply to support 11:23:20

this expert's opinion.

MR. ZIMMER: And I'm going to add to that. We previously made the objections to the scope of the deposition and opinions that are given by Mr. Scalmanini to relevance as well. In addition to that, I would add the objection that the comments regarding recycled water, the application of recycled water, are all clearly beyond the opinions Mr. Scalmanini gave at the time of his deposition. 11:23:33

Furthermore, the expert who would be testifying to recycled water, Mr. Leffler, is Mr. Sanders' expert. Mr. Sanders has specifically objected to any testimony by Mr. Leffler regarding recycled water. And it was represented by Mr. Sanders as well as the other group of purveyor attorneys that there would be no testimony regarding recycled water in this phase of the lawsuit, and that's the only reason that there was any agreement not to take Mr. Leffler's deposition in that regard. 11:23:46 11:24:05

BY MR. DUNN: 11:24:24

Q. Mr. Scalmanini, how is the tabulated environmental and open space water requirements relevant to the overall use of water in the Antelope Valley?

MR. ZIMMER: Same objections. 11:24:39

THE WITNESS: Well, I tried to sort of, I guess you could say, you know, hint at where we're going. That ultimately we're going to look at, you know, a fairly lengthy study period to try to estimate natural recharge. And multiple methods were used to make that estimate, and some of those -- or at least one of those involves accounting for waters within the Antelope Valley groundwater basin. 11:24:59

And so one can't do a thorough accounting of waters within the Antelope Valley groundwater basin while ignoring any one piece of where water might have gone. And so for completeness, then, the accounting for applied water requirements for agriculture and ultimately dealing with so what water supplies were used to meet those requirements and what was the fate of them after they were applied is important. 11:25:17 11:25:42

The same is true for municipal water requirements. What sources of water were used in what volumes at what points in time and what was the fate of those waters. 11:25:57

And lastly, such as there's a wastewater component that's generated, it's -- it goes somewhere and so it's accounted for as part 11:26:10

of the overall water budget in the basin by being, in this case, summarized in graphical form in Exhibit 63 and tabular form in Exhibit 64.

BY MR. DUNN:

Q. Mr. Scalmanini, let's look at the exhibit premarked as 65. It is labeled "Historical Total Water Requirements Antelope Valley Area of Adjudication." 11:26:26

(Whereupon, Scalmanini Exhibit 65 was introduced for identification.) 11:26:37

BY MR. DUNN:

Q. Do you have Exhibit 65 before you?

A. I do.

Q. Who prepared Exhibit 65?

A. Our office did. 11:26:44

Q. What is the source of information for Exhibit 65?

A. Well, it's basically a collection of information that is tabulated in Exhibit 61, 63, and 64. 11:27:16

Q. What does Exhibit 65 show?

MR. ZIMMER: Same objections to scope. Relevance. All of the objections previously stated.

THE WITNESS: Well, Exhibit 65 tracks historical total water requirements, as the label -- 11:27:41

or as the title block says, versus time from about 1920 to the present; where the present is 2009.

It shows an early era, you know, buildup of water requirements in the 1920s from less than 100,000 to about 200,000 acre feet per year. It's somewhat recognized in the literature that the decline reflected in the early 1930s was the result of or coincident with the Great Depression. And then there was a buildup somewhat linearly but steeply as reflected by land use and by agricultural water requirements in earlier exhibits through the era of World War II and beyond to the early 1950s. 11:28:06 11:28:26

There was a period of peak total water requirements that lasted for about two decades in the 1950s and '60s. There was a reduction in total water requirements in the 1970s but still rather high in the bigger picture of things, and more or less a linear decline through the 1980s to a low point in demand by about 1989, '90, '91; followed by a re-increase of total water requirements through the 1990s to where, for the most part, excepting the last year, you know, total water requirements today are around 240- to 250,000 acre feet per year. 11:28:44 11:29:06

The historical values in terms of peak, you know, total water requirements were more than 11:29:28

350,000 acre feet per year through much of the 19950s and '60s. The decline in the 19- -- into the 1970s brought total water requirements down into the area of, say, 250- or -60,000 acre feet per year up to slightly more than 300,000, but say around 300,000 acre feet per year. 11:29:51

The decline through the 1980s brought total water requirements down to around 140- or maybe 130,000 acre feet by 1991. And then as I just said, the re-increase brought them back up into the neighborhood of 240- to 250,000 acre feet to present. 11:30:07

MR. ZIMMER: Objection. Nonresponsive. Out of the scope. Objections previously made. Relevance, significant relevance problems. Motion to strike. 11:30:23

THE WITNESS: The balance of the figure shows how the individual components of agricultural type-water requirements, municipal-type water requirements, and environmental-type water requirements have contributed to the total. 11:30:40

So through the early era; meaning prior to about 1950 for all practical purposes, all the water requirements were associated with agricultural land uses. 11:30:56

Then municipal-type requirements began to increase so the fraction of total water requirements attributable to agricultural land use for the green curve and squares plotted just below the total water requirement curve separated from the total water requirement curve, and a relatively small fraction of total water requirements through the 1960s and '70s and into the '80s was -- the municipal fraction was relatively small, the agricultural fraction was still quite high. 11:31:21 11:31:41

From about the time of the late 1980s when municipal-type water requirements had significantly increased and agricultural-type water requirements had significantly decreased, the -- for all practical purposes municipal and agricultural water requirements were about the same; on the order of about, say, 70,000 feet per year in 1990. 11:32:00

Since then both municipal and agricultural water requirements have increased such that while they're not identical, arguably, starting, I don't know, in the late 1990s ag water requirements were a little higher. I've already mentioned the numbers, but, you know, ag water requirements got up into the, say, 110- to 140,000 acre foot per year range, and municipal water requirements up into 11:32:19 11:32:42

about, say, the 115- or -20,000 acre per year range.

And then the lower-most curve in red with circles is the environmental water requirement which relative to the total of 240- or 50,000 acre feet is a relatively small number, less than 10,000 acre feet per year. 11:33:05

MR. ZIMMER: Once again, nonresponsive. There was no question pending to that last offering by Mr. Scalmanini and all the previously stated objections. 11:33:18

THE WITNESS: Actually, it was a continuation of the answer that was interrupted.

MR. ZIMMER: It wasn't interrupted. There was a significant period of time after you finished talking, Mr. Scalmanini. 11:33:28

MR. DUNN: Counsel --

MR. ZIMMER: Well, I have to make the record because the record won't reflect it otherwise.

MR. DUNN: The record will reflect what was indicated both by counsel and by Mr. Scalmanini. It is the record. 11:33:35

BY MR. DUNN:

Q. Mr. Scalmanini, if you would direct your attention, please, to Exhibit No. 66. 11:33:41

66 is labeled "Tabulated Historical Total Water Requirements Antelope Valley Area of Adjudication." Or excuse me. 66, rather, is labeled "Table D.3-5, Estimated Total Historical Water Requirements Antelope Valley Area of Adjudication," parenthetically "(acre feet per year)."

Exhibit 66 is a substitute for the exhibit earlier provided to counsel.

(Whereupon, Scalmanini Exhibit 66 was introduced for identification.)

BY MR. DUNN:

Q. Do you have Exhibit -- excuse me -- do you have Exhibit 66 before you?

A. Yes. 11:34:57

Q. Who prepared 66; Exhibit 66?

A. Our office did.

Q. What is the source or sources of information for Exhibit 66? Is it the same as Exhibit -- the previous Exhibit 65? 11:35:12

A. Well, Exhibit 66 -- the answer to your question is yes. And so Exhibit 66 are tabulated values derived from -- well, if you want me to walk back through, I will.

The preceding exhibits that summarized 11:35:29

agricultural water requirements, municipal-type water requirements and environmental water requirements and the tabulated values are summarized for each of those, and in total in Exhibit 66.

Q. So if we -- 11:35:41

A. In turn of plotted versus time in Exhibit 65.

Q. So if we were to compare Exhibit 65 with Exhibit 66, Exhibit 66 has the data from Exhibit 65 but in tabulated format; is that correct? Or in 11:35:59 table format?

A. I'd turn it around in the way that I said it. The data reflected in Exhibit 66 is plotted versus time in Exhibit 65.

So if you wanted to know, for example, 11:36:24 what number goes with one of the black triangles in Exhibit 65 for total water requirements in a particular year, but take the very last one, for example, which looks by inspection to be somewhere around 220,000 acre feet per year -- 11:36:44

MR. ZIMMER: It's nonresponsive.

THE WITNESS: -- you could go to Exhibit 66 and go down the right-most column to the last year, which is 2009, and the exact value is 220,591. 11:37:02

BY MR. DUNN:

Q. Mr. Scalmanini, when you look at exhibits 65 and 66, are you able to determine whether the water requirements in the Antelope Valley were satisfied solely with groundwater pumping? 11:37:34

MR. ZIMMER: Same objections.

MR. KUHS: The question is vague.

THE WITNESS: No.

BY MR. DUNN: 11:37:43

Q. Let's look, if you would, please at the next exhibit marked in order, Exhibit 67. Exhibit 67 is labeled "Historical Groundwater Pumping Antelope Valley Area of Adjudication."

(Whereupon, Scalmanini Exhibit 67 was introduced for identification.) 11:38:00

BY MR. DUNN:

Q. Do you have Exhibit 67 before you?

A. Yes.

Q. Who prepared Exhibit 67? 11:38:08

A. Our office did.

Q. What source or sources of information were used for Exhibit 67?

A. Well, the sources were multiple. Of the three curves reflected in Exhibit 67, the 11:38:31

lower-most one is a historical track of municipal-type groundwater pumping versus time. Most of the data that went into that was derived from records provided by the various purveyors that we listed a few exhibits back. I can go dig them out if you want. 11:38:56

The exception, of course, is that we estimated rural residential water uses and assumed, since we're not aware of any connections of other water sources to individual rural residential connections, that all of that water supply was met by groundwater pumping. 11:39:14

And with regard to the mutual water companies, there are some records available through the State Department of Health Services which we interpreted to come up with the amount of water that was pumped by mutual water companies versus the amount of water that was taken from supplemental water sources; for example, from the state water project treated water. 11:39:31 11:39:52

And so we -- as to the total amount of water requirements estimated from the mutual water companies we were able to account for a certain amount being delivered from surface water sources; treated surface water sources, subtracted that away 11:40:06

from a total to come up with an estimate of the groundwater pumping.

On the agricultural side --

MR. ZIMMER: Motion to strike.

MR. DUNN: Counsel, if you would please allow Mr. Scalmanini to finish before making your objection or motion. 11:40:13

MR. ZIMMER: I don't think it's a requirement.

THE WITNESS: On the agricultural side, after going through the analysis as described thus far to estimate total -- 11:40:21

MR. ZIMMER: Same objections previously stated as well as to the scope of the testimony, the relevance, the failure to provide opinions previously. 11:40:35

BY MR. DUNN:

Q. You may continue, Mr. Scalmanini.

A. Do you think we can kind of like get to the end of a sentence this time? 11:40:48

That on the municipal -- excuse me -- on the agricultural side, that we had records of deliveries of supplemental water from both local as well as imported sources that were delivered to agriculture. 11:41:06

We also had records of recycled water that were delivered to -- or that was delivered to agriculture as part of its water supply. So to compute --

MR. ZIMMER: Same objections as to "recycled water." 11:41:19

MR. DUNN: Mr. Zimmer, if you would allow Mr. Scalmanini to finish his response, his answer, that will allow you a further opportunity to make an appropriate objection or other motion as you deem appropriate. 11:41:34

MR. ZIMMER: Given the fact that the answers go on for pages, it will be difficult -- extremely difficult to go back and try and ferret out where he was giving improper testimony at a later time. The answers that he gives are in large part nonresponsive, incorporate multiple objectionable material in an attempt to squeeze it all in without any objections without anybody noticing. 11:41:45 11:42:02

But I feel compelled to comment on and make objections as they're occurring because of that. If there was questions and answers and Mr. Scalmanini gave a direct and succinct answer, this perhaps wouldn't be necessary. 11:42:17

MR. DUNN: I would again ask you to not interrupt Mr. Scalmanini during his response.

BY MR. DUNN:

Q. Mr. Scalmanini, you were testifying as to the source of information, and specifically the source of information for estimated rural residential water uses and also for mutual water companies and the records that were available through the State Department of Health Services which were interpreted. 11:43:19 11:43:32

Were you able to finish your response before the -- before Mr. Zimmer made his motion to strike?

MR. ZIMMER: It's vague.

THE WITNESS: I finished my response on municipal type -- 11:43:43

BY MR. DUNN:

Q. Sorry to interrupt you. I think you were about to explain on the agricultural side. Would you explain the source of information for the agricultural side. 11:43:55

A. Right.

MR. ZIMMER: It's vague as to "explain the source."

Do you mean what is the source? That's 11:44:09

where we get tied up. The problem is that you'll ask a question that's vague like that as to explain the source and then he goes into a discussion about how he did the calculations, and that's objectionable. 11:44:21

I've tried to not object to the questions as to what the source is because what the source is is very simple. How he did the calculations is much more difficult and/or complicated. And how he did the calculations is in fact the objectionable part 11:44:34 of the information that he's given, or he's giving.

So if you could be clear in the question, that would be helpful as to what you're asking. If it's the source, that's one thing; if you're asking him how he did his calculations, that's a completely 11:44:49 different question.

BY MR. DUNN:

Q. Mr. Scalmanini, would you please continue with your response as to the source of information for this exhibit, and specifically for agricultural 11:45:00 information indicated.

A. Well, the source of information is a combination of the total agricultural water requirements as developed in earlier discussion this morning, along with accounting for the 11:45:20

contributions to those total water requirements from local surface water supplies, "imported" meaning state water project, water supplies, and recycled water supplies, such that what's reflected in the graph that is Exhibit 67 is a result of arithmetic that nets out the amount of pumping by recognizing the amounts of those other water supplies that were utilized to meet part of the total agricultural water requirements. 11:45:42

Q. Mr. Scalmanini, what does Exhibit No. 67 show? 11:46:09

MR. ZIMMER: Same objections previously stated as to scope, relevance.

THE WITNESS: 67 -- Exhibit 67 shows historical trends in total groundwater pumping, agricultural-type groundwater pumping, and municipal-type groundwater pumping versus time from about the end of World War II to the present. 11:46:24

It shows that total pumping was in the 1950s and '60s, again, up in the same range as has previously been discussed; meaning around 300 and, say, 50 to almost 380,000, or about 380,000 acre feet per year, at a peak, followed by a decline in the 1970s and then an ongoing decline in the 1980s to where total pumping got down to be around 90,000 11:46:50 11:47:14

acre feet per year. After which it climbed back up, you know, into the area of 150- to 170,000 acre feet per year early after 2000 and has fluctuated between about 100 and, say, 35 and 155,000 acre feet per year in time since then. 11:47:44

Of those two in round numbers, in recent times anyway, about a third of that total pumping, or about 50,000 acre feet per year, is pumped by municipal -- or for municipal-type purposes and about two-thirds or about 180,000 acre feet per year, not a constant number in all years, is pumped for agricultural-type purposes. 11:48:02

MR. ZIMMER: I will add to the objection -- you stopped there Mr. Scalmanini. I assumed you're finished? 11:48:16

Apparently he's finished.

I will add to the objection that the testimony we're hearing over and over -- we've probably heard it four times -- about the agricultural pumping going up in the 1940 period to the 1970s and then decreasing over time to about 1990 and then going back up to some degree in 2000 and 2010, it has probably been covered maybe ten times. 11:48:27

The additional information that 11:48:45

Mr. Scalmanini is now attempting to put in through the last several exhibits is information that's -- should not be relevant to this phase. It was not -- in some regards it was not testified previously at his deposition.

As to the main information in terms of the overall pumping versus the overall supply which is the focus of the -- this phase of the trial in terms of the safe yield has been testified to multiple times. So I'm adding a cumulative objection to the objection previously stated. 11:49:15

MR. DUNN: And, Counsel, in the interest of time when you state your objections, if you could state the objection and avoid the use of speaking objections, that would facilitate the limited time that we have available for the use of further questions and answers and also potential objections. 11:49:30

MR. ZIMMER: Given the complexity of the issues and then how his testimony is coming about and the substantial surprise of some of the information that you're trying to get into the record, I think that there needs to be some discussion more than simply an objection. It clearly needs to be pointed out what's really occurring here. 11:49:45 11:50:00

MR. DUNN: I will note that what seems to be occurring here are a series of ongoing objections to interrupt the testimony of Mr. Scalmanini. The objections, although noted for the record, are also improper and they will be taken up I'm sure at the appropriate time with the Court when we resume the trial. 11:50:16

MR. ZIMMER: That's all we're doing is maintaining a record so the Court can review those things and so that we remember when it happened and why it was significant. 11:50:30

MR. DUNN: The record will reflect that there is more than just making objections taking place with regards to this witness' testimony. There appears to be a coordinated effort to interrupt Mr. Scalmanini, and particularly at times when his testimony is dry conclusions or his testimony is referring to his explanations of the exhibits which illustrate his testimony. 11:50:44

MR. KUHS: Mr. Dunn, I assume this line of questioning is relative to overdraft and safe yields and not some other issue? 11:51:11

MR. DUNN: Well, what's relevant -- Mr. Kuhs, we can take that up at another point. But the Phase 3 proceeding is on safe yield and 11:51:24

overdraft.

MR. KUHS: Okay. I didn't want to have a continuing relevance objection so long as I understood that all this was foundational to Mr. Scalmanini's opinion regarding safety as an overdraft and not sort of an advanced play on the prescription phase. 11:51:37

MR. ZIMMER: I assume, Mr. Dunn, you're willing to represent on the record --

MR. DUNN: Let me -- 11:51:48

MR. ZIMMER: Well, I think he raised a good point. I assume you're willing to represent on the record that anything that's being testified to here today and the exhibits that are being produced are solely relevant to the issue of safe yield and overdraft. 11:51:57

MR. WEEKS: This is Brad Weeks. Counsel, all these things can be discussed after 12:00. What we're doing now is burning up time that we will not get back from this witness. 11:52:11

MR. ZIMMER: Well, we're burning up time spending a lot of time talking about issues that it seems to me aren't relevant overall to overdraft and safe yield and are -- there's some attempt to put this information in for other reasons without any 11:52:24

effective cross-examination because a lot of this information has not been presented either in this form before or is being presented for the first time in terms of graphs or otherwise.

MR. LEMIEUX: It seems unlikely to me that we're going to have a chance of resolving some kind of relevancy objection right now. And if you have an overarching concern about the evidence coming in, obviously you need to bring that up with the judge when we get back in front of the judge. 11:52:37 11:52:46

MR. ZIMMER: I agree with that. We're going to do that. But we -- go ahead, Mr. Dunn.

MR. DUNN: All right. Can we have an agreement amongst counsel that objections can continue to be made, including motions, but that we will continue to go forward with a minimal amount of comment amongst counsel and a minimal amount of the speaking part of the objections? Would that be acceptable? 11:52:56

Mr. Joyce, did you want to say something? 11:53:14

MR. JOYCE: I'm not sure. I hope that we kind of half resolved it with the stipulation in order to just kind of plow forward here. I stand kind of in between on some of the issues, but that's neither here nor there. 11:53:32

The bottom line is I think we just need to get this done and then we can deal with the objections and the like when we have the opportunity to have Komar available to rule upon them as -- as and when necessary. 11:53:45

I mean, I don't know that the -- the one clear observation is nothing can get resolved here today as to any particular question. So other than facing the ultimate reality we're going to have to take it up at the appropriate time when we have the 11:54:00 ultimate adjudicator of the objection available, I think we've got to kind of try to plow forward.

MR. DUNN: All right. Thank you, Mr. Joyce.

BY MR. DUNN: 11:54:12

Q. Mr. Scalmanini, directing your attention to Exhibit No. 66. Do you still have that before you?

A. Yes.

Q. Or strike that. I'm sorry. Not 11:54:22 Exhibit No. 66.

I'm going to need some assistance here. What exhibit were we last looking at?

A. 67.

Q. 67. Thank you. 11:54:38

Let's go back to Exhibit No. 67, please. This is the exhibit labeled "Historical Groundwater Pumping Antelope Valley Area of Adjudication."

Do you have that before you?

A. Yes. 11:54:53

Q. Okay. Now, Mr. Scalmanini, this shows, I take it, historical groundwater pumping for the time periods indicated on Exhibit 67?

A. Yes.

Q. And how is that relevant, historical groundwater pumping, to the issue of safe yield and overdraft in this phase of the case? 11:55:02

MR. ZIMMER: Calls for a legal opinion.

THE WITNESS: Well, ultimately to compute the yield as I tried to go back to, I'll call it, re-discussing that early exhibit -- 11:55:21

BY MR. DUNN:

Q. Is that Exhibit 12?

A. Yeah, thanks. -- there needs to be an estimate of the natural recharge to the groundwater basin. And we haven't gotten there yet, but to estimate natural recharge to the groundwater basin we undertook collectively; meaning myself and others, efforts to estimate what that was. And one of the efforts involves an understanding of how much 11:55:49 11:56:09

historical pumping is taking place and how much of that pumping returned to the groundwater basin as contrasted as to how much of it consumptively, if you will, exhausted back to the atmosphere.

So the effort to get to pumping -- which I might note we've only begun to discuss. We haven't discussed it ten times. We've discussed land use and things of that type multiple times, but we've only discussed pumping on this one last exhibit. 11:56:28

Then it is important in part to look at the total, but also importantly to look at the two components because the two components of municipal-type use and agricultural-type use contribute different fractions of return flows to the subsurface, all of which needs to be factored into estimating at least using one of the methods that we deployed what the natural recharge to the groundwater basin is, from natural recharge then as illustrated in Exhibit 12, but as to be discussed in greater detail. 11:56:42 11:56:58 11:57:13

Then a computation of yield of the basin under native conditions and later independent of natural recharge, a consideration of supplemental recharge which also relies on -- of course on knowledge of how much supplemental water was brought 11:57:33

into the basin, but also then fractions of its use by municipal as well as agricultural users and the recharge that derives from that all is relevant to ultimately computing or estimating a safe yield, whether it be native, supplemental or total. 11:57:52

Q. Mr. Scalmanini, if I could have you look, please, at the next exhibit marked as Exhibit 68.

MR. DUNN: Counsel, this is a substitute for the exhibit packet earlier provided to counsel.

I will identify it. It is "Appendix D-7: Table 2 Calculation of Agricultural Groundwater Pumpage," and parenthetically it's -- it indicates an "(AFY)" for in acre feet a -- per year. 11:58:21

(Whereupon, Scalmanini Exhibit 68 was introduced for identification.) 11:58:39

BY MR. DUNN:

Q. Mr. Scalmanini, do you have Exhibit 68 before you?

A. Yes.

Q. Who prepared Exhibit 68? 11:58:49

A. Our office did.

Q. And the sources of information for Exhibit 68 are what?

A. In the second column, historical total agricultural water requirements are derived from the 11:59:10

work which we've explained, you know, in preceding exhibits. I can go back to refer to those if you'd like.

Then successive columns that are labeled "SWP," which stands for state water project imported water "(AVEK)," which is Antelope Valley-East Kern Water Agency, or the next one which is parenthetically "(LCID)"; Littlerock Creek Irrigation District, and then the last is "(PWD to LCID)," which is Palmdale Water Direct to Littlerock Creek Irrigation District, come from records supplied by those respective three state water contractors; AVEK, Littlerock Creek, and Palmdale Water District, for their importation of water that was not treated or delivered as raw water for agricultural purposes. 11:59:24 11:59:46 12:00:04

The next column is a sum of those three for total state water project imported water from those sources.

The next two columns have to do with local surface water which is diverted off Littlerock Creek by Littlerock Creek Irrigation District, so those data came from Littlerock Creek Irrigation District. 12:00:18

The next column is a total of those.

WRPs recycled water is the amount of water 12:00:37

reported by the water reclamation plants as having been delivered to agriculture versus time.

And then there's a total surface and recycled water which is a summary of local surface water, imported surface water, and recycled water that was delivered to meet part of the total agricultural water requirements. 12:00:56

And so arithmetically then groundwater pumping was estimated to be the difference between total surface and recycled water and historical agricultural water requirements in the second column. 12:01:12

And so calculated groundwater pumpage is the result or the arithmetic difference between total other -- all the waters used to meet agricultural water requirements and total agricultural water requirements. 12:01:27

MR. ZIMMER: Same objections previously stated, and also nonresponsive.

MR. DUNN: It's noon. We'll take the noon recess. We'll see everybody at 1:30 -- or actually before 1:30 so we can start at 1:30. 12:01:40

THE VIDEOGRAPHER: This marks the end of tape No. 1 of today's testimony of Joseph Scalmanini, Volume III. 12:01:52

The time is 12:01 p.m. and we are off the record.

(Whereupon, lunch taken from 12:01 p.m. until 1:30 p.m.)

THE VIDEOGRAPHER: This marks the beginning of tape No. 2 in today's testimony of Joseph Scalmanini, Volume III. 13:30:19

The time is 1:30 p.m. We are on the record.

BY MR. DUNN: 13:30:29

Q. Besides groundwater, what other sources of water are used to meet the water requirements of the Antelope Valley?

A. I think we touched on this briefly, but there's local surface waters, off of Littlerock Creek, imported water from the state water project, and though they originate from either groundwater or local surface water or imported water, then there's some treated municipal wastewater or recycled water that's used to meet some of the water requirements. 13:30:43 13:31:02

Q. I'd like to show you the next exhibit which has been premarked as Exhibit No. 69. It is labeled "Historical Local Water Use Antelope Valley Area of Adjudication."

(Whereupon, Scalmanini Exhibit 69 was 13:31:14

introduced for identification.)

BY MR. DUNN:

Q. Mr. Scalmanini, do you have Exhibit 69 before you?

A. Yes. 13:31:19

Q. Who prepared Exhibit 69?

A. Our office did.

Q. And the information that's depicted in Exhibit 69 comes from what source or sources?

A. It comes from the records of primarily Littlerock Creek Irrigation District, but I think also partially from Palmdale Water District and records of diversions off of Littlerock Creek. 13:31:32

Q. What does Exhibit 69 show?

MR. ZIMMER: Same objections. 13:31:52

THE WITNESS: It basically shows that there's been utilization of a small amount, maybe up to a maximum of about 8,000 acre feet in any given year, but typically down around, say, 4,000 acre per year of water when it's been available to be diverted directly off Littlerock Creek for local uses. 13:32:10

BY MR. DUNN:

Q. And, Mr. Scalmanini, is the water that's referenced here in Exhibit 69, is that surface 13:32:22

water?

A. Yes, it is.

Q. Would you consider the amounts of local surface water to be significant in the context of water supplies in the Antelope Valley adjudication area? 13:32:38

A. Well, significant in terms of a large quantity, probably no. I mean, if there was a total water demand of a quarter of a million acre feet a year, then 4-, 5-, 6,000 acre feet a year is not exactly significant, but it's certainly of consequence as part of the overall water supply picture. 13:32:53

Q. You mentioned that imported surface water was also used to meet water demands in the Antelope Valley. What is the source of that imported water? 13:33:07

MR. ZIMMER: Vague.

THE WITNESS: It's pretty straightforward. It's the state water project.

MR. DUNN: Mr. Joyce, maybe we could get your assistance to hit the -- or, Mr. Scalmanini, if you can push the sound button down to its lowest setting. 13:33:24

THE WITNESS: It's kind of stuck on 8 out of 12. 13:33:40

Maybe if somebody on the other side could talk, we could see whether it comes back.

MR. DUNN: Hearing nothing --

THE WITNESS: It's quiet.

MR. DUNN: -- we will proceed. 13:34:01

BY MR. DUNN:

Q. Mr. Scalmanini, if I could, please, I'd like to direct your attention to Exhibit No. 70 that was premarked for identification.

(Whereupon, Scalmanini Exhibit 70 was introduced for identification.) 13:34:10

MR. DUNN: Counsel, this is an exhibit which is also substitute -- a substitute for an earlier premarked exhibit in the exhibit packet for counsel. It's entitled "Boundaries of SWP Contractors with Table A Amounts Antelope Valley Area of Adjudication." 13:34:18

MR. ZIMMER: Mr. Dunn, do you know if that was produced yesterday or --

MR. JOYCE: Yesterday. 13:34:34

MR. ZIMMER: Yesterday? Okay.

MR. DUNN: I'm sorry, Counsel. The question was was this exhibit --

MR. ZIMMER: I wasn't trying to find the exhibit. 13:34:40

MR. JOYCE: It was produced yesterday.

MR. DUNN: I'll give counsel a moment to locate it.

MR. ZIMMER: Thank you.

MR. JOYCE: It's the last one, Rich. The last one. 13:34:54

MR. ZIMMER: Got it. Thank you.

MR. DUNN: It appears here that all counsel have a copy or access to the exhibit. We'll proceed. 13:35:10

BY MR. DUNN:

Q. Mr. Scalmanini, who prepared Exhibit No. 70?

A. Our office did.

Q. What is the source -- or what are the sources of information that were used to prepare this exhibit? 13:35:15

A. I can't cite to specific websites, but there are publicly-available delineations of the service area boundaries of all the state water contractors. I don't recall instantly whether we got this from the Department of Water Resources or from the individual state water contractors themselves, but it was probably one of those two. 13:35:37

Q. And who are the state water project 13:35:53

contractors with table A amounts within the Antelope Valley area of adjudication?

A. I think I mentioned in passing this morning, but the largest is the Antelope Valley-East Kern Water Agency, commonly nicknamed AVEK; the second in terms of table A entitlement is the Palmdale Water District; and the third or smallest is the Littlerock Irrigation District. 13:36:11

Q. And directing your attention to Exhibit No. 70 in the lower left-hand corner in the area marked or indicated as "Legend." 13:36:28

Do you see that?

A. Yes.

Q. Do you see the -- the acronyms for those three state water project contractors listed there, are those the acronyms for the three project contractors? 13:36:39

A. Yes. The three state water contractors, yes.

Q. I'd like to ask you a question about the three state water contractor boundaries or service areas. Are all of the boundaries of those three state water contractors located in the area of adjudication? 13:36:50

MR. ZIMMER: Same objections. Also 13:37:05

relevance.

MR. KUHS: Lacks foundation.

THE WITNESS: Well, are they located within, at least partially so, yes. But in case of two of them; AVEK and Palmdale Water District, they have a service area that extends outside or beyond the limits of the Antelope Valley area of adjudication. 13:37:18

BY MR. DUNN:

Q. And are you aware of how much water has been imported through the state water project to meet water requirements in the Antelope Valley over time? 13:37:34

A. Yes.

Q. I'd like to direct your attention, if you would, please, to Exhibit No. 71. It is labeled "Historical Supplemental (SWP) Water Use Antelope Valley Area of Adjudication." 13:37:45

(Whereupon, Scalmanini Exhibit 71 was introduced for identification.) 13:38:17

BY MR. DUNN:

Q. Do you have Exhibit 71 before you?

A. Yes.

Q. Who prepared Exhibit 71?

A. Our office did. 13:38:23

Q. The source of information or sources of information used for Exhibit 71 are what?

A. The amounts of state water project use recorded by the three state water contractors in the Antelope Valley that we previously identified; AVEK, Palmdale Water District, and Littlerock Creek Irrigation District. 13:38:42

Q. And did you have access or available to you the information from the three state water project contractors regarding not only their service areas, but their historical water use? 13:38:54

A. Their historical use of state water?

Q. Yes.

A. Yes. We sought that, you know, by direct request and they provided it. 13:39:08

Q. And on Exhibit -- referring to Exhibit No. 71, what does it depict or show?

A. It basically shows in time series graphical form what the amount of aggregate; meaning by all three of the state water contractors, use of imported state water project water has been within the Antelope Valley area of adjudication. 13:39:33

Q. And you're referring to the green line on Exhibit 71?

A. Yes. 13:39:49

Q. The green boxes that are indicated on that exhibit are what?

MR. ZIMMER: Same objections.

THE WITNESS: They are data points that reflect on a year-to-year basis how much state water was used in aggregate -- or I should say imported in aggregate to the Antelope Valley area of adjudication by the three state water contractors. 13:39:58

BY MR. DUNN:

Q. Exhibit 71 illustrates the use of -- or the delivery of the state water project water by these three state water project contractors. Why does the amount as indicated on Exhibit 71 go up and down? 13:40:14

A. And you think that earlier answers had issues with length and complexity of answer. You may not think that but others do. 13:40:33

I'll try to do it in quick summary. Okay. I'd say it's a combination of demand; meaning a willingness by local entities to take the water that's imported and in some cases treat it to drinking water standards for municipal-type water supply and in other cases delivered as raw water, untreated, typically for non-potable or irrigation supply. It's a combination of, I'll call it, a 13:40:53 13:41:14

willingness by local entities to take it along with availability of state water that varies as basically a function of hydrology on the state water project system, typically in Northern California.

So if we could back up one slide to -- 13:41:31

Q. To Exhibit No. 70?

A. I said "slide," but Exhibit No. 70. That in the legend on the lower left-hand corner, or in the lower left-hand corner, are three parenthetical numbers; you know, for AVEK 141,400 acre feet, for 13:41:48 Palmdale Water District 21,300 acre feet, and for Littlerock Creek Irrigation District 2,300 acre feet. Those numbers are the so-called table A amounts for those three state water contractors.

The state water project has a certain 13:42:19 capacity. And I'm not a hundred percent sure, but I think I'm close, I think there is a total of 29 state water contractors throughout the overall system and each has a table A amount that adds up to the total available supply. 13:42:40

But hydrology in Northern California that accrues water in Lake Oroville and ultimately, you know, works through the Delta into the state water project system to be delivered to these various state water contractors isn't the same every year. 13:42:57

So the State of California, the Department of Water Resources, makes determinations that progress through the wintertime as a function of rain, runoff, storage, and snowpack accumulation to progressively indicate what fraction of table A amounts will be available to state water contractors in that following year. 13:43:13

We've just experienced a very wet December, for example, in terms of huge snowpack. So the early season indication I think is at 50 percent, I'm not a hundred percent sure now, and that number will change as we go through the rest of winter and into spring, and typically by about April or May the state indicates what the available fraction of these table A amounts will be. 13:43:28 13:43:44

So now moving to Exhibit --

Q. 71.

A. -- 71, that in different year types, regardless of what the interest might be on behalf of local takers of state water, if it's made available by the state water contractors, there can be limits on how much the state water project can make available. 13:44:01

So I realize it's already a little bit longwinded, but the combination of availability on 13:44:18

the state water system and willingness to take the water, whether treated or untreated locally, derives or results in the kinds of fluctuations that are reflected in the graph in Exhibit 71.

Q. In Exhibit 71 did you observe or do you observe any trends in the use of the state water project water? 13:44:35

MR. ZIMMER: Relevance. Same objections.

MR. JOYCE: I'll just -- I'll wait to hear the answer. 13:44:50

THE WITNESS: You could probably extract, you know, some, I'll call it, short-term trends. You know, there was an initial kind of rapid buildup, for example, in the use of state water but there was a subsequent decline. There was, you know, a period of significant increase in the use of state water in the 1990s, but there was, you know, a subsequent decline. 13:45:03

So to try to extract a trend, I'd say no. Maybe in very, very gross terms you could say that, you know, it went from, you know, humble beginnings when water was first available in the early 1970 to a fairly significant amount, you know, in the -- say, you know, this past decade or the first decade of the 21st century that's for the most part, you 13:45:21 13:45:39

know, been in the range of, say, grossly 60- to 80,000 acre feet per year. A couple years it got a little bit higher.

The last couple of years have been dry on the state system and so the delivery of water from the state water project has been lower. But, you know, in general terms, you know, a very gross trend has been to go from zero or near zero in its beginnings; you know, 40ish years ago, to something that's using, you know, more than 60,000 acre feet typically at present. 13:45:51 13:46:07

BY MR. DUNN:

Q. Do each of the state -- excuse me.

Do each of the three state water project contractors provide retail water deliveries to customers? 13:46:19

MR. ZIMMER: Same objections.

MR. JOYCE: Lack of foundation.

THE WITNESS: I better ask you back what you meant by "retail." 13:46:38

BY MR. DUNN:

Q. What I meant to ask, Mr. Scalmanini, is: Are the three state water project contractors wholesalers or retail water providers?

MR. JOYCE: Objection. Calls for 13:46:47

speculation. Lack of foundation.

THE WITNESS: My best answer is I don't know for sure. That they each provide both treated water; meaning it can be used for potable supply. I know that in some cases that goes to an ultimate retailer to customers and is not delivered, for example, by AVEK directly. They also provide untreated water for non-potable uses, for example, by agriculture. And I think that's directly delivered by them. 13:47:06 13:47:23

But, you know, as far as the rest -- the ultimate, I'll call it, handling of water, who processes the bills to the ultimate user, I don't know all that for sure.

BY MR. DUNN: 13:47:33

Q. Mr. Scalmanini, if you would, please, take a look at Exhibit 72 premarked for identification. It is labeled "Historical Local and Supplemental (SWP) Water Use Antelope Valley Area of Adjudication." 13:47:59

(Whereupon, Scalmanini Exhibit 72 was introduced for identification.)

BY MR. DUNN:

Q. Do you have Exhibit 72 before you?

A. I do. 13:48:04

Q. What is -- who prepared Exhibit 72?

A. Pardon me. Our office did.

Q. And where did your office obtain the information for the preparation of the Exhibit 72?

A. Well, it's basically an aggregate of the information that went into exhibits 70 and 71 -- I'm sorry -- 69 and 71. So it came from the records of the respective local water agencies or districts that either diverted local surface water or imported state water. 13:48:23 13:48:55

MR. DUNN: Counsel, just one moment. We're picking up some phone conversations here. I'm going to see if I can reach over and adjust the sound.

Thank you. 13:49:17

BY MR. DUNN:

Q. Mr. Scalmanini, what do the different line colors on Exhibit 72 illustrate?

MR. ZIMMER: Same objections. Beyond the scope of the deposition. Beyond the scope of phase issues. Relevance. 13:49:30

THE WITNESS: The bottom-most curve which is blue highlighted with round dots to illustrate -- or to indicate specific data points on a year-to-year basis is a repeat of the same 13:49:51

graph or curve reflected in Exhibit 69.

The graph reflected is lines connecting green squares that begin in 1972 and come forward to the end is a repeat of the graph reflected in Exhibit 71. And the black diamond -- correction -- 13:50:25
triangles reflects simply a sum of the two curves to show individually local surface water use, imported state water use, and the combination of those two.

BY MR. DUNN: 13:50:50

Q. Mr. Scalmanini, what is significant about Exhibit No. 72 as it relates to your opinions on overdraft and safe yield?

MR. ZIMMER: Same objections.

THE WITNESS: Ultimately we'll talk about 13:51:00
two components of safe yield; one being native which derives from local waters, and one being supplemental that derives from the use -- the importation and use of additional waters over and above what occurs naturally within the basin itself. 13:51:23

So thinking ahead to that, then the significance of what's reflected in Exhibit 72, particularly the imported water component, is significant in ultimately analyzing that imported water use, tracking its fate, estimating how much 13:51:43

recharge it contributes to the basin and how that converts to a yield, that we'll ultimately call supplemental safe yield.

This is also important because as we've already gone through in some previous exhibits, and I'll flip back to them if you'd like, is that in tracking particularly on the agricultural side from land use; cropping patterns, individual water duties and estimating total water requirements, we have a need in analyzing or estimating natural recharge to know how much groundwater was pumped over time. And to get from total water requirements to groundwater pumping should properly account for any other waters that were used to meet some of those agricultural water requirements. 13:52:00 13:52:21 13:52:41

So this reflects how much local and supplemental surface waters were used to meet agricultural as well as in some cases municipal total water requirements to get to groundwater pumping. So it's important in both of those regards. 13:52:55

BY MR. DUNN:

Q. Mr. Scalmanini, if you would, please, take a look at the next exhibit premarked as Exhibit No. 73. 13:53:14

(Whereupon, Scalmanini Exhibit 73 was introduced for identification.)

MR. DUNN: Counsel, 73 is also a substitute copy for an earlier premarked copy. I'll identify it. Exhibit 73 is "Table D.4-1 Historical Supplemental Surface Water Supplies Antelope Valley Area of Adjudication," and parenthetically it is noted "(acre feet per year)." 13:53:20

Do you have Exhibit 73 before you?

A. I do. 13:53:39

Q. Do you recognize it?

A. Yes.

Q. Who prepared it?

A. Our office did.

Q. The source or sources of information for which this exhibit was -- or strike that. 13:53:44

What are the sources or sources of information used for this exhibit?

A. Well, the same -- they are the same as I've identified previously with regard to exhibits 69 and 71 which flowed into 72. So it came from the local state water contractors or agencies, specifically AVEK, Palmdale Water District, and Littlerock Creek Irrigation District, which are the state water contractors. And then -- 13:54:00 13:54:30

well, let's just say over time both Littlerock Creek Irrigation District and Palmdale through their operations of Littlerock Creek Reservoir have operated the diversion off Littlerock Creek so we got data from them for the local surface water diversions. 13:54:55

Q. What does Exhibit No. 73 show?

MR. ZIMMER: Same objections.

MR. KUHS: Hearsay.

THE WITNESS: Basically it is a summary of the data that we received from those entities, how much state water project water were imported by them -- or excuse me -- was imported by them on a year-to-year basis for municipal-type uses and for agricultural-type uses, and in total, and how much local; meaning diversions off Littlerock Creek water, was diverted by them whether for municipal purposes or agricultural purposes, and in total, and then an aggregate of the two. 13:55:05 13:55:26

It's fundamentally the data points which are reflected in graphical form in Exhibit 72. 13:55:42

BY MR. DUNN:

Q. If you would, please, Mr. Scalmanini, will you turn to premarked Exhibit 74. It is labeled "Recycled Water Disposition Antelope Valley Area of 13:56:19

Adjudication."

(Whereupon, Scalmanini Exhibit 74 was introduced for identification.)

BY MR. DUNN:

Q. Who prepared Exhibit 74? 13:56:26

A. Our office did.

Q. And what were the sources of information used for this exhibit?

A. Data supplied by Los Angeles County Sanitation Districts 14 and 20, and I think some from Rosamond Community Services District. 13:56:49

Q. What does Exhibit 74 show?

MR. ZIMMER: Objection -- same objections previously stated. Beyond the scope of the deposition, beyond the scope of phase issues incorporating recycled water data apparently from Mr. Leffler for which there was a specific agreement that that water -- that that data and opinions regarding recycled water will not be used in this case. And also a foundational problem and hearsay. 13:57:07 13:57:25

THE WITNESS: Okay. I kind of lost the question with all that.

BY MR. DUNN:

Q. I'll repeat the question. What does Exhibit 74 show? 13:57:37

MR. ZIMMER: Same objections.

THE WITNESS: Well, it tracks, as shown in the legend at the bottom, how much recycled water was used for irrigation purposes to offset part of the total irrigation water requirements, how much was discharged to what we described earlier as environmental water demands at Piute Ponds and at Apollo Lakes. 13:57:55

It tracks some what was at one time classified as "land application and disposal" where water was applied to the ground after treatment -- after lesser treatment than it receives today to basically infiltrate and be disposed. 13:58:15

And it also tracks a very small amount of treated wastewater that's been used for what we just grossly call "other purposes" where it's made available for construction water and things of that type. 13:58:34

And then it aggregates all of those to show how much recycled water has been generated and then disposed in total, you know, increasing from the early part of the record in the mid 1970s of, I don't know, maybe about 3,000 acre feet per year tracking up to their better part of 25,000 acre feet per year over the last several years. 13:58:47 13:59:10

BY MR. DUNN:

Q. And why is the disposition of recycled water a consideration for your opinions on safe yield and overdraft?

MR. ZIMMER: Same objections. 13:59:19

THE WITNESS: Well, as I described before, it's ultimately input to such as recycled water offsets what might otherwise be groundwater pumping for water supply. Then to ultimately quantify what pumping is best estimated to be, it should be 13:59:38 accounted in that regard.

It's, I'll call it, of account, but no contribution as far as we're concerned to the yield of the basin that disposal or discharge of water to places like Piute Ponds -- I'm sorry -- yes, to 13:59:57 Piute Ponds on the Rosamond Dry Lakebed because of the nature of the, I'll call it, the dry lakebeds; again, fine-grained materials, that for practical purposes no water deep percolates through those clays to contribute to the yield of the basin. 14:00:17

So we accounted for the water but recognized in analyzing the yield that there's not a contribution to the yield. The same is practically true with regard to Apollo Lakes, although it's an almost inconsequential amount of water; a couple hundred 14:00:32

acre feet per year.

And then this land application and disposal, you can see with the trace or the track of the blue line that's highlighted by individual years that at one point in time, meaning prior to 2000, that the application of water at high rates for purposeful infiltration and disposal got up to be about 10,000 acre feet per year. But for water quality reasons that was ordered to be reduced or ultimately eliminated and that's why that tracks down significantly. 14:00:50 14:01:13

So when we ultimately talk about yield, we're going to talk about prevailing cultural conditions in the basin and where that might have once been a contributor to the yield because of the application of a lot of water that was purposely intended to deep percolate. The fact that it's been progressively reduced and intended to be eliminated, that it doesn't under prevailing cultural conditions contribute to yield. So that's taken into account also in estimating what the yield of the basin is. 14:01:24 14:01:39

BY MR. DUNN:

Q. A moment ago you mentioned that the water or the use had been ordered reduced. Who ordered that or what entity ordered that? 14:01:54

A. State Regional Quality Control Board.

MR. JOYCE: Hearsay.

MR. ZIMMER: Same objections. Join.

MR. DUNN: If I could direct your attention to Exhibit No. 75, please. It is labeled "Tabulation" -- or strike that. 14:02:12

It is labeled "Table D.4-3" -- Counsel, this is another substituted exhibit for an earlier premarked exhibit.

Again, "Table D.4-3, Historical Recycled Water Antelope Valley Area of Adjudication," and parenthetically it indicates "(acre feet per year)." 14:02:33

(Whereupon, Scalmanini Exhibit 75 was introduced for identification.)

BY MR. DUNN: 14:02:43

Q. Mr. Scalmanini, do you have Exhibit 75?

A. Yes.

Q. Who prepared it?

A. Our office did.

Q. Where did the information -- or strike that. 14:02:55

The data or the sources of data for this exhibit, was that provided by the Los Angeles County Sanitation Districts?

A. And by Rosamond. 14:03:06

Q. And by Rosamond Community Services --

A. Yes.

Q. -- District?

That's a "yes"?

A. Yes. 14:03:15

Q. Okay. And does Exhibit 75 show the data plotted on the previous exhibit, Exhibit 74, but this time in a table format?

A. Yes.

Q. And, Mr. Scalmanini, can you describe -- 14:03:25 strike that.

Mr. Scalmanini, are you able or can you describe how the different sources of water available in the Antelope Valley were used to meet water use in the Antelope Valley? 14:03:52

MR. JOYCE: Vague.

MR. ZIMMER: Vague and same objections previously stated.

THE WITNESS: Yes, I think can.

MR. ZIMMER: Overbroad. 14:04:08

MR. DUNN: Let's take a look, if you would, please, at the next exhibit premarked as Exhibit 76.

MR. SLOAN: Before we move on to that, I'd like to object and move to strike the testimony on 14:04:19

historical recycled water.

And I'd like to note that the substitute Exhibit 75 does not have the same footer or footnote that the original premarked Exhibit 75 had. The original Exhibit 75 that was premarked says in the 14:04:50
bottom left-hand corner "volumes in acre feet," and then it says, "All data from P. Leffler."

And I would just note that in the substituted exhibit that comment has been removed and changed -- it's different than the original 14:05:10
premarked exhibit, and the motion to strike is going to be based on the inability to obtain discovery on Mr. Leffler.

MR. ZIMMER: Just out of curiosity, Mr. Dunn, have there been any other modifications to 14:05:26
substituted exhibits of the nature that Counsel is raising?

MR. DUNN: To be honest with you, I don't understand what Mr. Sloan is saying.

MR. ZIMMER: He's saying that the exhibit 14:05:41
you originally had in the exhibits produced at the first day of Mr. Scalmanini's deposition you had in the booklet that all is attached together, Exhibit 75.

Mr. Sloan is pointing out that in the 14:05:56

Exhibit 75 that you're seeking to substitute for the Exhibit 75 in the original compilation, it is my understanding these were simply substituted as being clearer versions of the exhibits initially produced, not that data or verbiage or lines or anything else would be changed. 14:06:19

What Mr. Sloan is pointing out is if you look at Exhibit 75 that you're asking to substitute for the prior Exhibit 75, the words "All data from P. Leffler" except -- no, I guess just the words "All data from P. Leffler" have been taken out of that exhibit by somebody. 14:06:37

So that raises a whole group of new issues in terms of the accuracy of what's been substituted. We were all under the assumption they were exact copies of what was being substituted and apparently it's not the case. 14:07:05

MR. KUHS: I object that Exhibit 75 lacks foundation. Hearsay.

MR. DUNN: I still don't -- I still don't think the three of you are on the same page, but let me see if I can characterize -- 14:07:22

MR. KUHS: I have not raised any issue that Mr. Sloan and Mr. Zimmer raised.

MR. DUNN: Thank you, Mr. Kuhs. 14:07:33

MR. JOYCE: And I'm reserving my objections. I make the same generalized observation, but my basis for moving to strike are to exclude the basis on a slightly different ground; but, nonetheless, I reserve. 14:07:43

MR. DUNN: Mr. Sloan, if I understand your objection, your objection is to the use of Exhibit 75 that's been marked for use in this proceeding today because it differs in some format with the copy of an exhibit that was earlier 14:08:10 premarked for identification purposes and provided to counsel in an exhibit packet.

Is that a fair statement?

MR. SLOAN: That's not the basis of my objection. 14:08:25

MR. DUNN: Well --

MR. SLOAN: I was objecting for lack of foundation and moving to strike on the basis of discovery that was not made available on Mr. Leffler, and I wanted to observe the difference 14:08:39 between the premarked exhibit and the exhibit that was substituted.

MR. DUNN: We're wasting -- strike that.

MR. SLOAN: That's fine.

MR. DUNN: We're wasting valuable time. 14:08:52

BY MR. DUNN:

Q. Let me just ask the one question, Mr. Scalmanini.

Exhibit No. 75, do you have it still before you, sir? 14:09:00

A. Yes.

Q. Do you recognize this that's labeled "Table D.4-3" --

A. Yes.

Q. -- as being an exhibit that was included in the expert summary report that was produced in this case? 14:09:06

A. Yes.

Q. Do you recall during your deposition over a three-day period -- three separate days, rather, that you had the expert summary report with you? 14:09:18

A. Yes.

Q. And were you asked questions during your deposition about the expert summary report?

A. Yes. 14:09:31

Q. And this Exhibit 75 was in that report?

A. Yes.

Q. We'll move on.

Let's go to the next exhibit marked Exhibit No. 76. 14:09:40

Mr. Scalmanini, do you have Exhibit No. 76 before you?

A. Yes.

Q. Who prepared Exhibit No. 76?

A. Our office did. 14:09:57

MR. DUNN: And it's labeled "Historical Total Water Use Antelope Valley Area of Adjudication."

(Whereupon, Scalmanini Exhibit 76 was introduced for identification.) 14:10:08

BY MR. DUNN:

Q. And what does this exhibit show?

MR. ZIMMER: Same objections.

THE WITNESS: It tracks a combination of what -- historical use of recycled water, the 14:10:26 red line or curve lower-most on the overall graph, plus the historical use of local and imported supplemental waters, the second lowest curve versus time which is blue with triangles to indicate the individual data points. Groundwater use over time 14:10:59 which is overlain by the total curve to the left-most portion; meaning prior to the early 1970s when groundwater was the same as total water use. But it tracks groundwater use versus time and then ultimately adds the three of those together to be 14:11:25

components of total water use in the area of adjudication.

In somewhat simple summary, the total water use curve is a repeat of the total water use curve in Exhibit 65, the groundwater use curve is a repeat of the groundwater use curve in Exhibit 67, the combination of local and imported state water project use versus time is a repeat of that same curve in Exhibit 71, and the recycled water curve is a repeat of what's reflected in Exhibit 74. 14:11:44 14:12:07

BY MR. DUNN:

Q. What is the largest -- according to the illustrations here on Exhibit No. 76, what is the largest source of water supply for the Antelope Valley area of adjudication? 14:12:41

MR. ZIMMER: Same objections.

THE WITNESS: Well, it is and always has been groundwater.

MR. DUNN: Mr. Scalmanini, I'd like to direct your attention, please, to Exhibit No. 77. 14:13:01

Counsel, this Exhibit No. 77 is a substitute copy for an earlier premarked exhibit. It is labeled "Table D.4-4, Historical Total Water Supply Antelope Valley Area of Adjudication," and parenthetically it indicates "(acre feet per year)." 14:13:25

(Whereupon, Scalmanini Exhibit 77 was introduced for identification.)

BY MR. DUNN:

Mr. Scalmanini, do you have Exhibit No. 77 before you? 14:13:31

A. Yes.

Q. Who prepared Exhibit No. 77?

A. Our office did.

MR. JOYCE: Oh, I'm sorry.

MR. DUNN: Did you need more time, Mr. Joyce? 14:13:44

MR. JOYCE: Yes, just one second. I apologize. Thank you.

BY MR. DUNN:

Q. And does the table shown in Exhibit 77 provide the data or the backup data for the graph shown on Exhibit 76? 14:13:57

A. Yes.

Q. And I take it Exhibit 77 shows in table format the total water supply over time for the Antelope Valley area of adjudication; is that correct? 14:14:21

MR. ZIMMER: Hearsay.

THE WITNESS: I'm sorry. I drifted just a little bit. 14:14:34

BY MR. DUNN:

Q. Yeah. What does Exhibit 77 show?

A. Basically a collection of values for components of water supply, groundwater, imported and local surface waters, and any other waters used subdivided as components of water supply for municipal industrial-type uses, for agricultural-type uses, for environmental uses, as we defined them earlier, and then in aggregate. 14:14:52

Q. Would you like to take a break? 14:15:11

A. That would be good.

MR. DUNN: With permission of all counsel, Mr. Scalmanini would like to have -- can we have a five-minute break, please?

MR. ZIMMER: That's fine. 14:15:21

MR. JOYCE: Sure.

MR. DUNN: Thank you.

May we go off the record?

MR. JOYCE: Please.

THE VIDEOGRAPHER: The time is 2:15 p.m. and we are off the record. 14:15:27

(Off the record.)

THE VIDEOGRAPHER: The time is 2:24 p.m. We are on the record.

BY MR. DUNN: 14:24:40

Q. Mr. Scalmanini, I direct your attention to the next exhibit premarked as Exhibit No. 78. It is labeled "Native Sustainable Yield."

(Whereupon, Scalmanini Exhibit 78 was introduced for identification.) 14:24:52

BY MR. DUNN:

Q. Do you have Exhibit 78 before you?

A. Yes.

Q. Who prepared Exhibit No. 78?

A. Our office did. 14:25:05

Q. What does Exhibit 78 show?

A. Well, it's largely a repeat of I think it's Exhibit 12. But segueing from 12, which was intended to be just a conceptual illustration of how recharge turns into yield, Exhibit 78 is intended 14:25:31 to, let me -- call a little more focus to the bottom part where the various components of yield are going enumerated in equation form. Sustainable yield, (SY) equals natural recharge(NR), plus ag return flows (RFag), plus M&I return flows (RFMI), when S, 14:26:13 which is indicative of groundwater storage, equals constant over time. And it bracketed those components of yields as "Fundamental Inputs."

So the computed native sustainable yield one needs natural recharge and estimates of return 14:26:55

flows from the use of water that derives from natural recharge from agriculture or by agriculture and by municipal industrial users, all ultimately intended to keep groundwater storage a long-term constant, but not literally constant. 14:27:20

And so as I think I mentioned when we were discussing Exhibit 12, we attached a -- I'll call it a hypothetical hydrograph to the water table over on the right side where one might expect on a long-term basis groundwater levels to fluctuate typically up 14:27:38 in wet cycles and down in drier cycles, and on a long-term basis to average out to be a constant.

So the groundwater levels weren't declining, groundwater storage wasn't declining; in other words, avoidance of the undesirable results 14:28:00 that were enumerated as being possible if safe yield were exceeded.

Q. What do the light blue arrows on the left-hand side of Exhibit 78 depict or show?

MR. JOYCE: Jeff -- 14:28:19

MR. DUNN: Yes.

MR. JOYCE: -- on this exhibit I'm making the observation that other people have a variation slightly different. Like, for instance, Mr. Kuhs' arrows are dark blue, whereas mine are light blue, 14:28:34

as are yours. I'm just wondering --

MR. ZIMMER: It's a copy.

MR. JOYCE: -- which one is intended to be used by the Court?

MR. DUNN: I'm informed, but you can correct me if I have this wrong, that, Mr. Joyce, the copy that you have and that I have and Mr. Scalmanini has, those are the copies. 14:28:42

Mr. Kuhs, maybe -- I believe what you did was print out your own copies; is that correct? 14:28:54

MR. KUHS: That's correct.

MR. DUNN: Yeah. So that's -- that may be the reason why your copy might be different. But in any event, we'd be happy to provide you with the copy we have. 14:29:04

MR. JOYCE: All I'm just -- his printer works better, I can tell you that.

MR. DUNN: But we'll work off -- but to answer your question, Mr. Joyce, we'll work off this copy, if that's fine with you. 14:29:13

MR. JOYCE: Yeah. I just wanted to make sure I understood which one is going to be the official.

MR. DUNN: Okay. Thank you.

BY MR. DUNN: 14:29:19

Q. All right. And, I'm sorry. I'll just repeat the question. The light blue arrows on the left-hand side of Exhibit No. 78 beneath the words that say "Runoff/Infiltration," what do the light blue arrows represent? 14:29:38

A. Well, they represent a combination of runoff from the watershed and -- which would flow onto the valley floor, or in this case the watershed surrounding the Antelope Valley, and then flow onto the Antelope Valley floor that can infiltrate, 14:29:57 deep percolate, reach the water table and in effect contribute a component of so-called natural recharge; "natural" meaning that the source waters originate as precipitation within the watershed surrounding the aquifer system that is the area of 14:30:15 adjudication.

The other light blue line, or whatever shade of blue, is labeled "Mountain front recharge," and it's intended to reflect waters that again originate in the watershed but infiltrate some 14:30:31 of which -- not detailed here, can resurface and contribute to surface runoff, but some of which stays in the subsurface and flows into the boundary of the aquifer system around the edges, so to speak, of the area of adjudication and contributes a 14:30:53

component of natural recharge in that fashion.

Q. On Exhibit No. 78, what do the darker blue arrows represent?

A. Well, there are several. I'll start with the ones in the subsurface. Okay. So more or less at the confluence of the two light blue arrows there is the symbol "NR" intended to reflect natural recharge. 14:31:15

And so natural recharge, you know, in effect joins the groundwater system; you know, contributes to water in storage, and can be captured by or picked up by, intercepted by, groundwater pumping. So that arrow reflects in effect the flow of natural recharge in this case to one schematic well, but basically to water wells that are installed to develop supply from the groundwater basin. 14:31:36 14:31:57

And maybe I just better follow it sequentially so I'll stick with just that subsurface arrow for right now. 14:32:13

And then water in this case pumped to the ground surface and into distribution systems, whether for all agriculture or whether for municipal uses, follows the two blue arrows which go left to right immediately above the ground surface. To the 14:32:32

left is to municipal supplies and to the right is to agricultural supplies. So let's arbitrarily pick the one to the left first.

So municipal and industrial groundwater pumping goes to users, some of which is 14:32:45
consumptively used or basically exhausted by evaporation to the atmosphere. That's the C- -- excuse me, CUmi, or the blue arrow pointing up. And some of the water that's delivered to municipal
users infiltrates into the subsurface and deep 14:33:08
percolates and can ultimately get back to the water table or the groundwater basin as a return flow contribution to the overall water supply and the -- the overall groundwater supply, and that's
symbolized by the blue arrow pointing down labeled 14:33:31
"RFmi."

And analogous to that going back to the wellhead, so to speak, the arrow pointing to the right to agriculture irrigation, some of the water
applied for agriculture irrigation; in fact, a 14:33:49
fairly high fraction, is consumptively used; meaning evapotranspirated to the atmosphere, and that's symbolized by that "CUag" and some applied to the ground surface infiltrates, deep percolates past the
root zone, is not uptaken by plants, and ultimately 14:34:18

deep percolates back to the water table and provides a return flow component symbolized by "RFag."

So ultimately the total amount of water that is sustainably pumped under native conditions derives from the natural recharge; the dark blue 14:34:39
arrow coming in from the left, at the confluence of those symbolized runoff and mountain front recharge components, along with the return flow components of pumping that derives from the uses of groundwater pumped from the basin; meaning that part of natural 14:35:03
recharge that's pumped and utilized for either, in this case, agricultural or municipal-type uses on the ground surface.

Q. On Exhibit 78 there is a triangle indicating Delta S -- 14:35:19

A. Yes.

Q. -- "S = 0."

A. Yes.

Q. Why is that depicted there? In other words, why is Delta S indicating change of storage 14:35:27
equaling zero?

A. Well, there's -- you know, that is imprinted in a portion of the overall figure that is hopefully in everybody's version hatched with some blue dots. And there's a blue line that goes across 14:35:51

with some small triangles at the top of it, and then that blue line is attached to the hydrograph on the right-hand side. That is intended to depict the water table. And groundwater storage, of course, would be the water in the saturated zone below the water table. 14:36:08

Q. Depicted by the area with the tiny blue --

A. With the tiny blue hatching, that's correct.

And under sustainable or so-called safe yield conditions, then going back to the definitions that we worked our way through on the first day of this, that safe or sustainable yield derives from pumping an amount on an average basis; meaning average annual basis, that does not result in undesirable conditions such as lowering of water levels, depletion of storage, degradation of water quality, land subsidence, those kinds of things. 14:36:21 14:36:41

And as I think I mentioned when describing those, most of them derive ultimately from a declining water level condition but it's expressed as a depletion of storage. 14:36:58

So under native sustainable or safe yield conditions, then storage does not decline; or expressed in the symbolic form, it's common to use 14:37:22

the Greek symbol Delta for change in the technical literature. So Delta S would mean change in storage. And if storage is not going to deplete under sustainable conditions, then Delta S would be equal to zero. Again, on a long-term average basis. 14:37:40

Looking at the hydrograph, you could expect storage to increase and decrease through wet and dry cycles. That's basically using the storage to buffer your way through wet and dry cycles. You use some water from storage during dry cycles, 14:37:58 expect it to refill during wet cycles and on a long-term basis storage is not depleted.

Q. If you would, please, I direct your attention to the premarked Exhibit 79. It is labeled "Native and Supplemental Sustainable Yield." 14:38:33

(Whereupon, Scalmanini Exhibit 79 was introduced for identification.)

BY MR. DUNN:

Q. Mr. Scalmanini, do you have Exhibit No. 79 before you? 14:38:40

A. Yes.

Q. Who prepared Exhibit No. 79?

A. Our office did.

Q. What does Exhibit No. 79 show?

A. It shows two things. The focus is 14:38:52

intended to be on the right-hand side, but for completeness if we could divide it, you know, basically down the middle -- and I think there is a faint line -- a faint vertical line that does that -- the left-hand side or left half, you know, shows for all practical purposes the same things as reflected in Exhibit 78. Okay? 14:39:17

So there are natural recharge component and pumping and return flow components; in this case including a return flow component from recycled water from the -- on the municipal side. It's a small component when we get into numbers. But basically that's the same as we just discussed with regard to native supplies. 14:39:39

The right side is added to it to try to schematically illustrate how this supplemental water use ultimately contributes to more yield. 14:39:57

So if I could walk through that, I think it --

Q. Yeah. Would you please walk us through the supplemental sustainable yield -- 14:40:15

A. Sure.

Q. -- as shown here on Exhibit 79, please.

A. Okay.

MR. ZIMMER: Subject to objections 14:40:27

previously stated.

THE WITNESS: Okay. So starting at the right side there are two horizontal arrows that point in from the right but point to the left. One is labeled "SWag," and the one next to it is labeled "SWmi." And they illustrate that supplemental surface water, in this case from the state water project, is brought into the basin, but in contrast to some other places where that water might be put into spreading basins and infiltrated into the ground or injected into wells -- we talked about ASR for a brief moment this morning. 14:40:38 14:41:09

In contrast to that, in the Antelope Valley supplemental water that's brought in is delivered to users; agricultural users and municipal-type users. And when that happens, then just as with water that's pumped from the groundwater basin under native conditions, some of the water that's delivered to AG is consumptively used, exhausted to the atmosphere; some of the supplemental water that's delivered to M&I users is consumptively used or exhausted to the atmosphere; and that's reflected by the arrows pointing up above where the SW arrows comes into the basin. 14:41:24 14:41:40

It so happens that the use of those 14:42:02

supplemental waters also produces some return flows. So the delivery of supplemental water to agriculture produces some return flow and the use of supplemental water by municipal uses produces some return flow. Those are recharges to the groundwater basin that wouldn't occur if not for the importation of that supplemental water. 14:42:23

So that recharge is, in terms of how it contributes to yield, somewhat analogous to the natural recharge that's coming in on the left-hand side of this figure from local waters. It's not a local water in this case, it's a supplemental water. But it's a component of recharge that then can be pumped and that's the next set of, I'll call it, vertical well in the delivery of water that's pumped from these return flows that derive from the supplemental water importation into the basin. 14:42:39 14:42:56

And so the two recharges from the use of supplemental waters can be picked up by wells, but illustrated here by one well, and delivered to agricultural users and to M&I users. 14:43:18

So much like we looked at with Exhibit 78, the discharge from the well that's capturing these recharges from supplemental water is partially delivered to agriculture, partially delivered to 14:43:39

municipal-type users. In both cases parts of those deliveries are consumptively used, so that would be the CUag or mi on the two sides of the discharge from that well that's capturing these recharges from supplemental water.

And the delivery of that pumped water to agriculture and municipal-type uses also produces return flows labeled RFsag; meaning supplemental ag, and RS -- I'm sorry, RFsmi; meaning supplemental municipal industrial. And those two return flows add to the recharge that derives from the importation of supplemental waters on the right-hand side and collectively add up to a supplemental sustainable yield; meaning that there's yield added to the basin as a result of that and it can be quantified. 14:44:05 14:44:35 14:44:55

BY MR. DUNN:

Q. Mr. Scalmanini, as part of your analysis did you pick or determine an appropriate study period? S-t-u-d-y. 14:45:25

A. Yeah. Yeah. Also sometimes called a "base period."

We actually used ultimately by the time we get to the finish line about four of those. But at this point in the overall discussion the answer 14:45:48

CERTIFICATE OF REPORTER

I, JANIS L. JENNINGS, a Certified Shorthand Reporter of the State of California, do hereby certify:

That the foregoing proceedings were taken before me at the time and place herein set forth; that any witnesses in the foregoing proceedings, prior to testifying, were placed under oath; that a verbatim record of the proceedings was made by me using machine shorthand which was thereafter transcribed under my direction; further, that the foregoing is an accurate transcription thereof.

I further certify that I am neither financially interested in the action nor a relative or employee of any attorney of any of the parties.

IN WITNESS WHEREOF, I have this date subscribed my name.

Dated: January 24, 2011

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JANIS JENNINGS, CSR NO. 3942, CLR, CRP