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SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES

DEPARTMENT NO. 316

HON. JACK KOMAR, JUDGE

COORDINATION PROCEEDING)
SPECIAL TITLE (RULE 1550B))

ANTELOPE VALLEY GROUNDWATER CASES))

JUDICIAL COUNCIL
COORDINATION
NO. JCCP4408

PALMDALE WATER DISTRICT AND)
QUARTZ HILL WATER DISTRICT,)

SANTA CLARA CASE NO.
1-05-CV-049053

CROSS-COMPLAINANTS,)

VS.)

LOS ANGELES COUNTY WATERWORKS,)
DISTRICT NO. 40, ET AL,)

CROSS-DEFENDANTS.)

REPORTER'S TRANSCRIPT OF PROCEEDINGS

TUESDAY, MARCH 15, 2011

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1 EXPERTS.

2 Q ALL RIGHT. IN THEIR WORK ON THIS PROJECT,
3 DID THEY WORK SOLELY UNDER YOUR DIRECTION?

4 A YES, THEY DID.

5 Q AND HOW DID YOU REVIEW THEIR WORK?

6 A I REVIEWED THEIR WORK FAIRLY FREQUENTLY.
7 THERE IS A NUMBER OF COMPONENTS THAT WENT INTO THIS
8 FAIRLY SUBSTANTIAL EFFORT FROM THE STANDPOINT OF DATA,
9 RAW DATA ENTRY. THERE IS INTERIM PRODUCTS WITH MODELING
10 EFFORTS. I REVIEWED THOSE AS WE WENT ALONG. I ALSO
11 LEANED ON ONE OF MY SENIOR PARTNERS, MICAH HEILMANN TO
12 ASSIST ME WITH SOME REVIEWS, AND WE CONFERRED ON THOSE
13 REVIEWS AS WELL. AND, OF COURSE, I REVIEWED MODEL
14 OUTPUT PARAMETERS FOR THEIR REASONABLENESS IN LIGHT OF
15 THE EFFORTS THAT WE CONDUCTED ON THIS PROJECT.

16 Q ARE YOU AWARE OF THE NUMBER OF HOURS THAT
17 YOU AND YOUR TEAM SPENT ON THIS PROJECT?

18 A NOT EXACTLY, BUT I'M CONFIDENT IT WAS WELL
19 OVER 1,000 HOURS.

20 Q AMONG YOUR TEAM?

21 A AMONG OUR TEAM, YES.

22 Q YOU SAID THAT ONE OF YOUR TASKS WAS TO
23 ESTIMATE APPLIED WATER FOR AGRICULTURAL USE IN THE
24 ANTELOPE VALLEY. COULD YOU DESCRIBE FOR US WHAT YOU
25 MEAN BY APPLIED WATER?

26 A APPLIED WATER BY MY DEFINITION IS THAT WATER
27 WHICH IS APPLIED FROM AN IRRIGATION SYSTEM. ANOTHER WAY
28 TO PUT IT IN FARMER'S TERMS IS THE WATER THAT COMES OUT

1 OF THE END OF THE NOZZLE OF THE SPRINKLER OR THE END OF
2 SYPHON TUBE OF AN IRRIGATION SYSTEM.

3 Q AND FOR YOUR ANALYSIS, WHAT DID YOU CONSIDER
4 TO BE IRRIGATED LAND?

5 A IRRIGATED LANDS ARE SIMPLY THOSE LANDS THAT
6 RECEIVE IRRIGATION WATER FOR THE PRODUCTION OF
7 PROFITABLE CROPS.

8 Q OKAY. AND DO YOU HAVE PRIOR EXPERIENCE
9 PERFORMING THE TYPE OF ANALYSIS THAT YOU PERFORMED IN
10 THIS CASE?

11 A YES, I DO.

12 Q AND COULD YOU PROVIDE SOME EXAMPLES?

13 A THERE ARE MANY. THE MOST RELEVANT EXAMPLE
14 OF MY PRIOR EXPERIENCE IS THE WORK THAT I DID ON THE
15 SANTA MARIA GROUNDWATER BASIN ADJUDICATION WORK, OH, 10
16 OR MORE YEARS AGO. THE METHODS THAT WERE USED IN THAT
17 EFFORT ARE VERY SIMILAR TO THE METHODS THAT I EMPLOYED
18 IN THIS EFFORT.

19 THERE ARE A NUMBER OF OTHER PROJECTS THAT I
20 HAVE USED THE SAME TYPE OF METHOD ON THROUGHOUT THE
21 WESTERN UNITED STATES AS WELL AS ARID REGIONS AND SUNNY
22 ARID REGIONS IN THE MIDDLE EAST, IN EGYPT AND TURKEY.
23 AND THOSE INCLUDE, IF YOU WANT ME TO GO THROUGH A FEW OF
24 THEM, A WORK IN THE SANTA CLARA RIVER WATERSHED FROM THE
25 STANDPOINT OF IRRIGATION SUITABILITY FOR AVOCADO AND
26 STRAWBERRY PRODUCTION.

27 AND I ALSO PREPARED A VERY, VERY DETAILED
28 CASE FOR JUDGE OLIVER RANGER IN HIS COURT IN FRESNO. I

1 WAS ULTIMATELY NOT CALLED TO THE STAND, BUT THE SAME
2 TYPES OF APPROACHES THAT WERE USED IN THIS CASE WERE
3 USED IN THAT CASE FROM ACTUALLY A DEFICIT IRRIGATION
4 PRACTICE FROM THE STANDPOINT OF WATER -- WATER
5 LIMITATIONS.

6 AS I MENTIONED I HAVE DONE A GOOD BIT OF
7 WORK IN THE MIDDLE EAST IN COUNTRIES LIKE JORDAN, WEST
8 BANK, TURKEY AND EGYPT. IN ALMOST ALL THOSE CASES OR
9 THOSE PROJECTS, THE WORK THAT I PERFORMED WAS CENTERED
10 AROUND IRRIGATION APPLICATION TO PREVIOUSLY
11 NON-IRRIGATED GROUND. MOSTLY TO REUSE TREATED WASTE
12 WATER AS IRRIGATION RESOURCE.

13 WE HAD TO DO WATER BALANCE CALCULATIONS TO
14 DETERMINE THE SIZING OF THE SITES TO BE IRRIGATED. WE
15 HAD TO DO THOSE WATER BALANCE CALCULATIONS WITH THE SAME
16 TOOLS THAT I HAVE USED HERE FOR THE PURPOSES OF
17 UNDERSTANDING IRRIGATION SCHEDULING AND ALSO APPLIED
18 WATER RETURN FLOWS. WE CARE A LOT ABOUT RETURN FLOWS IN
19 THOSE SITUATIONS FROM THE STANDPOINT OF NITRATE
20 L-E-A-C-H-I-N-G. FROM THE STANDPOINT OF NITRATE
21 LEACHING FOR POTENTIAL CONTAMINATION OF GROUNDWATER
22 BECAUSE THAT WATER IS NUTRIENT RICH.

23 SOME OTHER AREAS WHERE I HAVE USED THIS WORK
24 WAS AS I MENTIONED BEFORE, THE MOST DIRECT APPLICATION
25 WAS IN SANTA MARIA. WE HAVE USED THIS WORK IN -- FOR A
26 VARIETY OF IRRIGATION DISTRICTS, GLENN-COLUSA IRRIGATION
27 DISTRICT, IMPERIAL IRRIGATION DISTRICT. BUTTE --
28 RICHFIELD IRRIGATION DISTRICT, BIGGS WEST GRIDLEY

1 IRRIGATION DISTRICT.

2 WE ARE CURRENTLY WORKING ON TWO PROJECTS
3 WHERE WE ARE DOING IRRIGATION SCHEDULING. THAT WORK IS
4 CONDUCTED IN COLORADO ON A CORN FARM. AND THEN ALSO WE
5 USE THIS MODEL FROM THE STANDPOINT OF BLENDING
6 IRRIGATION WATER IN ARIZONA FROM A MINE DEWATERING
7 OPERATION AND BLENDING THAT WITH CENTAL ARIZONA PROJECT
8 WATER. SO THAT IS -- IF YOU WANT ANY MORE, I HAVE SOME
9 MORE, BUT I THINK THAT GIVES YOU A TASTE.

10 Q THANK YOU. DO YOU HAVE ANY OTHER PERSONAL
11 EXPERIENCE THAT IS RELEVANT TO THE TASK OF ESTIMATING
12 APPLIED WATER FOR IRRIGATED AGRICULTURAL?

13 A I FEEL VERY FORTUNATE TO HAVE GROWN UP AND
14 BEEN RAISED ON AN IRRIGATED AGRICULTURAL FARM IN
15 NORTHERN CALIFORNIA AT BUTTE COUNTY NEAR CHICO.

16 I STARTED PHYSICALLY IRRIGATING AT THE AGE
17 OF TEN, DID THAT THROUGH -- WHEN I LEFT FOR GRADUATE
18 SCHOOL AT THE AGE OF 23, EVERY SUMMER, PRACTICE HANDS-ON
19 IRRIGATION PRACTICES, HAND LINES, SPRINKLER SYSTEMS,
20 SYPHON PIPES, FLOOD IRRIGATION ON A VARIETY DIFFERENT
21 CROPS INCLUDING BOTH ROW AND TREE CROPS.

22 Q AND DO YOU PRESENTLY OWN ANY AGRICULTURALLY
23 IRRIGATED PROPERTY?

24 A I DO. MY FAMILY AND I OWN A WALNUT ORCHARD
25 IN THE SAME AREA NEAR MY FAMILY FARM. MY BROTHER FARMS
26 IT FOR US, AND SO I AM ALTHOUGH NOT ACTIVELY INVOLVED ON
27 A DAY-TO-DAY BASIS IN THE FARMING OPERATION. I'M VERY
28 WELL-VERSED IN HOW THOSE TECHNOLOGIES HAVE CHANGED OVER

1 TIME AND HOW THAT SYSTEM IS IRRIGATED AND WHAT WE CARE
2 ABOUT FROM THE STANDPOINT OF THAT IRRIGATION WATER
3 APPLICATION.

4 Q YOU MENTIONED PREVIOUSLY QUITE A FEW
5 EXAMPLES WHERE YOU HAVE DONE THE SAME TYPE OF ANALYSIS
6 THAT YOU DID IN THIS CASE. DO YOU HAVE PRIOR EXPERIENCE
7 IN AREAS WITH SIMILAR CONDITIONS TO THE ANTELOPE VALLEY?

8 A YES. THE ANTELOPE VALLEY IS AN ARID
9 ENVIRONMENT, SOME MIGHT ARGUE SEMIARID, BUT MOSTLY ARID,
10 MOJAVE DESERT. ONE OF THE MOST RECENT EXAMPLES IS SOME
11 WORK THAT WE ARE CURRENTLY CONDUCTING IN ARIZONA ABOUT
12 60 MILES OUTSIDE OF PHOENIX WHEREBY WE ARE BLENDING
13 IRRIGATION WATER AND MINE DEWATERING OPERATION WHERE THE
14 WATER IS BEING REMOVED AS HIGHLY SALINE. AND WE BLEND
15 THAT WATER TO SUITABLE WATER QUALITY TO PROVIDE SUITABLE
16 WATER QUALITY FOR THE CROPS THAT ARE BEING GROWN.

17 THE MODEL THAT WE USE THERE SIMPLY DICTATES
18 A QUALITY COMPONENT AS WELL AS A QUANTITY COMPONENT.
19 HOW MUCH CAN WE IRRIGATE AND WHAT'S THAT BLENDING RATIO
20 NEED TO BE TO BE SUITABLE FOR THOSE CROPS.

21 Q AND DO YOU HAVE ANY PRIOR EXPERIENCE IN
22 SOUTHERN CALIFORNIA?

23 A YEAH. I HAVE WORKED IN IMPERIAL VALLEY FOR
24 IMPERIAL IRRIGATION DISTRICT. OF COURSE, THE ANTELOPE
25 VALLEY, WITHIN THE ANTELOPE VALLEY I HAVE WORKED IN THE
26 CITY OF VICTORVILLE, CITING POTENTIAL IRRIGATION SITES
27 FOR APPLICATION OF TREATED WASTE WATER.

28 I HAVE WORKED IN -- FOR THE LA COUNTY

1 SANITATION DISTRICTS IN PALMDALE TO HELP THEM SITE
2 FUTURE APPLICATION SITES CENTER, PIVOTS FOR EXPANSION OF
3 THEIR TREATED WASTE WATER APPLICATION PROGRAM.

4 AND I'VE DONE A LITTLE BIT OF WORK WEST OR
5 EAST OF BAKERSFIELD IN LOOKING AT SOME IRRIGATION
6 DEMANDS IN THAT AREA; WORKED ON A PROJECT FOR THE LOS
7 ANGELES COUNTY BUREAU OF SANITATIONS, A PLACE CALLED
8 GREEN ACRES FARMS. AND WE DID SOME IRRIGATION
9 MANAGEMENT ESTIMATES FOR THEM TO HELP THEM BETTER MANAGE
10 THEIR IRRIGATION WATERS.

11 AND A GOOD BIT IN -- THROUGHOUT THE CENTRAL
12 VALLEY AND IN NORTHERN PART OF THE VALLEY AS WELL, BUT I
13 WON'T BELABOR THE ISSUE.

14 Q WHAT WAS THE GEOGRAPHIC AREA THAT WAS THE
15 SUBJECT OF YOUR ANALYSIS IN THIS WORK IN THIS CASE?

16 A THE GEOGRAPHIC AREA THAT I ANALYZED WAS THE
17 SAME GEOGRAPHIC AREA THAT I BELIEVE EVERYONE ELSE
18 ANALYZED AND THE BOUNDARY THAT WE RECEIVED CAME FROM THE
19 SUMMARY EXPERT REPORT.

20 Q OKAY. AND WHAT TIME PERIOD WAS THE SUBJECT
21 OF YOUR ANALYSIS?

22 A FOR AG. SYSTEMS OUR TIME PERIOD RANGED FROM
23 1962 TO 2006; FOR URBAN SYSTEMS IT RANGED FROM 1975 TO
24 2006.

25 Q HAVE YOU DEVELOPED AN ESTIMATE OF THE AMOUNT
26 OF WATER APPLIED ON IRRITATED LANDS WITHIN THE ANTELOPE
27 VALLEY?

28 A YES.

1 MR. HERREMA: COULD I DIRECT YOUR ATTENTION TO
2 EXHIBIT A93?

3
4 (AGWA EXHIBIT A93 MARKED.)

5
6 THE WITNESS: YES.

7 BY MR. HERREMA:

8 Q DO YOU HAVE THAT DOCUMENT BEFORE YOU?

9 A I DO.

10 Q DO YOU RECOGNIZE THAT DOCUMENT?

11 A YES, I DO.

12 Q WHAT DOES THAT DOCUMENT SHOW?

13 A THIS IS A ROLE UP OF THE TOTAL APPLIED WATER
14 IN ACRE-FEET ANNUALLY FROM 1962 TO 2006 FOR THE
15 IRRIGATED ACRES IN THE ANTELOPE VALLEY.

16 Q THESE ARE YOUR ESTIMATES?

17 A THEY ARE MY ESTIMATES.

18 Q WAS EXHIBIT A93 PREPARED BY YOU OR AT YOUR
19 DIRECTION?

20 A YES, IT WAS.

21 Q WHAT WAS THE METHODOLOGY THAT YOU USED TO
22 ESTIMATE THE AMOUNT OF APPLIED WATER ON IRRIGATED LAND
23 WITHIN THE ANTELOPE VALLEY?

24 A THE METHOD I USED IS AN INTERNAL PROPRIETARY
25 METHOD THAT WE HAVE DEVELOPED IN MY FIRM OVER THE LAST
26 15 YEARS I HAVE DEVELOPED AND ENHANCED IN MY FIRM IN THE
27 LAST 15 YEARS. IT WAS DEVELOPED SPECIFICALLY FOR THE
28 PURPOSE OF EVALUATING SOIL MOISTURE DYNAMICS, IF YOU

1 WILL, WITHIN THE ROOT ZONE OF A CROP. IT IS
2 SPECIFICALLY DEDICATED TO AGRICULTURE. IT IS DEVELOPED
3 IN SUCH A WAY THAT IT IS MODIFIABLE BECAUSE IT IS A CELL
4 BASED VERSION MODEL.

5 AND THAT ABILITY TO MODIFY THE MODEL TO
6 ACCOUNT FOR SPECIFIC CONDITIONS WITHIN A GIVEN AREA IS
7 IMPORTANT BECAUSE AGRICULTURAL IRRIGATION THROUGHOUT THE
8 WORLD CHANGES DEPENDING UPON WHO YOU ARE AND WHERE YOU
9 ARE IN THE CLIMATIC CONDITIONS THAT IS EFFECTED, THAT
10 AFFECTS THAT. SO AN EXAMPLE IN THIS CASE WE HAD NEVER
11 UTILIZED EROSION CONTROL APPLICATIONS OF WATER BEFORE;
12 SO WE WERE ABLE TO CUSTOMIZE OUR MODEL TO ACCOUNT FOR
13 THAT.

14 Q HAVE YOU USED THIS MODEL IN OTHER SIMILAR
15 ANALYSES THAT YOU HAVE CONDUCTED?

16 A THE SAME MODEL WAS USED IN THE MOST
17 COMPARABLE ANALYSIS AND ALSO THE WORK DONE IN SANTA
18 MARIA.

19 Q COULD YOU DESCRIBE WHAT THE INPUT PARAMETERS
20 ARE TO YOUR MODEL?

21 A I PROBABLY WON'T GET THEM ALL BUT THE --
22 THERE'S A MAJORITY OF THEM IN INPUT PARAMETERS IN THIS
23 MODEL. FIRST, I SHOULD EXPLAIN THAT THIS MODEL IS A
24 SPATIAL MODEL. IT ACCOUNTS FOR DIFFERENCES IN APPLIED
25 WATER AND RETURN FLOWS SPATIALLY OVER A LANDSCAPE, HAS
26 THINGS LIKE SOIL-TYPE CHANGE, HAS THINGS LIKE CLIMATIC
27 REGIME CHANGE, HAS THINGS LIKE CROPPING PATTERNS CHANGE
28 ON TOP OF DIFFERENT SOIL TYPES.

1 SO THE MODEL -- I'M SORRY IF I GOT
2 SIDETRACKED. CAN YOU REPEAT YOUR QUESTION?

3 Q WHAT WERE THE INPUT --

4 A PRECIPITATION, CROP EVAPOTRANSPIRATION,
5 ROOTING DEPTH, SOIL STORAGE, PRE-IRRIGATION, FROST
6 PROTECTION, CROP EVAPOTRANSPIRATION -- AGAIN, I'M
7 SORRY -- EROSION CONTROL WATER, DEPLETION FACTORS WHICH
8 INDICATE WHEN YOU MIGHT START IRRIGATION AGAIN BASED ON
9 A SPECIFIC CROP TYPE -- SOME CROPS DON'T LIKE TO GET
10 THEIR ROOTS DRIED OUT TOO MUCH AND OTHERS DON'T CARE.

11 ALL OF THESE THINGS WERE ROLLED UP SPATIALLY
12 SO WE CARED WHERE THE CROPS WERE GROWN AND ON WHAT SOILS
13 AND UNDER WHAT CLIMATIC CONDITIONS THEY WERE GROWN ON.

14 Q AND WHAT WERE THE SOURCES OF THE DATA FOR
15 THESE INPUT PARAMETERS?

16 A THERE WERE REALLY THREE SOURCES OF DATA FOR
17 THE INPUT PARAMETERS TO OUR MODELING EFFORTS IN THE
18 BROAD SENSE. THERE WAS PUBLICALLY AVAILABLE DATA. THAT
19 DATA INCLUDED THINGS LIKE PRECIPITATION RECORDS FROM
20 NCDC, NATIONAL CLIMATIC DATA CENTER, DESERT RESEARCH
21 INSTITUTE, AND THERE ARE OTHERS THAT YOU CAN ACQUIRE
22 THIS DATA FROM.

23 THERE WERE PUBLIC DATA AVAILABLE FROM CIMIS;
24 CALIFORNIA IRRIGATION MANAGEMENT INFORMATION SYSTEMS,
25 STATIONS. THERE IS ONE IN THE -- THERE ARE TWO IN
26 THE -- ONE IN THE AREA OF OUR INVESTIGATION AND ONE
27 IMMEDIATELY OUTSIDE THE ANTELOPE VALLEY.

28 SO THOSE ARE TWO EXAMPLES OF DATA THAT ARE

1 PUBLICLY AVAILABLE. A SECOND AREA OF DATA THAT WE USED
2 WAS SIMPLY UNDERSTANDING LOCAL CONDITIONS FROM
3 COMMUNICATIONS WITH GROWERS AND OTHER AGRICULTURAL
4 INDUSTRY REPRESENTATIVES.

5 EVERYBODY FARMS DIFFERENTLY. PEOPLE FARM
6 DIFFERENTLY WITHIN THE ANTELOPE VALLEY ITSELF. IT IS A
7 BIG AREA.

8 AND SO IT IS -- I'M, YOU KNOW, A FIRM
9 BELIEVER IN UNDERSTANDING THE LOCAL CONDITIONS AS BEST I
10 CAN WITH THE RESOURCES AVAILABLE SUCH THAT WE DON'T MAKE
11 ASSUMPTIONS THAT ARE INCORRECT DUE TO LOCAL CONDITIONS.

12 AND THE THIRD SOURCE OF DATA THAT WE USE WAS
13 BASICALLY MY BEST PROFESSIONAL JUDGMENT IN MY
14 EXPERIENCE. THAT WOULD COME INTO PLAY, FOR EXAMPLE,
15 WITH LOOKING AT IRRIGATION EFFICIENCIES. WE KNOW THAT
16 THE TECHNOLOGY OF IRRIGATION DEVELOPMENT HAS INCREASED
17 OVER TIME, AND WHAT THAT MEANS IS THAT THE IRRIGATION
18 EFFICIENCIES HISTORICALLY WERE LESS EFFICIENT. WE HAVE
19 DEVELOPED MORE EFFICIENT IRRIGATION SYSTEMS OVER TIME;
20 THEREFORE, THE IRRIGATION EFFICIENCIES ACCORDINGLY
21 SHOULD IMPROVE OR INCREASE OVER TIME.

22 SO THOSE ARE THE THREE BROAD AREAS THAT WE
23 HAVE ADDRESSED FROM WHERE THE DATA SOURCES CAME. AND
24 THERE IS A LOT MORE DATA THAT WE TALKED ABOUT, BUT THAT
25 IS THE THREE THAT WE ...

26 Q IN DEVELOPING THAT LOCAL KNOWLEDGE YOU SPOKE
27 OF, DID YOU SPEND ANY TIME IN THE ANTELOPE VALLEY?

28 A I DID. I HAD AN OPPORTUNITY TO SPEND TWO

1 DAYS IN THE ANTELOPE VALLEY. FIRST DAY I WAS FORTUNATE
2 ENOUGH TO MEET A NUMBER OF FOLKS AND INTERVIEW THEM TO
3 LEARN AS MUCH AS I COULD; AGAIN, ABOUT THAT SECOND PART
4 OF THE DATA REQUIREMENT, THE LOCAL CONDITIONS.

5 THEN THE SECOND DAY I TOOK UPON MYSELF TO
6 KIND OF DO A SELF-GUIDED TOUR. I WANTED TO GO BACK AND
7 KIND OF GET OUT IN THE FIELD AND LOOK AT HOW -- THE WAYS
8 THAT PEOPLE WERE IRRIGATING AND ASSESS THE TYPES OF
9 METHODS THAT THEY WERE USING AND GET A FEEL FOR, YOU
10 KNOW, WHO IS IRRIGATING WHERE. AND I COULD SEE
11 DIFFERENCES IN IRRIGATION MANAGEMENT FROM ONE SIDE OF
12 THE BASIN TO THE OTHER SIDE OF THE BASIN. SO THAT
13 OFFERED A BIT OF COMPLEXITY.

14 Q IN YOUR DATA SOURCES, DID YOU HAVE A
15 COMPLETE RECORD FOR ALL OF THE YEARS THAT WERE INVOLVED
16 IN YOUR STUDY PERIOD?

17 A UNFORTUNATELY NOT. IT GETS BACK TO THE
18 EXPANSIVE SIZE OF THE ANTELOPE VALLEY. YES, THERE ARE
19 PRECIPITATION STATIONS IN THE ANTELOPE VALLEY. NO, THEY
20 DO NOT HAVE COMPLETE DATA SETS. YES, THERE ARE
21 CIMIS STATIONS IN THE ANTELOPE VALLEY AND IMMEDIATELY
22 ADJACENT OUTSIDE THE VALLEY. NO, THEY DO NOT HAVE
23 COMPLETE DATA SETS FOR THE PERIOD OF RECORD THAT I WAS
24 INVESTIGATING.

25 ANY TIME YOU TALK TO LOCAL RESOURCES TO GET
26 INFORMATION, YOU GET CONFLICTING INFORMATION. IT IS
27 JUST HUMAN NATURE. IT IS NOTHING WRONG WITH THAT; IT'S
28 JUST YOU HAVE TO BE KNOWLEDGEABLE ABOUT THAT. AND

1 APPLICATION OF MY PROFESSIONAL JUDGMENT ON THINGS LIKE
2 IRRIGATION EFFICIENCIES WAS JUST THAT, MY BEST
3 PROFESSIONAL JUDGMENT AT THE TIME. THOSE THINGS CAN BE
4 IMPROVED AS WELL.

5 Q WHEN YOU HAD INCOMPLETE DATA SETS LIKE YOU
6 TALKED ABOUT, HOW DID YOU FILL IN THOSE GAPS?

7 A WELL, I CAN GIVE YOU ONE EXAMPLE: CROP
8 EVAPOTRANSPIRATION, THE SIMPLE WAY TO DO THIS IS TO SAY
9 WHAT'S THE AVERAGE CROP EVAPOTRANSPIRATION FOR THE LAST
10 12 YEARS THAT EXIST AT THE VICTORVILLE CIMIS STATION.
11 LET'S AVERAGE THAT AND SAY THAT'S WHAT IT IS EVERY YEAR.

12 I KIND OF COME FROM THE STANDPOINT OF, IF WE
13 DON'T HAVE TO AVERAGE THINGS, LET'S NOT. LET'S LOOK AT
14 AS MUCH REAL DATA AS WE CAN.

15 NOW SAYING THAT, WHAT I SAID WAS THAT THEY
16 DIDN'T HAVE A COMPLETE DATA SET AT VICTORVILLE WHICH WAS
17 NEARBY AND A DECENT REPRESENTATION AT LEAST OF THE YEARS
18 THAT THEY HAVE.

19 SO WE EXPERIENCED THE SAME THING IN SANTA
20 MARIA AND WHAT WE DID IN SANTA MARIA, WHICH IS A LIMITED
21 DATA SET FROM CIMIS, BUT THERE IS A WAY THAT YOU CAN
22 CALCULATE REFERENCE CROP EVAPOTRANSPIRATION THAT
23 UTILIZES TEMPERATURE, DAILY TEMPERATURE, ELEVATION,
24 LATITUDE, LONGITUDE. I THINK THOSE ARE THE FOUR
25 PARAMETERS AND WILL CALCULATE A DECENT ESTIMATE.

26 I KNOW IT'S A DECENT ESTIMATE, AT LEAST FOR
27 SANTA MARIA, BECAUSE WE COMPARED THAT CALCULATED VALUE
28 TO CIMIS STATION VALUES, AND IT MATCHED UP VERY WELL

1 WITH OUR SQUARE OF ABOUT .9, SIX TO NINE TO EIGHT
2 (PHONETIC) IF I REMEMBER CORRECTLY. AND OUR SQUARE OF
3 ONE IS A PERFECT LINE WITH ALL THE DOTS FALLING ON THE
4 LINE.

5 SO I SAID, WELL, THAT WORKED PRETTY GOOD IN
6 SANTA MARIA; AND, THEREFORE, WE COULD CALCULATE
7 BACKWARDS IN TIME AND BE CONFIDENT THAT THOSE RECORDS WE
8 GOT FOR CROP EVAPOTRANSPIRATION VALUES WERE GOOD,
9 REPRESENTATIVE.

10 SO WE DID THE SAME THING IN THE ANTELOPE
11 VALLEY, AND WE DISCOVERED THERE WAS NOT AS GOOD A MATCH.
12 I THINK THERE IS ... (FADING OUT) -- WAS SQUARE
13 SOMETHING LIKE .7 WHICH BOUNCES AROUND A BIT. SO IN
14 DIGGING INTO THAT A LITTLE BIT DEEPER, WE DISCOVERED
15 THAT THERE WERE ALWAYS MONTHS WHERE OUR BIGGEST
16 DIFFERENCES OCCURRED, AND THOSE MONTHS WERE EARLIER IN
17 THE YEAR.

18 AND IT JUST SO HAPPENS THAT THOSE MONTHS
19 CORRELATE TO HIGH WIND EVENTS DURING EARLIER IN THE
20 YEAR. AND IF YOU REMEMBER WHEN I SAID THAT TO CALCULATE
21 REFERENCE CROP ET AND NOT USE CIMIS STATION ET. I
22 DIDN'T SAY ANYTHING ABOUT PUTTING IN WIND DATA.

23 SO WE HAD TO ADJUST THOSE VALUES TO TRY TO
24 REPRESENT REFERENCE CROP ET THAT WAS SOMEWHAT ACCURATE
25 AND GO WITH THAT BECAUSE THAT'S ALL WE HAD AT THE TIME.
26 SO THAT IS AN EXAMPLE, SORRY, FOR THE LONG-WINDED.

27 Q ARE THERE OTHER DATA SETS WHERE YOU DIDN'T
28 HAVE A FULL RECORD AND HAD TO FILL IN THAT RECORD?

1 A YEAH. PRECIPITATION DATA WAS IN SOME PLACES
2 FAIRLY THOROUGH AND IN OTHER PLACES VERY SPOTTY. WE
3 HAD -- AT LEAST HISTORICALLY I NOTICED THEM BECAUSE WE
4 ANALYZED OUR WORK SPATIALLY ACROSS THE ANTELOPE VALLEY.
5 WE HAD AREAS THAT WERE IRRIGATED ON THE WESTERN SIDE OF
6 THE VALLEY THAT HAD VERY LITTLE PRECIPITATION DATA DOWN
7 IN THE VALLEY ITSELF. YOU COULD LOOK AT A PRECIPITATION
8 STATION DATA SET THAT WAS ON TOP OF THE HILL OR HALFWAY
9 UP THE HILL, AND YOU WOULD DISCOVER THAT THE
10 PRECIPITATION IN GENERAL WAS TWO AND SOMETIMES THREE
11 TIMES GREATER THAN THAT WAS IN THE BASIN ITSELF.

12 SO WE KIND OF HAD TO DO SOME EXTRAPOLATION.
13 ONE WAY WE DID THAT WITH PRECIPITATION WAS WE GROUPED
14 AREAS OF LIKE AGRICULTURE AND WENT AHEAD AND SAID, OKAY,
15 WELL, THE BEST INFORMATION WE KNOW IS THIS PRECIPITATION
16 STATION ASSOCIATED WITH THAT LIKE AGRICULTURE AND THERE
17 ARE DIFFERENCES. THERE IS IRRIGATED LAND ON THE
18 WESTERN -- OR THE SOUTHERN EDGE OF THE ANTELOPE VALLEY
19 THAT RECEIVES, ON THAT DOWNWARD SLOPE, THAT RECEIVES
20 HIGHER RAINFALL THAN WHAT IS IN THE MIDDLE OF THE BASIN
21 ITSELF.

22 SO THAT IS ANOTHER EXAMPLE WHERE WE HAD TO
23 MAKE SOME PROFESSIONAL JUDGMENTS. AND EXTRAPOLATION OF
24 THE DATA, IF YOU WILL, TO COMPLETE -- TO OBTAIN A
25 COMPLETE DATA SET SO THAT WE COULD DO OUR MODEL.

26 Q ONCE YOU HAD OBTAINED THE COMPLETE DATA SET
27 USING THE DIFFERENT DATA SOURCES THAT YOU MENTIONED AND
28 THE GAP FILLING METHOD THAT YOU TALKED ABOUT, WHAT DID

1 YOU DO WITH ALL THOSE DATA SETS?

2 A WELL, FIRST WE QAQC THEM --

3 THE REPORTER: EXCUSE ME?

4 THE WITNESS: QAQC'D THEM, STANDS FOR QUALITY
5 ASSURANCE QUALITY CONTROL, FOR THEIR RELIABILITY AND
6 LOOKED BACK AT THE ORIGINAL DATA SETS TO MAKE SURE THEY
7 TRULY WERE REPRESENTATIVE. ANY MODELING EFFORT QUALITY
8 OF THE DATA THAT GOES IN OBVIOUSLY SIGNIFICANTLY
9 DICTATES THE QUALITY OF THE DATA COMING OUT, SO WE DID
10 THAT.

11 WE ALSO HAD TO TAKE THINGS LIKE DAILY
12 PRECIPITATION DATA OR DAILY EVAPOTRANSPIRATION DATA AND
13 SUMMARIZE THAT UP TO A MONTHLY TIME STEP BECAUSE THE
14 WORK -- OUR MODEL WORKS ON A MONTHLY TIME STEP.

15 SO THOSE ARE, YOU KNOW, SIMPLE EXAMPLES OF
16 HOW WE HAD TO -- HAD TO SET UP OUR DATABASES
17 APPROPRIATELY.

18 THE COURT: ALL RIGHT. LET'S TAKE A TEN-MINUTE
19 RECESS AND SEE IF WE CAN FINISH TODAY.

20

21 (A RECESS WAS TAKEN.)

22

23 THE COURT: ALL RIGHT. GO AHEAD.

24 MR. HERREMA: THANK YOU.

25 Q DR. KIMMELSHUE, BEFORE WE TOOK OR BREAK, WE
26 WERE DISCUSSING THE DATA SOURCES THAT YOU USED FOR THE
27 INPUT PARAMETERS OF YOUR MODEL; DO YOU RECALL THAT
28 DISCUSSION?

1 A YES.

2 Q IN FORMING YOUR DATA SETS, DID YOU RELY ON
3 ANY AGRICULTURAL COMMISSION REPORTS?

4 A YES, WE DID. WE -- THERE ARE TWO MAIN
5 SOURCES OF CROP RECORDS, IF YOU WILL, HISTORIC CROP
6 RECORDS, CALIFORNIA DEPARTMENT OF WATER RESOURCES, CROP
7 MAPPING REPORTS AS WELL AS COUNTY AG. COMMISSIONER CROP
8 REPORTS.

9 Q HOW FAR BACK DO THOSE COUNTY AG.
10 COMMISSIONER CROP REPORTS GO?

11 A WE HAVE COUNTY AG COMMISSIONER CROP REPORTS
12 FOR THE COMPLETE DURATION OF THE DATA SET THAT WE USE,
13 1962 TO 2006.

14 Q THANK YOU. NOW ONCE YOU PUT TOGETHER ALL
15 THE DATA SETS AND PREPARED YOUR INPUT PARAMETERS, WHAT
16 DO YOU DO WITH THE -- THOSE INPUT PARAMETERS THEN?

17 A WE HAVE TO GET THEM IN A FORM SUCH THAT --
18 OR MODEL WHICH IS AN AUTOMATED MODEL. I THINK I MIGHT
19 HAVE ALLUDED TO THE FACT EARLIER THAT THERE IS A LOT OF
20 INPUT PARAMETERS GOING INTO THIS MODEL SIMULTANEOUSLY,
21 AND THAT IS WHAT MAKES THE MODEL SO ROBUST IN ITS
22 ABILITY TO PREDICT.

23 SO WE DEVELOPED SCRIPTS AND AUTOMATED
24 SYSTEMS, IF YOU WILL, TO GO OUT AND GRAB A CERTAIN DATA
25 SET WHEN IT'S SUPPOSED TO GRAB A CERTAIN DATA SET, LINE
26 IT UP WITH A MODEL, GRAB ANOTHER DATA SET, LINE UP WITH
27 THE MODEL. SO WE SPENT A LOT OF TIME MAKING SURE THAT
28 THOSE DATA SETS ARE ACCURATE AND REPRESENT THE ORIGINAL

1 RAW DATA THAT WE RECEIVED AS WELL AS SET UP IN A FASHION
2 THAT THE MODEL ACCESSES THAT, AND WE WILL KNOW WHEN IT
3 DOESN'T BECAUSE WE JUST WON'T GET NUMBERS THAT ARE
4 CORRECT.

5 Q WHAT ARE THE OUTPUTS OF YOUR MODEL THEN?

6 A THE MAIN TWO OUTPUTS OF OUR MODEL ARE
7 APPLIED WATER AND RETURN FLOWS.

8 Q AND DOES EXHIBIT A93 SHOW THE APPLIED WATER
9 FOR AGRICULTURAL IRRIGATION OUTPUTS THAT YOUR MODEL
10 ESTIMATED?

11 A YES, IT DOES. IT IS EXHIBIT A93 IS THE
12 ANNUAL APPLIED WATER ROLLED UP FOR ALL IRRIGATED GROUND,
13 AT LEAST OUR ESTIMATE OF IT, FROM 1962 TO 2006.

14 Q AND IS THAT THE DATA THAT IS SHOWN IN
15 EXHIBIT A93 -- I'M SORRY. THE ESTIMATES THAT ARE SHOWN
16 IN EXHIBIT A93, ARE THOSE SHOWN IN THE FORM THAT THE
17 MODEL OUTPUTS THEM, OR HAVE YOU SORTED THEM IN A CERTAIN
18 MANNER?

19 A THOSE ARE THE ROLL-UPS OF THE ENTIRE APPLIED
20 WATER BY YEAR AND JUST SUMMATION OF ALL IRRIGATED
21 GROUND.

22 Q OKAY. YOU ALSO STATED THAT YOU ESTIMATED
23 RETURN FLOWS FROM APPLIED WATER FOR IRRIGATED
24 AGRICULTURAL PURPOSES; IS THAT CORRECT?

25 A THAT IS CORRECT.

26 Q FOR THE PURPOSES OF MAKING THAT ESTIMATE,
27 HOW DO YOU DEFINE RETURN FLOWS?

28 A MY DEFINITION OF RETURN FLOWS IS THAT WATER

1 WHICH PASSES THE ROOT ZONE OF THE CROP AND DIFFERENT
2 CROPS AFTER DIFFERENT ROOT ZONE DEPTHS; AND IN ADDITION
3 TO THAT THE CAPILLARY FRINGE OR BELOW THE ROOT ZONE IN
4 THE CAPILLARY FRINGE IS THE AMOUNT OF WATER THAT CAN
5 FLUX UPWARD TO THE COHESIVE ADHESIVE FORCES OF THE WATER
6 MOLECULES THAT IS ON THE PARTICLES THEMSELVES AS WELL AS
7 AGAINST EACH OTHER, AND COARSER TEXTURED SOILS THAT COAT
8 THAT CAPILLARY FRINGE IS FAIRLY SMALL, BUT WE DO INCLUDE
9 IT, TRY TO INCLUDE IT. SO ANYTHING THAT PASSES THAT
10 DEPTH FOR OUR PURPOSES IS CONSIDERED AS RETURN FLOW AND
11 NON-RECOVERABLE BY THE CROP.

12 MR. HERREMA: YOU SHOULD HAVE BEFORE YOU A
13 DOCUMENT MARKED EXPECT A94. DO YOU HAVE THAT IN FRONT
14 OF YOU?

15

16 (AGWA EXHIBIT A94 MARKED.)

17

18 THE WITNESS: I DO.

19 BY MR. HERREMA:

20 Q DO YOU RECOGNIZE THAT DOCUMENT?

21 A YES, I DO.

22 Q AND WHAT DOES EXHIBIT A94 SHOW?

23 A EXHIBIT A94 SHOWS THE ANNUAL RETURN FLOW
24 FROM IRRIGATED AGRICULTURE FROM 1962 TO 2006 IN
25 ACRE-FEET FOR BOTH IRRIGATION COMPONENTS OF RETURN FLOW
26 AND PRECIPITATION COMPONENTS OF RETURN FLOW.

27 Q AND WAS THIS DOCUMENT PREPARED BY YOU OR AT
28 YOUR DIRECTION?

1 A YES, IT WAS.

2 Q AND WHY DOES THIS DOCUMENT DISTINGUISH
3 BETWEEN RETURN FLOWS FROM IRRIGATION AND RETURN FLOWS
4 FROM PRECIPITATION?

5 A WELL, AS I MENTIONED EARLIER, WE ANALYZED
6 THE ANTELOPE VALLEY BASIN SPATIALLY BECAUSE, WELL, IT'S
7 A VERY LARGE SPACE, EXTREMELY LARGE SPACE.

8 AND WHEN WE GOT INTO ANALYZING THE DATA SUCH
9 AS PRECIPITATION, WE QUICKLY FOUND OUT THAT THERE ARE
10 DIFFERENCES IN PRECIPITATION THROUGHOUT THE BASIN.

11 AND SO IF YOU WILL RUN DOWN THIS LIST,
12 YOU'LL SEE THAT THE RETURN FLOW FROM IRRIGATION IS, YOU
13 KNOW, IT BOUNCES AROUND A LITTLE BIT, BUT IT IS SOMEWHAT
14 CONSTANT. IF YOU RUN DOWN THE LIST AND YOU LOOK AT
15 RETURN FLOW FROM PRECIPITATION, YOU'LL SEE THAT THERE'S
16 A CONSIDERABLE AMOUNT MORE VARIABILITY THERE.

17 NOW GRANTED THESE NUMBERS ARE SMALLER THAN
18 THE RETURN FLOW FROM IRRIGATION, BUT WHAT THIS DOES IS
19 IT PROVIDES AN EXAMPLE OF THE EFFECT OF PRECIPITATION
20 ONE YEAR TO THE NEXT. YOU CAN HAVE SIGNIFICANTLY
21 DIFFERENT PRECIPITATION, AMOUNT OF PRECIPITATION. AND
22 IN ONE AREA OF THE BASIN, YOU CAN HAVE SIGNIFICANTLY
23 DIFFERENT PRECIPITATION THAN ANOTHER, PRIMARILY BECAUSE
24 IT IS SUCH A BIG AREA.

25 Q AND TO BE CLEAR, THE RETURN FLOWS FROM
26 PRECIPITATION THAT ARE SHOWN ON EXHIBIT A94, WHICH LAND
27 WITHIN THE BASIN DOES THAT -- DO THOSE RETURN FLOWS
28 OCCUR ON?

1 A THOSE ARE IRRIGATED AGRICULTURAL LANDS.

2 Q THESE ARE THE SAME LANDS THAT ARE -- THAT
3 THE IRRIGATED RETURN FLOWS -- I'M SORRY -- THE RETURN
4 FLOWS FROM IRRIGATION OCCUR ON?

5 A YES.

6 Q OKAY. WHAT METHOD DID YOU USE TO ESTIMATE
7 THE RETURN FLOWS SHOWN ON EXHIBIT A94?

8 A I USED THE SAME METHOD THAT THE SOIL
9 MOISTURE ROOT ZONE WATER BALANCE METHOD THAT MODEL THAT
10 WE DEVELOPED AND AN OUTPUT FROM THAT MODEL IS ALSO
11 RETURN FLOW.

12 Q OKAY. DOES EXHIBIT A94 THEN SHOW THE
13 OUTPUTS OF YOUR MODEL FOR RETURN FLOWS FROM APPLIED
14 WATER FOR IRRIGATED AGRICULTURE AND RETURN FLOWS FROM
15 PRECIPITATION?

16 A YES.

17 Q YOU STATED THAT A THIRD COMPONENT OF YOUR
18 TASK WAS TO ESTIMATE APPLIED WATER AND RETURN FLOWS FROM
19 WATER APPLIED FOR URBAN IRRIGATION USES; IS THAT
20 CORRECT?

21 A THAT'S CORRECT.

22 Q WHAT USES DO YOU CONSIDER TO BE URBAN
23 IRRIGATION AS OPPOSED TO AGRICULTURAL IRRIGATION?

24 A FIRST OFF, I SHOULD SAY THAT WE TREATED
25 URBAN IRRIGATION EXACTLY LIKE A CROPPING SYSTEM. IT IS
26 IRRIGATED, YOU KNOW, IN THE SAME MANNER WITH PRESSURIZED
27 SYSTEMS OR IN SOME CASES PERHAPS NON-PRESSURIZED SYSTEMS
28 JUST LIKE A GROWER WOULD. HOWEVER, THERE ARE

1 DIFFERENCES, SIGNIFICANT DIFFERENCES IN IRRIGATED
2 SYSTEMS IN URBAN ENVIRONMENT THAN THERE IS IN AN
3 AGRICULTURAL ENVIRONMENT.

4 THE ANALOGY I LIKE TO MAKE IS IN AN
5 AGRICULTURAL ENVIRONMENT ONE GROWER, ONE IRRIGATION
6 MANAGER MAY MANAGE A THOUSAND ACRES; AND THEY WILL
7 GENERALLY MANAGE THAT IN THE SAME WAY.

8 THEY ALSO CARE A LOT ABOUT HOW THEY MANAGE
9 THAT WATER BECAUSE IT'S ONE OF THE MAJOR COST ITEMS IN
10 THE PRODUCTION OF CROPS. I KNOW FROM MY PERSONAL
11 EXPERIENCE ON OUR WALNUT ORCHARD, ALBEIT IT'S SMALL, I
12 KNOW WHAT PRODUCTION COSTS ARE; AND OUR BIGGEST COST IS
13 ELECTRICITY. SO WE CARE A LOT ABOUT HOW MUCH WATER WE
14 WILL PUMP. THE GROWERS ARE NO DIFFERENT.

15 WHEN YOU CONTRAST THAT TO AN URBAN
16 ENVIRONMENT, I THINK WE ALL KNOW THAT YOU CAN WALK DOWN
17 THE STREET AND SEE SOME PEOPLE WITH THEIR IRRIGATION
18 SYSTEMS ON IN THE MIDDLE OF THE WINTER, WHICH MY
19 NEIGHBOR ACROSS THE STREET DOES, AND I HAVE BEEN AFTER
20 HER TO STOP THAT BUT WITH NO AVAIL.

21 AND YOU CAN ALSO SEE IRRIGATION SYSTEMS IN
22 URBAN ENVIRONMENTS WHERE THEY MIGHT ACTUALLY BE
23 PRACTICING A SLIGHT DEFICIT IRRIGATION, BUT THAT IS NOT
24 VERY COMMON, GENERALLY SPEAKING IN URBAN ENVIRONMENTS.
25 THEY TEND TO IRRIGATE A BIT HEAVY. HOW DOES THAT RELATE
26 TO THIS?

27 THE IRRIGATION EFFICIENCY FOR URBAN SYSTEMS
28 ARE GENERALLY MUCH LOWER THAN WHAT WE SEE IN

1 AGRICULTURAL SYSTEMS. YOU HAVE ONE GROWER, AGAIN,
2 FARMING AND MANAGING A THOUSAND ACRES. IN AN
3 AGRICULTURAL SYSTEM -- WHEREAS IN AN URBAN SYSTEM YOU
4 MIGHT HAVE A THOUSAND ACRES OF IRRIGATED GROUND IN
5 QUARTER ACRE LOTS, BUT YOU HAVE 4,000 MANAGERS AND THOSE
6 MANAGERS DO THINGS VERY DIFFERENT FROM ONE NEIGHBOR TO
7 THE NEXT.

8 IT IS EXTREMELY VARIABLE IN URBAN
9 ENVIRONMENTS. WE CHOSE TO TREAT THIS AS A CROP BECAUSE
10 TO ME IT MAKES SENSE TO DO THAT. IT IS AN IRRIGATED
11 SYSTEM.

12 Q WHAT WERE THE URBAN -- WHAT DID YOU CONSIDER
13 TO BE WITHIN YOUR URBAN IRRIGATION, WHAT TYPES OF
14 LOCATIONS?

15 A YEAH, WE QUICKLY LEARNED THAT THERE'S A
16 REASONABLE SPLIT OF URBAN IRRIGATION INTO FOUR MAIN
17 CATEGORIES:

18 THAT BEING RECENT URBAN, WHICH A LOT OF
19 THOSE ARE TRACT HOMES AND THEY HAVE SMALL LOTS, SMALL
20 FRONT YARDS AND SMALL BACK YARDS. OKAY.

21 THEN YOU HAVE OLDER HOMES WHERE THEY HAVE
22 KIND OF A DIFFERENT LAY OUT, USUALLY A LITTLE LARGER
23 LOTS AND MORE IRRIGATED LAND.

24 AND WE ALSO SPLIT IT OUT INTO COMMERCIAL AND
25 INDUSTRIAL WHICH HAS VERY SMALL IRRIGATED AREAS, JUST
26 MEDIANS ALONG THE PARKING LOT, FOR EXAMPLE.

27 AND THEN THE FOURTH CATEGORY WAS THE
28 PLAYGROUNDS AND PARKS AND CEMETERIES.

1 MR. HERREMA: NOW YOU SHOULD HAVE BEFORE YOU AN
2 EXHIBIT MARKED A95. DO YOU SEE THAT BEFORE YOU?

3
4 (AGWA EXHIBIT A95 MARKED.)

5
6 THE WITNESS: YES, I DO.

7 BY MR. HERREMA:

8 Q DO YOU RECOGNIZE THAT DOCUMENT?

9 A YES.

10 Q WHAT IS SHOWN ON EXHIBIT A95?

11 A A95 REPRESENTS THE ANNUAL URBAN APPLIED
12 WATER AND RETURN FLOWS FROM 1975 TO 2006. THE
13 ASSOCIATED ACRES THAT WE DETERMINED VIA REMOTE SENSING.
14 "THE TOTAL APPLIED WATER," THE "RETURN FLOW FROM
15 IRRIGATION," AND THE "RETURN FLOW FROM PRECIPITATION."

16 Q AND WAS EXHIBIT A95 PREPARED BY YOU OR AT
17 YOUR DIRECTION?

18 A IT WAS.

19 Q WHAT WAS THE METHOD THAT YOU USED TO
20 ESTIMATE THE APPLIED WATER AND RETURN FLOW NUMBERS FOUND
21 ON EXHIBIT A95?

22 A IT WAS THE SAME METHOD THAT WE USED FOR
23 AGRICULTURAL SYSTEMS.

24 Q EXHIBIT A95 CONTAINS COLUMNS FOR BOTH RETURN
25 FLOW FROM IRRIGATION AND RETURN FLOW FROM PRECIPITATION.
26 WE TALKED ABOUT THE DIFFERENCE BETWEEN THOSE AS APPLIED
27 TO LAND IRRIGATED FOR AGRICULTURE IN RELATION TO EXHIBIT
28 A94. DO YOU RECALL THAT?

1 A YES.

2 Q DO THE SAME PRINCIPLES APPLY TO THESE
3 NUMBERS ON EXHIBIT A95 AS THE DIFFERENTIATION BETWEEN
4 RETURN FLOWS FROM IRRIGATION AND RETURN FLOWS FROM
5 PRECIPITATION?

6 A YES.

7 Q IN SUMMARY DOES EXHIBIT A95 SHOW YOUR
8 ESTIMATES USING YOUR MODEL OF APPLIED WATER AND RETURN
9 FLOWS FROM URBAN IRRIGATION WITHIN THE ANTELOPE VALLEY
10 BASIN?

11 A YES, IT DOES.

12 Q DR. KIMMELSHUE, WHAT LEVEL OF UNCERTAINTY
13 WOULD YOU ASCRIBE TO YOUR ESTIMATES THAT ARE INCLUDED IN
14 EXHIBIT A93, A94 AND A95?

15 A I WAS ASKED TO INDEPENDENTLY AND OBJECTIVELY
16 EVALUATE THE APPLIED WATER AND RETURN FLOWS FOR
17 IRRIGATED SYSTEMS AND URBAN SYSTEMS IN THE ANTELOPE
18 VALLEY.

19 WE HAVE A METHOD THAT WE CHOOSE TO USE
20 BECAUSE IT IS A SPATIAL METHOD WHICH ESPECIALLY WHEN YOU
21 ARE TALKING ABOUT AREAS AS EXPANSIVE AS THE ANTELOPE
22 VALLEY IT IS IMPORTANT TO TRY TO CAPTURE THAT
23 VARIABILITY IF YOU CAN.

24 AND WE HAVE ALREADY DISCUSSED AND I HAVE
25 GIVEN SOME EXAMPLES OF THAT VARIABILITY WITH REGARD TO
26 PRECIPITATION, WITH REGARDS TO CROPPING SYSTEMS. FOR
27 EXAMPLE, I THINK IT IS WELL-KNOW THAT THE CROPPING
28 SYSTEMS IN THE ANTELOPE VALLEY ARE SPOTTY AT BEST,

1 EXTREMELY SPARSE. THERE IS MUCH MORE GROUND THAT'S NOT
2 IRRIGATED THAN IRRIGATED.

3 AND THAT GROUND MOVES AROUND A LOT. SO YOU
4 MIGHT TAKE A CARROT FIELD, FOR EXAMPLE, ONE YEAR ON A
5 SANDY SOIL; AND THE NEXT YEAR BECAUSE OF THE DISEASE
6 PROBLEMS IN THE SOIL MOVE IT TO A SANDY SOIL WHICH HAS
7 ALL -- WHICH HAS DIFFERENT COMPONENTS WITH REGARDS
8 DOING -- PERFORMING SOIL MOISTURE WATER BALANCES.

9 I WAS HOPING WHEN DOING THIS ANALYSIS THAT,
10 YOU KNOW, I WOULD COME UP WITH AN ANSWER THAT WAS, YOU
11 KNOW, VERY -- AS ACCURATE AND I FELT REALLY COMFORTABLE
12 ABOUT IT. BUT AS I GOT INTO THE DATA AND I SAW THE GAPS
13 IN THE DATA AND I LEARNED MORE ABOUT THE EXPANSIVENESS
14 OF THE BASIN AND I LEARNED ABOUT HOW THINGS CHANGE AND
15 MOVE AROUND, EVEN THE CROPPING SYSTEMS ACREAGE CHANGES
16 DRAMATICALLY ONE YEAR TO THE NEXT.

17 I AM NOT AS CONFIDENT IN THIS ANALYSIS AS
18 SOMETHING I CAN COMPARE TO THE SANTA MARIA VALLEY. I
19 DON'T HAVE A QUANTIFIABLE ESTIMATE OF WHAT THAT
20 VARIABILITY IS, BUT IT IS DEFINITELY NOT INSIGNIFICANT.

21 Q DR. KIMMELSHUE, ARE THE ESTIMATES THAT YOU
22 PRESENTED IN EXHIBITS -- THAT ARE PRESENTED IN EXHIBITS
23 A93, A94 AND A95 THE SAME ESTIMATES YOU PRESENTED DURING
24 YOUR TESTIMONY AT DEPOSITION IN THIS CASE?

25 A I BELIEVE THEY ARE.

26 Q AND DID YOU PROVIDE THESE ESTIMATES TO ANY
27 OTHER EXPERT WITNESSES FOR THEIR USE IN THEIR EXPERT
28 ANALYSES?

1 A I PROVIDED THESE ESTIMATES TO MR. FIFE WHO I
2 BELIEVE THEN FORWARDED THEM ON TO MR. BACHMAN.

3 Q SINCE THE TIME OF YOUR DEPOSITION, HAVE YOU
4 LEARNED OF ANY REASON TO BELIEVE THAT CERTAIN CHANGES IN
5 YOUR ANALYSIS COULD LEAD TO MORE PRECISE ESTIMATES?

6 A YES, I HAVE. THERE ARE TWO MAIN PARTS TO MY
7 ANALYSIS, AND THAT IS TO FIRST DETERMINE THE UNIT WATER
8 APPLIED AND THE UNIT RETURN FLOWS. THAT IS THE MODELING
9 APPROACH, AND THOSE RESULTS COME OUT IN UNITS OF FEET OR
10 INCHES. OKAY. SO MANY INCHES OF WATER WAS APPLIED AND
11 SO MANY FEET OF WATER WAS RETURNED FLOW.

12 AND THE NEXT STEP THAT YOU COMMONLY GO
13 THROUGH IS TO MULTIPLY THAT SIMPLY BY THE ACREAGES, AND
14 THAT IS USUALLY THE EASY STEP. BUT IN THIS CASE, IT WAS
15 NOT. AS I MENTIONED PREVIOUSLY, THE ACREAGES IN THE
16 ANTELOPE VALLEY ARE DYNAMIC TO SAY THE LEAST. IF YOU
17 COULD COMPARE THAT TO SANTA MARIA VALLEY, THE SANTA
18 MARIA VALLEY IN THE BASIN IF IT IS NOT URBAN IT IS
19 USUALLY CROPPED TO THE POINT WHERE THE SOILS ARE NOT
20 SUITABLE FOR CROPPING ANY MORE ON THE HILLSIDES OF THE
21 DUNES OR WHATEVER FOR THE MOST PART.

22 IN THE ANTELOPE VALLEY, IT IS NOT THAT WAY.
23 IT IS EXTREMELY DIVERSE, AND IT GOES UP AND DOWN
24 SOMETIMES 80 OR 100 PERCENT ONE YEAR TO THE NEXT. WHEN
25 EVERYTHING IS CROPPED IN A GIVEN REGION, YOU KNOW, FROM
26 YEAR TO YEAR YOU HAVE A PRETTY GOOD IDEA OF WHAT YOUR
27 ACREAGE IS GOING TO BE. THERE IS NOT THAT MUCH
28 VARIABLE. YES, THERE IS SOME, BUT NOT LIKE WE SEE IN

1 THE ANTELOPE VALLEY.

2 SO, I FORGOT YOUR QUESTION, SORRY.

3 Q IS THERE ANYTHING THAT YOU HAVE LEARNED
4 SINCE THE TIME OF YOUR DEPOSITION?

5 A YEAH. SO BECAUSE OUR MODEL IS A SPATIAL
6 MODEL, WE LEAN ON DWR MAPS BECAUSE THEY ARE SPATIAL.
7 THEY TELL US WHERE THAT ALFALFA IS. YOU CAN LEAN ON
8 COUNTY CROP REPORTS, TOO; BUT THEY DON'T TELL YOU WHERE
9 THEY ARE. SO I LEAN ON THE SPATIAL COMPONENT.

10 AND EVEN WHEN YOU LEAN ON THE SPATIAL
11 COMPONENT, THERE ARE DIFFERENCES BETWEEN, AS I THINK I
12 MAY HAVE MENTIONED EARLIER, DWR DATA AND COUNTY CROP
13 RECORD REPORT DATA ON SOME YEARS OF ALMOST 100 PERCENT
14 OF TWO INDEPENDENT EVALUATORS. THERE ARE REASONS FOR
15 THAT. I DON'T NEED TO GO INTO THEM TODAY.

16 BUT THAT IS A BIT CONCERNING WHEN YOU TALK
17 ABOUT -- WHEN YOU TALK ABOUT TAKING A NUMBER LIKE
18 6.5 FEET OF APPLIED WATER AND MULTIPLY IT BY 10,000
19 ACRE-FEET WITH A DWR REPORT, AND THEN I'M GOING TO GO
20 AHEAD AND MULTIPLY THAT BY 20,000 ACRE-FEET WITH COUNTY
21 CROP REPORT, THAT IS SIGNIFICANTLY DIFFERENT.

22 SO BECAUSE I APPROACH MY MODEL ON A SPATIAL
23 STANDPOINT, I LEAN ON DWR MAPS MORE THAN I DO ON COUNTY
24 CROP REPORTS. THERE IS SOME VALUE IN THOSE COUNTY CROP
25 REPORTS. AND GIVEN SOME MORE TIME, I WOULD LIKE TO
26 INVESTIGATE THAT A BIT MORE. I THINK THERE CAN BE SOME
27 ENHANCEMENTS TO THE EFFORTS IN THAT.

28 SAYING THAT ALSO, THERE IS A THIRD WAY TO

1 DETERMINE IRRIGATED ACRES, AND THAT IS THROUGH REMOTE
2 SENSING. AND THAT IS IN MY OPINION THE MOST ACCURATE
3 WAY TO DO IT AS LONG AS YOU HAVE ARCHIVE DATA, WHICH IN
4 THE CASE OF LANDSAT DATA I THINK GOES BACK TO THE LATEST
5 OF ... I'M NOT SURE, EARLY 80'S -- I WOULD HAVE TO LOOK.
6 I CAN'T RECALL.

7 Q IS THERE ANY PARTICULAR ELEMENT OF THE
8 ACREAGE ANALYSIS THAT YOU DID THAT YOU HAVE LEARNED IN
9 THE LAST FOUR MONTHS COULD BE IMPROVED UPON?

10 A YEAH. WE HAD A DATABASE WHICH -- THAT
11 MOVING FORWARD FROM 1985 WHICH WAS A DWR MAPPING YEAR TO
12 PRESENT DAY THAT ACTUALLY UTILIZE LINEAR INTERPOLATION
13 WHICH WAS OUR INTENTION TO USE MORE APPROPRIATE
14 DISTRIBUTION OF COUNTY CROP REPORTS.

15 I WENT BACK AND WHEN I DISCOVERED THIS, WHEN
16 I WENT BACK AND LOOKED AT WHAT THE EFFECT WOULD BE,
17 FORTUNATELY IT DOESN'T HAVE A SIGNIFICANT EFFECT. AND I
18 CAN GIVE YOU AN EXAMPLE WHY. THAT EXAMPLE IS, IF YOU --
19 IF YOU HAVE LINEAR INTERPOLATION FROM 1985, THE BULK OF
20 THE CROPS THAT WERE GROWN IN 1985 CONSISTED OF ALFALFA,
21 BUT WE KNOW IN THE MID 90'S CARROTS CAME INTO
22 PRODUCTION. AND PASTURES -- AND A LOT OF THE PEOPLE
23 WANTED THEIR RANCHETS SO PASTURE INCREASED AS WELL.

24 FOR EXAMPLE, LET'S JUST PULL OUT A NUMBER,
25 THE APPLIED WATER ON ALFALFA IS 6.5 FEET. IF THE
26 DOMINANT CROP MOVING FORWARD IS ALFALFA AND WE DON'T
27 ACCOUNT FOR THINGS LIKE AND -- AND PASTURE, THAT
28 6.5 FEET IT'S CARRIED FORWARD. THE FORTUNATE THING, AND

1 MAYBE IT'S LUCKY IN THIS CASE, IS THAT WHEN WE DID GO
2 AHEAD AND UTILIZE COUNTY CROP REPORTS MOVING FORWARD,
3 THE TWO MAIN CROPS THAT POPPED OUT WERE CARROTS, ONIONS
4 AND ALFALFA -- EXCUSE ME -- CARROTS, ONION AND PASTURE.

5 PASTURE IS NOTORIOUS, SPECIALLY ON RANCHETS
6 TO BE -- HAVE LOWER IRRIGATION EFFICIENCY SO YOU APPLY
7 MORE WATER TO THAT. CARROTS AND ONIONS THAT IS COMPARED
8 TO ALFALFA. CARROTS AND ONIONS HAVE A GENERALLY A
9 HIGHER IRRIGATION EFFICIENCY AS COMPARED TO ALFALFA. SO
10 THE NET EFFECT WAS A WASH IN THE RESULTS.

11 BUT THAT IS ONE AREA THAT I WOULD LIKE TO
12 IMPROVE ON.

13 Q AND GIVEN ANOTHER FOUR MONTHS, DO YOU THINK
14 THAT YOU WOULD FIND ADDITIONAL ELEMENTS OF YOUR ANALYSES
15 THAT COULD BE IMPROVED TO YIELD MORE PRECISE ESTIMATES?

16 A YES.

17 Q GOING BACK TO THE UNCERTAINTY THAT YOU HAVE
18 INDICATED THERE IS IN YOUR ESTIMATES. IF YOU WERE A
19 FARMER AND IN THE ANTELOPE VALLEY BASIN, WOULD YOU FEEL
20 COMFORTABLE IF THE FATE OF YOUR FARMING OPERATION WAS
21 DEPENDENT ON THE ACCURACY OF YOUR ESTIMATES?

22 A NO. I WOULD NOT FEEL COMFORTABLE. I WOULD
23 WANT TO -- IF IT WERE MY GROUND, I WOULD WANT TO MEASURE
24 THINGS IN THE FIELD MYSELF.

25 Q YOU WOULD WANT TO DO ADDITIONAL ANALYSES?

26 A I WOULD WANT TO DO ADDITIONAL ANALYSIS.

27 Q FINALLY, DR. KIMMELSHUE, HAVE YOU REVIEWED
28 THE ANALYSIS OF IRRIGATED -- I'M SORRY -- APPLIED WATER

1 FOR IRRIGATED USE AND RETURN FLOWS FROM THE SAME --
2 CONDUCTED BY THE EXPERTS FOR THE PUBLIC WATER PURVEYORS
3 IN THIS CASE?

4 A I HAVE.

5 Q DO YOU HAVE ANY CRITICISMS OF THE METHODS
6 THAT THEY EMPLOYED?

7 A I WOULD LIKE TO START THIS OFF BY SAYING
8 THAT NEITHER METHOD IS INACCURATE. NEITHER METHOD IS
9 WRONG, I SHOULD SAY. THEY ARE NOT -- THEY ARE BOTH
10 METHODS THAT CAN BE USED.

11 OUR METHOD JUST TOOK INTO ACCOUNT AND TRIED
12 TO ACCOUNT FOR THE VARIABILITY WITH A LOT MORE INPUT
13 PARAMETERS. I CAN GIVE A FEW EXAMPLES OF WHERE WE
14 DIFFER: IRRIGATION EFFICIENCY IS ONE. WE ESTIMATED
15 IRRIGATION EFFICIENCY AS WE BELIEVED IT CHANGED TO THE
16 TECHNOLOGICAL ADVANCEMENTS OVER TIME. AND HAD TO MAKE
17 SOME PROFESSIONAL JUDGMENTS ON WHAT THAT IRRIGATION
18 EFFICIENCY WAS.

19 THE SUMMARY EXPERT REPORT USED STANDARD
20 IRRIGATION EFFICIENCY OF 80 PERCENT. THEY CALL IT
21 DISTRIBUTION UNIFORM, BUT THAT WAS IN THEIR CALCULATION,
22 ACROSS ALL CROPS FOR ALL TIMES, WHICH I KNOW IS NOT
23 NECESSARILY TRUE.

24 NOW IS THAT WRONG? I THINK IT CAN BE DONE
25 BETTER. IT IS NOT NECESSARILY WRONG, BUT IT -- IT JUST
26 TAKES A LOT MORE EFFORT TO DO IT IN A DIFFERENT WAY. SO
27 THAT IS WHY WE DIFFERENTIATE IT OUT IN PERIODS BY CROP
28 TYPE AND BY OVER TIME TEMPORALLY.

1 AND WE ACCOUNTED FOR FROST PROTECTION FOR
2 TREE CROPS, AND I DID NOT SEE THAT IN THE SUMMARY EXPERT
3 REPORT. THERE WAS A STATEMENT IN THE SUMMARY EXPERT
4 REPORT THAT MENTIONED THAT THERE IS NO EFFECTIVE
5 PRECIPITATION DURING -- OUTSIDE OF THE MONTHS OF
6 NOVEMBER, DECEMBER AND JANUARY. I THINK MAYBE IT WAS
7 DECEMBER, JANUARY AND FEBRUARY, I FORGET.

8 BUT IF YOU LOOK AT PRECIPITATION RECORDS,
9 THERE IS CLEARLY SIGNIFICANT PRECIPITATION EVENTS
10 OUTSIDE OF THOSE THREE MONTHS WHEREBY EFFECTIVE
11 PRECIPITATION DOES OCCUR. AND EFFECTIVE PRECIPITATION
12 IS SIMPLY THAT PRECIPITATION WHICH CAN CONTRIBUTE TO
13 SOIL MOISTURE STORAGE.

14 YOU COULD VERY WELL HAVE A 1- OR 2-INCH
15 RAINFALL EVENT IN THE MONTH OF MARCH, AND IT HAPPENS
16 THAT WILL FILL A FOOT OF SOIL STORAGE WHICH MAY
17 THEREFORE IMPACT HOW A GROWER MIGHT PRE-IRRIGATE THEIR
18 FIELD. BECAUSE THEY KNOW I GOT A DECENT AMOUNT OF SOIL
19 STORAGE OF WATER HERE ALREADY. I'M ONLY GOING TO RUN MY
20 IRRIGATION SYSTEM, YOU KNOW, SIX HOURS RATHER THAN TEN.
21 OR THINGS LIKE THAT. SO BEST WAY TO COMPARE THE TWO
22 APPROACHES IS MINE IS SPATIAL AND THEIRS IS NOT.

23 MINE IS TEMPORAL IN ALL CASES; THEIRS IS
24 MOSTLY NOT. BUT AGAIN, I DON'T WANT TO SAY THAT THEIRS
25 IS WRONG. IT IS JUST A VERY CURSORY OR ROUGHER WAY TO
26 DO THINGS.

27 Q COULD YOU JUST BRIEFLY EXPLAIN WHAT YOU MEAN
28 WHEN YOU SAY YOUR ANALYSIS IS SPATIAL?

1 A YEAH. WE LOOK -- WE PREFER TO USE DWR
2 MAPPING BECAUSE THAT IS SPATIAL, SO WE KNOW WHAT CROP
3 HAS GROWN WHERE, THAT CROP IS OVER A CERTAIN SOIL TYPE
4 THAT HAS A CERTAIN SOIL MOISTURE HOLDING CAPACITY. AND
5 THAT CROP HAS A CERTAIN PRECIPITATION ZONE THAT WE HAVE
6 APPLIED TO IT. AND SO THE OBJECTIVE IN DOING THAT IS TO
7 TRY TO ACCOUNT FOR THAT VARIABILITY IN -- TO ILLUMINATE
8 (SIC) VARIABILITY AVERAGING THOSE PARAMETERS IS -- CAN
9 BE DONE, BUT I PREFER TO, WHEN I CAN, USE REAL DATA THAT
10 EXISTS. IT IS A LOT MORE DIFFICULT EVALUATION, THAT IS
11 TRUE. IT TAKES A LOT OF EFFORT, AND WE DID THAT, BUT IT
12 IS -- THAT'S IT.

13 Q WHEN YOU SAY THAT YOUR ANALYSIS HAS A
14 "TEMPORAL" COMPONENT, DOES THAT MEAN IT RECOGNIZES
15 VARIABILITY THROUGHOUT TIME?

16 A YES.

17 Q I THINK YOU MENTIONED YOUR CRITICISMS OF THE
18 SUMMARY EXPERT REPORT IN REGARD TO ITS ANALYSIS OF -- BY
19 WATER FOR IRRIGATED AGRICULTURE, DID YOU HAVE ANY
20 CRITICISMS RELATED TO ITS ANALYSIS -- THE SUMMARY EXPERT
21 REPORT'S ANALYSIS OF WATER APPLIED FOR URBAN IRRIGATION?

22 A YEAH. THAT IS EVEN MORE DIVERSE. I ALREADY
23 WENT DOWN THE DIATRIBE OF MY ANALOGY OF ONE GROWER
24 FARMING 1,000 ACRES AND 4,000 GROWERS FARMING THE SAME
25 1,000 ACRES. THEY JUST HAPPEN TO LIVE IN THE CITY, AT
26 LEAST THAT IS THE WAY I LOOK AT IT. BECAUSE BOTH OF
27 THEM ARE IRRIGATING.

28 OUR -- I TREATED OUR ANALYSIS JUST LIKE A

1 CROP. WE CONDUCTED REMOTE SENSING TO ACTUALLY DELINEATE
2 OUT LANDSCAPED AREAS AND EXTRAPOLATED OVER THOSE FOUR
3 TYPES OF URBAN AREAS THAT I MENTIONED BEFORE.

4 IF I'M NOT MISTAKEN, THE SUMMARY EXPERT
5 REPORT HAD AN ESTIMATE OF URBAN WATER OR RETURN FLOWS
6 FROM URBAN WATER USE AS 20 PERCENT OF 55 PERCENT. AND
7 THAT MEANS OF THE WATER DELIVERED TO A HOUSE, IF I'M
8 GETTING THIS RIGHT, 45 PERCENT IS USED WITHIN THE HOUSE
9 AND 55 PERCENT IS USED OUTSIDE THE HOUSE. AND OF THAT
10 55 PERCENT, 20 PERCENT GOES TO RETURN FLOW.

11 THAT IS A VERY ROUGH WAY TO DO IT. IT MAY
12 YIELD SOME REASONABLE RESULTS, BUT AGAIN I THINK WE HAVE
13 INFORMATION TO REFINE THAT A BIT MORE, IS WHAT I
14 THOUGHT.

15 MR. HERREMA: THANK YOU. I HAVE NOTHING FURTHER
16 AT THIS POINT.

17 THE COURT: CROSS-EXAMINATION, MR. WEEKS.

18 MR. WEEKS: YOUR HONOR, MAY I CROSS THE WELL?

19 THE COURT: YES.

20 MR. WEEKS: THIS IS A DEPOSITION. THANK YOU.

21

22 CROSS-EXAMINATION

23 BY MR. WEEKS:

24 Q GOOD AFTERNOON, DR. KIMMELSHUE, IT IS NICE
25 TO SEE YOU AGAIN. ONE OF THE LAST QUESTIONS THAT YOU
26 WERE ASKED OR YOU RESPONDED TO IT IS YOUR OPINION THAT
27 THE APPLIED WATER AND ALFALFA IS 6.5 FEET?

28 A THAT WAS JUST A ESTIMATE -- THAT WAS JUST AN

1 ESTIMATE NUMBER.

2 Q THAT IS YOUR BEST ESTIMATE FOR APPLYING
3 WATER FOR ALFALFA?

4 A NO, IT IS NOT. THAT IS A NUMBER THAT I USED
5 AS AN EXAMPLE.

6 Q OKAY.

7 MR FIFE: SORRY, YOUR HONOR, HIS COMPUTER IS
8 RECOGNIZING HIS FLASH DRIVE SO WE CAN PULL UP HIS
9 EXHIBITS.

10 MR. WEEKS: USUALLY THIS DOESN'T HAPPEN.

11 Q DR. KIMMELSHUE, YOU BROUGHT, IF YOU RECALL
12 AT YOUR DEPOSITION A FEW MONTHS AGO -- YOU DIDN'T HAVE
13 ALL OF YOUR DATA AT THE TIME, DID YOU?

14 A NO.

15 Q AND YOUR DATA IS KEPT PRIMARILY IN AN EXCEL
16 SPREADSHEET?

17 A YES.

18 Q AND YOU TOOK THOSE SPREADSHEETS AND YOU GAVE
19 THEM TO MR. FIFE AT A LATER TIME?

20 A YES.

21 Q AND THEN HE EMAILED THEM TO ME AT A LATER
22 TIME AND -- BUT ALL THAT DATA IS IN A SPREADSHEET ANYONE
23 CAN ACCESS AND ANYONE CAN USE, AT LEAST ANYONE THAT HAS
24 MICROSOFT EXCEL?

25 A YES.

26 Q COULD MR. BACHMAN HAVE USED ALL THE DATA YOU
27 GAVE HIM?

28 A I DON'T KNOW WHAT PIECES OF DATA MR. BACHMAN

1 WAS USING. I WAS INSTRUCTED TO PROVIDE THE DATA TO
2 MR. FIFE. I'M ASSUMING THAT MR. FIFE FORWARDED IT ON TO
3 MR. BACHMAN. I DON'T KNOW WHAT HE USED.

4 Q BUT THERE IS NO REASON THAT YOU ARE AWARE OF
5 THAT MR. BACHMAN COULDN'T HAVE READ ALL THE DATA THAT
6 YOU GAVE HIM?

7 A I DON'T KNOW WHAT MR. BACHMAN DID WITH THE
8 DATA.

9 Q OKAY. AND YOU ARE AWARE THAT THE PUBLIC
10 WATER SUPPLIERS -- THEIR AGRICULTURAL DATA STARTED IN
11 1910?

12 A I BELIEVE I SAW THAT IN THE SUMMARY EXPERT
13 REPORT.

14 Q AND YOUR DATA STARTED IN 1962?

15 A WE CHOSE TO START OUR ANALYSIS IN 1962.

16 Q THE DATA YOU GAVE TO ME WAS STARTED IN 1962?

17 A RIGHT.

18 Q OKAY. AND THE DATA THAT YOU PROVIDED ENDED
19 IN 2006?

20 A CORRECT.

21 Q AND THE DATA FROM THE PUBLIC WATER
22 SUPPLIERS, THAT ENDED IN 2009, DIDN'T IT?

23 A I'M UNAWARE OF THAT, BUT IF YOU SAY SO.

24 Q OKAY. AND YOU ARE AWARE THAT MR. BACHMAN IS
25 GOING TO BE TESTIFYING FOR THE LANDOWNER PARTIES?

26 A I'M AWARE OF THAT.

27 Q AND HE -- YOU ARE AWARE THAT HE TOOK YOUR
28 DATA AND USED -- DIDN'T USE ALL OF IT, DID HE?

1 A I'M UNAWARE OF WHAT HE USED IN MY DATA.

2 Q WELL, I WILL REPRESENT TO YOU THAT HE HAS
3 TAKEN YOUR DATA AND CUT IT INTO TWO PIECES. HE
4 TESTIFIED THAT HE PREPARED A WATER BALANCE FROM 1976 TO
5 1991?

6 A OKAY.

7 Q DID YOU TELL HIM TO USE THAT PARTICULAR
8 PERIOD OF YOUR DATA?

9 A NO.

10 Q OKAY. AND HE ALSO TOOK THAT -- YOUR SAME
11 DATA AND PREPARED ANOTHER WATER BALANCE FROM 1985 TO
12 2005. DID YOU TELL HIM TO USE THAT PERIOD OF DATA?

13 A NO.

14 MR FIFE: YOUR HONOR, THIS IS OUTSIDE THE SCOPE OF
15 HIS TESTIMONY. HE TESTIFIED HE DOESN'T KNOW WHAT
16 MR. BACHMAN --

17 THE COURT: MAKE AN OFFER OF PROOF.

18 MR. WEEKS: THE OFFER OF PROOF IS THAT
19 MR. KIMMELSHUE GAVE MR. BACHMAN DATA FROM 1962 UNTIL
20 2006.

21 THE COURT: I THINK THE TESTIMONY WAS HE GAVE IT
22 TO MR. FIFE.

23 MR. WEEKS: MR. FIFE, I'M SORRY, BUT MR. BACHMAN
24 HE HAS TESTIFIED AT DEPOSITION -- HE TESTIFIED THAT HE
25 GOT THE DATA FROM MR. KIMMELSHUE. AND THEN MR. BACHMAN
26 HAS ONLY USED A PORTION OF THE LARGER DATA SET GIVEN TO
27 HIM BY MR. KIMMELSHUE.

28 THE COURT: HOW DOES THAT RELATE TO HIS

1 EXAMINATION?

2 MR. WEEKS: WELL, I WAS WANTING THE COURT TO KNOW
3 WHETHER OR NOT MR. KIMMELSHUE TOLD MR. BACHMAN WHAT
4 PERIOD OF TIME TO USE OR IF MR. BACHMAN JUST DECIDED ON
5 HIS OWN.

6 THE COURT: WHY DON'T YOU ASK HIM THAT.

7 BY MR. WEEKS:

8 Q MR. KIMMELSHUE, DID YOU TELL MR. BACHMAN TO
9 ONLY USE THE DATA FROM 1976 TO 1991?

10 A NO.

11 Q DID YOU TELL MR. BACHMAN TO ONLY USE THE
12 DATA FROM 1985 TO 2005?

13 A NO.

14 Q OKAY. NOW I'M SHOWING YOU A CHART. IT IS
15 FROM THE PUBLIC WATER SUPPLIERS REPORT, AND YOU ARE
16 FAMILIAR WITH THAT CHART, AREN'T YOU?

17 A I CANNOT READ IT FROM HERE, BUT IF IT IS THE
18 SAME CHART THAT WAS IN THE SUMMARY EXPERT REPORT, THEN,
19 YES, I'M FAMILIAR WITH IT.

20 MR. WEEKS: IT IS, AND FOR THE RECORD THIS IS
21 APPENDIX D-3 TABLE 5 FROM THE PUBLIC WATER SUPPLIERS'
22 REPORT AND IT'S ALSO BEEN MARKED AS THE EXAMINATION OF
23 JOEL SCALMANINI -- AS EXHIBIT 56 FROM THE EXAMINATION OF
24 JOEL SCALMANINI.

25 MAY I APPROACH THE WITNESS, YOUR HONOR?

26 THE COURT: YES.

27 BY MR. WEEKS:

28 Q I'M SHOWING YOU THE EXHIBIT 56, DO YOU

1 RECOGNIZE THAT DOCUMENT?

2 A YES.

3 Q AND YOU CONSULTED THAT DOCUMENT IN
4 PREPARATION OF YOUR ANALYSIS OF THIS BASIN, DIDN'T YOU?

5 A TO A CERTAIN DEGREE, YES.

6 Q AND I'M GOING TO DRAW YOUR ATTENTION TO THE
7 THIRD COLUMN OVER WHICH IS A CROP COEFFICIENT FOR
8 ALFALFA, DO YOU SEE THAT?

9 A I DO.

10 Q AND WHEN YOU CALCULATE A WATER -- A WATER,
11 DO YOU USE CROP-COEFFICIENTS, DON'T YOU?

12 A YOU USE CROP-COEFFICIENTS TO CALCULATE THE
13 AMOUNT OF WATER THAT WILL BE CONSUMPTIVELY USED BY THE
14 CROP.

15 Q AND THE CROP-COEFFICIENTS THAT YOU USE IN
16 YOUR ANALYSIS FOR ALFALFA ARE THE SAME CROP-COEFFICIENTS
17 THAT'S ON THE ALFALFA COLUMN IN THIS CHART?

18 A I BELIEVE THEY ARE.

19 Q YOU USED THOSE NUMBERS BECAUSE YOU THOUGHT
20 THEY WERE THE MOST ACCURATE NUMBERS, DIDN'T YOU?

21 A I USED THESE NUMBERS BECAUSE THEY WERE THE
22 ONLY NUMBERS THAT WE COULD FIND THAT WERE
23 REPRESENTATIVE. AND AS YOU SEE IN THE UPPER LEFT-HAND
24 CORNER AND ARE BLESSED BY THE UNIVERSITY OF CALIFORNIA
25 COOPERATIVE EXTENSION, AND I AM AN OBJECTIVE SCIENTIST.
26 AND I USE INFORMATION THAT IS PEER REVIEWED WHENEVER I
27 POSSIBLY CAN.

28 Q SO IT'S YOUR TESTIMONY TO THE COURT THAT THE

1 BEST CROP-COEFFICIENT USED FOR ALFALFA FOR THE ANTELOPE
2 VALLEY IS THE ALFALFA CROP-COEFFICIENTS LISTED ON THIS
3 SCALMANINI EXHIBIT 56?

4 MR FIFE: OBJECTION. MISSTATES HIS TESTIMONY.

5 THE COURT: HE CAN ANSWER THE QUESTION.

6 THE WITNESS: I WILL TELL YOU THAT AT THAT TIME
7 THIS WAS THE BEST INFORMATION THAT CAN BE USED. I WILL
8 ALSO TELL YOU THAT THERE IS -- I THINK IN MY TESTIMONY
9 PREVIOUSLY TODAY I MENTIONED THAT THERE IS A LACK OF
10 GOOD DATA IN THE ANTELOPE VALLEY.

11 SO WHEN I HAVE TO MAKE ESTIMATES, I'M AT THE
12 MERCY OF WHAT'S AVAILABLE AND THIS WAS AVAILABLE. IT
13 WAS APPROVED BY THE UNIVERSITY OF CALIFORNIA COOPERATIVE
14 EXTENSION. I ALSO SAID IN MY TESTIMONY THAT I THINK
15 THERE IS SIGNIFICANT EFFORTS THAT NEED TO BE TAKEN TO --
16 OR MAYBE I MISSED THIS IN MY TESTIMONY. AND ACTUALLY
17 THERE ARE SIGNIFICANT EFFORTS THAT NEED TO BE TAKEN TO
18 IMPROVE THE AMOUNT OF DATA THAT GOES INTO THESE MODELS.

19 ONE OF THOSE IS TO UNDERSTAND IRRIGATION
20 EFFICIENCIES. ANOTHER ONE IS --

21 MR. WEEKS: THIS IS BEYOND THE COPE.

22 THE COURT: LET HIM ANSWER THE QUESTION.

23 THE WITNESS: ANOTHER ONE IS TO UNDERSTAND --
24 BETTER UNDERSTAND CROP-COEFFICIENTS. I'M WELL AWARE
25 THAT THERE WAS DISCUSSION OF CROP-COEFFICIENTS; HOWEVER
26 I'M AT THE MERCY OF USING WHAT IS PUBLISHED INFORMATION,
27 AND THAT WHAT IS I DO. I'M AN OBJECTIVE SCIENTIST. I
28 AM NOT GOING TO USE ANY INFORMATION THAT'S NOT PEER

1 REVIEWED AND PUBLISHED.

2 BY MR. WEEKS:

3 Q THANK YOU. PULL THE NEXT SLIDE UP. NOW,
4 DR. KIMMELSHUE, YOUR ATTORNEY WAS KIND ENOUGH TO SEND ME
5 YOUR DATA AHEAD OF TIME SO I HAVE IT HERE. AND I TOOK
6 THE PUBLIC WATER SUPPLIERS' APPLIED WATER DATA AS WELL
7 FROM THE REPORT THAT I BELIEVE YOU ARE FAMILIAR WITH.
8 AND I COMPARED THE TWO IN THOSE PERIODS OF THE PERIODS
9 SELECTED BY -- AT LEAST BY MR. BACHMAN TESTIFIED THAT HE
10 BASED HIS WATER BALANCES ON.

11 SO ON THE LEFT COLUMN IS YOUR NUMBERS, AND
12 THE RIGHT COLUMN IS PUBLIC WATER SUPPLIERS NUMBERS.

13 THOSE ARE PRETTY CLOSE, AREN'T THEY?

14 MR. ROBERT KUHS: YOUR HONOR, COULD WE HAVE THE
15 EXHIBIT MARKED FOR IDENTIFICATION?

16 MR. WEEKS: I WILL BRING ADDITIONAL COPIES
17 TOMORROW.

18 THE COURT: WELL, LET'S MARK IT FOR IDENTIFICATION
19 SO WE KNOW WHAT IT IS.

20 MR. WEEKS: THANK YOU. IN FACT THE NEXT THREE --

21 MR. SLOAN: YOUR HONOR, COULD WE ALSO FIND OUT
22 WHAT THE SOURCE OF THE NUMBERS ARE?

23 THE COURT: WE ARE JUST MARKING IT FOR
24 IDENTIFICATION AT THIS POINT, AND THERE WILL BE
25 OPPORTUNITIES TO ASK LOTS OF QUESTIONS, UNFORTUNATELY.

26

27

(EXHIBIT 56 MARKED.)

28

1 BY MR. WEEKS:

2 Q SO THOSE NUMBERS ARE PRETTY CLOSE, AREN'T
3 THEY?

4 A YOU ARE ASKING ME TO COMPARE 1978, FOR
5 EXAMPLE, WHERE IT'S 172,000 ACRE-FEET AND 276,000
6 ACRE-FEET?

7 Q I WAS JUST LOOKING AT TOTALS AT THE BOTTOM.
8 THE COURT: I STILL WANT TO GET A NUMBER FOR THIS
9 EXHIBIT.

10 MR. WEEKS: I'M SORRY, I DON'T RECALL THE NUMBER.

11 THE COURT: WELL, IT IS NEXT IN ORDER FOR QUARTZ
12 HILL WATER DISTRICT. I'M NOT SURE WHERE WE ENDED UP.

13 THE CLERK: WHAT IS THE LETTER?

14 THE COURT: THERE WOULD BE NO LETTER. I THINK IT
15 IS GOING TO ABOUT 109 OR 110, BUT WE WILL LABEL IT NEXT
16 IN ORDER AT THIS POINT UNTIL SOMEONE TELLS US, SO WE CAN
17 MOVE ALONG.

18 BY MR. WEEKS:

19 Q SO JUST LOOKING AT THE TOTALS DOWN THERE,
20 ARE THOSE PRETTY CLOSE?

21 MR. ROBERT KUHS: OBJECTION, ARGUMENTATIVE.

22 THE COURT: THE NUMBERS ARE WHAT THE NUMBERS ARE.

23 MR. WEEKS: VERY WELL, YOUR HONOR.

24 THE COURT: SUSTAINED.

25 BY MR. WEEKS:

26 Q DR. KIMMELSHUE, YOU ARE FAMILIAR WITH THE
27 WATER BALANCE METHOD OF CALCULATING NATURAL RECHARGE?

28 A NATURAL RECHARGE PRECIPITATION IN

1 NON-IRRIGATED AREA?

2 Q NO, JUST WATER BALANCE OF -- WELL, THE
3 WATER BALANCE BEING USED IN THIS CASE, THE METHOD OF
4 CALCULATING NATURAL RECHARGE?

5 MR. HERREMA: OBJECTION, BEYOND THE SCOPE OF
6 DIRECT.

7 THE COURT: SUSTAINED.

8 THE WITNESS: OKAY.

9 THE COURT: NEXT QUESTION.

10 BY MR. WEEKS:

11 Q DR. KIMMELSHUE, THE PUBLIC WATER SUPPLIERS
12 IN THIS PERIOD OF TIME, THEY HAVE MORE APPLIED WATER,
13 DON'T THEY?

14 A THEY DO.

15 Q AND IF THERE WAS MORE APPLIED WATER USED
16 HERE THAT -- IN BALANCE THAT MEANS, THERE HAVE TO BE
17 MORE APPLIED WATER COMING INTO THE SYSTEM?

18 MR FIFE: OBJECTION, OUTSIDE THE SCOPE.

19 THE COURT: SUSTAINED.

20 MR. WEEKS: COULD I HAVE THE NEXT IN ORDER. NEXT
21 SLIDE.

22 Q NOW THIS IS YOUR DATA FROM 1985 TO 2005?

23 A YES.

24 Q ON THE RIGHT, I'LL REPRESENT TO YOU THAT THE
25 PUBLIC WATER SUPPLIERS APPLIED WATER FOR THAT SAME
26 PERIOD OF TIME?

27 A OKAY.

28 Q AND, WELL, THAT IS PRETTY CLOSE TOO, ISN'T

1 IT, 616 ACRE-FEET?

2 A I NEVER SAID THE FIRST GROUP WAS PRETTY
3 CLOSE, FIRST OFF, SO I'M ONLY GOING TO FOCUS ON THIS
4 DATA HERE.

5 Q OKAY.

6 A THE BOTTOM LINES ARE CLOSE. IF YOUR
7 DIFFERENCE IS 616 FEET, ONE PERCENT IS YOUR DIFFERENCE,
8 YES; BUT I WOULD LIKE DO DIRECT YOU TO INDIVIDUAL LINE
9 ITEMS.

10 Q I'LL LET YOUR ATTORNEY ASK YOU QUESTIONS
11 ABOUT THAT. ALL RIGHT.

12 A CAN I EXPLAIN?

13 Q I'M SURE YOUR ATTORNEY WILL BE RIGHT ON IT.

14 A WELL.

15 MR. HERREMA: YOUR HONOR, COULD WE HAVE THIS
16 MARKED FOR IDENTIFICATION PLEASE.

17 MR. WEEKS: NEXT IN ORDER. I DON'T KNOW A NUMBER
18 ON THIS, YOUR HONOR.

19 THE CLERK: I HAVE GOT UP TO NUMBER 99 AS FAR AS I
20 CAN SEE.

21 THE COURT: I THINK IT GOES BEYOND THAT. JUST FOR
22 IDENTIFICATION LET'S CALL THIS ONE 125. THAT IS WELL
23 BEYOND THE RANGE, AND THE OTHER THE FIRST ONE IS 124.
24 OKAY.

25

26 (QUARTZ HILL EXHIBIT 124 AND 125 MARKED.)

27

28

1 MR. WEEKS: WOULD YOU TURN TO THE NEXT SLIDE?

2 THE WITNESS: CAN I COMMENT ON THIS?

3 MR FIFE: YOUR HONOR, I'M NOT SURE THE WITNESS
4 FINISHED HIS ANSWER.

5 THE COURT: WAIT UNTIL -- I THINK YOU ANSWERED HIS
6 QUESTION, AND IT WAS A VERY NARROW QUESTION. SO JUST
7 WAIT.

8 THE WITNESS: OKAY. I'LL WAIT.

9 THE COURT: YOU WILL GET AN OPPORTUNITY. LET'S
10 DON'T WASTE TIME.

11 BY MR. WEEKS:

12 Q OUR ANNUAL AGRICULTURAL RETURN FLOWS, AGAIN
13 THE COLUMN ON THE LEFT, IS THE COLUMN YOU JUST SPOKE
14 ABOUT IN YOUR DIRECT TESTIMONY AND THAT IS YOUR -- THAT
15 IS TRUE, THAT IS YOUR AGRICULTURAL RETURN FLOWS FOR 1976
16 THROUGH 1992?

17 A WITHOUT CHECKING THEM THEY PROBABLY ARE.

18 Q CAN YOU TELL ME?

19 THE COURT: THIS IS THE THIRD NEW EXHIBIT; IS THAT
20 RIGHT?

21 MR. WEEKS: YES, NEXT IN ORDER 126.

22

23 (QUARTS HILL EXHIBIT 126 MARKED.)

24

25 THE COURT: ALL RIGHT.

26 BY MR. WEEKS:

27 Q AND WOULD YOU LIKE TO CHECK IT?

28 A I'LL TRUST YOU.

1 Q OKAY. I HAVE AN EXHIBIT RIGHT THERE IF YOU
2 WANT TO LOOK AT THEM?

3 A I'LL TRUST YOU.

4 Q ALL RIGHT. AND, AGAIN, THIS IS ALSO FROM
5 THE PUBLIC WATER SUPPLIERS EXPERT REPORT, THE NUMBERS ON
6 THE RIGHT. THOSE NUMBERS ARE PRETTY CLOSE TOO, AREN'T
7 THEY?

8 MR. ROBERT KUHS: ARGUMENTATIVE.

9 THE COURT: SUSTAINED.

10 MR. WEEKS: OKAY. AND THE NEXT SLIDE.

11 Q AGAIN, THE NUMBER ON THE LEFT THAT IS FROM
12 1985 TO 2005, THOSE ARE YOUR ANNUAL AGRICULTURAL RETURN
13 FLOWS?

14 A YES.

15 THE COURT: THIS IS EXHIBIT 127?

16 MR. WEEKS: YES, YOUR HONOR.

17

18 (QUARTZ HILL EXHIBIT 127 MARKED.)

19

20 THE COURT: FOR IDENTIFICATION ONLY.

21 MR. WEEKS: THE NUMBERS ON RIGHT, THOSE ARE THE
22 PUBLIC WATER SUPPLIERS' ANNUAL AGRICULTURAL RETURN
23 FLOWS?

24 MR. ROBERT KUHS: IS THERE A QUESTION PENDING?

25 BY MR. WEEKS:

26 Q DO YOU DISPUTE THOSE NUMBERS ON THE RIGHT
27 ARE THE ANNUAL -- THE PUBLIC WATER SUPPLIER ANNUAL
28 AGRICULTURAL RETURN FLOWS?

1 A I HAVE NO IDEA IF THEY ARE.

2 Q OKAY. DID YOU INSTRUCT MR. BACHMAN TO USE A
3 LAG TIME FOR YOUR DATA?

4 A NO. I DIDN'T INSTRUCT MR. BACHMAN TO DO
5 ANYTHING.

6 Q YOU JUST GAVE HIM THE DATA?

7 A THAT IS ALL I DID.

8 Q OKAY. DURING YOUR DEPOSITION, DO YOU RECALL
9 TESTIFYING THAT 34 PERCENT OF THE URBAN WATER WHICH I
10 ASSUME IS THE SYNONYM OF M&I WATER WOULD DEPERCOLATE?

11 A I DO RECALL THAT, AND I THINK I CORRECTED
12 THAT.

13 Q WHAT PERCENTAGE OF THE -- AS A PERCENTAGE
14 BASIS WHAT PERCENTAGE OF M&I WATER, MUNICIPAL AND
15 INDUSTRIAL, WOULD DEPERCOLATE?

16 A I WOULD HAVE TO LOOK BACK AT OUR MODELING
17 RESULTS, BUT I WILL TELL YOU THIS: IT IS A GREATER
18 PORTION THAN AN AGRICULTURAL SYSTEMS BECAUSE IT IS
19 SIMPLY A LOWER EFFICIENCY.

20 Q SO IF -- IS IT APPROXIMATELY 34 PERCENT OR
21 DO YOU --

22 A I WOULD HAVE TO LOOK BACK AT MY RESULTS.

23 Q OKAY.

24 A I CAN'T TELL YOU OFF THE TOP OF MY HEAD.

25 Q OKAY. SO BY THAT DO YOU MEAN THAT IF PUBLIC
26 WATER SUPPLIER IMPORTS 100 ACRE-FEET, IMPORTS 100
27 ACRE-FEET OF WATER, AND SERVES IT TO THEIR CUSTOMERS
28 THAT 34 PERCENT OR WHATEVER NUMBER IT WOULD CALCULATE

1 OUT TO WOULD END UP AS DEPERCOLATED WATER?

2 A A PORTION OF THAT 100,000 ACRE-FEET WOULD
3 END UP AS DEPERCOLATION; BUT AS I SAID BEFORE, I CANNOT
4 TELL YOU WHAT THAT IS RIGHT NOW BECAUSE I WOULD HAVE TO
5 LOOK BACK AT MY PAST ANALYSIS.

6 Q BUT AT DEPOSITION YOU TESTIFIED THAT WAS
7 34 PERCENT?

8 A AND I BELIEVE THAT I CORRECTED THAT IN AN
9 OPPORTUNITY PROVIDED ME TO CORRECT MY DEPOSITION.

10 Q OKAY. IF WE TOOK YOUR CHART, EXHIBIT A95,
11 AND YOU LOOK AT TOTAL APPLIED WATER, AND WE JUST DIVIDED
12 THE TOTAL APPLIED WATER BY THE RETURN FLOW FROM
13 IRRIGATION, WOULD THAT GIVE US THAT PERCENTAGE?

14 A IF YOU TOOK TOTAL APPLIED WATER AND DIVIDED
15 BY RETURN FLOW FROM IRRIGATION, IT WOULD NOT GIVE YOU
16 THAT PERCENTAGE.

17 Q WHY NOT?

18 A YOU HAVE TO DO IT THE OTHER WAY.

19 Q OKAY. I'M SORRY. SO IF I DID IT THE OTHER
20 WAY, WOULD IT GIVE US THAT PERCENTAGE?

21 A IT WOULD.

22 Q SO ALL WE NEED TO DO IS GO THROUGH THERE,
23 AND IT WOULD BE THE SAME PERCENTAGE EVERY YEAR?

24 A IT SHOULD BE.

25 Q SO WHATEVER THAT PERCENTAGE IS IF A PUBLIC
26 WATER SUPPLIER IMPORTS 100 ACRE-FEET, THAT PERCENTAGE
27 WILL DEPERCOLATE?

28 A THAT PROPORTION -- THERE IS A PROPORTION OF

1 THAT WATER WHICH WOULD DEPERCOLATE, YES. OBVIOUSLY, IT
2 IS THE TOTAL APPLIED WATER DIVIDED BY -- RETURN FLOW
3 DIVIDED BY THAT TOTAL APPLIED WATER.

4 Q AND IF THAT SAME PUBLIC WATER SUPPLIER WITH
5 A WELL PUMPED THAT WATER OUT OF THE GROUND AND THEN
6 SERVED IT AGAIN, A CERTAIN PERCENTAGE OF THAT AGAIN, AND
7 I ASSUME IT WOULD BE SAME PERCENTAGE, WOULD AGAIN
8 DEPERCOLATE?

9 A IT WOULD. YOU HAVE TO KEEP IN MIND WHAT I
10 MENTIONED EARLIER IN MY TESTIMONY AND THAT THE
11 DEPERCOLATION ESPECIALLY IN URBAN ENVIRONMENTS IS
12 EXTREMELY VARIABLE, AND ANYTHING THAT I PROVIDED FROM
13 THE STANDPOINT OF RETURN FLOWS FROM URBAN AREAS IS JUST
14 THAT, A ROUGH ESTIMATE.

15 Q BUT IT IS THE SAME ESTIMATE FOR EVERY YEAR?

16 A I HAD TO PROVIDE AN ESTIMATE. THAT IS WHAT
17 I WAS TASKED TO DO, BUT IT IS A VERY ROUGH ESTIMATE FOR
18 THE REASONS THAT I MENTIONED PREVIOUSLY.

19 Q BUT IF WE APPLIED -- BY THE WAY, COULD THAT
20 PERCENTAGE BE ABOUT 31 PERCENT?

21 A IT IS A VERY ROUGH ESTIMATE, SO IT COULD
22 VARY FROM ONE PLACE TO THE NEXT, ONE HOMEOWNER TO THE
23 NEXT.

24 Q IF WE APPLY THAT PERCENTAGE TO THE
25 HOMEOWNERS OF THE -- TO THE PUBLIC WATER SUPPLIERS OF
26 THE ANTELOPE VALLEY AND THE WATER THEY IMPORT --

27 MR. HERREMA: OBJECTION, YOUR HONOR, THERE WAS NO
28 TESTIMONY ON DIRECT FOR IMPORTED WATER.

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SUPERIOR COURT FOR THE STATE OF CALIFORNIA

COUNTY OF LOS ANGELES

DEPARTMENT NO. 316

HON. JACK KOMAR

COORDINATION PROCEEDING)
SPECIAL TITLE (RULE 1550B))

JUDICIAL COUNCIL
COORDINATION
NO. JCCP4408

ANTELOPE VALLEY GROUNDWATER CASES)

PALMDALE WATER DISTRICT AND)
QUARTZ HILL WATER DISTRICT,)

SANTA CLARA CASE NO.
1-05-CV-049053

CROSS-COMPLAINANTS,)

VS.)

LOS ANGELES COUNTY WATERWORKS,)
DISTRICT NO. 40, ET AL,)

CROSS-DEFENDANTS.)

STATE OF CALIFORNIA)

) SS.

COUNTY OF LOS ANGELES)

I, GINGER WELKER, OFFICIAL REPORTER OF THE
SUPERIOR COURT OF THE STATE OF CALIFORNIA, FOR THE
COUNTY OF LOS ANGELES, DO HEREBY CERTIFY THAT THE
TRANSCRIPT DATED MARCH 15, 2011 COMPRISES A FULL, TRUE,
AND CORRECT TRANSCRIPT OF THE PROCEEDINGS HELD IN THE
ABOVE ENTITLED CAUSE.

DATED THIS 16TH DAY OF MARCH, 2011.

OFFICIAL REPORTER, CSR #5585