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IN RE: NON-BINDING ARBITRATION PURSUANT TO THE FINAL  
SETTLEMENT STIPULATION, KANSAS v. NEBRASKA and COLORADO  
No. 126 Original, U.S. Supreme Court

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TRANSCRIPT OF ARBITRATION PROCEEDINGS

before

KARL J. DREHER, ARBITRATOR

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Tuesday, March 10, 2009

VOLUME II

BE IT REMEMBERED that the above-entitled matter came  
on for Arbitration before KARL DREHER, Arbitrator,  
held at Byron Rogers Building, 1929 South Street,  
Room C-205, Denver, Colorado on the 10th day of  
March, 2009.

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1 PROCEEDINGS

2 ARBITRATOR DREHER: This is the second day  
3 of the hearing in the Nonbinding Arbitration issue  
4 pursuant to the Final Settlement Stipulation and Supreme  
5 Court Decree of May 19, 2003.

6 And, Mr. Draper, I believe you have one  
7 remaining witness in your first direct case?

8 MR. DRAPER: Yes. Thank you, Your Honor.  
9 That is Dr. John Leatherman. And with your permission,  
10 we would call him to the stand at this time.

11 ARBITRATOR DREHER: Okay.

12 JOHN C. LEATHERMAN  
13 having been first duly sworn, was examined and  
14 testified as follows:

15 DIRECT EXAMINATION

16 BY MR. DRAPER:

17 Q. Please state your name, professional  
18 position and professional address for the record.

19 A. My name is John C. Leatherman. I'm a  
20 Professor in the Department of the Agricultural  
21 Economics at Kansas State University, 331 Waters Hall,  
22 Manhattan, Kansas 66506.

23 Q. Dr. Leatherman, I would like to call  
24 attention to your curriculum vitae, which is Kansas  
25 Exhibit No. 13 and ask you to give a short description

1 of your education and experience as it relates to this  
2 proceeding.

3 A. I have a bachelor of arts degree in  
4 psychology 1980, master's degree in natural resources  
5 management in 1985, as well as a Ph.D. in urban and  
6 regional planning 1995.

7 Q. And this is your resume, Kansas Exhibit 13?

8 A. Yes, it is.

9 Q. And have you served as a part of the Kansas  
10 economics team in this proceeding?

11 A. Yes, I have.

12 Q. And is there any other member of the team  
13 who has worked particularly closely with you in your  
14 participation in that team?

15 A. Yes, there is. Dr. Tom Johnson, from the  
16 Department of Agricultural Economics at the University  
17 of Missouri Columbia, partnered with me in working on  
18 the indirect economic impacts portion of the study.

19 Q. And I would call attention to his CV, which  
20 is Kansas Exhibit No. 15.

21 Would you describe briefly the  
22 investigation and analysis that you and Dr. Johnson  
23 undertook as part of your work on this case?

24 A. Yes. In fact, in partnership with the  
25 other team members who worked principally on the direct

1 economic impacts, we monitored the work that they did  
2 requesting that they provide us with certain inputs into  
3 our analysis. Specifically, we requested that they  
4 provide us with estimates of farm profit/losses. We  
5 indicated to them that value of commodities or  
6 production losses were not useful to us; instead, we  
7 needed to know what happened with farm income. And we  
8 asked that they would essentially ensure that they had  
9 the -- that they had taken into account all of the  
10 protective actions that KBID farmers would be able to  
11 take.

12           With that, we had our losses of direct farm  
13 income and we applied that in a modeling system designed  
14 to determine the indirect impacts. It is an extension  
15 of input/output analysis, the very same analysis that  
16 was utilized in the Kansas v. Colorado case that was  
17 affirmed by the U.S. Supreme Court when they determined  
18 that indirect impacts were appropriate for this type of  
19 action.

20           We utilized an extension of input/output  
21 analysis called Social Accounting Matrix analysis.  
22 While input/output analysis simply focuses on the  
23 relationship among production sectors within the  
24 economy, Social Accounting Matrix analysis takes into  
25 consideration a comprehensive view of all financial

1 flows and, thus, gives us a more complete picture of  
2 changes in economic welfare.

3 We essentially determined that the direct  
4 effects were distributed across several income classes  
5 that were, we believe, to be representative of KBID farm  
6 families. And as we conceptualized these profit/losses,  
7 these are one and the same with household income.  
8 Essentially, farm profit is household income for farm  
9 families.

10 With the losses of farm family income, we  
11 assumed that essentially in the very short term in 19 --  
12 in 2005 and in 2006, there is very little that these  
13 farm families can do in response to this loss of income.  
14 And indeed, about all they can reasonably do overall is  
15 to reduce household consumption.

16 And so conceptualizing the loss of family  
17 income as resulting in curtailment of their household  
18 consumption when we consider consumption behavior on the  
19 part of households, it is not restricted to a narrow  
20 geographic area; and, in fact, we know that people are  
21 more than willing to travel significant distances to  
22 spend household income for household goods and services.

23 Given that our interest overall was the  
24 damages to the State of Kansas, we essentially  
25 conceptualized the appropriate geographic area to model

1 to be the State of Kansas. And we subsequently looked  
2 at the consumer expenditure patterns associated with  
3 three household income classes. We calculated, from our  
4 Social Accounting Matrix, disposable income and then  
5 ultimately reduced State of Kansas household consumption  
6 by those amounts.

7 Q. As you describe the work that you did, I  
8 would ask that you guide us through the section of the  
9 report that describes this. This is Kansas Exhibit No.  
10 5, and I believe what you are describing begins on page  
11 9 of that exhibit.

12 A. Yes, that's correct. That, indeed, we  
13 begin with simply an Introduction to our analysis  
14 identifying the analysis technique that we applied. In  
15 Section B, we discuss further the analysis and its  
16 relevance to this particular case.

17 We identify, in the Section C, the  
18 geographic scope of the analysis describing it as the  
19 state of Kansas overall. We specify the timeframe of  
20 our analysis being 2005-2006, indicating that we are  
21 assuming a very short-term type of analysis.

22 We describe our construction of our -- our  
23 Social Accounting Matrix analysis model and how we then  
24 took the direct farm family losses and applied them to  
25 our Kansas Social Accounting Matrix.

1           We discuss changes in household spending  
2 and then ultimately estimate the economic impacts that  
3 we assume to occur.

4           Then finally, we take the direct economic  
5 impacts, the direct profit/losses of farm families, as  
6 well as the indirect economic impacts associated with  
7 farm family losses of household income and the reduction  
8 of consumer spending, and we add those together and then  
9 bring them forward to a present value of 2009.

10           Q. If I may, I would like to ask you to, now  
11 that you have given a complete and very brief  
12 description, go back to the discussion which you have, I  
13 think, on page 10 where you describe the Kansas IMPLAN  
14 Model. What are IMPLAN Models?

15           A. IMPLAN is an accounting system originally  
16 developed by the U.S. Forest Service to assist them in  
17 the development of their management plans, such that  
18 they could consider impacts on communities affected by  
19 their management plans.

20           That was an input/output-type model and  
21 ultimately that system was privatized and is currently  
22 owned and maintained by a private organization called  
23 the Minnesota IMPLAN Group. They have subsequently  
24 developed the system into a full-blown Social Accounting  
25 Matrix system that, once again, comprehensively accounts

1 for all financial flows in the economy.

2 With that particular system, we have a  
3 structure whereby we create our Social Accounting Matrix  
4 accounts. We have an economic impact routine within  
5 that system that can help us to transform it from simply  
6 a descriptive model into a predictive model by  
7 calculating various economic multipliers. And then,  
8 finally, they also supply the data that's necessary to  
9 complete the analyses. These data are complete for the  
10 nation, all states, all counties and, in sort of custom  
11 arrangements, can be estimated that at a zip code level,  
12 as well.

13 Q. Is the IMPLAN Model capable of providing  
14 the secondary impacts for a state like Kansas where you  
15 have the direct impacts in an area like north central  
16 Kansas that is also next to the state of Nebraska?

17 A. Yes, it can. In fact, once again, it  
18 accounts for all financial flows, including those that  
19 would accrue to the State of Kansas, as well as all the  
20 appropriate leakages, as we tend to refer to them, from  
21 the state economy that would include such things as the  
22 purchase of imported goods and services, as well as any  
23 sort of leakages that might accrue to nearby states or  
24 outside of the state of Kansas.

25 And so we -- essentially, the system, once

1 again, comprehensively accounts for where economic  
2 impacts occur, given that our interest is damages  
3 accruing for the State of Kansas. While we could  
4 essentially assign damages to other areas outside of the  
5 state, that's not particularly our concern here and,  
6 indeed, we focused our efforts on estimating those  
7 damages to Kansas.

8 Q. And the results of your indirect effects  
9 analysis was then combined with the direct effects  
10 calculated by the rest of the team?

11 A. Yes. We did so such that we, at first,  
12 reported them both in 2005 dollars and then in 2006  
13 dollars. And to get a sense of what that tallied to, we  
14 essentially applied an interest rate to bring those  
15 values up to 2008 dollars.

16 And I believe that's what ultimately we  
17 reported.

18 Q. I would ask you to turn to pages 20 and 21  
19 of your report and describe the tables that appear on  
20 those pages that relate to the indirect analysis and the  
21 ultimate combination of that analysis with the direct  
22 impacts.

23 A. Well, first of all, in Table 14 sort of the  
24 bottom line reported in that particular table are the  
25 results of the estimates of the direct economic impacts.

1 Those values are inputs into calculating the indirect  
2 economic effects.

3 We, once again, took those values and  
4 assumed that three household income classes bracketed by  
5 \$50,000 and \$150,000 were the household income groups  
6 that were impacted. We assumed that the losses were  
7 evenly distributed across those household income  
8 classes.

9 We then looked to the Social Accounting  
10 Matrix and calculate a disposable income factor,  
11 recognizing that the total value, it would be  
12 inappropriate to utilize that; that, in fact, households  
13 do not have the luxury of being able to spend all income  
14 for consumption.

15 So we calculate the disposable income  
16 factors in Table 15 and then we apply that to our Social  
17 Accounting Matrix -- to our Social Accounting Matrix and  
18 the results are shown then in Table 16.

19 And you will note in Table 16, we've used  
20 an aggregation scheme to illustrate how those impacts  
21 are widely distributed across various economic sectors  
22 in the state of Kansas, and you can see the total values  
23 for 2005 and 2006.

24 Finally, in Table 17 we summarize all of  
25 this information by taking the direct household income

1 losses, combining that with the indirect value added  
2 loss. And I would mention that we did, indeed, report  
3 our results in terms of something called "value added,"  
4 and it's very important to understand what that -- what  
5 that particular measure represents.

6           It's a very broad measure of income. And,  
7 in fact, value added is equivalent to what we tend to  
8 know as a gross domestic product. It's a very  
9 comprehensive accounting of income within the economy,  
10 not to be confused with the notion of adding value to  
11 agricultural commodities or anything like that.

12           In this context, it is a -- it is an income  
13 measure and what we believe to be the best measure of  
14 economic welfare. And given that our concern at the  
15 bottom line is the economic welfare of the citizens of  
16 the state of Kansas, that is the appropriate measure to  
17 use.

18           And so we take our indirect value-added  
19 losses, add them to the direct income losses and, once  
20 again, apply the appropriate interest rates to bring  
21 them to a present value. And, ultimately, you can see  
22 the total impact estimated as of 12-31-2008.

23           Q. And that's shown in Table 17?

24           A. That's in Table 17, yes.

25           MR. DRAPER: Thank you very much, Doctor.

1           No further questions.

2           ARBITRATOR DREHER: I have two -- that's  
3 two questions. I should have finished the sentence.

4           The first question has just a couple of  
5 subquestions to it.

6           Were you present yesterday during the  
7 testimony of Scott Ross?

8           THE WITNESS: Yes, I was.

9           ARBITRATOR DREHER: Did you hear him  
10 testify that during 2005 and 2006, the irrigators in the  
11 Kansas Bostwick Irrigation District were out buying new  
12 irrigation equipment that he characterized as best  
13 available technology?

14          THE WITNESS: Yes.

15          ARBITRATOR DREHER: I'm conflicted a little  
16 bit in understanding why the KBID irrigators, on the one  
17 hand, would be out buying new irrigation equipment if,  
18 on the other hand, they were reducing household  
19 expenditures.

20          And, you know, I think in my own situation  
21 if I lost income and I went out and bought a new car,  
22 I'm not sure that my wife would be that happy with me.

23          So I'm a little puzzled about that, that  
24 behavior.

25          THE WITNESS: It's a very good question,

1 and I could only offer speculation in response because I  
2 have not done extensive interviewing of KBID farm  
3 families to determine exactly what they did do; but I  
4 can offer, perhaps, the following thoughts as to what  
5 they did, why they did it.

6 I would suspect that they were acting in  
7 their -- in their purchasing of new equipment for the  
8 farm, they were acting in defense of the family business  
9 and, indeed, that would become priority, in my mind.  
10 If, indeed, I found myself financially squeezed, I would  
11 try to make sure that I had sort of the bread and butter  
12 taken care of; and that is, you know, my means of  
13 production.

14 And so if I were to, perhaps, favor  
15 anything, I would forgo the purchase of the new family  
16 car or other kinds of things, while at the same time  
17 doing everything that I could to ensure that my family  
18 business was as -- was as competitively positioned as  
19 possible. And so I would offer that speculation as to  
20 how they might do this.

21 This certainly did not leave them  
22 destitute, by any means. They, obviously, still had  
23 income, but they didn't have as much as they might have.

24 Either way, I think we have seen trends  
25 toward this effort at trying to, in uncertain times,

1 shore up the family business, the family farm, as best  
2 they're able; but I would suggest that they could have  
3 been relatively better off, had they not incurred that  
4 household income loss.

5 ARBITRATOR DREHER: Second question: Have  
6 you reviewed Dr. Sunding's report, particularly his  
7 statements regarding his opinion about the  
8 inappropriateness of including damages for indirect  
9 effects, given that any -- and I'm quoting from his  
10 report now -- "any damage payment from Nebraska to  
11 Kansas will generate its own multiplier effects and a  
12 damage payment that compensates for direct losses should  
13 result in indirect benefits that compensate for indirect  
14 losses"?

15 THE WITNESS: Yes, I have reviewed  
16 Dr. Sunding's report. And, indeed, he presents an  
17 interesting theoretical notion. I would suggest several  
18 things in response.

19 Number one, we have got precedence affirmed  
20 by the United States Supreme Court that these are real,  
21 these are valid impacts that are fair game for  
22 consideration.

23 Number two, that, under no circumstances  
24 that we can imagine, would there be anything like the  
25 equivalence necessary to exactly offset impacts. In

1 fact, we cannot, by federal law, replicate the kinds of  
2 losses by way of offsetting gains that his theory  
3 asserts may be possible.

4 MR. WILMOTH: Mr. Arbitrator, I have to  
5 object to these opinions as legal conclusions, both with  
6 regards to the prior Supreme Court precedent and what  
7 federal law requires or disallows in terms of these  
8 payments.

9 ARBITRATOR DREHER: Well, it seems like  
10 referring to the Supreme Court decision is a statement  
11 of fact. And I will note your objection to the legal  
12 conclusions, but I would like to allow him to finish.

13 THE WITNESS: Where was I?

14 So, theoretically, there could, in fact, be  
15 offsetting impacts, positive impacts associated with the  
16 payments versus the damage occurred by the loss of  
17 family income.

18 But, once again, that would be under a very  
19 narrow set of circumstances. You would essentially have  
20 to replicate as closely as possible in terms of the  
21 amount of damage, as well as the timing of those  
22 payments, as well as what ultimately happened to  
23 stimulate economic activity. And, here again, it's  
24 simply not feasible.

25 Indeed, the State of Kansas, perhaps, would

1 take any -- any type of moneys awarded to them and they  
2 would -- they would do something with that; but exactly  
3 what, I really don't know.

4 And so that is something that would be very  
5 speculative on my part to try to estimate any kind of  
6 offsetting damages, absent there being specific  
7 information with regard to how they would spend the  
8 money.

9 And it may or it may not be anywhere even  
10 close to what those direct damages and indirect impacts  
11 were.

12 ARBITRATOR DREHER: Okay, thank you.

13 Mr. Wilmoth.

14 MR. WILMOTH: Thank you.

15 CROSS-EXAMINATION

16 BY MR. WILMOTH:

17 Q. Dr. Leatherman, I will give you a copy of  
18 your deposition transcript dated February 24, 2009 and I  
19 will provide copies in just a moment. Mr. Powers is  
20 fishing it out of our many boxes.

21 I believe this will be Nebraska Exhibit No.  
22 9.

23 Good morning, Dr. Leatherman.

24 A. Good morning.

25 Q. I would like to direct your attention to

1 page 19 of your transcript -- I beg your pardon, excuse  
2 me -- page 20, please.

3 A. Yes.

4 Q. Lines 15 and 16, I believe during your  
5 deposition you explained the expenditure of resources  
6 will always have some impact.

7 Do you still hold that opinion?

8 A. Yes.

9 Q. And so do you agree that conceptually the  
10 payment of damages in a proceeding like this will have  
11 some effect on the Kansas economy?

12 A. Yes. Assuming that some of that money is  
13 spent within the Kansas economy, yes.

14 Q. Not spent outside of the state, for  
15 example?

16 A. Correct.

17 Q. And did you take that issue into account at  
18 all in your report?

19 A. No, I did not.

20 Q. Thank you.

21 In conducting your analysis, if I  
22 understood you correctly, you relied essentially on the  
23 direct impact number from Dr. Kastens; is that right?

24 A. From the -- from the economic team that  
25 estimated the direct number, including Dr. Kastens.

1 Q. Very well.

2 And, of course, that team relied on Dr. --  
3 I'm sorry, Mr. Book's conclusions with regard to the  
4 water volume; is that your understanding?

5 A. That would be my understanding.

6 Q. So if Mr. Book's water volume were lower --  
7 and I believe if you were here yesterday, you may have  
8 heard Dr. Kastens explain that if that were the case,  
9 his direct impact analysis would be smaller.

10 Does that translate through to your  
11 analysis?

12 A. Yes, it does.

13 Q. And so if each of those, Mr. Book's  
14 analysis, Dr. Kastens' analysis are smaller, does that  
15 mean that your analysis, the overall number, would be  
16 smaller?

17 A. Yes, that would be correct.

18 Q. Thank you.

19 You mentioned that you assumed that  
20 household income declined in 2005 and 2006; is that  
21 correct?

22 A. It either declined or it failed to achieve  
23 what it otherwise might have been. I haven't actually  
24 gone to see precisely what happened with household  
25 income. It either declined or it was not what it could

1 have been.

2 Q. And that's based on your assumption?

3 That's based on your assumption?

4 A. That household income declined?

5 Q. Correct.

6 A. Based on the direct economic impacts, yes.

7 Q. But that's not based on any actual  
8 interviews or research as to county income levels in  
9 2005 or 2006?

10 A. No. I did not independently observe what  
11 happened with income levels in those counties during  
12 that time.

13 Q. Okay, thank you.

14 Just a point of clarification. I thought  
15 that I heard yesterday -- excuse me, were you present  
16 yesterday --

17 A. Yes, I was.

18 Q. -- for the testimony of all the witnesses?

19 I thought I heard Dr. Kastens indicate that  
20 he did not take into account the impact of any  
21 preventive planting programs or CRP payments or anything  
22 like that as potential offsets to his damages analysis.

23 Do you recall that statement?

24 A. I recall that statement.

25 Q. And so is it accurate that you did not

1 factor in those issues either in your report?

2 A. Well, once again, while I think, from a  
3 farm production standpoint, they looked at the operation  
4 of the farm enterprise and they took into account all  
5 they could do within the farm enterprise.

6 Now, what those individual producers did,  
7 in addition to that, to try to mitigate any kind of  
8 negative -- any kind of negative economic impacts, I  
9 understand that he did not go to determine whether or  
10 not any of these KBID farmers enrolled in some sort of  
11 an agricultural program or anything else. And that  
12 would be true, and I didn't do that either.

13 Q. Okay. Thank you.

14 I have a couple of detailed questions, I  
15 guess, about your tables. If you would please turn to  
16 Table 15 in your expert report, please.

17 A. Yes.

18 Q. The third column over from the left, I  
19 believe, is a "Disposable Income Factor"; is that  
20 correct?

21 A. That's correct.

22 Q. And what is that -- what does that mean?

23 A. Out of our gross household income, we do  
24 not have the luxury of having the opportunity to consume  
25 all of that. And, indeed, there are certain taxes that

1 we must pay, certain other types of payments that have  
2 to be accounted for as well. And so it would be  
3 inappropriate to perform an analysis on that gross  
4 income level. Rather, we calculate what we assume to be  
5 available after deducting for taxes, after deducting for  
6 savings and other kinds of factors. We determine, then,  
7 what is left over for households to spend. And that's  
8 what that is accounting for.

9                   75-odd percent among these household income  
10 classes were available for household consumption of  
11 goods and services to sustain the household.

12                   Q. And do you have any idea how that compares  
13 to the national average?

14                   A. For these household income classes?

15                   Q. Yes.

16                   A. It would be the same. This is a national  
17 average household expenditure pattern that we're dealing  
18 with.

19                   Q. And is there a reference for that  
20 information that we could evaluate?

21                   A. Not in this report, but I can tell you that  
22 IMPLAN begins with, essentially, national data and they,  
23 essentially, take that data; they make some adjustments  
24 to reconcile differences across various data sources  
25 that they are working with, and then they utilize

1 various techniques to distribute information to states'  
2 and county levels of government.

3 With regard to the household consumption  
4 patterns, these are national average patterns. While we  
5 have the capacity to adjust them within IMPLAN, should  
6 we have better information, absent doing some sort of  
7 primary information-gathering initiative to determine  
8 how it may differ from national averages, we simply use  
9 the default assumption that local expenditure patterns  
10 mirror national expenditure patterns.

11 And I think that that is perhaps, more  
12 often than not, the common assumption that an analyst  
13 would make.

14 Q. Perhaps my question wasn't clear.

15 My question is very simply: What is the  
16 source of these numbers?

17 A. There is -- the federal government  
18 periodically undertakes consumer expenditure surveys,  
19 and that is the source.

20 I can't tell you more specifically a  
21 citation, although I can come back with that after I  
22 have access to the Internet.

23 MR. WILMOTH: Would that be acceptable to  
24 you, Mr. Arbitrator?

25 ARBITRATOR DREHER: Yes.

1           Q    (BY MR. WILMOTH) The reason I ask these  
2 questions is that we have reason to believe that the  
3 national average is lower than that figure.

4                    If it were lower, for the sake of argument,  
5 Dr. Leatherman, how would that affect your analysis?

6           A.  If it were lower, then households would  
7 be -- would have less disposable income and they would,  
8 therefore, spend less.

9           Q.  So the indirect impact would be lower  
10 because they would spend less in the first instance?

11          A.  That would be correct.

12          Q.  Thank you.

13                   One of the interesting things about this  
14 analysis, of course, is that it looks at a very discrete  
15 time period, relatively short time period, 2005 and  
16 2006; is that correct?

17          A.  That's correct.  That's a short-term  
18 analysis.

19          Q.  And in my experience as a layperson,  
20 although I hate to admit this on the record,  
21 occasionally I will carry my debt on the credit card.

22                   Did you evaluate the extent to which any of  
23 these individuals might reach out and carry debt in  
24 order to defer having to make payments on bills and  
25 other things?

1           A. No, I did not. I personally believe that  
2 the chances are that not many substituted debt for their  
3 income. However, to the extent that they did, we would  
4 have to recognize that that was, in fact, an opportunity  
5 cost to those households; that it carried additional  
6 interest; and to the extent that they did, I would  
7 suggest that that would be in addition to any kind of  
8 estimate that we might make in relation to direct income  
9 losses.

10           Q. Mr. Dreher asked you a question about the  
11 purchase of farm equipment in 2005.

12                   Is it possible that individuals relied on  
13 credit or debt to purchase those instruments?

14           A. I would imagine that would be true.

15           Q. And as long as that money is flowing into  
16 the economy, isn't it really only that interest  
17 component that is any kind of damage? In other words,  
18 the farm equipment is still being manufactured, it's  
19 still being purchased, it's still being utilized. If I  
20 understood your last comment, it was essentially that --  
21 well, if that was bought on credit, the damage would be  
22 that 10 percent interest rate, or whatever they're  
23 paying?

24           A. I'm not sure that I'm tracking exactly;  
25 but, no, it wouldn't just simply be the interest. It

1 would be the direct income loss, plus the indirect  
2 effects that occur, plus interest to bring it to a  
3 present value.

4 Q. But with regard to farm equipment  
5 purchases, for example, there seems to me there is two  
6 opportunities: Either the individual decides not to  
7 purchase in a given year, which would be a direct loss  
8 of the entire farm equipment amount; or they purchase  
9 it, that money goes into the economy, the farm equipment  
10 is utilized; and to the extent they're doing it on debt,  
11 there is a much smaller figure that would be considered  
12 the interest or the damage, I think is what you  
13 mentioned earlier?

14 A. Well, here again, we're talking farm  
15 production economics that I have little expertise in,  
16 but I think we're talking about at least some increment  
17 of the value of the new purchase in any given year, plus  
18 debt that would be on top of that.

19 Q. Turn your attention to page 12 of your  
20 report, please.

21 Concerning the interest rates that you  
22 utilized in, I believe it's Section I of your report,  
23 why did you elect to use a market loan rate?

24 A. I would have to defer on that because it  
25 was actually the agricultural production folks who

1 determined what would be the appropriate interest rate.  
2 And so I cannot -- I cannot answer why one interest rate  
3 was chosen over some other.

4                   That would have to be some -- a question,  
5 perhaps, Dr. Kastens might be in a better position to  
6 answer.

7                   Q. Have you ever been in a position to make  
8 those judgments in your work?

9                   A. To make judgments with regard to how to  
10 bring things to present value?

11                   Q. Yes.

12                   A. Yes.

13                   Q. And then, if you had written this portion  
14 of the report, would you have selected a market loan  
15 rate or would you, perhaps, might have used a risk-free  
16 rate?

17                   A. What I would have done was gone to one of  
18 our finance specialists and identified exactly what the  
19 analysis was and asked that individual to tell me what  
20 the most appropriate rate would be.

21                   And that's typically how I deal with  
22 finance questions, is go to a finance specialist.

23                   Q. Okay. So you really have no opinion on the  
24 validity of these numbers?

25                   A. I have no opinion on that.

1 Q. Thank you.

2 MR. WILMOTH: I believe that's all we have,  
3 Mr. Arbitrator.

4 Thank you very much, Dr. Leatherman.

5 ARBITRATOR DREHER: Before we look for  
6 redirect, I do have one additional question.

7 Looking at Table 17 in your report, if I  
8 divide the total impact before interest by the direct  
9 impact for both years 2005-2006, I get an imputed factor  
10 of 1.44.

11 THE WITNESS: That's correct.

12 ARBITRATOR DREHER: If the direct impacts  
13 are more or less than what you would assume, would the  
14 1.44 factor be applicable?

15 THE WITNESS: Yes.

16 ARBITRATOR DREHER: All right, thank you.

17 Mr. Draper, would you like a few minutes  
18 before redirect?

19 MR. DRAPER: Yes, unless Colorado has any  
20 cross-examination.

21 MR. AMPE: No, we don't. Thank you.

22 MR. DRAPER: Yes. Then if we could have  
23 our five minutes, I would appreciate that.

24 ARBITRATOR DREHER: Okay.

25 (Break was taken from 8:49 to 9:02.)

1                   ARBITRATOR DREHER: Before we begin, Mr.  
2 Wilmoth, of course, had requested a citation or a  
3 reference to the disposable income proportions that were  
4 in Table 15.

5                   And in order to keep the record straight, I  
6 think it would be helpful when you get that information,  
7 if you introduced it as part of your rebuttal case, so  
8 we can get it into the record.

9                   MR. DRAPER: We will do that. Thank you.

10                  ARBITRATOR DREHER: Please.

11                                   REDIRECT EXAMINATION

12 BY MR. DRAPER:

13                   Q. Doctor, you were questioned on  
14 cross-examination as to whether you had conducted any  
15 county interviews as part of your analysis of the  
16 indirect impacts.

17                   Would it have been appropriate to conduct  
18 county interviews for purposes of this analysis?

19                   A. To have simply conducted interviews from  
20 available and willing individuals, perhaps would have  
21 been really quite inappropriate. Indeed, absent  
22 engaging in some sort of systematic and scientific  
23 survey initiative, to make some generalizations with  
24 regard to how all of the farm families within the KBID  
25 District responded to conditions in the years 2005-2006,

1 indeed, simply having gone out on a tour and talked to  
2 any available person wouldn't have necessarily provided  
3 us with the valid and reliable data that we might hope  
4 that we could use to further refine the estimates that  
5 are otherwise represented in the national surveys,  
6 which, in fact, would have been conducted utilizing  
7 scientific procedures.

8           And so, no, to answer you directly, it  
9 wouldn't have been terribly helpful for me to go on a  
10 ride around the region and visited with folks to see  
11 exactly what they did and incorporate it into the  
12 analysis.

13           And, indeed, that could have substantially  
14 biased the analysis in ways that would be very  
15 unhelpful. And, indeed, it would be better -- absent  
16 undertaking that kind of detailed and extensive research  
17 initiative, we're better off utilizing a national  
18 average over and above this notion of collecting an  
19 anecdotal data from willing tellers.

20           Q. Is that kind of information the type of  
21 information that goes into the IMPLAN Model and provides  
22 you with a comprehensive set of information on which to  
23 base your opinions?

24           A. The federal government conducts  
25 scientifically based random surveys of American

1 households to determine what their expenditure patterns  
2 are. They, then, also collect data with regard to  
3 household income, and that's how we come up with these  
4 various income classes that are reflected in IMPLAN.

5 And, indeed, that as a default assumption,  
6 absent having the time, resources and capacity to engage  
7 in primary data-gathering activities, such as,  
8 perhaps, have been suggested have been superior, that  
9 is -- that is the normal default assumption that we  
10 would use, is that it's better to use that  
11 scientifically generated information in the absence of  
12 being able to conduct something unique to a given  
13 analysis.

14 MR. DRAPER: Thank you, Doctor.

15 No further questions.

16 ARBITRATOR DREHER: All right.

17 MR. WILMOTH: Mr. Arbitrator, can I just  
18 get a point of clarification --

19 ARBITRATOR DREHER: Yes.

20 MR. WILMOTH: -- on what was said?

21 If this goes beyond my entitlement, stop  
22 me.

23 RECROSS-EXAMINATION

24 BY MR. WILMOTH:

25 Q. But was your statement that it was not

1 possible to do that systematic survey? You said  
2 something about limited funds and time. I wasn't sure  
3 of the import of that statement.

4 A. In research, we are always faced with  
5 certain constraints. Constraints relate to capacity,  
6 time, resources and so forth.

7 Was it impossible to do? No.

8 We could have undertaken that, had we had  
9 significantly more time available, as well as  
10 significantly more resources available; but I would  
11 suggest that, by and large, the improvement of  
12 information probably would not have justified the  
13 expenditure of that time and those resources.

14 ARBITRATOR DREHER: Okay. Thank you very  
15 much.

16 You can step down.

17 And if I remember right, at least according  
18 to the list, that's your last direct witness.

19 MR. DRAPER: That's correct.

20 ARBITRATOR DREHER: So now we'll turn to  
21 Nebraska and Colorado, either separately or together, or  
22 however you're going to do this.

23 MR. AMPE: Well, we'll start out with  
24 Dr. Pritchett.

25 JAMES PRITCHETT,

1 having been first duly sworn, was examined and  
2 testified as follows:

3 MR. AMPE: If it's okay with the  
4 Arbitrator, I would address him from the podium, so we  
5 don't have a side conversation on the side so no one  
6 else can hear.

7 ARBITRATOR DREHER: Wherever you are most  
8 comfortable, that will be fine.

9 DIRECT EXAMINATION

10 BY MR. AMPE:

11 Q. Dr. Pritchett, in front of you is a  
12 document I've marked Colorado Exhibit No. 1. Do you  
13 recognize that document?

14 A. Yes, I do.

15 Q. Is this your curriculum vitae?

16 A. Yes, it is.

17 Q. Could you just briefly summarize your  
18 education and some of your experience in the Republican  
19 River Basin as it relates to this proceeding.

20 A. Certainly. I have a bachelor's and  
21 master's degree from Colorado State University in  
22 agricultural economics; Ph.D. in agricultural and  
23 applied economics from the University of Minnesota. I  
24 joined the faculty, after having a teaching position at  
25 Purdue University, at Colorado State University in 2001.

1 My current appointment there is both as an extension  
2 economist, as a teacher and with some research  
3 requirements. I work in the areas of aggregate  
4 management with specific emphasis in how farms allocate  
5 water resources that are scarce. Also, in how  
6 communities benefit or the effects of irrigated  
7 agricultural on their rural communities. And have also  
8 done some work in some other areas.

9 Q. Do you have a specific title?

10 A. I'm an Associate Professor at Colorado  
11 State University.

12 Q. What is your business address?

13 A. It's in Colorado State University,  
14 Department of Agricultural and Resource Economics.

15 Q. Dr. Pritchett, were you given an assignment  
16 that relates to this matter?

17 A. Yes, I was.

18 Q. Who gave you that assignment?

19 A. You did, Mr. Ampe.

20 Q. What did I ask you to do?

21 A. You provided me with a report that was an  
22 assessment of potential economic losses and ask that I  
23 review that report, noting anything relevant to data, to  
24 the methods that were employed and just what my general  
25 perceptions were of that report.

1 Q. Did I ask you to take the Kansas estimates  
2 or conclusion as to the amount of water owed at face  
3 value, without any additional analysis?

4 A. That's correct.

5 Q. Did I ask you to go out and collect any of  
6 your own data?

7 A. No, you did not.

8 Q. Did I ask you to design your own model?

9 A. No, you did not.

10 Q. Did I ask you to conduct any field research  
11 or interviews or any other type of data collection?

12 A. No, you did not.

13 Q. So can you sort of walk through what you  
14 did in reviewing this report and reaching your  
15 conclusions.

16 A. I reviewed the report and tried to  
17 understand how the estimates of economic losses were  
18 made, noted the underlying crop water response model,  
19 and then how the economics were determined.

20 I tried to place information about yields  
21 and prices in a context of secondary information that I  
22 could collect. That would include prices provided by  
23 the National Ag Statistics Services and compared those  
24 to the KBID prices that were in Annual Reports that I  
25 did have access to.

1           Also, took a look at those yields as  
2 reported within the Kansas expert report, compared those  
3 to National Ag Statistics Service yield determination  
4 and then sort of worked through some calculations.

5           Cost information wasn't available to me, as  
6 far as what the Kansas experts used for costs. So I  
7 found some, what I believe to be good proxies for cost  
8 and applied those in order to determine my own profit  
9 considerations.

10           Examined those, and then began to read the  
11 regional economic impact reports, using some of my own  
12 research and placing that in that context as to whether  
13 those direct/indirect effects seemed reasonable for what  
14 I experienced as well. Then applied those to the  
15 interest calculation and came up with damages as I  
16 thought might fit within that context.

17           Q. And you put those into a report?

18           A. I did.

19           Q. And is that report in front of you marked  
20 as Colorado Exhibit 2?

21           A. Yes, it is.

22           Q. Now, you were deposed about a week ago,  
23 correct?

24           A. That's correct.

25           Q. And based upon some questions from

1 Mr. Draper, did that cause you to go back and review  
2 some sections of your report?

3 A. Yes, it did.

4 Q. Did you find a typographical error in your  
5 report?

6 A. I did.

7 Q. And what was that error?

8 A. There were two specific errors. One was  
9 applying 2005 costs to nonirrigated ground to 2006  
10 estimates, and also applying 2005 yields to 2006 yield  
11 evaluation.

12 Q. And did you create a paper essentially  
13 correcting those errors?

14 A. I did; I provided an amendment.

15 Q. Is that in front of you, as well, as  
16 Colorado Exhibit No. 3?

17 A. Yes, it is.

18 Q. And based on that, you reached a new  
19 slightly higher conclusion as to total damages?

20 A. That's correct.

21 Q. And do you recall that amount from the  
22 paper -- the amendment, I should say?

23 A. From the amendment, the sum of total  
24 impact, which would include direct losses, indirect  
25 losses and the interest calculation, would be a little

1 more than \$2.9 million.

2 Q. And just for the record, you mentioned the  
3 2005-2006 KBID reports, and those have already been  
4 entered into evidence as Kansas Exhibits 24 and 25, so I  
5 will not be repeating that.

6 MR. AMPE: That's all I have, sir.

7 ARBITRATOR DREHER: Dr. Pritchett, I would  
8 like to ask a couple of questions before we turn to  
9 cross.

10 I'm not completely understanding why you  
11 adopted alternate crop prices in Table 1, given the  
12 statement that you make in the last paragraph on page 3,  
13 where you state that you were able to reproduce the KBID  
14 prices when dividing the total value of production by  
15 the total bushels produced.

16 So, on the one hand, you were able to check  
17 that and then in Table 1 you proceeded to use  
18 alternative crop prices. And I didn't understand why.

19 THE WITNESS: Yes, sir.

20 Mr. Ampe had asked me to review the data  
21 that was used in the reports. The KBID prices that I  
22 was able to compute out were simply imputed, but I don't  
23 know how those prices were collected, sir.

24 I don't know if that was a survey of  
25 representative farmers, if it was a local cash price at

1 an elevator, what that happened to be.

2 So I wanted to place that into a context  
3 and I compared those to the National Ag Statistics  
4 Service prices for that District.

5 ARBITRATOR DREHER: But as a layperson in  
6 all this, how do I sort through whose prices are more  
7 representative, I guess?

8 THE WITNESS: You know, that's a great  
9 question. I would like to learn more about how the KBID  
10 prices were determined.

11 There is a value production number and then  
12 a total bushels' number and knowing something about how  
13 those prices were collected would tell me if they were  
14 representative of the economic loss that was there.

15 ARBITRATOR DREHER: Second question: Do  
16 you have an opinion about the suitability of the IPYsim  
17 Model in estimating loss production for the purposes of  
18 computing direct damages?

19 THE WITNESS: I wasn't able to review the  
20 model itself or make my own runs, and so that limits the  
21 opinion that I can provide.

22 I understand that the underwater crop water  
23 response functions that's used in that IPYsim Model  
24 seems to be accurate, given what I have seen  
25 presentations made and my own experience at various

1 meetings.

2 I don't know how appropriate it was to  
3 adapt that to that particular area, if we understand  
4 that that underlying crop water response model fits that  
5 area. So I don't know for sure about that.

6 What I do note is that in terms of its  
7 yield prediction, those seem to fit trend yields and  
8 also the National Ag Statistic Service yields. And so I  
9 felt comfortable in that sense, that the yields were  
10 representative.

11 Later, the Kansas experts boot-strapped  
12 those yields to a higher level and I'm not sure I'm  
13 comfortable with that.

14 For the underlying costs and economics  
15 associated with the model, I can't really evaluate those  
16 without having seen those costs. It is an optimal sort  
17 of model, so it is solving out for optimal choices of  
18 inputs and optimal levels of irrigation.

19 Not all farmers would act optimally and  
20 would necessarily fit that model. So we would have to  
21 ask the question about whether or not we could aggregate  
22 that to the area and across the 40,000 or so acres that  
23 are involved.

24 ARBITRATOR DREHER: Now, you made the  
25 statement that they boot-strap yields -- I'm not exactly

1 sure how you put it -- but can you further describe your  
2 understanding of what they did in that particular part  
3 of the process?

4 THE WITNESS: Well, I believe that, given  
5 the presumable water shortfall, that their yields were  
6 about 90 percent of what the IPYsim Model would predict.

7 So the model predicted something in the  
8 area of 196 -- sorry, 169 bushels per acre. The KBID  
9 Annual Report suggested that there are about 185 bushels  
10 per acre that were produced.

11 So the IPYsim prediction didn't really fit  
12 what the KBID model was; but that since the model had  
13 predicted that that would be 90 percent of what the  
14 total yield was, they took the 185 bushels and then  
15 booted that up so that it would be 100 percent and  
16 that's how they came with the 206 bushels in 2005.

17 So that would be the, sort of the  
18 booting-up effect.

19 ARBITRATOR DREHER: In your opinion, is the  
20 206 bushels a reasonable yield?

21 THE WITNESS: It seems very outstanding,  
22 given the historical nature in what trend yields are.

23 ARBITRATOR DREHER: All right. Thank you.

24 Mr. Draper?

25 MR. DRAPER: Thank you, Your Honor.

CROSS-EXAMINATION

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BY MR. DRAPER:

Q. Good morning, Dr. Pritchett.

A. Good morning.

Q. To follow up on Mr. Dreher's questions, with respect to calibrating the IPYsim Model to the KBID area, would it be true to say that you agree that it should be calibrated and that your difference with the Kansas experts had to do with the method of calibrating the model?

A. I think it would be appropriate to use a crop water response function that fits the climate in that area and the underlying soil conditions when predicting yields for an area, one small area or farm level area.

I think that the IPYsim Model yields that were shown, not the 185 or 206 bushels, but rather the 169-bushel area and that 170-bushel area seemed to fit and seemed to be representative of what trend yields are for that area and what National Ag Statistics yields are for that area. So it really is that booting up that I find troublesome when I review the report.

Q. Also, with respect to Mr. Dreher's first question on prices, you utilized a national source for north central Kansas, rather than the specific prices

1 listed in the KBID Annual Reports; is that right?

2 A. That's correct.

3 Q. And this was because you were unsure about  
4 the -- about how the prices in the KBID Annual Reports  
5 were determined?

6 A. Yes. And in a larger issue, if they were  
7 representative or not.

8 Q. And so would it be correct to say that it's  
9 possible that those are correct, that you did not have  
10 what you consider sufficient information to determine  
11 that?

12 A. That's correct.

13 Q. If I understand your report correctly, you  
14 agree with the Kansas experts also with respect to the  
15 propriety of using yield modeling combined with farm  
16 budget analysis to determine the questions in this case?

17 A. I think that at a farm or a field level, it  
18 makes sense to use a crop model -- a water crop response  
19 model and to be able to pick a shortage in bushels.

20 I'm not certain that that can be aggregated  
21 across all acres or all farms. I think I would want to  
22 do more research and learn more about the  
23 representativeness of the model, how variable the farms  
24 and the acres are within KBID before I can make that  
25 determination.

1 Q. In your report you, in deriving your values  
2 for the Kansas losses, you utilized the same indirect  
3 impact analysis and the same indirect impact factor of  
4 1.4 that the Kansas experts used; is that right?

5 A. Yes, I did.

6 Q. Now, with respect to the acreage that was  
7 considered to be put into irrigated agriculture  
8 production by hypothesizing that the water that was  
9 expected to be available to the fields if Nebraska had  
10 complied with the Compact, with respect to those acres,  
11 many of which are in the Upper KBID area above Lovewell  
12 Reservoir, there is no indication, is there, that those  
13 are any less productive acreages than the other acreages  
14 in the KBID area?

15 A. I have no information that would suggest  
16 that those are less productive.

17 Q. And did you look at the relative yield  
18 figures for above Lovewell versus below Lovewell?

19 A. Are we referring to the IPYsim, the  
20 I-P-Ysim yields?

21 Q. Well, in terms of data about the production  
22 figures for KBID, the upper versus the lower parts.

23 A. Well, there were -- within the Kansas  
24 experts' report, to the best of my recollection, there  
25 were lists for yields in 2005 and 2006 based on their

1 crop water response call.

2 Q. And, in fact, the yields tend to be higher  
3 in the areas of above Lovewell, as opposed to below  
4 Lovewell; isn't that right?

5 A. I'm sorry, sir, I don't recall if that's  
6 true in that report. I need to review it.

7 Q. Now, doing your budget analysis, you relied  
8 upon budgets from northwest Kansas; is that right?

9 A. I believe that for budgets I couldn't find  
10 for the north central District within the Kansas Farm  
11 Management Associations, I did use the northwest Kansas  
12 budgets.

13 Q. Did you make any investigation to determine  
14 whether the northwest Kansas budgets that you used were  
15 comparable and equitable to the KBID area?

16 A. No, sir, I didn't, for instance, visit the  
17 KBID area and research what those costs were and compare  
18 them to the northwest Kansas budgets.

19 Q. For instance -- we discussed this during  
20 your deposition -- the irrigation fuel/pumping charges  
21 that you relied on in your budget analysis figures for  
22 northwest Kansas were -- well, pick 2006, \$73.49 per  
23 acre.

24 Do you know why those costs are so high in  
25 northwest Kansas?

1           A. Sir, I don't know that they are  
2 particularly high or low for northwest Kansas.

3           Q. What is the source of water in northwest  
4 Kansas -- irrigation water?

5           A. To my knowledge, most of that water is from  
6 center pivot irrigation that comes from the Ogallala  
7 aquifer.

8           Q. So it is deep-well pumping in the area of  
9 2- to 300 feet of the lift; is that right?

10          A. I don't have the information to verify  
11 that, sir.

12          Q. But it is Ogallala pumping?

13          A. I believe that most of it is, sir.

14          Q. And do you know what the source of water is  
15 for KBID?

16          A. I understand that there is both sprinkler  
17 and surface irrigation that takes place in KBID. I  
18 don't know from those groundwater sources if that's  
19 aquifer water, alluvial wells or what that happens to  
20 be.

21          Q. Do you know what the irrigation  
22 fuel/pumping costs would be for for a surface water  
23 supply?

24          A. Sir, I don't think I could give you an  
25 estimate of what those are for the KBID area.

1           Q. Given the fact that it's surface water that  
2 we're analyzing here, the absence of surface water and  
3 how much it would have cost to put that water on the  
4 fields, do you think that the -- that it's reasonable to  
5 assume that the per-acre cost is \$73.49 for pumping that  
6 water when it's supplied by irrigation?

7           A. Sir, I don't know if pumps are used in  
8 order to transfer the surface water, the distance that  
9 it might be used or what the source of energy might be,  
10 so I can't verify that.

11          Q. Were you here yesterday for the testimony  
12 of Mr. Ross describing the canals that bring the water  
13 to the KBID area?

14          A. No, I was not.

15          Q. If we assume that it is gravity flow  
16 delivery to the fields in the KBID area, would you  
17 expect the irrigation fuel - pumping charges to be in  
18 the range of \$73 per acre-foot -- per acre?

19          A. It would be difficult for me to verify it.  
20 I believe that for the same irrigated ground where you  
21 irrigated the same way, that those fuel costs would be  
22 less if it were gravity flow versus pumping from an  
23 aquifer that would be a deep water well, but I don't  
24 know what those energy costs are in KBID.

25          Q. And in KBID, at least for the gravity flow

1 delivery of surface water, it's possible that the  
2 irrigation pumping/fuel charges would be zero; isn't  
3 that right?

4 A. Again, sir, I don't have the information to  
5 verify that.

6 Q. But it would be possible, wouldn't it?

7 A. It would be possible, sir.

8 Q. Now, when you applied the northwest Kansas  
9 budget, including numbers like the ones we've just been  
10 discussing, to the budget for irrigating in the area  
11 above Lovewell, what did you determine?

12 A. Could you explain the question, sir.

13 Q. Did you determine whether it would be  
14 economically practical to provide irrigation water to  
15 the Upper KBID area above Lovewell Reservoir?

16 A. I don't believe I addressed that  
17 information. I compared what profits were for  
18 nonirrigated production versus profits for irrigated  
19 production in that area.

20 Q. Let me ask you to turn in your report, I  
21 think that's Colorado Exhibit 2, to page 10.

22 What do you show in Table 6 that is on the  
23 bottom of page 10 and the top of page 11?

24 A. The upper portion of Table 6 is the  
25 nonirrigated production 2005 and the bottom portion of

1 that table is the profits from irrigated production.  
2 The very bottom of the table compares total potential  
3 irrigated profits and the difference between the  
4 irrigated and nonirrigated falls in the sub below that.

5 Q. And what was your ultimate conclusion in  
6 the analysis shown in this table?

7 A. That the dryland cropping was more  
8 profitable than irrigated cropping in that year for that  
9 area under the assumptions of my analysis.

10 Q. And one of the assumptions was that to put  
11 water on the fields would cost, in 2006, over \$70 per  
12 acre in pumping costs?

13 A. I did use the fixed and the variable costs  
14 from those farm budgets, yes.

15 Q. And you determined, then, a negative value  
16 for irrigating the Upper KBID area above Lovewell in  
17 those years?

18 A. The total irrigated crop production would  
19 have been a negative value, yes.

20 Q. Does that result seem reasonable to you?

21 A. Yes.

22 Q. In other words, Nebraska was doing Kansas a  
23 favor by depriving them of the water that would have  
24 been used in that area?

25 A. I'm not sure that is reasonable, sir.

1 Q. Why not?

2 A. I think that it's true that farmers, when  
3 they make decisions about planting, may choose to take  
4 actions that lead to negative profits when they realize  
5 prices can go up later.

6 I also think it's true that farmers for a  
7 short time will produce at negative profits, as long as  
8 they can cover what their variable costs are, even  
9 though they may not be able to service their debt.  
10 That's part of the cycle of ag economics.

11 Q. And how did you use the value that you  
12 determined in your analysis to be a negative \$372,000?

13 A. I treated the economic loss for the above  
14 Lovewell area as zero dollars.

15 Q. Why was that?

16 A. There would not have been economic losses  
17 in this instance.

18 Q. In doing your analysis, did you take into  
19 account the fact that irrigators who do not have water  
20 to put in their -- put on their fields using the  
21 irrigation equipment that they have bought and may be  
22 paying their principal and interest on, they cannot  
23 avoid those payments when they go to dryland farming  
24 because the water is not available?

25 A. No, sir. The farmers' debt service, their

1 ability to make payments was not something that I  
2 considered. I did not have information about what their  
3 debt levels were or what their commitments were to  
4 lenders.

5 Q. But those would be real costs to the  
6 dryland farmer, wouldn't they?

7 A. I think it's a question that deserves  
8 investigation, sir. It's not part of the crop budget,  
9 in the sense that there is a penalty, say, associated  
10 with late payments. There is a land charge within those  
11 budgets. There is also charges for interest on variable  
12 interest, operating service of notes' interest that  
13 would be part of those budgets.

14 I believe the question you're asking me, is  
15 that different for irrigated production versus dryland  
16 production and would that show up in a dryland budget?

17 And, again, I think it would deserve some  
18 investigation.

19 MR. DRAPER: No further questions.

20 ARBITRATOR DREHER: Point of clarification  
21 for my benefit. You were -- Mr. Draper, you were  
22 referring to the irrigation fuel costs of \$73 how much  
23 per acre?

24 MR. DRAPER: \$73.49.

25 ARBITRATOR DREHER: And where -- I don't

1 find that in Dr. Pritchett's report.

2 MR. DRAPER: Your Honor, we have as an  
3 exhibit to Dr. Pritchett's deposition, Exhibit 3 to that  
4 deposition, the sheet that I was referring to, and I  
5 would offer that as an exhibit. And you will see that  
6 in about the middle of that sheet is the figure for 2006  
7 of \$73.49 for irrigation fuel-pumping.

8 ARBITRATOR DREHER: Okay, that would be  
9 helpful.

10 MR. AMPE: I note that would be Exhibit  
11 Kansas 42, I believe.

12 MR. DRAPER: We would number that 43.

13 MR. AMPE: 43? Okay.

14 ARBITRATOR DREHER: Any objection to that  
15 being offered?

16 MR. AMPE: None.

17 MR. BLANKENAU: Mr. Arbitrator, just a  
18 point of cleanup, too. I think we have a number of  
19 exhibits from even yesterday --

20 ARBITRATOR DREHER: We do -- and I didn't  
21 mean to talk over you, excuse me.

22 I have asked the reporter to figure out  
23 where we are in that and find out what has been  
24 introduced and what hasn't, and we should be able to  
25 clean that up later this morning, I think.

1 MR. BLANKENAU: Thank you.

2 ARBITRATOR DREHER: Colorado -- well, does  
3 Nebraska wish to cross?

4 MR. WILMOTH: Mr. Arbitrator, if I can  
5 spend just two minutes with Mr. Ampe and figure out our  
6 responsive case. I want to make sure that we all feel  
7 like we're getting equitable time on that.

8 ARBITRATOR DREHER: Certainly. We'll take  
9 a brief break.

10 (Break was taken from 9:35 to 9:40.)

11 ARBITRATOR DREHER: Mr. Wilmoth, do you  
12 have any questions for this witness?

13 MR. WILMOTH: Just two questions.

14 ARBITRATOR DREHER: Okay.

15 CROSS-EXAMINATION

16 BY MR. WILMOTH:

17 Q. Good morning, Dr. Pritchett. My name is  
18 Tom Wilmoth and we met in the hallway. Thank you for  
19 coming today.

20 If I understood your testimony earlier, you  
21 indicated that the model yield that Kansas projected of  
22 206 bushels was somewhat high; is that correct?

23 A. That's correct.

24 Q. And is that, in fact, about 10 percent  
25 higher than the highest yield that has ever been

1 produced in KBID?

2 A. That's correct.

3 Q. And that highest yield that was produced,  
4 was that in 2005?

5 A. I believe it was in 2005.

6 Q. You also mentioned that -- if I inferred  
7 correctly, I believe you mentioned you had some  
8 difficulty replicating the results that Kansas came to;  
9 is that right?

10 A. My task with Mr. Ampe wasn't really to  
11 replicate those results, but -- so I didn't -- I didn't  
12 attempt to run the same models that they did and get the  
13 same information.

14 Q. Did you have access to those models?

15 A. No, I did not.

16 MR. WILMOTH: Thank you. That's all the  
17 questions I have.

18 ARBITRATOR DREHER: Mr. Ampe, redirect?

19 MR. AMPE: Yes, thank you.

20 Before I begin with that, just for the  
21 record, I move admission of Colorado Exhibits 1, 2 and  
22 3.

23 ARBITRATOR DREHER: Any objection?

24 MR. DRAPER: What was 3?

25 MR. AMPE: That's the addendum that

1 corrected the error in the original report resulting in  
2 the higher estimated cost.

3 MR. DRAPER: Okay.

4 MR. AMPE: I thought that explanation would  
5 sway you.

6 MR. WILMOTH: We have no objection.

7 ARBITRATOR DREHER: They're admitted. And  
8 if I could have an extra copy of Exhibit 3.

9 MR. AMPE: Second copy?

10 ARBITRATOR DREHER: Yes.

11 MR. AMPE: Of course.

12 (WHEREUPON, Colorado Exhibits 1, 2 and 3  
13 were admitted into evidence.)

14 REDIRECT EXAMINATION

15 BY MR. AMPE:

16 Q. Dr. Pritchett, there were a lot of  
17 questions about what you did or did not look into.

18 How long did you have to review the Kansas  
19 report, make whatever investigation you could and supply  
20 me a written report?

21 A. About three weeks.

22 Q. Mr. Draper asked you about the difference  
23 in productivity between above Lovewell and below  
24 Lovewell. Do you have any data at all about the  
25 relative productivity between above Lovewell and below

1 Lovewell?

2 A. No, I don't.

3 Q. And we discussed your use of some data from  
4 northwest Kansas as applied to central Kansas.

5 In a perfect world, would you have  
6 preferred to either get data from central Kansas or at  
7 least investigate the applicability of simply taking  
8 data from one region to another?

9 A. Yes, I would.

10 Q. And do you think that should always be done  
11 when moving data from one region to another in the  
12 context of economics?

13 A. Yes.

14 MR. AMPE: No further questions.

15 ARBITRATOR DREHER: All right.

16 MR. AMPE: You're free to go.

17 MR. WILMOTH: If it's all right with you,  
18 Mr. Arbitrator, Nebraska is prepared to delve into the  
19 next witness.

20 ARBITRATOR DREHER: Okay. We've had a  
21 couple of short breaks already, but we're approaching  
22 the 10 o'clock hour. What is the thought? Do we need a  
23 15-minute break? And if so, is this a good time to do  
24 that?

25 MR. WILMOTH: We're amenable to it. We

1 don't need it.

2 ARBITRATOR DREHER: The one advantage, from  
3 my perspective, is we're still trying to sort out  
4 Nebraska exhibits, and I would like to take 15 minutes  
5 now and see if we can't get that done.

6 (Break was taken from 9:37 to 9:50.)

7 ARBITRATOR DREHER: Mr. Wilmoth, please  
8 proceed.

9 MR. WILMOTH: Well, as a preliminary  
10 matter, I believe we need to offer some exhibits.

11 Nebraska, at this point, would offer  
12 exhibits, which I believe are marked Nebraska Exhibits 1  
13 through 4 and 9.

14 ARBITRATOR DREHER: Any objection to that?

15 MR. DRAPER: Could you just identify which  
16 those are, 1 through 4 and 9?

17 ARBITRATOR DREHER: Certainly. Exhibit 1  
18 is a letter from the Kansas Water Office to Jack Wergin  
19 of the Bureau of Reclamation, dated April 18, 2005  
20 dealing with the drought assistance.

21 Nebraska Exhibit 2 is a letter from David  
22 Barfield to Dick Wolfe, and I believe it has to do with  
23 the initial quantification of groundwater from wells  
24 being authorized on 13,912 acres. And that was, I  
25 believe, corrected by your witness.

1 MR. DRAPER: And the date on that letter,  
2 just for the record?

3 ARBITRATOR DREHER: The date is April 2,  
4 2008.

5 Exhibit 3 is a letter from the Kansas  
6 Bostwick Irrigation District signed by Kenny Nelson to  
7 the area manager for the Bureau of Reclamation, dated  
8 January 31, 2006. It has to do with Bureau of  
9 Reclamation crop and water data.

10 MR. WILMOTH: Mr. Arbitrator, with respect  
11 to Exhibit 4 and 9, for the record, we've agreed to just  
12 offer the pages cited --

13 ARBITRATOR DREHER: The pages cited, right.

14 MR. WILMOTH: -- within the witness'  
15 testimony.

16 ARBITRATOR DREHER: Exhibit 4 is the pages  
17 cited from the deposition of Terry Kastens, and Exhibit  
18 9 is the pages cited from the deposition of John  
19 Leatherman.

20 MR. DRAPER: Very good. We have no  
21 objection.

22 ARBITRATOR DREHER: Colorado?

23 MR. AMPE: No objection.

24 ARBITRATOR DREHER: Hearing no objection,  
25 Exhibits 1 through 4 and 9 are admitted.

1 (WHEREUPON, Nebraska Exhibits 1, 2, 3, 4  
2 and 9 were admitted into evidence.)

3 MR. WILMOTH: And at this point  
4 Mr. Arbitrator, we would like to call Dr. David Sunding.

5 DAVID SUNDING,  
6 having been first duly sworn, was examined and  
7 testified as follows:

8 DIRECT EXAMINATION

9 BY MR. WILMOTH:

10 Q. Good morning, Dr. Sunding, how are you  
11 today?

12 A. Good morning. Just fine.

13 Q. Very good. A little colder than  
14 California?

15 A. Yes.

16 Q. Dr. Sunding, you have in front of you, I  
17 believe to the right, a copy of Nebraska's Exhibit List  
18 and copies of exhibits there?

19 A. Yes, I do.

20 Q. Could you please look at Tab No. 5. And is  
21 that your curriculum vitae, sir?

22 A. Yes, it is.

23 Q. And would you please look at Nebraska  
24 Exhibit No. 6 in that binder?

25 A. Yes.

1 Q. Is that a report that you prepared relative  
2 to the economic impact of losses in Kansas?

3 A. Yes, it is.

4 Q. And that was prepared for purposes of this  
5 litigation?

6 A. That's correct.

7 Q. Before we get too far down into that  
8 report, could you please state your current occupation.

9 A. Sure. I'm a Professor in the Department of  
10 Agricultural and Resource Economics at UC Berkeley. I'm  
11 also the co-director of the Berkeley Water Center, which  
12 is an interdisciplinary research center at Berkeley.

13 Q. What does that generally involve, the Water  
14 Center?

15 A. The Water Center was set up to sponsor  
16 large interdisciplinary projects and water resources,  
17 mainly economics and engineering.

18 Q. And your CV is just a little shorter than  
19 the Bible, so I would just like to ask you briefly to  
20 highlight some of your relevant experience.

21 A. Sure.

22 Probably most relevant is my current  
23 position as a professor at Berkeley. I teach graduate  
24 and undergraduate courses in natural resource economics  
25 and environmental economics, including the economics of

1 water resources and agricultural water use.

2 Prior to my position at Berkeley, I was a  
3 senior economist at President Clinton's Council of  
4 Economic Advisers, where I had responsibility for  
5 agricultural, natural resource and energy policy.

6 Q. Very good.

7 Your report essentially consists of three  
8 components; is that correct? Basically an analysis of  
9 the Kansas damages assessment, your own analysis of that  
10 and then an opinion about indirect impacts?

11 A. Yes, that's correct. I have -- I think you  
12 described it accurately -- three, what I would  
13 characterize as top-level opinions. And then underneath  
14 that is a whole series of supporting and interlocking  
15 opinions.

16 Q. Very good.

17 And what I would like to do with you today  
18 is just walk through each of those in time.

19 First and foremost, could you please  
20 explain for the Arbitrator, recognizing that he has  
21 obviously read this report, give us your general sense  
22 of your Kansas analysis and your views about the  
23 validity of that analysis.

24 ARBITRATOR DREHER: Mr. Wilmoth, if I could  
25 interrupt just a second.

1 MR. WILMOTH: Yes.

2 ARBITRATOR DREHER: I meant to disclose  
3 that Dr. Sunding and I were briefly on a team proposing  
4 to do some groundwater work in Nebraska. We were not  
5 the successful team, and so we never did do any work  
6 together; but we were on that team, and I just wanted to  
7 disclose that.

8 There is no conflict, from my perspective,  
9 and I wanted to disclose it in case there was some  
10 objection.

11 MR. DRAPER: We appreciate that, Your  
12 Honor. When was that team active?

13 ARBITRATOR DREHER: I think Dr. Sunding and  
14 I were together maybe a day and a half in -- that would  
15 have been less than a day and a half; it would have been  
16 like an evening and a half a day the following half day  
17 in 2008.

18 THE WITNESS: I think it was -- it was  
19 about a year ago, something like that.

20 ARBITRATOR DREHER: The work that we were  
21 proposing to do had no relationship with the Republican  
22 River Basin in any manner.

23 MR. DRAPER: Was that a proposal to Kansas  
24 or Nebraska state government?

25 ARBITRATOR DREHER: No. It was a proposal

1 to one or more of the NRDs in Nebraska. It had to do  
2 with developing -- further developing of groundwater  
3 model that presumably would have been used, to some  
4 extent, in either managing the groundwater withdrawals  
5 in the NRD, or potentially used by the State and the  
6 NRDs in managing or administering groundwater.

7 But again, it was in the Platte River  
8 Basin. It was not in the Republican River Basin.

9 MR. DRAPER: Thank you for that discussion.  
10 We have no objection.

11 ARBITRATOR DREHER: Okay, thank you.

12 Q. (BY MR. WILMOTH) Dr. Sunding, just for the  
13 record, based on Mr. Dreher's description of those  
14 events, is there any reason for you to believe that you  
15 have a conflict of interest in this proceeding?

16 A. No, not at all.

17 Q. Getting back to where we started, could you  
18 please provide your general overview and perspective on  
19 the Kansas economic analysis as reflected in your  
20 report, Exhibit 6.

21 A. Sure.

22 Again, what I would characterize as a  
23 top-level opinion or a summary opinion is that the  
24 Kansas model, which was described by Dr. Kastens  
25 yesterday, with respect to direct impacts is not

1 sufficiently reliable to be an adequate basis for a  
2 damage calculation.

3 Q. And why is that?

4 A. Well, I would -- I would have several  
5 reasons. You know, frankly, one is sufficient, but I  
6 have five or six.

7 First of all, I think it's basically an  
8 improper use. What they have done in this instance is  
9 an improper use of a crop budget model. A model that  
10 was intended to make recommendations to farmers is now  
11 being used for policy analysis or for damage  
12 calculation, more accurately. And that, I think, is  
13 improper.

14 Second, the model relies on what I would  
15 characterize as an ad hoc calibration procedure, which  
16 has the effect of distorting the results.

17 Third, the model is inconsistent with basic  
18 economic theory of agricultural water use in a number of  
19 important respects.

20 Fourth, the model relies on an array of  
21 unsubstantiated assumptions which, on balance, have the  
22 effect of increasing -- increasing damages.

23 And fifth, there are a number of important  
24 key assumptions in the report that, upon further  
25 inspection, are inconsistent with actual behavior in the

1 Republican River Basin. KBID, in particular.

2 So those would be five -- five general  
3 reasons that I think their analysis is insufficient.

4 MR. WILMOTH: Mr. Arbitrator, any time that  
5 you would like to interrupt, please feel free to do so.

6 Q (BY MR. WILMOTH) But, Dr. Sunding, would  
7 you like to walk through very briefly each of those five  
8 issues.

9 A. Sure.

10 The first issue is my opinion that what  
11 Dr. Kastens and company have done is to make an improper  
12 use of a crop budget model.

13 I think even -- even he testified that the  
14 model, in its normal application, is intended to make  
15 recommendations to farmers about input application,  
16 application of nitrogen fertilizer, now we have  
17 phosphorus in the model and water being the three main  
18 inputs.

19 Q. And for the record, you were present during  
20 Dr. Kastens' deposition, as well as that of  
21 Dr. Leatherman?

22 A. No. I wasn't present for either.

23 Q. I'm sorry --

24 A. I reviewed.

25 Q. My mistake. Not the depositions.

1           You were present yesterday and today for  
2 their testimony?

3           A. Yes, I was; that's correct.

4           Q. Thank you. My mistake, thank you.

5           A. Yes.

6           Q. Please continue.

7           A. Sure.

8           So, again, the -- I don't think there is  
9 dispute about the fact that the model was intended to  
10 make recommendations to farmers about how they should be  
11 behaving. And, in fact, I'll note that in its normal  
12 application, the IPYsim Model isn't even calibrated to  
13 replicate reality.

14           It's calibrated so that the recommendations  
15 of Kansas State's agronomists turn out to be  
16 economically optimal.

17           So a good way to view the IPYsim Model is  
18 as part of a larger package. They're agronomic  
19 recommendations and then an economic framework that  
20 supports that, but the model is intended to be sort of  
21 self-referential or internally consistent.

22           So that the way, you know, Dr. Kastens and  
23 others calibrate the model is, again, so that the  
24 recommendations of the Kansas State agronomists with  
25 respect to, say, application of nitrogen fertilizer

1 turns out to be economically optimal or profit  
2 maximizing; but there is no attempt made in normal  
3 application to have the model replicate reality.

4 Q. And you had a second issue, I believe?

5 A. Second issue with respect to the improper  
6 use of the crop budget model, yes.

7 There is not any evidence that I'm aware  
8 of -- you know, presentation in Hastings,  
9 notwithstanding -- that farmers actually use the advice  
10 of the model or that it accurately predicts behavior. I  
11 think that work simply hasn't been done, and -- at least  
12 not that I'm aware of. It certainly doesn't show up in  
13 the record anywhere.

14 And I, you know, go a little further and  
15 add that that is a normal situation, in my experience,  
16 in crop-budgeting efforts. Every land-grant university  
17 in the country has a group of people, sometimes just  
18 one, who put out crop budgets. And they're intended,  
19 again, to be sort of the informational devices. Farmers  
20 can look at it and compare their costs line by line with  
21 what is in the budget. But in my experience, crop  
22 budgets can be quite inaccurate.

23 I think that's sort of commonly known in  
24 the agricultural economics community. It doesn't mean  
25 they're totally useless, but they can be quite

1 inaccurate. And I don't think the extra step has been  
2 taken here to correlate the predictions of the crop  
3 budget model with how farmers are actually behaving.

4 Q. And does that summarize your views on the  
5 use of that model?

6 A. In a general way, yes.

7 Q. And the next point that you referenced?

8 A. The next point is with respect to the  
9 calibration procedure, and I also heard Dr. Pritchett's  
10 testimony this morning. I think he touched on some of  
11 the same issues that I would like to get into now.

12 This is -- I will, you know, tell everybody  
13 upfront, it's probably the most technical part of what I  
14 have to say today.

15 Q. Do you need to utilize the white board for  
16 that?

17 A. I do. I do. It would help me a lot, and  
18 I, frankly, think it would help the Arbitrator  
19 understand some of these technical issues.

20 MR. WILMOTH: Would that be acceptable,  
21 Mr. Arbitrator?

22 ARBITRATOR DREHER: Anything to help me  
23 understand is obviously acceptable.

24 MR. WILMOTH: You and me both.

25 Q (BY MR. WILMOTH) Feel free if you would

1 like to at any time approach the board.

2 A. Sure.

3 At a certain point in here I'm going to  
4 draw a couple of pictures that I think help explain,  
5 first of all, what the Kansas State economist did and  
6 then some of the issues that might result from that.

7 Should I just start on that?

8 Q. Absolutely, please.

9 A. Yes. I feel pretty comfortable up there  
10 drawing, sort of an occupational hazard.

11 So there really -- I think there are  
12 three -- three pictures I could draw that would help you  
13 understand what happened here with respect to  
14 calibration.

15 ARBITRATOR DREHER: Before you start, are  
16 you going to be okay with this?

17 (Discussion off the record for reporter's  
18 benefit of hearing witness at easel.)

19 A. So as Dr. Kastens testified yesterday, the  
20 basis of the model is some research by Stone, who is a  
21 professor of agronomy, I believe, or an extension  
22 agronomist at Kansas State. And he went out to  
23 calibrate what we call a crop water production function  
24 for a number of different crops. And the basics of the  
25 model, I think, are pretty well accepted.

1           If you think about a relationship between  
2 yield, which I will call  $y$  and start with just one  
3 input: Water. What the crop water production function  
4 says is what Dr. Kastens described yesterday, that there  
5 is -- I think he called it a -- I would call it a  
6 quadratic. I think he called it a curvilinear, is that  
7 right? -- relationship between water application and  
8 yield where, in a certain region, water application, the  
9 more water you apply, the more yield you get to reach a  
10 plateau. And then beyond that, more water application  
11 can be actually detrimental.

12           Now, economically, the only interesting  
13 region is not this one to the right of the hill, but to  
14 the left of the hill. There is no reason you would pay  
15 for water that lowered your yield. So economists  
16 generally ignore what is over here.

17           So what Stone did was to go out and  
18 estimate what this relationship looked like based  
19 primarily on data from western Kansas and did that for a  
20 suite of crops, corn being one that I will talk about a  
21 lot.

22           So that's the biology. Remember,  
23 agricultural is a biological process, after all. And  
24 this relationship is describing a biological or an  
25 agronomic relationship between water in and yield out.

1           So now where the economics comes in,  
2 biologically, a farmer can choose between operating at  
3 all of these different points, but there is only one  
4 that will maximize profit. And the point that maximizes  
5 profit is where you get a proper relationship between  
6 the cost of the input going in and the value of the  
7 extra yield coming out.

8           So the way we describe that graphically is  
9 in terms of a ratio between prices, crop prices, the  
10 price of yield and the cost of water -- the variable  
11 cost of water is the cost of the input.

12           So the way economists would usually think  
13 about this is you have a price ratio -- the price --  
14 output and input price combinations up in this region  
15 give you higher profit, because you have higher price --  
16 higher price of output, lower price of input.  
17 Combinations down in this region, you get a lower  
18 profit.

19           So you want to find -- this ratio is  
20 determined by whatever prices happen to be on the  
21 market. And you want to find the point on this  
22 biological relationship that gets you as far to the  
23 northwest as possible.

24           So this is the point of maximum profit.  
25 And that's the basic economic theory that underlies the

1 IPYsim Model. If input prices change, if the price of  
2 crop output goes up, this ratio is going to rotate like  
3 this; you will apply more water and have more output.  
4 If the price of water goes up, this ratio is going to  
5 rotate back, and you will end up with a lower  
6 profit-maximizing point down here.

7 So this is the basic theory.

8 Q. For the record, we'll mark that as Nebraska  
9 Exhibit 10.

10 A. So now let me draw the same thing over  
11 again.

12 So this is the crop water production  
13 function that Stone developed, okay, from his paper.

14 Now, what the IPYsim Model tries to do is  
15 say, Okay, we have this, what they call a trend yield,  
16 which is up here; it's an exogenous parameter into the  
17 model. So they assume, all right, we want it to be  
18 economically optimal that farmers produce this amount of  
19 output.

20 Okay. Well, you have got a problem.

21 There is no point on this function -- this  
22 biological function that will give you that trend yield.

23 So what do we do about that?

24 The assumptions are the trend yield is  
25 provided by whoever is using this crop budget, output

1 price is exogenous, the price of yield is exogenous.

2 I'm sorry, exogenous means determined outside the model.

3 The price of water per unit is exogenous. So we know

4 this ratio has to look something like this. Okay?

5 So we know we want to hit this and we know

6 that the ratio between input and output prices is going

7 to be something like that.

8 So what they do in the model is they take

9 this biological relationship and tweak it or calibrate

10 it so that you produce optimally this amount of output

11 with this input price ratio.

12 And so I don't know if you've ever used a

13 graphing program, you know, say in Excel. And the way

14 they do that is by taking this point, which they call

15 the yield goal, they take that point and they grab it

16 and move it up or down. And they move it up or down in

17 such a way that they hit this trend yield at this price

18 ratio. And so let's just say it turns out to be here.

19 And now you're going to put my graphing skills to the

20 test. Okay.

21 So this would be the optimum predicted by

22 the IPYsim Model. You hit exactly this trend yield at

23 these price ratios, but the biology is distorted

24 entirely to hit this point. And that, to me, goes

25 beyond calibration.

1           This is a physical relationship, but it's  
2     tweaked to produce a particular economic result. And  
3     "tweaked" I understand is not a scientific term, but I  
4     think you get the point.

5           ARBITRATOR DREHER: Before you go on, let  
6     me ask a question.

7           As I recall from yesterday's testimony and  
8     reading Kansas' expert report, the trend yield was like  
9     169 bushels per acre.

10          THE WITNESS: It's something in that range.  
11     I think that's correct.

12          ARBITRATOR DREHER: And I mean, I'm  
13     struggling with the use of terms like "optimal" when we  
14     also have evidence that the actual yield in 2005 was on  
15     the order of 187 bushels.

16          How can the maximum -- help me understand  
17     how the maximum can be more than the optimal.

18          THE WITNESS: Well, I think you're,  
19     frankly, pointing out -- this is where I was leading. I  
20     think this is a problem that has not been adequately  
21     addressed in the reports.

22          ARBITRATOR DREHER: I see.

23          THE WITNESS: Because, in fact, there is  
24     another step beyond this to deal with exactly the issue  
25     that you just raised. So I think I will leave this

1 graph -- I will leave this graph here.

2 Q. (BY MR. WILMOTH) For the record, I would  
3 mark that as Nebraska Exhibit 11?

4 A. So now the next step in what they describe  
5 as their calibration procedure, we have Stone down here.  
6 We have the quote/unquote, calibrated IPYsim to hit  
7 their assumptions about the 2005 trend yield.

8 Well, as you just pointed out, actual yield  
9 was somewhere up here, again off the front tier.

10 So how do we deal with that?

11 And the way they deal with that is simply  
12 by taking the ratio between these two points and  
13 applying it up here. So whatever this vertical distance  
14 is, they take the actual observed yield and boost it up  
15 by that amount. That was what Dr. Pritchett referred to  
16 as this boot-trapping procedure.

17 So this is the 187. And this is, I  
18 believe, 206, which is, as Dr. Kastens described,  
19 10 percent higher than the highest observed yield ever;  
20 and I think, frankly, lacking credibility.

21 So that's the second step in their  
22 calibration procedure, which is really kind of a  
23 postprocessing economic kind of analysis.

24 MR. WILMOTH: And for the record, I would  
25 mark that as Nebraska Exhibit 13 -- I'm sorry, I think

1 it might have been Exhibit 12, excuse me.

2 A. Here is another problem with the way they  
3 have done the calibration.

4 For a given level of water use, say, that  
5 is, you know, close to an observed level of water use,  
6 because of the way they take this function and pull it  
7 up, what they have done is change the slope.

8 According to Stone, say, at this level of  
9 water use, the extra yield you would get from one more  
10 unit of yield application would be this. Here in their  
11 calibrated model, it's higher.

12 Q (BY MR. WILMOTH) Dr. Sunding, excuse me,  
13 for the record, you are now working on Nebraska Exhibit  
14 11?

15 A. Yes, I put back one, that's correct.

16 Now, why does that matter? That matters  
17 because the heart of their valuation analysis or their  
18 damage analysis is to answer the question: What would  
19 have been the extra yield and, hence, the extra profit  
20 earned from a few extra units of water, few extra inches  
21 of water per acre?

22 So this slope matters a lot for their  
23 damage analysis. It's not derived from Stone. It is, I  
24 would submit, totally made up to fit this particular  
25 trend yield and, therefore, I think inadequate as a

1 basis for a damage calculation.

2 Q. Dr. Sunding, you mentioned a couple of  
3 other points that you wanted to cover. We do have some  
4 time limitations today. I just want to make sure that  
5 we get through those things.

6 Could you briefly highlight the other  
7 criticisms that you had with regard to the Kansas  
8 analysis, if any, in very brief form --

9 A. Yes.

10 Q. -- remembering that Mr. Dreher has read  
11 this material.

12 A. Yes. And I appreciate the opportunity to  
13 give a little chalk-talk there.

14 The third reason I think their analysis is  
15 not adequate is that there are features of it that are  
16 inconsistent with received economic theory with respect  
17 to agricultural water use.

18 Importantly, it does not consider  
19 variations in soil quality across the area of KBID.  
20 There is one level of soil quality that's assumed for  
21 the whole -- for the whole region.

22 Another issue I have is that Kansas assumes  
23 that whatever water is available is applied equally to  
24 all crops, and I think that is not economically  
25 rational. It also assumes similarly that farmers don't

1 ration available water by curtailing irrigation on the  
2 least-productive lands.

3 Another point I would make is that the  
4 IPYsim Model fails to consider interdependence between  
5 inputs; in other words, water is treated independently,  
6 nitrogen is treated independently, phosphorus is treated  
7 independently, even though there is a mountain of  
8 production literature in agricultural economics that  
9 describes the interdependence of crop inputs.

10 And this is something that I think is, you  
11 know, to give them some credit, acknowledged by the  
12 Kansas economists.

13 There is also, as we were discussing  
14 yesterday, no consideration of the timing of irrigation  
15 water, even though Stone disaggregated the crop water  
16 requirements by growth period and it's well known in the  
17 economists literature the timing does matter.

18 Q. Obviously, once you had had an opportunity  
19 to review some of this material, you, I believe,  
20 formulated some opinions about how you might go about  
21 this analysis; is that correct?

22 A. Sure.

23 Again, I -- you know, my approach to this  
24 is to start with first principles. And first principles  
25 would suggest that there is a market for access to

1 irrigation in north central Kansas. And we have some  
2 information on what farmers are willing to pay and what  
3 they actually have to pay in the market for access to  
4 irrigation. And those numbers, which are based, by the  
5 way, on expected conditions, because land prices are set  
6 before actual conditions are known in any given year,  
7 those prices are inconsistent with the very large  
8 damages that come out of the Kansas analysis.

9 Q. What is the source of some of that  
10 information?

11 A. Actually, the source of some of that is  
12 other publications that are produced by Dr. Kastens and  
13 company. Dr. Dhuyvetter, I believe, is one of the  
14 co-authors of those.

15 Q. And how did you essentially apply that  
16 information, in a nutshell?

17 A. The basic way to do it is to look at the  
18 difference in cash rents, so farmers have to pay a  
19 certain amount of their money on the market to rent land  
20 that is not irrigated and they have to pay a different,  
21 higher amount of money to rent land that is irrigated.  
22 And the difference between those two tells you something  
23 about how much farmers value access to irrigation water.

24 I mean, remember, just as a general point  
25 we're about -- in this region about -- in KBID, not

1 right now -- in KBID, we're about, you know, 100 miles  
2 east of John Wesley Powell's famous 100th meridian,  
3 which demarcates the arid west from the relatively humid  
4 and high precipitation east. The 100th meridian is an  
5 important demarcation people have known for over a  
6 century.

7           So it stands to reason that you would have  
8 small differences in cash rents between irrigated and  
9 nonirrigated land, because this is an area where,  
10 generally speaking, irrigation is known to be  
11 marginal -- of marginal importance.

12           Q. Did you hear Dr. Kastens yesterday imply,  
13 or perhaps state, that it wasn't really appropriate to  
14 utilize the land rents to infer the value of irrigation  
15 water? Do you recall that statement?

16           A. I did.

17           Q. And do you have an opinion about that?

18           A. I think he is incorrect about that.

19           Q. Why so?

20           A. Well, the technique of using land prices to  
21 measure -- you know, to measure factors like the value  
22 of access to irrigation water is absolutely standard  
23 practice in economics. And I brought it up in my report  
24 because I didn't see any reference whatsoever to land  
25 price differences in their analysis at all, which struck

1 me, because, frankly, that would be one of the first  
2 things I would look at.

3 Q. Is that because those values are available  
4 and they reflect some real-world transactions?

5 A. Yes, that's correct. Economists have a  
6 strong bias toward looking at actual data, as opposed to  
7 data that comes from a researcher-produced model.

8 And remember here, we're looking at a time  
9 period in the past. We have observations on important  
10 parameters before, during and after 2005-2006.

11 One of the main reasons economists build  
12 models is to predict the future because, by definition,  
13 there is no data available on the future.

14 And just as a general matter, I was struck  
15 by how little reference there was in the Kansas analysis  
16 to actual market data, as opposed to this, you know,  
17 really very complicated theoretical model.

18 Q. And applying your methodology, what figures  
19 did you come up with in the way of damages?

20 A. Sure.

21 In the range of -- and I will be rough  
22 here. In the range of, say, 400,000 to 1.2 million for  
23 direct damages.

24 Q. Very good.

25 And did that depend on the volume of water

1 that was actually --

2 A. Yes, it did.

3 Q. -- lost?

4 A. Sorry to talk over you.

5 Yes. That's bracketed by different  
6 hydrologic assumptions. So, you know, using Book's  
7 numbers to get the high end and then using some numbers  
8 that I think you'll be introducing later on to get the  
9 lower end.

10 Q. And those are from Mr. Groff?

11 A. Yes. The Flatwater Group; that's correct.

12 Q. And just briefly to conclude with this  
13 line, I believe you have an opinion expressed in your  
14 report about the use of indirect impacts and the concept  
15 in this type of proceeding.

16 Could you summarize that view, please.

17 A. I -- not to put too fine a point on it, I  
18 think it is wholly inappropriate to be looking at  
19 indirect damages.

20 Q. Why is that, generally?

21 A. Well, the obvious point is that if Nebraska  
22 makes a cash payment to Kansas to compensate for direct  
23 losses, that payment will generate its own indirect  
24 effects. It will ripple throughout the economy in very  
25 much the same way that the direct losses did, and that

1 was not accounted for at all in Kansas' analysis.

2 Further, the magnitude of the indirect  
3 benefits that results from Nebraska's payment, whatever  
4 that may be, depends, as we heard this morning, on how  
5 Kansas chooses to spend the money.

6 And that puts Nebraska, I would argue, in  
7 really in impermissibly unfair position of being wholly  
8 dependent on Kansas' behavior with respect to the size  
9 of its damage payment.

10 If Kansas took whatever money comes from  
11 Nebraska and put it in a treasure chest in front of the  
12 state house, it wouldn't create any indirect benefits;  
13 and, therefore, Nebraska could, in theory, have to pay  
14 even more.

15 That -- that is just unfair, I think.

16 MR. WILMOTH: Thank you very much,  
17 Dr. Sunding.

18 We would turn the witness over to any  
19 questions you might have, or Kansas.

20 ARBITRATOR DREHER: I do have several.

21 First off, let me start with this latter  
22 point on the indirect damages.

23 I understand that if Nebraska makes a  
24 payment, or is required to make a payment to Kansas,  
25 that there will be some indirect results from that

1 payment, but they're going to occur much later in time  
2 than the indirect impacts occur.

3 THE WITNESS: That's correct.

4 ARBITRATOR DREHER: And theoretically --  
5 well, maybe not theoretically.

6 Hypothetically, you could have someone that  
7 suffers -- someone or an entity that suffers significant  
8 loss from these indirect impacts and by the time the  
9 indirect benefits come from whatever payment Nebraska is  
10 required to make, they may or may not even be in  
11 business.

12 THE WITNESS: Yes. There are two points  
13 there that I would like to unpack, if I could.

14 The first point with respect to the timing  
15 issue, that is correct, the damages occurred in  
16 2005-2006. Assuming there were damages, whatever  
17 payment would come from Nebraska to Kansas is later in  
18 time.

19 So there is that issue. But that, I think,  
20 is fairly easy to fix.

21 If the direct losses are inflated by an  
22 appropriate interest rate, you take care of the timing  
23 issue. You don't have to look at indirect impacts at  
24 all to deal with that.

25 The second point that I think was in your

1 question is a good one.

2 It is possible that whoever was harmed  
3 indirectly by the lost profits is not exactly the same  
4 person who is benefited by Nebraska's payment to Kansas  
5 but I think that has never been the standard here.

6 The standard has been, as Dr. Leatherman  
7 testified this morning, Kansas state income, income of  
8 everybody together. So if Person X is harmed indirectly  
9 and Person Y is benefited indirectly and just supposing,  
10 hypothetically, those two things cancel out, then they  
11 cancel out. But I think nobody on our side, certainly  
12 I'm not arguing that there wouldn't be some potential  
13 redistribution effects.

14 ARBITRATOR DREHER: I don't completely  
15 understand how interest payments would necessarily  
16 take -- I mean, interest payments just deal with the  
17 difference in time between when the damage occurred  
18 versus when the payment is made. They don't really  
19 account for any sort of difference in timing between --  
20 or difference in the entity that benefits from the  
21 payment versus the entity that suffered from the  
22 indirect impact.

23 THE WITNESS: That's correct, and that was  
24 why I answered the way I did. I wanted to separate  
25 those two issues, acknowledging the possibility of some

1 redistribution.

2 But the question of timing purely, I think  
3 can be handled by, you know, an appropriate essentially  
4 prejudgment rate of interest.

5 ARBITRATOR DREHER: My second question goes  
6 to this assumption that the difference in rental rates  
7 for irrigated versus nonirrigated cropland is a measure  
8 of the lost profit.

9 On one level, that makes sense to me. On  
10 another level, it doesn't, because -- and let me explain  
11 it in maybe a little more simple terms.

12 If I have to invest \$100 to make \$100, why  
13 bother? Now, if I can invest \$100 to make \$200, I'll  
14 look at that. So when you look at these difference in  
15 land rental rates, it seems to me that a farmer would be  
16 willing to pay more for irrigated land on the  
17 expectation that he is going to make some amount in  
18 addition to what he has to pay. And I didn't see that  
19 in your analysis.

20 THE WITNESS: Yes, understood. And this  
21 is -- you know, when I teach agricultural economics,  
22 this is a subject that we spend a lot of time on,  
23 because, for example, the benefits of farm programs, for  
24 example, have been shown to ultimately result -- or be  
25 enjoyed by landowners.

1           You know, if there is a farm subsidy  
2 program that increases farm profitability, land rents go  
3 up as a result and landowners are able to capture -- you  
4 know, capture some of those proceeds.

5           So this is, you know, I think a pretty well  
6 established principle in agricultural economics.

7           A distinction I would make here is the  
8 equilibrium is determined in the land market at the  
9 margin. So at the margin, the last farmer in is willing  
10 to pay the market price. He's just indifferent between  
11 paying the market price for irrigated land versus  
12 nonirrigated land.

13           And in a proceeding like this, I think  
14 that's the margin that we should be operating on at, you  
15 know, what we would call the extensive margin, as  
16 opposed to the inframarginal values.

17           And remember, the supply of land is fixed.  
18 That's one thing that makes land a really unique asset.  
19 So think about it in, I hope, not overly technical  
20 terms.

21           The supply curve of land is vertical, and  
22 then there is a demand curve that intersects with that.  
23 So the changes in demand between irrigated and  
24 nonirrigated production should get reflected in the  
25 market price of irrigated versus nonirrigated land.

1                   ARBITRATOR DREHER:  But even the farmer  
2   that came in last, I mean, he has an expectation that he  
3   is going to make more than the incremental difference  
4   between the land rates?

5                   THE WITNESS:  It should be -- at the  
6   margin, it should be just equal.

7                   ARBITRATOR DREHER:  I see.

8                   THE WITNESS:  That's the basic theory of  
9   land markets, and it's the basic theory of markets for  
10  tennis shoes and semiconductors and everything else.  
11  Supply and demand, where they intersect is, by  
12  definition, where the marginal values are the same.

13                  ARBITRATOR DREHER:  But when you look at  
14  actual land rentals, you don't know if they're at the  
15  margin or not, do you?

16                  THE WITNESS:  That's possible, sure.  There  
17  could be farmers who have, say, an especial amount of --  
18  maybe they went to Kansas State and got a master's  
19  degree and have a great amount of human capital and are  
20  able to earn some extra profits.  They might earn  
21  profits that are beyond what are reflected here.  That's  
22  definitely possible, but they would not be the ones at  
23  the margin.

24                  ARBITRATOR DREHER:  Let me change gears  
25  here on you --

1 THE WITNESS: If I --

2 ARBITRATOR DREHER: -- for a moment.

3 THE WITNESS: If I -- I didn't mean to talk  
4 over you, but if I could just say one more thing in  
5 answer to your question.

6 Technique in using land markets to value  
7 features of land like access to irrigation water, as I  
8 said in my written testimony, is absolutely fundamental  
9 to environmental and natural resource economics these  
10 days.

11 It's -- there are literally hundreds of  
12 papers that do that, so that is not a technique I made  
13 up. It's a mainstream way of looking at things.

14 ARBITRATOR DREHER: Okay. My last  
15 question, at least for now, is: It seems to me that  
16 there may be -- and I will emphasize the word "may" --  
17 be a piece of market data that I haven't heard  
18 presented, I haven't seen it in any of the reports; and  
19 that is, the amount that the State of the Nebraska paid  
20 to the Nebraska Bostwick Irrigation District in 2006 for  
21 the water that they then made available to the Kansas  
22 Bostwick Irrigation District in 2006. Do you know what  
23 that amount was?

24 THE WITNESS: I do not, no.

25 ARBITRATOR DREHER: Well, I have to ask

1 you, because you're Nebraska's witness --

2 THE WITNESS: Sure.

3 ARBITRATOR DREHER: -- but that is a piece  
4 of information that I would request that I be provided,  
5 and, you know, I presume that that's public information;  
6 I don't know why it would be protected. But I would  
7 like to see the contract, if there is such a thing,  
8 between the State of the Nebraska and the Nebraska  
9 Bostwick Irrigation District.

10 MR. WILMOTH: Perhaps one thing we could  
11 do, because Dr. Sunding hasn't looked at that, and I'm  
12 not sure Dr. Sunding has an opinion on why that would  
13 even be relevant for the analysis.

14 But the easiest thing to do, I'm sure we  
15 can get the information, but would it be acceptable if  
16 we produced it and authenticated it essentially during a  
17 different phase of this, because we do have Director  
18 Dinnigan with us, and he could probably be an  
19 appropriate person who could do that and then you could  
20 utilize as you saw necessary. But at least that way it  
21 would be properly offered.

22 ARBITRATOR DREHER: Certainly, that can  
23 come at a later point in the proceeding.

24 MR. LAVENE: I believe that's the case. I  
25 believe it's in one of our other expert reports for the

1 future compliance, at least the outline of the  
2 information.

3 I don't know if you're actually wanting the  
4 contracts, that might be different from what we  
5 provided; but the analysis of the monetary payments I  
6 think were in that report. We can definitely check  
7 that.

8 ARBITRATOR DREHER: I don't recall. I  
9 mean, you all have done a very good job of flooding me  
10 with information.

11 MR. WILMOTH: Not good enough, apparently.

12 ARBITRATOR DREHER: I just don't recall.

13 I mean, the bottom line of what I'm looking  
14 for is what did Nebraska pay and how much water did they  
15 get for what they paid. That's what I'm looking for.

16 MR. WILMOTH: We can certainly provide that  
17 information.

18 ARBITRATOR DREHER: Mr. Draper, please  
19 proceed.

20 CROSS-EXAMINATION

21 BY MR. DRAPER:

22 Q. Good morning, Doctor.

23 A. Good morning.

24 Q. Doctor, have you physically visited the  
25 KBID Irrigation District as part of your analysis in

1 this case?

2 A. No, I have not.

3 Q. Were you previously familiar with KBID  
4 District?

5 A. Generally, sure. As part of the PICK-SLOAN  
6 project, sure.

7 Q. And did you conduct any interviews in  
8 connection with the preparation for your analysis?

9 A. Interviews with anyone?

10 Q. Interviews with farmers in KBID.

11 A. No, I did not.

12 Q. Did you have anybody review your report?

13 A. No.

14 Q. You did not prepare it in conjunction with  
15 a team or any peer reviews?

16 A. No. I have a couple of research assistants  
17 who helped me with it; but no, no other professional  
18 colleagues.

19 Q. Now, it's your position, Doctor, that it's  
20 more appropriate to analyze the question of Kansas  
21 losses using a difference in rents?

22 A. I would characterize it this way. I think  
23 that's a very relevant piece of real-world information  
24 that sheds light on actual damages that was not  
25 apparently considered in the Kansas analysis.

1 Q. And did you have all the information  
2 necessary to conduct such a rent analysis?

3 A. I had some information. As I said in my  
4 written report, it definitely is not perfect. There is  
5 information available on land rent and land price  
6 differences for the region of north central Kansas, but  
7 no information that I had available to me on land price  
8 differences within KBID.

9 Q. Did you know what the distribution of  
10 ownership was between owners and renters in the  
11 ownership of irrigation equipment?

12 A. Only by inference. I don't have any direct  
13 information on, say, the percentage of -- of the  
14 percentage of owner/operators in KBID.

15 Q. Isn't that information that's relevant to  
16 such an analysis?

17 A. Well, again, by inference, I had that  
18 information. Yes, it is potentially relevant.

19 Q. And you did it by inference?

20 A. Well, the difference in the cash rents is,  
21 more or less, a direct measure -- you know, direct  
22 measure of what farmers are willing to pay for access to  
23 irrigation.

24 So, yes, that procedure is done largely by  
25 inference, in the sense that you infer something about a

1 value, you know, microeconomic value based on observed  
2 market data.

3           You know, in the same way that if I were to  
4 observe two homes that are, in every feature, identical,  
5 but one home has three bedrooms and the other one has  
6 two bedrooms, the difference in market price I observe  
7 between those two homes would tell me something about  
8 what homebuyers are willing to pay for an extra bedroom.

9           Q. But there are other costs and factors in  
10 applying such an analysis to the KBID area; isn't that  
11 right?

12           A. You will have to explain what you mean. I  
13 want to make sure I answer the question you're intending  
14 to ask.

15           Q. Well, for instance, the ownership of the  
16 irrigation would be one?

17           A. Yes. Again, the evidence that I had  
18 available to me suggested that was not a significant  
19 factor.

20           Q. And how did you go about making your  
21 inference in that regard?

22           A. Well, in the publication that I relied on  
23 for the difference in cash rents, it also reported the  
24 difference in land prices. The difference being -- the  
25 cash rents is a rental rate. The land prices is a

1 statistic that purports to measure what is the market  
2 value of land.

3 The land price data explicitly excludes  
4 equipment and the difference in irrigated and  
5 nonirrigated land. Prices, when expressed on an annual  
6 basis, excluding irrigation equipment, is almost exactly  
7 the same as the difference in the cash rents, which  
8 indicated to me that this equipment issue was not very  
9 important.

10 MR. DRAPER: Mr. Dreher, would it be  
11 permissible to take our morning break at this point? We  
12 had not anticipated that this witness would be  
13 testifying before the other witness for Nebraska, and I  
14 need to get a couple of things together in order to  
15 finish up the cross-examination.

16 ARBITRATOR DREHER: Okay. By "morning  
17 break," you mean the lunch break?

18 MR. DRAPER: I wasn't thinking of that, but  
19 something on the order of the 10- or 15-minute break  
20 that we normally take.

21 MR. BLANKENAU: Just so everybody knows,  
22 that clock on the wall is off by an hour.

23 ARBITRATOR DREHER: Yes, it's an hour, so  
24 it's 11:15, but we already did take our 15-minute break,  
25 because I remembered working with the reporter to

1 straighten out --

2 MR. WILMOTH: For the record,  
3 Mr. Arbitrator, we're amenable to a break. If Kansas  
4 needs it, that's fine.

5 ARBITRATOR DREHER: I'm wondering if we  
6 should take an early lunch break.

7 MR. DRAPER: Maybe an early lunch break  
8 would be good.

9 ARBITRATOR DREHER: An hour and a half  
10 maybe again, and that way you can spend some time now  
11 getting ready and then decide how much time you really  
12 want to spend trying to get some lunch.

13 So that's what I would suggest, but before  
14 we break, I don't want to forget to ask a question that  
15 his last response triggered.

16 Where is the data -- I'm looking at your  
17 references, and it isn't imminently clear to me -- yes,  
18 it is, Kansas Land Prices and Cash Rental Rates, Kansas  
19 State University, Agricultural. That's where you got  
20 the data that you're referring to?

21 THE WITNESS: Yes, that's a bulletin that  
22 was authored by Dr. Kastens and Dr. Dhuyvetter. That's  
23 an informational bulletin that Kansas State puts out.

24 ARBITRATOR DREHER: But that was not  
25 provided with your report and it was not -- I'm not

1 aware that it was provided as part of anything else.

2 THE WITNESS: I think publicly available  
3 information -- I mean, we download it off the Internet.  
4 Publicly available information, I don't think I included  
5 in the report.

6 ARBITRATOR DREHER: No, and that's fine.  
7 I'm just trying to figure out where I can get it. It is  
8 available on Internet, is that what you're suggesting?

9 THE WITNESS: Yes, it is.

10 MR. WILMOTH: And Mr. Arbitrator, I mean,  
11 just to be clear for the lunch break, from our  
12 perspective, if Kansas needs two hours for lunch, that's  
13 fine with us. I mean, we don't want them to feel  
14 disadvantaged. If they want more time to find  
15 documents, that's fine.

16 ARBITRATOR DREHER: Will an hour and a half  
17 be sufficient, Mr. Draper, or would you like more time?

18 MR. DRAPER: What if we reconvened at 1  
19 o'clock? That would be a little more than an hour and a  
20 half.

21 ARBITRATOR DREHER: That's fine.

22 (Lunch break was taken from 11:15 to 1:02.)

23 ARBITRATOR DREHER: Before we get  
24 started -- and this is on the record.

25 Before we get started, I was curious to

1 know if Nebraska and/or Kansas has had any success  
2 contacting the Bureau regarding deposing the two Bureau  
3 employees.

4 MR. DRAPER: We have made an attempt and  
5 talked to the Solicitor's Office and told them that we  
6 wanted to see if we could arrange for a deposition day  
7 of the two witnesses and a supplemental trial date and  
8 that you, as the Arbitrator, were willing to have the  
9 trial date be wherever might be most convenient for the  
10 Bureau witnesses. And I said we -- you know, those of  
11 us that would be involved in the depositions would be  
12 glad to do the same.

13 And I suggested that one way of doing it  
14 would be maybe Thursday or Friday of the week after this  
15 hearing concluded that we might convene, say, at McCook,  
16 Nebraska for the depositions and maybe a week after  
17 that, to give the parties time to assess the results of  
18 the depositions, for the single day, either in McCook or  
19 wherever you might decide.

20 I said I understood that wherever they felt  
21 it was convenient, most convenient we were willing to  
22 come there. So they said, Okay. And we'll investigate  
23 it and call us back at noon or whenever we can. I  
24 haven't called them back yet, but they didn't -- they  
25 didn't say absolutely no, we're not going to cooperate

1 with that. It means them changing their dates and so  
2 on. They sounded like they were going to do everything  
3 they could to accommodate the schedule change.

4 ARBITRATOR DREHER: Okay.

5 MR. DRAPER: So that's the progress report  
6 that I can make.

7 ARBITRATOR DREHER: So tentatively, the  
8 deposition would be the Thursday or Friday after this  
9 proceeding, this initial -- this part of the hearing.

10 MR. DRAPER: Right. I thought a week, to  
11 give people a chance to make preparations, and then a  
12 week after that for hearing preparation.

13 ARBITRATOR DREHER: Okay. Is Peter here?  
14 Do those dates work for Colorado?

15 MR. AMPE: I'm double-checking. I believe  
16 so. I don't have my calendar with me, but either the  
17 26 -- 26th or 27th would be the depositions, one of  
18 those two.

19 MR. DRAPER: I think that it would be, yes.

20 MR. WILMOTH: Would it be both dates, do  
21 you think?

22 MR. DRAPER: I was thinking we would do one  
23 day.

24 MR. WILMOTH: One day for each witness?

25 MR. DRAPER: For two witnesses.

1 MR. WILMOTH: One day for each -- two days  
2 total or one day total?

3 MR. DRAPER: One day total.

4 Under our time constraints, we've had to  
5 limit ourselves to, at most, two or three, four hours to  
6 a witness, so this would be consistent with that. So I  
7 indicated to them that we would be looking for a whole  
8 day.

9 MR. WILMOTH: Is your thinking that that  
10 would cover -- each of the three States would conduct a  
11 deposition of each individual within the one day?

12 MR. DRAPER: Yes. In other words, we  
13 might -- we might notice it up as a mutual deposition of  
14 the States so that everybody is in the position of  
15 taking the deposition and has full authorization to  
16 inquire into whatever they like.

17 MR. WILMOTH: I think bottom line is we  
18 will make it work, but I guess I would just like to  
19 reserve maybe the idea that we might want a day and a  
20 half. It might be hard -- we're talking about three  
21 depositions, two hours apiece on each individual,  
22 potentially it would be a 12-hour day. I'll do a  
23 12-hour day. I don't know if the Bureau will. I mean,  
24 we'll make it work. That's the upshot.

25 MR. DRAPER: Well, there are two witnesses.

1 I think a lot of the information that the States would  
2 be interested in eliciting would be probably the same  
3 subject area, and so I would think there would be quite  
4 a bit of overlap there.

5 MR. WILMOTH: We'll make it work.

6 MR. AMPE: Just Marv and Aaron?

7 MR. DRAPER: The two witnesses, Aaron  
8 Thompson and Marv Swanda.

9 MR. AMPE: Sure, we can make that work.

10 ARBITRATOR DREHER: Okay. Mr. Draper, are  
11 you ready for cross?

12 MR. DRAPER: Yes, thank you, Your Honor.

13 Q. (BY MR. DRAPER) Doctor, good afternoon.

14 A. Good afternoon.

15 Q. Before the break we were talking about your  
16 analysis that's in your report, which is -- I believe it  
17 has been designated Nebraska Exhibit 6?

18 A. All right.

19 Q. And we were talking about the question of  
20 rents. I believe you have -- your discussion of rents  
21 on page 14.

22 A. Just give me a second. All right, sure.

23 Q. This is where you at least begin your  
24 discussion of your rent analysis; is that right?

25 A. Yes, that's correct.

1           Q. And you are looking, if I understand your  
2 description there, at the cash rent difference between  
3 irrigated and nonirrigated land?

4           A. Yes, that's correct.

5           Q. Now, cash rent reflects returns, both from  
6 the land and from the equipment, irrigation equipment;  
7 isn't that right?

8           A. If farmers had made investment in human  
9 capital or irrigation capital or any other kind of  
10 capital, they will want a profit that results from that.

11                   What the cash rents pick up is -- the  
12 difference in the cash rents, what that picks up is the  
13 incremental value of having irrigation water or not.  
14 And my analysis depended on the difference, not the  
15 absolute level of capturing it, so it was a comparison.

16           Q. And the difference would depend, at least  
17 in part, on whether you're looking at the rental value  
18 of land where the landowner owns the irrigation  
19 equipment versus the rental of land where the tenant  
20 owns the irrigation equipment?

21           A. In theory, yes, I would agree with that,  
22 because the situations are different.

23                   In one case, what the landowner would be  
24 renting is just the land. In the other case, they're  
25 renting basically a bonded commodity of the land and the

1 equipment together, so it's a different transaction, if  
2 you will.

3 Q. Did you determine the ownership of the  
4 equipment as part of your analysis?

5 A. Well, again, indirectly, yes. I think  
6 there is some corroborating information that indicates  
7 that equipment ownership is not a significant issue or  
8 not a significant confounding factor, maybe we could put  
9 it that way.

10 I would add, in my own experience working  
11 with farmers in California and elsewhere, the notion of  
12 a rental contract that includes irrigation equipment is,  
13 speaking from my own experience, extremely unusual. In  
14 fact, I would be hard-pressed to think of one. It's not  
15 to say it doesn't exist. Just, in my mind, I think that  
16 would be a very unusual situation. So I was not  
17 surprised when I found this corroborating information  
18 that indicated that wasn't a significant issue.

19 Q. What corroborating information are you  
20 referring to?

21 A. Well, what we were talking about before  
22 with the land prices, which does explicitly exclude  
23 irrigation equipment.

24 Q. There is a big difference between land  
25 prices and cash rents; isn't that right?

1           A. Well, one is a present value of the other.  
2 One is a capitalized value of the other. Potentially,  
3 they're different, sure; but I think the corroborating  
4 information indicates that, in this instance, they're  
5 comparable.

6           Q. What was it about that information that  
7 told you that ownership was in one party, rather than  
8 the other?

9           A. Well, the land price information, as we  
10 discussed before the lunch break, is specifically for  
11 just land and buildings. It excludes irrigation  
12 equipment.

13                   And on that basis, there is a reported  
14 difference in the price of irrigated land versus the  
15 price of nonirrigated land. And if you take that  
16 capitalized value and impute an annual value using a  
17 capitalization factor, the differences come out to be  
18 very close to what the cash rental rate differences are.

19           Q. So your assumption was what, with respect  
20 to who owned the equipment?

21           A. That the operator owns the equipment.

22           Q. The tenant?

23           A. Yes, which, again, is in keeping with my  
24 experience in other places.

25           Q. And to the extent that it's the landowner

1 that owns the equipment in KBID, your results would need  
2 to be reviewed; is that right?

3 A. I think that's fair, yes.

4 Q. Looking at page 14 of your report, you  
5 indicate, in the third paragraph, that the average  
6 difference in land rents for 2005 and 2006 was \$33.50  
7 per acre?

8 A. As an average, yes. It was \$33 in 2006,  
9 \$34 in 2005.

10 Q. And you converted that to a value in  
11 acre-feet?

12 A. Yes, I did.

13 Q. And how did you do that?

14 A. Based on the water entitlement of 15 inches  
15 per acre in KBID.

16 Q. Now, the difference in rents that you used,  
17 those were the actual difference in rents for those two  
18 years; is that right?

19 A. That was what was reported in the bulletin  
20 that we talked about before lunch, yes.

21 Q. And to convert that to a value per  
22 acre-foot, you used the entitlement, as you referred to  
23 it, which you mention is 15 inches?

24 A. Yes.

25 Q. Don't you need to be using the actual

1 deliveries? You're using actual data for the rents and  
2 the actual deliveries, wouldn't that be the appropriate  
3 way to convert that to the per acre?

4 A. Well, I think you need to use what is  
5 actually in the contract. And if you think of it like  
6 an option, if the underlying entitlement on the land is  
7 15 inches and the tenant has the option of using up to  
8 15 inches on that piece of ground, then I think you  
9 should use the option value. I think that would be more  
10 appropriate.

11 Q. But where you're only getting something  
12 less than the entitlement amount, isn't it more  
13 appropriate to use your actual rents with the actual  
14 inches delivered?

15 A. Again, for the reasons I just gave I would  
16 argue no, because it's unknown at the time the contract  
17 is signed what the actual -- after rainfall and market  
18 conditions and other things, it's unknown how much  
19 irrigation water will actually be demanded in a  
20 particular year. That depends on future conditions.

21 Q. Do you know whether 15 inches is what was  
22 actually delivered in 2005 and 2006?

23 A. No, it was not, is my understanding. It  
24 was less than that.

25 Q. Significantly less?

1 A. Yes.

2 Q. More in the range of about 6 inches?

3 A. Yes. Counterbalanced, of course, by the  
4 very large degree of natural precipitation.

5 Q. And if that value were used, it would give  
6 you a very different value per acre-foot, wouldn't it?

7 A. Again, with the proviso I don't think  
8 that's proper, yes, it would give you mathematically a  
9 different value.

10 Q. I would now like to provide you a copy of a  
11 document that was an exhibit at your deposition. We  
12 have labeled this as Kansas Exhibit 42 for the hearing.  
13 This is a report that we discussed during your  
14 deposition; isn't that right?

15 A. Yes, I remember.

16 Q. Would you describe briefly what this report  
17 sought to do?

18 A. Sure. The circumstance that prompted this  
19 report or this analysis to be requested was a situation  
20 that occurred in California last summer where the  
21 farmers, federal contractors in the San Joaquin Valley  
22 had gone ahead and made planting decisions in April,  
23 May. They had crops in the ground. And as the summer  
24 unfolded, the Bureau of Reclamation informed them that  
25 their actual water deliveries would be significantly

1 less than they had originally been told.

2 So the question that the federal  
3 contractors asked me to investigate was: What are the  
4 economic consequences of that, of that unanticipated  
5 very late-arriving, you know, new bit of information  
6 that they weren't going to get the water they thought  
7 they would get.

8 Q. And this was done this past year, 2008?

9 A. Yes. It was done last summer. So roughly,  
10 you know, say nine months ago.

11 Q. Now, this study shares a number of common  
12 characteristics with the work you're doing in this case;  
13 isn't that right?

14 A. That's not apparent to me. I think the  
15 situation is pretty different than what we're talking  
16 about here.

17 Q. Well, let's look at the area of the  
18 fundamental question.

19 Wasn't the fundamental question, what is  
20 the economic -- what would the economic impact be for  
21 missing water in an area used to having irrigation  
22 water?

23 A. Yes, yes. To that extent, I think there is  
24 a similarity, but that might be the end.

25 Q. This was an area that received contract

1 irrigation water?

2 A. Correct.

3 Q. And over a short term, like in this case,  
4 it's 2005-2006. In the case in your study, it was for  
5 one year; is that right?

6 A. Yes. This was one summer, one growing  
7 season.

8 Q. So for a short-term lack of water to an  
9 irrigation district that was set up and equipped to take  
10 irrigation water and it was your purpose to determine  
11 what the economic impacts of the missing water was?

12 A. All of that's true.

13 Q. How many acres did you analyze in this  
14 study?

15 A. Oh, lots. Well, in excess of a million. I  
16 think. I mean, that may not be literally true, but I'm  
17 pretty sure it's in excess of a million. I mean, one  
18 water district in this area, Westlands, is roughly ten  
19 times the size of KBID.

20 Q. I notice in the opening paragraph that you  
21 indicate there would be a 40 percent -- a reduction to  
22 40 percent of the contractual entitlement, and that the  
23 amount of water involved would be reduced from 355,000  
24 acre-feet to 240,000?

25 A. Right, that's correct.

1 Q. And what do you tend to supply in this  
2 district as far as a per-acre duty of water?

3 A. Well, taking just Westlands, their  
4 entitlement is -- their entitlement is, I think,  
5 1.1 million acre-feet. Now, they never get that, I  
6 mean, basically ever; but that is their theoretical  
7 maximum entitlement.

8 I think they normally get -- oh, I may be  
9 wrong here by a little bit, but on the order of like  
10 12 inches per acre, that would be a normal entitlement.

11 Q. Anyway, a fairly large number of acres?

12 A. Yes, definitely. It's the largest  
13 irrigation district in the country.

14 Q. Now, in making your analysis in the Central  
15 Valley study, if I may call it that for short --

16 A. Sure.

17 Q. -- did you use the comparison of cash rents  
18 approach to that valuation there of the effect --  
19 economic effect of the missing water?

20 A. No, for the simple reason that there is no  
21 nonirrigated production in California. It's a very  
22 different kind of agronomic environment, so there is no  
23 such thing, essentially. I mean, it would be rangeland,  
24 but you cannot grow lettuce in the San Joaquin Valley  
25 without access to irrigation water, which is why I say

1 it's a fundamentally different problem than you have, as  
2 we were talking about earlier, east of the 100th  
3 meridian.

4 Q. So you used crop production function,  
5 didn't you?

6 A. A particular kind of relationship between,  
7 if you want to call it a crop production, a particular  
8 kind of relationship between water input and yield  
9 output, yes.

10 Q. You agree that it was a crop production  
11 function, or we can go --

12 A. I would have -- no, I wouldn't --

13 Q. -- to your deposition?

14 A. Perhaps. It's not the same kind of crop  
15 production function that was used in the analysis we  
16 were discussing this morning, but there is an assumed  
17 relationship between water and output. So that extent,  
18 yes, there is a crop production function implicit in  
19 what we did.

20 Q. And you were comparing the difference in  
21 value between the irrigated and nonirrigated conditions,  
22 correct?

23 A. Yes, which would be the difference between  
24 irrigation and no production at all, in that instance.

25 Q. And in this study did you include sunk

1 costs?

2 A. I actually don't remember. I would have to  
3 look. No. I believe in this -- in this instance --  
4 well, I mean, I would have to refresh my memory. I  
5 believe we were looking at the difference between  
6 revenue and variable cost. Because again, the  
7 production -- the planting decision had been made, so  
8 money had been expended up to the point when the  
9 shortage occurred.

10 So from the farmer's point of view, the  
11 incremental benefit they received going forward would be  
12 they would lose the revenues, but then they would not  
13 have to pay for the additional variable costs from that  
14 point to the end of the growing season. So that was the  
15 measure of impact in that case, which is, I believe,  
16 theoretically justified, because the sunk costs are  
17 sunk; they net out of the calculation.

18 Q. Well, that would include costs like  
19 irrigation equipment that has already been bought?

20 A. Sure, no matter who owns it.

21 Q. Labor that couldn't be laid off?

22 A. No. There was some labor that was  
23 considered to be a variable cost.

24 Q. And there may be differences between KBID  
25 and the Central Valley in terms of migrant labor?

1           A. Potentially for some of the crops that we  
2 looked at here, actually labor is -- there can be \$6000  
3 per acre in labor expenses. And if there is no crop to  
4 harvest, there is no need to hire harvest labor. So I  
5 think in this instance, it was appropriate to treat  
6 labor as a variable cost, at least in part.

7           Q. And water taxes, for instance, to the  
8 District for O&M?

9           A. No. Those are paid on a volumetric basis.  
10 So if the water is not available, they don't have to be  
11 paid, and that was accounted for in our analysis.

12          Q. Basically, the things that could be  
13 changed, you included those with variable costs that  
14 could be changed under the short-run analysis you were  
15 doing, and those that couldn't were considered fixed  
16 costs and had to be paid in any event in your analysis?

17          A. As I recall, yes.

18          Q. Now, did you include those kinds of costs  
19 in your analysis in this case?

20          A. I think implicitly, yes; but looking at the  
21 differences in cash rents, that would tell you the  
22 difference in the expected profitability of irrigated  
23 and nonirrigated production.

24          Q. Doesn't that again depend on who owns, say,  
25 the irrigation equipment?

1           A. Well, as we went through before, in  
2 principle, yes, because that would be a different kind  
3 of a transaction than I was assuming for my analysis.  
4 If the landlord is renting land, plus equipment, that's  
5 a different kind of a transaction than renting just the  
6 land.

7           Q. And how about the O&M or tax payments to  
8 the District?

9           A. That -- my understanding is that's paid on  
10 a per-acre basis. It is not a volumetric charge, in  
11 other words.

12          Q. Yes.

13          A. That that's paid on a per-acre basis, so  
14 that would net out of the calculation.

15          Q. Now, in your study in the Central Valley,  
16 did you use the IMPLAN method for analyzing the indirect  
17 impact?

18          A. Yes, we did.

19          Q. And you described that in Footnote 1, I  
20 believe, in your paper on page 3.

21          A. Give me a second and I will take a look.  
22 Sure, I see that.

23          Q. And, in fact, you're an expert on the  
24 IMPLAN method; isn't that right?

25          A. Yes.

1 Q. That's one of the areas you listed as your  
2 areas of expertise for this proceeding?

3 A. Yes.

4 Q. And you, in fact, report results from your  
5 indirect impact analysis in Tables 2 and 3 in your  
6 report on the Central Valley; isn't that right?

7 A. Yes, that's correct.

8 Q. Now, looking at your report in this case on  
9 page 4 --

10 A. I'm sorry, which report are we looking at  
11 now?

12 Q. The one in this case, which is Nebraska  
13 Exhibit 6.

14 A. Okay, let me go back to this. Now where am  
15 I looking?

16 Q. Page 4, if you please.

17 A. Yes.

18 Q. In the last paragraph on that page you are  
19 discussing whether the IMPLAN method should be used in  
20 this case. And you say, "While the method is standard,  
21 the uses of IMPLAN to assess indirect impacts resulting  
22 from changes in water availability is fraught with  
23 problems relating to the generally poor quality of the  
24 input purchase and consumer expenditure data, including  
25 information on 'export' coefficients, for rural areas in

1 the United States."

2 Now, that opinion apparently did not stop  
3 you from analyzing Central Valley issues in California  
4 with the IMPLAN method?

5 A. Yeah. Well, there are two -- there are two  
6 distinctions I draw out.

7 One, there is a big difference, as you know  
8 well, between a damage proceeding where potentially  
9 millions of dollars is going to change hands from one  
10 party to another. I think the standard of proof  
11 required for that is considerably higher than in a  
12 policy study where the results may get used, they may  
13 not, people are interested in indirect impacts; but the  
14 standard of proof is lower in a case like that.

15 The second thing I would point out is that  
16 the IMPLAN Model for California is not just based on  
17 national coefficients imputed to Kansas, like we heard  
18 today, but there is preprocessing or preinput analysis  
19 that has been done for the California version of IMPLAN  
20 that I think was not done for the Kansas version of  
21 IMPLAN. In other words, the California version of  
22 IMPLAN, the quality of the rural data that go into it  
23 are generally better than the quality of the data that  
24 go into the Kansas model where, as I understand it, just  
25 national coefficients were used. And, in fact, if you

1 read the IMPLAN Manual, it says specifically the great  
2 care has to be taken when using the imputed national  
3 coefficients for the agricultural sector, in particular.

4 So that's something that I think is well  
5 known.

6 Q. So you don't -- you don't use the IMPLAN  
7 Model outside of California because of this -- it's only  
8 got acceptable data in California; is that your  
9 testimony?

10 A. Well, I think -- there are -- let me put it  
11 this way.

12 There are problems with the IMPLAN approach  
13 that are known to every economist who works in this  
14 area. I don't think anybody would deny that. So it is  
15 something that a lot of economists will, if you will,  
16 kind of hold their nose and do anyway, because it is  
17 getting at something that is real.

18 There are indirect impacts and I have never  
19 challenged that in this case. I do challenge their  
20 relevance to the proceeding going on here, both because  
21 I have questions about the reliability of the results  
22 and the Kansas analysis failed to consider the indirect  
23 benefits that result from Nebraska's payments.

24 Q. You're aware that the Supreme Court did  
25 rely on the IMPLAN for Kansas analysis in our Kansas

1 River case, aren't you?

2 A. I am aware of that, and I think, frankly,  
3 you got by with one in that case. I don't think it's  
4 justified.

5 Q. You're aware that your new concerns were  
6 never raised in that case and there were some very, very  
7 good economists involved there?

8 A. Well, from what I read in that case,  
9 Colorado did not directly challenge the indirect impacts  
10 analysis. I didn't see any record of that. I saw some  
11 challenge on the direct impacts, but I didn't see any  
12 record that they paid a whole lot of attention to the  
13 indirect impacts.

14 And I still haven't heard a good answer to  
15 my assertion about it, the inappropriateness of not  
16 considering the indirect benefits of Nebraska's payment.  
17 I mean, that, to me, is just a commonsense principle,  
18 but that, again to my way of thinking, has not been  
19 addressed.

20 Q. Well, suffice it to say for present  
21 purposes that there was a very strong challenge by  
22 Colorado in that case many days of trial, and we will --

23 MR. BLANKENAU: Is counsel testifying?

24 MR. DRAPER: -- make available --

25 I'm trying to respond in an appropriate way

1 to the questions being asked by the witness.

2 MR. BLANKENAU: I don't believe --

3 MR. WILMOTH: I didn't hear a question.

4 MR. DRAPER: So if you have a problem with  
5 your witness responding to my questions by suggesting  
6 that, really, it's Kansas on trial here, I don't think  
7 that it's inappropriate for me to say a few words to put  
8 that to rest.

9 MR. BLANKENAU: We would object. You can  
10 raise that at the appropriate time. Your job is not to  
11 badger this witness, though, at this time.

12 MR. DRAPER: I'm "badgering the witness" I  
13 think is a mischaracterization of our present situation.

14 MR. BLANKENAU: Well, in any event --

15 MR. DRAPER: I thought it was Mr. Wilmoth  
16 who was examining this witness. Is this a group  
17 activity?

18 MR. WILMOTH: I think the point is very  
19 simply that to the extent that Mr. Draper is trying to  
20 tell this Court what the holding of or the proceedings  
21 were in another matter, that's constituting effectively  
22 testimony, and we have no way to challenge that or rebut  
23 that.

24 I don't think what Dr. Sunding did was  
25 present a direct question to Mr. Draper. I think what

1 he said was in his opinion he hadn't heard any  
2 refutation of that. I don't think that it's the  
3 position of counsel to testify as to the refutation.

4 ARBITRATOR DREHER: Let me ask a question,  
5 Mr. Draper. I think before the objection was raised,  
6 you were about to say -- you were going to provide  
7 something. Is that accurate?

8 MR. DRAPER: Yes.

9 ARBITRATOR DREHER: What is it that you  
10 think you would provide that would be pertinent here?

11 MR. DRAPER: I would offer to provide the  
12 section of the Special Master's Report in that case  
13 which discusses the evidence that was put on there and  
14 the objections that were strenuously urged by Colorado,  
15 under those circumstances, and his decision.

16 ARBITRATOR DREHER: How would you submit  
17 that in this case?

18 MR. DRAPER: I would have to think about  
19 what might be the most appropriate way. Of course, it's  
20 a public document. It's on the Supreme Court website.

21 ARBITRATOR DREHER: Right, it is a public  
22 document. I'm just trying to figure out how, if it has  
23 any -- if it should be included as part of the record  
24 for this; and if so, how.

25 MR. WILMOTH: Mr. Arbitrator, I would

1 simply suggest that to the extent Mr. Draper believes  
2 that information is relevant, he could cite it in his  
3 posttrial brief. It's essentially his interpretation of  
4 what he believes is precedent in this context, and he is  
5 certainly entitled to argue that; but we just need to  
6 recognize that, that that's argument and not testimony.

7 That's the point of the objection of  
8 Mr. Blankenau and I.

9 MR. DRAPER: I think that's maybe a good  
10 way to handle it, and the witness and I were having a  
11 discussion about this. And maybe that's enough said on  
12 it at the moment.

13 ARBITRATOR DREHER: Okay.

14 Q. (BY MR. DRAPER) Doctor, you were suggesting  
15 that the work that you were doing in the Central Valley  
16 study was not of the same consequence as the decisions  
17 to be made in this case. Decisions were not going to be  
18 made based on your economic analysis there?

19 A. No. No. The decision was made by the  
20 Bureau of Reclamation based on environmental  
21 restrictions. I think the -- the goal of our client in  
22 that instance was just simply to provide information to  
23 the public about the economic ramifications of that; but  
24 there was no -- there was no decision that was going to  
25 be made based on -- you know, based on the results of

1 the report.

2 Q. And it is true that with respect to IMPLAN,  
3 the data is marshaled specifically for each state; isn't  
4 that right?

5 A. There are aspects that are specific to each  
6 state where that information is available. For the  
7 agricultural sector in particular, the folks at MIG who  
8 design IMPLAN, who operate it and implement it, they  
9 lack information on a lot of relevant relationships for  
10 rural areas, but particularly for agricultural  
11 production. So that part of the IMPLAN model is based  
12 on what they call derived data. It's essentially, to  
13 some degree made up, scaled up or down based on national  
14 coefficients.

15 ARBITRATOR DREHER: And MIG stands for  
16 what?

17 THE WITNESS: Minnesota IMPLAN Group. I  
18 think Dr. Leatherman gave a very nice description of,  
19 you know, IMPLAN being essentially, it's become private  
20 advertised. It was developed originally by the Forest  
21 Service, I think, to look at social losses from things  
22 like reduced timber cutting on public land, and now it  
23 has become privatized and it is used in different  
24 settings.

25 MR. DRAPER: I think that will do it.

1                   ARBITRATOR DREHER: Okay. I have one  
2 further question.

3                   And I don't know if Colorado has any  
4 questions for this witness or not.

5                   MR. AMPE: No, we don't.

6                   ARBITRATOR DREHER: Okay. Setting aside  
7 for the moment whether or not it is or is not  
8 appropriate to include indirect costs as damages, I  
9 heard you say that you agreed there were indirect  
10 effects.

11                   And earlier when Dr. Leatherman was  
12 testifying I asked about the multiplying factor being  
13 1.44 and whether or not that would remain constant if  
14 the direct damages were to increase or if the direct  
15 damages were to decrease and he said that it would  
16 remain constant. And then when Dr. Pritchett was  
17 testifying in his report -- I don't remember if I asked  
18 him this, but I know in his report he made reference to  
19 that multiplying factor of 1.44, and I'm paraphrasing,  
20 which may not be a good thing, but at least the  
21 impression I had from the report was that, whereas he  
22 couldn't necessarily directly check that value, it was  
23 consistent with his experience in indirect effects.

24                   Not addressing whether it's appropriate to  
25 include indirect effects as damages or not, but do you

1 agree that the 1.44 would be appropriate for indirect  
2 effects or do you think it's too high or too low?

3 THE WITNESS: I think it's a -- well, it's  
4 hard to know for sure if it's too high or too low  
5 without getting in supplemental information specific to  
6 Kansas that I discussed; but within the confines of the  
7 analysis that Kansas has proffered, I think the  
8 multiplier would be the same for both years.

9 1.44, I think, is not out of the realm of  
10 what I have seen in other contacts, so that particular  
11 part of their analysis didn't stick out particularly.

12 Let me answer it that way.

13 ARBITRATOR DREHER: Okay. And maybe this  
14 isn't a question for the witness necessarily, but it  
15 seems like there is an unresolved issue as to whether  
16 the rentals that occurred in KBID did or did not include  
17 irrigation equipment owned by the landowner. And I'm  
18 not sure how we're going to get at that.

19 Obviously, this witness isn't prepared to  
20 address that at this point, but it seems to be an  
21 unresolved issue and I am certainly open to suggestions  
22 as to how we might resolve it, but it would seem to  
23 have -- it seems to be something that needs to be  
24 addressed to further analyze the approach taken by this  
25 witness, as opposed to the alternate approaches. I'm

1 not saying that the selected method rises or falls on  
2 this, that's not what I am saying.

3 MR. WILMOTH: If I could just make a  
4 suggestion. I mean, this damage's phase obviously  
5 Kansas has the burden on, so they are going to have a  
6 rebuttal opportunity later today or tomorrow; if they  
7 have got that data, perhaps they can bring it in.

8 And since it's kind of a new issue, maybe  
9 there is some room for cross on that, I don't know. But  
10 strategically that would be, in my view, the place to do  
11 it.

12 ARBITRATOR DREHER: Do you agree,  
13 Mr. Draper?

14 MR. DRAPER: Well, the way I see it is this  
15 is information that is required for this particular kind  
16 of analysis that the witness is proposing needs to be  
17 done as an alternative to the way Kansas has analyzed  
18 it. And when Nebraska proposes an alternative and it  
19 needs to show that that alternative is viable. And part  
20 of that clearly is this ownership question, and I,  
21 frankly, don't believe the information is readily  
22 available. It's not something you can go out and look  
23 up, and so it's a very difficult question to answer.

24 ARBITRATOR DREHER: And yet independent  
25 from that, obviously the testimony of this witness

1 raises -- his testimony would raise issues that have to  
2 be considered, at least, in terms of addressing the  
3 appropriateness of the methods used by Kansas.

4 I guess what I'm expressing to you is I  
5 feel like I have an incomplete picture with things  
6 missing on both sides, and I will think some more about  
7 what we might do, but that's -- I mean, right now this  
8 afternoon, that's kind of where I am at.

9 I understand it, but I think it is  
10 incomplete.

11 All right. If Colorado has nothing  
12 further, thank you. You're excused.

13 MR. WILMOTH: May we do some redirect?

14 ARBITRATOR DREHER: Oh, I'm sorry.

15 MR. WILMOTH: Can we just take ten minutes  
16 perhaps and come back?

17 ARBITRATOR DREHER: Sure.

18 (Break was taken from 2:05 to 2:12.)

19 ARBITRATOR DREHER: Mr. Wilmoth, redirect.  
20 And I apologize for missing your opportunity.

21 MR. WILMOTH: No problem, no problem. We  
22 just have one line of questions, which is really playing  
23 off something that you asked, Mr. Arbitrator, and that  
24 related to the purchase of NBID water.

25 ARBITRATOR DREHER: Okay.

REDIRECT EXAMINATION

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BY MR. WILMOTH:

Q. Dr. Sunding, you had heard a question from the Arbitrator concerning the relevance, or potential relevance of water that was purchased by the State of Nebraska for the Nebraska Bostwick Irrigation District. Do you recall that general question?

A. I do.

Q. And I know that you're not privy, necessarily, to the details of that transaction; however, do you have any general thoughts on how that kind of transaction might relate to the damages allegedly suffered by irrigators in KBID?

A. Yeah. I understand the question -- you know, the question that the Arbitrator asked earlier, I understand the interest; but I think to make a comparison like that, you need to be very, very careful that you're understanding the nature of the transaction, whatever it was.

I'm inferring from the question that the purchase was made by a governmental entity, that's what I got. So you have basically a monopolist, on one side, as opposed to what you would have in a land rental market, where you have many participants on either side of the transaction.

1           So I think you need to be very careful  
2 about making a comparison. Is it really the same kind  
3 of a market? Is it a market at all where values are  
4 being revealed through prices? Or is it something else?  
5 Is it like an intergovernmental reallocation? What was  
6 the motivation of the purchaser? What were potential  
7 penalties if they didn't get the water they were after?

8           I think you need to factor all of this in  
9 to understand how relevant that is.

10           MR. WILMOTH: Thank you very much. We have  
11 no further questions.

12           ARBITRATOR DREHER: Okay. Now you can step  
13 down.

14           MR. WILMOTH: At this point, if it's all  
15 right with you, Mr. Arbitrator, Nebraska would call  
16 Mr. Marc Groff.

17           ARBITRATOR DREHER: Before we swear  
18 Mr. Groff in, are you going to admit these?

19           MR. WILMOTH: I would like to go ahead,  
20 before we forget, I would like to offer the exhibits, I  
21 believe, it's Nebraska 10, 11, 12, which Dr. Sunding --  
22 and also 5 and 6, 5 being the CV of Dr. Sunding, and 6  
23 being the expert report. And we can tear those off.

24           ARBITRATOR DREHER: Mr. Draper, do you have  
25 any objections to those exhibits being admitted?

1 MR. DRAPER: Which exhibits were those,  
2 Your Honor?

3 ARBITRATOR DREHER: It's the three charts  
4 that Dr. Sunding created and his curriculum vitae, or  
5 however you pronounce that, and his report.

6 MR. DRAPER: I don't have any objection. I  
7 assume that we'll be provided with an 8 1/2-by-11  
8 version of the bumper paper; is that correct?

9 MR. WILMOTH: I would ask the court  
10 reporter, is that possible to -- we were just going to  
11 give you those and ask that you make them part of your  
12 record and that they be provided to all the parties,  
13 including the Arbitrator.

14 MR. AMPE: Can we go off the record for a  
15 second.

16 (Discussion off the record.)

17 MR. DRAPER: Your Honor, I might take this  
18 opportunity to move the admission of the exhibits that  
19 we identified during the previous testimony just before  
20 this.

21 ARBITRATOR DREHER: Which exhibits were  
22 those?

23 MR. DRAPER: Well, I guess there was one,  
24 it was Exhibit No. 42, the report that Dr. Sunding had  
25 done, and then also I think we have already at least

1 identified, and if we haven't, move the admission of  
2 Kansas Exhibit 43, this is the one that we were  
3 referring to from the deposition of Dr. Pritchett.

4 ARBITRATOR DREHER: Any objection from  
5 Nebraska or Colorado on any of those?

6 MR. AMPE: No.

7 MR. WILMOTH: No.

8 ARBITRATOR DREHER: Okay, they're admitted.

9 (WHEREUPON, Nebraska Exhibits 5, 6, 10, 11  
10 and 12 and Colorado Exhibits 42 and 43 were admitted  
11 into evidence.)

12 MARC GROFF,  
13 having been first duly sworn, was examined and  
14 testified as follows:

15 DIRECT EXAMINATION

16 BY MR. WILMOTH:

17 Q. Good afternoon, Mr. Groff.

18 A. Good afternoon.

19 Q. How are you today?

20 A. Good, thank you.

21 Q. It's good to be in beautiful sunny Denver.

22 A. Yes.

23 Q. Mr. Groff, would you please turn to the  
24 Exhibit No. 7 in the Nebraska's exhibit book for a  
25 moment. And is that your curriculum vitae, sir?

1 A. Yes, it is.

2 Q. And Exhibit No. 8, Nebraska Exhibit No. 8,  
3 is that a report that you prepared in connection with  
4 this litigation?

5 A. Yes, it is.

6 Q. And I see that you have brought with you  
7 today a visual aid. Could you identify generally what  
8 that is.

9 A. It's a general map showing the area that  
10 our report discusses.

11 Q. Thank you.

12 Is that generally the Lower Republican area  
13 below Harlan?

14 A. Yes, it is.

15 Q. And I would just like to mark that as  
16 Exhibit Nebraska 13.

17 And, Mr. Groff, is this visual aid designed  
18 to kind of assist in the narrative presentation  
19 concerning your report?

20 A. Yes, it is.

21 MR. WILMOTH: And with the Arbitrator's  
22 indulgence, is it acceptable if Mr. Groff leaves the  
23 witness stand --

24 ARBITRATOR DREHER: Certainly.

25 MR. WILMOTH: -- and either points at or

1 uses a marker or something on the exhibit?

2 ARBITRATOR DREHER: That's perfectly okay.

3 Q. (BY MR. WILMOTH) Mr. Groff, just very  
4 briefly, because, again, the Arbitrator has read your CV  
5 and report, could you just generally state your current  
6 occupation and employment.

7 A. I'm a water resources engineer for the  
8 Flatwater Group.

9 Q. And the Flatwater Group is based in  
10 Lincoln, Nebraska, correct?

11 A. Correct.

12 Q. And you conducted -- or I should say you  
13 participated in preparing the report entitled "Review of  
14 the 20 January 2009 Report Prepared by Spronk Water  
15 Engineers, Inc. for the State of Kansas"?

16 A. Correct.

17 Q. And is that what we've generally been  
18 referring to as the "Book report" shorthand?

19 A. Yes, it is.

20 Q. And this report, if I'm correct,  
21 essentially evaluated the analysis that Mr. Book  
22 conducted, reached some conclusions about that analysis  
23 and presented some alternative findings?

24 A. Correct.

25 Q. Could you please give us a general

1 overview, as necessary referring to the visual aid, of  
2 what your conclusions were, your findings and your  
3 conclusions in the report, please.

4 A. What I would like to do is just start with  
5 a quick overview of the physical features that are kind  
6 of covered in our report. I believe Mr. Ross gave a  
7 good description of the Lower Bostwick system as a  
8 whole. And I guess, if it's all right, I would like to  
9 point out kind of the relevant features that helps with  
10 the flow through our report.

11 The easiest place to start for our report  
12 is the Guide Rock area. That's Nebraska's compliance  
13 point during water-short years. It's also where waters  
14 for KBID will be diverted out of the state of Nebraska.

15 Waters that are diverted at the  
16 Superior/Courtland Dam flow past the Courtland Canal  
17 gage at .7 miles downstream from the diversion point,  
18 which is one of the gages that we used in our analysis.  
19 Flows will continue down the canal for approximately  
20 15 miles. There it will come across the USGS gage,  
21 which is approximately at the stateline. That was  
22 another gage that we used in our analysis.

23 Q. And, Mr. Groff, the red line is the  
24 stateline; is that correct?

25 A. Yes, this is the stateline here.

1 Q. Thank you.

2 A. We also make reference to Nebraska Bostwick  
3 irrigation lands irrigated out of the Courtland Canal,  
4 which are generally in this area here.

5 Once flow passes the stateline within the  
6 Courtland Canal, it flows into the Upper KBID area,  
7 which are those lands above Lovewell, as we discussed  
8 previously. We have a gage at the inlet to Lovewell  
9 Reservoir which we use, which is a Bureau gage. Flows  
10 then enter Lovewell Reservoir, where we looked at the  
11 reregulation of flows there. There is a gage at the  
12 outlet of Lovewell Reservoir, goes through the Courtland  
13 Canal to the Lower KBID. Beneath that, then, are the  
14 return flows that we talked about, the return to the  
15 Republican River, and the Concordia gage is kind of  
16 where we summarize the flows.

17 Q. And, generally, if you'll pardon the pun,  
18 the flow of your report follows the flow of the water  
19 through the system as it physically would flow, correct?

20 A. Correct.

21 Q. Thank.

22 A. I guess going back and speaking about the  
23 specific details, as I mentioned, Guide Rock is our  
24 compliance point, so that was the area from which we  
25 needed to route the computed volume. And the volume

1 that we calculated was -- to arrive at that volume, we  
2 considered the Arbitrator's decision regarding  
3 non-federal reservoir evap and Harlan County  
4 evaporation. I think we talked about a few -- a few of  
5 those in detail in our report. And we walked through to  
6 the point where we end up with our annual volume.

7 The question became what to do with the  
8 annual volume at our compliance point. And it seemed  
9 like we needed to come up with a reasonable way to  
10 distribute that volume temporally over the year. We  
11 viewed that volume as the amount of water that Nebraska  
12 owed for that year.

13 What we decided to do was to look at the  
14 years 1994 through 2007 and what a typical distribution  
15 of flows would be past the Guide Rock gage and through  
16 the Courtland diversion.

17 And that by breaking those apart in Table  
18 3-2, we can see that we were able to achieve for a given  
19 month what has been the historical average percentage of  
20 flows through that point. And we used those to  
21 segregate the annual volumes from 2005 and 2006 to be by  
22 month.

23 The next step, then, was to route those  
24 flows down the Courtland Canal. What we looked at there  
25 was how much physical water that was diverted would

1 actually reach the stateline, that being the USGS gage  
2 down below.

3 So to do that analysis, we did a reach gain  
4 analysis, which considered historically what -- what  
5 percentage of flows crossing the Courtland gage at .7  
6 made it to the stateline. Our report talks about how we  
7 do that.

8 One thing that we should note, Table 3-3,  
9 which kind of presents a summary of those equations, the  
10 headings on the last two columns of Table 3-3 aren't  
11 correct. The text is correct, but they should read  
12 "Gage 2 + Gage 3" and the last column should be "Gage 2  
13 + Gage 3."

14 ARBITRATOR DREHER: Can you hold on a  
15 second and let me get my working copy of your report.

16 Okay. Which table are you referring to  
17 now?

18 THE WITNESS: It's Table 3-3. It would be  
19 on page 9.

20 Q (BY MR. WILMOTH) Mr. Groff, for sake of  
21 clarity, I believe you said that the heading is  
22 incorrect, but the numbers are --

23 A. The numbers are correct.

24 Q. -- remain the same in the table?

25 A. The text is correct. The reference is the

1 table, it's just the specific headings in the table.

2 ARBITRATOR DREHER: Help me with the  
3 headings in the table, please.

4 THE WITNESS: As we go across the -- I will  
5 just walk all the way across the table.

6 We start with the date that has the month  
7 that we're interested in. The next column are the flows  
8 at the Courtland gage, .7 miles downstream.

9 Second gage represents the diversions into  
10 Nebraska Bostwick.

11 Gage 3, then, is the stateline gage.

12 Then the headings, that next column should  
13 read "Gage 2 + Gage 3."

14 And the last column should read "Gage 2 +  
15 Gage 3 divided by Gage 1."

16 ARBITRATOR DREHER: Okay.

17 A. What that showed was that on -- you know,  
18 as an annual average, we had about a 14 percent loss of  
19 flows from Courtland at the diversion gage to the  
20 stateline gage.

21 Our computations in this reach also makes  
22 the assumption that Nebraska Bostwick did not divert.  
23 We make that assumption on the basis that this water  
24 that we're trying to deliver is because of overusage by  
25 Nebraska and to allow usage on water that's being

1 provided because of overusage would kind of defeat the  
2 purpose of providing the water.

3 The result of that analysis is we now have  
4 a total volume of wet water at the stateline to be  
5 diverted for use in KBID. We performed, using  
6 historical gage data again, to --

7 Q. Excuse me, Mr. Groff. Could you please  
8 identify that volume at the stateline.

9 A. Sure.

10 The stateline volumes that we had in 2005  
11 were 34,938 as shown on Table 3-4, and 22,003 acre-feet  
12 as shown on Table 3-5.

13 To route those flows through KBID, we took  
14 a look again at the '94 to '07 period to get a feel for  
15 what percentage of the flows crossing the stateline had  
16 historically been diverted into Upper KBID.

17 We used that information then with our  
18 projected stateline flow to determine how much of that  
19 water would be diverted into KBID. We then looked at  
20 historical records of that same time period, what  
21 percent of that water that was diverted was actually  
22 delivered, and we used that percentage to arrive at our  
23 deliveries for Upper KBID.

24 In order to get a feel for, then, losses in  
25 a canal so that we could get inflows into Lovewell

1 Reservoir, we looked at historically how much flow  
2 crossing the stateline, less what was diverted, arrived  
3 into Lovewell. And we used that relationship to develop  
4 a loss percentage stateline flows to get a new inflow  
5 volume into Lovewell.

6           Within Lovewell, then, we had new inflow  
7 values. We used the state storage area curves provided  
8 by the Bureau to arrive at new elevations. We then used  
9 standard pan evaporation, the factors that the Bureau  
10 specifies, .7, to arrive at how much evaporation we  
11 would be having. Releases from Lovewell then were  
12 essentially the updated inflows, less whatever  
13 evaporation we would have had.

14           To get the timing of those releases from  
15 Lovewell, we looked again historically of the total  
16 releases from Lovewell for irrigation into Lower KBID,  
17 what percentage of those occurred per month. We used  
18 those monthly values then to divert -- to arrive at our  
19 diversions into Lower KBID.

20           Similarly, to how we did Upper KBID, we  
21 looked at historically what was delivery to farm based  
22 from what was diverted, we used those percentages to  
23 establish new deliveries into Lower KBID. That took us  
24 to the point of return flows.

25           I think, as we discussed through here, we

1 essentially used the same technique in the report that  
2 we were reviewing. We specified, perhaps, an irrigation  
3 efficiency that we used that was -- from what I heard,  
4 is different slightly than what would have been used in  
5 the Book report.

6 I guess the major difference in our report  
7 versus the Book report would be what we assumed the  
8 downstream irrigation diversions would have been.  
9 Again, we used the Appendix D information; but rather  
10 than using the maximum values in that table, we used the  
11 average values listed in that table.

12 That pretty well walks us through the  
13 general purpose of what we did.

14 I might add, we -- well, I'll leave it at  
15 that for now.

16 Q. Very good.

17 And am I correct in understanding, you  
18 didn't conduct any additional analysis of whether there  
19 were limitations on the beneficial use of this water  
20 once it was delivered, did you?

21 A. No.

22 Q. And so this represents kind of an outside  
23 max volume, assuming it could all be beneficially used?

24 A. Yes.

25 MR. WILMOTH: I have nothing further on

1 direct.

2 ARBITRATOR DREHER: Okay, I've got a number  
3 of questions.

4 Just to make sure that I have my  
5 understanding in line with what actually occurred, did  
6 the Nebraska Bostwick Irrigation District divert any  
7 water from storage in Harlan County Lake during 2005?

8 THE WITNESS: My understanding is no, they  
9 did not.

10 ARBITRATOR DREHER: You've obviously  
11 reviewed Mr. Book's report, and I guess the question I  
12 have is: Do you agree with the values for 2005 that are  
13 in Attachments 1 and 2 of Mr. Book's report?

14 MR. WILMOTH: Do you have a copy of that  
15 report, Mr. Groff?

16 THE WITNESS: I do not have one with me.

17 MR. WILMOTH: May I provide him one?

18 ARBITRATOR DREHER: Sure.

19 MR. WILMOTH: Mr. Arbitrator, which  
20 attachment was it?

21 ARBITRATOR DREHER: It's Attachments 1 and  
22 2 to Mr. Book's report.

23 MR. WILMOTH: If you will accept the fact  
24 that I might have a note or two on here.

25 MR. DRAPER: I found a copy, also.

1 MR. WILMOTH: With attachments?

2 MR. DRAPER: Yes.

3 MR. WILMOTH: Thank you.

4 Is this what you're referring to? There is  
5 a Figures, Table, Appendices and Attachment. Is that  
6 what you're looking for?

7 ARBITRATOR DREHER: That's the one.

8 MR. WILMOTH: Attachment 2 is here, I  
9 believe. Would it be possible to read that question  
10 back.

11 (The last question was read.)

12 THE WITNESS: Yes, I believe we did use the  
13 same values for 2005.

14 ARBITRATOR DREHER: And have the values for  
15 2005 that I just referred to in Attachments 1 and 2 of  
16 Mr. Book's report, have they been adopted by the  
17 Republican River Compact Administration?

18 THE WITNESS: I will probably have to defer  
19 that to those that are little bit more knowledgeable on  
20 the whole.

21 My understanding is there were two sets of  
22 numbers approved, pending the ruling on the nonfederal  
23 reservoir evap. My understanding is these are the  
24 numbers that coincide with your ruling, plus, I believe,  
25 these are all the accepted numbers, but I'm not

1 100 percent sure of that.

2 ARBITRATOR DREHER: I don't remember if you  
3 were here for Mr. Book's testimony or not.

4 THE WITNESS: I was.

5 ARBITRATOR DREHER: I'll ask you the same  
6 questions that I asked him.

7 Given the preciseness of the procedures  
8 outlined in the FSS, why shouldn't Nebraska's overuse  
9 during water-short year administration for 2006 be the  
10 two-year average of overuse above Guide Rock for 2005  
11 and 2006?

12 THE WITNESS: Well, I think at the time  
13 that we put this report together, we were essentially  
14 responding to the approach that was done in the Book  
15 report. So I don't believe that we necessarily  
16 contemplated that question at the time that we developed  
17 this report.

18 ARBITRATOR DREHER: But you did testify  
19 that the compliance point for Nebraska was at Guide  
20 Rock?

21 THE WITNESS: Correct.

22 ARBITRATOR DREHER: But that's for  
23 water-short year administration?

24 THE WITNESS: Correct.

25 ARBITRATOR DREHER: So for 2005, which

1 pursuant to the FSS, is one year before the first  
2 water-short year compliance requirement. Why shouldn't  
3 Nebraska's overuse, if any, be determined by subtracting  
4 Nebraska's computed consumptive beneficial use,  
5 including both surface and groundwater, and less  
6 imported water supply credits, why shouldn't that be  
7 subtracted from the allocations -- straightforward  
8 allocations set forth in Article IV of the Republican  
9 River Compact?

10 THE WITNESS: I suppose that's something we  
11 probably should explore. We didn't for the purposes of  
12 this report.

13 MR. WILMOTH: Just to clarify, too, for the  
14 record, I don't recall Mr. Groff -- and I may be  
15 misremembering this, but I don't think we indicated that  
16 Mr. Groff was an expert on accounting procedures under  
17 the RRCA.

18 I think what -- if I may ask the question,  
19 Mr. Groff, were you focusing principally on the kind of  
20 physical water movement?

21 THE WITNESS: Yes.

22 MR. WILMOTH: And not on accounting  
23 procedures that Mr. Dreher is asking you about?

24 THE WITNESS: I believe that's a fair  
25 assessment. I mean, I have to have some level of

1 understanding of the accounting procedures in order to  
2 do the process, but I rely heavily on others for the  
3 expert opinion on particular accounting rules.

4 MR. WILMOTH: I just didn't want you to be  
5 confused about what he was attempting to do.

6 ARBITRATOR DREHER: Well, it's the only  
7 witness that you're offering in the related area, so  
8 that's why I'm asking the question.

9 MR. WILMOTH: Certainly.

10 ARBITRATOR DREHER: On page 6 of your  
11 report, you make a statement which reads as follows:  
12 Quote, It is questionable whether the increased flows  
13 potentially resulting from a reduction in Nebraska's  
14 consumptive use in the manner proposed by Kansas would  
15 in fact be physically available for diversion into  
16 Courtland Canal.

17 Can you explain -- I'm not sure I track  
18 exactly what you mean by that in the context of what you  
19 just described this afternoon.

20 THE WITNESS: I think it would require  
21 clarifying what I meant by "manner proposed by Kansas."

22 They have a proposal that Nebraska would  
23 eliminate pumping within a quick response area all along  
24 the river. A portion of that lies below Guide Rock;  
25 it's between Guide Rock and Hardy. So flows that would

1 result as a reduction of pumpage in those areas would  
2 not be available at Guide Rock.

3 I believe that was what I was alluding to.

4 ARBITRATOR DREHER: But that really doesn't  
5 relate, then, to how much water would have been  
6 physically available, had Nebraska been in compliance  
7 then?

8 THE WITNESS: To the extent that we were in  
9 compliance and that streamflows gained below Guide Rock,  
10 those flows would not be available for diversion into  
11 KBID through the Courtland Canal.

12 ARBITRATOR DREHER: The next question  
13 Mr. Book has already answered, so I will skip over it.

14 Also on page 6, though, you make the  
15 following statement, quote, For the purposes of this  
16 report, we accept Spronk's assumption that the  
17 additional supply volume would have been regulated  
18 through Harlan County Reservoir, or HCR, as you refer to  
19 it.

20 If the postulated additional supply,  
21 whatever that number is, if the postulated additional  
22 supply is available to the Kansas Bostwick Irrigation  
23 District in Harlan County Lake, can't the District call  
24 for the release of that water when needed and when the  
25 downstream capacity exists to redivert such water

1 release?

2 THE WITNESS: What we did there was, in  
3 order to get a volume to estimate, we needed to follow,  
4 kind of follow up on some procedures. And for looking  
5 at that volume, that's the approach that we took to get  
6 an annual volume.

7 Now, the distribution of flows into Harlan  
8 County Lake don't necessarily correspond to the flow --  
9 to the flows at Guide Rock. Those distributions aren't  
10 one and the same.

11 To try to mimic how those flows would be  
12 available in KBID, it became: What is a reasonable way  
13 to do that? Do we go in there and say, Okay, the flows  
14 are entirely available during the growing season? Do we  
15 say, The flows are entirely available during the  
16 nongrowing season?

17 We know that it is an annual compliance  
18 number, so it seemed to make the most sense, once we had  
19 a computed volume, to make it available temporally in a  
20 manner -- at our compliance point in a manner somewhat  
21 representative by history.

22 That historical distribution would reflect  
23 calls from KBID through the Courtland Canal.

24 ARBITRATOR DREHER: Well, the reason for  
25 the question is the way that you did the temporal

1 distribution, basing it upon the historic averages of  
2 temporal distribution, percentage of annual volume for  
3 the years 1994 through 2007.

4 And I guess I have a question, if not a  
5 concern, as to how representative those averages are for  
6 what would have happened in 2005 and 2006, had that  
7 water been available.

8 I mean, 2006, I think, in particular,  
9 seemed to be somewhat of a -- I don't want to say it was  
10 hugely abnormal, but there was significant rainfall, and  
11 I don't know how close to this historic period average  
12 rainfall would have been -- also been temporally  
13 distributed in accordance with the average over this  
14 period. I just don't know.

15 And how it could affect this analysis --  
16 this gets to the question, how this could affect the  
17 analysis is if the temporal distribution that you  
18 assumed resulted in KBID not being able to divert and  
19 use the water, for some reason, then you could have  
20 underestimated what their actual behavior would have  
21 been, had they had full control over when the releases  
22 were actually made.

23 THE WITNESS: I guess to address that  
24 concern, we did -- based on this distribution, we  
25 diverted 100 percent of those additional flows into

1 KBID. We -- the report talks about our scaling factor  
2 for growing season flows, so that we could take  
3 100 percent of those flows and put them to Upper KBID.  
4 Nongrowing season flows then flowed into Lovewell. We  
5 didn't -- the report talks about a 10 percent storage  
6 cap in the flood pool at Lovewell.

7 ARBITRATOR DREHER: Right.

8 THE WITNESS: We allowed our analysis to  
9 exceed that 10 percent. So to the extent that we could  
10 make water available, we did.

11 Granted, the distribution of flows is  
12 subjective, and we felt like that time period  
13 represented a range of flows, a range of precipitation  
14 patterns that seemed like a reasonable distribution to  
15 make.

16 ARBITRATOR DREHER: And given that I  
17 haven't read your report as recently as some of the  
18 others, or should I say reread it, because I read it a  
19 couple of times, the postulated additional water, based  
20 upon what you just said, you're sure that you used --  
21 you allowed the simulated use of 100 percent of that  
22 water?

23 THE WITNESS: We routed 100 percent of it  
24 through KBID. And then each month -- I think there are  
25 some tables in there show each month we had varying loss

1 percentages based on the historical; but 100 percent of  
2 it was made available at the stateline to go -- well,  
3 100 percent of it was diverted.

4 ARBITRATOR DREHER: Into the KBID system?

5 THE WITNESS: Into the 1 Courtland Canal,  
6 mile .7. And then we had loss factors to get to the  
7 stateline and all that.

8 ARBITRATOR DREHER: But other than the loss  
9 factors, was any of this additional water in your  
10 analysis not diverted at a farm headgate, other than the  
11 losses?

12 THE WITNESS: No. The only -- we didn't  
13 intentionally -- we intentionally did not allow any  
14 water to continue down Republican River, and we did not  
15 intentionally spill any water in Lovewell Reservoir.

16 I think -- in my deposition I think we  
17 talked about we did have a formula error that resulted  
18 in a spill that impacted things to the tune of about 150  
19 acre-feet, something like that; but otherwise, we tried  
20 to make the water as available to KBID as possible.

21 ARBITRATOR DREHER: But then below KBID,  
22 you didn't allow -- by using the average diversions in  
23 Appendix D, you didn't allow for the full rediversion of  
24 those return flows; is that accurate or not?

25 THE WITNESS: Below Lovewell, everything

1 was diverted to farms below Lovewell, except to what we  
2 calculated as evaporation in the reregulation time in  
3 Lovewell. And then we followed the same procedures as  
4 used in the Book report, as far as return flows, as a  
5 volume of return flows, the difference being that when  
6 we get to the actual diversions below, we used an  
7 average at a maximum.

8 ARBITRATOR DREHER: And that resulted -- if  
9 I understand it correctly, did that result in some of  
10 those return flows not being diverted below, downstream  
11 of the KBID area?

12 THE WITNESS: Yes. Essentially that  
13 selection of averages at a maximum lowered that number,  
14 yes.

15 ARBITRATOR DREHER: And you refer to this,  
16 I think, again; but if you wouldn't mind, if you could  
17 further explain the use of the scaling factor described  
18 at the bottom of page 11.

19 THE WITNESS: Sure.

20 If -- when we look at the historical record  
21 for that time period, it's not 100 percent of the flows  
22 coming through Courtland Canal during the growing season  
23 are necessarily diverted into Courtland -- or into Upper  
24 KBID; but for this analysis, we already knew, and I  
25 guess we had the benefit of foresight of knowing what

1 the conditions in Lovewell were.

2 So we made, basically, an optimization  
3 decision in the benefit of Upper KBID to divert  
4 100 percent of those flows, and that scaling factor 6 is  
5 what allowed that to happen.

6 So, essentially, any water coming down the  
7 canal in the months of basically June, July, August,  
8 those were all diverted for use in Upper KBID.

9 ARBITRATOR DREHER: And my last question  
10 may not be -- you may not be the right person to ask.

11 But I've seen the Annual Reports for 2005  
12 and 2006 from the Kansas Bostwick Irrigation District.

13 Does the Nebraska Bostwick Irrigation  
14 District publish Annual Reports like that?

15 THE WITNESS: To my knowledge, they do,  
16 yes.

17 ARBITRATOR DREHER: Well, again, I don't  
18 know how to necessarily get them into the record, but it  
19 would -- I would like those to be introduced, so that at  
20 least I could have the opportunity of reviewing them.

21 MR. WILMOTH: I will investigate that for  
22 you.

23 ARBITRATOR DREHER: Okay.

24 Mr. Draper.

25 MR. DRAPER: Thank you, Your Honor.

1 CROSS-EXAMINATION

2 BY MR. DRAPER:

3 Q. Good afternoon, Mr. Groff.

4 A. Good afternoon, Mr. Draper.

5 Q. I believe you state, as part of the purpose  
6 of your study, the quantification with respect to the  
7 alleged overuse by the State of Nebraska; is that right?

8 A. Yes.

9 Q. You do agree that there is some overuse; is  
10 that right?

11 A. I believe that the numbers that have been  
12 agreed to in 2005 would indicate that to be the case,  
13 yes. I believe that the situations for 2006 are still  
14 under dispute.

15 Q. But in some quantity, they're more than  
16 just alleged at this point?

17 A. Probably I'm not the most qualified to make  
18 a legal determination of what is alleged. I can say  
19 that 2005 spreadsheet numbers show to be approved by the  
20 State of Nebraska.

21 Q. And you assume, for purposes of your  
22 analysis, that all of the evaporation in 2006 from  
23 Harlan County Reservoir was allocated to Kansas; is that  
24 right?

25 A. Correct, we did.

1 Q. And that's the first time that that has  
2 ever happened; isn't that right?

3 A. To my knowledge.

4 Q. You also assumed in your analysis that if  
5 Kansas were receiving its share of Republican River  
6 Compact -- Compacted waters to the Kansas Bostwick  
7 District, that the Nebraska Bostwick District would not  
8 be receiving anything; is that right?

9 A. For the purposes of this analysis, with the  
10 additional supplies that Nebraska was providing, we did  
11 not allow Nebraska Bostwick to get that water.

12 Q. Well, whether Nebraska Bostwick is  
13 receiving water through some of these facilities affects  
14 your decision as to how much water to determine becomes  
15 available for use by Kansas Bostwick, doesn't it?

16 A. Well, there is an actual physical loss of  
17 water that occurs in the canal because of the physical  
18 transit of that water. So there could be, I guess, an  
19 assignment of loss based on use, but physically there is  
20 only going to be so much water there.

21 Now, my understanding of the accounting is  
22 that as NBID would use, that that would increase  
23 Nebraska's overage; thus, the initial volume that we  
24 started with would have been the correct volume. So you  
25 kind of get in a circular problem.

1           So it seemed that this water was already  
2 being delivered for the purposes of making up overuse.  
3 Digging ourselves deeper into the hole didn't seem to be  
4 practical.

5           Q. So you assumed, even under the hypothetical  
6 condition that Kansas was receiving its water through  
7 Harlan County Reservoir, that Nebraska Bostwick was not  
8 receiving any water and, as one example, would share no  
9 portion in the evaporation that you assumed in Harlan  
10 County Reservoir?

11          A. Again, we used Harlan County in the  
12 accounting. It was just to establish a volume.

13           We relied on the fact that Nebraska's  
14 compliance point is Guide Rock; and, therefore, we  
15 looked at the timing of flows past Guide Rock, and that  
16 flows that were diverted down Courtland Canal would not  
17 be diverted by Nebraska Bostwick in that reach.

18          Q. Now, if you had chosen to assign some water  
19 going to NBID, for instance, they typically -- as we  
20 found yesterday, they typically act as a partner with  
21 the corresponding Bostwick Irrigation District at  
22 Kansas. That diminished -- that decision by you  
23 diminished the amount of water that you calculated the  
24 farmers in KBID would receive; isn't that right?

25          A. The number we computed was what Nebraska's

1 actual shortage was. We then alleged shortage, however  
2 you want to phrase that. We took that flow at our  
3 compliance point. We didn't allow that compliance water  
4 to be used by Nebraska Bostwick down the Courtland  
5 Canal, essentially reserving it for use in KBID.

6 Q. Now, isn't it true that NBID typically  
7 applies water to its lands, if it can obtain that water,  
8 either through the surface water delivery system of the  
9 Bureau project or from its wells?

10 A. Again, for this report we didn't do that.  
11 They weren't diverting in 2005 and 2006, so we -- again,  
12 this volume of water was a result of computed shortages,  
13 computed overusage by Nebraska. So to deplete that  
14 would reduce the amount of water available to KBID, and  
15 we did not do that.

16 Q. But NBID was still supplying its lands with  
17 water, wasn't it, from its wells?

18 A. I don't have direct knowledge to the extent  
19 to which that occurs. I know there are wells in NBID,  
20 but I don't know the extent.

21 Q. And that area does have some Ogallala  
22 aquifer underneath it, doesn't it?

23 A. I believe a portion of it is under land by  
24 the Ogallala.

25 Q. It's included in the domain of the RRCA

1 Groundwater Model; isn't that right?

2 A. Yes.

3 Q. Now, I believe you do agree with the Kansas  
4 experts with regard to the deduction that was determined  
5 associated with the increased storage in Harlan County;  
6 isn't that right?

7 A. I believe, as I mentioned in my deposition  
8 there, we -- there was a seasonal number there that we  
9 applied an annual number to, which, if you were to try  
10 to equate the distribution of flows into Harlan with the  
11 distribution of flows at Guide Rock, would require  
12 modification of those numbers a little bit. I think  
13 we're on the order of 500 acre-feet for 2005. I don't  
14 remember 2006.

15 It's not necessarily something you would  
16 have to do, because you could have different  
17 distributions; but it's a point that I raised during my  
18 deposition, yes.

19 Q. Now, in analyzing the transit losses  
20 between Guide Rock and the stateline in the Courtland  
21 Canal, did you follow the methods that are prescribed by  
22 the RRCA accounting procedures?

23 A. To compute the transit loss, we followed  
24 the techniques that I laid out in the report here, which  
25 were essentially to look at -- essentially to add the

1 volume of water at the stateline, plus what was diverted  
2 and divided by how much was available at the .7 mile  
3 Courtland Canal gage. So we did a physical calculation  
4 there based on those inputs.

5 Q. In other words, you deducted the total  
6 losses between Guide Rock and the stateline from the  
7 amount of the water that you allocated to Kansas?

8 A. Yes. Our goal was to get -- to arrive at a  
9 volume of wet water that would be available physically  
10 for diversion.

11 Q. And how did you consider the portion of the  
12 loss that was really Kansas water, the nonconsumptive  
13 portion of that loss?

14 A. Again, the technique we used looked at  
15 total loss. If that water is not physically there, it  
16 cannot be diverted. So we add our compliance volume at  
17 our compliance point, we look at the physical loss  
18 between the diversion into Courtland and its arrival at  
19 the stateline.

20 Q. And so what use, or what fate does that  
21 water have that you deducted that otherwise would have  
22 come to Kansas?

23 A. Are you asking me what happens to the  
24 seepage losses in the Courtland?

25 Q. Yes, the unconsumed seepage losses.

1           A. There are a host of factors. I suppose it  
2 could go to phreatophyte suitability, it could go to  
3 groundwater recharge, it could go into bank storage.

4           Q. And if it were bank storage, eventually it  
5 would come down to Kansas?

6           A. Yes. Another way that you would use that  
7 would be in -- you know, our analysis was year-to-year,  
8 so end of '06, could return to end of '07, type of  
9 thing. But generally, because we used a long term  
10 period, we should have factored that in our analysis.

11          Q. And to the extent that it becomes  
12 groundwater at the recharge, it then is pumped by Kansas  
13 or by Nebraska farmers and used in Nebraska, rather than  
14 Kansas; isn't that right?

15          A. I'm sure it's pumped by whoever is  
16 hydrologically connected with that water and losses near  
17 the stateline could go either way. Those that are up  
18 near the diversion point, most likely, are Nebraska  
19 farmers, yes, sir.

20          Q. How many miles of the Courtland Canal are  
21 in Nebraska?

22          A. There is roughly 15 miles from the point of  
23 diversion at Guide Rock to the stateline.

24          Q. And that's where these losses are  
25 occurring; isn't that right?

1           A. Yes, that's where we looked at this loss  
2 calculation, was that reach.

3           Q. So that would be recharged areas that are  
4 within the state of Nebraska; isn't that right?

5           A. Those lands would -- the canal is in the  
6 state of Nebraska.

7           Q. Did you assign any value to that water in  
8 your analysis?

9           A. No, we did not assign any value to that  
10 water.

11          Q. Were you here yesterday for the testimony  
12 of Mr. Ross?

13          A. Yes, I was.

14          Q. Did you have any reason to disagree with  
15 his testimony regarding the use of wells in KBID?

16          A. Mr. Ross spoke a lot about the wells. I'm  
17 not sure which specific statements, if you're referring  
18 to any. I have no reason to doubt his knowledge of that  
19 area.

20          Q. You indicate that there may be wells in  
21 Kansas that would intercept return flows from KBID?

22          A. We mentioned that as something that should  
23 be evaluated.

24          Q. Did you evaluate it?

25          A. No, not as part of this report. We just

1 indicated that's something that, given additional time,  
2 would be something that would be worth looking into.

3 Q. And to the extent that would occur, that  
4 would be additional uses in Kansas that were foregone as  
5 a result of the lack of water under the Compact; isn't  
6 that right?

7 A. Well, as I stated, we would need to  
8 evaluate what all was going on, whether it is  
9 replacement of storage water or what exactly would be  
10 going on in that situation.

11 Q. Would you summarize your analysis of how  
12 the water, in the way you looked at it, was operated  
13 through Lovewell Reservoir in KBID?

14 A. Just a general discussion of the reservoir  
15 operation section of the report?

16 Q. Well, if you could focus particularly on  
17 the supplies to KBID that you assumed would be there and  
18 how you routed those flows to and through Lovewell.

19 A. Okay. I'll start. If I'm not going where  
20 you're asking, please stop me.

21 Q. Okay.

22 A. We -- the available supply we had at the  
23 stateline, we -- again, we looked at historically what  
24 percentage of that water had been diverted into Upper  
25 KBID, and we looked at historically what kind of canal

1 losses we could expect. And we used an averaging  
2 technique over that period and efficiencies are affected  
3 by a great number of things. It can be affected by  
4 quantities of flow, timing of flow, precipitation,  
5 timing and volumes of precipitation, conditions of  
6 canals.

7           So we tried to pick a time period which  
8 would be representative of -- captured those effects.  
9 It's hard to pick a number, so we tried to span that by  
10 using that averaging technique. We thought we made a  
11 reasonable approximation of that.

12           And using those types of efficiencies, we  
13 were able to compute new inflows into Lovewell. We then  
14 had basically a spreadsheet, operations model, if you  
15 will, that looked at, given the new inflows, what the  
16 historical elevations were; we projected new  
17 end-of-month elevations; computed an evaporation, stored  
18 water that arrived during the nongrowing season for  
19 release to Lower KBID during the growing season, tried  
20 to release that water in a temporal fashion as it had  
21 been released previously.

22           Q. Did you allow in your analysis KBID to call  
23 for the water when the water was needed?

24           A. No. The approach we basically took was  
25 this was a volume of water that's available at our

1 compliance point, because I talked about, you know, we  
2 put a temporal distribution on that that seemed to be in  
3 line with what historically had been there and then made  
4 100 percent of that available to KBID. Whether or not  
5 they would have needed it or asked for it, we sent it  
6 all down.

7 Q. And by handling it that way, rather than as  
8 it is actually done with pursuant to calls, didn't you  
9 cause certain waters to go unused -- certain surface  
10 waters to go unused in KBID?

11 A. I don't see where we would have had  
12 anything go unused. You could say that there were  
13 waters that either went to Lower KBID that should have  
14 potentially gone to Upper KBID, or Upper KBID that  
15 should have gone to Lower KBID, or distribution of that  
16 would probably be -- could be subject to saying, you  
17 know, that's higher than a lot the distribution that we  
18 picked above; but again, I don't believe that we spilled  
19 any water other than what I previously mentioned. We  
20 didn't allow water to remain in a river.

21 Q. I think you said you made a change in how  
22 much water could be stored in Lovewell so that there  
23 wouldn't be spill; is that right?

24 A. Correct. My understanding is historically  
25 the Corps of Engineers is allowed up to 10 percent of

1 the flood pool to be used as irrigation storage and then  
2 beyond 10 percent, that that has been the historical.  
3 We went beyond that as part of this analysis and we  
4 didn't basically enforce a 10 percent cap.

5 Q. And is that a sense in which your report is  
6 conservative or is that just to correct for this forced  
7 feeding, if you will, of Lovewell with diversions?

8 A. In my view, I guess I kind of look it  
9 initially as being conservative. The forced feeding  
10 essentially is the flows are at our compliance point  
11 representative of historic time. If Lovewell was truly  
12 in the flood pool and the flows were as they  
13 historically were, would Lovewell have called for the  
14 water or not, I can't say.

15 But it seemed to be, for what we're talking  
16 about, to be the conservative call to bring it down into  
17 Lovewell and allow it to be used for irrigation in Lower  
18 KBID.

19 Q. But you do accept the assumption that this  
20 water can be initially regulated through Harlan County  
21 Reservoir, don't you?

22 A. When we look at the whole hypothetical  
23 situation, there's a number of ways, I think, that you  
24 could manage the timing of this water.

25 What we tried to do was come upon a

1 reasonable way to do it up at the compliance point; and  
2 yet, we believe that if the flows are historically  
3 coming in this pattern, it seemed reasonable to use that  
4 pattern for these flows as well.

5 Q. But didn't this result in leaving water  
6 unused in Lovewell Reservoir?

7 A. Only, I guess, if you're referring to the  
8 water that would be in Lovewell postirrigation season in  
9 2006 that would be available for diversion in 2007.

10 In other words, you're referring to Figure  
11 4-7, the last three or four months of that curve would  
12 have been water that did cross the stateline would not  
13 have necessarily been delivered within that year to  
14 those irrigation lands -- to the lands in KBID in 2006,  
15 but they were certainly available over there for 2007.

16 Q. Now, to the extent that you had water in  
17 Lovewell at the end of the 2005-2006 study period, did  
18 you quantify the benefits from using the water that was  
19 left in Lovewell if it occurred at a later time?

20 A. I believe our -- the ending point for our  
21 analysis with our additional water supply or adjusted  
22 water supply and what actually happened were almost  
23 right on top of each other. So we did not do any  
24 analysis of what that delta meant.

25 Q. I was looking actually, not at Figure 4-7,

1 but Figure 4-5.

2 What does that show that is going on with  
3 respect to flows into Lovewell at the end of your study  
4 period?

5 A. Shows that we have additional inflows going  
6 into Lovewell above those which historically occurred  
7 for those last three or four months.

8 Q. Are you suggesting that it's appropriate to  
9 assume that KBID would call water down after the end of  
10 the irrigation season?

11 A. Again, a couple things. I guess, our  
12 analysis was that our compliance volume was an annual  
13 volume over that temporal distribution and 100 percent  
14 of that was sent down.

15 I guess, as a matter -- KBID has had  
16 inflows during -- after the irrigation season. So it  
17 didn't seem like it was an unheard of event to bring  
18 water into Lovewell.

19 Again, we made the assumption that we were  
20 making these flows 100 percent available, based on that  
21 time period, and that's what you're seeing there.

22 Q. Did you assign any value to that water?

23 A. No. Are you referring to economic value?

24 Q. Well, was that applied to the fields in  
25 your study?

1           A. Was this additional water brought down at  
2 our compliance point past the end of the growing season?  
3 No. We put it into Lovewell for storage.

4           Q. Is that part of the water you're analyzing  
5 here; namely, if this extra water had been available,  
6 how much of it would have reached the fields? Is it  
7 part of that water?

8           A. It's part of the water that -- it's part of  
9 this annual compliance water that we diverted for use in  
10 KBID.

11          Q. And your conclusion with respect to that  
12 part of the water that was diverted at Guide Rock and it  
13 made it down through all these losses, down the  
14 Courtland Canal and so on, it stayed in Lovewell and was  
15 assigned -- and was considered not to have reached the  
16 fields?

17          A. That would be correct, because it wouldn't  
18 have been at our compliance point until after the end of  
19 the growing season.

20          Q. But this is the water that you were  
21 analyzing to see how much would get to the fields and  
22 you decided that portion of the water would not get to  
23 the fields because it would be stored in Lovewell?

24          A. Again, that goes back to the temporal  
25 distribution of that water at our compliance point.

1           Q. So you applied a temporal distribution that  
2 you chose, based on the factors that you mentioned, and  
3 that resulted in, not only the losses from seepage and  
4 other causes intervening, but some losses because you  
5 assigned it to months that were too late for it to be  
6 used on the fields in KBID?

7           A. We looked at that volume of water as being  
8 an annual compliance number. We looked at what is a  
9 reasonable way to expect that annual compliance number  
10 to be at our compliance point. We based that on  
11 historical records of flow at that point. And so as  
12 that water became available, we made it available to  
13 KBID.

14           Q. And I believe your answer is that it came  
15 down on that schedule because of the temporal  
16 distribution that you used, even though KBID  
17 historically never called for that water at that time?

18           A. No. I believe that there is records of  
19 flows into Lovewell during that period of time. So I  
20 don't know that we can say that there has never been  
21 flows into Lovewell during that time period.

22           Q. But not called out at Harlan County?

23           A. Well, again, our compliance point is Guide  
24 Rock, and so we were looking at flows there. We weren't  
25 really looking at operations in Harlan County, per se.

1           We were looking at this is a volume of  
2 water that needs to pass Nebraska's compliance point  
3 within the year, and what's a reasonable way to expect  
4 it to pass that gage during the year.

5           We could have said it is all in the growing  
6 season, we could have said it is all in the nongrowing  
7 season. It seemed reasonable to look at historically  
8 how does it come and to take that same amount of water  
9 and put it through that same distribution path.

10           MR. DRAPER: This might be a good time to  
11 take a break.

12           ARBITRATOR DREHER: How much more time do  
13 we have?

14           MR. DRAPER: Maybe 10 to 15 minutes.

15           ARBITRATOR DREHER: Why don't we take a  
16 15-minute break then. I assume that -- let's see, is  
17 Colorado going to have any questions for this witness?

18           MR. AMPE: No.

19           ARBITRATOR DREHER: I assume that you will  
20 want some redirect.

21           MR. WILMOTH: Yes, sir.

22           ARBITRATOR DREHER: Are you going to want  
23 to start your rebuttal case yet this afternoon?

24           MR. DRAPER: I would prefer not if we  
25 could. Since we have a sense of what is being

1 presented, if we could start with that in the morning,  
2 it would be appreciated.

3 ARBITRATOR DREHER: Because it does appear  
4 we're somewhat ahead of schedule on this issue, to my  
5 surprise.

6 MR. WILMOTH: Maybe you didn't see this.

7 MR. DRAPER: We're fine-tuning it here.

8 ARBITRATOR DREHER: Because we did allot  
9 three days for this. And even if you do your rebuttal  
10 tomorrow morning, it doesn't appear we're going to use  
11 all three days. So I think that will be fine.

12 Let's go ahead and take our 15-minute break  
13 and then we'll come back, you'll finish and then we'll  
14 take a short break to allow Nebraska to redirect and  
15 then we'll probably call it a day.

16 (Break was taken from 3:20 to 3:34.)

17 ARBITRATOR DREHER: I think we're ready.  
18 Mr. Draper, if you want to conclude.

19 MR. DRAPER: Very good. Thank you, Your  
20 Honor.

21 Q. (BY MR. DRAPER) Mr. Groff, did you do any  
22 analysis of the water rights downstream -- the surface  
23 water rights downstream of KBID?

24 A. Downstream of KBID, the information that I  
25 had available would have been the Appendix D from the

1 Book report would have been the right information that I  
2 relied upon for this report.

3 Q. You did no independent analysis yourself?

4 A. No. I used those, the information in that  
5 appendix.

6 Q. And the results of your position on the use  
7 of the return flows downstream of KBID are shown in  
8 Table 6-1, is that right, of your report?

9 A. That would be correct.

10 Q. Page 27?

11 A. Yes.

12 Q. And in 2005, how much did you determine  
13 would have been used of the additional water?

14 A. Referring to the downstream diversions  
15 water?

16 Q. Yes.

17 A. 1054 acre-feet.

18 Q. So 1000 acre-feet -- 1054, in your opinion,  
19 would have been diverted out of a total of how much  
20 extra water?

21 A. Referring to the net return flows to stream  
22 number above it, 20,044?

23 Q. That would be the additional water that you  
24 would calculate reaching the stream, right?

25 A. Those were our net returns, yes.

1 Q. As a percentage figure, that's about, what?

2 About 5 percent?

3 A. If I remember from the deposition, I think  
4 we compute 7 percent; but, yes.

5 Q. One is about 5 percent of 20, right? It's  
6 a little higher in 2006, isn't it?

7 A. Yes.

8 Q. Something between 5 and 10 percent?

9 A. Yes.

10 Q. And how does that compare to the amounts  
11 determined by Mr. Book?

12 A. Our amounts are lower.

13 Q. As I recall, he determined about 25 percent  
14 is a combined figure of how much of the additional  
15 return flows would have been diverted. Does that sound  
16 about right?

17 A. I believe that's the number I've heard  
18 previously, yes.

19 Q. So you're less than -- less than half of  
20 that?

21 A. Yes.

22 MR. DRAPER: No further questions.

23 ARBITRATOR DREHER: All right.

24 MR. WILMOTH: I'm surprised again. May we  
25 have five minutes to just get together real quick on

1 this?

2 ARBITRATOR DREHER: Certainly.

3 (Break was taken from 3:40 p.m. to 3:45  
4 p.m.)

5 ARBITRATOR DREHER: Mr. Wilmoth.

6 REDIRECT EXAMINATION

7 BY MR. WILMOTH:

8 Q. Mr. Groff, I wanted to clarify a couple of  
9 things that I may have misperceived in the record, and I  
10 just want to make sure that no one else did.

11 There was some questioning, I believe, both  
12 by Mr. Dreher and Mr. Draper about whether there was  
13 some water that was unused, essentially, under your  
14 analysis.

15 Do you recall those general questions?

16 A. I do.

17 Q. And just for clarity sake, was there any  
18 volume of water that your analysis delivered at the  
19 stateline that went unused in Kansas?

20 A. No. Our analysis intended to make  
21 100 percent of that water usable.

22 As I mentioned, there was an error in the  
23 way we did the spills that resulted in about 150  
24 acre-feet that would have been unavailable; but other  
25 than that calculation, all of the flows were made

1 available to users in KBID.

2 Q. And Mr. Draper ended with a couple of  
3 questions about how your 2005 use number below KBID  
4 related to Mr. Book's.

5 Do you recall that line of  
6 questioning?

7 A. Yes.

8 Q. And there was this difference between  
9 5 percent and 25 percent.

10 Do you recall that?

11 A. Yes.

12 Q. And that 5 percent number, or that 1054  
13 number, there was -- I inferred an implication that  
14 there was -- that had something to do with return flows  
15 in the question.

16 But, in fact, it has nothing to do with  
17 return flows, does it?

18 A. Essentially, that is driven by the  
19 diversions and whether we accept from the Appendix D,  
20 the maximum value or the average value in our report.  
21 We looked at the numbers, it seemed that the average  
22 value was more reasonable to use, so that's what we used  
23 for this report.

24 MR. WILMOTH: Very good.

25 That's all I have.

1 MR. DRAPER: Your Honor, now I'm confused  
2 on that first point.

3 RE-CROSS-EXAMINATION

4 BY MR. DRAPER:

5 Q. I thought we were clear that there was  
6 water left at the end of the study period in Lovewell  
7 Reservoir unused and you said available. So maybe  
8 you're distinguishing between -- it's sitting there  
9 unused, it's available for use eventually, but it's not  
10 included in your quantity of water applied to the land?

11 A. I think the point was, in our analysis we  
12 didn't intentionally make water unavailable. In other  
13 words, we didn't -- we didn't send water to Lower KBID  
14 out of Lovewell in a season in which it couldn't be  
15 used. We didn't intentionally spill water out of  
16 Lovewell. We didn't leave water in the river.

17 As the course of natural operations and as  
18 the course of the fact that our compliance volume is  
19 measured on an annual basis, the water comes annually;  
20 it's not confined to the growing season. But, yes,  
21 there is water in the Lovewell that wasn't delivered in  
22 '06. And maybe that's the distinction there.

23 Q. So that, in other words, it was available  
24 for use in a later period, a later period, like started  
25 with 2007?

1           A. That last little, the three or four months'  
2 worth of the inflow into Lovewell that we looked at on  
3 the graphs, yes.

4           Q. Did you analyze that arriving at the  
5 fields?

6           A. No. Our analysis ended in 2006.

7           MR. DRAPER: Okay.

8           MR. WILMOTH: We have nothing further.

9           ARBITRATOR DREHER: One last question on  
10 this latter point.

11                   Is there -- is there a place in your report  
12 that shows this amount of water that was left in Lake  
13 Lovewell, at the Lovewell Reservoir at the end of 2006?

14           THE WITNESS: I don't believe we have  
15 reservoir volumes per month like that. I mean, there  
16 is -- you could maybe estimate them off of the graphs,  
17 but we don't have a table or anything like that.

18           ARBITRATOR DREHER: Where are those graphs  
19 again, for my benefit?

20           THE WITNESS: Figure 4-7 would have what  
21 the reservoir contents were by month.

22           ARBITRATOR DREHER: Okay. All right, thank  
23 you. Well, with that, we're ready for the rebuttal  
24 case, but --

25           MR. WILMOTH: Can we make --

1                   ARBITRATOR DREHER: We'll do that tomorrow  
2 once Nebraska has offered its exhibits.

3                   MR. WILMOTH: I just wanted to make sure  
4 that we had an opportunity to offer Nebraska Exhibits 7  
5 and 8, and 13; 7 being the CV, 8 being the report, 13  
6 being the graph.

7                   ARBITRATOR DREHER: Right. Any objection  
8 to those being offered?

9                   MR. DRAPER: No objection.

10                  MR. AMPE: No objection.

11                  ARBITRATOR DREHER: All right, they're  
12 accepted. And with that, we're adjourned for the day.

13                  (WHEREUPON, Nebraska Exhibits 7, 8 and 13  
14 were admitted into evidence.

15                  (WHEREUPON, hearing recess at 4:00 on March  
16 10, 2009 until Wednesday, March 11, 2009 at 8:00 a.m.)

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