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## Trial Transcript, Vol. 35, Afternoon Session

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File 142  
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Box 11

case # 4993

File # 142

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IN THE DISTRICT COURT FOR THE FIFTH JUDICIAL DISTRICT  
WASHANIE COUNTY, STATE OF WYOMING

IN RE: )  
)  
THE GENERAL ADJUDICATION )  
OF RIGHTS TO USE WATER )  
IN THE BIG HORN RIVER )  
SYSTEM AND ALL OTHER )  
SOURCES, STATE OF )  
WYOMING. )

Civil No. 4993

FILED

5/1

1981

*Margaret V. Hampton* CLERK  
DEPUTY

VOLUME 35

Afternoon Session

Tuesday, April 14, 1981

**ORIGINAL**

1 THE SPECIAL MASTER: Okay, Mr. White.

2 Q (By Mr. White) Mr. Kersich, I hand you what's  
3 been marked for identification as Plaintiff's  
4 Exhibit SK-41 and ask you whether or not you  
5 recognize that.

6 A Yes, I do.

7 Q Is it a chart that appears in the back of your  
8 report which has been previously admitted as --

9 MR. WHITE: -- and I have forgotten the  
10 exhibit number, Your Honor.

11 THE SPECIAL MASTER: Forty-three.

12 Q (By Mr. White) -- Forty-three?

13 A It appears to be, yes.

14 Q Is it true that the lands that are shown on Exhibit  
15 41, SK-45, as gravity -- let me start that over  
16 again. I dropped a verb some place. Is it true  
17 that the lands for which acreages are shown in  
18 SK-41 for gravity are shown on those exhibits,  
19 map exhibits, such as US WRIR C-46, which is the  
20 South Crowheart, in color?

21 In other words, are all the acreages shown  
22 on that Exhibit SK-41 for the South Crowheart area  
23 under gravity color on US Exhibit WRIR C-46?

24 A Yes, that was the intent to do that.

25 kersich-cross-white

1 Q Let's turn back to Exhibit US WRIR C-45, which is  
2 a map that you classified as Sprinkler Four North  
3 Crowheart area, and I ask you if you can show me  
4 on that exhibit the 1,227 acres of additional  
5 sprinkler which are listed for North Crowheart on  
6 SK-41, where those lands are located?

7 A. Not on the exhibit by itself, no. You are saying  
8 take the lands from WRIR C-45 and point specific-  
9 ally to those lands which are called additional  
10 sprinkler on our total in Exhibit SK-41, am I  
11 correct, sir?

12 Q That's correct.

13 A. No, I can't do that simply by using the exhibits.

14 Q All right. Can you if I show you the North Crow-  
15 heart sprinkler map, WRIR C-44?

16 THE SPECIAL MASTER: Which is not the sprinkler  
17 map. Which is what?

18 THE WITNESS: Gravity map.

19 MR. WHITE: I'm sorry. Gravity map. I  
20 apologize. Off the record.

21 (Whereupon an off-the-record  
22 discussion was held.)

23 Q (By Mr. White) Can you locate the additional  
24 sprinkler lands on that exhibit?

25 kersich-cross-white

1 A. The only way to locate the additional sprinkler  
2 lands is by the use of tabs, and we tabulated the  
3 information on acreages, and I believe we gave  
4 you a copy of those tabs at my last session.  
5 Isn't that correct, sir?

6 Q Yes.

7 A. Everything that was additional sprinkler -- in  
8 other words, that did not have a valid classifi-  
9 cation, was sprinkler only, was circled on the  
10 acreages and that's how we determined the acreages.

11 Q Al, do you have those tab sheets with you?

12 A. Yes, I do.

13 Q May I look at them, please?

14 A. You sure can.

15 THE SPECIAL MASTER: While you are handing him  
16 those, Mr. Kersich, give us again the distinction  
17 between land that is classified as gravity and  
18 land classified as additional sprinkler -- I mean  
19 land classified as sprinkler and land classified as  
20 additional sprinkler.

21 THE WITNESS: Yes, sir. Those are lands,  
22 which some of the lands can have either a gravity  
23 or a sprinkler classification to them. Some lands  
24 can only have a sprinkler -- gravity sprinkler

25 kersich-cross-white

1 classification to them, and some lands were not  
2 deemed acceptable for gravity irrigation but  
3 would meet the sprinkler standards and therefore,  
4 those are the lands that are called additional  
5 sprinkler.

6 Those are lands which were not covered in  
7 either the gravity classification, the sprinkler  
8 classification and gravity or any other type, in  
9 other words.

10 MR. WHITE: Your Honor, I didn't understand  
11 the answer. Could I ask the witness to explain  
12 it again?

13 THE SPECIAL MASTER: Why don't you read it  
14 and save him the trouble?

15 (Thereupon the following answer  
16 was read back as follows: "THE  
17 WITNESS: Yes, sir. Those are  
18 lands, which some of the lands  
19 can have either a gravity or a  
20 sprinkler classification to  
21 them. Some lands can only have  
22 a sprinkler -- gravity sprinkler  
23 classification to them, and some  
24 lands were not deemed acceptable  
25 for gravity irrigation but would  
meet the sprinkler standards and  
therefore, those are the lands  
that are called additional  
sprinkler.

Those are lands which were  
not covered in either the grav-  
ity classification, the sprinkler  
classification and gravity or any  
other type, in other words.")

25 kersich-cross-white

1

THE SPECIAL MASTER: Is that distinction set forth any place else and the definitions set forth any place else in Exhibit C-43, to your knowledge?

2

3

4

THE WITNESS: There is no definition of that in there, sir, as such.

5

6

THE SPECIAL MASTER: Okay. Mr. White, I'm sorry.

7

8

MR. WHITE: Could we go off-the-record for just a minute?

9

10

(Whereupon an off-the-record discussion was held.)

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kersich-cross-white



1 THE SPECIAL MASTER: Whenever you're ready,  
2 Mr. White.

3 MR. WHITE: Thank you, sir.

4 Q (By Mr. White) Mr. Kersich, is it true that  
5 within the tabulations which you have kindly  
6 provided me, those lands which are shown under the  
7 additional sprinkler heading in SK-41, have  
8 their acreage numbers circled?

9 A Yes.

10 Q That is the convention?

11 A That is the convention that we use, sir.

12 MR. WHITE: Your Honor, the United States  
13 has agreed that I can make copies of these on  
14 one condition, and that is that I admit that I  
15 made copies before but I lost the copies I made  
16 before.

17 (Laughter.)

18 THE SPECIAL MASTER: Okay.

19 MR. WHITE: And having fulfilled my part of  
20 the bargain, we will now take them and make copies.

21 THE SPECIAL MASTER: Okay, if that's all we  
22 lose out of the loads of paperwork and material,  
23 we have, we'll be lucky.

24 Q (By Mr. White) Okay. Mr. Kersich, I hand you what  
25 kersich-cross-white

1 has been marked for identification purposes only,  
2 as SK-42, and ask you whether or not you recognize  
3 SK-42?

4 A Yes, I do.

5 Q That's another summary chart of a back of U.S.  
6 Exhibit WRIR C-43, is that correct?

7 A Page 26 from that report.

8 Q I note in the total columns -- excuse me, the total  
9 column under sprinkler lands on SK-42, there is  
10 the number 44,382.

11 A Yes. Under North Crowheart, sir.

12 Q Yes, for North Crowheart.

13 A Yes.

14 Q How do you derive that number from the information  
15 that's shown on SK-41?

16 A You can't derive that number from SK-41.

17 Q Well, I see that North Crowheart gravity, both  
18 SK-41 and SK-42, show 46,649 acres.

19 A Yes, sir.

20 Q But when we move onto the total, the two total  
21 columns under additional sprinkler, and additional  
22 arable lands, is there any correlation between  
23 the values shown there for North Crowheart and  
24 the total sprinkler lands for North Corwheart and

25 kersich-cross-white

1

SK-42?

2

It doesn't seem to be an arithmetic

3

connection. Could you explain?

4

A Yes, sir, if I might.

5

Q If there is any explanation between the two

6

graphs.

7

A May I approach the two exhibits?

8

Q Yeah, go ahead.

9

A SK-42 has the units of North Crowheart listed

10

under gravity lands and under sprinkler lands.

11

Under gravity lands the lands that are broken out

12

on WRIR C-44, and those are lands which are

13

acceptable to gravity irrigation, or as we later

14

defined with hand moved sprinklers, things of

15

that nature, and the location and the approximate

16

size of the tracts and the land classifications

17

are depicted pictorially on WRIR C-44. And, so,

18

the 46,649 acres that are shown on SK-42 are the

19

same 46,649 acres that you would find on WRIR

20

C-44, as far as class, location and size of the

21

tracts.

22

With regard to the sprinkler lands figure

23

to WRIR C-44, and these are lands now which meet

24

the sprinkler lands classification only, --

25

kersich-cross-white

1 THE SPECIAL MASTER: If you go to C-44 or  
2 C-45?

3 THE WITNESS: C-45, sir.

4 A If you go to SK-42, the total of 44,382 is equal  
5 to the figure that's shown on C-45 as a total  
6 lands, and these lands then are the lands that  
7 are both by class and location, located upon the  
8 exhibit pictorially.

9 Q (By Mr. White) Okay. Is there any other exhibit  
10 besides SK-41 that shows total arable land of  
11 47,876 for the North Crowheart area, which is in  
12 the last column, first row, of SK-41?

13 A I don't believe so, but I'll check.

14 What -- maybe I can explain this a little  
15 bit here.

16 Q Well, let me ask you to answer that question.

17 THE WITNESS: All right. Would you read the  
18 question back, please? I'm sorry.

19 (The above question was read  
20 (back by the Reporter as  
21 (follows: "Q Okay. Is there  
22 (any other exhibit besides  
23 (SK-41 that shows total arable  
24 (land of 47,876 for the North  
25 (Crowheart area, which is in  
(the last column, first row  
(of SK-41?"

24 A No, sir, not to my knowledge.

25 kersich-cross-white

1 Q (By Mr. White) Okay. Now, what did you want  
2 to explain, Al? You wanted -- you said, let me  
3 explain here a little bit and --

4 A Okay, I -- maybe I shouldn't be offering too much  
5 here, but all I'm saying is that what we tried to  
6 do, is come up with a total of -- total arable  
7 lands and if land had both the gravity and the  
8 sprinkler classification to it, we didn't add them  
9 up together to get the total arable lands. We  
10 tried to just get those lands that met both  
11 sprinkler and gravity, and then just any additional  
12 sprinkler on top of that to develop the total  
13 arable base.

14 Q Okay. Now, you're saying then, that some lands,  
15 in some cases, the same lands, are classified for  
16 both gravity and sprinkler?

17 A Yes.

18 Q Is that correct?

19 In all cases, or are lands given the same  
20 classification for gravity as they were for  
21 sprinkler?

22 A No.

23 Q Okay. Isn't it true that you have significant  
24 amounts of land that are classified 3 gravity

25 kersich-cross-white

1 and 1 sprinkler?

2 A Yes.

3 Q How did you decide that the same land would be  
4 classified as 1 sprinkler when it had already  
5 been classified as 3 gravity?

6 A Well, the standards allow that. If you go back  
7 to the standards and you will see that under  
8 gravity, for example, slope is a consideration.  
9 Let's take slope for example, under gravity  
10 under Class 1, you're limited from zero to two  
11 percent. For sprinkler you could have an eight  
12 percent slope and still qualify as Class 1.

13 Q Okay. How did you decide that sprinklers --  
14 excuse me, let me back up. How did you decide  
15 that land could be Class 1 --

16 A For sprinkler?

17 Q -- with an eight percent slope for sprinklers?

18 A I'm afraid I don't understand the question.

19 THE SPECIAL MASTER: Well, who set those  
20 standards you just testified about?

21 THE WITNESS: We set the standard.

22 THE SPECIAL MASTER: Well, who are we?

23 THE WITNESS: HKM.

24 MR. WHITE: I skipped a couple of questions.

25 kersich-cross-white

1 I'm sorry, sir.

2 THE SPECIAL MASTER: That's okay.

3 Q (By Mr. White) HKM established the standards.  
4 How was it determined that the same land would  
5 go from Class 3 for gravity, to Class 1 for  
6 sprinkler at an eight percent grade? In other  
7 words, what determination did you make that  
8 would allow you to conclude that sprinklers on  
9 an eight percent grade would turn otherwise  
10 Class 3 lands into Class 1 lands?

11 A Well, if the lands met all of the other limitations  
12 that Class 1 has: The depth of soil, one thing  
13 and another, and the only deficiency, for example,  
14 would have been the slope, we know that we can  
15 handle steeper slopes. It is an accepted method  
16 of handling steeper slopes by putting sprinklers  
17 on. In our review of setting up the standards,  
18 why, those were the applicable slopes that we  
19 chose for Class 1.

20 Q Okay, the question is: Why did you choose those  
21 slopes for Class 1?

22 A Because they allow us to with sprinklers, where  
23 we can handle those slopes. We don't have to  
24 worry about the length of run, about the problems

25 kersich-cross-white

1 with our ditches and our field sizes. As far  
2 as the slope is concerned, we didn't have to  
3 border dike, things of that nature.

4 Q Okay. On page 8 of Exhibit C-43 of your report,  
5 you define Class 1 lands as land being of high  
6 quality irrigation and will yield high returns  
7 on minimum production and management costs. How  
8 did you determine that an eight percent grade  
9 for sprinkler lands would yield high returns  
10 with a minimum production and management cost?

11 A One thing, when we go into the sprinkler for the  
12 first thing, we decrease our labor cost so our  
13 production costs decrease. The slopes in them-  
14 selves, an eight percent slope by practice in  
15 the field, has not been -- is not an excessive  
16 slope for these types of lands. We've got good  
17 moisture holding capacity, we are assuming, we've  
18 got good workability, our soils are at least 36  
19 inches in depth. The slope can be handled by  
20 the mechanical application because on a gravity  
21 system you begin at one spot and you have to run  
22 the water down the hill to the field. With a  
23 sprinkler system, ordinarily you carry the water  
24 through a pipe through the point you're going to

25 kersich-cross-white



1 put the water on, so if you're down here at the  
 2 tail end of a field that's, let's talk about  
 3 a center pivot, it is 1,320 feet away from the  
 4 source of water. You're putting on the water at  
 5 the place that you want to put it on, you don't  
 6 have to run it all the way down the field from  
 7 a point 1,300 feet away.

8 Q Would you please turn to page 8?

9 A I'm there, sir.

10 Q Okay, what production costs, and I'll later ask  
 11 you what management costs specifically, specific  
 12 costs did you consider in establishing the eight  
 13 percent slope standard for Class 1 sprinkler lands?

14 THE SPECIAL MASTER: Mr. White, may I inject  
 15 before he answers that. Is that relevant to  
 16 determining arable lands or is that more appropriately  
 17 a question on irrigable lands?

18 MR. WHITE: Well, it might be, Your Honor,  
 19 except that the witness has testified about arable  
 20 land. He's testified about his classification of  
 21 arable lands and he's testified through this  
 22 report.

23 THE SPECIAL MASTER: But does the economics  
 24 of that crop have any place in the question on

25 kersich-cross-white

1 arable lands?

2 MR. WHITE: Well, I think we are about to  
3 find out, Your Honor, because the witness' own  
4 report says that it does. His own report speaks  
5 of minimum production and management costs and  
6 I think --

7 THE SPECIAL MASTER: Okay. He may answer.

8 Q (By Mr. White) Okay, specifically what production  
9 costs did you consider, Al, including the values  
10 in determining that an eight percent slope was  
11 appropriate for Class 1 sprinkler lands?

12 A We did not do a farm budget, if that's what you're  
13 asking me.

14 Q I'm asking you what cost you considered in  
15 compliance --

16 A Okay. What is the cost of delivering water with  
17 a sprinkler system? As I said before, you don't  
18 need the ditch system, you don't need the border  
19 dike, you don't need the water control measures.

20 Q What value per acre-foot of water did you  
21 establish, if any, for the cost of delivering  
22 water?

23 A We did not sit down and do the economics out.

24 Q But, did you do the costs, not the economics, the

25 kersich-cross-white

1 costs, did you come up with any dollar figures  
2 when you made this analysis?

3 A No, we worked with this and other specifications  
4 in the area which indicates what Class 1's are --

5 Q How did you know --

6 A -- Class 1 land is.

7 Q How did you know then that the cost, without  
8 using dollar figures, how did you know that the  
9 costs associated with an eight percent grade  
10 were indeed minimum costs as called for by your  
11 definition?

12 A How do I know that?

13 Q Yes, without using dollar figures?

14 A One place I do note, is from my experience in  
15 the business.

16 Q Okay. How much experience, prior to this study,  
17 did you have with the actual irrigation of land  
18 on the Wind River Indian Reservation, by sprinklers  
19 with a net eight percent grade?

20 A On the Wind River Indian Reservation, none. In  
21 other places, much.

22 Q Well, let me see if I've got it straight. You  
23 used no dollar values in determining your costs,  
24 is that correct?

25 kersich-cross-white

1 A That's correct.

2 Q And you relied on your professional judgment,  
3 which was derived from experience in other  
4 places aside from the Wind River Indian Reservation,  
5 is that correct?

6 A That's one of the places, yes.

7 THE SPECIAL MASTER: Before you leave these  
8 exhibits -- are you about to leave them, these  
9 two?

10 MR. WHITE: I was going to ask a couple more  
11 questions. I couldn't let it go.

12 THE SPECIAL MASTER: I have one when you're  
13 through.

14 Q (By Mr. White) If you made a determination that  
15 eight percent slope resulted in minimum production  
16 and management costs, what was the slope which  
17 you used for the maximum production and management  
18 cost which you developed based on your professional  
19 experience?

20 A Well, first of all, it isn't just slope, of  
21 course, that affects production and cost.

22 Q I understand that, but I'm asking you --

23 A Okay, that's only one element. I just want that  
24 understood so that we both understand.

25 kersich-cross-white

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We allowed, in Class 3, up to 20 percent slopes.

Q Uh-huh. And was that again based on no dollar costs and professional opinions derived from experience outside the Wind River Indian Reservation?

A From professional experience outside the Wind River Indian Reservation and a review of what was going on in other areas, yes.

\* \* \* \* \*

1 Q (By Mr. White) Did you use any dollar values  
2 for any of the percent/slope standard for Class 1.  
3 Class 2, Class 3, or Class 4 as shown on Page 11  
4 of your report?

5 A No, we did not. Not directly.

6 MR. WHITE: I'm going to leave those exhibits,  
7 Your Honor.

8 THE SPECIAL MASTER: The last time, Mr.  
9 Kersich, that we dealt with Page 26 of the Exhibit  
10 C-43, which is the same as SK-42 that Mr. White is  
11 using now, I drew from my notes the fact that Mr.  
12 White either as much as said or so proved by what  
13 he brought out from you that about 9,500 acres of  
14 those 79,689 totals were parcels on which there  
15 had been no holes drilled of any kind to prove  
16 depth to barrier.

17 Do you recall that now, and can I ask you some  
18 questions about that?

19 MR. ECHOHAWK: Your Honor, I believe the  
20 9,500 figure came from Mr. White's offer of proof.

21 MR. WHITE: That's correct, Your Honor.

22 THE SPECIAL MASTER: Well, I will throw it at  
23 him anyway. I would like to know a little more.

24 Ninety-five hundred was the total, was it not,

25 kersich-cross-white

1 of the total that had no probe holes, whatever?

2 MR. ECHOHAWK: That was Mr. White's repre-  
3 sentation.

4 MR. WHITE: If you ask him about it, I would  
5 sure like to cross-examine him on that.

6 THE SPECIAL MASTER: I guess I had better stay  
7 in my own role and not yours, Mr. White, but the  
8 point that I wanted to make is that I'm trying to  
9 find a ratio or a percentage of human, understand-  
10 able, marginal error, or profit and loss balances,  
11 as sometimes in the banking field -- you know, you  
12 put and you take. You lose one day and you gain  
13 the next, a clear accounting of some types for  
14 those odds and ins because in acreages this vast  
15 there has to be some kind of a debit and credit  
16 account of each day from which you can put a few  
17 acres, or draw a few acres, and I wonder, if you  
18 had put slope land into these, which you have  
19 been questioned now about, there would be a range  
20 of possible mistake as there is in the ratio of the  
21 9,500 to 79,000?

22 THE WITNESS: Well, I don't agree with Mr.  
23 White on most of those. There are some holes in  
24 some of those parcels, but as I testified, you

25 kersich-cross-white

1 don't need a hole in every parcel. There are a  
 2 number of other ways to determine barrier, and I  
 3 believe that should be discussed further in the  
 4 trial.

5 THE SPECIAL MASTER: Can you relate that to  
 6 what you are testifying to here now?

7 THE WITNESS: With regard to these slopes,  
 8 what you try to do is try to get a slope that you  
 9 can handle easily with your system, and experience  
 10 has taught us that the slopes that we have in  
 11 there are reasonable for the types of system we  
 12 are talking about.

13 There are other systems within the State of  
 14 Wyoming -- for example, around Ten Sleep -- that  
 15 have slopes up to twenty percent for a sprinkler.  
 16 It's not uncommon in the Columbian Basin to find  
 17 that. It's not uncommon in Montana to find that  
 18 in work we have done.

19 A lot depends on what types of crops you grow  
 20 and things of this nature. You certainly would  
 21 go to more of a cover crop such as alfalfa in  
 22 those types of slopes.

23 THE SPECIAL MASTER: Do you feel that a margin  
 24 of differences, if not of error, is much less in

25 kersich-cross-white



1 this phase than it was in the matter of the probes?

2 THE WITNESS: Well, you asked me about  
3 slopes the last time I was here, and after an  
4 examination of our field notes, our drawings and  
5 the slopes that are listed on the log sheets, one  
6 of the duties of the classifier is to determine  
7 the major slope of the field. We had very few  
8 acres that were over ten percent. I have the  
9 figures with me, and if you would give me a moment,  
10 I could get those, but the slopes are mostly under  
11 ten percent for most of the lands.

12 THE SPECIAL MASTER: All right. Go ahead,  
13 please.

14 Q (By Mr. White) Mr. Kersich, I asked you before  
15 about the production cost associated with percent-  
16 age of slope within your standard. If I asked you  
17 the same questions with respect to management costs,  
18 would your answers be the same as those which you  
19 gave for production costs?

20 A Basically we assume good management. We didn't  
21 put a cost figure to each class for management.

22 Q Okay. Let me go back and ask just another couple  
23 of questions about SK-41 and -42.

24 Specifically, the total column in SK-41, total  
25 kersich-cross-white

1 arable lands, and the total under that, the far  
2 right-hand column, if only sprinkler irrigation  
3 were used on these lands, would there still be a  
4 total of 47,876 acres of arable lands in the North  
5 Crowheart unit, only sprinkler irrigated?

6 A. Yes.

7 Q. Would there still be 6,704 Class 1 arable lands in  
8 the North Crowheart unit if only sprinkler irri-  
9 gation were used?

10 A. As long as we define sprinkler irrigation as being  
11 able to include the hand moved and solid set  
12 sprinklers, I would say yes to that question.

13 Q. Now, let's exclude the hand move and solid set  
14 sprinklers. Would there still be 47,876 acres of  
15 arable lands using only sprinkler irrigation in  
16 the North Crowheart unit?

17 A. Well, you'll have to define sprinkler then for me  
18 because that's a different question entirely.

19 Q. Well, I'm asking about the term sprinkler as it is  
20 used on your tables, SK-41 and -42.

21 THE SPECIAL MASTER: Aren't you asking him to  
22 remove from there or subtract from that that land  
23 that could be irrigated by sideroll or center  
24 pivot systems, and use only those of a hand move

25 kersich-cross-white

- 1 or solid set? Is that what you are asking?
- 2 Q (By Mr. White) When you qualified your question,  
3 I thought you qualified it by saying that so long  
4 as you assumed that hand move or solid set are  
5 included in sprinkler. Wasn't that the way you  
6 answered the question?
- 7 A At that point in time, yes.
- 8 Q Now, if you exclude hand move and solid set  
9 sprinklers and you use only sprinkler irrigation,  
10 excluding those two methodologies, how many acres  
11 are left?
- 12 A Okay. If you limit then -- as I understand your  
13 question, you are going to limit the sprinkler to  
14 sideroll or center pivot systems?
- 15 Q Right.
- 16 A There would probably be some acres less than that.
- 17 Q Do you know how many?
- 18 A Not without going back to the tab sheets and the  
19 aerial photographs and working it all out.
- 20 Q Did you make any determination of the management  
21 and operation cost associated with hand moved  
22 sprinklers?
- 23 A No. I have some idea.
- 24 Q What are hand moved sprinklers?
- 25 kersich-cross-white

1 A Hand moved sprinklers normally are pipes, aluminum  
2 pipe, that you can take out in the field and set  
3 with risers on them. They are picked up manually  
4 and moved to the next set, either through mechan-  
5 ical means -- they have trailers, trucks, or what-  
6 ever.

7 THE SPECIAL MASTER: I can't help but inter-  
8 pose that I learned my first lesson by dropping  
9 one on my foot in Wheatland about twenty years ago.  
10 I learned about moving those.

11 MR. WHITE: Off-the-record.

12 (Whereupon an off-the-record  
13 discussion was held.)

14 MR. WHITE: Back on the record.

15 Q (By Mr. White) Al, isn't it true that you con-  
16 cluded that the operation costs for hand moved or  
17 solid set sprinklers and the management costs for  
18 those sprinklers were roughly the same as gravity  
19 irrigation?

20 A No, I don't recall I concluded that.

21 Q What did you conclude with respect to those two  
22 types of sprinkler systems in terms of the rela-  
23 tive management and operation costs contrasted  
24 with sideroll or center pivot sprinklers?

25 kersich-cross-white

1 A Are you talking about management costs or labor  
2 costs? There's a difference in my mind between  
3 the two.

4 Q I will use the terms that you used, and that's  
5 management and operation.

6 MR. ECHOHAWK: I believe Mr. Kersich designated  
7 that as labor costs when he discussed that earlier.

8 MR. WHITE: No, the report refers to pro-  
9 duction and management.

10 MR. ECHOHAWK: Mr. Kersich, in testifying  
11 about the hand move and solid set, his testimony  
12 was discussing labor costs.

13 MR. WHITE: Well, I'm going to ask a different  
14 question, Your Honor. I'm going to ask him about  
15 production and management costs associated with  
16 hand moved or solid set sprinklers and -- let me  
17 start again.

18 Q (By Mr. White) With respect to hand moved and  
19 solid set sprinklers, are management costs greater  
20 than for sideroll or center pivot sprinklers?

21 A You are talking about management costs as normally  
22 referred to in irrigation?

23 Q Well, as you refer to it here.

24 A Okay. The management costs may or may not be

25 kersich-cross-white

- 1 greater and may or may not be less. There is a  
2 difference in the sprinkler labor costs which  
3 would be part of production costs but not a  
4 management cost.
- 5 Q But let's turn to production costs.
- 6 A Okay.
- 7 Q Is there a relative difference between the production  
8 costs associated with hand moved or solid set  
9 sprinklers as opposed to sideroll or center pivot  
10 sprinklers?
- 11 A On an acre-by-acre difference, if you look at an  
12 acre of sprinkler labor for hand moved versus an  
13 acre of labor for intermittent move there is some  
14 difference, normally the hand move being somewhat  
15 higher.
- 16 Q How were those differences in production and man-  
17 agement costs reflected in the soil classification  
18 standards?
- 19 A Well, they are not really involved in the land  
20 classification costs because if you have 47,876  
21 acres of arable land and of that you irrigate  
22 40,000 acres by intermittent move or center pivot  
23 and another -- well, let's say 40,000 by center  
24 pivot and 40,000 acres by intermittent move and  
25 kersich-cross-white

1 a few thousand acres or less than that that you  
2 would get with hand move or solid set, the total  
3 cost of production would be raised only minimally,  
4 if anything at all.

5 Q But your classification was done on a virtual  
6 acre-by-acre basis, wasn't it?

7 A It was -- but there were projectized specifications.

8 Q And you are saying that your land classification  
9 standards did not reflect the difference based on  
10 the differing production costs between the two  
11 different types of sprinklers, is that correct?

12 A Sprinkler labor is not usually a function of the  
13 land classification standards. There are other  
14 production costs which are built into the standards  
15 that I testified to previously.

16 Other people -- when the final design is  
17 done, other people will be putting in the sprinkler  
18 labor costs.

19 Q Okay. I didn't mention labor costs. You did.  
20 That's why I was asking about it.

21 A I'm trying to define this between labor costs and  
22 management costs because the two are not synonymous.

23 Q Let's talk about production cost. That's what I  
24 was hoping we were talking about.

25 kersich-cross-white

1 Is labor cost a part of production cost?

2 A It can be considered that, yes.

3 Q What other costs are associated or assumed within  
4 the rubric of production costs?

5 THE SPECIAL MASTER: Is he a competent witness  
6 for this since he excluded the economics of irri-  
7 gating and crop yields totally from his professional  
8 work as a land classifier?

9 MR. WHITE: I would think that he would not  
10 be competent if we could agree to strike the cost  
11 portion of the definition of Class 1 lands, but  
12 that is his definition.

13 THE SPECIAL MASTER: What cost was the criteria  
14 that he took notice of in establishing the differ-  
15 ence between a Class 1 and a Class 2 lands?

16 MR. WHITE: That's right, Your Honor.

17 THE SPECIAL MASTER: But he also has said  
18 several times, I believe, Mr. Kersich, that the  
19 economics of this classification and irrigability  
20 of land will be up to other witnesses, not up to  
21 him, and I wondered about your question in that  
22 light.

23 MR. WHITE: Let me see if I can solve the  
24 problem in a couple of questions.

25 kersich-cross-white



1 Q (By Mr. White) Isn't it true, Mr. Kersich, that  
2 you did not consider costs or economics in  
3 establishing standards for which you used for the  
4 classification of arable lands?

5 A Well, I believe I testified before we considered  
6 cost in a unique way. In other words, Class 1  
7 lands that are deep that have good water-holding  
8 capacity but do not need to be irrigated on a very  
9 frequent basis, those are lands which will normally  
10 be less restrictive as far as farming practices.

11 In other words, you probably need less  
12 fertilization, things of this nature.

13 See, we tried to set up a set of standards  
14 that would take that into consideration so the  
15 person working with the farm budgets, the pro-  
16 duction costs, and such things, would understand  
17 that here are lands that are deep. They have good  
18 water-holding capacity. We have very little land  
19 development costs associated with them. We have  
20 very little surface undulation, no rock to pick,  
21 things of this nature.

22 That was put in a separate class and this  
23 was done. Then each class after that had some  
24 noted deficiencies which were brought to the

25 kersich-cross-white

1 attention of the other people on the team to  
2 utilize in their work.

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1 Q I guess then that the answer is that you did  
2 consider, to some extent, the costs and economics

3 A Well, I said I did that. When you set up standards  
4 like this, you inherently build in some things.

5 THE SPECIAL MASTER: He used an excellent  
6 description of obliquely.

7 Q (By Mr. White) And it was so oblique that you  
8 considered no dollar values, is that correct?

9 THE SPECIAL MASTER: Well, that -- I think  
10 that's a little bit argumentative. I think he's  
11 answered the question, Mr. White, pretty well.

12 Q (By Mr. White) With respect to any of the land  
13 classification standards, in addition to those  
14 that we have already discussed dealing with slope,  
15 did you make any determination of the dollar  
16 values associated with costs, either production  
17 or management costs with respect to any of those  
18 standards for any of those classes?

19 A We did not do a farm budget analysis concurrent  
20 with the standards, no.

21 Q Did you consider dollar value costs?

22 A Again, they were considered obliquely or inherently  
23 in the standards.

24 Q But isn't it true that you considered no specific

25 kersich-cross-white

1 dollar value costs? You can't --

2 THE SPECIAL MASTER: Well, he pretty much  
3 answered that, I think.

4 MR. WHITE: Well, it keeps waffling, Your  
5 Honor. I would like to get it one way or the  
6 other, either he did or did not.

7 THE SPECIAL MASTER: I think you got an  
8 honest answer, and it is hard for me to see how  
9 you could move him from his position.

10 MR. WHITE: Well, let me try one more time,  
11 Your Honor.

12 THE SPECIAL MASTER: I don't know whether  
13 I'll let you, but go ahead.

14 Q (By Mr. White) Mr. Kersich, are there any specific  
15 dollar values which you use for production, or  
16 management costs in connection with the formulation  
17 of the land classification standards for any  
18 class of arable lands?

19 A No, not a specific dollar value.

20 MR. WHITE: Thank you.

21 Q Did you happen to run into Mr. Saunders memo?

22 A I was working on your stuff at noon. I'm sorry --  
23 I'm trying.

24 Q Did you finish the other stuff at noon?

25 kersich-cross-white

1 A I'm about two-thirds of the way through.

2 Q Okay.

3 A I'll get that done tonight.

4 Q Mr. Kersich, would you please describe the  
5 sampling and lab analysis which you conducted,  
6 the results of which formed the basis of your  
7 professional opinion?

8 A When the land classifiers were in the field, they  
9 would, on a periodic basis, sample the soils when  
10 they were making an auger test or drilling an  
11 auger hole. The samples were taken sometimes  
12 from the entire horizon, sometimes from a portion  
13 of the horizon depending upon what the land  
14 classifiers saw there. Certain holes were sampled  
15 the entire length of every different horizon,  
16 or any change in texture or color, things of that  
17 nature. Samples were taken, put in sample sacks and  
18 then sent to the lab in Billings for review. On  
19 that, basically five tests were run within the lab,  
20 and they are described on pages 18 and 19 and so  
21 on in my report, but I'll go through them very  
22 briefly: There were electrical conductivities  
23 which determines the total amount of soluble salt  
24 that might be present in that particular sample.

25 kersich-cross-white

1 I measured the pH -- the alkalinity or acidity  
2 of the soil was checked. A settling volume  
3 test was run to determine the amount of fines that  
4 may be affected by sodium, and if there were any  
5 sodium present to affect those fines, and a test  
6 called the sodium adsorption ratio, which is an  
7 indication of the amount of exchangeable sodium  
8 that might be held in the soil and which could  
9 cause permeability problems, was determined. SAR  
10 is a function of sodium, the magnesium and calcium  
11 cations in the soil.

12 Let's see, that's four. The last one is the  
13 mechanical analysis, a particle size analysis to  
14 determine the soils texture. This was run on a  
15 number of samples.

16 Q What instructions did you give your field classifiers  
17 as to when and where they would sample?

18 A Well, they were to use their judgment primarily.  
19 That's one of the reasons we use people with quite  
20 a bit of experience out there, and if there were  
21 areas that, because of structure or texture or  
22 obvious grease spots on the surface where you  
23 might have grease wood or slick spots or it appears  
24 that the drainage might be a problem, they took

25 kersich-cross-white

1 samples in those areas.

2 Q What instructions did you give them, if any?

3 THE SPECIAL MASTER: I think he answered  
4 that question.

5 Do you feel like you answered it?

6 THE WITNESS: I think so, yes.

7 MR. WHITE: Would you read the question back,  
8 Lamont, or the answer back?

9 (The above answer was read  
10 (back as follows: "A Well,  
11 (they were to use their  
12 (judgment primarily. That's  
13 (one of the reasons we use  
14 (people with quite a bit of  
15 (experience out there, and if  
16 (there were areas that,  
17 (because of structure or  
18 (texture or obvious grease  
19 (spots on the surface where  
20 (you might have grease wood or  
21 (slick spots or it appears  
22 (that the drainage might be a  
23 (problem, they took samples in  
24 (those areas."

18 Q (By Mr. White) Those were your instructions to  
19 them?

20 A My instructions were to go out and do a good  
21 job and let us know what problems are out there.

22 Q How many samples were collected in the field?

23 A I would have to go back and check my figures. I  
24 don't have that here right now. I believe it's

25 kersich-cross-white

1 in the report. I don't know how many samples  
2 were collected in the field, but a total of  
3 about 4,400 analyses were performed.

4 Q What quality control did you establish to  
5 verify the results of those 4,400 analyses?

6 A We had people checking them. Carol Snow checked  
7 random check samples which I would go out and  
8 take in the lab and pick out and say, these are  
9 to be checked. The samples were checked by two  
10 different ways, because during the period of time  
11 that we were working on this project we obtained  
12 an atomic adsorption unit and so some of the  
13 chemical work was done with that.

14 We used the normal measures that you would  
15 expect in a lab like this.

16 Q How many samples were checked as part of your  
17 quality control effort?

18 THE SPECIAL MASTER: May I hear the question  
19 again, please?

20 (The above question was read  
21 (back by the Reporter as  
22 (follows: "Q How many  
23 (samples were checked as part  
24 (of your quality control  
25 (effort?"

24 A Well, there was a number of them, but I can't

25 kersich-cross-white



1 give you the exact number right now, Some were  
2 checked for one thing, some were checked for  
3 the whole series, others were checked for just  
4 parts of the series.

5 Q (By Mr. White) Did you retain those samples  
6 and the results of your checks?

7 A I don't know that we retained the results of  
8 the checks, we've got what's left of the samples.  
9 You sometimes use up part of the sample in the  
10 process.

11 Q Are the remainder of those samples available?

12 A Yes.

13 Q In Billings?

14 Would you provide those to the State of  
15 Wyoming?

16 A I would --

17 MR. ECHOHAWK: Your Honor, that is a request  
18 more properly directed to the attorneys.

19 MR. WHITE: No, it is not, Your Honor.

20 MR. ECHOHAWK: It is a matter of discovery.

21 MR. WHITE: At this point then, Your Honor,  
22 I'll ask for an order directing them to produce  
23 those samples. I think we are entitled to take a  
24 look at them.

25 kersich-cross-white

1 THE SPECIAL MASTER: If you want to do that,  
2 I can't stop you.

3 MR. WHITE: What's that?

4 THE SPECIAL MASTER: If you want to do that,  
5 I can't stop you.

6 MR. WHITE: Well, they are not letting the  
7 witness tell me whether or not he will produce  
8 them and I'm asking you for an order directing  
9 that they be produced.

10 THE SPECIAL MASTER: Well, your evidence so  
11 far before us, is that there are 43 -- there were  
12 44,400 analyses that would have been performed.  
13 Out of that, how many are still in organic  
14 condition and still such that they can be separately  
15 identified in the event you are called to come up  
16 with either five or ten or fifteen of each of  
17 these seven categories?

18 THE WITNESS: Well, I would say the majority  
19 of the samples are still available and they are  
20 marked. They were put back in the sacks that they  
21 come in from and --

22 THE SPECIAL MASTER: Well, if the State wants  
23 to send somebody up to Billings and look some of  
24 them over, would you permit it without my order?

25 kersich-cross-white

1 I know you will if I order it, but --

2 THE WITNESS: I want to put out one thing:  
3 Some of the samples may have been damaged. We  
4 had a bad winter -- we had -- a year ago and we  
5 had a pipeline break and some of those samples have  
6 been soaked. But, I mean, with that understanding  
7 the rest of the answer is up to counsel.

8 MR. ECHOHAWK: We have no objection.

9 THE SPECIAL MASTER: All right.

10 MR. ROGERS: Your Honor, I can only observe  
11 it is curious for them to be asking for them at  
12 this time. The State has known these samples have  
13 been there for months and months and months. Why  
14 do they --

15 MR. WHITE: Well, for Washington, D.C. Counsel,  
16 this case gets curiouser and curiouser all along.

17 THE SPECIAL MASTER: I don't know whether  
18 the question asked, but if Mr. White or someone  
19 else from the State was to look at a few samples,  
20 I see no objection to them looking them over and  
21 I presume you don't either. If you do object, say  
22 so now and maybe it is a good -- maybe it is an  
23 area to cross-examine, I don't know.

24 I don't think the case gets curiouser and

25 kersich-cross-white



1 THE SPECIAL MASTER: All right. We stand  
2 convened. Go ahead, Mr. Echohawk.

3 MR. ECHOHAWK: You recall that at the close of  
4 Mr. Billstein's testimony, we introduced the hydrographic  
5 photos, Mr. Billstein's back-up information, and since  
6 that time there has been a problem or a question of access  
7 to those.

8 The State has checked them out for, I think, a week  
9 and then we got them back for a week, and we gave them  
10 back to the State.

11 THE SPECIAL MASTER: Yes, I got caught in that  
12 cross fire a couple of weeks ago.

13 MR. ECHOHAWK: Well, it's erupted again.

14 THE SPECIAL MASTER: It's like Mount St. Helen's.

15 MR. ECHOHAWK: Right. We would like access to  
16 those copies. We need them to continue our work, and I  
17 was advised by the State that they won't be finished with  
18 them until Friday. And I was wondering whether there's a  
19 way we could speed up and get a portion of them before  
20 Friday or --

21 MR. KROB: Your Honor, if I might respond to  
22 it. I realize you have been caught in that cross fire.

23 THE SPECIAL MASTER: Give your name for the  
24 record.

25 MR. KROB: I'm sorry. I'm Scott Krob for the

1 State, and if you will recall the phone conversation  
2 we had, Mr. Billstein at the end of his testimony said  
3 that he would take three weeks for HKM, who have made  
4 the changes necessary on these photos, and I asked that  
5 we be given those three weeks, even though we weren't  
6 as familiar with those photos as HKM and it might take  
7 us a little longer, and at the time the Master ordered  
8 that we, having had the photos for the one week, would  
9 give them to the United States, and they were to be  
10 returned to them on the 3rd.

11 Some of them came back on the 3rd and some  
12 of them didn't, but we haven't had the figures for all  
13 of two weeks.

14 At the time of the telephone hearing with the  
15 Master, you indicated that we would have them for this  
16 past week and then for the first week of trial to make  
17 up the full three weeks that Mr. Billstein had indicated  
18 that it would take to make these changes.

19 I just checked with our experts. They are  
20 still using the photographs, especially since we just  
21 received some more updated exhibits with regard to Mr.  
22 Waples today, and there simply is no way that they can  
23 get them done before Friday, not knowing what parcels  
24 we have to go back and recheck again and not knowing --  
25 well, they simply haven't completed their work.

1 THE SPECIAL MASTER: Why don't we ask them  
2 to take a look through the remainder of today and  
3 tomorrow, and if they are through with a portion of  
4 them by tomorrow, Wednesday afternoon, maybe they can  
5 be delivered Thursday and they can help out.

6 MR. ECHOHAWK: That would help some.

7 THE SPECIAL MASTER: Maybe they can and maybe  
8 they can't. Why don't we do the best we can?

9 MR. KROB: I will check.

10 THE SPECIAL MASTER: We will see if we can  
11 have some by Thursday and some Friday.

12 MR. ECHOHAWK: Thank you.

13 THE SPECIAL MASTER: Mr. White -- off the  
14 record.

15 (Whereupon an off-the-record  
16 discussion was held.)

17 THE SPECIAL MASTER: Let's go back on the record.

18 Before you begin, Mr. White; Mr. Kersich, have you  
19 made any adjustments, allowances, in your testimony and  
20 your studies on this Reservation from the very beginning  
21 to now for those areas that have a capacity or a tend-  
22 ancy or historic record of going into alkalization and  
23 failure to stay as a viable irrigated land?

24 THE WITNESS: That was an important part of  
25 the study, sir. Yes, we did.

1 THE SPECIAL MASTER: How much of that such  
2 land is included in your figures?

3 Are you going to allow that question? No,  
4 please strike that.

5 What did you do with those?

6 MR. WHITE: That's a good question, Your  
7 Honor. We will allow it.

8 THE WITNESS: We threw it out.

9 THE SPECIAL MASTER: You feel certain that  
10 what you have left is land that will not, under the  
11 standards where you have alluded to -- and they are in  
12 the record -- end up being susceptible to alkaline  
13 destruction and low yield, failure -- with proper  
14 drainage and proper water management, that's correct.

15 Okay. Go ahead, Mr. White. I just thought  
16 I wanted to ask about that.

17 Q (By Mr. White) In your answer to the last question,  
18 what did you mean by proper management?

19 A Well, one of the most important things in any area  
20 where you may have a trace of alkalinity/salinity  
21 is that you apply the water properly and not over  
22 apply water, especially if the water itself has  
23 any salts which would be added to the total salts  
24 and cause a saline or a saline sodium condition.

25 kersich-cross-white



1 Q Mr. Kersich, I direct your attention to Page 27  
2 -- excuse me -- 21 of your report, Exhibit US  
3 WRIR C-43 and specifically that paragraph entitled,  
4 "Laboratory Procedure," and specifically the last  
5 sentence, and ask you whether or not that last  
6 sentence refers to what I am handing you that has  
7 been marked for identification as SK-40?

8 A. This appears to be the same manual that we used,  
9 yes.

10 Q Are you absolutely certain that the techniques for  
11 laboratory procedures which you used are those  
12 that are set forth in what's been marked for  
13 identification as SK-40?

14 A. Well, if there's a question, I can go back and  
15 check with our lab people, but this was the basic  
16 manual that we used for the work that we were doing  
17 on the project, yes.

18 Q Would you please turn to page 517.37F? I'll run  
19 through that again, 573,3 -- excuse me -- 517,37F,  
20 and that may be a fifth of the way down from the  
21 top.

22 THE SPECIAL MASTER: Mr. White, I don't have  
23 any 517,3s. All I have is 517-1s.

24 MR. WHITE: The top left-hand corner, Your  
25 kersich-cross-white

1 Honor, of this page.

2 THE SPECIAL MASTER: Oh, you are doing that  
3 to me. I have to take the hook off.

4 MR. WHITE: The State is up to its usual  
5 tricks, Your Honor.

6 Your Honor, that's 517.3.7F.

7 Q (By Mr. White) Al, did you find it in your copy?

8 A Yes,

9 THE SPECIAL MASTER: Go ahead with your  
10 question. I'll find it.

11 MR. WHITE: I would like you to have it in  
12 front of you, Your Honor, when I ask the question,  
13 if you don't mind.

14 THE SPECIAL MASTER: How far down are you?

15 MR. WHITE: If I can look at that, I will try  
16 to find it.

17 THE SPECIAL MASTER: All right, you are welcome  
18 to.

19 Okay. Thank you.

20 Q (By Mr. White) Paragraph G, it says, quote, areas  
21 which appear to be normal and well adapted to  
22 irrigation should have these confirming tests.

23 Do you find that portion?

24 A Yes, sir.

25 kersich-cross-white

1 Q Isn't it true that you conducted no bulk density  
2 test?

3 A No, I don't recall that, that we did or not. I  
4 don't believe so.

5 Q Isn't it true that you did conduct a particle size  
6 analysis?

7 A Yes, we did.

8 Q But isn't it true that that particle size analysis  
9 was not a pipette analysis? It was something other  
10 than a pipette analysis?

11 THE SPECIAL MASTER: Something other than a  
12 what?

13 MR. WHITE: Pipette, p-i-p-e-t-t-e.

14 A. (By the witness) It may have been something else,  
15 yes.

16 Q (By Mr. White) I would ask you to turn to the very  
17 next page, 517.4.1, which deals with particle size  
18 analyses.

19 A. Yes.

20 Q And paragraph .2 describes the pipette analysis  
21 and indicates that that's the approved procedure?

22 A. I believe there are two procedures which are  
23 approved. I would have to go back and check.

24 Q Would you find the procedure that you used and  
25 kersich-cross-white

1 indicate and show the Court where it's indicated  
2 as being approved in Exhibit SK-40?

3 A. Well, I'd have to get my copy of the manual out.  
4 It's marked up. I'm having some problems here,  
5 but -- can I look at my notebook for a minute?

6 THE SPECIAL MASTER: You bet. Go right ahead.

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kersich-cross-white

1 A We used the hydrometer procedure, that's right.  
2 We did not use the pipette procedure.

3 Q Isn't it true that the procedure which you used  
4 is not listed as an approved procedure in the  
5 Bureau of Reclamation manual?

6 A I can't answer that right now.

7 Q Well, can you show me where it is?

8 A I say I can't answer it, that's why I tell you --  
9 I would have to go through the whole manual  
10 before I try to answer.

11 The hydrometer analysis is an accepted  
12 particle size analysis.

13 Q According to the Bureau of Reclamation as set  
14 forth in this manual?

15 A As set forth in the manual, I'm not sure. That's  
16 what I said.

17 Q Well, let's go back to page 517.3.7 (f) paragraph G.  
18 Isn't it true that you conducted no percent lime  
19 test?

20 A We did a field line procedure, a field test to  
21 determine lime.

22 Q But you didn't do a laboratory analysis?

23 A No, normally they are not done.

24 Q You didn't do a laboratory analysis for percent  
25 kersich-cross-white

- 1 lime that's described on page 517.3.7 (f),  
2 isn't that correct?
- 3 A That's correct.
- 4 Q Isn't it true that you did no tests for gypsum  
5 content?
- 6 A That's correct.
- 7 Q Isn't it true that you did no tests for percent  
8 free swell of clay-size particles?
- 9 A Well, we did a settling volume test, which gives  
10 us near the same results.
- 11 Q But, did you do the tests that called out in the  
12 (5) or G (5) on page 517.3.7 (f)?
- 13 A That's correct.
- 14 Q You did that test or you did not?
- 15 A No, I said I did not.
- 16 Q Oh. Although you did an SAR, isn't it true that  
17 you did not do an exchangeable sodium test that's  
18 described in (6) under G?
- 19 A No, because the SAR can be equated to the  
20 exchangeable sodium.
- 21 Q Is that the same test that's described in this  
22 manual?
- 23 A Which test now are you talking about?
- 24 Q The SAR.
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1 A The SAR, did we do the SAR test?

2 Q No, is the SAR test the same test that is  
3 described in this manual?

4 A I think it is, yes. I would have to check it  
5 again.

6 Q Well, let's see --

7 MR. ROGERS: Your Honor, I think there is  
8 a confusion and the references back and forth  
9 have gotten a little confused here. The  
10 description of SAR test in the book is, I think,  
11 what Mr. Kersich just answered, is the same that  
12 he did, but that's not the same thing that Mr.  
13 White was talking about. I don't think the  
14 witness understood the question.

15 MR. WHITE: I think the witness is perfectly  
16 competent to testify by himself, Your Honor.

17 THE SPECIAL MASTER: Well, nobody is trying  
18 to assist him in testifying, I'm sure.

19 Go ahead, Mr. White.

20 Q (By Mr. White) Well, then, with respect to the  
21 test called out under paragraph G, you can't  
22 remember whether you did a bulk density test, you  
23 did do a particle size analysis, but not the pipette  
24 analysis, which is listed as approved in the manual,

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1 you did not do a percent lime test, you did not  
2 do a gypsum content, you did not do a percent  
3 free swell of clay sized particle test and you  
4 did an SAR test, which you feel is roughly  
5 equivalent to an exchangeable sodium test called  
6 in (6), is that correct?

7 A You can use it to get the result for exchangeable  
8 sodium, yes.

9 THE SPECIAL MASTER: Mr. Kersich, is each of  
10 the techniques that you used for your laboratory  
11 procedure, described in this publication, called  
12 SK-40?

13 THE WITNESS: Most of them are. The others  
14 are described in our own lab manual.

15 THE SPECIAL MASTER: Okay.

16 Q (By Mr. White) Okay, Mr. Kersich, do you recall  
17 the Master's question about alkaline areas?

18 A Yes.

19 Q Or areas of high alkalinity?

20 A Uh-huh.

21 Q Would you turn back to the previous page, I guess  
22 it is page 517.3.7 (b)?

23 A Oh, okay. Three (b)?

24 Q 3.7 (b) and that page number is in the upper

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1 right-hand corner.

2 A Okay.

3 MR. WHITE: Can I find it for Your Honor?

4 THE SPECIAL MASTER: I've got it.

5 Q (By Mr. White) I refer you to paragraph C:  
6 "Areas of alkali soil may be evaluated by these  
7 tests."

8 A Yes.

9 Q Isn't it true that you conducted no bulk density  
10 test?

11 A That's correct.

12 Q Isn't it true that you conducted no gypsum  
13 requirement test?

14 A Gypsum requirement, no, that's not true. We did  
15 it.

16 Q Okay. What test did you perform specifically?

17 A I'll have to go back and check our manual, but  
18 I -- we performed a gypsum requirement test.

19 Q Can you describe that test?

20 A I can't, no. I have people doing it for me.

21 THE SPECIAL MASTER: Was it a laboratory  
22 procedure or a field procedure?

23 THE WITNESS: It is a laboratory procedure.

24 Q (By Mr. White) Did you get any results from those  
25 kersich-cross-white

1 tests?

2 A Yes, we had them, uh-huh.

3 Q Do you have those results with you?

4 A Not with me, no.

5 Q Where are they?

6 A In my office.

7 MR. WHITE: Well, I'll ask Counsel for the  
8 United States if we can see the results of those  
9 tests, the gypsum requirement test.

10 MR. ECHOHAWK: Your Honor, could I have one  
11 minute, please?

12 (Brief pause.)

13 MR. ECHOHAWK: We will make those available,  
14 Your Honor.

15 THE SPECIAL MASTER: All right.

16 Q (By Mr. White) Isn't it true that you conducted  
17 no exchange capacity test?

18 A No, we did not.

19 Q Isn't it true that you conducted no aggregate  
20 stability test?

21 A Well, here again, you might be able to use  
22 settling volumes for that. Settling volumes were  
23 run for all of --

24 Q Did your aggregate stability test conform to those  
25 kersich-cross-white

1 described in this manual?

2 A No, not under this particular number here.

3 Q Isn't it true that you have previously testified  
4 that you conducted no percent free swell of  
5 clay-sized material test?

6 A That's correct.

7 Q Isn't it also correct that you conducted no  
8 surface area studies in the lab?

9 THE SPECIAL MASTER: No surface area studies  
10 in the lab?

11 THE WITNESS: I don't recall that.

12 MR. WHITE: In the lab.

13 THE SPECIAL MASTER: That would be hard to  
14 do, to conduct area surface studies in the laboratory.

15 MR. WHITE: These are laboratory procedures,  
16 Your Honor, and --

17 THE SPECIAL MASTER: Well now, the areas of  
18 alkali soils may be evaluated by these tests and  
19 there are seven of them.

20 MR. WHITE: Uh-huh.

21 THE SPECIAL MASTER: The last one is a surface  
22 area study. And there is nothing here that says  
23 that's done in the laboratory, if it is then I've  
24 got to have a new definition of surface.

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1 MR. WHITE: The whole manual deals with  
2 laboratory instructions and laboratory procedures,  
3 Your Honor. Up at the top you can see it says,  
4 "General laboratory instructions".

5 And I would point out that on page 517,3.7,  
6 which is the immediate preceeding page to the one  
7 we are on now, that these are all suggested  
8 laboratory tests.

9 I'm not competent to describe that test for  
10 you, but it is a laboratory test.

11 Your Honor, can I go ahead and ask him the  
12 question?

13 THE SPECIAL MASTER: Yes.

14 Q (By Mr. White) Isn't it true that within the  
15 context of Exhibit SK-40, you conducted no surface  
16 area studies in the laboratory?

17 A That's correct.

18 Q Isn't it true then with respect to the six tests  
19 set out under areas of alkali soils, you conducted  
20 only one?

21 A Well, the exchange sodium percentage, as I said  
22 before, the SAR is a measure of that also and the  
23 two could be interrelated, so I consider that  
24 while that particular test was not done, the

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1 information was developed with regards to the  
2 gypsum requirement. That one was run. The bulk  
3 density was not, the aggregate stability -- that  
4 may come under your settling volumes and that  
5 was run on all the samples. So there was a  
6 screening done on some of the tests. Not all of  
7 these tests are run on every sample anyway.

8 Q But isn't it true that as described in the Bureau  
9 of Reclamation manual, you conducted only one of  
10 those six tests?

11 THE SPECIAL MASTER: He's answered that he's  
12 already done more than that, and he feels that he's  
13 done more than two. He also answered that not all  
14 seven are necessary to evaluate an alkali area.  
15 I don't know whether you made your case, but there  
16 have been some distinctions between these criteria  
17 and those that he used.

18 But I think the point is made and I would  
19 like to ask this question of the witness: What  
20 are the techniques that you used for the laboratory  
21 procedures in addition to those you admitted that  
22 are in the lab -- are in the SK-40?

23 THE WITNESS: Well, the techniques were --  
24 for the most part we used the techniques that are  
25 kersich-cross-white

1 in SK-40.

2 THE SPECIAL MASTER: Well, but, on the alkali  
3 tests that I asked you about, you have not?

4 THE WITNESS: Right. Right -- well, we used  
5 the gypsum requirement test to determine what  
6 might be needed from a land reclamation standpoint,  
7 if anything. We exchanged sodium percentage.  
8 As I pointed out, the SAR gives you a relationship  
9 of the ESP. I believe an aggregate stability,  
10 we did use the settling volumes which basically  
11 can be used to replace that test, so that three  
12 of those were basically used in the screening  
13 process.

14 THE SPECIAL MASTER: Okay.

15 Q (By Mr. White) Could you describe in detail how  
16 the settling volume test that you described works,  
17 and how it can be used to determine aggregate  
18 stability?

19 A Basically what happens with the settling volume  
20 test is, you have a cone-shaped flask, it looks  
21 like an ice cream cone, and you put a certain  
22 amount of the sample that you are examining in there  
23 and you fill that flask with water to a certain  
24 elevation, then you take air or you stir the

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1 material up, you mix it up real well. Then, over  
2 a period of time, you read how long it takes for  
3 this material to settle out and if you happen to  
4 have a sample that has an awful lot of fines in  
5 it, and there's sodium reacting with those fines,  
6 clay fines I'm speaking of, you know the sodium  
7 has a tendency to disperse the fines and as a  
8 consequence when you read this at the end of the  
9 test, you may have a settlement volume up near,  
10 say, 27, 28, 29, 30, 35 -- I think I've seen some  
11 on lands which we did not classify as arable,  
12 much above 30, this gives you an indication that  
13 you should look at the soils a little bit more;  
14 that there is a potential here of sodium dispersion  
15 in it with the clay fines and that permeabilities  
16 and the movement of water through the soil would  
17 be affected.

18 Q Mr. Kersich, at the bottom of page 517, 5.3 (e),  
19 there is a description of the soil aggregate  
20 stability test, which is the approved procedure.  
21 That doesn't sound anything like what you have  
22 described. Could you explain now, how what you  
23 described replaces that?

24 A 517 -- what was that, please?

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1 Q 517.5.3 (e).

2 THE SPECIAL MASTER: I have no .3 (e). I  
3 go from 3 (c) to 4 (a).

4 MR. WHITE: Well, you're ahead of me, Your  
5 Honor, I don't even have a 4 (a) -- I'm sorry --

6 MR. ROGERS: I think what happened is the  
7 page may be reversed, 4 (a) -- I think 3 (e) is  
8 there.

9 MR. WHITE: Yes, it is. It is reversed,  
10 Your Honor.

11 THE SPECIAL MASTER: On the back of 4 (a)?

12 MR. WHITE: No, 4 (a) and 3 (e) are  
13 reversed in their order there. If you can find  
14 either one of those.

15 THE SPECIAL MASTER: You are correct. Thank  
16 you for calling my attention to that. I've got  
17 them, but they are transposed.

18 Now your question again was, what he testified  
19 to is different from what on 5.3 (e), Mr. White?

20 MR. WHITE: The approved procedure that's  
21 described towards the bottom and then continues  
22 on the next page on 4 (a).

23 THE WITNESS: Okay. Could I have the  
24 question back?

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1 MR. WHITE: I'll ask it again just to make  
2 it faster.

3 Q (By Mr. White) Isn't it true that the test which  
4 you described is not the test which is described  
5 on pages 3 (e) and 4 (a) for soil aggregate  
6 stability?

7 A Well, some of the answers that you're getting out  
8 of the test that you're talking about here are  
9 the same answers that we are looking for under  
10 settling volumes. It is not the same test, no,  
11 that's correct.

12 Q It is not the approved procedure by the Bureau of  
13 Reclamation either, is it?

14 A It is not necessarily required procedure, that's  
15 right.

16 Q Mr. Kersich, does HKM have a laboratory manual  
17 which --

18 A Sure.

19 Q -- which sets out its testing approach?

20 A We have a laboratory manual, yes.

21 Q Do you have that with you?

22 A No.

23 Q How does it vary from the Bureau of Reclamation  
24 manual, which according to your report, your

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1        techniques were described in?

2        A        I would have to sit down and go through it  
3                test by test to be able to tell you that.

4        Q        Isn't it true that your techniques that you  
5                used were not completely described in the Bureau  
6                of Reclamation manual?

7        A        Some of the techniques may have not been described,  
8                completely in the Bureau of Reclamation manual,  
9                that's correct.

10                MR. WHITE: Your Honor, until we receive  
11                the information from Mr. Kersich with respect  
12                to the areas that he was checking, that might  
13                be different on the photography to mosaics and  
14                the map --

15                THE SPECIAL MASTER: Right.

16                MR. WHITE: -- and until we receive his  
17                memorandum from Mr. Saunders, concerning the  
18                accuracy checks and scale rectification of those  
19                mosaics, we are at a point where we can stop.

20                THE SPECIAL MASTER: All right, that being  
21                the case, can you proceed with your case this  
22                afternoon, Mr. Echohawk, or do you want to put  
23                your next witness on tomorrow?

24                MR. ECHOHAWK: No, Your Honor, I would rather

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1 the State finish their cross-examination  
2 entirely of Mr. Kersich, and then I'll see whether  
3 or not I have any redirect.

4 THE SPECIAL MASTER: Well, that being the  
5 case, we will have to adjourn then and give you  
6 some time to work on the materials. He has to  
7 answer the schedule Mr. White gave him this  
8 morning. And you can use that to a good advantage  
9 this afternoon, can you not, if we were to  
10 adjourn now? And then perhaps we can convene  
11 in the morning at 9:15.

12 MR. WHITE: For the benefit of Counsel,  
13 Your Honor, I would expect to be done with the  
14 cross-examination of Mr. Kersich, unless something  
15 new comes up --

16 THE SPECIAL MASTER: By noon?

17 MR. WHITE: -- by noon.

18 THE SPECIAL MASTER: Yes. Then we can  
19 proceed with that tomorrow. So we will stand in  
20 recess now until tomorrow morning at 9:15.

21 (Recess, 3:14 p.m.)

22

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We further certify that we are not agents, attorneys or counsel for any of the parties hereto, nor are we interested in the outcome thereof.

Dated this 14th day of April, 1981.

*Lamont Miller*  
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