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Trial Transcript, Vol. 48

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File 155
4406
Box 11

case # 4993

File # 155

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

IN RE:)
)
THE GENERAL ADJUDICATION)
OF RIGHTS TO USE WATER)
IN THE BIG HORN RIVER) Civil No. 4993
SYSTEM AND ALL OTHER)
SOURCES, STATE OF)
WYOMING.)

BEFORE: The Honorable TENO RONCALIO, Special Master
Presiding.

FILED _____
5/20 1981
Margaret V. Hampton CLERK
VOLUME 48 _____ DEPUTY

BE IT REMEMBERED that on this 4th day of May,
1981, at Courtroom 2, Federal Building, Cheyenne,
Laramie County, Wyoming, the above-entitled matter re-
sumed for trial before the Honorable Teno Roncalio,
Special Master, presiding, whereupon the following
proceedings were had, to wit:

PROCEEDINGS:

ORIGINAL

APPEARANCES

FOR THE STATE OF
WYOMING:

HALL & EVANS
2900 Energy Center One Building
717 17th Street
Denver, CO 80202
BY: MR. MICHAEL D. WHITE, Special
Assistant Attorney General
and
MR. SCOTT KROB

FOR THE UNITED STATES
OF AMERICA:

MR. JAMES CLEAR
Attorney at Law
Land and Natural Resources
Division
Department of Justice
P.O. Box 7415
Benjamin Franklin Station
Washington, DC 20044

and

MR. THOMAS ECHOHAWK
Attorney at Law
Land and Natural Resources
Division
Department of Justice
1961 Stout Street
Denver, CO 80294

FOR THE SHOSHONE
TRIBE:

SONOSKY, CHAMBERS & SACHSE
200 M. Street
Washington, DC 20006
BY: MR. HARRY SACHSE

CLERK TO THE
SPECIAL MASTER:

MR. LEO SALAZAR
Attorney at Law
701 Rocky Mountain Plaza
Cheyenne, WY 82001

1 THE SPECIAL MASTER: We will please come
2 to order. I would like to let all of you know,
3 and this is notice, that through the kindness
4 of Judge Clarence Brimmer of the United States
5 District Court for Wyoming, this Courtroom has
6 been made available to us for today and for
7 Tuesday and for Wednesday. There is a small
8 chance that a lawsuit scheduled to start Thursday
9 morning might be settled, in which case we might
10 stay but we must not plan on it. So, if we
11 haven't heard by Wednesday night, we are to have
12 all of our material out of here on the close of
13 the hearing on Wednesday and back to the little
14 sweatshop room in GSA which we will use Thursday
15 morning.

16 I have prepared, thanks to Leo's good work,--
17 rather he has prepared exhibit dockets and indexes
18 through the next several hundred exhibits. And,
19 I'll pass those out to you now if you would
20 like to have them and the record can show one to
21 the State of Wyoming, one to the United States
22 of America, Tom Echohawk that is, the other one
23 to the Tribes, Mr. Sachse.

24 Very well, there are no motions to dispose
25 of that are in time. There has been filed a

1 motion to compel production of computer program,
2 and which we can't get to until Thursday, is
3 that correct?

4 MR. SALAZAR: Right.

5 THE SPECIAL MASTER: Unless there was to be
6 a waiver of the ten-day rule. And the other
7 item we have, is a motion for expedited discovery,
8 which was just filed in the last two or three
9 days.

10 Dr. Mesghinna, you are the same Doctor who
11 was here last week. You have been sworn.

12 THE WITNESS: Yes, sir.

13 THE SPECIAL MASTER: All right. And
14 we are ready to proceed.

15 Mr. White -- Mr. Sachse.

16 MR. CLEAR: We had finished, Your Honor.

17 THE SPECIAL MASTER: The United States was
18 finished with your --

19 MR. CLEAR: Direct.

20 THE SPECIAL MASTER: -- direct.

21 Mr. Sachse on direct --

22 MR. SACHSE: No, on cross-examination.

23 THE SPECIAL MASTER: Yes.

24 Mr. White, did you have an announcement
25 you wanted to make, or a request from the Court?

1 MR. WHITE: I wanted to ask the Court if
2 it would be possible after Harry Sachse finishes
3 his cross to recess for the day, and the
4 reason is I've got bronchitis and I'm taking
5 medication that makes me incredibly fuzzy. He
6 will probably pull the wool over my eyes three
7 or four times on cross, and I would sure like
8 to let him complete his cross and for us to
9 recess for the rest of the day, Your Honor.

10 THE SPECIAL MASTER: I would like very much
11 to accomodate you, but I wonder if we can't
12 find some attorney, either with the Attorney
13 General's office or with your firm, that can
14 carry on.

15 MR. WHITE: I don't think that is possible.
16 Mr. Krob has not been approved by the Attorney
17 General yet for the purposes of examining
18 witnesses, and Mr. Merrill who has been, is in
19 Lafayette today. I'm advised this morning,
20 because of his wife, who is in her last month of
21 pregnancy has some sort of viral infection that
22 has made her very ill and so, I'm it, Your Honor.
23 So, I would respectfully request that you grant
24 the State a continuance after Mr. Sachse's cross
25 until tomorrow morning.

1 It seems that we have had eight or nine
2 weeks of continuances requested by the United
3 States and the Tribes, and one day ought not
4 to make much difference.

5 THE SPECIAL MASTER: Well, I am reluctant
6 not to grant your request and I am reluctant
7 to grant it because, I think that the State of
8 Wyoming should have somebody to back you up.
9 It is almost the role of an indispensable man.
10 If you're sick, you've got to get to a doctor,
11 but with the gravity of this lawsuit, I think
12 it would warrant that someone should be ready
13 to carry on when you have to miss a period like
14 that. But, we will go ahead with Mr. Sachse's
15 material now.

16 Yes.

17 MR. ECHOHAWK: Okay Your Honor, the United
18 States has no objection to Wyoming's continuance.

19 THE SPECIAL MASTER: We'll go ahead with
20 your cross now.

21 MR. SACHSE: On the Tribes side, we would
22 like to accomodate Mr. White, but I would have
23 to say that I don't expect my cross-examination
24 to last more than an hour and if Mr. White was
25 not going to have anyone to carry through the

1 day, it would have been a big help had we
2 been notified before. I know you can't really
3 tell how your health is going to do.

4 THE SPECIAL MASTER: Well, Mr. White
5 recognizes it is an imposition, but it is not
6 of his doing certainly.

7 MR. SACHSE: Right.

8 THE SPECIAL MASTER: And we will accomodate
9 you.

10 MR. WHITE: Thank you, Your Honor.

11 THE SPECIAL MASTER: And we hope that you
12 will keep it in mind as we go through the
13 tribulations of the rest of the lawsuit.

14 Go ahead, Mr. Sachse.

15 MR. ECHOHAWK: Your Honor, before Mr. Sachse
16 begins, I would like to file the United States'
17 response to Wyoming's motion to compel production
18 of documents which was related to the Crow
19 Indian Reservation and the United States' response
20 to Wyoming's motion to compel computer listings.

21 THE SPECIAL MASTER: All right.

22 MR. ECHOHAWK: Those were served on the
23 State of Wyoming Friday.

24
25 * * * * *

1 THE SPECIAL MASTER: Mr. Sachse.

2 CROSS EXAMINATION

3 BY MR. SACHSE:

4 Q Dr. Mesghinna, as I understand your testimony when
5 you were previously on the stand, you said that you
6 took the acreages that had been given to you by
7 HKM and that you made some reduction in those acreages
8 to square off fields but that the major reductions
9 you made in those acreages was not because of any
10 engineering necessity but was because of advice
11 from the economist, that, for economic reasons some
12 acreages should be dropped; is that correct?

13 A Um-hum.

14 Q Now, I want for a minute for you to forget entirely
15 about any definition of practicably irrigable acreage
16 that any of the government's lawyers may have given
17 to you. I want to ask you first, is the term
18 practicably irrigable acreage a term of art in
19 agricultural engineering such as depth to barrier, con-
20 sumptive use or hydraulic conductivity?

21 A Well, the practicably irrigable land does not really
22 lie with those definitions that you just mentioned
23 in the engineering that I know.

24 Q Let me ask the question in a different way then.

25 mesghinna-cross-sachse

1 Is practicably irrigable acreage a term of art in
2 agricultural engineering?

3 A I wouldn't say that. It's more of a legal term
4 rather than engineering.

5 Q All right. Now, I want you to assume the following
6 definition for practicably irrigable acreage. Assume
7 that practicably irrigable acreage means acreage of
8 the same kind that has been successfully irrigated
9 elsewhere in the west of the United States. Now,
10 has the acreage -- Does the acreage that you've in-
11 cluded in your design constitute practicalby irri-
12 gable acreage under that definition?

13 MR. WHITE: Objection; foundation. There's
14 absolutely no fact in the record, no law cited to
15 the Court that ... PIA could have that definition.

16 THE SPECIAL MASTER: I'll overrule the ob-
17 jection. It's an assumption or a hypothetical.

18 MR. SACHSE: Absolutely, Your Honor.

19 Do you want the question reread to you?

20 THE WITNESS: Yes, would you please say it
21 again.

22 MR. SACHSE: Would you reread the question.

23 THE SPECIAL MASTER: Please read the question
24 back.

25 mesghinna-cross-sachse

(Off the record discussion.

(Thereupon the following question
(was read back as follows: "Q
(All right. Now, I want you to
(assume the following definition for
(practicably irrigable acreage.
(Assume that practicably irrigable
(acreage means acreage of the same kind
(that has been successfully irrigated
(elsewhere in the west of the United
(States. Now, has the acreage --
(Does the acreage that you've included
(in your design constitute practicably
(irrigable acreage under that defini-
(tion?"

MR. WHITE: I'll further object. The question is
ambiguous, too general for a definitive answer.

Lands being irrigated successfully is a question that
involves many considerations. More importantly, how-
ever, in the west of the United States is roughly half
this country and there ought to be some limitations
to similar soils and climatic conditions.

THE SPECIAL MASTER: We still overrule the ob-
jection. Same kind I presume includes all classes and
types and those are words of art in this case.

THE WITNESS: Yes. To answer that question it
is yes, it is positive.

MR. SACHSE: Can you give examples of irrigation
of lands roughly similar to lands that you made de-
signs for?

mesghinna-cross-sachse

1 A Well, without going too far away, we have land in
2 the Wind River Indian Reservation which is the
3 Federal Indian Projects, which are successfully
4 irrigated.

5 Q And that are substantially similar to the new
6 lands that would be put into irrigation?

7 A I would say so.

8 Q Now, I want to move to the topic of drainage. When
9 I looked at the drainage plans that you presented I
10 saw what appeared to be a totally worked out system
11 of drainage for almost all the acreage that was to
12 be put into irrigation in the future projects, and
13 yet I know that a great part of that acreage is
14 classified as Class 1 and Class 2 lands by Kersich,
15 HKM, and that the definition for Class 1 land is
16 no drainage problem and the definition for Class 2
17 land, as to drainage, is slight drainage problem,
18 easily corrected. Do you really think that you,
19 to start this project, that you'd have to put in
20 the drainage, totality of the drainage system that
21 you outlined in your plans?

22 A First of all if we start the project right now
23 there is no drainage problem at all. We are antici-
24 pating --

25 mesghinna-cross-sachse

1 THE SPECIAL MASTER: You are what?

2 THE WITNESS: Anticipating.

3 THE SPECIAL MASTER: Anticipating?

4 THE WITNESS: Yes, future drainage problems.

5 In fact, for the first four, five years I believe
6 there won't be substantial drainage problems. So
7 in practice when someone designs drainage it doesn't
8 necessarily mean that you have to put all the
9 drainage to start with. In practice what is done is
10 since drainage is very complex you put about half
11 of the drains first and see how it works, and you put
12 monitoring devices to see whether the drainages are
13 working or not, to see whether those drainages are in-
14 deed enough for the area that you have designed.

15 Now, after monitoring for several years, if you
16 find some areas that would require additional, then
17 you put those additional. So in essence, the drainage
18 designs we have put in is what you call maximum pro-
19 tection.

20 Q (By Mr. Sachse) Is it equally possible as a practical
21 matter that if you put in 40% of those drains after
22 five years, for instance, and then brought it up
23 to 50%, if you saw areas where there was some partic-
24 ular problem, that you might never have to put in the

25 mesghinna-cross-sachse

1 additional 50%?

2 MR. WHITE: Objection, Your Honor, it doesn't
3 call for a professional opinion, it calls for pure
4 speculation.

5 THE SPECIAL MASTER: And a little conjecture.

6 MR. SACHSE: Let me ask the State. The State
7 then admits as a fact in this case that it's entirely
8 speculated as to whether more than 50% of those drains
9 would be needed? If the State will admit that I'll
10 withdraw my question.

11 MR. WHITE: That's absurd, Your Honor. The
12 record stands or speaks for itself. The objection is
13 made, it is speculative.

14 THE SPECIAL MASTER: The objection is made, but
15 he may answer the question.

16 THE WITNESS: The point that I would like to
17 make in this matter is the theory of drainage analysis
18 is not to perfection, it hasn't been perfected. So
19 with the standard of knowledge that we have, with the
20 level of knowledge that we have today, what we do is
21 we design for the maximum protection, but designing
22 maximum protection does not mean that we put all the
23 drainage, as I said. In practice we put probably about
24 50% of the drainage, especially those areas which are
25 mesghinna-cross-sachse

1 depth to barrier, you know, extensive depth to
2 barrier. We put less drainage there and we see
3 what happens. If it requires some additional,
4 we put additional in future, but there are chances,
5 in fact good chances that some of the drainages may
6 not be needed. I think this is the way, how I would
7 answer the question.

8 Q (By Mr. Sachse) So then when I look at another drain-
9 age cost figure on page 39 of your report, table 22
10 and you show cost, for instance, of \$380 an acre for
11 North Crowheart, \$320 for an acre for South Crowheart
12 and so forth, it's entirely possible that you never
13 have to spend that amount of money in putting drain-
14 age for those areas?

15 A As I said, it -- this has been designed for maximum
16 protection. There is a possibility that some of the
17 drainages may not be needed.

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21 * * * * *

1 Q If we take your assumption that you would put
2 in 50 percent of the drainage, and whether you
3 would put in any of the rest of it, we would
4 have to wait for experience over the years to
5 determine, then as far as any immediate costs
6 or any directly foreseeable costs of the drainage,
7 we could really cut these figures that you have
8 in half?

9 MR. WHITE: Objection, Your Honor.
10 Foundation.

11 THE SPECIAL MASTER: We could cut the
12 figures, but I think in half puts it in the
13 realm of conjecture. I would sustain.

14 Q (By Mr. Sachse) All right. Now --

15 THE SPECIAL MASTER: Not so much conjecture,
16 it is almost total uncertainty by his very
17 testimony. The future will tell.

18 MR. SACHSE: That's right.

19 Q (By Mr. Sachse) Do you know whether when the
20 economic justifications of the Midvale Irrigation
21 District were done, that an entire system of
22 drainage for that district had to be justified
23 before the system could be built?

24 MR. WHITE: Objection, Your Honor. The
25 mesghinna-cross-sachse

1 Witness has not been qualified either on Midvale,
2 or as an economist.

3 THE SPECIAL MASTER: He was asked, does he
4 know. If he knows, he may answer.

5 A The thing that I know about the Midvale Irrigation
6 District, is there are many sour lands and they
7 are putting drainage in them now.

8 Q (By Mr. Sachse) They are putting drainage in now?

9 A Uh-huh.

10 Q But that district has been in operation for over
11 50 years, is that correct?

12 A Well, when I say now, I don't mean only this
13 year. They have been putting it in for the
14 last several years.

15 Q Thank you. Do you know whether the drainage
16 problem should be less for lands that are higher
17 up and sandy, with a high hydraulic conductivity,
18 than for lands in the Basin area such as Midvale?

19 MR. WHITE: I object, Your Honor, to the
20 question on the lack of specificity. What does
21 he mean by hydraulic conductivity, what does he
22 mean low Basin areas. It is a question that
23 defies specific response and also, it is a
24 question without foundation.

25 mesghinna-cross-sachse

1 THE SPECIAL MASTER: The objections are
2 overruled. I think the question can clearly
3 be answered.

4 A Obviously, if you have higher lands compared
5 with lower lands, there is a chance that water
6 might seep out from the higher lands and collect
7 to the lower lands. So in a sense, to answer
8 the question from what I just have said, there
9 are chances that the -- high chances that the
10 lower lands will have higher drainage problems
11 than the higher lands.

12 Q (By Mr. Sachse) Now, I want to ask you a question
13 about the definition of barrier and hydraulic
14 conductivity. There has been a good deal of talk
15 about that in this suit. I want to be sure that
16 I understand this correctly, and that the Court
17 understands it correctly.

18 The definition of barrier, as used in the
19 land classification, is a strata of land that has
20 less than one-tenth of the hydraulic conductivity
21 of the land above it, is that correct?

22 A That's correct.

23 Q All right. Now, if the land above the so-called
24 barrier is highly -- has a high hydraulic
25 mesghinna-cross-sachse

1 conductivity, if it's sandy land that the water
2 flows through quickly, that would then mean that
3 the barrier could also have water flowing through
4 it, but at less than one-tenth that rate, is
5 that correct?

6 A That's correct, yes. Because if the barrier has
7 some permeability in it, if it is not completely,
8 you know, 100 percent a barrier, there will be
9 water flowing down.

10 Q Now suppose that the upper strata had a conductivity
11 of ten inches per hour -- I don't know whether
12 that's reasonable, but I just use it as an
13 example -- then when you would reach land that
14 had a conductivity of less than one inch per hour,
15 even though it might be .9 inches per hour, that
16 would be defined as a barrier, the way the soil
17 classification was done, is that correct?

18 A That's correct.

19 Q Now, is it also correct that a barrier that has
20 a permeability of over .0025 inches per hour
21 can have an effect, perhaps a significant effect,
22 on drainage taking place despite the barrier?

23 A Well, the standard procedure in engineering or
24 in any work, whatever you're going to word it, is
25 mesghinna-cross-sachse

1 to assume a barrier of one-tenth the permeability
2 of the upper strata, as I said, so you use that
3 one as a barrier really.

4 Q Right.

5 A But from the logic standpoint of view, there is
6 water leaking there, if there is permeability,
7 good permeability of the lower stratum. So, in
8 a sense although that is not tangible, that is
9 not something that we can concretely say that
10 is true, there is a possibility of your drain
11 spacing might, in reality, be farther than what
12 you have designed for.

13 THE SPECIAL MASTER: Mr. Sachse, you have
14 used the words hydraulic conductivity and then
15 the word permeability interchangeably. Do you
16 mean to do that?

17 MR. SACHSE: Well, I meant to do that. I
18 might be wrong in doing that, and Dr. Mesghinna:
19 I'm sure, could correct me. I'm probably being
20 a bit inaccurate there.

21 Q (By Mr. Sachse) Could you explain the difference
22 between permeability and hydraulic conductivity?

23 A No, they are the same. They can be used inter-
24 changeably. They are words used by different

25 mesghinna-cross-sachse

1 professions.

2 Q Uh-huh.

3 A But they mean the same, essentially the same.

4 Q Uh-huh. Now, in your work in spacing your
5 drains, you have assumed that when you hit a
6 barrier, it is really a barrier, and no water
7 goes through just to be on the safe side?

8 A That's true.

9 Q But the fact may be otherwise, water may go
10 through and you may not need that much in the
11 way of drains?

12 MR. WHITE: Objection, Your Honor. It calls
13 for speculation.

14 MR. SACHSE: It doesn't call for speculation,
15 it is really just summing up what he's already
16 testified. In fact, I'll withdraw the question.

17 THE SPECIAL MASTER: All right, that's fine.

18 Q (By Mr. Sachse) Now, I want to go to the cost
19 figures that you have given for your pumping
20 plants. If I understand correctly, you did not
21 actually go to pump manufacturers, draw specific
22 designs to get these figures but relied primarily,
23 though not exclusively, on the estimating manuals
24 of the Bureau of Reclamation for giving the figures

25 mesghinna-cross-sachse

1 on pumps and pumping stations, is that correct?

2 A Our costs of pumps and pumping plants, we have
3 relied, it is true, on the Bureau of Reclamation
4 standards, but also we have relied on our
5 experience in the company.

6 Q Now, I want to give you a hypothetical situation:
7 First, I want to draw your attention to your
8 report and testimony. As I understand the Arapahoe
9 Pumping Station No. 1 is a 65 horsepower pump,
10 and you have a price set for the pump and pumping
11 station of \$57,000, is that correct?

12 A That's correct.

13 Q All right. Now, wouldn't it be possible to
14 buy that pump for approximately \$8,000?

15 A I'm sure there is a possibility of buying it,
16 eight to \$10,000.

17 Q Well, let's say eight to \$10,000 then. Now, if
18 I were to say to you that other people in your
19 field think that if you have gotten the price
20 of the pump that the pumping station for a pump
21 of this relatively modest size, should not cost
22 more than twice the value of the pump, would
23 that sound unreasonable to you?

24 A It depends what kind of design you're doing really.
25 mesghinna-cross-sachse

1 You can just -- let me start from the lowest
2 point what you can do. You can just buy a
3 pump as you said, eight, \$10,000 and put two
4 planks of what do you call, wood, on top of the
5 canal, set the pump there and that won't cost
6 you much. This being the lowest thing that I
7 would say, and on the other side of the arena
8 there is the costs and the designs done by the
9 Bureau of Reclamation which is in many cases to
10 a certain extent, fully automated and with a lot
11 of gadgets and so on, which is essentially as
12 you said, probably the pumps might only be ten
13 percent of the total framework. If you say,
14 where do we stand on this in our costs in between
15 what I have given you, to extreme costs, the
16 lowest cost that can be and the highest cost that
17 can be, I will say we are a little bit lower than
18 the Bureau of Reclamation and higher than the
19 lowest, what you call standard of pump and pumping
20 plant.

21 Q Now, do you anticipate that in the projects of
22 the size that you're working with, that the pumps
23 and pumping stations would have to have the
24 automation and other sophisticated devices that

25 mesghinna-cross-sachse

1 the Bureau of Reclamation includes in its larger
2 projects?

3 A The automation that I said is, this is what I
4 think, it doesn't say in their manual, but if
5 you come to think about it, it has to be something
6 of that sort in order to have such high costs,
7 meaning like the structures and the improvements.
8 They call it the accessories, electric equipment
9 and the pump plant, miscellaneous manifolds and
10 so on. The kind of thing that you can cut down
11 from that cost are things like for example, in
12 the structures and in the improvements, you can
13 have the lowest structure whereby the water turns
14 from the canal into the pumps and then it would
15 be taken up by the pumps. That is essentially
16 as far as we are concerned that's necessary. But,
17 there are things, as I have testified previously,
18 that we can cut down. Say, for example, the
19 super-structure, the parking lot, the fence, such
20 things can be, you know, out. They are not really
21 essential. Instead of a super-structure, you can
22 make just a shed. Instead of having, you know,
23 a crane and so on to assign costs of cranes to
24 move equipment from place to place, you can have
25 mesghinna-cross-sachse

1 an overall crane for the whole project and so on,
2 you know, so there are many things that you can
3 cut down from this. But, I am saying also, we
4 are a little lower than the Bureau of Reclamation
5 costs, but we are much higher than the lowest
6 cost that I mentioned to you.

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25 mesghinna-cross-sachse

1 Q (By Mr. Sachse Continued) In terms of your
2 engineering, you're not planning sophisticated
3 automatic pump stations, are you? Aren't you
4 planning a pump that someone turns on and
5 turns off?

6 A Yeah, that's what we are assuming.

7 Q A pump that someone turns on and turns off?

8 A Yeah, as much as possible. The best thing is if
9 you have a pump that is fully automated, but
10 that is too much.

11 Q Well, then in your pumping -- strike that before
12 I get to that question.

13 In your testimony previously you said then --
14 this is from Page 4185 of the transcript: That
15 it's not really necessary to have an over-
16 structure in a pump station, but we've included
17 the cost for our over-structure just to be on
18 the safe side.

19 I assume you mean safe side in terms of
20 cost there?

21 A Yes.

22 Q And you said you've included "Other costs such
23 as parking lots that can always be subtracted."

24 A Certainly there is -- you can cut, as I have said,
25 mesghinna-cross-sachse

1 from that cost, there is no question about it.
2 But the point is where are your limits in
3 cutting down. Although we have added that, in
4 that, there is an area where it says pumping
5 plant switch yard. One of the figures gives
6 you the cost of pumping plant switch yard. We
7 did not find it necessary to add that cost, for
8 example, in there. We eliminated that because
9 we assumed that it is inputted with the other
10 costs that we have, we have put on. So, as I
11 have said earlier, there is a possiblility of
12 decreasing this because some of the things that
13 we have included there are optional.

14 Q All right. Now, let me ask one further question
15 on pumps. You had your prices fixed or set at
16 approximately, from -- omitting Big Horn Flats
17 for the moment -- for the other projects, from
18 \$366 per acre to a low of \$138 per acre, that's
19 on Page 22 of your report, table 15.

20 Is it fair to say that if you just want to
21 get the job done and you're not concerned with
22 the aesthetics of it or with building something
23 that's going to be there as long as the Pyramids,
24 but building something to the standards of other
25 mesghinna-cross-sachse

1 water projects built in the West for private
2 persons or for the Government, that you could
3 make a substantial reduction in these pumping
4 costs?

5 MR. WHITE: Objection, foundation, and calls
6 for speculation, Your Honor.

7 THE SPECIAL MASTER: I will overrule.

8 THE WITNESS: Could you please say the
9 question again?

10 THE SPECIAL MASTER: Would you read it,
11 please?

12 (Thereupon the following
13 (question was read back as
14 (follows: "Q All right.
15 (Now, let me ask on further
16 (question on pumps. You had
17 (your prices fixed or set
18 (at approximately, from --
19 (omitting Big Horn Flats for
20 (the moment -- for the other
21 (projects, from \$366 per
22 (acre to a low of \$138 per
23 (acre, that's on Page 22 of
24 (your report, table 15.
25 (Is it fair to say that
(if you just want to get the
(job done and you're not
(concerned with the aesthetics
(of it or with building some-
(thing that's going to be
(there as long as the Pyramids,
(but building something to
(the standards of other water
(projects built in the West for
(private persons or for the
(Government, that you could
(make a substantial reduction
(in these pumping costs?"

mesghinna-cross-sachse

1 THE WITNESS: First of all, to comment on
2 the difference of costs that you see from \$366
3 to \$138 is, Arapahoe Unit in many cases it uses
4 gravity flow so your pumping costs are low there.
5 In Riverton East you have to pump a long
6 distance, the lifts are higher and when the lifts
7 are higher the horsepower is high so your
8 pumping costs will be higher.

9 THE SPECIAL MASTER: What costs like that
10 of Riverton East reach the point that would
11 result in a conclusion on your part, based upon
12 your professional judgment that it is no longer
13 a feasible project?

14 THE WITNESS: To say whether it's a feasible
15 project or not, I wouldn't be deterred by pumping
16 and pumping plant cost alone. I have to see the
17 other costs because in some areas the pumping
18 plant cost is high while drainage costs are low
19 or canal costs is low. So we have to see overall
20 cost.

21 THE SPECIAL MASTER: Thank you.

22 THE WITNESS: As to whether this project
23 was built to the standards of projects that are
24 built in the United States, in my professional
25 mesghinna-cross-sachse

1 judgment we have designed this in such a way
2 that this would be a good viable strong project.
3 Q (By Mr. Sachse) On Page 4124 of your previous
4 testimony you were talking about the water
5 holding capacity of the soil and you say -- you
6 said that if the only positive information you
7 had is as to the top strata of the soil and
8 they don't have a very good water holding capacity --

9 THE SPECIAL MASTER: What do you mean, Mr.
10 Sachse, by top strata?

11 MR. SACHSE: I'll read it. "Let's say
12 gravelly, or for some matter the driller quit
13 his drilling from there, so what we are assuming,
14 we assume the water holding capacity of the
15 rest, 3.5 feet of soil. Gravelly soil has a very
16 low water holding capacity, so what we are doing
17 is we are punishing ourselves on the water holding
18 capacity on the rest of the profile."

19 I want to be sure I understand that. You're
20 saying that where you had insufficient data to
21 prove that the water holding capacity was better
22 than shown in the data that you did have, you
23 assumed the worst case?

24 THE WITNESS: What I mean to say by that is
25 mesghinna-cross-sachse

1 if, say for example, for answering this question,
2 let me bring an example. If we have received
3 say a boring hole which is 12 inches in depth,
4 for that 12 inches in depth we have the texture
5 of the soil and we know what the water holding
6 capacity is. But below that it says only, say
7 gravel. So what we are assuming is that the
8 rest of the stratum, which is 3.5 feet will use
9 gravel. There might be better soil there, you
10 know, way down, but that's essentially what we
11 have. The data that shows is gravel, so gravel
12 has lower water holding capacity, so we will
13 assume that, as if the rest of the depth is
14 gravel, which has lower water holding capacity,
15 means that you are on the conservative side.

16 There might be a chance that, you know, that
17 it might have better soil, but we are not
18 including the chances that --

19 THE SPECIAL MASTER: But if there is better
20 soil under the root zone, doesn't that detract
21 from the general value of that particular part
22 of the land, it doesn't add a factor to its
23 capability, does it?

24 THE WITNESS: What I'm saying is we know
25 mesghinna-cross-sachse

1 for a fact for the first -- for the top 12 inches
2 of soil. That we input it as its respective
3 water holding capacity. What we don't know is
4 the water holding capacity below the 12 inches
5 because we have to go another three and a half
6 feet down. So now the point is what do we do
7 as a water holding capacity for the 3.5 feet. So
8 what we have assumed is we know that below the
9 12 inches it says there is gravel, the gravel
10 has low water holding capacity, which means that
11 you have to irrigate more frequent. So what we
12 are assuming is if we irrigate more frequent --
13 By the way, that means you need more equipment,
14 more cost. So in those areas where we don't have
15 data we have assumed gravel, there is gravel
16 all the way.

17 THE SPECIAL MASTER: An assumption.

18 Q (By Mr. Sachse) So your assumption, in order to
19 be 100 percent safe, assumes the higher cost
20 rather than the possibility of a lower cost?

21 A Yes. Well, there are chances that -- there are
22 chances also on the other side of the coin, there
23 might be completely pure soil. I'm going to the
24 highest extent, pure gravel, let's say that water

25 mesghinna-cross-sachse

1 holding capacity is almost very low, so, you
2 know, it balances out towards the end itself.

3 Q All right. Now, in HKM's soil classification
4 standards they deal with the slope of the surface
5 for sprinkler irrigation, and they classify
6 Class 1 land -- of course I'm just talking about
7 the slope now, slope classification, Class 1
8 lands, that slope is less, is zero to eight
9 percent, and Class 2 land, which is still very
10 good land, eight to fifteen percent, and Class 3
11 land, 15 to 20 percent. Now, am I correct in
12 understanding your testimony to be that you
13 eliminated all lands with a slope of over 15
14 percent in designing your project?

15 A Well, it is not deliberately eliminating them,
16 it is a matter of cost. The more you go higher
17 like this, the higher the cost of energy will
18 be, power cost. And you'll have also higher
19 cost of pumps, so it's -- that's how they were
20 really eliminated.

21 Q So for economic considerations --

22 A It is economic considerations.

23 Q No soil or engineering considerations?

24 A It is economic considerations.

25 mesghinna-cross-sachse

1 Q You eliminated land that had over 15 percent
2 slope.

3 You also testified that only five to ten
4 percent of the land has a slope between ten
5 and fifteen percent. Did you also eliminate
6 some Class 2 land because of slope?

7 A I think I said maybe, I was not 100 percent sure,
8 I was not sure really, that was my opinion. I
9 didn't, you know, measure it exactly, that is
10 five to ten percent, and so on.

11 If at all that would be economic reasons,
12 you know, the more you go higher, the higher the
13 cost will be.

14 Q So you may have eliminated some Class 2 lands to
15 save money according to the economics that your
16 economic advisors gave you?

17 A The point -- it's not as simple as that really.
18 The point is you have to see the whole thing
19 together, you have a big package there, different
20 parameters enter into each other, so you have
21 to balance the whole thing. It is when you see
22 a land, it is not only the slope that determines,
23 you know, it's the drainage, the canal, where is
24 it in respect to that area, how far it is, the

25 mesghinna-cross-sachse

1 pumps, how much do they have to pump, how much
2 the lift and so on. So it's a matter of the
3 whole thing, as I explained before, in Riverton
4 East, when the question was asked to me, what
5 would be the highest cost that we would go before
6 you quit for pumps, and that logic applies to
7 what you're saying. It is a matter of looking
8 at the whole thing together and eliminating some
9 lands if they don't come up with that, but the
10 point is we were looking more towards an
11 economical strong project.

12 Q Now, I want to talk a little more about costs,
13 this time for the side roll sprinkler and the
14 laterals. As I recall your testimony you said
15 you got the costs for that on-farm equipment
16 by talking to Tom Shephard who runs a -- an
17 agricultural supply store in Riverton. Is that
18 correct?

19 A Yes.

20 Q Now, if this project were to be built, wouldn't
21 whoever is going to build it put out those
22 specifications on competitive bids and see where
23 he could get the lowest price for what would be
24 a very large amount of pipe to be purchased at

25 mesghinna-cross-sachse

1 one time?

2 MR. WHITE: Objection, Your Honor,
3 foundation, speculation.

4 THE SPECIAL MASTER: Overruled; he may
5 answer.

6 THE WITNESS: Definitely that's true. It
7 doesn't mean we haven't considered that. We have
8 considered it in our analysis, but as you are
9 well aware of, we don't have controls on what you
10 call competitive bids and so on. But there is a
11 chance, in fact we have discussed with suppliers
12 that those costs might be lower, as much as by
13 ten percent. If -- as much as by ten percent if,
14 you know, you buy in bigger quantities.

15 Q (By Mr. Sachse) Yes. Now, you talked about
16 varying the pipes and you said -- and this is
17 Page 4177 of the transcript, "That we assumed,
18 which is optional, may not be necessary, we
19 assumed that the pipes will be covered below
20 ground, that's not necessary, but that increases
21 the cost of the pipeline network, that is
22 optional."

23 Now, assuming that that is optional and not
24 necessary, how much money could be saved in --
25 mesghinna-cross-sachse

1 approximately, a rough figure, I don't expect
2 you to have an exact figure -- in dollars per
3 acre by not burying those pipes?

4 MR. WHITE: I'll object to the question as
5 to specificity. Is it money saved from the
6 original investment cost, is there money saved
7 throughout all the cost including costs of repair
8 after the cows step on those PVC pipes?

9 THE SPECIAL MASTER: Is it also the fact
10 that the pipe is put into trenches but the
11 trench not filled or the pipe simply laid on
12 the ground and left and not submerged? I'm not
13 clear on the question either, so try it again,
14 will you, Mr. Sachse?

15 Q (By Mr. Sachse) All right. Taking it as a fact,
16 your testimony that this is not necessary, I'm
17 not questioning you on your conclusion, you said
18 it's not necessary.

19 THE SPECIAL MASTER: What is not necessary?

20 Q (By Mr. Sachse) To bury the pipe. What would
21 be your saving in initial cost by not burying the
22 pipe?

23 A Let me clarify this more. When I say optional,
24 it doesn't mean everything cannot be -- should
25 mesghinna-cross-sachse

1 be on top of the ground. There are obviously
2 pipes that you have to put them below the
3 ground. There are rods, there are farmsteads,
4 there are, you know, many things that you have
5 to consider. You know, people are passing,
6 animals are passing by and so on, and in those
7 areas where you think that by putting the pipe
8 on top of the ground, meaning that without
9 burying them, in those areas a savings can be
10 made, initially, what you call investment
11 savings can be made in those areas.

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25 mesghinna-cross-sachse

1 Q In your cost figures for digging, whether it's dig-
2 ging canals or planting pipes of drains, am I correct
3 that you got those figures from the Bureau of Recla-
4 mation estimate of costs?

5 A Yeah, for all canals we got it from Bureau of Recla-
6 mation.

7 Q Now, do you know whether those estimates include a
8 profit for the contractor that's going to dig those
9 canals?

10 A Well, those are estimating costs, so they should
11 obviously include, I believe, the costs of -- I
12 mean, the profits.

13 Q Are you aware that in the Federal Indian Projects
14 a great number of canals were dug by the Indians
15 themselves by hand?

16 A Yes, in those days many canals were dug by hand.

17 Q All right. I'm not suggesting that these canals
18 would be dug by hand, but I am suggesting that the
19 Indians themselves with equipment that they also
20 use for other purposes, such as road repair, might
21 be the people who would dig these canals --

22 MR. WHITE: Your Honor, I would move to have
23 Mr. Sachse's eloquent testimony stricken because
24 he's not yet been sworn and subjected to

25 mesghinna - cross - sachse

1 cross-examination.

2 MR. SACHSE: I'll change my question by saying:

3 Q (By Mr. Sachse) Assume that the Indians themselves
4 were to use equipment already available and dig
5 these canals themselves and that it is for their
6 benefit so they wouldn't need an independent profit
7 from it, wouldn't that then make the Bureau of
8 Reclamation estimating levels inappropriate?

9 MR. WHITE: Objection, Your Honor. It assumes,
10 first, facts not in evidence, whether or not the
11 individual Indians or the Tribes or the Bureau of
12 Indian Affairs has that equipment is not of record.
13 We don't know what equipment is being talked about.
14 And finally, I'm not quite certain, I'm sure that
15 the record doesn't disclose, what Mr. Sachse means
16 as an independent profit, and I assume that whoever
17 did the work would have to make enough money to eat.

18 THE SPECIAL MASTER: Overruled. You may answer.

19 A Well, obviously, for example, if I have the land
20 somewhere, 160 acres, and if I have to dig it, if
21 I have to dig the canal myself with my own equipment,
22 my own labor, it will be substantially lower in cost
23 as compared to if I bring a contractor to do every-
24 thing.

25 mesghinna - cross - sachse

1 MR. SACHSE: Thank you.

2 Q (By Mr. Sachse) Now, are you familiar with a pro-
3 cedure by which companies, such as Continental
4 Hydro, for the name of one of them, use the head
5 on irrigation projects under an Act of Congress
6 that sets this up to generate electricity from
7 small generating plants that do not divert or
8 consumptively use water, but just have the water
9 pass through their plants?

10 MR. WHITE: I object on the grounds of rele-
11 vancy, Your Honor.

12 MR. SACHSE: I'll show the relevancy --

13 THE SPECIAL MASTER: Just a minute, Mr. Sachse.
14 The objection is overruled.

15 A Yes, I know about that program. I came to know about
16 it quite recently.

17 MR. SACHSE: For the Court's information,
18 we'll supply the citation of the Act of Congress.
19 There is an Act of Congress that now says that if
20 energy is produced by any method other than the
21 use of fossil fuels, the primary source of wind
22 energy, solar energy and hydroelectric energy,
23 that the electrical companies in the area are
24 bound by law to purchase that energy and let it

25 mesghinna - cross - sachse

1 enter into their grids at a cost established accord-
2 ing to a formula set in the Act as one of the Energy
3 Conservation Acts.

4 Q (By Mr. Sachse) My next question is: In the irriga-
5 tion system that you have designed would there be
6 heads of water sufficiently to install some of these
7 small electrical hydroelectric generators?

8 MR. WHITE: Objection, Your Honor.

9 THE SPECIAL MASTER: I'll sustain that objection
10 because that's getting into a tremendously complex,
11 difficult -- into another world of facts, figures,
12 costs related to transmission, peaking productivity,
13 areas of capacity and whatnot. It is just a differ-
14 ent world, Mr. Sachse.

15 I doubt very much it is really within this
16 witness' expertise anyway.

17 MR. SACHSE: All right, I'll go on to another
18 question.

19 THE SPECIAL MASTER: All right, sir.

20 Q (By Mr. Sachse) Can you tell me in whatever might
21 be the most convenient way to describe it the maxi-
22 mum heads of water created in your irrigation system?

23 THE SPECIAL MASTER: Do you want this in feet
24 and volume?

25 mesghinna - cross - sachse

1 MR. SACHSE: I would leave it to the witness
2 to state it the way that it would be the clearest.

3 THE WITNESS: Just to clarify things for me,
4 do you mean the pressure on the sprinklers?

5 Q (By Mr. Sachse) No, I do not mean that. I'm not
6 talking about sprinkler pressure; I'm talking about
7 heads of water that may be in the canals or the
8 pipes so that if we later have someone testify as
9 to the possibility of hydroelectric use, they will
10 have the basic information as to the amount of pres-
11 sure.

12 THE SPECIAL MASTER: Heads with capacity to
13 provide the capacity to turn a turbine.

14 MR. SACHSE: Correct.

15 MR. WHITE: Your Honor, I'll now object to the
16 question so long as the witness is not also asked
17 to be specific as to the location of these particu-
18 lar heads that he's referring to.

19 THE SPECIAL MASTER: All right.

20 A Just on approximately, I can't say because --

21 THE SPECIAL MASTER: Just on what, sir?

22 THE WITNESS: Approximately. I can't be
23 definite on this.

24 THE SPECIAL MASTER: All right.

25 mesghinna - cross - sachse

1 A. I will say like 20 feet or even over of head can be
2 attained.

3 THE SPECIAL MASTER: Where?

4 THE WITNESS: In some of the canals.

5 THE SPECIAL MASTER: Some of the canals of
6 which, of the North or South Crowheart or Riverton
7 East, or do you recall from your work?

8 THE WITNESS: I think there might be a possi-
9 bility in North Crowheart Canal at the -- specifi-
10 cally at the Pavillion Reach Canal and also at
11 Arapahoe Canal, but I can't be exactly certain on
12 the figures. But there are drops there that can
13 be used for small hydros probably, although I am
14 not an expert on this.

15 MR. WHITE: Your Honor, I would move that the
16 answer be stricken because under the law of evidence
17 we deal in reasonable probability --

18 THE SPECIAL MASTER: Well, he said --

19 MR. WHITE: -- not possibility.

20 THE SPECIAL MASTER: He said it was approxi-
21 mately. I'll let it stand, Mr. White.

22 MR. SACHSE: Your Honor, I wonder, we've been
23 at it an hour now, I wonder if we could take about
24 a five-minute break and I should be able to finish

25 mesghinna - cross - sachse

1 my cross-examination within a half hour after that.

2 THE SPECIAL MASTER: Mr. White, would that
3 leave you -- Do you want to go off to see a doctor
4 now and let one of your co-counsel take care of the
5 remaining half hour?

6 MR. WHITE: I'll stick here until it's done,
7 Your Honor, and then --

8 THE SPECIAL MASTER: Okay. We'll take a ten-
9 minute break.

10 MR. WHITE: Thank you.

11 (Recess, 10:20 a.m.)

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1 THE SPECIAL MASTER: Okay. Will we please come
2 to order. We'll try to expedite this, Sandy, so we
3 can be of some help to you.

4 MR. WHITE: I'm fine as long as I'm sitting
5 down. As long as Mr. Sachse wants to go, that's fine
6 with me.

7 Q (By Mr. Sachse) On the voir dire of your exhibits
8 for prior testimony, you explained that -- that you
9 had planned water project for 18,000 acres in the
10 Big Horn Flats that have been cut out on the advice
11 of the economist. And the Master asked you if you
12 could bring in figures on how much water it would
13 take to irrigate that area if it were in fact irri-
14 gated. Do you have those figures?

15 THE SPECIAL MASTER: Did he answer the question
16 at the time it was asked?

17 MR. SACHSE: No, he said he didn't have the
18 figures then but he'd try and bring them in.

19 THE SPECIAL MASTER: Very well.

20 MR. WHITE: I'll object to the question on
21 the basis of foundation, Your Honor. What kind of
22 system is going to be used, what costs are involved,
23 etcetera, etcetera?

24 mesghinna-cross-sachse

25

1 THE SPECIAL MASTER: I may sustain some of those
2 observations, objections at the moment, but for now
3 I'll overrule, so he may answer. Do you have the
4 figures?

5 THE WITNESS: Let me write it down.

6 (Brief pause.

7 THE WITNESS: As I have indicated before this
8 time, we haven't made the in-depth analysis of this,
9 but from the outset I can say around 66,000 acre
10 feet of water is needed for those lands.

11 MR. WHITE: I'll object, and I move the answer
12 be stricken. 60 to 6,000 feet of irrigation re-
13 quirement, diversion requirement, what? What amount
14 of water is needed?

15 THE SPECIAL MASTER: I'll let it in for what
16 it's worth.

17 Q (By Mr. Sachse) Let's ask that question, the 66,000
18 acres for what?

19 THE SPECIAL MASTER: The objection's overruled.

20 THE WITNESS: I am talking in terms of water
21 duty, overall water duty for all those acreages in
22 Big Horn Flats.

23 Q (By Mr. Sachse) For the acreages that you have ex-
24 cluded in your report but that you did not exclude
25 mesghinna-cross-sachse

1 in the map that accompanies your report?

2 In other words, we're not talking about the
3 2,000 some odd acres?

4 A I'm talking overall Big Horn Flats, including those
5 which are there.

6 Q Including the 2,000?

7 A Yes.

8 Q And the 18,000?

9 A Yes, yes. Between 60 to 70,000 really, but we can
10 refine this too if needed, but that is the range
11 that we are talking.

12 MR. WHITE: I would like to renew my motion to
13 strike on the basis of foundation. What efficiencies
14 were used, what acreage are we specifically talking
15 about and under what conditions? There are all
16 sorts of foundation things lacking.

17 THE SPECIAL MASTER: It's so general now that
18 it really has no probative value, so I'll overrule
19 the objection.

20 MR. SACHSE: I have no further questions.

21 THE SPECIAL MASTER: All right. Before the
22 State begins its cross examination, we will, Mr.
23 White, take the rest of the day off hoping you
24 can take care of your problem.

25 mesghinna-cross-sachse

1 MR. WHITE: I certainly appreciate that, and
2 I plan to be here with bells on in the morning.

3 THE SPECIAL MASTER: All right. Let's make
4 it 9:15 in the morning, and if I should forget, Mr.
5 White, if you would be nice enough to get a round
6 robin letter out to you attorneys to sign, thanking
7 Mr. Brimmer for using the courtroom.

8 MR. WHITE: Thank you, Your Honor.

9 THE SPECIAL MASTER: I'd like to read in the
10 record, gentlemen, during the last three weeks we've
11 seen many, many exhibits introduced, offered and
12 accepted into evidence, we marked a warranty deed
13 of the Harpoon Cattle Company regarding some land
14 as a U.S. Exhibit WRIR-146, and also it evolved
15 that we have an arable acreage with gradient of
16 five percent or more in the Wind River as an exhibit,
17 which was also marked U.S. WRIR-C-146. I will change
18 the number of the gradient tabulation to C-151 so
19 all of you may know.

20 MR. ECHOHAWK: Thank you, Your Honor.

21 THE SPECIAL MASTER: We are in recess until
22 9:15 tomorrow morning.

23 (Thereupon the proceedings were
24 recessed at 10:35 a.m.)

25 * * * * *

REPORTERS' CERTIFICATE

State of Wyoming)
 : SS
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We, Lamont Miller and Merissa Racine, Registered Professional Reporters in and for the First Judicial District, State of Wyoming, hereby certify that we did at the time, date and place, as set forth, report the proceedings had before the Honorable Teno Roncalio, Special Master Presiding, in stenotype; that the foregoing pages, numbered 4343-4390, inclusive, constitute a true, correct and complete transcript of our stenographic notes as reduced to typewritten form under our direction.

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

Dated this 4th day of May, 1981.


 LAMONT MILLER
 Registered Professional
 Reporter


 MERISSA RACINE
 Registered Professional
 Reporter

