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Trial Transcript, Vol. 52, Afternoon Session

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File 159
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case # 4993

File # 159

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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)
SYSTEM AND ALL OTHER)
SOURCES, STATE OF)
WYOMING.)

Civil No. 4993

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

VOLUME 52
Afternoon Session
Wednesday, May 6, 1981

ORIGINAL

1 THE SPECIAL MASTER: Please come to order.

2 MR. CLEAR: Go ahead.

3 Q (By Mr. White) Dr. Mesghinna, during your
4 direct testimony you discussed messic and
5 frigid soils. Do you recall that discussion?

6 A Yes, I recall that discussion, sir.

7 Q What effect does frigid soil have on cropping --
8 excuse me, on crop consumptive use?

9 A It doesn't have a direct relationship. It
10 doesn't have a direct relationship.

11 When we talk of frigid and messic soils,
12 when we talk in terms of those parameters we
13 are talking in terms of ground temperature.
14 But as you might know, as you know,
15 evapotranspiration is an ambience rather than
16 ground temperature. The effects that it will
17 have is during your planting time, because
18 when you plant your soil it should have
19 certain temperature in order for the plant to
20 grow. So the temperature has to be at some
21 temperature -- I mean the ground temperature
22 has to be above a certain temperature, that
23 varies for different crops.

24 Q So the irrigation requirement would be affected
25 mesghinna-cross- white

1 by the date of planting then; is that correct?

2 A Yeah, because if we assume, let's take for
3 example any crop, let's take corn. If you
4 plant corn when the temperature is quite low
5 your consumptive use will be quite low, but
6 the corn may not grow to the maximum point.
7 So it has some effects although it is not --
8 I can't say it is directly related to --
9 because what I am trying to bring about is
10 the ambient temperature has some effects on
11 ground temperature, you know, it's a function
12 of it, really. I mean if you have a hot
13 season, the ground temperature will be hotter --
14 I mean warmer, although that is not one to one.

15 Q Are you saying then that frigid soil might
16 affect yield or patterns or crop adaptability
17 but not necessarily irrigation requirement?

18 A Let me say it this way: Frigid soils have
19 shorter growing seasons than mesic soils.
20 I think that will answer the question.
21
22

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25 mesghinna-cross-white

1 Q What use, if any, did you make of available data
2 concerning the location and extent of frigid and
3 messic soils within the Wind River Indian Reserva-
4 tion in establishing your growing season?

5 A. If you remember, I have delineated part of my cli-
6 matic zone in terms of the information between area
7 -- the area between Lander and Riverton. Those --
8 that straight line across through there.

9 Q The straight line?

10 A. I have delineated that area.

11 Q What facts and data did you discover --

12 A. Okay.

13 Q -- within the -- concerning the Wind River Indian
14 Reservation concerning frigid and messic soils?

15 A. Okay, what they tell you in that data is messic
16 soils have over 120 days of growing season, and
17 the frigid soils - you can correct me here if I
18 am wrong in the figure - have a growing season
19 between 90 and 120 days. Okay. And when we
20 adapt the crop adaptability, we have taken this
21 into consideration.

22 Q From what source did you obtain the data that you
23 utilized concerning frigid and messic soils?

24 A. As I've indicated, the source of the data is the
25 mesghinna - cross - white

1 Soil Conservation Service, and I can get it all --
2 the whole publication, if necessary.

3 Q Could I look at that, please, to make sure we are
4 thinking about the same thing?

5 A Of course.

6 In fact, it is not very far.

7 Q Okay, the document you're referring to is entitled
8 "Irrigable Soils of Wyoming" prepared by the Wyo-
9 ming Water Planning Program of the State Engineer's
10 office in cooperation with the State Department of
11 Agriculture, 1974?

12 A Yes.

13 Q Is that the most current data which you used --

14 A Well, this is only a small part of what I have used.
15 This is additional data, really.

16 Q -- with respect to frigid and messic soils?

17 A I don't work -- I haven't worked really on frigid
18 and messic soils, but I have used this one in con-
19 nection of the developing my climatic zone map.
20 The straight lines that I have mentioned have
21 been taken from this and the map is here. By
22 the way, I have the map that shows where the
23 frigid soils are and where the messic soils are.

24 Q Could I see your map, please?

25 mesghinna - cross - white

1 A Of course, sir.

2 The Wind River Indian Reservation is shown in
3 orange and the lines that divide the messic and the
4 frigid soils is on the blue line.

5 Q Is this a map out of the Water Planning Report that
6 you have just referred to?

7 A Yeah, I think it is from that map -- from that pub-
8 lication.

9 Q Is it true that that map is vintage 1974 or 1975?

10 A Well, it has to be if the publication is 1974.

11 Q Did you use any data based on field investigations
12 made by the Soil Conservation Service in the years
13 1979, '80, '81?

14 A No, I haven't used.

15 Q Okay.

16 A Again, there shouldn't be any misunderstanding with
17 our climatic zone map. That shows only the -- it
18 is terms of ambient temperature.

19 Q Yes, I understand.

20 A Yes.

21 Q But for that one boundary you did use frigid and
22 messic soils, is that right?

23 A It helped in putting -- it was an additional factor,
24 as I have stated in my direct testimony. We

25 mesghinna - cross - white

1 considered several things, of which this one was a
2 small additional tool, making up our climatic zone
3 map.

4 Q Who provided that information to you, your map and
5 the report, was that HKM?

6 A I think, yeah, it was through HKM.

7 Q Wold, let's take a look at Table 12, Page 15 of
8 your report, your canal conveyance efficiencies.

9 THE SPECIAL MASTER: Would you ask the question
10 again, please? I'm sorry.

11 MR. WHITE: I would direct his attention to
12 Table 12, Page 15 of his report, Your Honor.

13 THE WITNESS: Page 16?

14 MR. WHITE: I have it on Page 15 of mine.

15 THE WITNESS: Okay. Yeah.

16 Q (By Mr. White) Okay, I would like to make sure I
17 understand what the table means. You indicate
18 there that the conveyance efficiency for the North
19 Crowheart Canal is 77 percent in July, is that cor-
20 rect?

21 A Yes, sir.

22 Q Does that mean that 23 percent of the water diverted
23 through that canal in July is lost, doesn't arrive
24 at the pumps?

25 mesghinna - cross - white

1 A. Yeah, it is being lost through several things, of
2 which the two important things are seepage and
3 operational waste.

4 Q. And isn't it true that you told me that your diver-
5 sionstbthrough that canal during July were roughly
6 750 c.f.s.?

7 A. Yes, roughly about 750 c.f.s., that is a design
8 more or less. It's --

9 Q. All right.

10 A. Go ahead.

11 Q. And if you divert 750 c.f.s. during July, isn't it
12 true that your 23 percent conveyance loss amounts
13 to around 10,700 acre-feet?

14 THE WITNESS: How -- Could I ask you to say
15 that question --

16 THE SPECIAL MASTER: I think the answer is
17 obvious. We can all compute it.

18 THE WITNESS: Okay.

19 Q. (By Mr.White) You compute it by multiplying 750
20 times .23 times 1.98 times 31, is that correct?

21 A. Something of that sort.

22

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* * * * *

1 Q (By Mr. White) Isn't it true that your canals
2 are unlined canals?

3 A Sure, I have indicated it in the report.

4 Q Isn't it true that those conveyance losses
5 would be significantly decreased if you lined
6 your canals?

7 A Well, they will be decreased obviously because
8 you have a lined canal.

9 Q Right. And if you decreased your conveyance
10 losses, isn't it true that you could decrease
11 your diversions as well?

12 A Of course.

13 Q Why didn't you?

14 A Decrease your efficiency?

15 Q No, decrease your diversions, your headgates.

16 A Oh, okay. If you decrease your conveyance
17 you'll decrease your diversions.

18 THE SPECIAL MASTER: Why don't you ask
19 him --

20 MR. WHITE: I wasn't quite sure.

21 Q (By Mr. White) You decrease your --

22 A You decrease --

23 Q I think we understand one another. If you
24 lined your canals, you wouldn't have to

25 mesghinna-cross-white

1 divert so much water; is that correct?

2 A That's exactly true, sir.

3 Q Next question is why didn't you line your
4 canals?

5 A When you plan a project you plan for certain
6 things, you have certain criterias, you have
7 certain limitations, of which the most
8 important factor is financial limitation. And
9 if you -- In this project what we have done is
10 instead of gravity irrigation we have used
11 sprinkler irrigation for this amount of water,
12 one, whereas in many projects they use gravity
13 irrigation and if the deficiency is low the
14 irrigation will be high.

15 The second part is the distribution
16 efficiency between the canal and the fields
17 or between the pumps and the fields, and we
18 have made that all closed pipes. Okay.

19 So the only thing -- So in there I
20 would like to add we have increased the
21 efficiency to 95 percent there rather than
22 using subcanals in what you call laterals
23 that would give a lot of losses of water. So
24 the only thing which is the shortest distance
25 mesghinna-cross-white

1 of all the things that I was talking, like
2 if you talk about distribution or transmission
3 lines it will be probably thousands -- I
4 mean hundreds of miles if you add just North
5 Crowheart. But we have only 57 miles of
6 canals which is uncanaled.

7 Q Unlined?

8 A I mean unlined. So we cannot, you know, we
9 cannot see everything, we have to see also the
10 costs.

11 Q But isn't it true that based on the information
12 shown on Table 12, if you lined your canals,
13 depending on the month and depending on the
14 canal, your headgate diversions would be between
15 23 percent and 40 percent less than you have
16 designed them for?

17 A Well, you always have operational waste.

18 Q Well, let's drop it from, let's say, take five
19 percent.

20 A It will be --

21 Q Eighteen percent to 35 percent.

22 A Why don't I tell you this: The efficiency will
23 increase and that's what I said, but that one
24 we have already taken care, you know, by using

25 mesghinna-cross-white

1 of all the things that I was talking, like
2 if you talk about distribution or transmission
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19 percent.

20 A It will be --

21 Q Eighteen percent to 35 percent.

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23 increase and that's what I said, but that one
24 we have already taken care, you know, by using

25 mesghinna-cross-white

1 pipelines and so on. You know, if we decrease
2 in one area we are increased in two areas,
3 that's what I am trying --

4 Q Are you saying then you did not plan for lined
5 canals because of financial constraints?

6 A That is one of it, yeah, because you cannot
7 line -- you cannot make everything completely
8 resistant of everything, you know.

9 If, you see, for example, the project
10 near us, Midvale Irrigation Project, you know
11 you see all kinds of losses there due to
12 canals and laterals and so on here and there.
13 We have substantially increased from that
14 project, for example, when we are designing
15 this project.

16 Q Is it true then that if you lined your canals
17 the project might not be financially feasible?

18 A No, I am not saying that. That is the
19 assumption that we have taken.

20 Q That's the assumption you've made?

21 A No, no, no.

22 Q Well, start again.

23 A What I am saying is we say that the best way to
24 conserve water is by trying to make everything

25 mesghinna- cross-white

1 as much as it can, I would say, as much as
2 we can to decrease the losses of water. Why
3 don't you compare, this is easy to compare,
4 let's see the Midvale Irrigation District,
5 okay?

6 THE SPECIAL MASTER: Does Midvale have
7 lined canals?

8 THE WITNESS: No, they don't have. Some
9 of it is lined, some of it is not.

10 THE SPECIAL MASTER: Do they have pipes in
11 their system?

12 THE WITNESS: No.

13 THE SPECIAL MASTER: Open ditches?

14 THE WITNESS: Mainly open ditches.

15 THE SPECIAL MASTER: Okay, go ahead.

16 THE WITNESS: Let's compare, see.

17 Where will you find nowadays with -- I'm
18 really serious about this -- with 3.8 acre-
19 feet per acre for such big projects? We have
20 only about 3.8 acre-feet per acre in this
21 project while the Midvale Irrigation District
22 is over five acre-feet per acre, you know. So
23 this has been, you know, substantially decreased,
24 the water duty, by using sprinklers and

25 mesghinna-cross-white

1 and transmission lines, pipelines.

2 So I mean this is a good comparison,
3 really, you know, without going too far
4 around discussion.

5 Q (By Mr. White) Isn't it true that the Midvale
6 Project was constructed some time ago?

7 A Oh, yes.

8 Q Isn't it true that if the project or the Bureau
9 project were constructed today it would have
10 lined canals?

11 A I don't know, I wouldn't say that. Maybe,
12 probably. I think they -- they are lining
13 their canals recently due to water limitations
14 and so on, but they still have also what you
15 call open ditch as their laterals and so on.

16 Q Dr. Mesghinna, I hand you what's been marked
17 for identification as Plaintiff's Exhibit
18 FM-9, which is an excerpt from the Bureau manual
19 which I'm sure you recognize. Well, I better
20 ask you. You recognize that excerpt, don't
21 you?

22 A Sure.

23 Q And I direct your attention to the canal lining
24 policy at the bottom of the page. Do you find

25 mesghinna-cross-white

1 that?

2 A Yeah.

3 Q Isn't it true that under that policy full
4 justification for using an unlined water
5 way can be required?

6 A Let me read it.

7 Q Go ahead, read it.

8 THE SPECIAL MASTER: I'd say that's only
9 half of a sentence that you read to him, Mr.
10 White. In those instances where the
11 recommendations do not call for lining of pipe,
12 then what you said is correct.

13 THE WITNESS: Yeah, I have read this, Mr.
14 White.

15 Q (By Mr. White) Okay. And over in the next
16 page, the top paragraph, second page of that
17 exhibit discusses that justification; isn't
18 that correct?

19 A They are saying justification for using unlined
20 waterways is sometimes very complicated
21 because of the large number of factors to
22 be considered.

23 Q And then it says: Consideration must be given
24 to seepage rates with and without lining. Is
25 mesghinna-cross-white

1 that correct?

2 A Yes.

3 Q And then it goes on but let's stop there for
4 a moment.

5 A Okay.

6 Q What consideration did you give the seepage
7 rates with and without lining?

8 MR. CLEAR: I think he's gone into his
9 justification for all of this.

10 THE SPECIAL MASTER: I object to the
11 question. The Witness may be asked what
12 considerations he made to determine to build --
13 or what pipe to put in, what considerations
14 did he consider in putting in unlined canals
15 rather than lined canals, those questions are
16 permissible.

17 MR. CLEAR: I think he's already asked
18 and answered that.

19 MR. WHITE: Was his objection sustained
20 or --

21 THE SPECIAL MASTER: I sustained the
22 objection.

23 THE WITNESS: I can answer the question,
24 you know, this is one of the strong points we

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have. So why don't I make it clear on --

MR. WHITE: You should coordinate with your lawyers on that.

THE WITNESS: This is -- we can settle the matter very easily.

* * * * *

mesghinna-cross-white

1 A Let me start this way. Before we design our system,
2 we study the historic conditions in the area. We
3 know that -- we found out in Historic Federal
4 Indian Project Lands the diversion requirements
5 are high, above five acre feet per acre.
6 Secondly, then we see the other projects outside
7 of the BIA -- I mean outside of the Federal
8 Indian Project Lands and those are -- the one
9 which is the most important and biggest one that
10 can be compared with our project is the Midvale
11 Irrigation District. From there we found out
12 that the diversion requirement is also higher
13 on the average if you take the last probably
14 10, 15 years. it would be, you know, those data,
15 it would be above five acre feet per acre.

16 Okay. So, we have these things in mind
17 now. Then we see, we try to consider our new
18 projects. We have the project, what do we ask
19 ourselves? One of the most important things
20 to do now-a-days whether it is in America or
21 somewhere else in the world especially in arid
22 regions of the world we have to conserve water.
23 How can we conserve water? As you said, one of
24 the ways of considering --

25 mesghinna-cross-white

1 Q Conserving?

2 A -- conserving water is by lining a canal. What
3 are the other ways? By using sprinklers rather
4 than gravity irrigation you can substantially
5 increase your efficiency and decrease your diver-
6 sion requirements.

7 What is the second? The second thing is
8 the transmission lines that go from the canal to
9 each of the fields. Those -- we said, okay, it
10 will be hundreds of miles of these canals so let
11 us line these meaning that let us use conduits,
12 pipelines for this.

13 So the shortest thing, the shortest distance
14 compared with all of these things is the canal.
15 Then we said, okay, we can leave the canal unlined
16 but we line everything else. So what did we come
17 up with? We come up with the substantially lower
18 diversion requirement as compared to adjacent
19 projects in the area so this was the consideration.

20 THE SPECIAL MASTER: So instead of five and
21 a half acre feet per acre, you have computed your
22 projects at what?

23 THE WITNESS: At about 3.9, I guess, at the
24 most.

25 mesghinna-cross-white

1 Q (By Mr. White) Isn't it true that the Midvale
2 Project District continues to line their canals?

3 A Yes. Of course, because the canal is getting old
4 and as it gets older you have to maintain it better.

5 Q What will the duties of water be if you know once
6 they have their canals lined?

7 A I wouldn't know that.

8 Q Isn't true that Midvale is generally a gravity
9 system?

10 A Yes.

11 Q And isn't it true that Midvale has very few sprink-
12 lers in it?

13 A Sure, I know that.

14 Q Are you suggesting, Dr. Mesghinna, that the net
15 depletion to a stream using sprinklers is less
16 than using some sort of gravity system or flood
17 irrigation?

18 A Depletion means so many things for me. Would you
19 clarify that?

20 Q Diversions minus return flows.

21 THE SPECIAL MASTER: Savings.

22 A I would say that the deep percolation from sprinklers
23 is lower than gravity irrigation in general.

24 Q Which means what with respect to net depletion?

25 mesghinna-cross-white

1 A You mean depletion, the amount of water that re-
2 turns to the rivers?

3 Q The net depletion to the stream as a result of
4 the irrigation activity.

5 A Well, what it means is if all the water returns
6 to the streams, you will have --

7 Q Would be zero depletion?

8 A No, no, no. There is no such zero depletion.

9 Q Well --

10 A I don't think there is any zero depletion --

11 Q You said if all the water is returned to the
12 stream. There was diversion, I assume that's
13 what you meant, that's zero depletion, isn't
14 it?

15 A No, what I'm saying is if I divert a certain
16 amount of water and part of it is consumed by
17 the plant and part of it goes to deep perco-
18 lation and then goes back to the streams, that's
19 the point -- that's the amount of water that I'm
20 talking about, the amount of water that returns
21 to the streams, return flow. I'm talking of
22 return flow.

23 Q I'm sorry.

24 A I'm talking of return flow.

25 mesghinna-cross-white

1 Q Okay.

2 A So, gravity systems would have, I believe, just
3 from the outset would have higher return flows
4 than gravity -- I mean than sprinkler.

5 Q Would have greater return?

6 A The very fact that you're using less water in
7 sprinklers, you know, as compared to gravity.

8 Q Isn't it true, Dr. Mesghinna, that if you did
9 line the canals you would enjoy a further con-
10 servation of water, some 50 to 70,000 acre feet
11 a year?

12 A Well, let me --

13 Q Or do you know?

14 A Let me tell you something. Even if I use pipe
15 instead of the canal, closed pipe for conveyance
16 instead of a canal I would conserve even more
17 than what you're saying, you know, so it is rela-
18 tive.

19 THE SPECIAL MASTER: So you are saying it
20 is all relative?

21 THE WITNESS: Yeah, it is all relative.
22 Because the more you make your project gold
23 plated the more water savings you will make.
24 That's obvious.

25 mesghinna-cross-white

1 THE SPECIAL MASTER: Do you think that the
 2 logical thing in years that would follow successful
 3 launching of these projects that these canals
 4 perhaps ought to be lined?

5 THE WITNESS: Well, what I'm trying to say
 6 is we have to make some kind of a compromise.
 7 Which part do we line? Do we line the canals or
 8 the distribution system? Or should we change it
 9 to gravity system?

10 THE SPECIAL MASTER: We appreciate that. You
 11 have made your options here and you have explained
 12 why.

13 THE WITNESS: Yes, uh-huh.

14 THE SPECIAL MASTER: And you have taken and
 15 elected the route you have shown, hundreds of miles
 16 of pipe whereas you have the short, relatively
 17 short canal. But as a matter of fact I was won-
 18 dering if this canal after five or ten years of
 19 operation ought to begin to have sections of it
 20 lined during the nonirrigating season as part of
 21 good operation and maintenance.

22 THE WITNESS: Yes, this is part of it, you
 23 know, in fact, we have what we call -- although
 24 you haven't reached that point I guess so far in

25 mesghinna-cross-white

1 the cross examination, we have what we call the
2 engineering and contingencies. And we have the
3 contingencies for something like this, you know,
4 when you find something unexpected when you find
5 something that probably you have to line your
6 canal and so on.

7 You have those contingencies and so on. So
8 everything is taken care in our plans.

9 Q (By Mr. White) Is it your opinion then, Dr.
10 Mesghinna, that the cost or the dollar values
11 given for engineering in contingencies is adequate
12 to cover not only the engineering and contingencies
13 which you and I have discussed on previous occa-
14 sions but also the lining of canals?

15 A No, no, no. No, I think you misunderstood me.

16 THE SPECIAL MASTER: I'm not sure that he
17 misunderstood you at all. I think he knows per-
18 fectly well what you said, if I may say so. You
19 go ahead and answer his question.

20 A Okay. What I'm saying is suppose in the route
21 of the canal we find, let's say, a big hole in
22 the route, sinks. What do we do? We have to
23 line the canal there so the contingencies are
24 for something of this sort, unexpected things.

25 mesghinna-cross-white

1 What we might have overseen. That's the reason
2 we have -- otherwise, it is not assigned specifically
3 for lining the canal.

4 Q Isn't it true then, Dr. Mesghinna, that the cost
5 values given in table 24 on page 42 of your report
6 do not include the costs for lining the canals at
7 any time in the future except if you should happen
8 to run into what you referred to as something like
9 a sink?

10 A Well, I think it is clear. This canal is unlined
11 canal and the costs are for unlined canal.

12 Q Now, let me get back to the question I asked some
13 time ago and isn't it true that if you lined these
14 canals, you would enjoy a further conservation
15 of water of between 50 and 70,000 acre-feet per
16 year?

17 MR. SACHSE: Objection.

18 THE SPECIAL MASTER: For these five projects?

19 MR. WHITE: Yes, sir.

20 MR. SACHSE: He's asked this question about
21 three times --

22 MR. WHITE: I have never gotten the answer.

23 THE SPECIAL MASTER: He has asked it once and
24 he got an answer, and I think I'll sustain the objection.

25 mesghinna-cross-white

1 MR. WHITE: Your Honor --

2 THE SPECIAL MASTER: You asked that question
3 and you got your answer.

4 MR. WHITE: Could I have that answer read
5 back because I believe that he didn't indicate
6 whether that was true, untrue, or he didn't know.

7 MR. SACHSE: Your Honor, the witness answered
8 the first time that there would be a savings in
9 water loss if the canal was lined. He declined
10 to give an exact number of acre feet and there is
11 no reason why he should off the top of his head
12 give one, and if Mr. White has a number of acre
13 feet that would be saved that he wants to try to
14 prove later in the case, he can do it through
15 his own witnesses.

16 MR. WHITE: Well, I think I ought to be
17 given at least the opportunity of that answer
18 being read back because I don't believe that Mr.
19 Sachse has correctly characterized it.

20 THE SPECIAL MASTER: Well, I think he did
21 but I'll let you read it back but I think it is
22 wasteful, extreme waste of time.

23 Can you find it, Lamont?

24 (Brief pause.)

25 mesghinna-cross-white

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THE SPECIAL MASTER: Go ahead and answer the question.
A You see, if you line a canal doesn't mean that you escape from seepage by the way. There is always seepage in canals, the joints and so on. At any rate if we are very successful in lining a canal, I don't think we'll save more than 30,000 acre feet.

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mesghinna-cross-white

1 Q (By Mr. White) Okay. Now, Dr. Mesghinna,
2 I hand you what has been previously admitted
3 or copies of what have previously been
4 admitted as C-231, 235 -- we're back to
5 drainage -- and ask you if those are the
6 Toedter maps which you relied upon in developing
7 your drainage costs based on drain depths --
8 excuse me, drain spacing, size, and length,
9 which are in turn based in part on depth
10 to barrier?

11 A Yeah, these are the maps, I believe.

12 (Brief pause.

13 THE SPECIAL MASTER: The hearing that
14 was set for three o'clock, this morning has
15 just been reset in Judge Kerr's Courtroom
16 so we don't have to move at three o'clock.

17 Q (By Mr. White) Dr. Mesghinna, I direct your
18 attention to one of those Toedter maps, which
19 is a copy of what has already been admitted
20 as Exhibit C-234, and ask you whether or not
21 your Field 9-20 in the Arapahoe Unit falls
22 within study area A-1 on Exhibit C-234?

23 A Yes, it is, A1-A1-2.1-20 is Field 920.

24 Q And 20 means that the depth to barrier that
25 mesghinna-cross-white

1 you assume for that field was 20 feet?

2 A Uh-huh.

3 Q Is it true that you relied on the HKM data
4 with respect to depth to barrier?

5 A Yes.

6 Q Is it reasonable to rely, of a person of your
7 expertise, on that sort of data in determining
8 depth to barrier?

9 A Why not?

10 Q Well, let's see.

11 (Brief pause.

12 Q Dr. Mesghinna, I hand you what's been marked
13 for identification as Plaintiff's Exhibit
14 FM-10, and tell you that it is a copy of
15 materials provided to the State of Wyoming
16 through discovery by the United States, and
17 ask you if it isn't true that drainage Hole
18 No. 32 on that plate which lies within your
19 Field 9-20 shows in its log a depth of 1.5
20 feet to shale?

21 THE SPECIAL MASTER: Depth of how much?

22 MR. WHITE: :1.5 feet, Your Honor. One
23 and a half feet.

24 THE SPECIAL MASTER: Can you tell where
25 mesghinna-cross-white

1 that hole is on this exhibit, please, or just
2 describe it by --

3 MR. WHITE: It's right there, Your Honor.

4 THE SPECIAL MASTER: Thirty-two?

5 MR. WHITE: Yes, sir.

6 THE SPECIAL MASTER: All right.

7 MR. CLEAR: Your Honor, I think we've been
8 through the depth to barrier.

9 THE SPECIAL MASTER: We have indeed, but
10 he has a right to test this Witness on his
11 use of this material, and I'll let a few
12 questions be asked.

13 MR. WHITE: The purpose of questioning --

14 THE SPECIAL MASTER: You've been over-
15 ruled, Mr. White.

16 You may answer.

17 THE WITNESS: Where that is, I haven't
18 found it.

19 (Brief pause.)

20 Q (By Mr. White) Okay. Have you now located
21 Hole No. 32 on FM-10?

22 A Yeah, it is on line A, and I have to try to
23 locate the boring that corresponds to it.

24 This map is not really very clear.

25 mesghinna-cross-white

1 Q Isn't it true that No. 32, the D with the 32
2 in it, which you circled on FM-10 is within
3 the boundaries of Field No. 9-20 in the
4 Arapahoe Unit?

5 A Let me check.

6 Q Okay. While you're looking, you might want to
7 check E, which is immediately --

8 THE SPECIAL MASTER: One at a time would
9 be a good idea.

10 MR. WHITE: I'm sorry.

11 THE WITNESS: Although it is very hard to
12 exactly pinpoint the place from these maps,
13 it is approximately somewhere there.

14 Q (By Mr. White) Isn't it true that on the
15 second page of FM-10, the log for Hole D-32
16 shows sandy brown shale, one and a half feet
17 to nine feet?

18 THE SPECIAL MASTER: When you say "Sandy
19 brown shale" --

20 MR. WHITE: Yes, sir.

21 THE SPECIAL MASTER: I can't read it.

22 MR. WHITE: These are the best copies we
23 got from the United States, Your Honor. I can
24 show you my copy, which is clearer.

25 mesghinna-cross-white

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THE SPECIAL MASTER: That's all right.
 We've been at it an hour now, let's take a
 five minute break, a little recess.

(Thereupon a five
 (minute recess was taken.

* * * * *

mesghinna-cross-white

1 MR. SACHSE: May it please the Court. Before
2 the witness answers --

3 THE SPECIAL MASTER: Well, are we -- I haven't
4 rapped in yet.

5 We are now resuming the hearing.

6 MR. SACHSE: May it please the Court. Before
7 the witness answers, it seems obvious to me at this
8 point that this was an improper question and the
9 witness should not be permitted to answer it for
10 the following reason: That when Mr. Toedter testi-
11 fied as to his establishment of depth of barrier
12 and then his furnishing Dr. Mesghinna the depth of
13 barrier, Mr. Toedter indicated over and over under
14 cross-examination that there were often five or
15 six holes that would be used and that one might
16 show a very shallow depth, that others nearby might
17 show deeper depths and that he would use his pro-
18 fessional opinion to decide what was the valid
19 depth to give to that property. He showed how he
20 often averaged holes or how he picked the deepest
21 or the shallowest, depending on his professional
22 judgment. And it is clear to me that from Dr.
23 Mesghinna's prior testimony and from the search
24 that has been going on in the last five minutes
25 that this was an area of work that was done by

1 HKM that has been testified to by HKM that has
2 been cross-examined in connection with HKM and that
3 to give Mr. White the opportunity to pick out the
4 one or two rejected shallow holes and then question
5 this witness who was not responsible for the soils
6 study as to why that hole was rejected and some
7 deeper barrier picked does not add to the search
8 for truth.

9 MR. WHITE: Do you want me to respond?

10 THE SPECIAL MASTER: Mr. Sachse, if your ob-
11 jections would have been timely -- I hope you can
12 appreciate that when an objection is not timely
13 made, it makes the duty of a judge or a master all
14 the more difficult to rule on an objection.

15 MR. CLEAR: Your Honor, we did make the objec-
16 tion --

17 THE SPECIAL MASTER: You did and it was overruled,
18 but it wasn't quite the one --

19 MR. SACHSE: Well, I make --

20 THE SPECIAL MASTER: Just a minute. -- with
21 the detail and the accurate recollection of earlier
22 testimony that Mr. Sachse has now, with all respect
23 to your objection, timely made. I appreciate that
24 this is not the witness to answer those things. I
25 have permitted the question only because I think it's

1 still proper that it may be answered for whatever it
2 may be worth. It is not a reflection upon the com-
3 petence of Mr. -- or Dr. Mesghinna. It is brought
4 out to show some reliance upon some information that
5 may not be valid that will come up again in this case,
6 I have no doubt, regarding these depth to barrier
7 holes, the number of them, the taking of particular
8 areas rather than defined irrigated fields. We
9 haven't heard the last of this, so I'm going to over-
10 rule your objection, Mr. Sachse, with all respect to
11 you, and you may answer.

12 A. Okay.

13 Q. (By Mr. White) Isn't it true that the log for Hole
14 D-32 in Field 19-20 shows sandy brown shale, 4 1/2
15 feet to 9 feet?

16 A. If you would remember, before I said that that area
17 is approximately the same, and I was not sure that
18 that area was there. So it is with regret that I
19 would say that area or Hole No. 32 does not show in
20 Mr. Toedter's map as 20 feet depth to barrier, it
21 shows a 7-foot depth to barrier.

22 Q. Okay, for Field 9-20, which of Mr. Toedter's areas
23 is that field in?

24 A. That field is in -- Okay, the hole is somewhere

25 mesghinna - cross - white

1 here. That's A-32.

2 THE SPECIAL MASTER: Where are you pointing?

3 MR. WHITE: It is in A-3.

4 THE WITNESS: Yes, A-3.

5 THE SPECIAL MASTER: Thank you.

6 Q (By Mr. White) So you used the depth to barrier of
7 7 feet for that field?

8 A. For that field area, yes.

9 Q And isn't it true then that Hole D-32 by the
10 Bureau shows sandy brown shale, 1 1/2 to 9 feet
11 there?

12 A. Yes, it shows that, Mr. White, but I think you would
13 appreciate this field, or anyone in here would have
14 appreciated this field, if one has to know through
15 what kind of estimations we go when we determine a
16 certain thing. There could be no four or five bor-
17 ings in one area. One of them might show in a
18 limited area, in a very small area, 1 foot depth
19 to barrier, but in the surrounding area it might
20 show like 20 feet, 10 feet, 5 feet, 7 feet, and so
21 on. So because of that depth of barrier in there,
22 you cannot assume really this area has a depth to
23 barrier. You cannot generalize, that's what I'm
24 saying, because you have just one area. So I am

25 mesghinna - cross - white

1 sure Mr. Toedter has gone through this and he has
2 seen several borings. In fact, I have seen several
3 borings right now there and, indeed, they show
4 greater than 7 feet, I believe, most of the borings
5 that I suggest now, the logs that I have seen.

6 Q Well, let me ask you this: At the point in Field
7 9-20 where it is 1 1/2 feet to shale, what sort of
8 drain depth and spacing are you going to have?

9 A Well, first of all, by definition, we don't have a
10 soil that has less than 6 feet depth to barrier.

11 Q How do you know that when in Field 9-20 it is a foot
12 and a half to sandstone?

13 MR. CLEAR: Your Honor, now, he's -- he's now
14 -- Mr. Toedter went into this about how Mr. Toedter
15 concluded those. He's not asking something from Mr.
16 Toedter's maps. What he's asking now is how did
17 Mr. Toedter reach his conclusions.

18 THE SPECIAL MASTER: I think Mr. White appre-
19 ciates the fact that he may be getting close to
20 enough of these. One or two more.

21 MR. WHITE: The point I'm trying to make is
22 Mr. Toedter testified to an average for a fairly
23 large area. Now, we are getting down to small
24 fields and I'm testing the reasonableness of Mr.

25 mesghinna - cross - white

1 -- or Dr. Mesghinna being required to rely on that
2 sort of information on an average for a larger area.

3 Q (By Mr. White) Now, let's turn to the Field 9-19.
4 Isn't it true that there is -- the same plate, FM-
5 10 -- isn't it true that the hole marked as E, which
6 I believe you have already circled in red just north
7 of D-32, falls within your Field 9-19?

8 MR. CLEAR: What hole was that?

9 MR. WHITE: E as in Echohawk.

10 Q (By Mr. White) Do you find E on there, Wold?

11 A Yeah, I found E, but I found -- it's hard from these
12 maps to correspond to this.

13 THE SPECIAL MASTER: It is, indeed.

14 Will it help if one were to observe from an
15 old dog-faced infantry view that it is about a
16 quarter of a mile due north?

17 MR. WHITE: It is the bottom of 20. Here it
18 is right there at the bottom of 20.

19 THE SPECIAL MASTER: The very bottom of Section
20 20.

21 Has he got it?

22 A Okay, I have seen that area. It corresponds, it
23 touches Field No. 19.

24 Q (By Mr. White) On the second sheet of FM-10,
25 mesghinna - cross - white

1 isn't it true that the log for Hole No. 3 shows
2 sandy shale, 2 feet to 9 feet?

3 THE SPECIAL MASTER: Isn't it true that it
4 shows --

5 MR. WHITE: Sandy shale, 2 to 9 feet.

6 A. At about 9 feet.

7 Q (By Mr. White) Two to 9 feet, between 2 and 9 feet?

8 A. Sandy shale.

9 Q Yes.

10 A. Not --

11 THE SPECIAL MASTER: Not clay.

12 THE WITNESS: Not shale.

13 MR. WHITE: I said sandy shale.

14 THE WITNESS: Yeah, yeah.

15 THE SPECIAL MASTER: What does it say just
16 under that?

17 THE WITNESS: Below the sandy shale at about
18 -- if I can read this correctly, about 9 feet, I
19 guess. Sandy gray shale about 9 feet. Isn't that
20 true?

21 MR. WHITE: Yes.

22 Q (By Mr. White) What's the depth to barrier when
23 you hit sandy shale at 2 feet?

24 A. Well, I have to know the soil above it, what kind
25 mesghinna - cross - white

1 of hydraulic permeability it has above it.

2 Q Well, it is on the log.

3 THE SPECIAL MASTER: He would have to know
4 the ratio --

5 THE WITNESS: I have -- exactly, I have to know
6 the ratio of hydraulic permeabilities.

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1 THE SPECIAL MASTER: Mr. White, perhaps
2 we have devoted enough time to depth to
3 barrier, you're the judge of your time.

4 MR. WHITE: I'd like to spend some
5 substantial time on it, Your Honor, because
6 I think it may be well the most important --

7 THE SPECIAL MASTER: I thought earlier
8 you had only two more questions.

9 MR. WHITE: No, not on this one, Your
10 Honor. We could go for days, but I'd like
11 to do enough of it so you get a strong flavor
12 for problems of using averages when it comes
13 down to dealing with fields by fields because
14 I think it's a significant area that needs to
15 be addressed.

16 THE SPECIAL MASTER: You be the judge
17 of the evidentiary question of what limits
18 this witness has to answer questions dealing
19 with matters that were not in his dominion.

20 MR. WHITE: Your Honor, if there was
21 evidence that the arable land base which he
22 used was in fact the arable land base which
23 is in evidence I think that Mr. Sachse's
24 observations would have substantial merit,

25 mesghinna-cross-white

1 but the evidence is quite to the contrary,
2 the evidence is that the Witness does not
3 know whether or not the arable land base
4 which HKM gave to him is the one to which
5 Mr. Kersich testified before you. In fact,
6 we were able to point out an area where
7 there was a substantial discrepancy.

8 THE SPECIAL MASTER: Well, I don't
9 remember every word of the weeks of testimony
10 on the many, many holes that were drilled
11 and the augering, but I came away with a
12 conclusion that like most of us, that that
13 too is a work of imperfectness and variations,
14 as long as they are in a given tolerance, it's
15 part of the real world.

16 The fact that they rejected the thousands
17 of acres they did before they even considered
18 what was left is proof, I think, of the good
19 many tests that were made to eliminate areas
20 that did not have proper depth to barrier or
21 hydraulic conductivity.

22 (Brief pause.)

23 THE SPECIAL MASTER: Gentlemen, you
24 remember the early months of this hearing,
25 the hours we spent fighting about what's

1 legibile -- oh, you weren't here, Mr. Clear.
2 Your predecessor, Ms. Sleater made a career
3 of objecting to matters like this because they
4 just are not readable. Now, I agree with her.

5 MR. WHITE: Your Honor, we made virtually
6 the same degree of objecting to the illegible
7 copies provided to us, which these happen to
8 be some.

9 THE SPECIAL MASTER: We'll do the best we
10 can.

11 Q (By Mr. White) Dr. Mesghinna, isn't it true
12 that -- First of all I hand you what's been
13 marked for identification as FM-15, and ask
14 you whether or not the hole marked D-3 at the
15 very top of the map falls within your North
16 Crowheart Field 24104?

17 MR. SACHSE: Your Honor --

18 MR. CLEAR: Your Honor, I have an objection
19 here. There's been no testimony that Dr.
20 Mesghinna has relied on any of these maps being
21 used now.

22 MR. WHITE: That's exactly the point of
23 the cross-examination, Your Honor, he should
24 have.

25 mesghinna-cross-white

1 THE SPECIAL MASTER: Go ahead with your
2 objection.

3 MR. CLEAR: And he's being asked to say
4 the hole says -- this hole is such and such,
5 is so deep and has a depth to barrier, and he's
6 never seen this before.

7 MR. SACHSE: Your Honor, --

8 THE SPECIAL MASTER: That doesn't exclude
9 him asking the question and he can use this
10 on his case in direct if he wishes to establish
11 a matter attacking the credibility of what's
12 on the record as arable lands. I suspect he
13 intends to do that.

14 MR. CLEAR: This is not arable land, this
15 is depth to barrier, which he's gone into
16 to some extent.

17 MR. SACHSE: I have a separate objection
18 to this, which I hope this time is timely
19 because I'm objecting the minute the question
20 was raised. And my objection is substantially
21 the same as my previous objection.

22 What we've just seen is Mr. White use
23 FM-10, an exhibit that had over 40 holes, to
24 demonstrate the depth to barrier in a

25 mesghinna-cross-white

1 relatively small area of land, and pick out
2 two of the 40 holes to try to give the
3 impression that the depth to barrier must be
4 judged by those holes.

5 Now, he did the same thing with Mr.
6 Toedter, who is a soils engineer who had done
7 the work and was an expert in this field and
8 who demonstrated over and over again the way
9 all the holes must be taken into account:

10 He's now proceeding to do the same thing
11 with an exhibit that shows 21 different holes,
12 and again with a witness who has not done the
13 soils work as to which this pertains. Now,
14 it's very clever cross-examination by Mr.
15 White --

16 MR. WHITE: It's also proper.

17 MR. SACHSE: Let me finish -- to try to
18 do with Dr. Mesghinna what he failed in doing
19 with Mr. Toedter, which was to try to show,
20 because one hole is in a shallow area of land
21 it has to be rejected, even though if the
22 majority of the holes show that the majority
23 of that land is deep.

24 And to allow him to continue this line of
25 mesghinna-cross-white

1 cross-examination with this witness is improper.

2 MR. WHITE: Can I respond to that, Your
3 Honor? I think it's important.

4 THE SPECIAL MASTER: Yes, you may respond
5 to that.

6 MR. WHITE: There are a couple of points
7 that Mr. Sachse overlooks, and one of them is
8 that the arable land base to which Mr. Kersich
9 and Mr. Toedter testified and about which I
10 cross-examined them, was not shown to be the
11 same arable land base which Mr. Mesghinna has
12 been given by HKM.

13 The second thing is that the cross-
14 examination of Messrs. Toedter and Kersich
15 went to the reasonableness of their arable
16 land base determinations. What we're talking
17 about now is not a large arable land base
18 determination, we're talking about whether
19 these particular fields should be included
20 within BIA because they do not have a depth to
21 barrier of six feet, but instead have areas
22 within them having a depth to barrier of a
23 foot and a half or two feet.

24 MR. CLEAR: Now he's asking them to
25 mesghinna-cross-white

1 cross-examination with this witness is improper.

2 MR. WHITE: Can I respond to that, Your
3 Honor? I think it's important.

4 THE SPECIAL MASTER: Yes, you may respond
5 to that.

6 MR. WHITE: There are a couple of points
7 that Mr. Sachse overlooks, and one of them is
8 that the arable land base to which Mr. Kersich
9 and Mr. Toedter testified and about which I
10 cross-examined them, was not shown to be the
11 same arable land base which Mr. Mesghinna has
12 been given by HKM.

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14 examination of Messrs. Toedter and Kersich
15 went to the reasonableness of their arable
16 land base determinations. What we're talking
17 about now is not a large arable land base
18 determination, we're talking about whether
19 these particular fields should be included
20 within BIA because they do not have a depth to
21 barrier of six feet, but instead have areas
22 within them having a depth to barrier of a
23 foot and a half or two feet.

24 MR. CLEAR: Now he's asking them to
25 mesghinna-cross-white

1 testify as to depth to barrier.

2 MR. WHITE: Now, the point is that the
3 United States has put this Witness in this
4 situation, they have left him out here hanging
5 because they've made absolutely no connection
6 and they couldn't, between the arable land base
7 with which he's been asked to work and the
8 arable land base that the other witnesses have
9 testified to. And as a result, I think that
10 it is quite proper, and I understand that Mr.
11 Sachse and Mr. Clear don't like the cross-
12 examination, but I think it's quite proper to
13 point out that with respect to Mr. Mesghinna's
14 fields, it was not reasonable for him to be
15 required to rely on the HKM work because he's
16 he's got fields which he's been blindsided
17 with essentially, he has fields that have depth
18 to barrier that are remarkably shallow. It's
19 not his fault, it's the fault of the way the
20 case was put together, and the fault that he
21 was required to rely on information that he did
22 not develop himself in his usual painstaking way.

23 THE SPECIAL MASTER: Gentlemen, it will
24 be my burden, when the case is closed to determine
25 mesghinna-cross-white

1 the relevancy of the evidence, to determine
2 what weight to give to the evidence and to
3 draw conclusions therefrom. That's going to
4 be more important than a ruling that something
5 should have been sustained where it was
6 overruled. I will overrule your objection
7 only to permit this answer for whatever it may
8 be worth to me in making that final adjudication.

9 I'm the person that has to meld and
10 bring together and interrelate all of the
11 testimony and I still don't follow that Dr.
12 Mesghinna's working with an entirely different
13 land base than was provided to him by HKM.

14 MR. WHITE: No evidence that it's the
15 same one.

16 MR. SACHSE: I want to respond to that.

17 MR. CLEAR: There was ---

18 THE SPECIAL MASTER: Just a minute, I'd
19 be happy to hear your responses if you'll
20 just speak one at a time.

21 MR. CLEAR: There are questions raised
22 on cross-examination and I believe it was
23 particularly in respect to these HKM maps.

24 THE SPECIAL MASTER: You mean the flooded
25 mesghinna-cross-white

1 area from the Boysen Reservoir?

2 MR. CLEAR: Not only that, Your Honor,
3 but there were some areas, I think -- I think
4 these were 52 to 56. There were some areas
5 down here, they were called Parcel 40 on Dr.
6 Mesghinna's maps. We went over there last night
7 and the areas in the 40 parcels are shown in
8 here. What happens was both Dr. Mesghinna
9 and Mr. White, when they were reading Dr.
10 Mesghinna's map --

11 MR. WHITE: I object to Counsel testifying.

12 MR. CLEAR: -- mistook a railroad track
13 for being a section line, and when we -- on
14 redirect we will show that all those areas are
15 included on these maps or are in evidence
16 through other means.

17 THE SPECIAL MASTER: Even if some aren't,
18 those are tracts or portions are minutia
19 compared to the general fact that he's working
20 with same land base given to him as arable
21 acres on which he must then run the test of
22 whether they are practicably irrigable acres
23 or not, and I believe I can --

24 MR. WHITE: The --

25 mesghinna-cross-white

1 THE SPECIAL MASTER: Just a minute, Mr.
2 White, I'm going to come on your side of this
3 if you give me a chance to, and I believe that
4 I can make the judgment as to the relevancy
5 and to the importance. They may not be proper
6 questions on cross-examination, but I'm
7 nevertheless going to overrule the objections
8 and allow this one to be answered by the
9 Witness. I may overrule the next one on the
10 basis of an entirely new subject, duplication
11 and redundancy.

12 MR. WHITE: The next one will be on a
13 different field, Your Honor.

14 THE SPECIAL MASTER: Okay. You may answer.

15 MR. WHITE: You remember the question?

16 THE WITNESS: No.

17 MR. WHITE: Your Honor, could we take a
18 short break?

19 THE SPECIAL MASTER: Let's take a ten
20 minute break and recover our glum and
21 normalcy.

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1 THE SPECIAL MASTER: Okay. Ladies and
2 gentlemen, shall we resume?

3 Q (By Mr. White) Dr. Mesghinna, how many acres
4 were in field 19 -- 9-19 and 9-20 in the Arapa-
5 hoe unit that we were previously discussing?

6 A Okay. Let me try to go over this.

7 Do you have -- can I borrow a scale from
8 someone?

9 MR. WHITE: Sure.

10 MR. CLEAR: What?

11 THE SPECIAL MASTER: A scale.

12 MR. WHITE: I saw an engineering scale --
13 Henry, have you got one?

14 (Off the record discussion.

15 MR. WHITE: We don't have one.

16 Do you mean a little triangular engineering
17 scale?

18 THE WITNESS: Yeah.

19 THE SPECIAL MASTER: There's not one in the
20 courtroom, I don't think.

21 A Well, I can say approximately it might be about
22 240 acres.

23 Q (By Mr. White) That's in which one? In both of
24 them put together?

25 mesghinna-cross-white

1 A Say 19.

2 Q Okay.

3 A But I wish I could measure it.

4 THE SPECIAL MASTER: I think that's close
5 enough.

6 Q (By Mr. White) Don't you have the field, the
7 acreages listed by field?

8 A Yeah, but I don't think I have the right list
9 before me. I think it is 235.

10 Q 235?

11 A Uh-huh.

12 Q How about in 20?

13 A I think 223.

14 Q Dr. Mesghinna, referring to FM-15, isn't it true
15 that hole number 2 which you have circled towards
16 the top center or at the top center edge of the
17 exhibit lies within North Crowheart field 23-78?

18 A If I may be excused I have some comments on the
19 previous borings that we discussed in Arapahoe.
20 I'm not done with them --

21 Q Well, why, since it is my cross examination, maybe
22 your lawyer can ask you that on redirect.

23 MR. WHITE: Your Honor, could we go ahead and
24 do this?

25 mesghinna-cross-white

1 THE SPECIAL MASTER: Well, the unanswered --
2 the question has been asked and which there was
3 no answer dealt with D-3.

4 MR. WHITE: I'm sorry --

5 THE SPECIAL MASTER: -- and I permitted an
6 answer to D-3 and I was wondering when we would
7 get to it.

8 MR. WHITE: I apologize. I can do whatever
9 you want.

10 Q (By Mr. White) Let's just go back to D-3 --

11 THE SPECIAL MASTER: You can pose the question
12 if you wish.

13 Q (By Mr. White) Isn't it true that D-3 is in field
14 24 -- 104 on North Crowheart?

15 A Yes, it is there.

16 Q Isn't it true that the soil log for Exhibit D-3
17 shows hard grey sandstone three to eight feet?

18 A At what depth did you say?

19 Q Three feet to eight feet?

20 A Yes, but if we go back and see at D-3 the people
21 who classified this land shows that this is class
22 3 land, and I can't read it very well but I don't
23 see any deficiency. Can you read the deficiency
24 of the soils there?

25 mesghinna-cross-white

1 Q But isn't it true that the original classification
2 was struck out and a class 6 was inserted above
3 it? Just -- or are you talking about the land
4 classification fraction just below D-3?

5 A Uh-huh.

6 Q Isn't a line through that, a line was struck
7 through that and class 6 was written into the
8 left?

9 A I'm not sure about that.

10 THE SPECIAL MASTER: I'm not sure he's
11 competent to answer either because he sure didn't
12 do these maps back in 1963.

13 Q (By Mr. White) Well, nevertheless, doesn't D-3
14 show hard grey sandstone three to eight feet in
15 field 24-104?

16 A Yes. I can read that.

17 Q You can't read that?

18 A I can read that. Yes, it says. But if I am
19 allowed to comment on this --

20 Q Go ahead.

21 A You see, the whole point of the matter is you
22 probably are looking on field by field but we
23 don't work field by field on drainage and I have
24 made that clear several times, and I would like

25 mesghinna-cross-white

1 to make it clear again. We work on the area.
2 based on areas that have a boundary in a given
3 area. You know, it is not just field by field,
4 all the drainage. We can't go on like that.
5 It is impossible to do that kind of work. There
6 is no way that one would do even in the stage
7 design. You know, in the stage of final design
8 and specifications you won't go through this.
9 I'm sure you understand that.

10 And secondly, some of these borings have
11 been, you know, well, this is on the previous
12 ones that I have found out that those soils did
13 not have any deficiencies at all. They were
14 taken as class 2 or class 3 soils with no soil
15 deficiencies.

16 Q How do you know that?

17 A It is written there. I can show you.

18 Q How do you know that that line through that
19 fraction doesn't mean that the classification
20 was rejected and a class 6 classification assigned
21 to it?

22 MR. CLEAR: Your Honor, --

23 THE SPECIAL MASTER: It is argumentative.

24 It is argumentative, Mr. White.

25 mesghinna-cross-white

1 THE WITNESS: I don't want to argue on this
2 matter but --

3 MR. WHITE: Okay, don't.

4 Q (By Mr. White) Well, Dr. Mesghinna, we have looked
5 at holes with depths to sandstone of a foot and a
6 half, two feet, three feet, isn't your average
7 root zone depth four and a half feet?

8 MR. CLEAR: Your Honor, we have looked at a
9 map showing some holes on it which Dr. Mesghinna
10 has not prepared and as far as we know has not
11 seen.

12 THE SPECIAL MASTER: Nobody is being fooled.
13 There is no jury to be misled by these remarks so --

14 MR. WHITE: The purpose is to point out that
15 he was not given it, right. His work was structured
16 and he didn't have an opportunity to look at things
17 other than what HKM served up, and that's right,
18 he hasn't looked at them before.

19 THE WITNESS: I have a comment on this, you
20 know.

21 MR. WHITE: Go ahead.

22

23

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1 Q (By Mr. White) Go ahead.

2 A On the Arapahoe, the two holes, D and E, I
3 guess, those two holes have no deficiency at
4 all. I think this map was made by USBR, and
5 they have struck out those deficiencies, they
6 have said that there is no deficiency on the
7 soil. They have given them as Class 2 and
8 Class 3 soils with no drainage problems, you
9 see. They have taken several borings and it
10 so happens one boring in one area was found
11 to be, you know, shallow, and they struck out
12 that boring and they used the other borings.
13 That's what I'm trying to say. And over and
14 above that we don't work field by field, we
15 work on a bigger area as I have explained
16 several times and I don't want to say it again.
17 In fact, I'm just killing time.

18 Q Isn't it true that you plant, irrigate field
19 by field?

20 A Plant, irrigate field by field?

21 Q That you're going to plant crops and irrigate
22 field by field?

23 THE SPECIAL MASTER: That's an argumentative
24 and questionable question. You might do it row
25 mesghinna-cross-white

1 by row too or foot by foot, I don't know
2 whether that term has much value; plot by
3 plot, unit by unit.

4 Q (By Mr. White) Dr. Mesghinna, staying on
5 Exhibit FM-15, do you find Hole No. D-17 also
6 in Section 2?

7 A Yes, I can see it.

8 Q Isn't it true that Hole No. 17 lies roughly
9 on the boundary between your Field 24.105 and
10 24.106 in the North Crowheart?

11 (Brief pause.)

12 A Yes, you are right, sir.

13 Q Isn't it true that the log for D-17 shows gray
14 sandy shale at four feet?

15 A Isn't it lower than that? It's lower than
16 that, it is between five and ten feet I guess.

17 THE SPECIAL MASTER: I can appreciate
18 how difficult that is to read, gentlemen.

19 MR. SACHSE: Your Honor, the Tribes wish
20 to renew. --

21 THE SPECIAL MASTER: I recognize your
22 objection and you are permitted to make it
23 again and you have a continuing objection
24 should there be anymore of these this afternoon.

25 mesghinna-cross-white

1 MR. WHITE: I'm going to have some more.

2 MR. SACHSE: I want to add another
3 ground to the objection. It's clear that
4 we're using maps that are difficult to read,
5 a witness who didn't do the work and who's
6 being asked to comment for the first time on
7 the basis of one hole out of 20 or 30. The
8 whole process is not just neutral, it's a
9 misleading process.

10 THE SPECIAL MASTER: I appreciate that.

11 MR. SACHSE: That it moves away from
12 expertise to speculation, it shouldn't be
13 permitted.

14 THE SPECIAL MASTER: I appreciate your
15 objection, and I have with reluctance, over-
16 ruled them, Mr. Sachse. And I have said I
17 think earlier we would listen to one more,
18 and I would do the overruling, but not on those
19 grounds, but on the grounds of redundancy
20 and repetition because the point has been
21 made.

22 MR. WHITE: It might --

23 THE SPECIAL MASTER: Argument has been
24 made by Counsel, and despite what they think
25 is an improper ruling on my part, and I haven't

1 permitted it to be made.

2 MR. WHITE: Your Honor, if you're going
3 to not allow me to go forward, it might be
4 a good idea to do it now and I can make my
5 offer of proof.

6 THE SPECIAL MASTER: I was going to say,
7 Mr. White, whatever it reads, three foot or
8 five feet, we can recognize that it is another
9 example of the point you are making in this
10 cross-examination, and I would now rule that
11 any further questions be denied on this
12 particular subject matter from these series
13 of maps on the basis that that would constitute
14 a redundancy and repitious pursuit of matters
15 that add nothing to the -- to our case.

16 So you can proceed to other areas if you
17 want, Mr. White, or if some of you people want
18 to call it early it won't hurt my feelings.

19 MR. WHITE: Why don't I make an offer of
20 proof on this area, Your Honor, and then we
21 can go into a couple other areas.

22 THE SPECIAL MASTER: All right. I may
23 be calling you back, Dr. Mesghinna, long
24 after your case is completed, both on behalf
25 of the United States, and if you recall, by

1 the State of Wyoming, because I want to ask
2 you some questions about the investigation
3 and get the answers into the record. Are you
4 familiar with the things I have in mind
5 regarding possible settlement of disputes and
6 mutual development of the resources to maximum
7 capacity water for everybody's benefit?

8 THE WITNESS: Yes, I would be glad to help
9 on that matter.

10 THE SPECIAL MASTER: All right. That will
11 come after a conclusion of our evidentiary
12 case.

13 MR. WHITE: Your Honor, if allowed to
14 respond to ---

15 THE SPECIAL MASTER: Allowed to continue.

16 MR. WHITE: If allowed to continue to
17 respond to this type of question concerning
18 fields which have holes in them indicating
19 a depth to barrier of less than -- Well, the
20 first portion of the offer of proof, four and
21 a half feet, second portion of the offer of
22 proof, less than six feet, Dr. Mesghinna would
23 indicate that in addition to those fields which
24 he has previously identified, there would be,
25 in the Arapahoe Unit, at least two additional

1 fields having less than four and a half feet
2 to barrier or holes within them having less
3 than four and a half feet to barrier.

4 In the North Crowheart, approximately 20
5 or 21 fields --

6 THE SPECIAL MASTER: Holes.

7 MR. WHITE: I'm sorry?

8 THE SPECIAL MASTER: Holes.

9 MR. WHITE: Fields with holes in them
10 with depths to barrier showing less than four
11 and a half feet.

12 In South Crowheart, eight fields showing
13 holes within them having depths to barrier
14 of less than four and a half feet.

15 In Riverton East, one such field.

16 With respect to holes or fields having
17 holes in them indicating a depth to barrier
18 less than six feet, North Crowheart would
19 include approximately 15; South Crowheart,
20 6; Riverton East, again 1; Arapahoe Unit, 3,
21 and those holes or those fields having holes
22 less than 6 feet are additive, in addition
23 to the fields having holes showing a depth
24 to barrier of less than four and a half feet.
25 In addition -- Well, I'll stop with the offer

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of proof there, Your Honor.

Could I have about five minutes to get some notes together and I think I would have about another oh, no more than about another hour this afternoon and then a short period for about an hour and a half tomorrow morning.

THE SPECIAL MASTER: We'll be in recess for five minutes.

* * * * *

1 THE SPECIAL MASTER: Shall we resume, please.

2 Q. (By Mr. White) Dr. Mesghinna, within your Table 24
3 on page 42 of your report I believe C245, where
4 do you include cost for land leveling and land
5 preparation?

6 A. First of all this is sprinkler irrigation. It is
7 not gravity irrigation.

8 Q. Uh-huh.

9 A. So the land leveling and so on, there is no, as such,
10 land leveling in the sprinkler irrigation, not to
11 the extent what we talk in surface or gravity
12 irrigation.

13 Q. But there is some, isn't there?

14 A. There is some clearing and so on and so on and
15 you are right about that. And that has been
16 included by the economist.

17 Q. So those values are not included in your table?

18 A. Yes.

19 Q. Okay --

20 THE SPECIAL MASTER: Have been included --

21 THE WITNESS: By the economist.

22 MR. WHITE: Mr. Dornbush will have them,
23 Your Honor.

24 THE SPECIAL MASTER: By the conomist. Thank you.

25 mesghinna-cross-white

- 1 Okay.
- 2 Q. (By Mr. White) Dr. Mesghinna, you have previously
- 3 given some of the Q values you used for the
- 4 pump field layout. In other words, the design
- 5 flow quantity. Do you have a listing of all of
- 6 those values being values which you used?
- 7 A. Will you say the question again?
- 8 Q. In your pipe network system --
- 9 A. Uh-huh.
- 10 Q. -- you developed Q values?
- 11 A. Uh-huh.
- 12 Q. For which are design flow quantities --
- 13 A. Uh-huh.
- 14 Q. For your pump field laterals, is that correct?
- 15 A. Yes, sir.
- 16 Q. You have given us some of those?
- 17 A. Uh-huh.
- 18 Q. Do you have a list of all of them?
- 19 A. Well I believe I have given you everything.
- 20 Q. Okay. Well, we'll cough up everything we think
- 21 you have given us tomorrow and we'll find out.
- 22 A. Okay.
- 23 Q. How about the pipe diameters? Have you given us
- 24 all of those?
- 25 mesghinna-cross-white

1 A. Pipe diameters?

2 Q. Yeah.

3 THE SPECIAL MASTER: Pipe what, Sandy?

4 MR. WHITE: Diameters, Your Honor.

5 THE WITNESS: We have never given you pipe
6 diameters, I believe.

7 Q. (By Mr. White) Do you have them segment by segment?

8 A. We have the whole books, you know.

9 Q. But do you have those with you in the courtroom?

10 A. Yeah.

11 Q. Oh, okay. Can I take a look at those to see what
12 they look like?

13 A. Sure.

14 I don't think you like this. It's too big.

15 Q. I can tell it's breaking your heart.

16 THE SPECIAL MASTER: I thought you gave us a
17 formula on direct called a Haeden-Williams formula
18 and it is Xf equals Q times X for the lower 152.
19 Now that's pretty rough notes from a layman and
20 that dealt with your pipe.

21 THE WITNESS: You are exactly right, sir.
22 That's the formulas that they have to use in order
23 to come up with the pipe network design.

24 THE SPECIAL MASTER: And you said that six-inch
25 mesghinnacross-white

1 pipe would be your smallest pipe on the system?

2 THE WITNESS: Yes, sir.

3 THE SPECIAL MASTER: Excuse me. I'm not trying
4 to help you with your case, I'm not really. Go ahead
5 and answer his question.

6 THE WITNESS: I think you have helped the
7 matter. That was the case.

8 THE SPECIAL MASTER: Okay.

9 Q. (By Mr. White) Okay. What do you have there, do
10 you have the pipe diameters by segments?

11 A. The pipe diameters in here are on calculations.

12 Q. Okay.

13 A. And just for North Crowheart it is almost half the
14 book, as you can see.

15 Q. Can I borrow that for just a second?

16 A. Of course.

17 Q. To look at it?

18 (Brief pause.)

19 THE SPECIAL MASTER: While Mr. White is looking
20 might I ask a question or two, Mr. White, or would
21 that detract you?

22 MR. WHITE: Let me listen in, Your Honor.
23 I'm always curious about your questions.

24

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EXAMINATION

2

BY THE SPECIAL MASTER:

3

Q. Did you testify that you did use some forty-eight inch steel pipe or that you did not because that would add too much to the cost of the pipe?

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A. I testified that I used forty-eight inch pipe, I believe.

7

8

Q. And what did you say regarding fourteen to thirty-six inch asbestos cement pipe?

9

10

A. Yes, sir, fourteen to thirty-six.

11

Q. You used some of that?

12

A. Asbestos cement and from six to twelve inch PVC pipe.

13

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Q. PVC?

15

A. Yes.

16

Q. What does that mean?

17

A. Plastic pipes.

18

CROSS-EXAMINATION (Resumed)

19

BY MR. WHITE:

20

Q. Dr. Mesghinna, I see that you have already given us some of that material but not others. Would you keep your mind on this kind of material for not only North Crowheart but the others and that will save us a lot of time if we can burn a copy of that

21

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1 material which you haven't given us?

2 A. Uh-huh.

3 Q. That section also included the pipe length
4 calculations too, did it not, the material in there,
5 your calculations in that section you just showed me?

6 A. Yes. What I was asked was I gave you the diameters
7 and so on and how the pipes are laid and everything
8 and I gave you the Qs necessary to determine the
9 pipe diameters.

10 Q. I understand but I want to know the pipe diameters
11 you used.

12 A. In fact I gave you an example on how to determine
13 the pipe diameters there.

14 Q. This is not an exercise, Dr. Mesghinna, in our
15 determining, it is a question of what you determined
16 and that's what I'm asking you about.

17 A. Yeah, well.
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1 Q (By Mr. White) Does that information which
2 you shared with us include the roughness
3 coefficient that you used?

4 A Yes.

5 Q With respect to pumps and pumping plants I
6 was confused about whether you included the
7 costs of parking lots. It seems like a silly
8 thing, but it was something that kept bothering
9 me. Did you or did you not include those?

10 A Mr. White, on our pumping plants we have
11 included almost everything beyond what is needed
12 in a design of a pumping plant.

13 THE SPECIAL MASTER: We have included
14 or we have excluded everything?

15 THE WITNESS: Let me --

16 MR. WHITE: I think he said it was included.

17 THE WITNESS: I'll go over this.

18 Q (By Mr. White) Did you include parking lots?

19 A Let me go over this one by one because you're
20 talking of really complicated and complex
21 items, you see. I can't remember everything
22 by heart.

23 Q Well, do you remember whether you included
24 parking lots?

25 mesghinna-cross-white

1 A To a certain extent, yes.

2 Q Okay. I guess I'll have to ask you what you
3 mean by a certain extent.

4 A Okay. This is the reason I say I have to
5 explain it.

6 Q Go ahead.

7 A Our pumping plants include -- give me one
8 minute.

9 Q Sure.

10 (Brief pause.)

11 A Our pumping plants include pumps and prime
12 movers. It also includes structures and the
13 equipment.

14 Now in structures and equipment the
15 following items are included -- When we say
16 structures and equipment -- I mean structures
17 and improvements, substructure, meaning the
18 lower part of the -- where the water is
19 connected so the canals can pump out.

20 The super structure of the building where
21 you have a building, yard facilities such as
22 fence, lighting and parking; building facilities
23 such as water, sewage, lighting and heating.

24 Now, I believe in my testimony, in my direct
25 mesghinna-cross-white

1 testimony and also I believe in my summary
2 report I have indicated that we have used
3 the Bureau of Reclamation guidelines in part.
4 What it means is that we did not rely 100
5 percent on the USBR works. We also relied
6 on works from what's been done here in Wyoming,
7 directly from this area on pump costs and so
8 on.

9 So for the structures and equipment,
10 if there is more than one pump in the same
11 location, the cost of structures and equipment
12 will be multiplied by .75. What I am trying
13 to say is, you know, if you have -- if you
14 build a structure for one pump station and
15 you have another pump right there, you don't
16 have to build exactly the same size of
17 building and structure, you have to make --
18 I mean you have to make at least half of that
19 for both of them, you know. So to take care
20 of that we have multiplied it by .75 percent.

21 The other thing that we have included is
22 the accessory and electrical equipment.

23 Q What are those costs?

24 A Those include the motor control equipment and
25 mesghinna-cross-white

1 wiring station service equipment.

2 Q Motor control equipment --

3 A And wiring station service equipment. I think
4 what these are the starters, transformers
5 on the poles to reduce the voltage to the
6 necessary voltage.

7 Q What cost did you include for those two items
8 of accessory and electric equipment, or did
9 you use the figures one through five?

10 A We used a graph and then we had our own graph
11 final.

12 Q Do you have your figures six, your graph six?

13 A We have a graph of our own, Stetson Engineers
14 developed a graph out of these items and
15 experience of the company and also out of the
16 works that have been done here in Wyoming
17 near us, which is not much different than the
18 work we are doing.

19 Q Do you have a copy of that graph with you?

20 A You mean the Stetson Engineers' graph?

21 Q Yeah, what you and I were talking about,
22 figure 6.

23 A Yes, I have that graph with me.

24 Q May I take a look at it, please?

25 mesghinna-cross-white

1 A Sure, sir.

2 (Brief pause.)

3 Q What is scaled along the vertical axis?

4 A That is Q times TDH.

5 Q And the horizontal?

6 A That is percentage.

7 Q Okay. And its percentage of?

8 A Let me explain this.

9 Q Okay.

10 A It will take some time. What it is if you
11 see the first graph in the US Bureau of
12 Reclamation, there is a graph that shows field
13 cost, dollars per c.f.s. on the vertical side
14 and on the horizontal side total head meaning
15 total lift in feet.

16 And this by entering the total head in
17 feet and multiplying it by the number of
18 c.f.s. will give the cost in dollars of the
19 pumps and prime movers.

20 So from the data that I have given you,
21 Q and TDH, of all the pump stations, of all
22 the units, you can get Q times TDH by entering
23 that Q times TDH on Stetson's map figure.
24 You get a percentage, nine percent, eight

25 mesghinna-cross-white

1 percent, ten percent, whatever it comes.

2 Now, if you divide the cost of pumps
3 and prime movers by that percentage you will
4 get the cost of pump and pumping plants for
5 1979. In it the graph includes also the
6 indexing of the cost of pumps and pumping
7 plants from 1968, in which the graphs of the
8 USBR were made, to 1979 by Stetson Engineers.

9 So this is the complete picture of how
10 it works.

11 Now, if you compare our cost of pumping
12 plants with pumping plants that are designed
13 in Wyoming, I think there is a big difference..
14 And that can be proved.

15 Q What -- What do the cost of the manifolds and
16 the valves appear within your graph, are they
17 included within the graph as well?

18 A Yes, sir. Let me go and finish what I was
19 reading.

20 Q I'm sorry, I thought you were done.

21 A Well, I was asked another question about my
22 graph and I went over my graph.

23 I discussed that we have included the
24 accessory and electrical equipment. The next

25 mesghinna-cross-white

1 thing we have included is pumping plant
2 miscellaneous. Now, what does pumping plant
3 miscellaneous equipment include? It includes
4 handling equipment such as cranes and hoists,
5 equipment for service facilities such as air
6 compressors and receivers, pump priming
7 equipment on watering and drainage pumps and
8 motors.

9 We included these costs which is quite a
10 high cost, but we know that the operation and
11 maintenance crew will have a portable equip-
12 ment, you know, can easily be solved with
13 portable equipment for the whole area without
14 having for each and every pump station.

15 So the reason why I'm saying this is
16 other cost is partly this and others.

17 The other thing we have included in our
18 cost is the manifolds and valves. The cost
19 of manifolds and valves has been assumed
20 at 50 percent of the costs for pumps and
21 prime movers, which is used by the USBR,
22 guideline of the USBR, so these are the things
23 that we have included.

24 In my direct testimony I have indicated
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also when Mr. Sachse asked me a question, I
also indicated that we have not included
one of the figures which is figure 5 on the
Reclamation structures, that says pumping
plants switchyards. Other than that we have
included everything. And we have reasons for
not including that. The reason why we are
not including it, I can say if you want me to
say it.

* * * * *

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- 1 Q. (By Mr. White) Keep going. You're doing a great job.
2 A. Yeah, you're going -- well, I might ask you to
3 ask it before you answer me.

4 The reason for that is, if you see, they give you
5 an example on how to calculate these things somewhere
6 in the pages which you and me have gone over in my
7 deposition. It is on page -- well, I don't see any
8 page.

9 Q. I know where the example is.

10 A. Okay. You know where it is.

11 They give an example for that pump station which
12 has a lift of 140 feet and 50 cfs which is really
13 a large amount of water. They give 41,000 of field
14 cost for that switch yard that I just mentioned
15 and that one is what percentage of the total cost?
16 That is about fifteen percent of the total cost.
17 So we assume that since we have overestimated the
18 rest of the things in all, instead of having super
19 structures of concrete walls and so on you can simply
20 use a shed. You don't have to have a parking lot,
21 switchyards, sewage systems, you know. I mean we
22 are talking, you know, of a pump, irrigation pumps.
23 Because one thing that we have to be realistically
24 is the USBR guidelines are made for big pumping plants

25 mesghinna-cross-white

1 where you have big ones and people can stay there,
2 you know, watching the pumps and so on, you know.
3 But then what we have used, just to finalize my
4 discussion, we have compared it with other works and
5 we found out that we are way, way over the work,
6 the designs and the cost that has been done by other
7 firms. In fact, the ones that I mentioned here in
8 Wyoming --

9 THE SPECIAL MASTER: Way, way over or way, way
10 lower?

11 THE WITNESS: Way, way over. This is over.

12 THE SPECIAL MASTER: In your costs?

13 THE WITNESS: In our costs, yes.

14 I can verify this, you know, very easily.

15 THE SPECIAL MASTER: To what do you attribute
16 that?

17 THE WITNESS: Yes. There is a work that has
18 been done by an agency which I think you are familiar.
19 I can bring -- let me try to find it.

20 MR. WHITE: I take back my representation I
21 would be done in an hour, Your Honor.

22 THE SPECIAL MASTER: That's all right. We can
23 go for a few minutes.

24 THE WITNESS: Huh?

25 mesghinna-cross-white

1 Q. (By Mr. White) Never mind.

2 THE WITNESS: I'm trying to help to expedite things.
3 Work that has been done by West Side Irrigation
4 Project Study at Big Horn County and Washakie County,
5 Wyoming shows their cost per horsepower much much
6 lower than ours, at least by fifty percent lower than
7 ours for their pumping plants.

8 Q. (By Mr. White) And you base your feeling that your
9 costs are very conservative --

10 A. Oh, yes.

11 Q. -- based on West Side?

12 A. Yeah, and also we have asked several manufacturers,
13 and when you compare the cost of the pump, you see,
14 the cost of the pump according to our estimation is
15 only ten percent of the whole structure and that is
16 quite unbelievable, you know, for a ten thousand
17 pump, a pump that costs \$10,000. We spend \$60,000
18 for its structure and so on and I think from the
19 logical point of view anyone would say that this
20 is overcosted, you know. As I have said it earlier,
21 before this time, you can go really -- and I'm not
22 underestimating anything, but you can go for a
23 ten thousand pump, you go really with five or six
24 thousand probably at the most \$10,000 under facilities
25 mesghinna-cross-white

1 rather than going to sixty thousand.

2 Q. Well, Dr. Mesghinna, instead of being so conservative
3 with these sorts of items including cost items that
4 you apparently don't feel are really necessary, instead
5 of including those costs, why didn't you line the
6 canal and reduce the amount of water you had to divert?

7 THE SPECIAL MASTER: I think that's argumentative
8 and -- well, we'll skip that.

9 THE WITNESS: Do you want --

10 MR. WHITE: You don't have to answer the question.

11 THE SPECIAL MASTER: You don't have to answer it.

12 We've walked that canal.

13 Q. (By Mr. White) Let's talk about canals here for a
14 little while and let me ask you at what frequency
15 did you propose to include canal check structures?

16 THE SPECIAL MASTER: Canal check structures?

17 MR. WHITE: Canal check structures.

18 THE WITNESS: Do you mean our check structures
19 are included? Do you mean the check structures at
20 each pumping station?

21 Q. (By Mr. White) Sure. To check your structure, to
22 give you a little pool of water.

23 THE SPECIAL MASTER: Perhaps for the benefit
24 of -- for my benefit you might define a check structure.

25 mesghinna-cross-white

1 Q. (By Mr. White) Wold, would you state for the record
2 what a check structure is?

3 A. Well a check structure is nothing but a structure
4 that keeps -- when you have a canal and water is
5 passing by and there is a pumping station on the
6 side of the canal and what the check structure does
7 is gives the -- it guides the water to give enough
8 head for the pump to pump out water. That is at
9 every pumping station and --

10 Q. Do you have any intermediate check structures between
11 pumping stations?

12 A. No, we have not assumed.

13 Q. Have you designed the check structures -- well, let
14 me start again.

15 For what ponding, increased ponding depths,
16 did you design the check structures?

17 A. I think the most important thing is if I give you
18 an idea of how the canal and the pump station looks,
19 because check structures in the kind of designs that
20 we have that we have proposed are not really
21 pertinent. They are within the pump stations, you
22 see.

23 Q. Okay. The cost for the check structures are within
24 the pump stations?

25 mesghinna-cross-white

1 A. Yeah. Let me give you -- yes.

2 Q. If that's the answer, that's fine. I'm looking in the
3 canal costs and I didn't see them.

4 A. Uh-huh.

5 Q. So that's included in your curve?

6 A. On the curve, yeah.

7 Q. Okay. I think you've indicated to us previously that
8 canal excavation costs was assigned by you the value
9 of a \$1.06 per cubic yard, is that correct?

10 A. Yes, sir.

11 Q. Does that include anything besides excavation such
12 as hauling, placing, spreading, compacting?

13 A. I believe I have given the compaction and spreading
14 and the things to Mr. Henry of your --

15 MR. WHITE: Mr. Henry?

16 THE WITNESS: I mean Mr. Sostrom.

17 Q. (By Mr. White) Was that your work item No. 3?

18 A. Probably, yes. I think so.

19 MR. WHITE: I've got one here.

20 Your Honor, I apologize for working with material
21 that's not of evidence. Tomorrow morning, however,
22 we are going to try to put everything in we've gotten
23 from Wold so we are sure that we are all talking
24 about the same thing.

25 mesghinna-cross-white

1 THE SPECIAL MASTER: No problem. No problem.

2 Q. (By Mr. White) Is that work item No. 3: Placing,
3 spreading, rolling, top soil for seed bedding?

4 A. Yeah. That's -- Again, that is -- we are making
5 the canal more fancy by putting top soil, you know,
6 on the side of the canal.

7 THE SPECIAL MASTER: Yeah.

8 THE WITNESS: You put top soil on it --

9 THE SPECIAL MASTER: To keep the erosion away?

10 THE WITNESS: Keep the erosion away and we are
11 assigning money, a tremendous amount of money for that.

12 THE SPECIAL MASTER: Do you line a canal with
13 some gravel?

14 THE WITNESS: We have gravel surface for the
15 canal on one side.

16 Q. (By Mr. White) On the outside, is that right?

17 A. On one side.

18 THE SPECIAL MASTER: On the bottom side.

19 Q. (By Mr. White) Well, in addition to work item No. 3,
20 where else did you include those things such as --

21 A. Cost of excavation?

22 Q. -- those items?

23 A. That is working --

24 Q. Yes.

25 mesghinna-cross-white

1 A. Here for example, compaction of embankment.

2 Q. Okay.

3 A. You see you have the -- you excavate the canal. When
4 you excavate the canal then we have assumed, by the way,
5 two roads on both sides of the canal and that is also
6 an overdesign in a sense because many people use one
7 road. So --

8 Q. But not real efficiently, isn't that correct?

9 A. Yeah. Well, you know, every project has its own
10 deficiency, but this project is really loaded with
11 things on it. At any rate --

12 Q. With one exception.

13 A. The lining.

14 (Laughter in the courtroom.)

15 A. Well so we put -- when you put the embankment on
16 both sides ten feet, twelve feet, whatever the widths
17 of the roads are, then we compact the soil you see
18 so that when equipment and so on pass through it
19 there won't be any problem and after compacting it
20 we generously put three inches of gravel all the way
21 from end -- from beginning to end on one side of the
22 road. That is work.

23 Q. Do you mean on one of the two roads you put gravel
24 on?

25 mesghinna-cross-white

1 A. Yeah. You see there are many other roads or excavation
2 works for the structures and so on that we have put
3 on this thing and I think I have given that to Mr.
4 Sostrom.

5 Q. Wold, on that worksheet that you and Henry talked
6 about over the telephone, where are your syphon
7 costs included?

8 A. Our syphon costs must be included in the pipelines
9 and the structures.

10 THE SPECIAL MASTER: What does the syphon cost
11 include? Just the pipe itself that you turn over,
12 I mean that's all a syphon is, isn't it, just a
13 little --

14 THE WITNESS: Well a syphon costs millions of
15 dollars.

16 THE SPECIAL MASTER: Millions of dollars?

17 THE WITNESS: Yes. We have assigned them
18 millions of dollars. That's what I'm saying. This
19 project really is overcosted. You know, I'm not
20 really kidding about this.

21 THE SPECIAL MASTER: You say this project is
22 overcosted?

23 THE WITNESS: Yeah. I mean not really overcosted
24 but we have been on the safe side. We have used
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Bureau of Reclamation standards --

THE SPECIAL MASTER: And you feel that they are, however, they are possibly higher than the truth -- than the facts will be upon its completion?

THE WITNESS: Yeah, because it's better to be careful than come back with problems later on.

THE SPECIAL MASTER: You sound like you have prepared requests for appropriations from Congress.

(Laughter in the courtroom.)

THE WITNESS: It might end up that way, sir.

mesghinna-cross-white

1 Q (By Mr. White) Are there any other costs
2 included within the pipeline for structures
3 category aside from siphons?

4 THE SPECIAL MASTER: Under canals and
5 related structures?

6 MR. WHITE: Yes, sir. This is working
7 off a sheet that you don't have, Your Honor,
8 and we'll have it tomorrow.

9 THE SPECIAL MASTER: All right.

10 (Brief pause.)

11 THE WITNESS: Yes, sir, there are some
12 other things included there.

13 Q (By Mr. White) Could you tell me what those
14 are, please?

15 A Although it is very hard to go through every-
16 thing.

17 Q You have a list of them?

18 A We have costs of cost drainage. In North
19 Crowheart alone we have assumed 41 cross-
20 drainage.

21 Q What do you mean by cross-drainage?

22 A Cross-drainages are by-pass pipelines under
23 the canal.

24 Q It's to keep water that's draining off of the
25 mesghinna-cross-white

1 upper fields --

2 A From the upper areas.

3 Q -- from coming into the canals?

4 A Coming from rainfall and so on and so on and
5 keeping it from destroying the canal that
6 it passes through.

7 Q Instead of bypassing the canal with that
8 natural drainage, you put that drainage into
9 the canal, isn't it true that if you could
10 manage the fluxuating nature of that drainage
11 you would reduce your headgate diversions at
12 the river?

13 A Well, it doesn't mean we haven't thought over
14 that. We have thought over that and we have
15 considered it. The problem is that water is
16 unpredictable and also that the water does not
17 come during most of the time, does not come
18 during the --

19 THE SPECIAL MASTER: The season that you
20 need it, sounds like Wyoming.

21 THE WITNESS: Season when you need it,
22 so that's the reason we have excluded it. But
23 if you drain it out, whatever it comes.

24 Q (By Mr. White) What size of structures did you
25 mesghinna-cross-white

1 have in mind for canal wasteways?

2 A Canal wasteways?

3 Q I'm sorry, can we go back, I don't think you
4 answered the last question, the other items
5 that you had included within pipeline for
6 structures. You told me the cost of cross-
7 drains. Were there other items in there as
8 well?

9 A Yes, I think there are many.

10 Q Can you give me those, please?

11 A You have a big item of road crossings.

12 THE SPECIAL MASTER: Drop crossings?

13 THE WITNESS: Road crossings. You see,
14 when a canal passes through a road we have to
15 make sure that we have -- we have to assign
16 some cost on it and --

17 THE SPECIAL MASTER: Bridge structures?

18 THE WITNESS: Yes, just -- almost like a
19 bridge, you're talking like a bridge. And
20 just to give you as an indication of that,
21 of this, we have about 17 road crossings in
22 the North Crowheart Canal alone. Seven of the
23 road crossings are major road crossings like
24 small county roads, we call them major.

25 mesghinna-cross-white

1 THE SPECIAL MASTER: You call them
2 midget?

3 THE WITNESS: Major road crossings.. I
4 think probably I am tired towards the end of
5 the day. And the rest of the ten we just
6 assign them ourselves, those roads are not
7 there but we put them in ourselves to be
8 safe, that to go from one set of fields to
9 other fields you have to cross the canal, so
10 that we have assigned costs for those, potential
11 roads, we might say.

12 So for those road crossings we have used
13 pipelines, you know, complete -- No, corrugated
14 pipelines.

15 Q (By Mr. White) Okay. Now, what size of
16 structures did you have in mind for your
17 canal wasteways?

18 A Okay. Canal wasteways are quite complicated
19 to design it and also to put it wherever it
20 is necessary.

21 The wasteway is also -- The canal waste-
22 way is also concrete, reinforced concrete
23 structure is our assumption. When the water
24 enters into the wasteway, which is parallel

25 mesghinna-cross-white

1 with the canal itself, the wasteway, then it
2 is, it comes to a collecting point and from
3 that collection point it is taken out by
4 pipes, concrete pipes. From those concrete
5 pipes we discharge it into creeks if there is
6 a creek right by. If not, we have to construct
7 a ditch and take it to the creeks.

8 Just to give an example, in the North
9 Crowheart Canal we have three main wasteways.
10 One is at Dry Creek, the other one is at Five
11 Mile Creek and the other one at the end of
12 the canal to drain the canal out. And also at
13 the end of Pavillion Canal. In fact, there
14 are four.

15 Q Are those four wasteway locations shown on
16 your plates -- copies of which have been marked
17 FM-1249-A for North Crowheart?

18 A As you are well aware of, Mr. White, you cannot
19 put everything in the plans, it will be very
20 crowded, you know. We have put the main,
21 important structures that we believe should be
22 there, and --

23 THE SPECIAL MASTER: Did you say all four
24 of them are in the North Crowheart area?

25 mesghinna-cross-white

1 THE WITNESS: Yes, all that I have
2 discussed.

3 THE SPECIAL MASTER: Are there other
4 wasteway plans in any of the other facilities?

5 THE WITNESS: Yes, each canal has its
6 own wasteway. There is no canal without a
7 wasteway, this is a prerequisite for a canal.

8 Q (By Mr. White) Would, do you have a list or
9 any other indication where I don't have to
10 ask you about the locations of all these? Do
11 you have them listed in tabular form or do you
12 have a map where you have them annotated on?

13 A No, I don't have that.

14 Q Okay.

15 A But I --

16 THE SPECIAL MASTER: Where would they next
17 show up, on design specifications?

18 THE WITNESS: They will show up on our
19 calculations.

20 Q (By Mr. White) Where does the wasteway
21 structure cost fit into those cost categories
22 that you gave Henry over the telephone?

23 A Okay, let me try to find it.

24 (Brief pause.

25 mesghinna-cross-white

1 A Okay. Let me read for you some items because
2 wasteway has several costs, many different
3 kinds of costs.

4 Q Let me ask you, are they lumped together any-
5 where in here?

6 A Yeah, I'll give you, if you just -- Okay.
7 Let's check, for example -- Let's take in a
8 wasteway you have excavation cost, cost of
9 excavation is in those excavation for structures.
10 You have back field, back field for structures.
11 There must be an item, I guess for back field.

12 Q Item 6?

13 A Yes. And then there is back field item -- I
14 mean compaction item.

15 THE SPECIAL MASTER: Compaction?

16 THE WITNESS: Yes, for structures. And
17 then there is reinforced concrete, concrete
18 structure.

19 THE SPECIAL MASTER: Reinforcement,
20 steel and cement?

21 THE WITNESS: Uh-huh, yes. Do you have it?

22 Q (By Mr. White) Yes, Wold.

23 A The other one I have said earlier, unit pipe-
24 lines, so you have pipeline costs. Some part

25 mesghinna-cross-white

1 of it is included in the pipeline cost.

2 The other thing, you might need a gate,
3 metal gate, and the metal gate has its own
4 item, it's in the items that I have given
5 you. And then you have also riprap, riprap
6 material. When the water comes out from the
7 wasteway, when it gusts out, we don't want
8 to destroy the creeks and so on, the
9 environment of the creeks, so we put rocks
10 of riprap.

11 THE SPECIAL MASTER: Riprap?

12 THE WITNESS: Yeah. So it includes all
13 this, the wasteway includes all this.

14 THE SPECIAL MASTER: I have a question
15 that's glaring and has to be asked. Is the
16 science of the construction irrigation system
17 such that you can construct canals without
18 the lining but you must have this reinforced
19 concrete lining in the wasteways?

20 THE WITNESS: The reason why we have
21 wasteways of concrete is because they will
22 destroy the concrete -- I mean they will destroy
23 the canal itself.

24 THE SPECIAL MASTER: That is because of
25 mesghinna-cross-white

1 the flow, the volume of flow, once it moves
2 in and it's gushing, a runaway type thing?

3 THE WITNESS: Of course. Because it's
4 a very dangerous thing. What happens --
5 why don't we discuss this so that it will be
6 clear to all of us?

7 Suppose the electric energy is completely
8 cut off, something happens to the generator
9 or someone makes a mistake and so on. Then
10 all the pumps will stop, but the canal is
11 flowing, and if the water is not diverted to
12 the pumps, the canal will flow and it will,
13 by the time it goes more, it will be more and
14 more water, and the canal cannot hold it any-
15 more, so what happens is it will destroy the
16 whole area and the canal will be destroyed.

17 So in order to be safe on this matter,
18 what we do is in case these things happen, let's
19 put a wasteway at some different sections of
20 the canal. Then we --

21 THE SPECIAL MASTER: What planning is
22 there in the contingency of that kind to get
23 to the headgate as soon as you possibly can
24 and cut the diversion, the main source?

25 mesghinna-cross-white

1 THE WITNESS: The faster you do it the
2 better it is, really, because really it may
3 not be -- it's not even good even though
4 you have the wasteways, the effect is not good
5 of that thing. I mean when the water goes
6 down the stream it might destroy some fields
7 and so on, you know, somewhere, you know,
8 somewhere. So the faster we do it the better
9 it is, and I believe --

10 THE SPECIAL MASTER: I think you explained
11 that, it's the volume of water that requires
12 it, it's the emergency nature of their use,
13 I guess.

14 THE WITNESS: Exactly.

15 Q (By Mr. White) Did you say approximately ten
16 percent of the diversions will be shunted
17 through wasteways?

18 A Yes.

19 THE SPECIAL MASTER: Is that over a ten-
20 year period?

21 THE WITNESS: No, no, no.

22 Q (By Mr. White) No? Well ten percent of what
23 then?

24 A What we are saying is there will be ten percent
25 mesghinna-cross-white

1 waste somewhere due to mismanagement, due to
2 someone sleeping somewhere because he doesn't
3 do his job, you know. This is unavoidable,
4 and if you see the works of Midvale Irrigation
5 District, you will see that thing there.
6 Every year they publish this data. And --

7 THE SPECIAL MASTER: Of that which is not
8 18 percent which will come back into your
9 main flow.

10 THE WITNESS: It will be -- it will be
11 used downstream; no water is really lost.

12 THE SPECIAL MASTER: No, in the state of
13 nature that's true, no water is really lost.
14 Even the seepage, the canal goes to feed the
15 Wind River Alluvium and Lord knows that feeds
16 a thousand wells someplace, so it's all
17 creating some good for somebody. But it's not
18 going to grow any crops.

19 THE WITNESS: That's true.

20 THE SPECIAL MASTER: And that decreases
21 the efficiency of your system.

22 THE WITNESS: That's true.

23 THE SPECIAL MASTER: Not yet, maybe a 100
24 years from now, 50 years.

25 mesghinna-cross-white

1 THE WITNESS: Probably, yes.

2 Q (By Mr. White) Dr. Mesghinna, what values
3 or did you use a percentage of diversions
4 to size your wasteways?

5 A Yeah, I have indicated it in my direct testimony,
6 Mr. White, that I have used ten percent.

7 Q Wait a minute, I just asked you that and you
8 said no.

9 A No, no. The purpose of it --

10 THE SPECIAL MASTER: A ten percent waste,
11 and he explained what it was, and he said,
12 no, he explained the difference.

13 THE WITNESS: Yeah, I --

14 Q (By Mr. White) Let me make sure I got it
15 straight. You designed the wasteways to pick
16 up ten percent of diversions?

17 A Unh-unh-unh, not only that. More than that.

18 Q Okay. What was the purpose of the design?

19 A Okay. Let me explain. It is better if I
20 explain in the maps here.

21 THE SPECIAL MASTER: All right.

22 A I have a wasteway here in the Dry Creek. Let's
23 assume something drastic happens in the area,
24 the whole Wind River area. And let's say that

25 mesghinna-cross-white

1 the generator fails, so there is no electricity,
 2 the pumps are not working. What happens?
 3 The pumps will not take the water, it will be,
 4 you know, closed, otherwise it will destroy
 5 your pumps and so on. So the water will flow
 6 in here, there will be additional flow that
 7 comes in unless the water is diverted in each
 8 of the pumps in here. The water that was
 9 supposed to be diverted before the Dry Creek
 10 Canal have to come, obviously have to come
 11 through the canal if the canal can hold it. So
 12 this canal is not -- this canal will not be
 13 able to take all the water that comes from
 14 there, so what we do is this water that was
 15 supposed to be diverted by the pumps, we waste
 16 this, including what we said also, the waste-
 17 way, I mean the waste of ten percent. Because
 18 what I am trying to say is the canal -- Let's
 19 see, the canal is not -- does not have the
 20 same size all the way. The more you go towards
 21 the end it becomes smaller and smaller and
 22 smaller, so it cannot carry the big flows that
 23 850 c.f.s. is when it reaches in the middle
 24 it. So if the pumps do not take that water, the

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1 flow, the water has to proceed, so before it
2 proceeds to that, before it destroys the
3 canal we have to waste it out, that's what I
4 am saying.

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1 Q (By Mr. White) Having you prepare the design and
2 calculation for the Dry Creek wasteway?

3 A Yes, sir.

4 Q Can I look at that, please?

5 MR. CLEAR: Your Honor, maybe we should take
6 a ten minute break or break for today. He's been
7 on a long time for the --

8 THE SPECIAL MASTER: What do you think,
9 gentlemen, do you want to go to 5:00 or do you
10 want to wind up in a few minutes?

11 MR. WHITE: My guess is I've got about ten
12 minutes left and then tomorrow we'll bring in
13 those exhibits. I was going to suggest, Your
14 Honor, that we try to break, oh, within the
15 next ten or fifteen minutes for the day.

16 THE SPECIAL MASTER: Let's work till 4:15
17 and call it a day.

18 MR. WHITE: Then call it a day.

19 THE SPECIAL MASTER: Okay. We'll go for
20 another fifteen minutes.

21 (Off the record discussion.

22 THE WITNESS: What I am trying to say, let's
23 see, how many pumps are there before Dry Creek.

24 Let me see.

25 mesghinna-cross-white

1 A Okay. What I'm trying to explain is we have a
2 wasteway at Dry Creek and I believe the pump,
3 the last pump station is pump station number
4 thirteen. So starting the water, the water that
5 comes for pump one up to pump thirteen, pumps
6 one, two, three, four, up to pump thirteen in
7 case the electricity is shut off the pumps here
8 are not going to take that water. They will be
9 shut off. So the water that comes in here can-
10 not pass through this siphon. The siphon is not
11 designed to take that water. So before it reaches
12 the siphon we have to build a wasteway that will
13 take out these flows.

14 Also the wasteway -- the waste, the amount
15 of waste that is supposed to go -- I mean assigned
16 for this acreage in here will go out through the
17 wasteway so that --

18 Q You've got two amounts that you add up?

19 A Yeah.

20 Q Okay.

21 THE SPECIAL MASTER: I see.

22 Q (By Mr. White) In addition to the riprap that
23 you described, what other channel protection
24 features do you have? Let's take, for example,
25 mesghinna-cross-white

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1 Dry Creek below your wasteway.

2 A I think that's a good question. As you know
3 Dry Creek is almost, we can call it, a wet
4 creek. You know, almost --

5 Q A what creek?

6 A Wet. Wet, it has water.

7 THE SPECIAL MASTER: Almost year round?

8 THE WITNESS: Yeah.

9 A And the amount of water that we divert as waste
10 to that canal is probably one-eighth or one-
11 seventh of the peak flows that flows through
12 that creek. So we're talking really a very small
13 amount of water as compared to the nature -- natural
14 flow that flows through it. So we didn't fail to
15 put any protection through all that canal.

16 However, in Five Mile Creek we have gone a
17 long way to protect the area because we found it
18 necessary to put riprap and also a long pipelines
19 to the area.

20 Q Was your channel protection work on the Five Mile
21 Creek similar to that that was done below the
22 Wyoming Canal and Five Mile Creek, are you
23 familiar with that work?

24 A I am not really familiar.

25 mesghinna-cross-white

1 Q Dr. Mesghinna, --

2 A Yes.

3 Q Drainage again.

4 What are the dimensions which you used for
5 the open drains and outlet ditches, specifically
6 what are your bottom widths?

7 A I can tell you the depth which is more important,
8 I guess.

9 Q Okay. Do you -- but you can't tell me the bottom
10 width?

11 A But I can tell you but I have to go through a long
12 thing.

13 THE SPECIAL MASTER: Do you want to save it
14 until tomorrow?

15 THE WITNESS: I can tell it.

16 Q (By Mr. White) Well, why don't you tell me
17 tomorrow and then we'll finish tonight by saying
18 you told me this morning that you could provide
19 a tabulation of field by field dimensions and
20 acreage and you have that, is that correct?
21 So we don't have to go through that --

22 A Uh-huh.

23 Q -- is that right?

24 A Yeah, I have said that.

25 mesghinna-cross-white

1 Q And you showed me this afternoon a portion of
2 your notebook for North Crowheart that all the
3 information you needed on pipes, and you said you
4 had similar sections for each of the other units,
5 is that correct?

6 A Yeah, but are you asking me to give you that?

7 Q No, I'm asking you to give it to me -- you have
8 given us some of it but certainly not all of it.

9 A Oh, my gosh. No way.

10 THE SPECIAL MASTER: How many pages will
11 that involve?

12 THE WITNESS: It is -- this is talking almost
13 about this whole book.

14 MR. WHITE: We are going to copy it, Your
15 Honor. It is not going to be any difficulty.

16 THE WITNESS: No matter what, I have given
17 you all the necessary things to do this.

18 MR. WHITE: Well, Dr. Mesghinna --

19 THE SPECIAL MASTER: Talk to your lawyers
20 on that.

21 MR. WHITE: Dr. Mesghinna, the point is you
22 keep saying you have given us the necessary things
23 to do the calculations ourselves. What I'm saying
24 is I want to see the calculations and the results

25 mesghinna-cross-white

1 that you have made and that's why I'm asking the
2 Court --

3 THE SPECIAL MASTER: What he's also saying
4 is apparently other witnesses have apparently given
5 him a lot more than you have as we saw yesterday.
6 If I may inject a point of humor toward the end
7 of a weary day.

8 All right. Next, Mr. White.

9 MR. WHITE: And I think you also indicated
10 that -- let's see, you've got the graph out on
11 your pumps and pumping plant. Do you have a
12 wasteway design for each wasteway that you in-
13 cluded such as --

14 THE SPECIAL MASTER: Wasteway design?

15 MR. WHITE: Yes, sir. Such as the two-
16 page wasteway design that you had and the calcu-
17 latipns you had for the Dry Creek wasteway that
18 you showed me?

19 MR. CLEAR: Your Honor, this trial is turning
20 into a discovery proceeding. --

21 MR. WHITE: Wait a minute.

22 MR. CLEAR: I think we gave them everything
23 conceivable.

24 THE SPECIAL MASTER: It may be and if it is,

25 mesghinna-cross-white

1 we'll do our best to bring it back in line. .

2 The question was on the wasteways.

3 MR. WHITE: Yes, sir. He's testified
4 that there are wasteways which are not shown --

5 THE SPECIAL MASTER: And you have asked
6 him, does he have a design for the wasteways
7 and that's a fair enough question.

8 A We have a design but this design is based on ex-
9 perience and knowledge of a company that is com-
10 peting with other companies.

11 THE SPECIAL MASTER: So you get the work
12 if the work is ever given --

13 THE WITNESS: Yeah. I mean --

14 THE SPECIAL MASTER: All right. I under-
15 stand that that's probably why Mr. White wants
16 to know.

17 MR WHITE: I want to know whether or not
18 I can see and copy your wasteway designs that
19 are included within the plans that you testified
20 about here in court.

21 THE WITNESS: I can give you the results of
22 it as to whatever you want in terms of how much
23 concrete, how much excavation and so on but the
24 design is something that I think is life and

25 mesghinna-cross-white

1 death for us.

2 THE SPECIAL MASTER: He may be saying to you
3 that we lawyers are -- Gimble's never tells Macy's
4 is what he's telling us.

5 MR. WHITE: Well, what I'm saying, Your Honor,
6 is if he included that design in the project that
7 he's testifying about whether he's real proud
8 of it or not, I'm entitled to see that design.

9 THE SPECIAL MASTER: That may not be true,
10 Mr. White. We'll go into that tomorrow.

11 MR. WHITE: I'm asking for it now.

12 THE SPECIAL MASTER: You're entitled to
13 know the amount of concrete in it and the amount
14 of component parts in it, but you are not entitled
15 to look at it.

16 MR. WHITE: The design that he is using?

17 THE WITNESS: Sure.

18 THE SPECIAL MASTER: It might be the same --

19 THE WITNESS: The same thing with the pipe
20 lines. I can give you the results; I can give you
21 anything but --

22 THE SPECIAL MASTER: The number of feet and
23 the size, you know.

24 MR. WHITE: Are you saying, Your Honor, that

25 mesghinna-cross-white

1 you will not allow me to see the design of the
2 wasteways?

3 THE SPECIAL MASTER: I'm saying I'm going
4 to have to anticipate there are going to be some
5 vigorous objections to your seeing it and we'll
6 have to look at the arguments. And it is probably
7 the case this will become a proprietary matter which
8 can make it --

9 MR. WHITE: I want to make sure we make a
10 record on that.

11 THE SPECIAL MASTER: I'll let you make a
12 record on it because I could be wrong but I could
13 be right.

14 THE WITNESS: The same thing on the pipes.
15 I have given you almost everything really in
16 fact I gave you the pipeline layout. I think
17 it is a simple matter of using calculators and
18 I gave you all the equations, you see, to come
19 up with that.

20 MR. WHITE: What you're saying, Dr. Mesghinna,
21 is isn't this correct --

22 THE WITNESS: And he --

23 MR. WHITE: -- you gave us enough informa-
24 tion that we can by calculating come up with the

25 mesghinna-cross-white

1 same results you did?

2 THE WITNESS: Of course you can.

3 MR. WHITE: But you're not willing to give
4 us the results that you came up with?

5 THE WITNESS: The point is, you see, there
6 are -- in design there are many, what shall I say --

7 THE SPECIAL MASTER: Trade secrets.

8 THE WITNESS: Trade secrets that we use and
9 we have especially, really on this thing, pipeline
10 network and so on --

11 THE SPECIAL MASTER: The request also, Mr.
12 White, would have to be considered in light of
13 the evidence and what I do so far by way of the
14 obtaining of information, the months and months of
15 depositions and the mountains of material already
16 in the record, and it all adds up to the fact that
17 there has been an awful lot of material obtained
18 already.

19 MR. WHITE: It will make it a lot easier,
20 Your Honor, if you just rule tonight that I could
21 not have his pipe network design, and I couldn't
22 have his wasteway design. We wouldn't have to
23 argue about it tomorrow.

24 THE SPECIAL MASTER: What stage of design are
25 mesghinna-cross-white

1 we if he's already concluded on a page or two
2 of the report that these are generalizations
3 made about them? You're entitled to those --
4 if you want to know how much material of each
5 kind, you're entitled to that. You're entitled
6 to peripheral material but a design regarding
7 that wasteway -- if there is a specific design
8 of those wasteways by this company and them and
9 your consultant both anticipate to get this
10 business and if and when the day ever comes when
11 the Tribal Counsel decides they want to build
12 this project, which in itself is a question, I
13 can see the point that they are going to raise
14 objections to delivering you the design specifi-
15 cations.

16 I don't think you've gone as far as working
17 prints yet by any means. If there were then I
18 know I would have to deny them. So it is a case
19 of where are we on the scale between conceptual
20 discussions of designs and working papers ready
21 for the first construction phase.

22 MR. WHITE: Your Honor, I would like you
23 to look at the Dry Creek wasteway design pages
24 and calculation pages which Dr. Mesghinna

25 mesghinna-cross-white

1 showed them --

2 THE SPECIAL MASTER: Has already provided
3 you --

4 MR. WHITE: -- showed it to me and I think
5 you will see what I'm talking about. What it
6 does, it shows the general shape and what went
7 into it. I think we are entitled to look at them.
8 I think you would --

9 THE SPECIAL MASTER: Have you answered?
10 You've already showed them to me?

11 THE WITNESS: Yeah, I have showed them to
12 you.

13 THE SPECIAL MASTER: You've already seen
14 it.

15 THE WITNESS: Okay. Let me make things
16 easier for you. How about if I give you -- I
17 don't know if my lawyers will --

18 THE SPECIAL MASTER: Will let you.

19 THE WITNESS: -- will let me do it. How
20 about if I give you all the amount of concrete,
21 the amount of riprap material, the amount of
22 excavation, everything that enters into each
23 wasteway that you want. Do you want that too?

24 MR. WHITE: I would like that but I want --

25 mesghinna-cross-white

1 THE SPECIAL MASTER: You see, Mr. White,
2 what has that got to do with whether or not the
3 reservation is entitled to a right of water on
4 this area? What difference does it make what
5 the design is of the wasteways? That's why I
6 think you're reaching into areas that are a far
7 departure from the reference to me from Judge
8 Joffe --

9 MR. WHITE: Well, let me tell you why, Your
10 Honor, let's take wasteways as an example or we
11 can take pipe networks --

12 THE SPECIAL MASTER: That's exactly what
13 we're talking about, the wasteways plans. It
14 is not an example, it is a fact.

15 MR. WHITE: Let's assume that the wasteway
16 that's designed for Dry Creek that we talked about
17 is perfectly adequate, no problem.

18 THE SPECIAL MASTER: Perfectly adequate?

19 MR. WHITE: We say there's no problems with
20 it, it is perfectly adequate and the costs associ-
21 ated with it are reasonable. But let's assume
22 on the other hand that if we are allowed to look
23 at that design, we would say that design has got
24 one of two problems with it, either the design

25 mesghinna-cross-white

1 is inadequate and therefore the costs are low or
2 the design is adequate but there is a gross
3 underestimation of the amount of material and
4 the amount of work that goes into the construction
5 of that wasteway, and therefore the costs are in-
6 adequate. It all ties into the costs, Your Honor,
7 and without looking at the design there is no way
8 to critique the costs used by Dr. Mesghinna and
9 it's the costs that go into the economic portions
10 of the analysis that gets to --

11 THE SPECIAL MASTER: Well, let's resume in
12 the morning at 9:15.

13 We stand adjourned for the day.

14 (Recess, 4:16 p.m.)

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INDEX TO EXAMINATION

PAGE

WITNESS: WOLDEZION MESGHINNA

Cross-Examination (Resumed) By Mr. White 4591

INDEX TO EXHIBITS

IDENTIFIED

RECEIVED

Plaintiff's Exhibit FM-8	4629
Plaintiff's Exhibit FM-9	4672
Plaintiff's Exhibit FM-15	4701

