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Trial Transcript, Vol. 82, Afternoon Session

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File # 189

4440

IN THE DISTRICT COURT FOR THE FIFTH JUDICIAL DISTRICT

WASHAKIE COUNTY, STATE OF WYOMING

IN RE:

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

Civil No. 4993

FILED

6/23 1981

Margaret L. Houghton CLERK

DEPUTY

VOLUME 82

Afternoon Session

Thursday, June 18, 1981

ORIGINAL

THE SPECIAL MASTER: Come to order, please.

MR. ECHOHAWK: Your Honor, do we have a firm schedule set now for the next two months?

THE SPECIAL MASTER: It's being drafted.

MR. ECHOHAWK: Okay.

THE SPECIAL MASTER: I can give it to you roughly what it contains, starting July 7 --

MR. ECHOHAWK: July 7?

THE SPECIAL MASTER: I beg your pardon. July 14. We were going to start July 7, but July 14.

We run into Frontier Days if they run us out of here, and we will convene September 1, but we will not come back in the second week of September.

Mr. Perry, that's for Mr. Sachse and his problem.

And then we will finish up two weeks of September. We will not work October 9 to October 20, and that takes care of all obligations to all parties being treated equally, and from there we go on through every week.

MR. ECHOHAWK: Every week?

THE SPECIAL MASTER: And we will go through everything in the balance of October and November and December, until December 20 for the submission of the case by December 20, and you may argue where is our hearing on adverse effects in Worland for three or four days, and the Estoppal Doctrine can be argued. They may be slopped over into

January, but I think we can hear it in January, and I think this is realistic because we have seen now, after you have knocked heads on so many issues, the other matters can go to one side.

I would imagine that the issues on the National Forest as to the Federal Reserve question could be resolved in three or four days of getting together a stipulation of some type in this lawsuit.

The water in Water Division III is a question of the Indians, non-Indians -- the others are minute in comparison, I think.

MR. WHITE: Did you mean that all the claims or just the Indian claims would be finished by December 20?

THE SPECIAL MASTER: All the claims.

MR. WHITE: I know you are going to get mad at me, but I don't think there's any way.

THE SPECIAL MASTER: We are going to crank it out and get it done because this is pretty much the schedule that even the State first submitted two years ago. You can't get -- We cannot have the type of cooperation we have tried to have on these questions for delays and keep going on -- the case has got to come to an end. It's got to.

MR. WHITE: We'll do our best, Your Honor.

THE SPECIAL MASTER: I realize you will, and the

guts of the case is right here (indicating).

MR. ECHOHAWK: Thank you.

Q (By Mr. Echohawk) Mr. Billstein, before we broke at lunch, I think we had a little discussion on water duties that you used in your systems operation.

Did you state that you received the water duties from the agricultural consultants in this case that previously testified, that being Mr. Stetson and Mr. Mesghinna?

A. That's correct.

Q. I show you what has been marked as United States Exhibit WRIR C-306.

Would you please identify that exhibit for us?

MR. WHITE: Excuse me. Before he answers, Your Honor, could I look at this for a minute? I may want to object, and I may not.

MR. ECHOHAWK: Could we have a minute, Your Honor?

(Off the record.

MR. WHITE: Your Honor, the State of Wyoming would object to any use of Exhibit C-306 on the grounds that only the Type VIII and the future monthly breakdowns have been previously provided to the State --

THE SPECIAL MASTER: Only the Type VIII and what?

MR. WHITE: And future, and we would object on the

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basis of the five-day rule.

MR. ECHOHAWK: This exhibit was provided to the State of Wyoming five days previous to today.

MR. WHITE: It was handed to us by Mr. Echohawk on Monday, wasn't it?

MR. ECHOHAWK: It was sent out either last Thursday or last Friday and received in your office the same day.

MR. WHITE: I don't believe so, Your Honor.

THE SPECIAL MASTER: Well, if it's a document that Mr. Billstein is going to use to refresh his memory or to testify from on knowledge that he has in having used some of the figures on it, I'm going to let it be used.

If it's an exhibit, then I might rule otherwise.

MR. WHITE: Your Honor, let me ask if I could check to see whether or not I fouled up on that earlier submission, and we can proceed, reserving your decision on the five-day rule, and let me check on that, and I can be a little more definite on it.

THE SPECIAL MASTER: I have a question or two on it.

What do you mean that this is a composite climatic zone on Big Horn Flats? In my opinion, this should be not a composite. It's clearly in one climatic zone.

THE WITNESS: This report, Your Honor, did show it in more than one climatic zone, and the summary totals as per the April, 1981 Stetson Engineers' Report are

as reflected for North Crowheart in Exhibit C-306.

If you would like to, we could open up that document, and I could point that out to you.

THE SPECIAL MASTER: No, I don't want to do that. I just -- You have a type of claim, usually based on Type A Project, but when you get to new ones, you have an above B Lake and below B Lake?

THE WITNESS: B is hyphenated for Bull Lake, Your Honor.

THE SPECIAL MASTER: That's supposed to be Bull Lake?

THE WITNESS: Yes.

THE SPECIAL MASTER: All right.

THE WITNESS: What it reflects, Your Honor, is the claimed acres presented by Stetson Engineers relative to their location, be it above Bull Lake or below Bull Lake.

THE SPECIAL MASTER: I guess there is a parcel of Big Horn Unit up north of the lake. I didn't realize that.

Okay. Thank you, Mr. Echohawk.

Q (By Mr. Echohawk) Mr. Billstein, is the information contained on Exhibit C-306 water duty information that you used in running your systems operation or water

availability analysis in this case?

A. I used this information relative to the Big Wind and Little Wind operations studies.

Q. And this is information that you received from Stetson Engineers?

A. That's correct.

Q. Mr. Billstein, you have mentioned previously that you used the water supply information from Mr. Keene that he has previously testified about, and you just stated that you received the water duty information from Stetson Engineers and identified it on C-306.

Is it necessary to use return flow information in your systems operations?

A. Yes, it is.

Q. And what type of return flow information did you use?

A. Return flow information was based on volume, monthly distribution, and location.

Q. Where did you get this information?

A. This was generated by HKM Associates, specifically by Mr. Toedter.

Q. Did you play any role in assisting Mr. Toedter in any of that generation of that information?

A. Yes, I did. I was in on the investigation in terms of meeting with various agencies or doing literature research.

We obtained some interviews with certain people that we felt were qualified in this area. I was also involved in the location of the return flow nodes and delineating the lands contributing or returning to those nodes.

Q. Is it a common practice for someone such as you in water resource planning to rely upon someone who has a back-ground such as Mr. Toedter in relying on return flow information?

A. Certainly a person who is a water resource planner delineates locations that he would like to see the information generated. He then can assist in the analysis of that data, but he goes to a technical expert to make sure that the interpretations that he is making are, in fact, adequate and that there is no technical information in evidence that would contradict any of the conclusions that the planner would make.

Q. To your knowledge, does Mr. Toedter have the correct technical background to provide you with this return flow information?

A. Mr. Toedter is qualified in that area.

* * * * *

Q (By Mr. Echohawk) Okay, you mentioned that you assisted in the delineation of return flow locations and areas. I direct your attention to what has been marked previously as United States Exhibit WRIR C -- I believe that's 294. Would you please identify that exhibit for us?

MR. WHITE: Objection, Your Honor. We are getting into the area again of opinion based on opinion. The Court will recognize Exhibit C-294 is the exhibit about which Mr. Toedter indicated that he -- or was presented during Mr. Toedter's testimony. The Court prohibited its use at that time because of the five-day rule, and at that time it was represented to the Court Mr. Toedter would be brought back to discuss that. I have two grounds for my objection to the future reference to this exhibit by this witness: First, again, it's based on opinion; second, the expert who actually prepared this is in the Courtroom, was in the Courtroom, and we were all told he would be brought back to testify about that. What is happening here is that the exhibit is being introduced based on the reliance theory and precluding effective cross-examination of the exhibit.

THE SPECIAL MASTER: The objections will be over-ruled. This Witness said he assisted in return flow data, so he may answer.

MR. ECNOHAWK: Your Honor, in response to Mr. White's objection, we have been over this many times in the last few months. Again, we rely on Rule 703. And to meet Mr. White's concerns, the United States is prepared to put Mr. Toedter on at this point, break Mr. Billstein's testimony, if the State of Wyoming feels it's absolutely necessary that we have that information established ahead of time. We can either put Mr. Toedter on now for direct examination and cross-examination and get this matter laid to rest, or we can put him on at the close of Mr. Billstein's testimony.

THE SPECIAL MASTER: I shouldn't think it's required, unless Mr. White says it is.

MR. WHITE: It will be inconsistent to say it isn't required, but in the interest of time, let's do it at the end of this testimony, Your Honor.

MR. ECHOHAWK: We will put that testimony on shortly.

THE SPECIAL MASTER: All right.

MR. ECHOHAWK: Excuse me, Your Honor.

(Off-the-record discussion.

THE SPECIAL MASTER: If we put Mr. Toedter on now, we don't have to wait for him until the end, and he was brought down expressly to use at this time. Why don't we put him on at this time and it will save him a day in respect to his time.

You have waived putting him on now?

MR. WHITE: Yes.

THE SPECIAL MASTER: But you said you want to reserve him until the end?

MR. WHITE: That was the suggestion of Mr. Echohawk. We have people here who are here primarily to hear Mr. Billstein's testimony because Mr. Toedter was not put on this morning. We are really not in a position to listen to his testimony right now.

THE SPECIAL MASTER: Is that agreeable, Mr. Echohawk, to wait and do Mr. Toedter tomorrow or when you are through with Mr. Billstein?

MR. ECHOHAWK: I'm not clear if -- I assume Mr. Billstein's cross-examination is going to go far beyond the break period, so if we don't do it now, then we are not going to get to Mr. Toedter until July.

(Off-the-record discussion.

THE SPECIAL MASTER: Mr. Echohawk -- off the record for a minute. Can I see you at the bench for just a minute?

(Off-the-record discussion.

THE SPECIAL MASTER: Back on the record, please.

MR. WHITE: Your Honor, we would renew our objection to Exhibit C-306, being in violation of the five-day rule. We object to the correspondence and the attachments to

that correspondence which we received last week, and we find that exhibit was not included in the attachments, and we further state to the Court we received this on Monday. Mr. Echohawk kindly pulled it out of his notebook and gave it to us on Monday, and it's in violation of the five-day rule because today is Thursday.

MR. ECHOHAWK: I apologize, Your Honor.

THE SPECIAL MASTER: I'm going to overrule the objection, Mr. White, because I don't think the -- I don't think there's an unfair advantage taken. It's shortening the rule, that's granted, but it's not a disadvantage to you, and I hope I'll appreciate that.

MR. WHITE: Can I have another chit, Your Honor, another crack?

THE SPECIAL MASTER: Another chit you get. You're up to eight.

MR. WHITE: I think I'm in the mid-60s, I think.

THE SPECIAL MASTER: Because if we do that, we delay the case, and delaying the case is becoming unethical to me. All right.

Q (By Mr. Echohawk) Mr. Billstein, I direct your attention -- I'm not sure if I got this out again -- to WRIR C-294. Would you please identify that exhibit for us?

A Yes. This is an exhibit showing the return flow areas,

specific to return flow collection control points for the Big Wind, specific to return flow collection control points for the Big Wind and the Little Wind study units. To explain further, you would see in the upper northeast corner of the --

THE SPECIAL MASTER: Which corner?

THE WITNESS: Northeast -- northwest corner of the exhibit is node or Control Point No. 11. It is colored in blue. There is a contributing drainage in terms of a closed line extending up the East Fork of the Big Wind River. That contributing drainage reflects areas containing agricultural claims served by the operation study which have return flows which are collected at Control Point 11. Moving downstream colored in green would be the next area of service whereby we would have return flows collected by a downstream node. In this case Control Point 3 is the return flow collection point. All of the areas outlined in green refer to the service base from which return flow has been collected at Node 3. Moving further in the downstream direction we see Control Point 24. It is colored in red. The area above it outlined in red corresponds to the service area supplied by the operational study from which return flows accrue to the system and are collected at Point No. 24.

Q (By Mr. Echohawk) Mr. Billstein, in relation to C-294, the base map, is that base map the same base map which is Exhibit C-305, does it show the same general information?

A The base map is one and the same. The only exception being that the respective agricultural claim distinctions are colored in on Exhibit C-305, while on Exhibit C-294 they are left blank, only identifiable by the insignia being either a triangle, circle or hexagon in the right-hand corner which reflects the type of claim the return flow is accruing from.

Q Are the control points or nodes, as you have described them, that are reflected on C-294, the same control points or nodes that are reflected on C-305?

A The numbering system is identical.

Q Are the control -- return flow collection areas and collection points that are reflected on C-294, the remainder of them that you have not yet described, generally denoted in the same manner as you have described the previous three or four?

A That's correct. Typically what we have is a color-coded return flow collection node. The area that contributes to that return flow node is identified by the same color.

Q Now, do you collect return flows at all control points

or nodes?

A No. As you will see on Exhibit 294, there are many nodes that are not colored in. Only the nodes that are, in fact, colored in are return flow collection points.

Q Now, when you talk collection points, those -- are those collection points merely for the purposes of your study?

A That's right. They are collection points that we use for our bookkeeping or accounting system in this operational study. There are many cases where the return flows from a particular service area would come in above that particular node, but in no case did we feel that there was any return flow coming in below that control node from the contributing area circled above it.

Q Could you tell us generally what sort of information you and Mr. Toedter relied upon in determining collection points or return flow collection areas?

A Basically we relied upon my needs as per the system's operations study in terms of locating the respective collection points. Oftentimes, however, there are physical systems in place or in evidence in the Basin that make for or are amendable for collection points. For example, the Little Wind Unit, which is a part of the Wind River Federal Irrigation Project, identified as the Ray Unit and the Coolidge Unit, the Little Wind Unit is a

complex service area where water can be utilized or reutilized within the system. In those cases the operational plans of the Bureau of Indian Affairs were re-evaluated, the facilities were reviewed, and the collection point nodes reflect actual locations where return flows are accounted for and collected in this system. A major example of this would be what we have on Exhibit C-294, Node No. 5 is colored in orange. This reflects the point where a major tributary in the Little Wind system called Trout Creek intersects the Coolidge Canal, the Coolidge Canal being a major service canal in the lower part of the Little Wind Unit. What happens is that the return flows from the areas that are being served between the point where Trout Creek passes the Ray Canal, which is the major service canal for the upper area of the Little Wind Unit, and the point that it meets the Coolidge Canal, these return flows are collected in Trout Creek and are available for reuse at the Coolidge Canal. Trout Creek enters into the main Coolidge Canal, and we have overflow structures that can be set up in such a way it either can take all of the return flow or all of the base flow that's moving down Trout Creek or it can be set up in such a way that some spill can take place, but this is a typical example how there is a

typical in-place facility in the Basin that was utilized as a return flow node. They were not a purely speculative or idealized node. If there was, in fact, a situation where return flow was being collected and reuse was being made, that was being brought back in incorporated in the plan if it was of value to the plan.

* * * * *

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Q (By Mr. Echohawk) Thank you. I think you can have a seat.

Mr. Billstein, does this, what we have discussed so far regarding return flows -- does that pretty much sum up the information that you needed -- return flow information that you needed and utilized in your systems operation?

A That's correct.

MR. WHITE: Your Honor, at this time the State would move to strike the testimony of Mr. Billstein concerning the return flow information which he developed in conjunction with Mr. Toedter because from the testimony of Mr. Billstein it's clear that the return flow information that he has pointed out on Exhibit 294 is return flow from both historic and future lands.

The offer of proof in the following discussion -- from that offer of proof from Mr. Clear concerning Exhibit 294 on Monday included a representation by the United States that this was a return flow representation only for future lands, not historic lands and, as a result, first the State objects on the five-day rule because the purpose and the contents of the exhibit were affirmatively stated to be one thing and not the thing that they actually are five days ago.

And, second, the United States is now estopped to claim that after an offer of proof to the effect that only future lands were included in that return flow study, that they now include historic lands as well.

THE SPECIAL MASTER: I don't see how a systems operation study map can be accurate and complete if it doesn't include both historic and future, so I will overrule the objection. If it's to have probative value or use at all, it has to include both.

Go ahead, Mr. Echohawk.

Q (By Mr. Echohawk) Mr. Billstein, now that we have the water supply, water demand, and the return flow information, I assume that this is the basic data you used to operate the system or assess the water availability generally in regard to the two main study areas you have set up, the Big Wind and the Little Wind unit.

Did you perform this systems operation or analysis by hand calculations, or did you use some sort of a computer?

A It's certainly too complex to do anything by hand calculations. We used a computer program, specifically the hydrologic engineering, HEC-3 program.

Q The HEC-3 program, is that a type of computer program that's generally accepted for people such as yourself to

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run this sort of analysis?

A Yes, it's certainly acceptable for this.

Q Is it a computer program that's available to the public?

A It's available to the public domain.

Q Could you describe for us in general terms, without getting too detailed or too specific, what this program does and how you used it?

A Okay. The HEC-3 program is a reservoir system study along the traditional accounting or bookkeeping principles, and what you do is count inflows, demands, depletions, and return flows and be able to monitor the remaining flow or the river flow in the downstream direction.

It's a sequential type of analysis. When you do have storage involved or you want to superimpose other operational constraints, if you wanted to have, say, fishery flows at a certain location or a certain node, you can, in fact, build in operational criteria for that, and we have in certain portions of this study, but by and large what it is is a computerized accounting system monitoring water flow in a sequential fashion in a downstream direction.

Q Now, these control points or nodes that you have been discussing that you have depicted on C-305 --

THE SPECIAL MASTER: On what?

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MR. ECHOHAWK: On Exhibit C-305 --

Q (By Mr. Echohawk) -- are those points accounting points where you kept track of what flows were available in that computer?

A That's correct. Each control point or node does have inflow or storage or release river flow information available for it.

Q By using the computer, that's how you assessed what water was available at each of those control points?

A That's correct. You take a look at what the inflow is into a point under the specific operational constraints that you apply to that point.

If you have demands coming out of that point, you take care of those demands, and then you take a look at what remaining river flow is leaving that point.

Q I assume from your previous testimony that you are also able to add return flows at those various points also?

A There are certain points that are return flow point nodes and other points that are diversion nodes. They are mutually exclusive nodes. You can't add return flow and call on demand at the same point, but --

THE SPECIAL MASTER: Is it possible that there are some return flow points along the river that you do not have spotted with a node, a study node?

THE WITNESS: I don't believe that we have any reaches designated on 294 that we don't have return flow accounted for except perhaps at the very end of the study unit where catagorization or quantification of those return flows had little or no importance.

THE SPECIAL MASTER: So you feel that Exhibit 294 is a thorough and accurate representation of all return flow in the two study areas?

THE WITNESS: That's my opinion.

Q (By Mr. Echohawk) Mr. Billstein, before we jump into your operation of the Big Wind system, you operated this study or assessed the flows over a period of time. What base period did you use?

A I used the base period supplied to me by Mr. Keene, the 1946 to 1979 period.

Q The same period Mr. Keene used for his natural flow analysis?

A That's right, the same period that was used for, for instance, his A.1 study site analysis.

Q Mr. Billstein, let's get into your operation, your analysis of the Big Wind system.

Could you explain for us very carefully and slowly, starting at the top of the system, how your analysis proceeded, what you considered, and just generally go down the system until we get a good understanding of what it is

that your analysis included?

A Certainly. As I discussed previously, in an operational study, you start from the upstream direction and move sequentially in a downstream direction.

The first area or reach of stream that was part of the Big Wind system was the East Fork of the Big Wind River. There were various agricultural water claims.

What I would like to -- let me break the thought for just a minute and say that what I am going to describe to you right now is procedurally how the agricultural claims were analyzed.

Later on we'll go back in and superimpose how the mineral and fishery claims were reviewed on the basis of this analysis.

* * * * *

THE WITNESS: Getting back to the East Fork of the Big Wind River, there were a number of claims, specifically government claims, developed on that system. These claims fell within the boundaries in red above Control Point No. 11. For the purposes of the computer program, I showed all the diversions coming out of Control Point No. 9. We have some very minor irrigation usage in the upper Basin. Those were simply transferred down here so that we didn't have to worry about several accounting nodes on the Big Wind System. We were able to come in with a composite acreage and define that as being irrigated out of Control Point No. 9.

THE SPECIAL MASTER: When you mention that around Control Point 9 and Control Point 27 there were various government claims, were those State or Federal or both?

THE WITNESS: I don't understand the question, Your Honor.

THE SPECIAL MASTER: Just a moment ago you said there were various government claims on that stream of the East Fork of the Big Wind.

THE WITNESS: Yes, sir.

THE SPECIAL MASTER: And I wonder what kind of government claims, if you are talking about the Wiggens Creek Elk Migration or is this irrigation reclamation

or Wyoming Game and Fish, just what is it?

Q (By Mr. Echohawk) Mr. Billstein, are the claims that are up there agricultural claims asserted by the United States and by the Indians?

A Yes, that's correct.

THE SPECIAL MASTER: I see. Where is the land that water goes on that's claimed up there that's Indian land? Go ahead and point it out.

THE WITNESS: Your Honor, we have a small acreage at this location (witness indicating).

THE SPECIAL MASTER: Okay, I see it.

THE WITNESS: Another small acreage at this location. (Witness indicating)

THE SPECIAL MASTER: All right.

THE WITNESS: Moving downstream we come to a blue area of adjudicated rights.

THE SPECIAL MASTER: Okay.

THE WITNESS: And I believe that covers the extent of the government claims in that area. Specifically, if you go back to the report submitted by the various experts for the United States as well as the amended motion relative to the adjudicated rights, one would be able to follow it tract by tract. I do have that backup information if that would help you, Your Honor, sometime

in the future to do that.

THE SPECIAL MASTER: Well, what bothers me is that I see that East Fork coming down to touch the confluence with the mainstem, and I was of the opinion that Blue Holes, which I see there -- what's it covering up there? Off the record.

(Off-the-record discussion.

THE SPECIAL MASTER: All right, thank you.

THE WITNESS: Therefore, we took the respective agricultural claims. In this case it was 308 and 310 acres of what we call non-project historic lands. We would then go into the water duty schedule and pull out the water duties for those 310 acres of non-project historic lands. In this case, Your Honor, it's out of the Dubois Climatic Zone, so if you would go to the second page of Exhibit C-306, look at water duty schedule No. 20, you would see under the description non-project acreage, climatic zone Dubois, historic claim, you would see that in reading across the unit or the individual acre water duty all the way over on the right-hand side is 5.06 acre-feet per acre, so relative to those 510 (sic) acres of government claim, this water duty under this monthly distribution of duty was applied to those lands to come up with the demand that was charged against the system

at that point.

THE SPECIAL MASTER: So your claim would encompass roughly 2,500 acre-feet for that -- the acreage you just described?

THE WITNESS: I believe it would be around 15, 1,600, Your Honor.

THE SPECIAL MASTER: Five hundred acres or --

THE WITNESS: Three hundred ten.

THE SPECIAL MASTER: You said 310 acres times 5.06, okay. Thank you.

THE WITNESS: Now, we do have a Control Point No. 27 above Point 9, and I'll just describe this once, and it's -- I don't want it to confuse the Court about the system study as a whole, but one of the only changes -- or the only change that we made to the HEC-3 Program was the fact we did not feel it adequately depicted return flows accurately over a 12-month or a yearly cycle. What we had to do was put in a point which we call a dummy diversion point, and the dummy diversion point acts as a mechanism to convert return flows to the monthly distribution that we would like them.

So everytime we had a diversion in the system, we code that back to this dummy diversion point, and consequently that allows us to get the return flow

distribution that we think is appropriate to the system. So that is what that point is, and nothing more, and should consequently then be dismissed from our minds in terms of the actual operation of the system.

So this, then, takes us down to the confluence of the East Fork of the Big Wind System to the mainstem of the Big Wind System. We then took up the natural flow estimate as developed by Mr. Keene in his testimony. This is a natural flow estimate utilizing a number of gauges in the Basin; specifically we start at the Wind River at Crowheart and then we step it up subtracting out all the other natural flow stations until we arrive at the natural flow estimate at that point. So this would give us -- the river flow leaving Point 11 would then reflect the remaining flow, that is leaving the East Fork of the Big Wind System plus the natural flow of the Big Wind System at that point.

We then go into the next reach and encounter Node No. 1. Node No. 1 constitutes a diversion point, control point, and it takes into account all of the diversions for use in the reach between 1 and 3. As we see here, there is a -- going to Exhibit C-294 we can see that Node 3 then is a collection point of the return flows for that same reach. We have a water supply leaving

Point No. 11, it's being diverted for the acreage between 1 and 3 at No. 1, it's then recollected at Node No. 3, which gives us then the river flow at that point.

We then move on in the downstream direction. In this particular case, to save reiterations on the computer, we combined the diversions in several locations into what we would call Control Point No. 4. Control Point No. 4 is a diversion point, and it would --

THE SPECIAL MASTER: Pardon me. Henry, would you do me a favor and knock off the lights behind you? I think it would be more comfortable. It's almost glaring for me.

(Whereupon, Mr. Sostrom
(turns off some lights in
(the Courtroom.

THE SPECIAL MASTER: Thank you very much. Go ahead.

THE WITNESS: Control Point No. 4 is shown three times on the schematic, which reflects the fact that I have incorporated three separate diversions into the computer program at this point. The diversions reflect 1,351 acres of non-project historic lands along the Big Wind River from the enlarged Black Rocks Ditch, which is roughly at Point No. 4, all the way down to Diversion Dam roughly. In other words, I built in all the diversions for the mainstem of the Wind River from enlarged Black Rocks Ditch down to Diversion at this

point. Also included was the Wind River A Canal portion of the Upper Wind Indian Unit, which is roughly along this line (witness indicating). This is the lower canal of the two major canal systems that serve the Upper Wind Project. And in that case there was 1,118 acres of project land served by the Wind River A Canal. Now, again, these acres can be referenced back to the water duties schedules if the only missing link would be the climatic zone information. And that backup data can be furnished so that you can trace the water duties in the downstream direction.

The third diversion location is for the North Crowheart Project. This is 38,773 acres of future lands.

* * * * *

THE SPECIAL MASTER: Where is that diversion?

THE WITNESS: That diversion is located at this lower point, No. 4. It's at the same headworks as the private ditch system, Nolan Ditch (indicating). It extends along the edge of the cliff, crosses Crow Creek, then extends up into the North Crowheart Service area. So, at this point in time, we have the diversions from these three control points being taken out of the river system.

The computer program then goes into Control Point No. 2, and Control Point No. 2 reflects the Dinwoody Creek area and the natural flow estimate, which again was an A.1 site sometime obtained from Mr. Keene, was utilized for the inflow at Point No. 2.

We have at this point a demand based on the agricultural claims of the United States of 171 acres of non-project historic lands.

We can go back to the water duty schedule and get that demand and charge it against the system. For ease of analysis, we've then allowed the stream flow to be diverted over into the Dry Creek, Meadow Creek and Willow Creek areas.

As you're aware of from your field trip, there is a major canal that services or brings supplemental water

from Dinwoody Creek over into the Dry Creek, Muddy Creek, Willow Creek areas.

Just for ease of accounting, we allowed the remainder of the stream flow to also continue along that canal.

One thing you have to remember, Your Honor, is that at any timeyou get into an operational study, there are several different solutions to the water availability issue, and we could -- there's many other ways that we could operate the system and still arrive at the same conclusion.

We chose to operate it in this way, but I could have chosen to release a certain amount of flow down Dinwoody Creek and not have remaining flow go over into the Dinwoody Bench area and still have the same conclusion.

So the flow from Point No. 2 is taken over into the Dinwoody Bench Canal and goes into Dry Creek.

Now, this is another one of those complicated commingling source areas in the Upper Wind Unit.

By that, what we can do is take any or all of the flow of Dry Creek and any or all of the flow that's coming over in the Dinwoody Canal and use it to service an area in that unit under a reach of canal moving into Control Point 8 and 17 by the name of Dry Creek Canal.

So, basically, what we do then at Control Point No. 8 is this is accounted for from the outflow from Control

Point No. 2 plus the natural flow estimate for Dry Creek which, again, is a Station A.1 site developed by Mr. Keene.

Then what is charged against this accumulated flow at this time is the private irrigation below on Dry Creek which is 187 acres plus 3,747 acres of project land which is serviced under the Dry Creek Canal portion of the Dinwoody Bench area and 441 acres of Type VIII lands, which are included further in that portion of the --

THE SPECIAL MASTER: I have a running troublesome problem every time you mention project lands because up until the reconnaissance trip I was of the opinion that virtually all project lands were either trust lands or fee lands to Indians, period.

Now I find out that there are non-Indian owners of fee land within the projects.

Do you make a distinction in your work regarding who owns the fee land in the projects?

THE WITNESS: At this particular time we made -- we are not including anything but trust land in the operational study, Your Honor.

THE SPECIAL MASTER: So if you find fee land in your study that is Indian-owned, you exclude that acreage?

THE WITNESS: That is not included in this study.

MR. ECHOHAWK: It's not in the Claim of the United

States, Your Honor. The United States is asserting claims only for trust lands.

Q. (By Mr. Echohawk) Mr. Billstein, what I derive from your analysis thus far, and you have been explaining it to us, is that it's generally, as you described before, an accounting system of adding inflows, subtracting diversions, and then adding again return flows at the various collection points that you have described on Exhibit C-294.

Is that generally what you have done?

A. That's correct. You do it year by year for the base period established for the study?

Q. So, essentially, this same analysis, inflow-outflow accounting, has been done for each period -- the 34-year base period that you have chosen?

A. That's correct.

Q. And it has been operated or analyzed for the entire area depicted in red as the Big Wind Study Unit?

A. That's correct.

MR. ECHOHAWK: Your Honor, could I have a brief moment, please?

THE SPECIAL MASTER: Sure. Do you want to take a five-minute break?

MR. ECHOHAWK: Yes, Your Honor. This may speed this up.

THE SPECIAL MASTER: Okay. Five to ten minutes.

(Recess.

THE SPECIAL MASTER: May we come to order?

I have got it clear now that the assertion of Mr. Echohawk was not understood by me, and that is the United States' claims do not assert any claims reserved right for Indians who hold it in fee. The Indians will make that claim when that case comes on, or the Tribes will make that claim when their case comes on.

MR. PERRY: That's correct, Your Honor.

THE SPECIAL MASTER: Go ahead, Mr. Echohawk.

Q. (By Mr. Echohawk) Mr. Billstein, as I understand, what you said so far is you performed this analysis at each of these downstream points, at each of these control points, or nodes for each year over the 33-year base period; is that correct?

A. That's correct.

Q. In your analysis of such and calculating supply against ideal demand or the demand set by the agricultural engineer in any of the years in the base period, does the situation arise where the supply available at any one of your control points or nodes -- does the situation ever arise where there was not enough water to meet the demand?

A. By the demand, you're talking about the idealized demand?

Q. That's correct.

A. Supplied by Stetson Engineers?

Q. That's correct.

A. Okay.

MR. WHITE: I object to the question, Your Honor, for lack of foundation. Until he gets some description of the control points he's talking about, I think the question is ambiguous.

THE SPECIAL MASTER: Mr. White, I admit in all honesty I wasn't following the question.

Will you read it to me, please?

(The above question was read back
(by the reporter as follows, to
(wit: "Q: In your analysis of
(such and calculating supply against
(ideal demand or the demand set by
(the agricultural engineer in any
(of the years in the base period,
(does the situation arise where
(the supply available at any one
(of your control points or nodes
(-- does the situation ever arise
(where there was not enough water
(to meet the demand?"

THE SPECIAL MASTER: Then you objected to the fact that it was supplied by Stetson Engineers?

(The above answers and questions
(were read back by the reporter as
(follows, to wit: "A: By the
(demand, you're talking about the
(idealized demand? Q: That's
(correct. A: Supplied by Stetson
(Engineers? Q: That's correct."

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MR. WHITE: No, I objected to -- I'm not sure which control points he's talking about, the ones he's already described or the ones that haven't been described.

THE SPECIAL MASTER: Okay. Identify your control points, Mr. Echohawk.

MR. ECHOHAWK: All right.

Q (By Mr. Echohawk) Mr. Billstein, I show you what has been marked United States Exhibit WRIR C-307.

Would you please identify C-307 for us?

MR. WHITE: Objection, Your Honor. May I have just a minute to review the document and see -- I will have a five-day objection, but I want to check on something else.

THE SPECIAL MASTER: I thought I saw you looking at that this morning, so it will be a four and a half-day objection, but go ahead.

MR. ECHOHAWK: Your Honor, may I consult with the witness off the record?

THE SPECIAL MASTER: Off the record for a while, Vi.

(Off-the-record discussion.

THE SPECIAL MASTER: Back on the record, please.

MR. WHITE: I object, Your Honor, to the use of this document as part of Mr. Billstein's testimony in that it is used in violation of the five-day rule. It was furnished to us approximately midday on Monday. Today is

Thursday.

THE SPECIAL MASTER: I'll overrule the objection, Mr. White, and let him proceed.

MR. WHITE: Can I have another chit on that?

THE SPECIAL MASTER: Okay, another chit on the subject.

Q. (By Mr. Echohawk) Would you please identify Exhibit 307 for us, Mr. Billstein?

A. Yes, this is a description developed by myself that describes what takes place at each control point associated with the Big Wind River operationalstudy.

Q. Now, the control points as listed along the left-hand side of each page of Exhibit C-307, control point numbers, do those numbers correspond to the control points indicated on Exhibit C-305 and C-294?

A. They are one and the same.

Q. Does the description that's depicted on Exhibit 307 describe what information is taken into account at each control point?

A. That would be correct.

Q. Mr. Billstein, I refer you to the last page of C-307. Could you please describe for us what that is?

A. That is a schematic of the Big Wind operational study. It shows in a schematic form the location of the diversion points, the return flow points, and describes the major

facilities or use areas utilized as part of the study relative to those nodes.

MR. WHITE: Your Honor, I would move to strike the Exhibit C-307 on the grounds that it's clear from the face of the exhibit that return flows from private lands are being used, and if that is the case, it 's utterly remarkable that this has any probative value at all to use return flows from private lands when there's been no establishment that those private lands could be served by diversions if the claims of the United States were filled.

MR. ECHOHAWK: Your Honor, I believe that with a couple questions we can clear that up.

THE SPECIAL MASTER: Well, I hope you do because I'm of the same opinion that Mr. White is that if you rely upon return flows from private lands to make a claim for water, you have included an improper factor in your instrument for right to water.

Q. (By Mr. Echohawk) Mr. Billstein, would you please tell us how the term "private land" is used in C-307?

A. In the schematic --

THE SPECIAL MASTER: You are talking about the back page, aren't you?

MR. WHITE: I'm also talking about such as Page 4 and 5 where it says,private lands below Dinwoody Bench

service canals, and then skipping some language, are collected at CP-24.

THE SPECIAL MASTER: All right. Which one are you referring to, Mr. Echohawk?

MR. ECHOHAWK: That would be fine. I think it's used the same way throughout the document.

THE WITNESS: I can respond to that.

THE SPECIAL MASTER: All right. Please do.

THE WITNESS: Private lands referred to nonproject lands. We're only talking about trust lands, and only trust lands are accounted for. These are trust lands that are located outside of respective projects. So, if you would,for purposes of my further testimony, associate non-project andpprivate as interchangeable phrases, then I think that should alleviate the problem, but they are located on trust land.

THE SPECIAL MASTER: That does alleviate the problem and alleviates the objection.

MR. WHITE: I withdraw the objection.

THE SPECIAL MASTER: Go ahead.

Q (By Mr.Echohawk) Just so we are clear on the point, Mr. Billstein, all lands that you considered in your operational study deal only with trust lands claimed by the United States, is that correct?

A. That's correct.

Q. Now that we have control points identifed and described in C-307, can you describe for us -- I will go back to my previous question -- in your analysis over the 34-year period -- in your analysis did you ever -- did your analysis ever show an insufficient water supply to meet the demands set by the agricultural engineer?

MR. WHITE: I will object to the question on the grounds of ambiguity, Your Honor. The question deals with annual acre-feet amounts of water that are necessary. It should state that, and I would have no objection.

If it says that it's the amount of water that's available at any one particular day or any one particular day or any one particular month during the instantaneous amount, the c.f.s. amount that's available, I would have no objection, but as it is, there's no way to know what information is not included by the question. And, therefore, the question is ambiguous.

* * * * *

THE SPECIAL MASTER: What do you mean by insufficient water supply, for what, for what period, for an area?

MR. ECHOHAWK: At each of Mr. Billstein's control points he has a demand -- or not at each of them, in certain ones he has a demand. He matches that with the water supply. The question is at each of those points he considered that is there a sufficient supply to meet the demand?

THE SPECIAL MASTER: I'll overrule the objection, and that question has been made much more clear I think.

THE WITNESS: Yes, there were a small number of years where there were points in the system where the water supply did not meet the idealized demand that was asked for by the agricultural engineer in his claims.

THE SPECIAL MASTER: What did you do accordingly?

MR. ECHOHAWK: That's right.

THE WITNESS: That was analyzed from the standpoint of manageable shortages. You took a look at how significant the shortage was in this particular case. For example, the worst shortage that we had in a given month took place in 1977, which was a very severe low flow year in the Basin, and that shortage was 6,600 acre-feet.

THE SPECIAL MASTER: At how many nodes did it show

up, in the whole system?

THE WITNESS: It only showed up at one particular node. Now, the total demand in the Big Wind System was 73,000 acre-feet during that critical low flow year during that month. So what we are talking about is roughly an eight percent shortage in the worst possible case in the worst possible month in the period of the operational study. So when you look at how was that handled in the Basin, there is a history of actions carried out by the irrigators during low flow periods to counteract draught conditions.

THE SPECIAL MASTER: Which Basin, Wind or Big Horn?

THE WITNESS: Wind, Your Honor. And in this particular case all you would have to look at was one particular reach of the Wind River -- of the Wind River System. And this particular case was the Wind River A Canal and the Dinwoody Bench area or the whole composite Upper Wind Unit. Now, the efficiencies just for that Upper Wind Unit are roughly 16 percent as specified in the water duty schedule established by the agricultural consultant, Stetson Engineers. If we were to increase that efficiency to 25 percent, for example, just in the Upper Wind Unit, that would free up enough water to alleviate that shortage. So when we are talking about

managing shortages, by going after approximately one-eighth of the acreage in the Basin and reducing the demand by increasing the efficiency from 16 percent to 25 percent, you have essentially negated any defficiency, so when I talk about a manageable shortage, this is a prime example.

THE SPECIAL MASTER: How do managers go about increasing their efficiency from 16 to 25 percent? Do you tell somebody they can't have water?

THE WITNESS: Yes, very definitely. We are talking about a Federal Irrigation Project, and I did a considerable amount of research in that area, and during 1977, for example, I researched what was done in the Wind River Federal Irrigation Projects, and they went in,-- they had sufficient lead time at that particular point to have a short water supply forecasted. So they had meetings in the spring to establish what the water duty schedules were going to be, and typically in the Little Wind area your water duty schedules were around five to five and a half acre-feet per acre. They set those at three acre-feet per acre. They went into the --

THE SPECIAL MASTER: You set that after the plant -- after the crop is planted and it needs water you --

THE WITNESS: No, Your Honor.

THE SPECIAL MASTER: You set that beforehand?

THE WITNESS: They set it beforehand, and then they set up a procedure to carry out the administration of that water duty. That causes some people to make some decisions. Sometimes they decide that they're not going to plant their full crop. They may go with a different crop type, like small grains where they feel they can get an early season supply and harvest it out by the time they get a late season shortage. They will get into a situation where they will accept partial service on pasture and apply a vast majority after the water duty to their cash crops. They will actually have their ditch riders out there administering certain heads and enforcing the efficiencies of the irrigators to improve, try to reduce or minimize the waste. For a system such as the Wind River A Canal where you got a water duty of 12 acre-feet per acre, it isn't hard to realize that -- trying to increase it up to 25 percent would not be all that difficult to do.. So in terms of going back and rationalizing what we call a manageable shortage, it's my opinion we have no shortage over a period of record. If this is the worst case, we have 6,000 acre-feet in the month of August there's a total of 173,000, If we went into just the Upper Wind Unit alone and increased those efficiencies slightly, which is still ample efficiency

for a gravity irrigation project, and not cause any other efficiency increases, certainly that's well within the standpoint of a manageable shortage. My opinion is we have no shortage at all under this situation.

THE SPECIAL MASTER: I thank you.

Q (By Mr. Echohawk) So generally the key, Mr. Billstein, then as I understand it, is it's a management consideration where there are some minor shortages that show up, is that correct?

A There are minor shortages that show up. If ---there are several ways of managing those types of shortages, and in the particular case that we examined, very definitely those kinds of management decisions are carried out because it really isn't up to the individual farmer to say he is or is not going to participate in this type of management decision, the administrator of that program, which is the Bureau of Indian Affairs, dictates you will do it and you will operate this way.

MR. WHITE: Your Honor, I would like pointed out to the Court that Mr. Billstein has just made our argument for us when we stated before the efficiencies assumed by the agricultural engineers were inappropriate, that by proper management, and Mr. Billstein has indicated, those efficiencies can be increased and the water demand

reduced. I suppose it would be appropriate to move to strike the agricultural engineer's testimony because of a conflict with Mr. Billstein's testimony, but I'll save that for a Rule 41 Motion.

THE SPECIAL MASTER: Go ahead, Mr. Echohawk.

MR. ECHOHAWK: I would like to point out, Your Honor, I don't think it's quite appropriate for Mr. White to stand up and make his argument now.

THE SPECIAL MASTER: Yeah., We have no jury, though. No advantage is being taken of it.

MR. WHITE: I can move to strike, if that's appropriate.

THE SPECIAL MASTER: He merely wanted to remind me the efficiencies can control water and adjust harsh water shortages, and I understand that.

MR. ECHOHAWK: It's pointed out in our testimony, we are claiming the people are doing that right now, and if that situation arises, any minor shortages that occur can be overcome by management situations.

THE SPECIAL MASTER: Go ahead, Mr. Echohawk.

* * * * * *

THE SPECIAL MASTER: Okay. Good.

Q (By Mr. Echohawk) Mr. Billstein, in your professional opinion, is there enough water available in the Big Wind system in the areas that you have delineated in the study unit there to serve the agricultural claims by the United States for lands encompassed within that study unit?

MR. WHITE: Objection. Ambiguous --

THE SPECIAL MASTER: You don't have to. I'll object. Object on this basis, Mr. Echohawk: to sustain the agricultural claims for what? For historic? For the combination of for everything? Adjudicated, unadjudicated, historic, futures?

MR. ECHOHAWK: For all agricultural claims asserted by the United States in this action.

THE SPECIAL MASTER: For all agricultural claims, that includes the claims for the five future projects too?

MR. ECHOHAWK: Well, Your Honor, for the lands contained within the Big Wind study boundary that he has delineated on Exhibit C-305, which we include --

THE SPECIAL MASTER: Which is within the Big Wind study boundary.

MR. ECHOHAWK: Yes, that large red study area he has delineated, which would include a combination of all historic --

THE SPECIAL MASTER: Yes, that question I understand. That question is unambiguous.

MR. WHITE: The other part of my objection --

THE SPECIAL MASTER: You are objecting to the new question?

MR. WHITE: Yes, because he doesn't delineate the time period involved. Mr. Billstein's testimony goes only to the 34 years from 1946 to 1979.

As we know, the underlying results or opinions upon which he relies are Mr. Keene's and can't be projected forward, can't be projected backwards, by Mr. Keene's own testimony.

What we are talking about is that one study period. I will withdraw the objection if the question is phrased, "Mr. Billstein, do you have a professional opinion whether or not adequate water is available to meet the agricultural or irrigation claims by the United States on behalf of the Indians during the period of study, 1946 to 1979?"

THE SPECIAL MASTER: Do you wish to adopt that question?

MR. ECHOHAWK: I will adopt that question for now.

THE SPECIAL MASTER: Very well. Will you answer that question? You are basing your answer upon the 44-year span of time to which you testified your studies were made?

THE WITNESS: There is no question in my mind that the

water is available. One just simply has to look at -- based on the SCS type forest study, there's 116,000 acres of total use in the basin now. The government claim is for 60,000 acres.

Roughly utilizing the same water supply sources that are reinforced by the operation analysis makes it obvious that there's no water supply constraints.

THE SPECIAL MASTER: One moment.

(Off the record discussion.

Q (By Mr. Echohawk) Mr. Billstein, the next question I'm not sure whether you just answered a portion of it, but let me ask you this: in your opinion as to what you know about the overall basin or the Wind River basin water supply, is that water supply adequate to serve the claims of the United States during the 34-year period in the Upper Wind study unit -- in the Big Wind study unit?

A Yes, it's my professional opinion that it's obvious that it does.

MR. WHITE: Your Honor, I would move to strike the answer and I object to the question because it includes some unspoken assumptions that ought to be included.

The unspoken assumptions that needs to be included is that nobody else diverts, and I think that ought to be clear.

THE SPECIAL MASTER: Nobody else what?

MR. WHITE: Nobody else diverts water, and I think that ought to be clear that what that means is that in order for the answer to be in the affirmative, the assumption has got to be made that nobody else is diverting water, and I would like to ask that the question be rephrased to include that concept.

THE SPECIAL MASTER: I thought the question was pretty repetitious of the first one. I didn't get the new one.

Q (By Mr. Echohawk) Mr. Billstein, in your analysis what priority date did you assume for the lands contained within the Big Wind study boundary?

A We serviced those lands that are in 1868 priority.

MR. WHITE: I move to strike the answer on the grounds of lack of foundation. I think that there must be some showing that the lands involved within that study area are, in fact, entitled to the 1868 priority date. They do not include, for example, lands that have gone out of trust status to private ownership or fee status and then been reacquired, and to the extent they include those, I think the answer is without foundation.

THE SPECIAL MASTER: I overrule the objection. I think the whole matter is a predication upon hypothetical facts, hypothetical situations, because you have to assert

MR. WHITE: I don't believe so.

THE SPECIAL MASTER: Mr. Keene was using figures, and he found that there was more water returned from return flow than there was diverted, he would give a negative factor or credit that stream providing that return came ahead of the gauging station.

At that time if there is to be some adjustment or compensation for other diverters of water in the area, that's when that ought to be made, I think.

MR. WHITE: I think Mr. Keene was rather forthright.

THE SPECIAL MASTER: It would diminish the amount of water to service the claims.

MR. WHITE: Mr. Keene was rather forthright that this was a natural flow analysis, and my concern and my first objection was that the natural flow assumption was not clearly stated in the question, and the answer could be misinterpreted to the question, could be misinterpreted to be that even under current conditions there's enough water for the claims, agricultural claims of the United States to be satisfied.

I think it ought to be clear that essentially under virgin flow conditions with nobody else diverting, that's the proper answer, and I think that's an assumption that has to be stated.

THE SPECIAL MASTER: I will overrule your objections,

something, and his answer was he asserts that there be no diversions and that the natural flow which was up from the historic flow results in sufficient water in the Big Wind River study area to take care of these claims.

That is not without possibility of some very strong assertions to question the study itself and some of the factors that went into it. That will bring out in your own case.

MR. WHITE: I would also move to strike the answer, Your Honor, since I believe there's been no foundation to show that the HEC-3 program can take into consideration relative priorities.

As a matter of fact, I believe the witness would testify if asked, in order to build an appropriate foundation for his answer, that if the priorities on an upstream and downstream basis --

THE SPECIAL MASTER: Mr. White, the time and the place for this discussion would have been about half way in Mr. Keene's testimony about the use of the computer printouts when he was talking about assuming the flows at that time as if there were no other diversions.

MR. ECHOHAWK: I believe, Your Honor, the proper place for this argument is in the briefs at the close of the case.

THE SPECIAL MASTER: It may be.

and I will ask the witness this quesition: You're talking now only about Big Wind study area, are you not, as delineated in 305?

THE WITNESS: That's correct.

THE SPECIAL MASTER: And what you testified to applies to the portion north of the diversion dam as well as south of the diversion dam?

THE WITNESS: That's right, Your Honor, everything ---

THE SPECIAL MASTER: What compensation, if any, did you make for the diversions at diversion dam to irrigate the entire Midvale Irrigation district of non-Indians who used water in this stream?

THE WITNESS: There's no compensation. This is a study carried out under an 1868 priority to establish whether there is available water to serve those senior water rights.

THE SPECIAL MASTER: If you, Mr. Billstein, owned a ranch or a farm in the Midvale Irrigation district and your grandfather homesteaded it and received a title from the United States made possible by a sale of land by the Indians and the United States, do you think you would have the right to your water rights so that 13,000 new acres would be put in irrigation at North Crowheart just north of you?

Just answer an ordinary decent question, would you?

THE WITNESS: Well, Your Honor, I would certainly look for some relief.

THE SPECIAL MASTER: Thank God for your honesty. Well, we are looking for some too. There has got to be equity in what we are doing. There just has to be some equity. I'm not going to preside over the disillusion of the State of Wyoming.

In any event, I want to ask one or two more questions.

Your 167 doesn't even begin to consider the Popo Agie and the Little Wind and the North Fork, does it? In other words, it doesn't come down into your Little Wind study boundary at all?

THE WITNESS: 167, Your Honor?

THE SPECIAL MASTER: Yes, you said 116,000 acre-feet. You added sixty --

THE WITNESS: What I meant to say or when I used those numbers, Your Honor, was from the standpoint of trying to clarify that under an 1868 priority, it's obvious that the trust lands would have available water because at this particular point in time or in recent period of time, based on the SCS Type IV inventory, there's 116 or 120,000 acres being served from the water sources delineated in the Big Wind study unit.

The government relative to trust lands are only claiming 60,000 acres.

20-9

Therefore, what we are doing is saying is there enough water available to serve 60 acres when at this point in time there's 116,000 acres currently being served, and it just reinforced the idea that, yes, there is certainly water available.

* * * * *

THE SPECIAL MASTER: Okay, go ahead, Mr. Echohawk.

MR. ECHOHAWK: Well, Your Honor, we all knew we were going to get to this point, that the Indians are asserting the early date on the stream and that's the evidence we have prepared, is what happens, is there enough water available for the first right on the stream to irrigate the lands that we are claiming, and I don't think there's any doubt that when the Indians have their water right decreed for the 1868 date to which they're entitled, that certain rights are going to fall second in line. But, Your Honor, that's the very nature of our claim and that's the nature of the law.

THE SPECIAL MASTER: I wish the law were that clear, Mr. Echohawk.

MR. ECHOHAWK: Your Honor, I think it's quite clear in Winters and even in Cappaert that impacts are to be considered and the Indians get what they're entitled to, and if it's 1868, then anybody that has a junior right to that must take second line.

THE SPECIAL MASTER: It's clear reserved federal rights must be applied with some sensitivity in some regard to other people's rights, but more important than that, what is clear -- what is not clear that neither Winters nor Cappaert have ever said to us and given us definitions precisely what quantification means. Does a

reserved water right mean that the historic lands use irrigation? Is 1868 above all else? Does it mean that any acre of land on this Reservation anywhere that can benefit with some water is entitled to it no matter what the relative values and equities are? I don't think so.

MR. ECHOHAWK: It's practicably irrigable acres test set out in Arizona versus California.

THE SPECIAL MASTER: That's Mr. Rifkin's idea, and he used it to crank out a formula that's being used now, so we are in a whole new world of finding what's justice.

MR. ECHOHAWK: We'll get possibly a reaffirmation or a second look at that practicably irrigable acreage test in the upcoming term of the Supreme Court. The Special Master's report in Arizona versus California will be rendered in September and argued in the upcoming term, and the practicably irrigable acreage test will again be reasserted by the Government in that case. Your Honor, that is the test that we are applying, that's what we feel we are entitled to, and in doing that the United States has put on the evidence to show what practicably irrigable acres there are, we have put on the required evidence, we have put on the required water amount, and once that evidence is in, Your Honor, we feel that that is the amount of water that we are entitled to with the date of reservation date.

THE SPECIAL MASTER: I would like to see your claims set forth with some specificity, and I hate that word, regarding the various units, the various acres in the units and the duty of water for each acreage for each unit. Is that in the report and still to come from Mr. Billstein?

MR. ECHOHAWK: Your Honor, I think the acreage and the duty is in the reports presented by Mr.Stetson and Mr. Mesghinna.

THE SPECIAL MASTER: Uh-huh, I was afraid those were the figures you were going to say. I was hoping you had maybe something boiling it down a little bit.

MR. ECHOHAWK: No, Your Honor, that's it.

THE SPECIAL MASTER: Okay. Does that conclude your --

MR. ECHOHAWK: No, we have a long ways to go.

THE SPECIAL MASTER: All right, go ahead.

MR. ECHOHAWK: That's only one study area.

THE SPECIAL MASTER: All right.

Q (By Mr. Echohawk) Mr. Billstein, we noticed -- I notice on Exhibit C-305 that you previously described that you have another study area delineated as the Little Wind Study Area that's bounded in green.

A That's correct.

Q Did you perform similar analyses using the HEC-3

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computer program that you have described for the Big Wind study area?

A A similar study was taken there.

Q Is this similar of the county in-flows -- the in-flows, diversions and return flows?

A That's correct.

Q Was there any different parameters considered or different items considered other than what you used in your Big Wind analysis?

A Yes, there was some storage involved in this situation.

Q Would you please describe for us what storage was used and how it was used?

A Yes. There are two existing storage facilities serving the Federal Irrigation Projects. One is called Washakie Reservoir and it's approximately 7,500 acre-foot capacity, it's located on the South Fork of the Little Wind River, and it's identified as Node No. 6 in the Little Wind River Study boundary in green. The second facility is an inland facility called Ray Lake. It similarly has approximately 7,000 acre-feet of storage and it is identified as Point 22, and it basically serves the Coolidge Unit and the Subagency Units of the Wind River Federal Irrigation Projects of, specifically, the Little Wind Unit.

MR. WHITE: Excuse me, Tom. Are those nodes that he's talking about described in 307?

MR. ECHOHAWK: No.

Q (By Mr. Echohawk) Mr. Billstein, I show you what has been marked United States Exhibit WRIR C-308. Would you please identify that exhibit for us?

MR. WHITE: Objection, Your Honor, five-day rule. It was provided on Monday, today is Thursday.

THE SPECIAL MASTER: I await your response on that.

MR. ECHOHAWK: It's true, Your Honor, we did not anticipate Mr. Billstein testifying this early. We had anticipated he would testify next week, and when Mr. White advised us Monday that his examination of Mr. Toedter and Mr. Keene would be somewhat abbreviated, that's when I gave this to him.

THE SPECIAL MASTER: I lieu of the adjustments we have made to accomodate various parties on the re-scheduling and the fact that we did kick him up a week earlier, would you be nice enough to withdraw the objection if the material isn't too germane?

MR. WHITE: I'm not that nice, Your Honor.

THE SPECIAL MASTER: Let's see what it is.

MR. WHITE: I assume the objection will be over-ruled, and I just want to get anotner chance if something

happens to us.

MR. ECHOHAWK: It's similar to 307.

THE SPECIAL MASTER: That doesn't really damage your case, Mr. White, it's nothing more than a description of the facilities at the various control points, so I'll overrule the objection.

MR. WHITE: I point out, Your Honor, that it does include a description of a number of acres and things like that, the types of lands that are included within the analysis of those control points, and I know that you have ruled against me, but I just wanted to make the observation. I apologize for arguing after the ruling.

THE SPECIAL MASTER: No problem. Go ahead, Mr. Echohawk.

Q (By Mr. Echohawk) Mr. Billstein, I direct your attention to the last page of Exhibit C-308. Would you please describe for us what that is?

A Similar to the Big Wind River operation study, this is a schematic that shows how the system is operated relative to the nodes that are described in the several previous pages to this exhibit.

Q Mr. Billstein, on each of the schematics contained in 307 and 308, how are your return flows indicated on there?

A Return flow nodes show collection by means of arrows.

However, it should be pointed out that there are other physical constraints or considerations in the system that also have arrows, dashed line arrows going to that node, and one would have to cross-reference with the node descriptions to make sure that it is, in fact, a return flow node that the dashed line is referring to.

Q Now, the control points delineated in the left-hand column of C-308, are those the -- do those control points correspond with the control points depicted in the Little Wind study area on C-305 and C-294?

A They should be the same.

Q Mr. Billstein, I think we left off with this discussion of reservoirs that you used on the Little Wind in your Little Wind operation study. Which two reservoirs were they, again?

A There was Washakie Reservoir, which is located on the South Fork of the Little Wind River; and Ray Lake, which is an in-land reservoir which is served from the Ray Canal of the Ray Unit of the Little Wind Unit.

Q Is the HEC-3 computer capable of operating reservoirs and moving water as the way it would be in actual operation?

A Certainly you can incorporate reservoir operation into the plan that was built into the operation of the

Little Wind study area. You have to have certain physical parameters such as the elevation, storage in area relationships, capacity relationships of the outlay work and spillways and such. Once that's established, you then build in operational criteria or constraints relative to how you wish to have the reservoir pool operated. For example, you could break into what we call a conservation pool zone which would allow you to extract it out for, say, all uses. You could have a buffer zone which would enable you only to put it out for selected uses, then you would have a minimum pool zone where it would establish the limits of how far you could draw the reservoir down. You also establish criteria as to what control points or what use areas you choose to serve from a given reservoir, so you can locate the particular nodes which reflect downstream demands tnat this reservoir would be on call to serve if the direct flows available to those users are not sufficient. Yes, it can -- to answer your question, it could be easily incorporated into the system it was.

Q It was?

A (Witness nodding head in the affirmative.)

Q With your reservoir operation in mind, then was your Little Wind Systems operation conducted in the same way

that the Big Wind System operation was?

A Utilizing storage, the system operational study was conducted in the same way as was the Big Wind System.

Q That's generally the downstream counting procedure of in-flows, diversions and return flows?

A That's right. It's a sequential analysis, and the way the particular program was set up for this case, it was totally sequential, although it is an option to the program that you can bypass certain stations.

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Q. (By Mr. Echohawk) Mr. Billstein, in your analysis over the 3-4-year period in the Little Wind system, did the situation arise where water supply was not adequate to meet the demand required by the agricultural engineer in this case?

A. Yes, there were cases where that occurred.

Q. Could you give us an example, please?

A. Out of 34 years, there were 12 years where there were shortages of a significance.

By that we are talking about anything other than a 1 or 2 percent shortage. And that shortage typically took place in one month, and that's very meaningful from the standpoint that there was a full water duty being supplied in May and June --

THE SPECIAL MASTER: You mean in the same month of each of the 12 years?

THE WITNESS: That's correct, Your Honor. The shortage occurred in August typically, and it's very important to realize that there were full water duties available in May, June and July during those flow sequences which had major impact on the farming operations of the area.

A typical example would be a year such as 1959, which is part of a drought cycle where in August there was approximately 5500 acre-foot of shortage.

Now, the total demand for the Little Wind Study Unit was 35,000 acre-feet, which results in something like 13 to 15 percent shortage in one of the most critical years of shortage in the basin.

Again, one takes a look at the standpint that we're talking about, meeting ideal demands for full water supply 100 percent of the time.

Really, that's not what has happened in the Little Wind Basin in the past and we certainly can't look at having a small shortage of 13 percent in a critical year of being an indication that there's not overall water supply available to that study unit. So, again, we looked at it from the standpoint of manageable shortages and interviewed the operators, specifically the Bureau of Indian Affairs people, who handled the Wind Unit. And, again, we went into a drought year, like 1977, and went over what measures they carried out during that year and came away that they felt quite comfortable with being able to increase their efficiencies from 10 to 15 percent through a particular drought year.

Superimposing that type of increase to the efficiencies of all the acres in that study unit, assuming shared shortages, that completely alleviates the shortage, and we are right back into a situation where we have a manageable

shortage or no shortage.

I think there were two years, 1960 and '61, where increasing it 10 percent we still had 3,000 or 4,000 acre-foot of shortage remaining, which again is a minor shortage.

MR. WHITE: Your Honor, I thought this morning that we had ageed among ourselves that when Mr. Billstein referred to a page out of his notebook, he would set it aside.

This afternoon he has gone through numerous pages in his notebook --

THE SPECIAL MASTER: All five of us or ten of us just forgot to remind him, I think.

THE WITNESS: Your Honor, I could pretty well -- what I have been referring to, Counsel,has been some summary tables and some listing of shortage tables.

THE SPECIAL MASTER: Would you be good enough to get them out of your book?

MR. WHITE: I have no doubt that Ron will do his best to pull them out. Like most of us, it's hard to remember, and it would be very helpful if he would do it as he goes.

MR. ECHOHAWK: We all know that Mr. White doesn't let very many papers go by.

MR. WHITE: If he wants to hand over his notebook, I will waive the requirement.

Q (By Mr. Echohawk) Mr. Billstein, in your professional

opinion, based on the 34-year base period which your analysis covered, which Mr. Keene defined as being reasonably representative for hydrologic studies, in your professional opinion, is there enough water available within the boundaries of your Little Wind Study Unit or study boundaries to serve the agricultural claims presented by the United States contained within that area using an 1868 priority date?

A. Yes, it is. I believe that there is no question that there is water available to serve those lands.

Again, one just has to look historically that's what's been served in the past, a comparison of numbers, like we did in the Big Wind system, as the government claim is approximately 27,500 acres. Historically, that's been approximately 34,000 acres served in the comparable study unit.

This is reinforced by the operational analysis that was done.

MR. ECHOHAWK: Your Honor, we are getting ready to switch areas. Perhaps we could take a break.

THE SPECIAL MASTER: All right. Let's take a ten-minute break.

(Recess.

* * * * *

THE SPECIAL MASTER: Back on the record, please. Let's leave this until tomorrow morning as to the scheduling of the dates of those first weeks of July. We'll have a definite in the morning whether I can pick it up Wednesday, the 15th, or the second week, but I think I would like so much to think we could have at least one day of Court July the 9th and 10th, even though that week will collapse into one day and be the 9th if we are only inconveniencing two people, and they're both single.

MR. CLEAR: He's married now, Your Honor.

MR. WHITE: He's now married. We haven't had a bachelor party for him yet.

THE SPECIAL MASTER: Is that why you were gone last week?

MR. CLEAR: Your Honor, I believe the record shows that while I was in Cheyenne and Billings, he was in Paris and Rome and Zurich.

THE SPECIAL MASTER: In that case, we convene on the 9th.

MR. WHITE: If that's the case, Your Honor, the State will host a bachelor party belated, but --

MR. PERRY: And I withdraw my objection to that statement.

THE SPECIAL MASTER: All right. We will convene the

9th and the 10th and hopefully the 15th, 16th and 17th, but in any event we will work the 9th and 10th of July and the 16th and 17th of July with court hearings. Go ahead, Mr. Echohawk.

Q (By Mr. Echohawk) Mr. Billstein, earlier in your testimony you indicated that you analyzed water availability of the Popo Agie, Little Wind and Big Horn Rivers where the United States has asserted agricultural claims in those areas. Will you please describe for us what type of analysis you performed?

A The particular reach that we are talking about deals with the North Fork of the Popo Agie River as it forms the southern Reservation boundary. It then becomes the Popo Agie River when it meets the Little Fork of the Popo Agie, then continues in a northeasterly direction, picks up flow from the Little Popo Agie River, then meets the Little Wind River, and at that point we call it the Little Wind River to its confluence with the Big Wind River, and at that point it becomes the Big Horn River System. So the reach we are talking about begins with the North Fork of the Popo Agie River as it forms the southern Reservation boundary and continues on to where it has its confluence with the Little Wind River and includes that portion of the Little Wind River to its confluence with

the Big Wind River, and then along the Big Horn River System to the northern Reservation boundaries.

Since this was an area of very few governmental claims, it resulted in a simple comparison of available natural flows from A.1 sites furnished by Mr. Keene against the demand in those respective reaches.

Q When you say "demand in those respective reaches," is that the demand presented by the agricultural engineers, in this case Mr. Stetson and Mr. Mesghinna?

A That would be the basis of the demand calculation.

Q In your comparison of the natural flows to the water duties or the demands set by Dr. Mesghinna and Mr. Stetson, did you have any periods of water shortage or where the situation arose where there was not sufficient natural flow to meet the agricultural claims within the 34-year base period?

A For the reach called Big Horn River there were no shortages allowed. For the reach that we called the Little Big Horn River there were no shortages during the period. For the reach between the North Fork of the Popo Agie and its confluence with the Middle Fork of the Popo Agie to the confluence of the Popo Agie with the Little Wind, there were no shortages at all. For the North Fork of the Popo Agie there were four years of

shortages out of 34 years. This was for the one month only, shortages varied from 6 percent to 22 percent, and with increased efficiencies and such we felt that they were manageable shortages. Therefore, we felt that there were no actual shortages in the North Fork of the Popo Agie System.

Q Increases in efficiencies that you talked about, is that a normal way to handle a deficiency such as the one you described?

A That's a normal way that people in this use area handle low flow periods. When you have full water supplies in May, June and July, they also utilize the soil moisture if necessary. That's another technique versus increase in efficiency, so yes, it's a very valuable management tool that's available to them.

* * * * *

Q (By Mr. Echohawk) Mr. Billstein, in this area, the Popo Agie, Little Wind, and Big Horn, did you also perform a secondary type of systems operations generally to check your results?

A Yes, I did.

Q Can you describe that for us briefly and the results of your study?

MR. WHITE: Your Honor -- before you turn the page, could I ask you to remove that page from your notebook?

A Yes, we performed an HEC-3 operational study for the period 1934 to 1979. We established a system of nodes quite similar to what was developed on the Big Wind and Little Wind system and operated the system, utilizing the agricultural demands that I have just evaluated previously in the Popo Agie, Little Wind, Big Horn reach analysis.

The purpose of this study was to formulate some base line information to evaluate whether there were fishery flows available after agricultural claims were satisfied in those reaches.

Q But as a result of this work that you did to analyze the fishery flows, what is your conclusion as to the availability of water for agricultural claims?

MR. WHITE: Where? Excuse me. Objection, Your Honor. When? Where?

MR. ECHOHAWK: For the North Fork Popo Agie.

MR. WHITE: I object also to the question being ambiguous. There's no priority dates set forth.

THE SPECIAL MASTER: I assume it's the same as the others.

MR. WHITE: If he adds 19 --

MR. ECHOHAWK: 34-years study. And assuming the 1868 priority date.

MR. WHITE: Withdraw the objection.

A The secondary operation study on the Popo Agie, Little Wind, Big Horn reach gave us the same identical results as my previous analysis and would be rationalized the same, the conclusion there being we have no shortages that cannot be managed in any of those reaches.

THE SPECIAL MASTER: What shortages did you have? Did you have some low ones, low August for given years?

THE WITNESS: Your Honor, it would be the same set of shortages that I spoke to and should be in the record.

Q (By Mr. Echohawk) Is that the four out of 34 years?

A That's correct.

Q Could you once again --

A In other words, one study verified the results of the other exactly.

Q Just once again could you give us the percent shortages

for those four years in August?

A 1946, six and a half percent; 1948, sixteen point eight percent; 1959, ten point eight percent; 1960, twenty-two and a half percent.

Q And by adjusting of irrigation efficiencies, those shortages can be overcome?

A By adjusting of efficiencies more utilizing available soil moisture.

Q In your professional opinion, is there enough water to serve the United States' agricultural claims in the Popo Agie, the Little Wind, and Big Horn rivers for the 34-year study period using an 1868 priority date?

A Yes.

Q Mr. Billstein, I believe we have two additional agricultural areas that you analyzed, the minor tributaries in Owl Creek.

A That's correct.

THE SPECIAL MASTER: The which tributaries?

MR. ECHOHAWK: Minor tributaries of the northern part of the reservation.

THE SPECIAL MASTER: I see. In Owl Creek?

MR. ECHOHAWK: In Owl Creek.

Q (By Mr. Echohawk) Would you please describe for us your analysis on Owl Creek?

A The analysis on Owl Creek dealt with the Main Stem resources of Owl Creek, specifically the South Fork of Owl Creek, which arrives in the head waters of the Owl Creek mountains, flow almost due east, and then enter and meet the North Fork of Owl Creek which enters the Reservation from the north to the south, and then it becomes the Main Stem of Owl Creek, and it then continues off the Reservation to its confluence with the Big Horn river system.

The two areas of study included the South Fork of Owl Creek and then the Main Stem of Owl Creek below the confluence of the South Fork of Owl Creek with the North Fork of Owl Creek (indicating).

Q Before we go any further, Mr. Billstein, on the Owl Creek areas that you analyzed, are those identified by Mr. Keene as the B.2 sites?

A Those would be B.2 sites as analyzed by Mr. Keene.

THE SPECIAL MASTER: Why did they have to be analyzed by B.2? Were there no gauges that you couldn't use any Type I?

I guess I asked that of Mr. Keene. Don't bother answering if you cannot answer.

THE WITNESS: It's a hydrologic question, Your Honor.

THE SPECIAL MASTER: All right. I'll wait and do it later.

Q (By Mr. Echohawk) Would you describe for us what method of analysis you used here?

A The claimed lands for the government consisted of those lands south of Owl Creek. There are some lands, part of the overall government claim, that are located north of Owl Creek, but those lands were not included in the study conducted under the 1868 priority.

THE SPECIAL MASTER: That's because those lands are clearly not a part of the reservation?

MR. ECHOHAWK: Part of the reservation, Your Honor, but they have State Water Rights that have a date after 1868.

MR. WHITE: Your Honor, I would move to strike the testimony of the witness concerning the Owl Creek area until the foundation is established that the lands contained within his study not only exclude those lands north of Owl Creek, but also exclude those lands which do not have a Wind River meridian legal description as stipulated by the parties being all the land within the exterior boundaries of the reservation.

THE SPECIAL MASTER: You may find me in error for my ruling, Mr. White, but I'm going to overrule it now because I think the maps make it so clear that what he included was properly included.

MR. WHITE: I want you to be sure --

THE SPECIAL MASTER: You did.

MR. WHITE: The stipulation that certain lands were within the exterior boundaries of the reservation -- those were lands which had Wind River meridian legal description as opposed to a sixth principle meridian legal description.

During Mr. Billstein's testimony about certain lands in the Owl Creek, it became clear that there were some lands south of Owl Creek, but those lands had a sixth principle meridian legal description, and those are the lands I'm talking aobut.

THE SPECIAL MASTER: Well, I'm going to let him testify as to those lands as long as they are south of the South Fork of the Owl Creek, and so go ahead.

A Those lands so described as being south of the South Fork of the Owl Creek were the only lands that were incorporated into the area of service from the South Fork --

THE SPECIAL MASTER: Some future irrigated land?

THE WITNESS: There's one portion in the Owl Creek unit that's colored in green. Mr. Mesghinna introduced that as a Type VIII land, Your Honor.

THE SPECIAL MASTER: Type VIII?

MR. CLEAR: I don't want to -- Dr. Mesghinna testified as to Type VIII's and Owl Creek. He testified at the same

time about the Type VIII's and Owl Creek, so I think that Mr. Billstein misspoke. Owl Creek was lumped in for testimonial purposes with the Type VIII, but it wasn't a Type VIII.

THE SPECIAL MASTER: I see. He just studied it at the time.

What type land was it? Was it a IV?

MR. CLEAR: It was really almost a future, but I think it was so small that he just did that with Type VIII lands because it was so small.

MR. ECHOHAWK: And the land was classified under the future standards.

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

THE SPECIAL MASTER: Go ahead.

A For those lands that were served from the Main Stem of Owl Creek, those again are only lands that are south of the main stem of Owl Creek. Those respective lands both in this category and for the South Fork of Owl Creek were categorized by water duty and supplied by the agricultural engineer and demands were developed on that basis.

* * * * *

THE SPECIAL MASTER: Go ahead, Mr. Echohawk.

Q (By Mr. Echohawk) So you compared the agricultural demands with the flow information prepared by Mr. Keene, is that correct?

A That's correct. These would be Keene B.2 sites.

Q What were the results of your comparisons?

A The results were such that we found that August, again, was a low flow month relative to -- it was a month of inability to meet the ideal demand as specified by the water duties of the agricultural engineer. We had similar findings for both the South Fork area as well as the Mainstem area.

THE SPECIAL MASTER: How many Augusts of the 34 years?

THE WITNESS: Your Honor, we took a little bit different approach on this particular study area. We did a -- I asked that a percent yield analysis be done, and that was the format for the stream flow data that was supplied to me by Mr. Keene. And by format --

THE REPORTER: Pardon me?

MR. WHITE: Format.

THE SPECIAL MASTER: Go ahead. You got --

THE WITNESS: Flow data is what I meant to say.

THE SPECIAL MASTER: Did you also use prediction techniques?

THE WITNESS: I didn't apply any prediction techniques.

THE SPECIAL MASTER: Okay. But you just said that you used a different technique or a different application, different methodology here?

THE WITNESS: Yeah. I asked Mr. Keene to give me the information, rather than just the number of years, to give me it in terms of percent yield which tells you basically how many years out of ten would you expect flow to be there that is equal to or greater than the amount of flow in a stream. In this particular case if we were looking at an 80 percent yield flow in August, wnich his table shows rougnly 888 acre-feet, it follows that eight out of ten yields you would have flow equal to or more than that. The reason we chose to use percent yield analysis was the fact that this is a time tested method of evaluating water supply used by the Soil Conservation Service over time. They use 80 percent chance to size their irrigation projects. With the advance of computerized studies, they are being able to get into a little bit higher chance frequency. But that has been kind of a rule of thumb that was utilized over time.

THE SPECIAL MASTER: But if in that area you had used actual gauging of the stream flows over the years

instead of a B.1 concept, would there might have been a shortage of five out of ten instead of two out of ten, August?

A I can speak to that. In this particular situation, going to the actual flow data supplied to us by Mr. Keene before the percent yield analysis was undertaken, in August approximately 12 out of 25 years we would have had some shortage where we would not have been able to meet the demand. In July we would have had six out of the 25 years, and similarily in September, approximately 6 out of the 25 years.

THE SPECIAL MASTER: Okay. Go ahead, Mr. Echohawk.

MR. ECHOHAWK: Your Honor, as I understand, the Owl Creek area is a B.2 site that has gauge flows, is that right? Is that your --

THE SPECIAL MASTER: Well, I used a different technique on it, and Mr. Keene I think testified that there was some need to make projections rather than having gauges.

MR. CLEAR: I think, Your Honor, they're unlike the B.1 sites, which I don't think had gauges, B.2, which is Owl Creek, had gauges which Mr. Keene utilized, but he did have to make some transfers and projections.

THE SPECIAL MASTER: That's right. That's right,

Mr. Echohawk.

Q (By Mr. Echohawk) Mr. Billstein, I show you what's been entered as evidence as United States Exhibit C-301, which is Mr. Keene's natural flow study report. I direct your attention to Page 27, Table 8 -- Page 28 and Page 29. Would you please review those and tell me whether those are the -- is that the flow information that you utilized from Mr. Keene?

A These are the flows -- I mean, these are the sites we analyzed, and these are the percent yields that were utilized to evaluate water availability.

THE SPECIAL MASTER: All right. I stand corrected because I note on my copy of it these are B.2 sites.

Q (By Mr. Echohawk) Okay. You took 80 percent probability of flow, is that correct --

A That's correct.

Q -- in your analysis, and did you then compare the agricultural demand to that 80 percent flow?

A That's correct. The result was we had 100 percent of the -- looking at the 80 percent chance flows, we could fulfill that need 100 percent of the time in May, 100 percent of the time in June and 100 percent of the time in July. We dropped from 80 percent chance down to roughly 60 percent cnance, say, in August, and we were able to meet

the 80 percent chance criteria in September, which meant that we, again, were looking at a low flow period and had to analyze how shortages typically were handled in the Basin in a period such as that.

Q What did you find in your analysis of how they handled shortages in the Owl Creek area?

A Well, Owl Creek is noted as having to have State administration and reports such as the Owl Creek studies of 1949, and such show that you have water duties typically of three, three and a half acre-feet per acre, Those water duties are less than the water duties estimated by the agricultural consultant, so typically what it means is that during those low flow months such as August these people have had to conduct good management on their lands and undertake practices that would extend their water supplies. They have had to do it over time, and it was quite logical that this is what is, in fact, taking place. So by increasing the efficiencies from approximately 35 percent to 50 percent, overall efficiencies, just during that month we could essentially alleviate that kind of shortage and get it to the point where we could have a supply of approximately 80 percent of the demand, which would basically allow you to get close to a full yield. So again, we felt that we had a situation

where we had tolerable shortages.

The other thing that confirms that is that in the Type IV study there's 12,400 acres listed as being irrigated in Owl Creek above the Le Sueur Pumping Plant area; of that, about 10,000 acres were listed by the State at that time as being full service irrigation lands. We are talking about between the South Fork and the Middle -- and the Mainstem of Owl Creek less than 2,000 acres. So basically just looking at the figures one realizes that they do undertake some very significant management during low flow periods which they're faced with over a great number of years. It's not unreasonable to expect that a continuation of a historic practice such as this would take place on these lands, and it's reasonable to say that that would manage the shortage.

MR. WHITE: Your Honor, at this time the State of Wyoming would move to strike testimony of Mr. Stetson concerning the duty of water for the historic lands.

Mr. Stetson testified that certain duties were required for those lands, and yet everytime Mr. Billstein comes up with a shortage, his opinion, which I very much respect, is that by proper management the duty of water for those lands can be reduced and the shortage managed. It seems almost patently clear that if the duties of water

recommended by the -- or stated by Mr. Stetson, the agricultural engineer, can be reduced in order to meet the shortages, then they may be a little high in the first place. As a result, because of the conflict of the testimony between the two witnesses of the United States, and the absolute incompatability of that testimony, we would at this time move to strike the testimony of Mr. Stetson.

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THE SPECIAL MASTER: I will deny the Motion to Strike his testimony. You can comment on the fact. If it's inconsistent and ambiguous, there will be some comments on it when we go to your side of the case.

MR. ECHOHAWK: I don't think it's any different than any other place or in this side of the basin where when water gets tight, they tighten their belts.

THE SPECIAL MASTER: Well, people should tighten their belts, and that includes only all kinds of people, everybody.

MR. ECHOHAWK: The point I would like to make, if nothing else, we have to remember that what's applied against the Indians must certainly be applied against the non-Indians in this case.

THE SPECIAL MASTER: That's right.

MR. WHITE: We will take the 1868 priority date, Your Honor.

THE SPECIAL MASTER: Let's don't go into that. We are going to have several weeks to argue the case. Let's see if we can't get the evidence in right now and submitted.

Okay, Mr. Echohawk.

Q (By Mr. Echohawk) Mr. Billstein, what is your professional opinion regarding water supply for the Owl Creek area?

MR. WHITE: Objection. During what period of time

of studies? Under what assumed priority date?

THE SPECIAL MASTER: Based on his 34-year --

Q. (By Mr. Echohawk) What period of analysis does your Owl Creek analysis cover?

A. The years covered on the South Fork of Owl Creek were from 1940 through '43 and then 1959 through '79.

Q. Based on the period of your study and assuming an 1868 priority date, is there enough water available, assuming reasonable management in periods of shortage, to serve the United States' agricultural claims?

MR. WHITE: Object on two grounds, Your Honor. The lands involved are not described in the question, and what's meant by reasonable management is not described in the question.

It goes back to my Motion to Strike. The question ought to say what the duty of water required by the agricultural engineer was or at some other lesser duty of water which Mr. Billstein has determined would be required under proper management.

THE SPECIAL MASTER: The motion is overruled. The lands are those that he described fairly accurately south of the South Fork of Owl Creek, and he can explain what that means when he gets into his answer on the specific management practices.

Q (By Mr. Echohawk) Mr. Billstein, for the months of May, June and July and September, assuming using the water duty supplied to you by Mr. Stetson and Dr. Mesghinna, and assuming an 1968 priority date, is there enough water available to irrigate those lands during those months?

MR. WHITE: Objection. The question has already been asked and answered. He's testified that there are shortages.

MR. ECHOHAWK: Regarding specific months, other than the month of August, Your Honor.

MR. WHITE: I withdraw the objection and apologize.

A. Under those conditions, we met the 80 percent yield criteria.

Q (By Mr. Echohawk) And in the month of August where you identified that there were some shortages that occurred, based on your research of how people in the Owl Creek area handled water shortages during that month, is there enough water available to meet the agricultural needs of those lands?

MR. WHITE: Objection. Foundation. There is no testimony as to his research and how the people in that area handled water shortages.

THE SPECIAL MASTER: I will overrule the objection. You may answer, if you can.

A. It's my opinion that those are manageable shortages, and

we have adequate water availability to serve the lands noted on the South Fork of Owl Creek.

I think we have to realize that what Mr. Stetson was doing was talking about water duty schedules resulting in average yields. The economists in the case, Mr. Dornbusch, used average yields, which implies there is going to be low flow years, which could impact yields.

I think we are confusing the fact that we have to have 100 percent water supply to come up with average yields. I think what we are doing is comparing apples and oranges.

When the water is in the stream, it's my feeling that the water duty that Mr. Stetson has defined should be served to those lands.

When they are not, then they can be managed down to an acceptable level of shortage, but with the basic assumption of average yields in this case, we certainly don't have to undergo the proof that we would never have a shortage.

Otherwise, we would have went with far better than average yields.

THE SPECIAL MASTER: Isn't this land pretty much in the high climatology anyway and mostly given to alfalfa and hays?

THE WITNESS: That's right, Your Honor.

THE SPECIAL MASTER: And if you haven't got the water in August, then you do with a little less hay crop than you would normally --

THE WITNESS: That's basically --

THE SPECIAL MASTER: How many acres are we talking about?

THE WITNESS: 1306 acres.

THE SPECIAL MASTER: 1306 acres of land. I wish that were our biggest problem.

Go ahead, Mr. Echohawk.

Do you want to hold those out?

MR. WHITE: Off the record.

(Off-the-record discussion.

THE SPECIAL MASTER: Is everyone as tired as I am?

MR. ECHOHAWK: I'm pretty tired.

MR. WHITE: Could I ask how long we are before the end of direct?

THE SPECIAL MASTER: Are you just about there?

MR. ECHOHAWK: No.,

THE SPECIAL MASTER: Then let's go another half hour. Let's go another half hour. We are going to have a short morning.

MR. ECHOHAWK: Your Honor, if we could break now, maybe I could get it in a little more compact --

THE SPECIAL MASTER: I don't see what much more you have on direct. You have just about stated --

MR. ECHOHAWK: We have got to cover the minor tributaries, the fish flows and the minerals.

What I'm saying is, if I have a little more time to organize my notes, perhaps it could be presented more precisely.

THE SPECIAL MASTER: Let me ask a question on two on this.

If the Vogel testimony on the fish need for maximum habitat is jeopardized by the requirements to meet your figures in May, June, July, which gives?

MR. ECHOHAWK: The fish.

THE SPECIAL MASTER: All right. That I was asking the witness, not counsel.

MR. ECHOHAWK: That's a decision for the --

THE SPECIAL MASTER: That's the official position of the United States, is it?

MR. ECHOHAWK: That question is more properly directed to the attorneys for the United States, Your Honor.

MR. CLEAR: And, note, Mr. Membrino is not here. That's why he said fish.

MR. WHITE: I think the witness can answer. It's his study.

THE SPECIAL MASTER: If you don't mind, I would like to ask the witness this question.

MR. ECHOHAWK: I hate to object to your question, but it's generally a question, a legal decision one, to be considered by the Tribes and by the attorneys for the Tribes, both the United States and the tribal attorneys, as to what claim will be asserted, should there be a conflict.

THE SPECIAL MASTER: I appreciate that.

MR. WHITE: We have no objection to the question, Your Honor.

THE SPECIAL MASTER: I just thought that might have some place in the matters tomorrow morning. You will probably touch on those.

MR. ECHOHAWK: I think the evidence will show, when we get to the morning, on the fishery, that there are various situations that arise where there will be a conflict between some agricultural claims and some fish claims, and that will certainly come out when we cover that portion with Mr. Billstein. But my position is, Your Honor, that that's not a decision for Mr. Billstein to make.

THE SPECIAL MASTER: Let me ask a few questions of this witness then on the systems operation.

If this is, in your professional opinion, an economically

feasible, engineeringly -- Why are you making such signs?

THE WITNESS: Well, Your Honor, you are asking me about the conclusions about the economic feasibility --

MR. WHITE: I would like to cross-examine him on it, Your Honor, so why don't you go ahead and ask him?

THE SPECIAL MASTER: I will let Mr. White do Mr. White's work then.

But I just have questions that arise naturally.

MR. WHITE: I have no objection to your asking the question.

THE SPECIAL MASTER: I know you don't.

MR. DONNELL: Nor do I.

MR. WHITE: If you ask him, I can cross-examine on it; but if you don't, I can't. So why don't you go ahead?

THE SPECIAL MASTER: I will wait. They will come out later in the case and, Lord knows, everybody else is tired.

Off the record.

(Off-the-record discussion.

(Proceedings recessed to reconvene (at 9:00 a.m., Friday, June 19, (1981.

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REPORTERS' CERTIFICATE

State of Wyoming)
: SS
County of Laramie)

We, Mary Nelson and Viola Lundberg, Registered Professional Reporters and Notaries Public, hereby certify that the facts as stated in the caption hereof are true; that we did at the time, date and place, as set forth, report the proceedings had before the Honorable Teno Roncalio, Special Master Presiding, in stenotype; that the foregoing pages, numbered 7145- 7331, inclusive, constitute a true, correct and complete transcript of our stenographic notes as reduced to typewritten form under our direction.

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

Dated this 18th day of June, 1981.

MARY NELSON
Registered Professional
Reporter

VIOLA LUNDBERG
Registered Professional
Reporter

MARY R. NELSON - NOTARY PUBLIC
STATE OF WYOMING COUNTY OF LARAMIE
My Commission Expires March 13, 1983