Water District #1:

Total Amount of Water Rented: **99,000 AF**

A. Water Rented (Summer, 1991): **50,000 AF**

B. Release Dates: July 14 to August 19, 1991

C. Flow Rates:

* Increased Flows at Milner:

*** from 200 cfs to 600 cfs**	July 14 to 31, 1991
*** up to 800 cfs**	August 1 to 19, 1991

A. Water Rented (Winter, 1992): **49,000 AF**

B. Release Dates: December 22, 1991 to January 16, 1992

* Amount Released to Date: **24,943 AF**

C. Flow Rates: **748 cfs from Am Falls**

* 300 cfs instream minimum flow requirement
* 448 cfs water rental

500 cfs from Milner

* ???

D. Amount Remaining: **24,057 AF**

* Projected End Date: February 12, 1992 (450 cfs/day from Am Falls)

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000
Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

January 31, 1992

Mr. Jack Barnett
Barnett Engineering
106 West 500 South, Suite 101
Bountiful, UT 84010-6232

Dear Jack:

Enclosed is a copy of a memo we sent to Water District 01 concerning Upper Snake reservoir evaporation. As promised, we have revised the Island Park evaporation (downward) used for the water right accounting. Attached to the memo are the data used for the new equation.

Also enclosed is a draft report on the gains and loses in the Lower Teton River below the St. Anthony gage, and a copy of the memo to Water District 01 and the Fremont-Madison Irrigation District which discusses potential courses of action based on the findings.

The reservoir evaporation revisions are being used for the 1991 final accounting, but it is unlikely that any decisions will be made concerning the Lower Teton in time to incorporate them into the 1991 final runs. Therefore, we will probably be hand correcting the Roxanna-Saurey storage use again this year.

If you have any comments/suggestions on either of these enclosures, please feel free to call or write.

Sincerely,

Bob

Bob Sutter
Hydrology Section

BS:cjk
enclosures
cc: Ron Carlson
Dale Swenson

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CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

M E M O

TO: Ron Carlson, Lyle Swank, Water District 01

FROM: Bob Sutter, Hydrology Section

DATE: January 31, 1992

SUBJECT: Upper Snake Reservoir Evaporation

We have recently updated the reservoir evaporation equations used in the Upper Snake water right accounting. The equations which we were using were developed in 1977, and there is now more data available. Also, three or four years ago we switched from using pan evaporation at American Falls to reference evapotranspiration (ET_R) because the (ET_R) values are more complete and better maintained in the U.S. Bureau of Reclamation HYDROMET system. We now have a longer history of pan evaporation-ET_R relationships.

The first sheet attached to the memo shows 1988-91 values of pan evaporation at Aberdeen Experiment Station and American Falls AGRIMET ET_R. As shown, Aberdeen (American Falls) pan evaporation can be estimated as 1.18 times ET_R. Pan evaporation at other reservoir sites can then be estimated from the Aberdeen pan data as shown on the final six attached pages. Data from 1965-76 was used to develop the following equations:

$$P_P = 0.91\ A_P - 0.03$$
$$I_P = 0.67\ A_P - 0.03$$

Where P_P - Palisades Pan Evaporation (inches)
I_P - Island Park Pan Evaporation (inches)
A_P - Aberdeen (American Falls) Pan Evaporation (inches)

From Map M23 of the Idaho Water Inventory, the following equation was developed:

$$R_P = 0.95\ A_P - 0.02$$

Where R_P = Ririe pan evaporation (inches)

From these values of pan evaporation at various reservoir sites, actual water surface evaporation was computed by applying the standard coefficient of 0.7.

The new equations are now in the accounting program and are being used for the 1991 final accounting.

BS:cjk
Enclosures

AMF AGRIMET ET_R – ABERDEEN EXP. STA. PAN EVAPORATION

		APR	MAY	JUN	JUL	AUG	SEP	
1991	PAN		-	-	11.11	9.83	6.40	
	ET_R		5.16	7.49	8.64	8.40	5.64	
	PAN/ET_R				1.29	1.17	1.13	
1990	PAN		8.18	9.61	11.47	9.93	7.16	
	ET_R		5.96	7.99	9.38	8.14	6.87	
	PAN/ET_R		1.37	1.20	1.22	1.22	1.04	
1989	PAN		-	9.88	10.38	9.41	7.31	
	ET_R		6.74	8.35	9.86	8.67	7.11	
	PAN/ET_R			1.18	1.05	1.09	1.03	
1988	PAN		7.85	9.84	12.63	11.38	6.81	
	ET_R		6.26	7.76	11.04	10.05	6.68	
	PAN/ET_R		1.25	1.27	1.14	1.13	1.02	
AVG	PAN/ET_R		1.31	1.22	1.18	1.15	1.06	1.18

WTO 6/24/91

PAN EVAPORATION DATA, NOAA NWS ANNUAL SUMMARIES

MONTHLY TOTALS IN INCHES

	MAY	JUN	JUL	AUG	SEP
1965					
ABERDEEN	7.12	8.76	9.73	8.33	6.74
ISL. PARK			6.75	5.55	
PALISADES	5.18	6.03	7.90	7.15	4.11
66					
AB	10.23	10.03	12.12	10.89	6.15
IP		5.38	8.35	6.14	
PAL			10.26	7.68	4.51
67					
AB	8.11	7.30	10.73	10.65	6.77
IP		4.14	6.03	5.68	
PAL		5.08	8.66	8.63	5.23
68					
AB	7.49	9.34	11.22	7.37	5.88
IP		4.42	6.71	3.99	
PAL	4.56	6.91	9.26	6.30	4.76
69					
AB	10.28	8.28	11.44	11.41	8.28
IP		4.19	6.18	6.63	
PAL	9.05	6.40	9.42	9.38	6.66
70					
AB	7.62	8.72	10.25	10.40	6.53
IP		4.87	5.86	6.99	
PAL	5.55	7.26	8.30	9.18	4.41
71					
AB	7.55	9.76		9.43	7.30
IP		5.36	6.67	6.86	
PAL	5.69	6.61	8.63	8.20	4.92
72					
AB	8.59	8.71	11.20	9.36	7.03
IP		4.60	5.86	5.60	
PAL	6.59	7.27	8.89	7.41	4.73
73					
AB	9.34	9.30	9.71	10.29	5.22
IP		4.71	6.02	5.73	
PAL	6.69	7.16	8.41	7.85	4.48

		MAY	JUN	JUL	AUG	SEP
74						
	AB	8.22	11.07	11.12	9.58	7.99
	IP		6.46	7.35	5.46	
	PAL	6.23	9.50	9.97	8.61	7.12
75						
	AB	8.13	10.33	10.86	9.83	7.13
	IP		4.29	6.71	5.04	
	PAL		7.74	9.41	7.87	6.65
76						
	AB	8.46	9.33	10.98	8.75	6.11
	IP		5.43	7.42	5.64	
	PAL					

PALISADES – ABERDEEN EXP. STA.

	JUNE			JULY	
65	6.03	8.76	65	7.90	9.73
67	5.08	7.30	66	10.26	12.12
68	6.91	9.34	67	8.66	10.73
69	6.40	8.28	68	9.26	11.22
70	7.26	8.72	69	9.42	11.44
71	6.61	9.76	70	9.18	10.40
72	7.27	8.71	71	8.20	9.43
73	7.16	9.30	72	7.41	9.36
74	9.50	11.07	73	7.85	10.29
75	7.74	10.33	74	9.97	11.12
			75	9.41	10.86

$n = 10$

$Y = .95X - 1.66$

$r = .87$

$n = 11$

$Y = .95X - 1.24$

$r = .89$

AUGUST			SEPT		
65	7.15	8.33	65	4.11	6.74
66	7.68	10.89	66	4.51	6.15
67	8.63	10.65	67	5.23	6.77
68	6.30	7.37	68	4.76	5.88
69	9.38	11.41	69	6.66	8.28
70	9.18	10.40	70	4.41	6.53
71	8.20	9.43	71	4.92	7.30
72	7.41	9.36	72	4.73	7.03
73	7.85	10.29	73	4.48	5.22
74	8.61	9.58	74	7.12	7.99
75	7.87	9.83	75	6.65	7.13

$n = 11$

$Y = .63X + 1.90$

$r = .80$

$n = 11$

$Y = .88X - .79$

$r = .74$

* ALL MONTHS COMBINED

$n = 43$

$Y = .91X - 1.00$

$r = .93$

STD ERROR OF ESTIMATE = .44

Island Park Dam – Aberdeen Exp. Sta.

June			July		
66	5.38	10.03	65	6.75	9.73
67	4.14	7.30	66	8.35	12.12
68	4.42	9.34	67	6.03	10.73
69	4.19	8.28	68	6.71	11.22
70	4.87	8.72	69	6.18	11.44
71	5.36	9.76	70	5.86	10.25
72	4.60	8.71	72	5.86	11.20
73	4.71	9.30	73	6.02	9.71
74	6.46	11.07	74	7.35	11.12
75	4.29	10.33	75	6.71	10.86
76	5.43	9.33	76	7.42	10.98

$n = 11$

$Y = .48X + .43$

$r = .70$

$n = 11$

$Y = .59X + .30$

$r = .54$

AUG

65	5.55	8.33
66	6.14	10.89
67	5.68	10.65
68	3.99	7.37
69	6.63	11.41
70	6.99	10.40
71	6.86	9.43
72	5.60	9.36
73	5.73	10.29
74	5.46	9.58
75	5.04	9.83
76	5.64	8.75

$n = 12$

$Y = .41X + 1.86$

$r = .55$

ALL MONTHS COMBINED

$n = 34$

$Y = .67X - .92$

$r = .76$

$\bar{X} = 9.94$

$\bar{Y} = 5.78$

STD ERR OF ESTIMATE = .69

FOR USE IN THE ACCOUNTING PROGRAM THE EQUATIONS MUST BE MODIFIED SO THEY REFLECT THE RELATIONSHIP BETWEEN THE SITES ON A DAILY BASIS. THIS CAN BE DONE BY DIVIDING THE INTERCEPT TERM BY THE AVERAGE NUMBER OF DAYS PER MONTH. UNITS ARE INCHES.

PALISADES - ABERDEEN (ALL MONTHS COMBINED)

$Y = .91X - .03$

ISLAND PARK - ABERDEEN (ALL MONTHS COMBINED)

$Y = .67X - .03$

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CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

M E M O

TO: Ron Carlson, Water District 1
Dale Swenson, Fremont-Madison Irrigation District

FROM: Bob Sutter, Hydrology Section

DATE: January 15, 1992

SUBJECT: Water Right Accounting for Lower Teton

Attached to this memo is a draft report concerning gains and losses on the Teton River below the near St. Anthony gage. This report is the result of concerns expressed by the Fremont-Madison Irrigation District that the Roxanna and Saurey canals were not receiving the benefit of ungaged gains/return flows above their points of diversion in the natural flow computations of the water right accounting. Agreeing that this was probably true, we have in the past 3 or 4 years made hand corrections at year's end, reducing the amount of storage used by these two canals by placing them on the same priority as the Henrys Fork.

The hand correction assumed that gains/return flows were always sufficient to meet the Roxanna and Saurey rights, which may not have been the case; and it was impractical by hand to compute the effect on other rights when these canals were credited with natural flow after the fact. Therefore, the purpose of this memo is to suggest options for modifying the accounting to automatically handle the lower Teton in a more fair manner, based on the information contained in the attached report.

Admittedly, the data available on the North Fork is very limited. The 1977-78 data may be atypical since effects from the 1976 Teton flood are most likely present. Also it is very difficult to assess the accuracy of this data from the Williams report. The Williams report was done primarily to assess sediment transport, and it is not clearly stated how the discharge data were gathered. The 1988-91 data near the mouth of the North Fork taken by the Fremont-Madison are probably not extremely accurate as they were taken for operational purposes only, not for a study such as this. The data that we can rely on are from the two USGS gages, North Fork at Teton, and the South Fork at Rexburg.

With the data limitations in mind, we can tentatively say that the gains/return flows on the North Fork are usually, but not always, sufficient to supply rights of the Saurey and Roxanna. Stream channel losses can be significant in the upper reaches of both forks, but in particular on the main river/South Fork from the near St. Anthony gage to the at Rexburg gage, where losses seem to occur throughout all ranges of flow.

Presently, the entire Teton below the near St. Anthony gage is treated as a single reach with no gains/losses. Possible options for improving the Teton accounting are as follows:

1. Add one reach from North Fork below Teton Island Feeder to North Fork near Mouth with a constant gain (about 50 cfs) which would meet the Roxanna-Saurey rights at all times.

2. Add one reach as in (1), but establish a gage at the near Mouth location, thus allowing a gain computation in the reach.

3. Add an additional reach on the North Fork at Salem in conjunction with (2) and assume one-third of the gain at Salem.

4. Along with either (1), (2), or (3), compute gain (normally a loss) from Teton River near St. Anthony and North Fork at Teton to the South Fork at Rexburg.

Option 1 would be quite simple to implement as it would require only minor programming changes. At times of lesser water supplies when return flows are diminished, this method may allocate too much natural flow to the Roxanna and/or Saurey canals.

Option 2 would require that Fremont-Madison report daily the flow from staff gage readings at the near Mouth site, and that the at Teton flow data be retrieved from the HYDROMET system. Frequent discharge readings at the near Mouth site would be required to update the existing rating curve which is based on limited data, and to obtain accurate shifts on a regular basis. Fremont-Madison has indicated that they would be willing to do this. This procedure would also assume a zero gain of the North Fork from the at Teton gage to below the Teton Island Feeder. The data show there to be little or no gain in this reach at low flows and a significant loss during higher flows. Any loss in this reach during low flow periods would cause gains in the lower reach to be underestimated by an equivalent amount.

Option 3 would be easy to implement with a small programming change. By adding a reach above the Roxanna diversion, that canal's natural flow supply would be more accurately represented. However, it may not merit the addition of a reach for one small canal.

Option 4 would require that data from both the at Teton gage on the North Fork and the at Rexburg gage on the South Fork be retrieved from HYDROMET. This would allow computation of the gain between the Teton River near St. Anthony and these two gages. Because this is normally a losing reach, including the gain in the natural flow computation would cause a reduction in the natural flow supply for all rights in the lower Teton. During the summer months when the magnitude of natural flows are most important on the Teton, this loss is consistently near 100 cfs. The loss does not appear to be dependant on variations in flow throughout the range of flows experienced during this period.

Please review the attached draft, make comments/suggestions, and return them to me. It would be nice, if we are going to make any of the proposed changes, to do so before we final the 1991 accounting.

BS:cjk
Attachment

MEMORANDUM

DATE: December 10, 1991

TO: Norm

FROM: Ron

RE: Water District 01 Improvements

In August you wrote a memo which asked that the hydrology staff and I identify ways of improving timeliness in the Water District accounting. You asked that we also identify how long implementation will take, the cost and the expected improvement in timeliness. The following five "Proposed Improvements" have been identified as actions that will have possible benefits in timeliness.

Proposed Improvement 1. - AUTOMATED INFORMATION ACCESS

Justification: Because of the size of Water District 1 and the number of people it impacts, it is difficult for the watermaster to get daily data related to storage and priority cuts out to all potentially interested parties every day. A system that allows people desiring information to be able to access these data at any time by telephone would not only make current data more accessible it would reduce the personnel requirements associated with handling requests for information.

Action: Install DEC-TALK hardware on the VAX and a WATTS line for accessing DEC-TALK information.

Estimated Cost: No out-of-pocket costs for DEC-TALK but personnel costs for programming and installation were estimated at about $5000 and the WATTS line will cost about $150 per month, depending upon usage.

Implementation time: This project was initiated in 1989 and was completed for use during the 1991 irrigation season. An upgrade to DECvoice would greatly improve the clarity of the speach. This upgrade would cost in excess of $10,000.

Benefits: This system provides anyone immediate access to specific information from the most recent water right accounting run. During 1991 the system received about 1000 inquiries. This represents a substantial savings in personnel time that now can be devoted to more productive work areas.

Estimated Time Savings: We estimate that the time saved by water district staff will equate to about one week in getting the final accounting completed for

1991. However, the benefits in the perception of timeliness on the part of users is immeasurable. Additional useage is likely if DEC-TALK were upgraded to a higer quality digitized voice system.

Proposed Improvement 2. REVIEW & DIGITIZE CHARTS

Justification: For many years recorder charts have been sent to the state office at the end of the year to be digitized. It has taken a substantial amount of time for this process to be complete and then the digitized data had to be further reviewed, corrected and merged with the database. If these charts were to be reviewed immediately at the end of each week the need for year-end digitizing could be eliminated.

Action: Have someone from the watermaster's staff review each recorder chart as it is brought in and make the appropriate data corrections at that time.

Estimated cost: If the digitization, and entry of data is done by hand in the watermaster's office there would be no additional costs. A digitizer, for the water district and required software however, would cost between $2500 and $5000.

Implementation time: Accomplishing this improvement without a digitizer was dependent upon having sufficient trained staff to be able to review data as it comes in and to make necessary corrections in the data base. This was done in 1991 and all canal data have been review and corrected in the data base by Dec. 1, 1991.

Estimated time savings: We anticipate that this change will result in shortening the time to the final accounting by about two weeks.

Proposed Improvement 3. COLLECT REAL-TIME PUMP DATA

Justification: During the past 14 years one of the most time consuming data preparation activities has been the preparation and entry of pump diversion data. By having these data available in a better form, ie. a form requiring fewer hand calculations at the end of the year, the final diversion data could be completed in about thirty (30) days less time than in past years. However, the collection of daily pump data has proven extremely difficult. The man-power requirements simply can not be justified. We have spent over $70,000 on investigations through the University of Idaho in an effort to establish an automated system for collecting time-tagged pump data. The results of this work has been unsatisfactory. There may be a way to use power data as an indicator of diversion rate. This, unfortunately does not provide the daily time-tagged data we need. However, some improvement can be made in reconstructing the pumping period by having monthly

power use figures.

Action: Nearly two years ago a study was initiated through the University of Idaho to evaluate the possibility of using power use data to measure diversion rate. Assuming the study determines that power use can be related to diversion rate, we will then need to get power records from the appropriate power companies through a direct data transfer. The next step then would be to evaluate methods of breaking down these data into daily diversion records. Ultimately we would like to acquire daily power use records.

Estimated Cost: The university study is costing about $21,000. The cost of collecting monthly power data will be primarily be personnel and travel costs. It is unlikely that the additional costs for these activities will exceed $1000 for the season

Implementation time: While working on more streamlined methods for getting pump diversion data improvements can be made by collecting power meter readings each month and encourage operators to keep better pumping records on the "pump cards" they are asked to keep and return to this office. If the U of I studies indicate that power data can reasonably be used as a measurement of diversion rate then negotiations need to continue with the power companies to acquire their power records. Our previous efforts to acquire power records from the utilities have proven unsuccessful. During the 1991 irrigation season power meter readings were taken by water district personnel monthly. The U of I is proceeding with the evaluation of available pump discharge vs. power data. We anticipate a report by mid-summer of 1992.

Estimated Time Savings: If it is possible to ever get time-tagged pump data the time savings are estimated to be about one man-month. We anticipate that the increased data collection efforts during 1991 will reduce the time to the final accounting run by about one week.

Proposed Improvement 4. DAILY DATA ENTRY & REVIEW

Justification: It is critical to the water district operation that current data are correctly entered each day. While much of the data is obtained directly from the HYDROMET system there is still a significant amount of data that have to be hand entered. In addition, even the HYDROMET data need to be reviewed each day. In addition, the reach gains program should be run daily to help identify data errors. In addition this person would have the responsibility of compiling the information for the annual watermaster's report.

Action: The review of all of the daily data and the reach gains analysis would require an additional professional staff person. This person could also be put

in charge of the preparation of the annual reports. However, a more limited daily review is already done. All data have been entered daily and accounting runs made three times a week since 1989.

Estimated Cost: An additional staff person can be expected to cost about $45,000 per year excluding the additional office space that may have to be acquired.

Implementation Time: Additional staff would be a decision that needs to be made by the water users. The implementation of the existing procedures has already been completed.

Estimated Time Savings: While an additional person to review data may improve the daily accounting data, the overall improvement in timeliness for completing the final accounting has been estimated at about three weeks. However, this individual probably would be able to take a year off of the time required to get annual reports through 1992 completed.

Proposed Improvement: 5 - USGS DATA ACQUISITION

Justification: The river and reservoir data required by Water District 1 are collected by the USGS. Data review takes time but there do appear to be actions the USGS could take to improve the quality and timeliness of data they provide to the water district. The USGS is geared toward publishing data, not providing data for real-time use. Consequently much of the data provided by the USGS has to be extensively corrected. Reservoir data are rounded to the point that it affects the computation of daily gains. We have to remove these rounding errors by hand. In addition the contents for Palisades has to be reduced by 201,000 AF before we can hand enter and proofread these data. Delays in getting these data and error corrections we have to make delay the completion of final water district data by about thirty (30) days each year.

Action: Keep working on the USGS to provide the data the water district has contracted for them to provide.

Estimated Cost: There should be no additional costs. If we got the data in the final form transferred directly to our data base there would be a net cost savings. It would likely represent the equivalent of one-quarter man-year in time savings.

Estimated Time Savings: By having final data down-loaded to the VAX directly from the USGS in final form we would be in a position of having our final accounting data within one week of receiving these data.

MEMORANDUM

DATE: December 10, 1991

TO: Norm /

FROM: Ron RDC

RE: Water District 01 Improvements

In August you wrote a memo which asked that the hydrology staff and I identify ways of improving timeliness in the Water District accounting. You asked that we also identify how long implementation will take, the cost and the expected improvement in timeliness. The following five "Proposed Improvements" have been identified as actions that will have possible benefits in timeliness.

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Implementation time: This project was initiated in 1989 and was completed for use during the 1991 irrigation season. An upgrade to DECvoice would greatly improve the clarity of the speach. This upgrade would cost in excess of $10,000.

Benefits: This system provides anyone immediate access to specific information from the most recent water right accounting run. During 1991 the system received about 1000 inquiries. This represents a substantial savings in personnel time that now can be devoted to more productive work areas.

Estimated Time Savings: We estimate that the time saved by water district staff will equate to about one week in getting the final accounting completed for

1991. However, the benefits in the perception of timeliness on the part of users is immeasurable. Additional useage is likely if DEC-TALK were upgraded to a higer quality digitized voice system.

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Implementation time: Accomplishing this improvement without a digitizer was dependent upon having sufficient trained staff to be able to review data as it comes in and to make necessary corrections in the data base. This was done in 1991 and all canal data have been review and corrected in the data base by Dec. 1, 1991.

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power use figures.

Action: Nearly two years ago a study was initiated through the University of Idaho to evaluate the possibility of using power use data to measure diversion rate. Assuming the study determines that power use can be related to diversion rate, we will then need to get power records from the appropriate power companies through a direct data transfer. The next step then would be to evaluate methods of breaking down these data into daily diversion records. Ultimately we would like to acquire daily power use records.

Estimated Cost: The university study is costing about $21,000. The cost of collecting monthly power data will be primarily be personnel and travel costs. It is unlikely that the additional costs for these activities will exceed $1000 for the season

Implementation time: While working on more streamlined methods for getting pump diversion data improvements can be made by collecting power meter readings each month and encourage operators to keep better pumping records on the "pump cards" they are asked to keep and return to this office. If the U of I studies indicate that power data can reasonably be used as a measurement of diversion rate then negotiations need to continue with the power companies to acquire their power records. Our previous efforts to acquire power records from the utilities have proven unsuccessful. During the 1991 irrigation season power meter readings were taken by water district personnel monthly. The U of I is proceeding with the evaluation of available pump discharge vs. power data. We anticipate a report by mid-summer of 1992.

Estimated Time Savings: If it is possible to ever get time-tagged pump data the time savings are estimated to be about one man-month. We anticipate that the increased data collection efforts during 1991 will reduce the time to the final accounting run by about one week.

Proposed Improvement 4. DAILY DATA ENTRY & REVIEW

Justification: It is critical to the water district operation that current data are correctly entered each day. While much of the data is obtained directly from the HYDROMET system there is still a significant amount of data that have to be hand entered. In addition, even the HYDROMET data need to be reviewed each day. In addition, the reach gains program should be run daily to help identify data errors. In addition this person would have the responsibility of compiling the information for the annual watermaster's report.

Action: The review of all of the daily data and the reach gains analysis would require an additional professional staff person. This person could also be put

in charge of the preparation of the annual reports. However, a more limited daily review is already done. All data have been entered daily and accounting runs made three times a week since 1989.

Estimated Cost: An additional staff person can be expected to cost about $45,000 per year excluding the additional office space that may have to be acquired.

Implementation Time: Additional staff would be a decision that needs to be made by the water users. The implementation of the existing procedures has already been completed.

Estimated Time Savings: While an additional person to review data may improve the daily accounting data, the overall improvement in timeliness for completing the final accounting has been estimated at about three weeks. However, this individual probably would be able to take a year off of the time required to get annual reports through 1992 completed.

Proposed Improvement: 5 - USGS DATA ACQUISITION

Justification: The river and reservoir data required by Water District 1 are collected by the USGS. Data review takes time but there do appear to be actions the USGS could take to improve the quality and timeliness of data they provide to the water district. The USGS is geared toward publishing data, not providing data for real-time use. Consequently much of the data provided by the USGS has to be extensively corrected. Reservoir data are rounded to the point that it affects the computation of daily gains. We have to remove these rounding errors by hand. In addition the contents for Palisades has to be reduced by 201,000 AF before we can hand enter and proofread these data. Delays in getting these data and error corrections we have to make delay the completion of final water district data by about thirty (30) days each year.

Action: Keep working on the USGS to provide the data the water district has contracted for them to provide.

Estimated Cost: There should be no additional costs. If we got the data in the final form transferred directly to our data base there would be a net cost savings. It would likely represent the equivalent of one-quarter man-year in time savings.

Estimated Time Savings: By having final data down-loaded to the VAX directly from the USGS in final form we would be in a position of having our final accounting data within one week of receiving these data.

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 4

To Bohs	From Ron C
Co.	Co.
Dept.	Phone #
Fax #	Fax #

MEMORANDUM

DATE: December 10, 1991

TO: Norm

FROM: Ron

RE: Water District 01 Improvements

In August you wrote a memo which asked that the hydrology staff and I identify ways of improving timeliness in the Water District accounting. You asked that we also identify how long implementation will take, the cost and the expected improvement in timeliness. The following five "Proposed Improvements" have been identified as actions that will have possible benefits in timeliness.

Proposed Improvement 1. - AUTOMATED INFORMATION ACCESS

Justification: Because of the size of Water District 1 and the number of people it impacts, it is difficult for the watermaster to get daily data related to storage and priority cuts out to all potentially interested parties every day. A system that allows people desiring information to be able to access these data at any time by telephone would not only make current data more accessible it would reduce the personnel requirements associated with handling requests for information.

Action: Install DEC-TALK hardware on the VAX and a WATTS line for [illegible] information.

Estimated [illegible] out-of-pocket costs [illegible] DEC-TALK [illegible] programming and installation [illegible] the WATTS line will [illegible] usage.

[illegible]

Improvements [illegible]

1991. However, the benefits in the perception of timeliness on the part of users is immeasurable. Additional useage is likely if DEC-TALK were upgraded to a higer quality digitized voice system.

Proposed Improvement 2. REVIEW & DIGITIZE CHARTS

Justification: For many years recorder charts have been sent to the state office at the end of the year to be digitized. It has taken a substantial amount of time for this process to be complete and then the digitized data had to be further reviewed, corrected and merged with the database. If these charts were to be reviewed immediately at the end of each week the need for year-end digitizing could be eliminated.

Action: Have someone from the watermaster's staff review each recorder chart as it is brought in and make the appropriate data corrections at that time.

Estimated cost: If the digitization, and entry of data is done by hand in the watermaster's office there would be no additional costs. A digitizer, for the water district and required software however, would cost between $2500 and $5000.

Implementation time: Accomplishing this improvement without a digitizer was dependent upon having sufficient trained staff to be able to review data as it comes in and to make necessary corrections in the data base. This was done in 1991 and all canal data have been review and corrected in the data base by Dec. 1, 1991.

Estimated time savings: We anticipate that this change will result in shortening the time to the final accounting by about two weeks.

Proposed Improvement 3. COLLECT REAL-TIME PUMP DATA

Justification: During the past 14 years one of the most time consuming data preparation activities has been the preparation and entry of pump diversion data. By having these data available in a better form, i.e. a form requiring fewer hand calculations at the end of the year, the final diversion data could be completed in about thirty (30) days less time than in past years. However, the [illegible] pump data is [illegible] extremely [illegible] can not be [illegible] investigate [illegible] effort [illegible] time lapse [illegible] been unsatisfactory. These may be a way to use power data as an [illegible] unfortunately does not provide the daily time-tagged data we need [illegible] reconstructing the [illegible]

power use figures.

Action: Nearly two years ago a study was initiated through the University of Idaho to evaluate the possibility of using power use data to measure diversion rate. Assuming the study determines that power use can be related to diversion rate, we will then need to get power records from the appropriate power companies through a direct data transfer. The next step then would be to evaluate methods of breaking down these data into daily diversion records. Ultimately we would like to acquire daily power use records.

Estimated Cost: The university study is costing about $21,000. The cost of collecting monthly power data will be primarily be personnel and travel costs. It is unlikely that the additional costs for these activities will exceed $1000 for the season

Implementation time: While working on more streamlined methods for getting pump diversion data improvements can be made by collecting power meter readings each month and encourage operators to keep better pumping records on the "pump cards" they are asked to keep and return to this office. If the U of I studies indicate that power data can reasonably be used as a measurement of diversion rate then negotiations need to continue with the power companies to acquire their power records. Our previous efforts to acquire power records from the utilities have proven unsuccessful. During the 1991 irrigation season power meter readings were taken by water district personnel monthly. The U of I is proceeding with the evaluation of available pump discharge vs. power data. We anticipate a report by mid-summer of 1992.

Estimated Time Savings: If it is possible to ever get time-tagged pump data the time savings are estimated to be about one man-month. We anticipate that the increased data collection efforts during 1991 will reduce the time to the final accounting run by about one week.

Proposed Improvement 4. DAILY DATA ENTRY & REVIEW

Justification: It is critical to the water district operation that current data are correctly entered each day. While much of the data is obtained directly from the HYDROMET system there is still a significant amount of data that have to be hand entered. In addition, even the HYDROMET data need to be reviewed each day. In addition, the reach gains program should be run daily to help identify data errors. In addition this person would have the responsibility of compiling the information for the annual watermaster's report.

Action: The review of all of the daily data and the reach gains analysis would require an additional professional staff person. This person could also be put

in charge of the preparation of the annual reports. However, a more limited daily review is already done. All data have been entered daily and accounting runs made three times a week since 1989.

Estimated Cost: An additional staff person can be expected to cost about $45,000 per year excluding the additional office space that may have to be acquired.

Implementation Time: Additional staff would be a decision that needs to be made by the water users. The implementation of the existing procedures has already been completed.

Estimated Time Savings: While an additional person to review data may improve the daily accounting data, the overall improvement in timeliness for completing the final accounting has been estimated at about three weeks. However, this individual probably would be able to take a year off of the time required to get annual reports through 1992 completed.

Proposed Improvement: 5 - USGS DATA ACQUISITION

Justification: The river and reservoir data required by Water District 1 are collected by the USGS. Data review takes time but there do appear to be actions the USGS could take to improve the quality and timeliness of data they provide to the water district. The USGS is geared toward publishing data, not providing data for real-time use. Consequently much of the data provided by the USGS has to be extensively corrected. Reservoir data are rounded to the point that it affects the computation of daily gains. We have to remove these rounding errors by hand. In addition the contents for Palisades has to be reduced by 201,000 AF before we can hand enter and proofread these data. Delays in getting these data and error corrections we have to make delay the completion of final water district data by about thirty (30) days each year.

Action: Keep working on the USGS to provide the data the water district has contracted for them to provide.

Estimated Cost: There should be no additional costs. If we got the data in the final form transferred directly to our data base there would be a net cost savings. It would likely represent the equivalent of one-quarter man-year of time savings.

Estimated Time Savings: By having final data down-loaded to the VAX directly from the USGS in final form we would be in a position of having our final accounting data within one week of receiving these data.

327-7866

State of Idaho
Water District 1
150 Shoup Ave., Suite 15
Idaho Falls, Idaho 83402

RONALD CARLSON
WATERMASTER
(208) 525-7172

October 21,1991

Gary Spackman
Department of Water Resources
1301 N Orchard
Boise ID 83706-2237

Dear Gary:

This letter is an overview of the delivery of water to the pumps on the Teton River.

Prior to the failure of the Teton Dam, several irrigation projects along the Teton River were started adjacent to the Teton Reservoir in anticipation of receiving storage from the reservoir. With the failure of the Teton Dam, the people involved in these projects started looking for ways to salvage their investment in these systems. The solution they proposed was a combination of transfers of natural flow rights and the replacement of water diverted with "exchange wells" downstream. The applications for several exchange wells were filed and approved by the Department of Water Resources. Efforts were also made to acquire stored water from Island Park to be exchanged through the Crosscut Canal. The Water District 1 accounting system accounts for these exchanges along with the water rights allocated and storage used. The water district uses the following sequence of water delivery during a "normal" year:

1) During high water runoff the late priority water rights are being filled with the water that is excess to the water needed to fill the reservoirs.

2) Next, water users are charged with storage use as the diversions exceed the natural flow available.

3) When natural flow is cut in order of priority on the Teton River and the need for storage water increases, the Crosscut Canal diversion is increased to meet the storage needs on the upper and lower Teton River. It provides storage water

both directly to the users on the Teton River below where it dumps in, and by exchange to the storage users above the confluence of the Crosscut Canal End and the Teton River.

4) After the Crosscut Canal reaches its capacity and is unable to satisfy the down stream irrigators, Fremont-Madison either notifies the pumpers directly to turn on their exchange pumps or informs the Water District #1 deputies, Gail Blanchard or Val Richards, to tell the exchange pumpers to turn on their exchange pumps or shut off their diversions.

5) The rate of diversion and the rate of recharge pumping should match for the rest of the irrigation season or until the downstream demand decreases to a level where the Crosscut can supply the necessary demand.

The total storage diverted is, of course, limited to the amount of exchange pumping plus the storage owned and rented. The amount of exchange pumping has varied greatly from year-to-year depending primarily on the water supply and storage water available for rental from Fremont-Madison. The driest years have seen the most exchange well pumping.

In the past, there have been problems in coordination of the exchange wells to be on at exactly the same time as the diversion pumps. One of the more prominent times was when the exchange wells were connected to the Utah Power & Light system and were on interruptable power at the same time that Fall River Rural Electric was providing power to the upstream pumps. It was probably inevitable that the recharge pumps were tripped off during a peak power demand period and the upstream diversions remained on.

During the irrigation season the diversions, exchange pumps, and their totalizing flow meters are read routinely. These readings have been taken daily during the irrigation season for 1990 & 1991 due to concern by some water users on the Teton that the diversion rates and the exchange pumping did not match.

If I can be of additional assistance, please let me know.

Sincerely,

LYLE SWANK, P.E.
Assistant Watermaster

LS:cw

State of Idaho
Water District 1
RONALD CARLSON
WATERMASTER
(208) 525-7172
150 Shoup Ave., Suite 15
Idaho Falls, Idaho 83402

MEMORANDUM

TO: Harold Jones, Water Resources Manager, Department of Water Resources

FROM: Tony Olenichak, Hydrologist, Water District #1

DATE: October 24, 1991

RE: Teton River data requested by Department of Fish & Game

The Idaho Fish & Game correspondence dated, 9/19/91, requested information on four items concerning the use and accounting of water diversions on the mainstem of the Teton River from Highway 33 downstream to the Crosscut Canal. I will attempt to answer three of the four items.

Item 4 was a request for a list of all pump locations and associated water rights from Highway 33 downstream to the Crosscut Canal. The following is a list of pumps used during the 1990 and 1991 irrigation seasons:

NAME	Twp.	Rge.	Sec.	1/4 1/4
South Pipe	6N	44E	15	SESE
J. Ricks	6N	44E	15	NENW
Boelke	6N	44E	10	SENW
Clementsville	6N	44E	3	NWSE
Hibbert Farms	6N	44E	3	NWNE
R & J Brown	7N	44E	29	NWNE
B. Parkinson	7N	42E	23	NESE
V. Schwendiman	7N	42E	23	NESE
R. Ricks	7N	42E	21	SWNW
Canyon Ck Lateral	7N	42E	30	SWNE

The following list of pumps have existed on the Water District records in the past but have been removed, or there isn't any recorded use in at least the last five years:

NAME	Twp.	Rge.	Sec.	1/4 1/4
Keith Arnold #1	7N	44E	33	SENW
M. Parkinson	7N	43E	11	NESW
Keith Arnold #2	7N	43E	16	NWSE
Siddoway Sheep Co.	7N	41E	14	SESW

Natural flow applications (A), permits (P), licenses (L), and decreed (D) water rights for the irrigation pumps are as follows:

NAME	Water Right No.	Priority Date	CFS	STAGE
South Pipe	22-07044B	Mar 26, 1971	1.36	L
	22-07100	Aug 07, 1974	6.98	L
	22-07116	Dec 03, 1974	10.00	P
	22-07120	Jan 14, 1975	5.00	P
	22-07159	Aug 18, 1975	1.90	L
	22-07180	Apr 01, 1976	9.56	P
J. Ricks	22-07470	Jul 21, 1983	3.00	P
Boelke	22-07044A	Mar 26, 1971	2.65	L
	22-07110	Oct 15, 1974	5.12	L
	22-07181	Apr 01, 1976	0.59	P
	22-07392	Mar 22, 1982	8.00	P
Clementsvil	22-00204C	Jun 10, 1883	6.50	D
	22-00435B	Jun 15, 1889	0.54	D
	22-00222B	Apr 01, 1890	0.54	D
	22-00245B	Apr 01, 1890	0.70	D
	22-00221B	Sep 01, 1890	0.70	D
	22-00145B	Jan 22, 1916	10.54	D
	22-07108	Oct 11, 1974	9.00	P
	22-07111	Nov 12, 1974	10.00	P
	22-07119	Dec 10, 1974	6.00	P
	22-07122	Dec 31, 1974	12.00	P
	22-07121	Jan 04, 1975	8.00	P
	22-07148	Jul 23, 1975	7.00	P
	22-07157	Aug 16, 1975	4.50	P
	22-07186	Apr 27, 1976	11.16	P
	22-07505	Jul 01, 1985	6.40	A
	22-07667	Apr 23, 1990	5.50	A
	22-07673	Apr 23, 1990	5.00	A
Hibbert Farm	22-07349	Mar 12, 1981	5.00	P
R & J Brown	22-07196	Sep 23, 1976	1.00	L
B. Parkinson	22-00838B	Jun 01, 1884	0.84	D
	22-00046B	Jun 01, 1889	0.67	D
	22-00537B	Apr 01, 1898	1.59	D
	22-00047B	Apr 01, 1939	0.05	D
	22-07270	Mar 02, 1978	18.00	P
Schwendiman	22-07271	Mar 02, 1978	18.00	P

Natural flow rights continued...

NAME	Water Right No.	Priority Date	CFS	STAGE
R. Ricks	22-07286	Jan 29, 1979	5.60	P
Canyon Ck L	22-00163	Apr 01, 1896	4.00	D
	22-07276	Apr 10, 1978	24.00	P
	22-07490	Apr 10, 1985	5.30	A

The groundwater exchange licenses, permits, and applications are as follows:

NAME	Water Right No.	Priority Date	CFS	STAGE
South Pipe	22-07235	Jun 07, 1977	6.00	P
J. Ricks	22-07188	Jul 06, 1976	7.00	P
Boelke	22-07375	Aug 17, 1981	11.87	P
Clementsvil	22-07216	Mar 04, 1977	4.00	P
	22-07504	Jul 01, 1985	6.40	A
	22-07221	Apr 14, 1989	3.44	P
R & J Brown	22-07256	Aug 31, 1977	13.40	L
B Parkinson	22-07205	Jan 18, 1977	11.00	P
	22-07265	Nov 16, 1977	4.50	P
	22-07314	Jan 15, 1980	9.00	P
	22-07701	Mar 19, 1991	9.00	A
	22-07702	Mar 19, 1991	9.00	A
Schwendiman	22-07210	Feb 15, 1977	15.50	P
	22-07313	Jan 15, 1980	9.00	P
R. Ricks	22-07247	Jun 10, 1977	5.60	P
Canyon Cr La	22-07253	Jul 29, 1977	14.00	P
	22-07508	Jun 26, 1985	14.00	P

In addition to the previously listed natural flow rights and groundwater exchange rights, the pumpers may also obtain available storage water from Fremont-Madison Irrigation District or the Snake River Water Bank exchanged through the Crossout Canal.

Item 3 in the Fish & Game correspondence requests an explanation of how the accounting is done for water diversions requiring water storage transfers or groundwater exchange.

If the listed pumps do not have natural flow rights, or their pumping rates exceed their rights on a given day, the excess water they divert must be replaced at the end of the Crosscut Canal or through groundwater exchange wells. During the 1990 and the 1991 irrigation season the totalizing flow meters for each of the pumps were read at least twice each week during the summer months, sometimes three times per week, or daily. The gage at the end of the Crosscut Canal records continuously and transmits the data via satellite to the Water District.

All diversion data and flow data for each day is entered into the Water District computer data base. The computer water-right accounting program is routinely run each Monday, Wednesday, and Friday during the irrigation season. The accounting program determines the natural flow priority dates for each stream reach, amounts diverted, and amount of storage diverted by each user on a daily basis.

In practice, when natural flow is out in order of priority on the Teton River and the need for storage water increases, the Crosscut Canal diversion is increased to meet the storage needs. It provides storage water both directly to the users on the Teton River below where it dumps in, and by exchange to the storage users above the canal. After the Crosscut Canal reaches its capacity and is unable to satisfy the downstream irrigators, Fremont-Madison Irrigation District or the Water District #1 Deputies notify the pumpers to turn on their exchange pumps. If the exchange pumps are unable to provide the amounts being diverted for irrigation, the pumpers are notified to shut down.

As requested in Item 2 of the Fish & Game correspondence, I have attached the daily record of flow rates diverted by the B. Parkinson and V. Schwendiman pumps for the 1990 and 1991 irrigation seasons. Note: The data for the 1991 irrigation season is preliminary and has not yet been checked for data entry and gaging errors.

13054420 B. PARKINSON (EAST & WEST)
DISCHARGE, CUBIC FEET PER SECOND, IRRIGATION YEAR NOVEMBER 1989 TO OCTOBER 1990
MEAN VALUES

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	---	---	---	---	---	---	0.0	0.0	23	8.1	0.0	0.0
2	---	---	---	---	---	---	0.0	0.0	23	8.1	0.0	0.0
3	---	---	---	---	---	---	0.0	0.0	22	10	0.0	0.0
4	---	---	---	---	---	---	0.0	0.0	22	10	0.0	0.0
5	---	---	---	---	---	---	0.0	18	24	10	0.0	0.0
6	---	---	---	---	---	---	0.0	18	24	10	0.0	0.0
7	---	---	---	---	---	---	0.0	18	24	10	0.0	0.0
8	---	---	---	---	---	---	0.0	18	24	10	0.0	0.0
9	---	---	---	---	---	---	0.0	18	23	5.3	0.0	0.0
10	---	---	---	---	---	---	0.0	18	23	5.3	0.0	0.0
11	---	---	---	---	---	---	0.0	18	23	6.4	0.0	0.0
12	---	---	---	---	---	---	0.0	18	23	6.4	0.0	0.0
13	---	---	---	---	---	---	0.0	18	23	6.4	2.7	0.0
14	---	---	---	---	---	---	0.0	18	23	6.4	2.7	0.0
15	---	---	---	---	---	---	0.0	18	23	6.4	2.7	0.0
16	---	---	---	---	---	---	0.0	0.0	23	3.8	2.6	0.0
17	---	---	---	---	---	---	0.0	0.0	23	3.8	2.6	0.0
18	---	---	---	---	---	---	0.0	0.0	23	3.8	2.6	0.0
19	---	---	---	---	---	---	0.0	0.0	17	0.0	2.6	0.0
20	---	---	---	---	---	---	0.0	18	17	0.0	0.0	0.0
21	---	---	---	---	---	---	0.0	18	17	0.0	0.0	0.0
22	---	---	---	---	---	---	0.0	18	17	0.0	0.0	0.0
23	---	---	---	---	---	---	0.0	18	17	0.0	0.0	0.0
24	---	---	---	---	---	---	0.0	18	17	0.0	0.0	0.0
25	---	---	---	---	---	---	0.0	15	8.1	0.0	0.0	0.0
26	---	---	---	---	---	---	0.0	25	8.1	0.0	0.0	0.0
27	---	---	---	---	---	---	0.0	16	8.1	0.0	0.0	0.0
28	---	---	---	---	---	---	0.0	30	8.1	2.5	0.0	0.0
29	---	---	---	---	---	---	0.0	23	8.1	2.5	0.0	0.0
30	---	---	---	---	---	---	0.0	23	8.1	2.5	0.0	0.0
31	---	---	---	---	---	---	0.0	---	8.1	2.5	---	0.0
TOTAL							0.0	416	578	142	19	0.0
MEAN							0.0	14	19	4.6	0.6	0.0
MAX							0.0	30	24	10	2.7	0.0
MIN							0.0	0.0	8.1	0.0	0.0	0.0
AC-FT							0	824	1146	281	37	0

IRRIGATION YEAR 1990 TOTAL 1154 MEAN 3 AC-FT 2288

13056420 B. PARKINSON (EAST & WEST)
DISCHARGE, CUBIC FEET PER SECOND, IRRIGATION YEAR NOVEMBER 1990 TO OCTOBER 1991
MEAN VALUES

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	---	---	---	---	---	---	0.0	0.0	21	12	4.2	0.0
2	---	---	---	---	---	---	0.0	0.0	21	12	4.2	0.0
3	---	---	---	---	---	---	0.0	0.0	21	12	0.0	0.0
4	---	---	---	---	---	---	0.0	0.0	21	12	0.0	0.0
5	---	---	---	---	---	---	0.0	0.0	21	12	4.9	0.0
6	---	---	---	---	---	---	0.0	0.0	22	0.0	4.9	0.0
7	---	---	---	---	---	---	0.0	0.0	22	0.0	0.0	0.0
8	---	---	---	---	---	---	0.0	0.0	22	0.0	0.0	0.0
9	---	---	---	---	---	---	0.0	0.0	21	0.0	0.0	0.0
10	---	---	---	---	---	---	0.0	0.0	23	0.0	0.0	0.0
11	---	---	---	---	---	---	0.0	0.0	23	0.0	0.0	0.0
12	---	---	---	---	---	---	0.0	0.0	23	0.0	1.1	0.0
13	---	---	---	---	---	---	0.0	17	24	11	1.1	0.0
14	---	---	---	---	---	---	0.0	17	24	11	0.0	0.0
15	---	---	---	---	---	---	0.0	17	24	9.3	0.0	0.0
16	---	---	---	---	---	---	0.0	17	22	9.3	0.0	0.0
17	---	---	---	---	---	---	0.0	16	22	7.0	4.8	0.0
18	---	---	---	---	---	---	0.0	16	22	7.0	4.8	0.0
19	---	---	---	---	---	---	0.0	16	22	7.0	11	0.0
20	---	---	---	---	---	---	0.0	16	22	2.4	11	0.0
21	---	---	---	---	---	---	0.0	16	25	2.4	8.3	0.0
22	---	---	---	---	---	---	0.0	17	25	3.0	8.3	0.0
23	---	---	---	---	---	---	0.0	15	21	3.0	8.3	0.0
24	---	---	---	---	---	---	0.0	15	21	0.0	3.2	0.0
25	---	---	---	---	---	---	0.0	16	20	0.0	3.2	0.0
26	---	---	---	---	---	---	0.0	16	19	0.0	0.0	0.0
27	---	---	---	---	---	---	0.0	0.0	19	6.8	0.0	0.0
28	---	---	---	---	---	---	0.0	21	12	6.8	0.0	0.0
29	---	---	---	---	---	---	0.0	21	12	4.8	0.0	0.0
30	---	---	---	---	---	---	0.0	21	12	4.8	0.0	0.0
31	---	---	---	---	---	---	0.0	---	12	4.2	---	0.0
TOTAL							0.0	291	640	159	82	0.0
MEAN							0.0	9.7	21	5.1	2.7	0.0
MAX							0.0	21	25	12	11	0.0
MIN							0.0	0.0	12	0.0	0.0	0.0
AC-FT							0	577	1270	315	163	0

IRRIGATION YEAR 1991 TOTAL 1172 MEAN 3 AC-FT 2325

13054705 V SCHWENDIMAN
DISCHARGE, CUBIC FEET PER SECOND, IRRIGATION YEAR NOVEMBER 1989 TO OCTOBER 1990
MEAN VALUES

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	---	---	---	---	---	---	0.0	0.0	24	19	10	6.0
2	---	---	---	---	---	---	0.0	0.0	24	19	10	6.0
3	---	---	---	---	---	---	0.0	0.0	24	19	10	6.0
4	---	---	---	---	---	---	0.0	0.0	24	19	10	6.0
5	---	---	---	---	---	---	0.0	0.0	24	19	2.0	6.0
6	---	---	---	---	---	---	0.0	0.0	24	18	2.0	4.5
7	---	---	---	---	---	---	0.0	0.0	24	18	2.0	4.5
8	---	---	---	---	---	---	0.0	0.0	26	18	2.0	4.5
9	---	---	---	---	---	---	0.0	0.0	26	18	0.0	4.5
10	---	---	---	---	---	---	0.0	1.5	26	18	0.0	4.0
11	---	---	---	---	---	---	0.0	6.0	26	18	0.0	4.0
12	---	---	---	---	---	---	0.0	12	26	18	0.0	0.0
13	---	---	---	---	---	---	0.0	12	26	18	0.0	0.0
14	---	---	---	---	---	---	0.0	12	26	18	0.0	0.0
15	---	---	---	---	---	---	0.0	10	26	18	0.0	0.0
16	---	---	---	---	---	---	0.0	12	26	18	0.0	0.0
17	---	---	---	---	---	---	0.0	12	11	13	0.0	0.0
18	---	---	---	---	---	---	0.0	12	26	15	0.0	0.0
19	---	---	---	---	---	---	0.0	12	26	13	0.0	0.0
20	---	---	---	---	---	---	0.0	12	26	13	0.0	0.0
21	---	---	---	---	---	---	0.0	12	26	12	0.0	0.0
22	---	---	---	---	---	---	0.0	12	23	6.0	0.0	0.0
23	---	---	---	---	---	---	0.0	19	23	6.0	0.0	0.0
24	---	---	---	---	---	---	0.0	19	23	6.0	4.0	0.0
25	---	---	---	---	---	---	0.0	19	23	0.0	4.0	0.0
26	---	---	---	---	---	---	0.0	19	23	0.0	4.0	0.0
27	---	---	---	---	---	---	0.0	19	23	0.0	4.0	0.0
28	---	---	---	---	---	---	0.0	19	26	4.5	6.0	0.0
29	---	---	---	---	---	---	0.0	4.0	26	6.0	6.0	0.0
30	---	---	---	---	---	---	0.0	19	26	6.0	6.0	0.0
31	---	---	---	---	---	---	0.0	---	23	10	---	0.0
TOTAL							0.0	276	756	403	82	56
MEAN							0.0	9.2	24	13	2.7	1.8
MAX							0.0	19	26	19	10	6.0
MIN							0.0	0.0	11	0.0	0.0	0.0
AC-FT							0	548	1499	799	163	111

IRRIGATION YEAR 1990 TOTAL 1573 MEAN 4 AC-FT 3119

13054705 V. SCHWENDIMAN
DISCHARGE, CUBIC FEET PER SECOND, IRRIGATION YEAR NOVEMBER 1990 TO OCTOBER 1991
MEAN VALUES

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	0.0	---	---	---	---	---	0.0	0.0	28	33	17	0.0
2	0.0	---	---	---	---	---	0.0	0.0	23	33	17	0.0
3	0.0	---	---	---	---	---	0.0	0.0	24	22	5.5	0.0
4	0.0	---	---	---	---	---	0.0	0.0	23	22	5.5	0.0
5	0.0	---	---	---	---	---	0.0	0.0	25	22	5.7	0.0
6	0.0	---	---	---	---	---	0.0	0.0	25	20	5.7	0.0
7	---	---	---	---	---	---	0.0	0.0	25	9.8	12	0.0
8	---	---	---	---	---	---	0.0	0.0	25	10	12	0.0
9	---	---	---	---	---	---	0.0	0.0	26	9.8	12	0.0
10	---	---	---	---	---	---	0.0	0.0	26	9.8	0.0	0.0
11	---	---	---	---	---	---	0.0	0.0	33	9.8	0.0	0.0
12	---	---	---	---	---	---	0.0	0.0	33	9.8	0.0	0.0
13	---	---	---	---	---	---	0.0	0.0	33	11	0.0	0.0
14	---	---	---	---	---	---	0.0	0.0	33	11	0.0	0.0
15	---	---	---	---	---	---	0.0	26	33	10	0.0	0.0
16	---	---	---	---	---	---	0.0	26	29	10	0.0	0.0
17	---	---	---	---	---	---	0.0	26	29	17	0.0	0.0
18	---	---	---	---	---	---	0.0	28	29	17	0.0	0.0
19	---	---	---	---	---	---	0.0	28	29	17	0.0	0.0
20	---	---	---	---	---	---	0.0	29	28	5.5	0.0	0.0
21	---	---	---	---	---	---	0.0	29	28	5.5	0.0	0.0
22	---	---	---	---	---	---	0.0	29	28	5.7	0.0	0.0
23	---	---	---	---	---	---	0.0	29	36	5.7	0.0	0.0
24	---	---	---	---	---	---	0.0	29	35	5.3	0.0	0.0
25	---	---	---	---	---	---	0.0	28	35	5.3	0.0	0.0
26	---	---	---	---	---	---	0.0	28	35	5.3	0.0	0.0
27	---	---	---	---	---	---	0.0	29	35	5.0	0.0	0.0
28	---	---	---	---	---	---	0.0	0.0	35	5.0	18	0.0
29	---	---	---	---	---	---	0.0	28	35	5.0	18	0.0
30	---	---	---	---	---	---	0.0	28	33	5.0	18	0.0
31	---	---	---	---	---	---	0.0	---	33	17	---	0.0
TOTAL	0.0						0.0	416	923	379	145	0.0
MEAN	0.0						0.0	14	30	12	4.8	0.0
MAX	0.0						0.0	29	36	33	18	0.0
MIN	0.0						0.0	0.0	23	5.0	0.0	0.0
AC-FT	0						0	826	1831	752	287	0

IRRIGATION YEAR 1991 TOTAL 1863 MEAN 5 AC-FT 3695

IDAHO FISH & GAME
REGION 6
1515 Lincoln Road
Idaho Falls, ID 83401-2198
(208) 525-7290

September 19, 1991

Harold Jones
Water Rights Specialist
Idaho Department of Water Resources
150 Shoup Ave. Suite 15
Idaho Falls, ID 83402

RE: Teton River groundwater applications currently under protest.

Dear Skip:

The Idaho Department of Fish and Game is requesting the following information regarding diversions and the accounting practices for the Teton River. This information will be used in the protest hearings for the Arnold Farms, Parkinson and Swendemann pending water right applications. We believe this information will also be valuable to our departments in reviewing future water right applications on the Teton River.

Item 1. We request the number, size, and date of installation of all pumps currently in place at the Parkinson/Swendemann diversion (near Canyon Creek.)

Item 2. We request a record of the water withdrawal at the Parkinson/Swendemann pumping facility during 1990 and 1991. If this information is not available, we request your department obtain electrical-use records from Utah Power and Light Company for the same period.

Item 3. We request an explanation of how the accounting is done for water diversions which require either storage water transfers or groundwater replacement. How does Water Resources know how much water is being diverted from the Teton River via private pumps at any point in time? How is the storage or groundwater make-up called for?

Item 4. We request a summary of all the pump locations and associated water rights from Highway 33 downstream to the Crossout Canal.

Thank you for your earliest attention to these questions.

Sincerely,

F. Steven Elle /for

Herbert A. Pollard II
Regional Supervisor
Region 6

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000
Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

TO: Ron Carlson, Eastern Region Manager

FROM: Norm Young, Administrator NCY

RE: Water District 01 Accounting Methods

DATE: August 2, 1991

I continue to be extremely concerned about the present procedure used by Water District 01 whereby the flow data is adjusted after the end of the irrigation season. This method was adopted when the program was initiated in the 1970's to allow accurate accounting of all water supplies and uses. The accuracy provided by this procedure is important, but recent experience has shown that it comes with an unacceptable sacrifice of timeliness. Water users are hindered in planning for the upcoming year because the carryover storage is not known, they are not able to track with needed confidence their storage use as the season progresses, and some have received unexpected, large billings for previous years for water rentals they did not know they were making. Annual reports have not been finalized, printed and distributed as required by Section 42-614, Idaho Code.

In view of these concerns and in an effort to assure that the process created by the department for use in Water District 01 is and continues to be state-of-the-art, I am asking that you and the staff of the Hydrology Section evaluate the current watermaster accounting processes and associated procedures with the intent of identifying ways to make the accounting more of a real-time process. I am requesting that this evaluation be completed with a written report to me by December 1, 1991. I envision that the report will describe the various alternatives relative to the actions needed to implement, how long it will take to implement them, the cost, and the expected improvement in timeliness, along with any downsides to implementing the action. It should also include a schedule to bring up to date the preparation, printing and distribution of all annual reports now backlogged.

I recognize that it is unlikely that an accounting procedure could ever be implemented that is not subject to criticism by those being regulated and assessed. However, I believe it is important that we periodically assess the procedure and

reasonable alternatives. Obviously, I would like a procedure that provided "final" data on a real-time basis. I doubt that this is possible, but I think a reasonable goal is to have data considered final within a maximum of one month after it is collected. Some action to improve timeliness needs to be implemented this year to avoid a repetition of the billing problems experienced this spring.

It is not my intent to discard accuracy as a very important goal of the accounting procedure, but a livable balance must be established between accuracy and timeliness. Quality data needs to be made available in time to meet the needs of the water users, the USBR, and the Department.

cc: Keith Higginson
Wayne Haas
Alan Robertson

Bob 8,

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720-9000
Phone: (208) 327-7900 FAX: (208) 327-7866

CECIL D. ANDRUS
GOVERNOR

R. KEITH HIGGINSON
DIRECTOR

June 27, 1991

Mr. Jack Barnett
Barnett Engineering
106 West 500 South, Suite 101
Bountiful, UT 84010-6232

Dear Jack:

Ron Carlson forwarded to me a copy of your letter of June 14, 1991, concerning various aspects of the Upper Snake water accounting. I felt I could best address the issues which are technical in nature since I am responsible, in large part, for those. We do appreciate and value your input as very few others have taken the effort to understand the accounting in sufficient detail to be able to constructively critique what we have done. As for the issues that you bring up that border on policy or legal interpretation, I will leave those for others to discuss.

1) Unaccounted-For Storage, Milner Reservoir

We have always (since 1978) assigned the first unaccounted-for storage to Milner Reservoir, assuming that this is the logical thing to do since each year some water is stored there, without a right, that because of its location could not be physically stored elsewhere.

Concerning the 1990 accounting, the year began with 28,000 acre-feet of unaccounted-for storage. This is storage which existed in the system but cannot be assigned to any particular storage right for various reasons.

From November 1 through March 2, about 8,000 acre-feet of unaccounted-for storage was accumulated, all in the reach from Minidoka to Milner. Also in this same time period, stored water passing Milner was almost 19,000 acre-feet. The physical content of Milner Reservoir dropped about 8,000 acre-feet during this period. At first glance these numbers don't appear to make sense since none of the storage water passing Milner originated above Milner Reservoir (stored flow passing Minidoka is zero). How can we show 19,000 acre-feet of Milner storage released when the reservoir only dropped 8,000 acre-feet? Because the level of

Milner fluctuates from day to day, it may be storing one day and releasing the next. Over a few days time these cancel out, but the program accumulates each total separately. In any given week, the storage in Milner may not have changed but due to daily fluctuations, storage passing Milner and unaccounted-for storage totals probably have accumulated significant water.

Therefore, your conclusion that 19,000 acre-feet of unaccounted-for storage was "lost" down the river during this period could be more accurately stated as 11,000 acre-feet were lost. Concerning this 11,000 acre-feet, it would not have been possible to save this water by not drawing Milner Reservoir down. From March 3 to March 30, an additional 24,000 acre-feet of unaccounted-for storage was accumulated when the flow at Milner was reduced and Milner began to fill to 34,000 acre-feet reached on March 30. Had the operation of Milner been modified such that the 34,000 acre-feet were maintained to March 3, the 24,000 acre-feet and the 11,000 acre-feet would have spilled past Milner prior to March 30.

In summary, of the 60,000 acre-feet of unaccounted-for storage in 1990, 21,000 acre-feet was physically in Milner Reservoir at the beginning of the season (November 1), 11,000 acre-feet unavoidably passed Milner, 8,000 acre-feet was due to daily fluctuations in the reservoir and therefore were not "real", and 13,000 acre-feet was stored in Milner which would have spilled past Milner anyway, leaving 7,000 acre-feet for distribution. You can see that this 7,000 acre-feet was actually carried over from 1989 since we started with 28,000 unaccounted for and only 21,000 was actually stored in Milner.

With respect to the disposition of the unaccounted-for storage in Milner, none of that water is delivered to any canal or power company. Any canal or power company using storage is charged from their allocated water supply or having completely used their water, from the water bank. This water passing Milner may eventually produce power at some downstream location, but it is not specifically released for that purpose. It is definitely not a delivered water right.

Unaccounted-for storage ceased on March 30. Subsequent to this date, valid rights took all of the natural flow generated by the basin. No unaccounted-for storage can occur unless there is water excess to water rights which are being exercised. To do so would be completely contrary to Idaho water law.

I think that the reason Ron couldn't find any worksheets for the 1989 accounting distribution of the unaccounted-for storage

is that there weren't any worksheets. Contrary to 1990 being extraordinary, 1989 and 1990 were very similar. We began 1989 with 15,900 acre-feet of unaccounted-for storage, all in Milner. On April 1 the last unaccounted-for storage was accumulated for a total of 44,500 acre-feet. On this date, 12,000 acre-feet of storage had passed Milner, all of which could be attributed to Milner Reservoir fluctuation and were not "real." Therefore, about 32,000 acre-feet of unaccounted-for storage was assigned to Milner, and I probably did this subtraction in my head as it was so simple.

In 1988, 25,000 acre-feet of unaccounted-for storage was accumulated, all in Milner and about 6,000 acre-feet was subtracted for storage passing Milner for a total of about 19,000 acre-feet assigned to Milner. Again, I did this in my head.

In 1987, the system essentially filled and there was no unaccounted-for storage distributed to reservoirs other than that accumulated due to the refill of space evacuated for flood control. This is the reason a similar computation distributing unaccounted-for storage was not done in 1987. In fact, the system essentially filled in all years between 1978 and 1988, so there really isn't any record of the type of computation which you seek that shows distribution of unaccounted-for storage in the absence of a flood control situation.

2) Reservoir Evaporation

As you know, the Snake River reservoirs are operated as a system, hopefully for the benefit of all. To accurately account for the evaporation as you suggest, would require that we classify the storage in each reservoir by owner and charge them accordingly. This would be extremely hard to do and would probably be counterproductive as almost certainly various owners would push to have "their" water stored at a more advantageous location, thus destroying the many advantages of a system operation.

It is not necessarily true that storage in Island Park suffers less evaporation than at other locations. We compute the evaporation at Island Park and Palisades with the same equation, 0.8 (0.94 ETR - 0.04), where ETR is the reference evapo-transpiration at American Falls computed by the Bureau of Reclamation. This equation was based on correlations between pan evaporation at Aberdeen and pan evaporation at Island Park and Palisades, and correlation of reference ET with pan evaporation. Again, this equation was based on very limited data, and we will review the available data to see if we can improve on this

method. We have often discussed the possibility of establishing evaporation pans at each reservoir, but I guess no one has been willing to bear this cost.

At American Falls, there is no evaporation loss charged for increments of storage above contents of 30,000 acre-feet, which occurs most of the time. Therefore, storage in Island Park which belongs to American Falls suffers a 100 percent greater evaporation loss than if it were stored in the reservoir where it "belongs." Since that water is being stored in Island Park for the potential benefit of Fremont-Madison, you can see how it may appear to a storage owner in American Falls unfair not to charge Island Park the entire evaporation in Island Park Reservoir. Once we begin to erode the "system" approach to reservoir management, there lurks the danger of reverting to individual reservoir operation where everyone, especially those having small upstream reservoirs with poorer refill capability, loses.

I'm not sure where you found the 0.07 reduction factor referred to in your letter, but it is very close to this. Our correlations were done in 1977 and 1978 and we cannot locate those, and for this I apologize. In retrospect, the equation we do use does not logically seem like it reduces the evaporation enough for Island Park. Therefore, we will redo this correlation and provide you with a copy of the study showing procedures, data, and assumptions. We will then use the new equations for the final 1991 accounting accounting.

Finally, you state that we have erred by double accounting for the evaporation in Island Park. This is not the case since the natural inflow to Island Park is computed as outflow plus change in storage plus evaporation. The evaporation is considered an unnatural loss and therefore must be added to the natural flow which is then subject to appropriation. However, since this water is lost to the system, it must also be charged against some storage account during the irrigation season. This method is used at all reservoirs in the system for which evaporation is considered to be an unnatural loss to the system caused by the existence of the reservoir.

3) Winter Crosscut Canal Losses

The computer program does not charge losses in the Crosscut Canal to Fremont-Madison. It does, however, keep track of those losses since the Crosscut canal has no natural flow right to divert water from the Henrys Fork. Therefore, any water diverted from the head of the Crosscut which is not diverted by the Fall River Canal or does not reach the Teton River is considered an

unnatural loss to the system, and therefore is not charged to natural flow, but rather must be charged against someone's storage account. We cannot simply change the computer program and wish this storage use away. The only way to stop this storage use is to stop diverting it. It is not true that gaging causes the storage use. The storage use is caused by someone diverting the water and the gaging simply provides a record of that use. We must assume that someone is calling for that water or it would not be released to the Crosscut in the first place.

As to who is then charged for the Crosscut losses, this is an internal matter for the entity which operates the Crosscut Canal. Rather than charge the losses to the Fremont-Madison in general, it is not extremely difficult to charge this loss to specific users. We have been unaware of any desire on the part of Fremont-Madison to do this, but if they can reach an agreement with those involved on a method, incorporation of this in the storage accounting procedures would be fairly easy.

Concerning water diverted by the Fall River Canal Company from the Crosscut, we estimate their diversion as the difference between the Crosscut gage below the North and Middle branches of the Fall River Canal and the head. In talking with Dale Swensen, he indicated that there is an additional diversion of Crosscut water to the South Branch of the Fall River Canal, but that it has been too difficult to obtain a measurement there. Again, it would be relatively simple to include this delivery to Fall River Canal lands if Fremont-Madison can provide the data.

4) Saurey and Roxanna Canal

Without additional gaging to determine the magnitude of return flow above these canals, it is difficult, if not impossible, to correctly account for the water diverted by these canals. However, we will attempt to temporarily change the acccounting to reflect a more accurate representation of what actually occurs. Time permitting, we will have this ready for the final 1991 accounting so that we can dispense with the hand corrections. This should only be considered a band-aid approach since proper gaging is the long-term solution to the problem.

5) Lag Time - Milner Time

It is necessary to have lag times from station to station throughout the system so that natural flows can be computed accurately. Without the lags, natural flows would fluctuate wildly at times of rapidly increasing or decreasing flow. Consider what would happen on a day when Island Park Reservoir

increases its release by 500 cfs. It takes one day for the flow to get to St. Anthony. Since this flow had not arrived at St. Anthony on the same day as the release, this in-transit water would appear as a loss in this reach. Therefore, the natural flow on this day would suddenly drop by 500 cfs. On the following day, when the flow did reach St. Anthony, there would be a sudden gain of 500 cfs, causing a difference of 1,000 cfs from the first to the second day. This would wreak havoc with the proper delivery of natural flow and be an operational nightmare for the canal managers trying to regulate this delivery. One day we would be filling 1890 rights and the next, 1892 rights, when the proper delivery should be 1891 rights. A user with an 1891 priority would be injured since the water he lost on day one is credited to someone else on day two--the error does not compensate over time.

Because of the large size of Water District 1, it takes approximately six days for the release at Island Park to reach Milner. Rather than wait six days for the data at Milner and then do the accounting, we "project" forward six days by estimating the gains and diversions at Milner. In this way we can estimate the priorities in effect for the Henrys Fork immediately instead of waiting. The results of this are usually quite accurate but obviously if gains and/or diversions that we have estimated are greatly in error so possibly will be the priorities, too.

I'm not sure what you mean when you say that a former watermaster allocated rights according to the flow at Heise. This would be impossible as the flow at Heise does not include natural flows in the Henrys Fork or the Snake below Heise. We are well aware of how the natural flow was delivered prior to 1978. If you look at PLATE 12 and PLATE 21 in any of the reports prior to 1978, you will find the watermaster computed natural (he called them "normal") flows at various locations throughout the basin and as far down as Milner using time lags similar to those that are used today. As I recall, these computations were such a task when done by hand that the watermaster would do these during the weekend when no interruptions would occur. Therefore, I imagine that unavoidably canal managers in the upper basin had to wait at least two weeks to learn what priorities they were on.

The term "Milner time" is used only to attach a reference to a particular day in the accounting sequence. The term "Heise time" or "Ashton time" could be used, but the numbers would not change. To do the accounting according to some "other" time as you have requested really doesn't make much sense unless you mean

to do away with all lags completely, which I think would prove to be quite unacceptable to everyone once the results became apparent.

Hopefully, I have adequately responded to most of the "technical" concerns which you have raised concerning the Upper Snake accounting as it relates to Fremont-Madison. If you have further questions, feel free to call or stop by.

Sincerely,

BOB

Robert Sutter
Hydrology Section

RS:cjk
cc: Ron Carlson
Ed Clark
Dale Swensen
Mark Rammell

BARNETT INT

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To BOR SUTTER	From RON CARLSON
Co.	Co.
Dept.	Phone #
Fax #	Fax #

106 West 500 South, Suite 101
Bountiful, Utah 84010-6232
(801) 292-4662

JUN 17 1991

Department of Water Resources
Eastern District Office

June 14, 1991

Mr. Ronald D. Carlson, Watermaster
Water District 01
150 Shoup Avenue, Suite 15
Idaho Falls, Idaho 83402

Re: **Storage accounting concerns of the Fremont-Madison Irrigation District.**

Dear Ron:

As you know, as part of our efforts for the Fremont-Madison Irrigation District, we are attempting to gain a better understanding of the processes and rational for the allocation and distribution of storage water in the upper Snake. As you also know, on March 1, 1991, we sent you a letter requesting that you respond to some of our questions regarding storage allocation. In mid-April, you responded to our letter, and we appreciate your time and thoughts with regards to our questions. We have reviewed your letter and the materials you sent to us, and find that we are yet lacking in an understanding on some of the issues addressed in our earlier letter, as well as some issues that we have discovered since that time. We are wondering if you would please review the contents of this letter and then look for an opportunity to meet with us and examine the issues as outlined below. The Bureau is tentatively looking to schedule a progress meeting on our study in Burley on June 25. They would be looking to invite you to participate in the progress update meeting. It may be that we could look to meet with you in conjunction with this effort.

Some of the issues outlined below are complex and involve digging deep, but we feel we owe it to Fremont-Madison, and in fact, you as watermaster owe it to Fremont-Madison, to fully review these issues and areas of procedural concern and give a full accounting of how storage water has been accrued and distributed within District 01. We realize that the understanding and methodology for distributing storage water is an ever growing and evolving process. We feel that some of the issues outlined below were not apparent 13 years ago when the current accounting procedures were initiated, but do feel strongly that they now do have merit. Therefore, we request that you review these issues. At the onset, we acknowledge that we may not have a full understanding of the intricacies and background on some of these issues.

1) **Unaccounted-for-Storage**

We know that we asked you questions regarding this issue in our letter in March. After which time we had numerous phone conversations on this issue. We sympathize with your concern to not formalize a policy with regards to the unaccounted-for-storage. It was agreed that rather than you formalizing a policy, you would send to us data which would show how such waters have been distributing over the past three or four years. When we received your letter, attached to it was only the information for 1990, which was a rather extraordinary year. When we phoned back for the data from the other years, we were told that the worksheets for 1989 were missing, the 1988 worksheets were in Boise, and it wasn't certain whether there were any worksheets generated for 1987. [We find this unacceptable.] We again request that this information be sent to us. This information should be a matter of record, and we need the information by June 18.

With regards to our review and understanding of the 1990 data, we have real concern as to why this water was first given to fill Milner Dam. As you aptly pointed out, Milner does not have a storage right. We understand that the policies with regards to this water are based upon "fairness" and are a little ambiguous. We do not understand, in fairness, why such water first goes to a non-water right holder, to assist in their operational needs, in lieu of a legitimate storage space holder. Milner did not bypass any water during the storage season to fill American Falls, as did the other reservoirs!

Our review of the reallocation of the unaccounted-for-storage water for 1990 would reveal that of the almost 60,000 af, the first 19,000 af were lost down the river, the next 34,000 af were used to fill Milner, and the remaining 7,000 af were split among the affected reservoirs, with the lion's share going to Palisades. Even if this is the fair way to divide the waters, there is an inconsistency in the manner of accounting. Towards the end of the irrigation season, we understand that the level of Milner Dam is drawn down. Most of this water goes out into the canals, or is delivered down the river to power interests. Therefore, it is delivered under a water right, and therefore, it no longer becomes unaccounted for water, but becomes a delivered water right. Therefore, this water is, in essence exchanged up to American Falls, or elsewhere, and becomes again unaccounted-for-storage which could then become reallocated for the space holders. Therefore, much of the 34,000 af which was given to fill

Milner would once again be available for distribution, in fairness, to the affected reservoirs. If this is not done, we are not sure where the water went, and to who's credit. Please review this issue.

One other area of concern to us is the fact that unaccounted-for-storage was only accrued last year through the end of March, while regular storage continued to accrue through mid-May. Why is this the case? Just following last year's procedures, there should, we believe, have there been much more water accrued to this account.

2) **Tabulation of Reservoir Evaporation**

Our understanding is that, beginning on April 1st of each year, the computer begins to charge reservoirs an evaporation loss based upon that days surface area on the reservoir and upon the pan evaporation at a weather station near Aberdeen. In years past, Fremont-Madison has been charged for 100% of the evaporation off of Island Park Reservoir, even when the accounting program indicates that a much less percentage is owned by Fremont-Madison. We further understand that this year, you are looking to only charge an individual reservoir owner a proportionate share of the evaporation losses that they hold in the "system." We applaud this effort to only charge Fremont-Madison for the losses according to the percentage of the total storage they hold, but wouldn't it even be more appropriate to only charge Fremont-Madison for the evaporation losses incurred by their proportionate share in their reservoir, rather than in the system in total. As you are well aware, evaporation losses are less at Island Park, than at other "system" reservoirs.

This leads to our second question. Clearly, evaporation off of Island Park is less than it is at Aberdeen. Our understanding is that the computer reduces the pan evaporation from the Aberdeen gage by a factor of 0.07 in order to adjust for this change in conditions. Is this enough? We would like to know from you what rationale, studies, or information were incorporated into the decision to only reduce the evaporation rate by this much. We, at this time, do not know that such is wrong, but we would like to know how it was arrived at.

Lastly, our understanding is that there is not a gage which measures inflow into Island Park Reservoir. The accrual to Fremont-Madison's water right, as we understand it, is based

upon keeping a five day average of the change in stage on the reservoir, plus outflow. If this is correct, then already built into the change in stage on the reservoir is the natural evaporation losses. Therefore, while storage is occurring, Fremont-Madison is already charged, by nature, for any evaporation losses. It is, thus, inappropriate for the watermaster to also charge an evaporation loss, during this time period, to Fremont-Madison. For example, during 1990 Fremont-Madison was charged for nearly 5,700 af evaporation by the accounting program, while nature was simultaneously charging them for evaporation. It would be appropriate to make a change in the accounting program such that a given reservoir, if its accrual is measured the same as Island Park's, cannot be charge for evaporation while it is storing. It would also be appropriate, to credit Fremont-Madison's carryover with the nearly 5,700 af of inappropriately charged evaporation losses last year.

3) **Winter storage losses across the Cross Cut Canal**

As you know, last year during the winter season, while no storage water was being delivered across the Cross Cut Canal, Fremont-Madison was being charged by the computer for storage water, because of the system of gaging. We understand that you have assisted Dale with his case before the Rental Pool Committee, and they have agreed that charging storage to Fremont-Madison during the winter is inappropriate. We appreciate your review and assistance with this matter. Our only request would be that you would review and direct to have rewritten that portion of the computer algorithm which inappropriately charges Fremont-Madison during the winter months for Cross Cut losses so that this will not be an issue year after year. Further, Fremont-Madison has wondered if it would not be more appropriate to have the normal Cross Cut losses charged to those canals, on a proportionate basis, which are receiving storage water on a given day. Could you please review this with your people and determine whether this would involve a major revamping of the computer program, or whether it would be a simple thing.

Lastly, the South Branch of the Fall River Canal siphons under the Cross Cut, and diverts water out of it. We feel that this could be part of the reason why the losses on the Cross Cut are as large as they are. Could you please review what it would take to make this correction in the accounting program so that the Fall River Canal, and not Fremont-Madison is, charged for this storage use.

4) Adjustment of storage charged to the Saurey and Roxanna Canals

As we have spoken recently, the Saurey and Roxanna Canals are lower diversions on the north branch of the Teton River. They have relative poor priorities on the Teton, but good priorities on the Henry's Fork. The computer accounting program treats this part of the Teton as one reach. During much of the summer, no natural flow water is delivered to these canals. A dry dam is essentially maintained at the Teton Island Feeder above these canals. However, because of return flows, there is almost always plenty of water physically flowing at these canals' headgates.

Because the computer treats this all as one reach, these canals are charged storage water for whatever they divert. This makes absolutely no sense in keeping with water law and practice, but is forced on these canals by the limitations imposed by the accounting program. It would be like limiting a diverter at Blackfoot to the same priority as one in the upper Teton, no matter how much water was available at Blackfoot. Apparently, you agree with this limitation and the unfairness imposed on these canals by the inadequacy of the accounting program, as at the end of the year, you have hand calculated that natural flow water which was inappropriately charged to the Roxanna and Saurey Canals as storage water, and these canals are dully credited.

Herein is where our hang-up lies. In crediting these canals for unused storage water, you debit the Fremont-Madison Irrigation District. The rationale is that, under the way the computer and reaches are now defined in the accounting program, if you credit these canals with natural flow, you need to debit another Teton user. As you do not know who this users is, you charge Fremont-Madison. The reach gain has to be balanced (when Teton is on a split priority). Therefore, the natural flow and storage use need to be adjusted and a charge has to be made to another (or other) Teton users. We would fully agree, except, the premise is wrong. The current definition of reaches within the accounting program is deficient. As soon as there is a split priority on the Teton, those diversions below the Teton Island Feeder must be treated as a different reach.

The Roxanna and the Saurey have every right to divert the <u>natural</u> flow waters at their headgates, as long as such does not deprive any downstream right, without being charged

storage. But the storage deficit is not a Teton River or a Fremont-Madison problem. It represents an Idaho Falls or Blackfoot user who has diverted storage and only been charged natural flow for it. To argue that it is a Teton user problem and to credit Roxanna and Saurey with natural flow and charge it to Fremont-Madison would be to infer that you have the authority to give a Roxanna Canal with an 1885 priority natural flow water and charge an upper canal with an 1883 priority storage via Fremont-Madison. It just isn't correct. We agree that the numbers add up using the accounting program and cause it to appear that this is the correct methodology. But the accounting program is limited in reaches and inputs and here forces a bust with water law. You've acknowledged this, and hand calculated the correction. But to then charge Fremont-Madison is wrong. Either the program needs to be altered, or hand calculations need to be made each year.

We have studied this issue. As we are sure you can tell, we feel strongly about it. Maybe we have missed something. If we have, please help us understand. But right now, we see that the inadequacy is in the accounting process, and not in Fremont-Madison's usage. This may be one of those issues which was not obvious 14 years ago when the program was written. Now it is apparent, and we feel adjustments should be made, so that it is never again an issue.

There are two additional issues with which we are still not comfortable. The first is the lag-time issue and its adverse effects on up-stream users. As you know, last year a notable amount of storage water was used early in May without the knowledge of the upstream users. Much of this was associated with the lag-time effects on the reporting system. We ask that you consider what would be involved in making an accounting from other than Milner time. Our understanding from the former watermaster is that he did his allocation based on the flows observed at Heise. We just ask that you consider all of the pluses and minuses of such a system and give us your reactions.

Secondly, you know that we are dissatisfied with the treatment of the so called last-to-fill storage water. The Committee of Nine's rules read that such shall be the last <u>space</u> to fill. Your interpretation is that this means that such shall be the last <u>**priority**</u> to fill. That is not what we read from the rules. Allowing space holders to sell their storage down the river will and has injured Fremont-Madison's ability to fill, unless a strict interpretation of the word <u>space</u> is followed. From a fairness standpoint, in a typical year, if a user were not allowed to sell

his water down the river, then such water would be carried over to the next year. This would make it so that the unaccounted-for-storage would be greater, and a system fill would be easier. We have great concerns that there are movements afoot which would make selling ones water down the river even more enticing. Please give this issue some careful review and be ready to respond to our queries when we meet with you.

We hope that our explanations as to our positions on these issues is clear. Again, our understanding may be incomplete on some of these issues, but we have spent notable time trying to fully understand them. If our points are lacking, we would happily listen to why they are so. We feel that we must give Fremont-Madison a full accounting of why storage is accrued and distributed as it is. We look forward to discussing these issues with you.

Sincerely,

Jack

Jack A. Barnett, P.E.

cc: Ed Clark
Dale Swensen
Mark Rammell

STATE OF IDAHO

IDAHO WATER RESOURCE BOARD

STATEHOUSE
BOISE, IDAHO 83720

June 3, 1991

Mr. Paul Berggren, Chairman
Committee of Nine
Water District 01
150 Shoup Ave., Suite 15
Idaho Falls, ID 83402

Dear Mr. Berggren:

Re: Rental pool procedures

The Idaho Water Resource Board reviewed the revisions to the rental pool procedures dated May 29, 1991. The procedures were found to comply with all the requirements of the Rules and Regulations of the Board for operation of a rental pool.

We greatly appreciate the extensive work you, your committee, Ron Carlson, Del Raybould, and many others have put into the revisions.

Enclosed is a copy of the Board's resolution approving the procedures. The Board instructed that the approval was based upon their understanding that Rule 1.2.c. would not be interpreted as preventing releases of water for specific instream purposes such as ice flushing flow for swans at Island Park or fish transportation flows arranged for specific identified time periods

The Board also noted possible confusion relative to late season rentals of water. Rule 2.10 allows water rented from the pool to be used up to June 15 of the following year. Rule 7.6 requires the water to be used by March 15 of the following year. It is the Board's understanding that late season uses are intended to be allowed through June 15 and that the March 15 date is the cutoff date to arrange a rental of the water remaining in the rental pool from the previous year for a non-irrigation purpose.

The above mentioned rules should be clarified the next time the procedures are revised, but revision is not urgent if the Committee's understanding of the rules is in agreement with that expressed by the Board. Please provide a letter to describe the Committee's understanding of these rules.

The Board greatly appreciates the cooperation of the Committee of Nine and looks forward to working with the Committee in the future, as both groups strive to maximize the value of Idaho's water resources.

Sincerely,

F. Dave Rydalch

F. DAVE RYDALCH
Chairman

FDR:dc

cc: Water Bank Sub-committee - Clarence Parr, Don Kramer, Mike Satterwhite
Ron Carlson, IDWR Eastern Region

BEFORE THE WATER RESOURCE BOARD

OF THE STATE OF IDAHO

IN THE MATTER OF WATER DISTRICT 01, UPPER SNAKE RIVER, RENTAL POOL.	))))	RESOLUTION

WHEREAS, the Committee of Nine of Water District 01, acting as the appointed local committee to operate a rental pool for the Upper Snake River, has submitted revised procedures for operation of the rental pool; and,

WHEREAS, the Board is responsible, pursuant to Rule 6.1 of the Rules and Regulations for Water Supply Banks, to review and approve the procedures of the local committee for operating a rental pool; and,

WHEREAS, the revised procedures submitted by the Committee of Nine have been reviewed by the Water Supply Bank Sub-committee of the Board and by the Director of the Department of Water Resources and found to comply with the Rules and Regulations for the Water Supply Bank.

NOW THEREFORE BE IT RESOLVED that the procedures for the rental pool of Water District 01 dated May 29, 1991 are hereby approved.

PASSED AND APPROVED this 31st day of May, 1991.

F. DAVE RYDALCH, Chairman

ATTEST:

GENE M. GRAY, Secretary

WATER DISTRICT 1

RENTAL POOL PROCEDURES
APPROVED BY THE COMMITTEE OF NINE MAY 29, 1991

RULE 1. AUTHORITY AND STATEMENT OF PURPOSE.

1.1 These procedures have been adopted by the Committee of Nine pursuant to Section 42-1765, Idaho Code, to assure the orderly operation of the Water District 1 rental pool by the Committee of Nine of Water District 1. Under no circumstances shall these procedures be interpreted or construed to limit the authority of the Director of the Department of Water Resources, the Water Resource Board, the Committee of Nine, or the Snake River watermaster in discharging their duties as set forth in the statutes of the state of Idaho and the rules and regulations promulgated thereto.

1.2 It is the purpose of these procedures to:

A. Provide the procedures by which the Committee of Nine, upon being appointed a local committee by the Water Resource Board, shall facilitate the rental of stored water made available to the committee for that purpose.

B. Provide a process, consistent with the Idaho Code and rules of the Idaho Water Resource Board, by which stored water supplies may be made available for a specified period of time for a particular beneficial use to water users who need additional water.

C. Provide incentives for those owning reservoir space and having stored water which may be, from time to time, surplus to their needs, to make such space and water accruing thereto, available to the rental pool for other users and uses. In no case will water from the rental pool be used to maintain miminum flows greater than those IWRB established pursuant to state law.

D. Provide a recognized system through which stored water supplies may be located, identified, advertised and subsequently leased and rented for specific times, purposes and uses.

E. Provide payment to Water District 1 for services rendered in the operation of the rental pool; to use said revenue to make improvements in distribution facilities; to aid in improving efficiency in the distribution of water within Water District 1; comply with the local public interest; and is consistant with the conservaion of water resources within the state of Idaho.

1.3 Available water supplies may be leased to the rental pool by the lessor and rented from the rental pool by the committee for any beneficial purpose recognized by the laws of the State of Idaho, provided other water rights are not injured, or irrigators are not deprived of supplemental storage by renting water for uses other than irrigation.

RULE 2. DEFINITIONS

2.1 ACRE-FOOT - a volume of water sufficient to cover one acre of land one foot deep and is equal to 43,560 cubic feet.

2.2 ANNUAL - refers to the period between annual meetings of Water District 1, and normally will be a period starting on the first Tuesday in March and ending on the first Monday of March of the succeding year.

2.3 BANK - means the ~~Water Supply Bank~~ of Water District 1, as operated by the Committee of Nine as a designated local committee.

REALLY THE RENTAL POOL (SEE 2.19)

2.4 BOARD - means the Idaho Water Resource Board.

2.5 BUREAU - means the Bureau of Reclamation, Department of the Interior, United States of America, sometimes known as the BOR.

2.6 COMMITTEE - means the Committee of Nine as appointed by the water users of Water District 1.

2.7 DEPARTMENT - means the Idaho Department of Water Resources or IDWR

2.8 DIRECTOR - means the Director of the IDWR.

2.9 DISTRICT - means Snake River Water District 1 of the State of Idaho.

2.10 LATE SEASON RENTAL - means water rented from the rental pool for release for non-irrigation beneficial uses after October 31 of one calendar year and before June 15 of the following year.

see 7.6, p.9

2.11 LEASE - A written contract by which a storage water right accruing to a specified storage by a consenting contract holder, is made available to the committee for rental from the rental pool.

2.12 LESSEE - means any person renting water or space from the rental pool.

Is this same as RENTER (2.18)?

2.13 LESSOR - is any person leasing space or water to the rental pool.

2.14 MILNER - means Milner Dam or the lowest diversion in Water District 1.

2.15 PERSON - means any individual, corporation, partnership, irrigation district, canal company or other political, subdivision or governmental agency.

2.16 LONG-TERM LEASE - means a contract with the committee for an improved priority within a given priority category to rent water from space leased to the rental pool in future years.

2.17 RENT OR RENTAL - means a written contract for the exclusive use of stored water leased to the committee for a determinate period for a specified price.

2.18 RENTER - means the person renting water from the committee, or the lessee.

2.19 RENTAL POOL - refers to the water bank activities adminstered by a local committee appointed by the Water Resources Board.

2.20 RENTAL POOL COMMITTEE - A sub-committee appointed by the committee of Nine composed of the Water District 1 watermaster, superintendent of the Minidoka Project of the Bureau, and three members of the Committee of Nine.

2.21 SPACE - means all or any portion of the active impoundment volume of a reservoir measured in acre-feet.

2.22 STORAGE - means the portion of the available space that is storing water.

2.23 WATERMASTER - means the watermaster of Water District 1.

2.24 PAID OUT - means the cost of construction under a spaceholder's contract with the Bureau has been paid in full, or for other reasons there are no remaining obligations to comply with the reporting requirements of the Reclamation Reform Act (RRA) of 1982.

RULE 3. GENERAL PROCEDURES

3.1 It is the policy of the water users of Water District 1 and the Committee to operate the rental pool under the priorities hereinafter stated for the maximum beneficial use of available water supplies.

3.2 A primary purpose in the operation of the rental pool will be to benefit the agricultural water users within Water District 1. These procedures are designed to assure that stored water leased to the rental pool from Federal and other private reservoirs within Water District 1 is rented or otherwise allocated in a manner that protects other water rights and assures that water is first made available to meet the

irrigation requirements of irrigation water users within Water District 1 before other uses are considered.

3.3 The operation of the rental pool shall in no way recognize any obligation to maintain flows below Milner Dam or to assure the minimun stream flows established at the USGS gaging station on the Snake River near Murphy unless specific arrangements to do so are made under these procedures.

3.4 The operation of the rental pool shall be consistent with the statutes creating the Water Supply Bank, the rules and regulations of the Board, and the provisions of the space holder's contracts with the United States.

3.5 Storage water is accepted by, or leased to the rental pool on a contingency basis. Payments to the lessor will be made to the extent rental monies are received by Water District 1 in trust for the committee pursuant to these rules.

3.6 The space of storage water leased to the rental pool that is rented for uses below Milner shall be the last space to fill in the ensuing year. LAST T FILL

3.7 No storage water leased to the rental pool shall be rented for uses below Milner without the express written consent of the lessor.

3.8 It is the policy of the Committee of Nine, in operating the rental pool, to facilitate annual leases and rentals, and to base all transactions on water stored (storage) rather than reservoir space. A CHANGE (?)

3.9 Any Lessor, Lessee, or Applicant aggrieved by a decision of the Rental Pool Committee on matters related to the operations of the rental pool may request a hearing before the Committee of Nine within 15 days after receiving notice in writing of the decision. After hearing the grievance and after review by the Committee of Nine, a decision will be made by the Committee of Nine in writing, setting forth the reasons for its decision, and said review decision must be signed by a majority of the Committee of Nine. The decision of the Committee of Nine may be appealed to the Board.

3.10 All leases of water stored within Water District 1, unless the associated change in point of diversion and place of use is being initiated through the statutory transfer process, (with the exception of other approved water rental pools within the District and, specifically, those exclusions applying to the Shoshone-Bannock Indian tribes) shall be transacted through the Water District 1 Rental Pool, unless the transaction is an internal rental within the distribution system of a contracting entity.

RULE 4 MANAGEMENT

4.1 The Water Rental Pool shall be operated pursuant to Idaho Code, sec. 42-1761 to 42-1766 with all policies being established through the approval of the Committee of Nine.

4.2 A sub-committee composed of the watermaster, the superintendent of the BOR's Minidoka project, and three members of the Committee of Nine appointed by the chairman shall have the following general responsibilities:

A. To determine general policies regarding annual storage leases which may not be covered by the adopted procedures of the Committee of Nine.

B. To assist the watermaster in the allocation of water from the rental pool when conflicts arise.

C. To advise the Committee of Nine on water banking activities.

D. To set policies for the disbursement of funds generated by the rental pool.

4.3 The watermaster shall act as the manager of the rental pool. His authority shall include accepting water or space into the rental pool, executing rental agreements on behalf of the Committee of Nine, disbursing and investing funds generated through the rental of stored water, and distribution of water supplies from the rental pool. All funds invested shall be considered public funds for investment purposes pursuant to the Public Depository Law, Chapter 1, Title 57, Idaho Code.

RULE 5. LEASES

5.1 Any person who owns or controls space or storage in a reservoir located in Water District 1 may seek to lease any portion of his space or accrued storage to the rental pool.

5.2 Leases of space and water accruing therein will be identified by reservoir. If no designation is made by a lessor holding space in more than one reservoir, it shall be understood that American Falls space will be designated before Jackson space and Jackson space will be designated before Palisades space.

5.3 Storage leases are subject to the approval of the Rental Pool Committee. Reservoir space submitted for lease to the rental pool may be rejected in whole or in part by the Rental Pool Committee or they may place special conditions on usage, allocation, and price, if, in the judgment of the Committee, accepting said water will not be in the best interest of the rental pool or the water users of Water District 1.

5.4 Leases of storage to the committee shall be on a priority basis as set forth in Rule 6.

5.5 Leases of storage to the committee shall be in writing on forms provided by the watermaster and shall bear the date they were received in the watermaster's office in Idaho Falls.

5.6 Leases of reservoir space may be made for periods of up to twenty (20) years. Any space leased for periods in excess of two (2) years shall be subject to rule 9 of these procedures.

5.7 All space leased to the committee shall be under the control of the watermaster and the Rental Pool Committee for the duration of the lease.

5.8 Any lease executed by the committee at the direction of the director or the Board cannot be for a rental charge less than that charged by the local committee in any year of said lease.

5.9 The lessor (contract holder) is responsible for paying lessor's continuing obligations to the Bureau of Reclamation for construction or annual operation and maintenance.

5.10 Subject to the provisions of paragraph 7.5 and 7.6, any lease of space or storage leased to the rental pool, or any portion thereof, which has not been rented by the committee prior to November 1, of that year, shall be terminated, the lease of the space to the rental pool shall be null and void, and the storage water not rented shall be returned to the credit of the lessor.

RULE 6. LESSOR PRIORITIES

6.1 Any person holding space in a federal or private reservoir who leases storage to the rental pool for annual rental prior to June 1 of any year shall share proportionally with other lessors leasing storage to the rental pool prior to that date. Long-term leases shall be considered to be in this time frame.

6.2 Any person holding space in a federal or private reservoir who leases storage to the rental pool for annual rental after June 1 and before July 1 of any year shall share proportionally with other lessors leasing storage to the rental pool within this time frame.

6.3 Any person holding space in a federal or private reservoir who leases storage to the rental pool for annual rental after July 1 of any year shall receive his share of the proceeds for the rental of all or part of the water rented which was made available after July 1 of that year on a "first come" basis, after water from space leased prior to July 1 has been rented.

6.4 All storage leased to the rental pool before June 1 of any year will be rented before any storage leased after June 1 is rented. All storage leased to the rental pool after June 1 and before July 1 will be rented before any storage leased after July 1 is rented.

6.5 Whenever a request to lease storage to the rental pool is made for an annual lease it will be assumed that it is the intention of the lessor to assign sufficient space to yield the designated amount of storage.

6.6 If a space holder should choose to lease all of his space to the rental pool, the "yield" of that space shall be determined by the watermaster after calculating the percentage of fill of that leased space in that particular reservoir, minus evaporation, and any fill restrictions associated with restrictions arising from Rule 3.6 of these procedures.

RULE 7 LESSEE PRIORITIES

7.1 Any storage available through the rental pool prior to June 1 for annual use shall be rented prior to June 1 on a priority basis as hereinafter provided. Any storage available after June 1 and before July 1 for annual use shall be rented prior to JUly 1 on a priority basis as hereinafter provided. The priority within each priority group hereinafter provided within the above time frames and after July 1 shall be determined by the date of the lessees rental agreement and upon payment in the office of the watermaster within the above time frames.

A. The first priority in renting water from the committee shall be given to those lessees owning space in any of the bureau's federal storage reservoirs in the district for storage prior to 1979, used for irrigation of lands in the district, for use on said lands, and lessees eligible for mitigation under the 1990 Fort Hall Indian Water Rights Agreement and who are stockholders in the Mitigation Corporation that has contracted with the BOR for mitigaion water, and only to the extent mitigation water is unavailable through sources made available through the Mitigation Corporation.

B. The second priority in renting water from the rental pool shall be given to lessees for other irrigation uses above Milner, with preference going to lands for which storage was rented prior to 1991.

C. The third priority in acquiring stored water from the rental pool shall be given to other beneficial uses in the order in which their requests are received.

7.2 Priority among each priority class listed above shall be determined by the date on which the water user's contract and payment is received at the office of the watermaster in Idaho Falls; the earlier in the year the executed lease is received by the watermaster, the higher the priority in the priority group the entity will receive. Long-term leases shall be in the priorities outlined in Rule 7.1, as initiated in Rule 9.4. The first lessee who has entered into a long term rental agreement and has rented storage water prior to 1991, shall have the earliest priority for rental pool supplies within his priority class. All subsequent long term rental agreements shall have the same relative priorities in their appropriate priority group as their rental agreement does to other long term rental agreements in the same priority group.

7.3 Any person having initiated an annual contract for stored water may request water in subsequent years by confirming, in writing, that all of the information on the original rental agreement is true and correct, and by identifying the amount of water he wishes to rent. The priority in this case will be the date on which payment is received by the watermaster.

7.4 Space leased to the rental pool for more than one year from reservoirs with paid-out federal contracts shall be first reserved for allocation for irrigation purposes. Any person renting water from such space for irrigation shall be subject to all applicable water laws of the State of Idaho but shall not as a result be subject to the Federal Reclamation Reform Act of 1982 (RRA). If sufficient space is not available in paid-out reservoirs and stored water is rented from a reservoir with remaining federal repayment contract, then anyone renting such water may be responsible for compliance with the limitations and reporting requirements of the RRA should the Bureau of Reclamation determine RRA compliance is required.

7.5 The watermaster will use his best efforts to assure that unauthorized diversions of water do not occur. In the case unauthorized diversions do occur, any water diverted within Water District 1 will be charged by the watermaster as storage used. Any such unauthorized use of water shall be replaced from available water bank supplies at a cost to the user equal to the established water bank price plus an additional seventy-five cents ($.75) to cover increased administrative costs. The administrative costs may be waived by the watermaster if, in his judgment, such unauthorized use resulted from measurement or accounting errors. If there is insufficient storage available in the rental pool during the current year, then the obligation of the renter to rent water to replace the stored

water used without authorization, shall continue to the following year.

7.6 Water rented and unused for irrigation purposes may be leased to the rental pool by September 1, for rental by the rental pool under the same conditions that said water was originally leased to the rental pool. Any proceeds from the re-rent of said water by the rental pool shall be refunded to the original renter of said water in the same proportion the rental proceeds are remitted to other lessors of water to the rental pool. Water rented from the rental pool and not used by the end of the irrigation season or by March 15 of the following year for nonagricultural uses shall be returned to the lessor or lessors as carry over storage of lessors, and all rights to said water leased from the rental pool by the renter shall be deemed to be terminated, except that, renters who own reservoir space may carry over water rented from the rental pool in their space for use the following year, unless lost through the subsequent filling of that space.

Appears to be inconsistent w/ 2.10

7.7 No water may be rented after November 1 of each year without the lessor's approval.

RULE 8. LEASE PAYMENTS AND WATER COSTS

8.1 The lease price of the storage rented from the rental pool shall be set by the Committee of Nine each year.

8.2 The rental price for 1991 shall be $2.75 including administrative charges for both irrigation and non-irrigation water users located above Milner Dam, tegether with any surcharge due the Board, under Idaho Water Bank rules and regulations. The cost for water rented for 1991 for delivery below Milner dam shall be $5.50, plus the surcharge, per acre-foot, with $2.00 being paid to the lessors and $2.00, plus a portion of the surcharge and any accrued interest, returned to the renter if the reservoirs fill in the following year. In the case that the reservoirs do not fill in the succeeding year the lessee shall be entitled to receive a payment from the $2.00 and accrued interest in proportion to the storage lost through the restriction associated with Rule 3.6. The remaining portion of the $2.00 and accrued interest not disbursed shall be returned to the renter. In the case that another water bank or space holder should lease water for the purpose of arbitrage and consequently seek to secure replacement water from the rental pool, the price shall be the amount charged by that water bank or space holder plus an additional $0.75 per acre foot administrative charge.

8.3 Lease payments to the lessors shall be made in accordance with the priorities of Rule 6 and shall be based upon the annual report of the Snake River watermaster. Payments to the lessors shall be considered due and payable once the watermaster has calculated the actual water used within Water District 1 for the annual watermaster's report and the rental payments have been received.

8.4 The Rental Pool Committee may authorize the watermaster to make timely partial payments to the lessors based upon provisional data when, in the judgement of the rental pool committee, such partial payments can be made with reasonable certainty.

8.5 All rental monies not paid to lessors under Rule 8.4 above, shall be maintained in a separate interest-bearing account with accrued interest being distributed on a pro-rata basis at the time that final payments are made. The Water District shall be entitled to use all rental funds on an as needed basis provided the accrual of interest due suppliers is not affected. Payments for water rented from the rental pool and distributed after October 31 shall be computed on a pro-rata basis for all unrestricted water supplied pursuant to the priorities under Rule 6.

RULE 9. LONG-TERM RENTAL AGREEMENTS

9.1 The Committee of Nine may arrange rentals of storage space for periods not to exceed 20 years. Such long-term rentals will be negotiated on a case-by-case basis and may be supplied from anticipated future annual space/water leases to the rental pool or from specific long-term leases, or a combination of the two.

9.2 Contracts for long-term rentals shall be subject to the provisions of the Rules 6 and 7, unless different provisions are specified in the rental agreement. Long term rental agreements in excess of 5 years shall only become effective upon final approval of the lease agreement by the Board.

9.3 Any contract for a long-term rental agreement shall contain the following information:

A. Name and address of the renter.

B. Amount of storage space obligated.

C. The rental price.

D. The legal description of the point of diversion and place of use.

E. The duration of the rental agreement.

F. The understanding of responsibilities and exposure if reservoir space does not fill at some time during the term of the rental agreement.

G. The beneficial use to be achieved through the delivery of water from the rented space.

9.4 A long term rental agreement will be initiated by submitting an application on forms provided by the watermaster to the watermaster's office in Idaho Falls. Upon approval of the request by the Committee of Nine, the watermaster shall initiate the rental upon receipt of the first year's rental payment. Each successive year the scheduled payment shall be due on the date specified in the rental agreement. Failure of the renter to meet any payment shall void the rental agreement, and any subsequent rental by the renter shall be under the last priority provided by Rule 7.

9.5 For purposes of Rule 7, the date of the agreement shall be the date the application is received by the watermaster.

norm

States Department of the Interior

BUREAU OF RECLAMATION
MINIDOKA PROJECT OFFICE
1359 HANSEN AVENUE
BURLEY, IDAHO 83318

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
407
ENV-4.00/WTR-4.00

DEC 21 1990

RECEIVED
DEC 24 1990
Department of Water Resources
Eastern District Office

RECEIVED
JAN 03 1991
Department of Water Resources

Mr. Chuck Peck, Refuge Manager
U. S. Fish and Wildlife Service
SE Idaho Refuge Complex
1246 Yellowstone, Bldg. A-4
Pocatello ID 83201

Subject: Water to Provide Releases from Island Park Dam for Swan Habitat Maintenance (Wildlife, Water Exchange)

Dear Chuck:

We are writing to confirm our discussions in last Thursday's (December 13, 1990) meeting in your office.

Changes in vegetation at Island Park gaging site have made determination of discharge and inflow difficult. Final numbers, after processing by USGS, will be used to determine discharges and inflows for accounting purposes.

Projected average inflow to Island Park Reservoir for the December through March period is 370 cfs. This is somewhat below the inflow observed in 1988 or 1989. This is also much below the projected inflows expected, for this winter, as recently as when we met two months ago. The change is due to the gaging difficulties we discussed, as well as the snowmelt occurring unusually late for a dry year (about the same time as we expect snowmelt in a normal year).

Maintenance of a 300 cfs release from Island Park Reservoir will require about 25,600 acre-feet more than would be released under a schedule designed to reach the spillway elevation (6302 ft., 127,250 acre-feet) by April 1. Projected inflows would allow a release of about 175 cfs to reach this elevation. Adverse storage amounted to 20,000 acre-feet. The adverse storage has covered releases to date and will be used up on December 22.

Reclamation will make water from uncontracted space, submitted to the water bank last year that remains unsold, available to provide

the swan habitat releases. Since we met, Ron Carlson has advised us that excess diversions last year will result in about 96,000 acre-feet more purchases from the bank. That will reduce our remaining water in the water bank to about 18,000 acre-feet. We had previously estimated that the remainder was 28,000 to 30,000 acre-feet.

If additional water is required, proceeds due Reclamation from the water bank leases could be used to acquire more water from the bank. Since more was rented than previously estimated more money is available. If the Committee of Nine were to waive the administrative fee, then the total water plus potential purchase will remain the same. Since we have committed water and funds to this purpose, and since the funds are still in the possession of the water bank, a guarantee of payment from the U. S. Fish and Wildlife Service will not be needed at this time. If all of the remaining Reclamation water is used, any additional water to maintain 300 cfs or to provide ice flushes would need to be purchased from the water bank.

With the recent purchase of previously uncontracted space in Palisades Reservoir by the State of Wyoming, most of Reclamation's remaining uncontracted space is in Ririe Reservoir. Ririe has limited capacity to accrue water to its water right. Most of the water presently available from Ririe is carried over from prior years and using it this year reduces the chance that any will be available next year. Additionally, all remaining uncontracted space is committed to mitigate the effects of the Shoshone-Bannock Tribes water rights on Minidoka Project irrigators and will not be available once the negotiated water rights settlement agreement is ratified and a contract for that space is executed.

The timing of Henry's Fork spring runoff and the onset of irrigation diversions lower in the valley allow water from downstream and South Fork reservoirs to be exchanged and delivered to Henry's Fork irrigators. This exchange can be accommodated in the reservoir operation this year but each consecutive year of drought and winter releases will hinder future exchange capacity. The other effect of increased winter releases this season is earlier and more severe drawdown of Island Park and Henry's Lake Reservoirs.

Island Park Dam releases were adjusted to the target flow of 300 cfs at 7:00 pm on Monday, December 17. We should keep close tabs

on all activities. With this in mind we should plan on getting our group together in January. I suggest that you set the time for a meeting.

Sincerely,

John M. Dooley

John M. Dooley
Project Superintendent

cc: Committee of Nine, Paul Berggren, 224 Berggren Lane, Blackfoot, Idaho 83221
Water District 01, 150 Shoup #15, Idaho Falls, Idaho 83402, Attention: Ron Carlson
Idaho Department of Fish and Game, 1515 Lincoln Road, Idaho Falls, Idaho 83401, Attention: Steve Elle
U. S. Fish and Wildlife Service, 4696 Overland Road, Room 576, Boise, Idaho 83705, Attention: Chuck Lobdell
Regional Director, Boise, Idaho, Attention: PN-100; PN-400

DOW

United States Department of the Interior

BUREAU OF RECLAMATION
PACIFIC NORTHWEST REGION
FEDERAL BUILDING & U.S. COURTHOUSE
BOX 043-550 WEST FORT STREET
BOISE, IDAHO 83724-0043

TAKE PRIDE IN AMERICA

IN REPLY
REFER TO:

PN 470

NOV 01 1990

Mr. Roger J. Fuhrman
Resource Operations Supervisor
Idaho Power Company
Box 70
Boise ID 83707

Subject: Response to Idaho Power Company on Water Bank Purchase (Water Purchase)

Dear Mr. Fuhrman:

We received your list of followup questions from the August 22, 1990, meeting which discussed using the Upper Snake water bank to back up minimum flows out of Island Park and Palisades Dams. Thank you for your continued consideration of a water bank purchase which could help fish and wildlife flows below our dams and increase power production in your system.

A copy of the current water bank rules is enclosed as you requested. We assume that any purchase you might make would adhere to these rules. In answer to your questions, we submit the following:

1. Q. Will Idaho Power Company have the flexibility to take the leased water anytime between July 1 and February 15th?

For your analysis of the purchase benefits, you should assume that the new purchase is available for release at American Falls at the same times that your current purchases are available. For example, if you purchase water in July of 1991, you may use the 1991 water in ensuing months of 1991 and 1992 to augment our releases from American Falls. This augmentation would not have to coincide with release of water from Island Park and Palisades. However, we do not want to release water from American Falls in anticipation of Idaho Power making a water bank purchase. This clarifies that you must have water bank water to your credit with the Watermaster before you can order it. Reclamation cannot loan the water in advance of your water bank credit. We will release water from Island Park and Palisades to maintain minimum flows and replace American Falls water during the December through March period. This procedure is in agreement with the water bank rules which call for deliveries to be made first from American Falls. Actual deliveries must be coordinated with the Watermaster and our damtender and scheduled reasonably, as you schedule your current purchases.

2. Q. Will Idaho Power Company have the flexibility to shape flows from American Falls throughout a 24-hour period (i.e. from night to day)?

Peaking American Falls powerplant would cause operating difficulties downstream for irrigation diverters and recreationists. Your analysis should exclude daily load shaping in determining the value of the water bank purchase to your system. This proposal is meant to improve instream flows below Island Park and Palisades Dams. We do not want to cause instream flow problems at American Falls in the process.

3. Q. Would American Falls power plant flow records be adequate to determine leased water releases from American Falls?

We have consulted with Water District #1 and determined that the Snake River at Neeley gage is acceptable for determining leased water releases during the winter (after November 1). If your powerplant flow records come from the Neeley gage using current U.S. Geological Survey tables and shifts, they can be used. During the irrigation season (April 1 through October 31), the point of delivery for leased water must remain at the Snake River at Milner gage.

4. Q. How many years would the leased water contract extend? Whom would the contract for leased water be with?

We continue to suggest a 20-year arrangement. As you study the water bank rules, you will find several possibilities in contract terms. It appears the most convenient and reliable seller would be the Water Supply Bank itself. It may be difficult to find individual sellers to make long-term commitments, although that is certainly a possibility. Rules 9 through 13 explain several optional purchase arrangements. Perhaps other options could be presented to the Water Supply Bank Committee for consideration and approval.

5. Q. How will Idaho Power be assured we are getting an incremental volume of water when the leased water is requested?

It would largely be up to Idaho Power to order water only when it would not otherwise be received. We and the Watermaster would work with you to schedule your purchase deliveries. The terms and conditions of the delivery accounting should be discussed with the Watermaster, and perhaps included in the lease agreement. We share your concern about receiving real value for the purchase cost. If you have past examples of cutting water bank orders with no attendant cut in American Falls outflow, they should be explained by us or the Watermaster. Our first thought is, though, you are ordering water at a time when it would be available anyway.

Again, thank you for your interest in our proposal. We look forward to meeting again with you in the near future when your purchase studies are complete. Please contact Mr. Dan Yribar at 334-1296, or Mr. John Dooley, Minidoka Project Superintendent, at 678-0461, if you need more information.

Sincerely,

Kenneth R. Pedde

Regional Director

Enclosure

cc: Project Superintendent, Burley ID

Mr. Alan Robertson
Idaho Dept. of Water Resources
State House Mail
Boise ID 83720

Mr. Ron Carlson
Water District #1
150 Shoup, Suite 15
Idaho Falls ID 83402

State of Idaho
Water District 1
150 Shoup Ave., Suite 15
Idaho Falls, Idaho 83402

RONALD CARLSON
WATERMASTER
(208) 525-7172

November 8, 1990

Department of Water Resources
ATTN: Bob Sutter
1301 N. Orchard Street
Statehouse Mail
Boise, ID 83720

RE: 1989 Preliminary Priority Date Accuracies

Dear Bob:

Enclosed is the report entitled ACCURACY OF PRELIMINARY PRIORITY DATES DURING THE 1989 IRRIGATION SEASON. The report compares the preliminary priority dates predicted during the 1989 season to the priorities computed from the finalized accounting run at the end of the season for Water District #1.

The original intent of the report was to determine "confidence intervals" for various priority dates, canals, and flow rates in Water District #1 during various times of the year. I very quickly discovered that this goal was impossible to achieve without the aid of a computer data base and with the limited available historical preliminary data.

I was able to determine the accuracy percentages of the preliminary numbers for the various stream reaches in Water District #1 for most of the 1989 irrigation season. They ranged from 39% for the Teton River to 58% for the Snake River, NR Blackfoot to Minidoka.

The accuracy percentages for the different reaches mean little or nothing to the individual priorities within the reach, but they may be an indicator of inaccuracies within the accounting program. For example, the "last to fill" preliminary priority dates (December 30 and 31, 1999) in the NR Blackfoot to Minidoka reach were predicted 37 days during the 1989 irrigation season. The final priority dates were earlier (more senior) on all 37 days (100% incorrect).

Accuracies of preliminary priority dates will vary from year to year depending on the amount and magnitude of the changes made to the accounting program data at the end of the irrigation season. However, by examining the accuracies each year, the Water District may be able to alter the program or improve the input data to dampen the effect of these changes.

Ideally, the preliminary data and final data should be compared at the end of each irrigation season. Accuracy percentages should be compared with parameters such as date predicted, total flow rate, and total diversions. If correlations and trends become evident, the Water District may be able to improve the daily water right accounting program and its accuracy or preciseness when predicting preliminary priority dates for subsequent years.

Thanks for all the information you've provided to me concerning the accounting program. If you have an comments or suggestions, please let me know.

Sincerely,

Tony Olenichak

Tony Olenichak
Hydrologist

ACCURACY OF PRELIMINARY PRIORITY DATES DURING THE 1989 IRRIGATION SEASON

Prepared for

Water District #1

by

Tony Olenichak

Hydrologist, Water District #1

November 6, 1990

PREFACE

This paper examines the accuracy of the 1989 preliminary water-right priorities. The preliminary priority dates produced by the daily water-right accounting program during the 1989 irrigation season are compared to the water right priorities from the 1989 finalized accounting run.

Data available for this report includes preliminary and final priority data for the period April 1, 1989 through October 1, 1989, excluding June 16 through June 30, August 17, August 18, and September 20, for which there wasn't any preliminary data (196 total days of data).

CONCLUSION AND RECOMMENDATIONS

Annual preliminary and final data should be entered into a computer data base following each irrigation year. Priority dates should be compared to parameters such as discharge rate, diversion rate, and time of year. Correlations and trends between the different parameters will become evident allowing the Water District to improve its accuracy and preciseness when predicting preliminary priority dates for subsequent years.

The greatest prediction accuracy in 1989 appeared to occur during mid-summer when both the natural flow and total diversions remained relatively steady. The least amount of accuracy achieved was in the Spring and early Fall when natural flow, total diversions, and/or weather varied significantly from day to day.

The daily accounting program greatly overestimated the "last to fill" priorities, December 30 and 31, 1999, for all the stream segments and tended to underestimate the lower priorities for some of the segments.

The most accurate stream segment predicted by the preliminary accounting programs in 1989 was the Snake River, NR Blackfoot to Minidoka. The final priority date was correctly predicted by the preliminary priority date for this reach 58% of the time (113 of the 196 days).

The least accurate segment was the Teton River. The preliminary priority date correctly predicted the final priority date 39% of the time (76 of the 196 days).

Accuracy percentages for each stream reach in Water District #1 are listed in Table 1.1 on page 3.

PRELIMINARY PRIORITY DATES

The Water District publishes preliminary priority dates throughout the irrigation season to enable watermasters and canal-managers to manage the diversions along the Snake River. A diversion must be "shut-off" or purchase additional storage water when the preliminary dates show the river has dropped below the diverter's allotted water right or they have used all of their available storage.

The preliminary priority dates are predicted during the irrigation season using the daily water right accounting program. The program uses discharge and diversion data for most streams, canals, and reservoirs transmitted by Hydromet stations, reported daily by gage-readers and the Bureau of Reclamation. The accounting program compiles the data and produces daily preliminary priority dates for each reach of stream in Water District #1.

FINAL PRIORITY DATES

Data which is not input into the daily accounting program, or is modified at the end of the irrigation season, includes: diversion or exhange-pumping by approximately 160 pumps; evaporation data; daily shifts in stream and canal stage-discharge curves; final USGS stream discharge and reservoir storage data corrected for wind-effects, gage-malfunctions, and other errors.

The accounting program is re-run for the entire irrigation year with the new or corrected data producing final priority dates. These final dates sometimes differ from the preliminary dates previously published but are used to calculate the storage used for the irrigation season and carryover storage to the following season.

CONFIDENCE INTERVALS

A problem sometimes arises when a canal manager carefully manages his canal during the year according to predicted preliminary priorities. Canals may be shut-off prematurely or unnecessarily if the preliminary dates underestimate (lower than) the final dates. Conversely, canals may be charged for excess storage used if the preliminary dates overestimate (higher than) the final priority dates. It would be helpful if Water District #1 could assign "confidence intervals" to each preliminary priority.

If the daily accounting program predicts a preliminary priority of February 6, 1895, the Water District could say there is a 63% chance that the final priority calculated at the end of the year will be the same; there is a 15% chance that the final date will be January 9, 1895; a 13% chance that the final date will be April 1, 1898, and a 9% chance the final priority date will be August 18, 1894.

With these confidence intervals, the canal managers might better understand the "risk" at operating the canals based on the preliminary priority dates as the river is dropping to levels near their allotted water right.

1989 COMPARISON

Stream reaches in the accounting program which had identical daily priorities (both preliminary and final) were grouped into eleven stream segments. The comparison of the preliminary and final priority dates for each stream segment is listed in Table 1.1.

TABLE 1.1

	PRELIMINARY PRIORITIES		
STREAM SEGMENT	NUMBER OF DAYS CORRECT	NUMBER OF DAYS OVER-ESTIMATED	NUMBER OF DAYS UNDER-ESTIMATED
Henrys Lake to Island Park	112 (57%)	47 (24%)	37 (19%)
Island Park to Falls River	91 (46%)	59 (30%)	46 (23%)
Falls River to Teton River	87 (44%)	66 (34%)	43 (22%)
Irwin to Lorenzo	79 (40%)	75 (38%)	42 (21%)
Teton R/Lorenzo to Willow Cr	85 (43%)	63 (32%)	48 (24%)
Willow Creek to NR Blackfoot	85 (43%)	63 (32%)	48 (24%)
NR Blackfoot to Minidoka	113 (58%)	65 (33%)	18 (9%)
Minidoka to Milner	111 (57%)	66 (34%)	19 (10%)
Falls River	85 (43%)	63 (32%)	48 (24%)
Teton River	76 (39%)	58 (30%)	62 (32%)
Willow Creek	105 (54%)	51 (26%)	40 (20%)

An overestimated preliminary priority date occurs when the final priority date is lower (earlier) than the preliminary date. The preliminary priority date is underestimated when the final priority date is higher (later) than the preliminary number.

The percentage of accuracy for the reaches should only be used as an indicator of either a flaw in the input data or the computer program. Reach percentages should not be used to predict individual priorities within a reach. Overall accuracy of all preliminary priorities in 1989 for Willow Creek was 54%. However, the preliminary priority of April 1, 1884, predicted 33 days, was correctly predicted 28 times (85%). It was overestimated three times (9%) and underestimated two times (6%).

The NR Blackfoot to Minidoka stream reach, which had the best accuracy percentage (58%), predicted either December 30, 1999, or December 31, 1999, for 37 days. It overestimated the priority date on all 37 days (100% incorrect).

Accuracies for each individual priority within a reach are contained in the Appendix.

PRELIMINARY PRIORITY DATE PRECISION

It is more difficult to access the preciseness of each predicted date. We know from Table 1.1 and the Appendix the percentages a priority date is overestimated or underestimated. However, we do not know by how much it is underestimated or overestimated. A preliminary priority date may be accurate 60% of the time, but may be within a few cubic feet per second (cfs) of the final date the remaining 40% of the time.

For example, assume a diversion at Blackfoot has a water right with a priority of **February 6, 1895.** Also, assume the Snake River and its tributaries above the diversion are supplying a natural flow of **12,424 cfs**, and total diversions with senior water rights is **12,404 cfs**, leaving a total of 20 cfs (12,424 cfs - 12,404 cfs = 20 cfs) available for the Blackfoot diversion. The preliminary priority date predicted by the daily accounting program for the river at Blackfoot would be **February 6, 1895.**

At the end of the year, final evaporation totals are input into the data base; daily shifts are input to calculate precise canal and streamflow discharges; and some reservoir storages are adjusted, resulting in a natural flow of **12,437 cfs** and a senior water-right diversion of **12,437 cfs.** The final priority date computed at Blackfoot would be earlier than **February 6, 1895**, perhaps **January 9, 1895.** The preliminary priority date was overestimated.

The preliminary priority date would have been underestimated had the above example been reversed: A preliminary accounting of **12,437 cfs** in both natural flow and senior-right diversion predicts a preliminary priority date of **January 9, 1895.** A final accounting of **12,424 cfs** natural flow and **12,404 cfs** of senior-right diversion yields a final priority date of **February 6, 1895.**

It would be difficult to access the differences in cfs amounts between the preliminary and final numbers. All of the diversion and flow data for each day of both the daily accounting and final accounting would need to be analyzed. As can be seen from the above examples, a very small change (approximately 20 cfs) in diversions and natural flow for the entire river system could change the final priorities either upward or downward.

DISCUSSION AND SUMMARY

Accuracies of preliminary priority dates will vary from year to year depending on the amount and magnitude of the changes made to the accounting program at the end of the irrigation season. By examining the accuracies each year, the Water District may be able to alter the accounting program or improve the input data to dampen the effect of these changes.

Statistical regressions should be made to determine if there is a correlation between prediction accuracy and natural flow, total diversions, precipitation, and time of year. Only by comparing the preliminary and final priorities from year to year will the Water District know if these tendencies hold true every year, or are just characteristic of a particular year under specific circumstances.

If the same trends continue annually, the Water District can improve prediction accuracy significantly by modifying preliminary data during the irrigation year. If the earlier priorities on a specific stream segment are consistently underestimated, an adjustment to the accounting program or input data could be made to correct the error during low flow periods.

Many times the Water District has been asked during the irrigation season by canal-managers **"How good is the preliminary priority date?"** After a few years of comparing preliminary dates with final dates, the Water District will be able to give them a precise estimate of the chances of being correct at the end of the year.

APPENDIX

Summary of 1989 Preliminary Priority Dates for the 11 Stream Segments in Water District #1. Period of use: April 1 through October 31, excluding June 16 through June 30, August 17, August 18, and September 20.

SNAKE RIVER

Irwin to Lorenzo

Preliminary Priorities	Number of days predicted	Number of days correct	Number of days over-estimated	Number of days under-estimated
1999/12/31	13	0	13	0
1999/12/30	3	0	3	0
1969/06/16	2	0	0	2
1939/07/28	53	26	27	0
1939/04/01	3	0	2	1
1935/03/14	6	1	3	2
1921/04/01	1	0	0	1
1921/03/31	7	7	0	0
1921/03/30	3	0	2	1
1916/11/14	1	0	1	0
1916/01/22	1	0	0	1
1915/12/22	2	0	1	1
1913/05/24	6	6	0	0
1908/08/06	1	1	0	0
1905/10/07	3	3	0	0
1903/03/26	10	5	3	2
1902/04/14	2	1	0	1
1901/05/01	1	0	1	0
1901/01/23	1	0	1	0
1900/10/11	5	0	0	5
1900/06/01	1	0	1	0
1898/04/01	1	0	0	1
1895/02/06	15	11	2	2
1895/01/09	2	0	0	2
1894/08/18	12	7	2	3
1894/06/01	2	1	0	1
1893/04/30	1	0	0	1
1892/06/01	4	2	1	1
1892/04/08	5	1	0	4
1891/12/14	8	2	2	4
1891/06/01	2	0	1	1
1891/01/24	1	0	1	0
1890/07/12	6	1	1	4
1890/06/10	6	2	4	0
1890/06/01	3	0	2	1
1889/06/01	3	2	1	0
Totals	**196**	**79 (40%)**	**75 (38%)**	**42 (21%)**

HENRY'S FORK

Henry's Lake to Island Park

Preliminary Priorities	Number of days predicted	Number of days correct	Number of days over-estimated	Number of days under-estimated
1999/12/31	11	0	11	0
1999/12/30	7	0	7	0
1935/03/14	9	0	9	0
1921/03/30	2	0	2	0
1917/05/15	62	62	0	0
1916/11/14	1	0	1	0
1916/01/22	1	0	0	1
1915/12/22	2	1	1	0
1913/05/24	6	6	0	0
1908/08/06	1	1	0	0
1905/10/07	2	2	0	0
1903/03/26	9	5	2	2
1902/04/14	2	0	1	1
1901/05/01	1	0	1	0
1901/01/23	1	0	1	0
1900/10/11	5	1	1	3
1900/06/01	1	0	1	0
1898/04/01	1	0	0	1
1895/02/06	15	11	2	2
1895/01/09	3	0	1	2
1894/08/18	12	7	2	3
1894/06/01	2	0	0	2
1893/04/30	1	0	0	1
1892/06/01	4	2	1	1
1892/04/28	3	1	0	2
1892/04/08	2	0	0	2
1891/12/14	19	7	1	11
1891/06/01	1	0	0	1
1891/01/24	8	6	0	2
1890/11/24	1	0	1	0
1890/10/16	1	0	1	0
Totals	196	112 (57%)	47 (24%)	37 (19%)

HENRY'S FORK

Island Park to Falls River

Preliminary Priorities	Number of days predicted	Number of days correct	Number of days over-estimated	Number of days under-estimated
1999/12/31	16	0	16	0
1999/12/30	21	7	14	0
1969/06/16	2	0	0	2
1939/07/28	32	26	6	0
1939/04/01	3	0	2	1
1935/03/14	6	1	3	2
1921/04/01	1	0	0	1
1921/03/31	6	6	0	0
1921/03/30	4	1	2	1
1916/11/14	1	0	1	0
1916/01/22	1	0	0	1
1915/12/22	2	1	1	0
1913/05/24	6	6	0	0
1908/08/06	1	1	0	0
1905/10/07	3	3	0	0
1903/03/26	10	5	3	2
1902/04/14	2	0	1	1
1901/05/01	1	0	1	0
1901/01/23	1	0	1	0
1900/10/11	5	0	1	4
1900/06/01	1	0	1	0
1898/04/01	1	0	0	1
1895/02/06	15	11	2	2
1895/01/09	2	0	0	2
1894/08/18	12	7	2	3
1894/06/01	2	0	0	2
1893/04/30	1	0	0	1
1892/06/01	4	2	1	1
1892/04/28	3	1	0	2
1892/04/08	2	0	0	2
1891/12/14	18	7	1	10
1891/06/01	1	0	0	1
1891/01/24	8	6	0	2
1890/11/24	1	0	0	1
1890/10/16	1	0	0	1
Totals	**196**	**91 (46%)**	**59 (30%)**	**46 (23%)**

HENRY'S FORK

Falls River to Teton River

Preliminary Priorities	Number of days predicted	Number of days correct	Number of days over-estimated	Number of days under-estimated
1999/12/31	23	1	22	0
1999/12/30	14	0	14	0
1969/06/16	2	0	0	2
1939/07/28	32	26	6	0
1939/04/01	3	0	2	1
1935/03/14	7	1	4	2
1921/04/01	1	0	0	1
1921/03/31	6	6	0	0
1921/03/30	3	1	2	0
1916/11/14	1	0	1	0
1916/01/22	1	0	0	1
1915/12/22	2	1	1	0
1913/05/24	6	6	0	0
1908/08/06	1	1	0	0
1905/10/07	3	3	0	0
1903/03/26	10	5	3	2
1902/04/14	2	0	1	1
1901/05/01	1	0	1	0
1901/01/23	1	0	1	0
1900/10/11	5	0	1	4
1900/06/01	1	0	1	0
1898/04/01	1	0	0	1
1895/02/06	15	11	2	2
1895/01/09	3	1	0	2
1894/08/18	11	7	2	2
1894/06/01	2	0	0	2
1893/04/30	1	0	0	1
1892/06/01	4	2	1	1
1892/04/28	4	1	0	3
1892/04/08	1	0	0	1
1891/12/14	18	8	1	9
1891/06/01	1	0	0	1
1891/01/24	8	6	0	2
1890/11/24	1	0	0	1
1890/10/16	1	0	0	1
Totals	**196**	**87 (44%)**	**66 (34%)**	**43 (22%)**

FALLS RIVER

Preliminary Priorities	Number of days predicted	Number of days correct	Number of days over-estimated	Number of days under-estimated
1999/12/31	22	1	21	0
1999/12/30	15	1	14	0
1969/06/16	2	0	0	2
1939/07/28	32	26	6	0
1939/04/01	3	0	2	1
1935/03/14	6	1	3	2
1921/04/01	1	0	0	1
1921/03/31	7	6	0	1
1921/03/30	3	1	2	0
1916/11/14	1	0	1	0
1916/01/22	1	0	0	1
1915/12/22	2	0	0	2
1913/05/24	6	6	0	0
1908/08/06	1	1	0	0
1905/10/07	3	3	0	0
1903/03/26	10	5	3	2
1902/04/14	2	0	1	1
1901/05/01	1	0	1	0
1901/01/23	1	0	1	0
1900/10/11	5	0	1	4
1900/06/01	1	0	1	0
1898/04/01	1	0	0	1
1895/02/06	15	11	2	2
1895/01/09	2	0	0	2
1894/08/18	12	7	2	3
1894/06/01	2	0	0	2
1893/04/30	1	0	0	1
1892/06/01	4	2	1	1
1892/04/28	2	0	0	2
1892/04/08	3	1	0	2
1891/12/14	18	7	1	10
1891/06/01	1	0	0	1
1891/01/24	8	6	0	2
1890/11/24	1	0	0	1
1890/10/16	1	0	0	1
Totals	196	85 (43%)	63 (32%)	48 (24%)

TETON RIVER

Preliminary Priorities	Number of days predicted	Number of days correct	Number of days over-estimated	Number of days under-estimated
1999/12/31	24	1	23	0
1999/12/30	13	0	13	0
1969/06/16	2	0	0	2
1939/07/28	32	26	6	0
1939/04/01	3	0	2	1
1935/03/14	6	1	3	2
1921/04/01	1	0	0	1
1921/03/31	7	6	0	1
1921/03/30	3	1	2	0
1916/11/14	1	0	1	0
1916/01/22	1	0	0	1
1915/12/22	2	1	1	0
1913/05/24	6	6	0	0
1908/08/06	1	1	0	0
1905/10/07	3	3	0	0
1903/03/26	10	5	3	2
1902/04/14	2	1	0	1
1901/05/01	1	0	1	0
1901/01/23	1	0	1	0
1900/10/11	5	0	0	5
1900/06/01	1	0	1	0
1898/04/01	1	0	0	1
1895/02/06	9	7	0	2
1895/01/09	2	0	0	2
1894/08/18	7	4	0	3
1894/06/01	2	1	0	1
1893/04/30	1	0	0	1
1892/06/01	2	1	1	0
1892/04/28	2	0	0	2
1891/12/14	15	7	0	8
1891/01/24	6	4	0	2
1890/11/24	1	0	0	1
1890/10/16	1	0	0	1
1889/10/01	1	0	0	1
1885/10/17	7	0	0	7
1885/06/01	14	0	0	14
Totals	196	76 (39%)	58 (30%)	62 (32%)

SNAKE RIVER

Teton River/Lorenzo to Willow Creek

Preliminary Priorities	Number of days predicted	Number of days correct	Number of days over-estimated	Number of days under-estimated
1999/12/31	24	1	23	0
1999/12/30	13	0	13	0
1969/06/16	2	0	0	2
1939/07/28	32	26	6	0
1939/04/01	3	0	2	1
1935/03/14	6	1	3	2
1921/04/01	1	0	0	1
1921/03/31	6	6	0	0
1921/03/30	4	1	2	1
1916/11/14	1	0	1	0
1916/01/22	1	0	0	1
1915/12/22	2	1	1	0
1913/05/24	6	6	0	0
1908/08/06	1	1	0	0
1905/10/07	3	3	0	0
1903/03/26	10	5	3	2
1902/04/14	2	1	0	1
1901/05/01	1	0	1	0
1901/01/23	1	0	0	1
1900/10/11	5	0	0	5
1900/06/01	1	0	1	0
1898/04/01	1	0	0	1
1895/02/06	15	11	3	1
1895/01/09	2	0	0	2
1894/08/18	12	7	2	3
1894/06/01	2	0	0	2
1893/04/30	1	0	0	1
1892/06/01	4	2	1	1
1892/04/28	5	1	0	4
1891/12/14	17	6	1	10
1891/06/01	1	0	0	1
1891/01/24	9	6	0	3
1890/11/24	1	0	0	1
1890/10/16	1	0	0	1
Totals	196	85 (43%)	63 (32%)	48 (24%)

SNAKE RIVER

Willow Creek to NR Blackfoot

Preliminary Priorities	Number of days predicted	Number of days correct	Number of days over-estimated	Number of days under-estimated
1999/12/31	24	0	24	0
1999/12/30	13	0	13	0
1969/06/16	2	0	0	2
1939/07/28	32	26	6	0
1939/04/01	3	0	2	1
1935/03/14	6	1	3	2
1921/04/01	1	0	0	1
1921/03/31	7	6	0	1
1921/03/30	3	1	2	0
1916/11/14	1	0	1	0
1916/01/22	1	0	0	1
1915/12/22	2	1	1	0
1913/05/24	6	6	0	0
1908/08/06	1	1	0	0
1905/10/07	3	3	0	0
1903/03/26	10	5	3	2
1902/04/14	2	1	0	1
1901/05/01	1	0	1	0
1901/01/23	1	0	1	0
1900/10/11	6	1	0	5
1900/06/01	1	0	1	0
1898/04/01	1	0	0	1
1895/02/06	15	11	2	2
1895/01/09	2	0	0	2
1894/08/18	12	7	2	3
1894/06/01	2	0	0	2
1893/04/30	1	0	0	1
1892/06/01	3	2	0	1
1892/04/28	6	1	0	5
1891/12/14	18	7	1	10
1891/06/01	1	0	0	1
1891/01/24	7	5	0	2
1890/11/24	1	0	0	1
1890/10/16	1	0	0	1
Totals	196	85 (43%)	63 (32%)	48 (24%)

SNAKE RIVER

NR Blackfoot to Minidoka

Preliminary Priorities	Number of days predicted	Number of days correct	Number of days over-estimated	Number of days under-estimated
1999/12/31	24	0	24	0
1999/12/30	13	0	13	0
1969/06/16	2	0	0	2
1939/07/28	32	26	6	0
1939/04/01	3	0	2	1
1935/03/14	6	1	3	2
1921/04/01	1	0	0	1
1921/03/31	6	6	0	0
1921/03/30	4	1	2	1
1916/11/14	1	0	1	0
1916/01/22	1	0	0	1
1915/12/22	2	1	1	0
1913/05/24	6	6	0	0
1908/08/06	1	1	0	0
1905/10/07	8	4	4	0
1903/03/26	36	26	8	2
1902/04/14	2	1	0	1
1901/01/23	1	0	1	0
1900/10/11	47	40	0	7
Totals	196	113 (58%)	65 (33%)	18 (9%)

SNAKE RIVER

Minidoka to Milner

Preliminary Priorities	Number of days predicted	Number of days correct	Number of days over-estimated	Number of days under-estimated
1999/12/31	24	0	24	0
1999/12/30	13	0	13	0
1969/06/16	2	0	0	2
1939/07/28	32	26	6	0
1939/04/01	3	0	2	1
1935/03/14	6	1	3	2
1921/04/01	2	1	0	1
1921/03/31	6	4	0	2
1921/03/30	3	1	2	0
1916/11/14	1	0	1	0
1916/01/22	1	0	0	1
1915/12/23	1	1	0	0
1915/12/22	3	2	1	0
1913/05/24	4	4	0	0
1908/08/06	1	1	0	0
1905/10/07	9	4	5	0
1903/03/26	35	25	8	2
1902/04/14	2	1	0	1
1901/01/23	1	0	1	0
1900/10/11	47	40	0	7
Totals	**196**	**111 (57%)**	**66 (34%)**	**19 (10%)**

WILLOW CREEK

Preliminary Priorities	Number of days predicted	Number of days correct	Number of days over-estimated	Number of days under-estimated
1969/06/16	40	13	26	1
1939/07/28	26	20	6	0
1939/04/01	4	0	2	2
1935/03/14	4	1	2	1
1921/04/01	2	0	0	2
1921/03/31	6	6	0	0
1921/03/30	4	1	2	1
1916/11/14	1	0	1	0
1916/01/22	1	0	0	1
1915/12/22	1	0	1	0
1913/05/24	5	4	1	0
1908/08/06	1	1	0	0
1905/10/07	3	2	1	0
1903/03/26	7	5	0	2
1902/04/14	1	0	1	0
1901/01/23	1	0	1	0
1900/10/11	5	0	1	4
1898/04/01	1	0	0	1
1891/12/14	3	0	3	0
1891/01/24	1	1	0	0
1889/05/01	6	6	0	0
1888/05/01	4	1	0	3
1885/04/01	3	3	0	0
1884/04/01	33	28	3	2
1883/04/01	23	13	0	10
1882/06/01	2	0	0	2
1882/04/01	5	0	0	5
1881/04/01	3	0	0	3
Totals	196	105 (54%)	51 (26%)	40 (20%)

THE WATER DISTRICT 1 UPPER SNAKE RIVER WATER SUPPLY BANK

SUMMARY OF OPERATING PROCEDURES

In general water stored in Upper Snake River reservoirs is accomplished under water rights granted for the beneficial purpose of irrigation. Under state law the use of this water for other purposes would require the approval of a transfer to change the nature of use of the water right. There is also the concern that, even if such a change is made using the statutory provisions of Idaho Code Sect. 42-222, the Constitutional Provisions of Art. 15 sec. 4 might restrict the transfer back to the original use. The water banking provisions added to the Idaho Code in 1979 provide a mechanism for conveniently making stored water available to new lands and different uses. The space holders and the Department of Water Resources shared the concern over the potential impacts of water banking activities. The rules (procedures) of the Committee of Nine attempted to address these concerns. These initial concerns could be categorized as follows:

1. Water supplies for irrigation must not be impacted by water banking activities.
2. The rights of other water users must not be injured by the change in nature of use of stored water.
3. The rights of suppliers must not be jeopardized through assignments to the bank.

The Water Bank rules cover 9 general areas which are identified and summarized as follows:

Rule 1 - AUTHORITY AND STATEMENT OF PURPOSE

This rule identifies the statutory authority under which the water bank will operate and the purpose for the rules. These purposes are:

1. Make water available to new uses and users.
2. Provide the incentives to supply water to the bank.
3. Provide a place to seek needed water.
4. Provide revenue for Water District 1.

In addition rule one provides authorizes the supplying of water for all beneficial uses of water but specifically prohibits the sale of water for maintaining minimum stream flows in excess of those established by the water resources board.

Rule 2 - DEFINITIONS

This rule simply defines the terms that will be used in the rules.

Rule 3 - GENERAL

Rule three defines the general philosophies under which the bank operates and are summarized as follows:

1. Operation should maximize the beneficial uses of water supplies.
2. Operation of the bank will be by and for irrigators - through the Committee of Nine.
3. No committment is made to suppliers to sell the water they supplied to the bank, other than they will share proportionally in the proceeds from the bank.
4. Those who receive money for the sale of water to users ourside of Water District 1 will bear the risk of refill in the following year.

Rule 4 - MANAGMENT

Rule four defines the authorities and procedures for managing the water bank on a day-to-day basis. This rule specifically provides:

1. That all procedures will be adopted through the approval of the Committee of Nine.

2. For the creation of the rental pool committee made up of the watermaster, the superintendent of the Minidoka Project for the BOR, and three members of the committee of nine.
   A. The purpose of this committee is to:
   i. Determine general policies not covered by the rules.
   ii. Assist the watermaster in the allocation of water bank supplies.
   iii. Advise the Committee of Nine.
   iv. Set policies for disbursing funds.

RULE 5 - ASSIGNMENTS

This rule specifies who can assign water and how such assignments will take place. Rule 5.8 specifically provides for assignments of water periods of time up to 20 years.

RULE 6 - PRIORITIES

This rule establishes procedures for paying suppliers from the proceeds form annual water sales.

RULE 7 - LESSOR PRIORITIES

This rule specifies that water is available through the water bank on a priority basis with first priority going to irrigators who own space in one or more federal reservoirs. The second priority goes to other irrigation water users located above Milner. Priority within each category shall be established by the date the rental request and appropriate payment is received by the watermaster. Rule 7.6 specifies that water from reservoirs not subject to the Reclamation Reform Act of 1982 will go for irrigation purposes first. Rule 7.7 provides for a penalty for diverting storage without first paying for it. Rule 7.8 provides the mechanism for returning unused water to the water bank.

RULE 8 - LEASE PAYMENTS AND WATER COST

This rule provides the procedures for setting the price for water bank water and how funds received will be divided between the water district and the suppliers.

RULE 9 - LONG-TERM LEASES

Rules 9 through 13 spell out several possible mechanisms for making commitments for periods in excess of one year. Rule 9 outlines the general procedures entering into long-term contracts. Rule 9.4 identifies four categories of long-term lease arangeements that are then individually provided for in Rules 10, 11, 12, 13. These four types of leases are identified as:

1. Preference leases.
2. Insurance water.
3. Long-term assignments.
4. Negotiated leases.

These four types of arrnagements are summarized as followes:

Preference leases provide a committment to be considered in the allocation of annual water bank supplies with out having to submit an application each year and to receive a higher priority than could be expected through an annual request.

Insurance water provides for periodic uses that are triggered under certain conditions. Under such an arrangement no water would be delivered to the lessee unless the triggering conditions are met. Then those who supplied the water for this purpose would receive all of the funds paid in and the lessor would in return get the assigned water. This could facilitate fish flush or be

used to increase "firm power" supplies.

Lease of long-term assignments establishes the rules for arranging long-term leases of storage space assigned to the bank for the term of the lease (or longer.)

Negotiated leases are simply leases between two or more parties who wish to avail themselves of the legal protections offered by using the water bank to facilitate the lease.

August 6, 1990

TO: Dave Shaw

FROM: Bob Sutter, Hydrology Section

COPY: Alan Robertson

SUBJECT: Upper Snake Water Right Accounting with 1867 Reservation Canal Right

Portions of the 1988 and 1989 Upper Snake water right accounting were rerun advancing 340 cfs of the 600 cfs 1891 Reservation Canal right to 1867. The table on the following page lists the increases in storage used by canal resulting from this change.

For the 1989 year, all historic data was used. The Reservation Canal would have used 8845 acre-feet less storage with the advanced right. For the 1988 year, all historic data were used with the exception of the Reservation Canal diversion. Because the Reservation Canal deliberately shut down in late August to prevent storage use, these diversions were modified as follows:

June 21 to September 15	-	600 cfs
September 16 September 30	-	500 cfs
October 1 to October 15	-	400 cfs
October 16 to October 31	-	300 cfs

This resulted in a storage use of 43367 acre-feet by the Reservation canal, which presumably would be charged to the non-Indian users.

Changes in storage use less than 20 acre-feet were not listed in the following table.

Increase in Storage Use with 1867 Reservation Canal Right
(acre-feet)

Canal	1988	1989
ANDERSON	106	
FARMERS FRIEND	109	
HARRISON	1148	
RUDY	715	
LOWDER SLOUGH	94	
KITE & NORD	26	
BURGESS	584	
DILTS	57	
ISLAND	618	200
MATTSON-CRAIG	30	
SUNNYDELL	1292	89
LENROOT	315	60
REID	1052	
TEXAS & LIBRTY P	244	57
BANNOCK JIM	121	
MARYSVILLE	226	
FARMERS OWN	197	
CONANT CR CANAL	50	
ENTERPRISE	41	
FALL RIVER CANAL	7708	
SILKEY	106	
CURR	93	
LAST CHANCE	59	
FARMERS FRIEND	365	
SALEM UNION	841	
EGIN	281	
INDEPENDENT	137	
CONSOLIDATED FRS	288	50
V SCHWENDIMAN	45	
WILFORD	163	
WOODMANSEE-JSN	40	
REXBURG IRRIG	187	
BUTTE & MARKET L	5253	1535
ARRINGTON	85	34
OSGOOD	322	64
KENNEDY	28	
GREAT WESTERN, PORTER	8226	6260
IDAHO	23261	
PROGRESSIVE WILLOW CR	82	
WOODVILLE	688	
SNAKE RIVER VY	2674	
BLACKFOOT	4089	
NEW LAVA SIDE	515	361
ABERDEEEN	3522	
CORBETT	2233	
TREGO	235	41
MINIDOKA	718	
NORTHSIDE TWIN F	272	
TWIN FALLS SOUTH	151	

July 25, 1990

FROM: Bob Sutter, Idaho Department of Water Resources

TO: Don Barnett

COPY: Alan Robertson, Norm Young, Ron Carlson

SUBJECT: Crosscut Canal Water Accounting

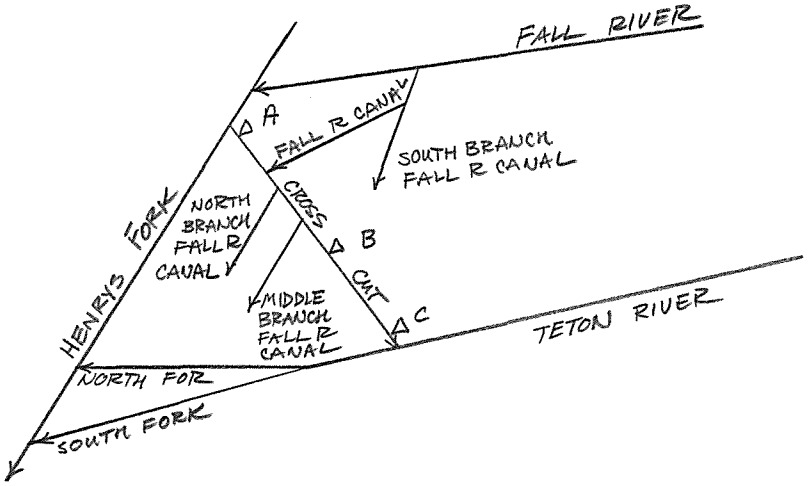
The Crosscut Canal diverts flow from the Henrys Fork to lands irrigated by the Fall River Canal Company and/or to the Teton River where the flow is rediverted or passes back downstream to the Henrys Fork. This memo describes the Upper Snake (Water District 01) water right accounting procedures used to account for this water.

There are three gages on the Crosscut Canal: 1) at the head where it diverts from the Henrys Fork, 2) below the diversions to the Fall River Canal Company lands, and 3) at the end where it enters the Teton River. In the diagram below, these gages are labeled points A, B, and C, respectively. The difference in flow from point A to point B is considered part of the diversion of the Fall River Canal Company and is treated the same as if the diversion were made from the Fall River through the main Fall River Canal.

The flow at point B, below the diversions to the Fall River Canal Company, is considered an alternate routing of water down the Henrys Fork and is not charged to any water user as long as at least an equivalent flow reaches the Teton River. If the flow at point C, the entry to the Teton River, is less than that at point B, the difference is considered an

unnatural loss and is then accounted for as stored water use by the Crosscut Canal (Fremont-Madison). If the flow at C is greater than B, the gain is treated as a natural flow gain to the Teton River.

As to the nature of the flow at the end of the Crosscut Canal, there is no determination made of what it is, nor is it necessary for the accounting. This flow could be natural flow from the Henrys Fork passing to downstream users, stored water passing downstream below the Teton, stored water passing to users on the Teton, or a combination of these. Actual use of stored water on the Teton is determined by the diversion of the individual canals. Anytime the rate of diversion of any canal exceeds its natural flow rights, stored water is charged to that canal. Therefore, other than the charging of losses from point B to point C, the operation of the Crosscut Canal is exclusively physical and does not affect the water right accounting in itself. For instance, all else remaining the same (losses, diversions, etc.) an increase or decrease in the flow of the Crosscut Canal will not change the amount of stored water charged to any user or district.



NATURAL FLOW DISTRIBUTION AND STORED WATER USE

The duty of a watermaster is to allocate the natural flows of a stream to the various users in accordance with their respective rights as defined in court decrees and state-issued licenses and permits. On streams having reservoirs it may also be his job to account for storage deliveries to points of use. The term "natural flow" refers to the flow that would occur if there were no upstream diversions or reservoirs. To determine natural flow the watermaster must measure the streamflow and any diversions and reservoir storage changes.

The water supply available to be allocated is defined by stream gages which divide a river system into a number of reaches. The daily natural gain to each reach is equal to the outflow minus inflow plus any diversions in the reach. Any irrigation return flow which occurs in the reach is therefore included as part of this gain and becomes available for allocation. If there is a reservoir in the reach the storage change is added. The sums of these inflows accumulated downstream to the ends of the various reaches represent the natural flows available for distribution according to water right priorities. In order to approximate the effects of the time for flow to travel through the system appropriate lag times may be incorporated in the inflow equation and in the summing process.

Allocation of the natural flows is performed by subtracting each right [beginning with the first priority] from the computed

natural flow at the end of the reach in which it occurs and from each downstream reach. These subtractions result in a set of remaining natural flows at the reach ends, which represent the flows allocatable to later priorities. Rights for each diversion are subtracted up to the actual measured diversion amounts as the canal rights are reached in the priority sequence.

The subtraction process proceeds sequentially through the water right priorities until a remaining natural flow of zero is encountered in a downstream reach. At this point all available natural flow is allocated in all reaches which have zero remaining natural flows in a downstream reach. Diversions which have not been satisfied are diversions of stored water.

Provided to Chuck B

ANNUAL ACCOUNTING CYCLE

1. The annual accounting cycle [irrigation year] begins with carry-over computed as of 31 October. Because this must be based on reviewed data it may actually not be available until February or March.

2. Begin daily accounting to determine reservoir accrual. Use reviewed USGS data if possible. Try to be near current before the irrigation season begins.

3. When irrigation begins continue accounting with HYDROMET and other preliminary data.

4. When reservoirs fill or reach maximum contents ["on paper"], allocate the stored water to the diversion accounts. Zero out storage use which may have been charged prior to the system filling or which may have occurred while Milner was spilling.

5. Keep accounts near current thru the remainder of the irrigation season. Issue weekly reports to users.

6. Before runoff increases in the fall re-set reservoir rights so that they can accrue water if some becomes available from storms in combination with declining diversions.

7. After 31 October begin replacing preliminary data with final data. For rivers and reservoirs HYDROMET data are replaced with reviewed USGS data. For canals having HYDROMET these data are retained. For canals with recorders mean daily diversions are computed and used in place of the once per day flow observations which were used during the season. Enter pump data not previously compiled.

8. Compute reach gains for all reaches to detect data errors. For reservoir reaches, eliminate unreasonable gain fluctuations by revising the storage record with data that will result in average gains during the fluctuating period.

9. Re-run entire accounting year in short sequences, checking data and results each time. Make appropriate adjustments as in 4 and 6, above.

10. Compute carry over by diversion and by reservoir in accordance with USBR guidelines.

11. Prepare data tables for annual report.

United States Department of the Interior

GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
230 Collins Road
Boise, Idaho 83702

TAKE PRIDE IN AMERICA

February 21, 1990

RECEIVED
FEB 22 1990
Department of Water Resources

Mr. Alan Robertson
Idaho Department of Water Resources
1301 North Orchard
Boise, Idaho 83706

Dear Alan:

As we discussed on the telephone February 20, 1990, our Idaho Falls field office will prepare the 1989 water year discharge record for Great Western Spillback (Station 13057132). These data will be published as part of our State Report.

There will be no additional charge for this work this year, but we will request full funding for the site in our 1991 FY program with Water District 01.

Nate Jacobson will probably want to include this station with the group he updates quarterly for the Watermaster.

I trust that this action will help resolve water-accounting problems in this important reach of Snake River.

Sincerely,

Robert W. Harper
Chief, Hydrologic Data Section

cc: Ron Carlson, Watermaster
Water District 01

N.D. Jacobson, Idaho Falls
Field Office

J.L. Hughes, District Chief
Boise, ID

RWH/mrl

University of Idaho
Research and Extension Center
3793 North 3600 East
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MEMORANDUM

February 22, 1990

TO: Advisory Committee Members
Upper Snake Water Allocation Program Project

FROM: C.E. Brockway

SUBJECT: Committee Meeting February 27, 1990

Enclosed is a draft of a proposed outline for the Operations Manual for the project. Please review the draft and be prepared to comment on the content and overall objectives of the project at the Tuesday meeting. I want to be sure that the project's final product meets the needs of current and future operating personnel for the District, and is informative for water users as well.

The meeting is scheduled for 10:00 AM at the Kimberly Research Center on Tuesday, February 27. I expect that we will be finished by at least 2:00 PM.

CEB:af
cc: Dr. Roy Mink, IWRRI
Ron Carlson, WD1
Ted Diehl, Northside Canal Co.
Jack Eakin, Twin Falls Canal Co.
Alan Robertson, IDWR
Dale Rockwood
Bob Sutter, IDWR
Dale Swensen, Fremont-Madison Canal Co.
Max Vandenberg, USBR
Bruce Sandoval, UI-WD1

Proposed Outline
Operations Manual
Upper Snake Water Allocation Procedures

Foreword
Summary
Purpose of Project
Use of Manual

I. WATER DISTRICT ONE

A. History, information, operating agencies and management structure
Committee of Nine

1. Idaho Department of Water Resources

a. Regulatory responsibilities

b. Idaho Falls Office
x. water master
y. organization
z. cooperative efforts with Water District One

c. Water rights accounting program
x. general description and purpose
y. credits to authors of programs
z. evolution

2. United States Geological Survey
a. Responsibilities
b. Data acquisition
x. Main functions
y. Stream gauging
z. Projects
xx. Data base

3. Bureau of Reclamation
a. Reservoir operations CE
b. Data acquisition

B: Physical Description

1. Geography
a. map
b. total area/ acreage irrigated
c. important sites

2. Hydrogeology
a. basic geological structure
b. surface/ ground water relationships

3. Hydrology
a. rivers and watersheds

b. reservoirs
c. aquifers

4. Sources of water supply
   a. surface water
      x. natural flow
      y. storage water; USBR contracts
         1. water bank
         2. reservoir shares
         3. carryover

   b. groundwater; relationship to surface water and water rights accounting procedure

C. Water Law

1. Doctrine of Prior Appropriation
   a. beneficial use
   b. priorities
   c. types of water rights
      w. court decrees
      x. licenses and permits
      y. adjudicated rights

2. Classifications of water rights
   a. Irrigation
   b. stockwater
   c. power
   d. storage
   e. domestic
   f. exchange pumping

II. OPERATIONS MANUAL

A. Summary and Use

1. Intended to give a nearly step by step procedure for using the water rights accounting program -- the network description takes a detailed look at the methods used to conduct the accounting and other procedures.

2. Alteration and comment pages are included so the manual can be expandable and dynamic to keep pace with the growth of the computer operations used for water rights accounting in Water District One.

B. Data Types

1. Flow data (f)

2. Diversions
   a. canals (d)
   b. pumps (p)
   c. exchange pumps (e)

3. Reservoir data (r)

4. Evaporation data

C. Daily Operation

1. Reservoir managment (in conjunction with USBR)
   a. snow surveys/runoff prediction
   b. checking Hydrometer river and reservoir data
      x. report problems with stations
      y. critical stations
   c. calculating (changes) in diversion demand
   d. calculating (changes) in inflows
   e. travel times for delivery

2. Data Gathering
   a. Idaho Falls Office telephone communications
      x. South Fork Snake River
      y. Sand and Willow Creek
      z. Snake River, Idaho Falls to Blackfoot
      xx. Butte and Market Lake, Bear Trap, and Kennedy-Clements
   b. Fremont-Madison Office
      x. computer operations
      y. Henry's Fork
      z. Falls River
      xx. Teton Basin
      yy. Canyon creek Lateral and Teton Pipeline
   c. Hydrometer
      x. computer operations
      y. Hydrometer tables
      z. shift ← USGS updates
   d. Bureau of Reclamation, Burley office
      x. computer operations
      y. Milner area canals
      z. Minidoka and Burley canals
      xx. Falls Irrigation District
   e. USGS
      x. computer operations) NOT DAILY
      y. flow data
   f. miscellaneous
      x. pumps
      y. exchange pumps
      z. evaporation
      xx Ft. Hall- Michaud

3. Data Review
   a. shifts
   b. errors (odd data)

4. Data entry
   a. formatting Hydrometer data
   b. entering data on the PC
      x. Fremont-Madison

y. Idaho Falls phoned in data
c. transferring data to VAX
d. missing data
e. creating the SNKdent input file
f. changing static input files

5. Running the water rights accounting program
a. options
x. number of days
y. projecting flows
z. output
b. output review
x. priorities and apparent allocations
y. continuous files
1. history files
2. allocation file

D. "Monthly" Operations

1. Data gathering
a. HP station monitors
b. pump cards
c. stage recorders

2. Shift corrections
a. linear adjustments
b. discontinuous adjustments

E. Yearly Operations

Update water rights

1. Data Review
a. new data
b. data corrections

2. Pump inventory

3. Reservoir Storage allocations

4. Final running of the water rights accounting program Reach gains

Carry-over determination (water bank, adjustments,

5. Billing

Report

III. PROGRAM NETWORK DESCRIPTION

A. A Network of Files

1. Input Files
2. Command Files
3. Executable Files
4. Output files

B. Main program listing and explanation by section

C. Important Peripheral Files Description

1. SNKDENT.COM (data entry program)
   a. SNKDENT.exe
   b. SNKCHGREC.COM (change records)
   c. SNKHSTUP.EXE (history file update)

2. SNKWRA.COM (water right accounting command file)
   a. SNKSEL.EXE (data selection program)
   b. ?chg.* (file or data changing program)
   c. SNKWRA.EXE (main program)
   d. SNKALCUP.* (allocations updating program)

3. SNKSTO.EXE (reservoir storage allocations programs)

4. SNKBILL.EXE (water users billing program)

IV. INDEX

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February 7, 1990

To: **UPPER SNAKE WATER USE ACCOUNTING ADVISORY COMMITTEE**

From: C. E. Brockway

MEETING ANNOUNCEMENT AND AGENDA

PLACE: *Soil & Water Research Center (formerly Snake River Conservation Research Center), Kimberly, Idaho*

DATE: *Tuesday, February 27, 1990 - 10:00 am*

The first meeting of the Advisory Committee for the project on the Upper Snake River Water Use Accounting Model will be held on Tuesday, February 27 at the Soil and Water Research Center in Kimberly. The meeting will begin at 10:00 am and run through approximately 2:00 pm.

AGENDA ITEMS

1. Review and discussion of the proposed outline for the operations manual
2. Discussion of updates by IDWR on American Falls inflow and evaporation procedures
3. Discussion on procedures for accommodating potential future updates and revisions
4. Input from committee members on current concerns

Please contact me immediately if you have any problem with the date or timing or any additions to the agenda.

CEB:af
cc: Dr. Roy Mink, IWRRI
Ron Carlson, WD1
Ted Diehl, Northside Canal Co.
Jack Eakin, Twin Falls Canal Co.
Alan Robertson, IDWR
Dale Rockwood
Bob Sutter, IDWR
Dale Swensen, Fremont-Madison Canal Co.
Max Vandenberg, USBR Mike Beus
Bruce Sandoval, UI-WD1

C:\CEB\PROJECTS\WD1\0290MTG.DOC

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January 5, 1990

Ron Carlson
150 Shoup Avenue
Idaho Falls, ID 83402

Dear Ron:

Enclosed is the first progress report on the research project to update the Snake River Water Use Allocation Program. It includes activities by the University, and particularly, Bruce Sandoval, since the project inception on August 1, 1989. We are preparing for a short presentation on progress for the proposed Committee of Nine meeting on January 23 in Pocatello.

As we discussed on January 5, I have asked Dale Swensen of Fremont-Madison Irrigation District to serve on the project advisory committee. Enclosed is the updated membership list for the Advisory Committee.

Sincerely,

C. E. Brockway, P.E.

CEB:af
cc: Advisory Committee
IWRRI
Bruce Sandoval

IDAHO WATER RESOURCES RESEARCH INSTITUTE

ADVISORY COMMITTEE MEMBERSHIP

UPDATE OF THE SNAKE RIVER WATER USE ACCOUNTING PROGRAM

Ron Carlson
Water District No. 1
150 Shoup Avenue
Idaho Falls, ID 83402

Ted Diehl
Northside Canal Company
921 North Lincoln
Jerome, ID 83338

Jack Eakin
Twin Falls Canal Company
163 2nd Avenue West
Twin Falls, ID 83301

Alan Robertson
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1301 N. Orchard St.
Boise, ID 83720

Dale Rockwood
6665 North 55 East
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Bob Sutter
Idaho Department of Water Resources
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Dale Swensen
Fremont–Madison Irrigation District
P.O. Box 5
St. Anthony, ID 83445

Max Vandenberg
U.S. Bureau of Reclamation
1359 Hansen Avenue
Burley, ID 83318

PROGRESS REPORT

UPDATE OF THE SNAKE RIVER WATER USE ACCOUNTING PROGRAM

TO

WATER DISTRICT NO. 1

by

IDAHO WATER RESOURCES RESEARCH INSTITUTE

December 31, 1989

PROGRESS REPORT

UPDATE OF THE SNAKE RIVER WATER USE ACCOUNTING PROGRAM

August 1 – December 31, 1989

INTRODUCTION

On August 1, 1989, the Institute entered into a contract with Water District No. 1 to update the Snake River allocation program to enhance data input and user interaction and document all new and previous changes in the program. Assistance is to be provided to the Idaho Department of Water Resources and Water District No. 1 under a program which would support a graduate student in Civil or Agricultural Engineering working under Dr. Charles Brockway at the Kimberly Research and Extension Center. This report outlines the progress from August 1 through December 31, 1989.

Mr. Bruce Sandoval, a recent graduate in Agricultural Engineering at Utah State University, was accepted for graduate school in the Department of Civil Engineering at the University of Idaho and has been on the project since August 7. He is stationed in Idaho Falls at the Water District No. 1 office and is working closely with staff.

Advisory Committee

An advisory committee has been set up to provide liaison with agencies and users and provide input to project personnel. The advisory committee consists of the following individuals:

Dale Rockwood
6665 North 55 East
Idaho Falls, ID 83401

Bob Sutter
Idaho Department of Water Resources
1301 N. Orchard St.
Boise, ID 83720

Alan Robertson
Idaho Department of Water Resources
1301 N. Orchard St.
Boise, ID 83720

Jack Eakin
Twin Falls Canal Company
163 2nd Avenue West
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Ted Diehl
Northside Canal Company
921 North Lincoln
Jerome, ID 83338

Max Vandenberg
U.S. Bureau of Reclamation
1359 Hansen Avenue
Burley, ID 83318

Ron Carlson
Water District No. 1
150 Shoup Avenue
Idaho Falls, ID 83402

Dale Swensen
Fremont–Madison Irrigation District
P.O. Box 5
St. Anthony, ID 83445

Review of Programs

A review of the draft manual for the program written in 1980 and current program code has been completed including the mass balance methodology, file relationships including command files, executable files and data input and output files.

A compilation of variable definitions from the MAIN program (SNKWRA) has been completed and a review of variables not presently used in the code and variables not present in the original code is complete. A review of variable definitions in the storage allocation program (SNKSTO) is partially complete.

Liaison with Organizations

Meetings have been held with Idaho Department of Water Resources Hydrology Branch personnel to secure information and discuss approaches to the project. U.S. Bureau of Reclamation personnel in the Burley office have been contacted and discussions held on the Bureau's activities and needs and suggestions for the project. Discussions have also been held and cooperation solicited with the USGS in Idaho Falls.

Operations Manual Outline

An outline for the Operations Manual to be completed for this project has been prepared and reviewed by project personnel. The draft will be submitted to the Advisory Committee in January 1990. A system map showing the river and reservoir system, significant stream gaging stations, and appropriate canal systems has been drafted.

Office and Field Practice Familiarity

In order to understand the procedures for field data acquisition and office data management, Mr. Sandoval has participated in many functions within the Water District No. 1 office. He has assisted in maintenance and operation of electronic pump monitoring systems, field data collection, and preparation of pump discharge data for the VAX system.

He has become familiar with the procedures for cataloging pump discharges throughout the

District, flow meter measurement, power meter measurement and utilization of field and other irrigation data to estimate pump discharges for use in the allocation program. Bruce has become familiar with the use of pump cards and utilization of acreage and consumptive use estimates to generate seasonal water volume use by pumpers and seasonal distribution.

He has assisted in analysis of hydrographer submitted data to calculate diversions and river discharges utilizing current meter data and appropriate shifts in rating curves for discharge stations.

Academic Pursuit

The program for this project includes classes and project research toward a graduate degree in engineering for Mr. Sandoval. During the fall of 1989, he was enrolled in Water Resource Systems class including linear programming and registered for Research and Thesis credits. He will remain in Idaho Falls for the spring semester 1990 and register in a Statistics class and Natural Channel Flow class as well as Research and Thesis. The plan is for Bruce to spend Fall semester 1990 at the Moscow campus to secure courses he is unable to get at Idaho Falls.

A literature search of pertinent publications and data sources for the project and for a Master's thesis has been started.

Bruce has purchased a personal computer to facilitate report and manual preparation and development of program routines.

Plans for Next Quarter

The review of program code to develop a better understanding of current procedures and variable use will be continued.

An initial advisory committee meeting is planned for February 1990 to solicit input and guidance on the project.

Review of calculation routines which might warrant updating within the various program subroutines. Possible revisions include the reservoir evaporation calculation routine to convert to regression developed equations instead of look–up tables, and addition of evaporation calculations for reservoirs developed for power–generation facilities by the City of Idaho Falls.

The format and content of the Operations Manual will be finalized and reviewed by the Advisory Committee.

Meetings will be held with IDWR and District staff to determine possible areas of improvement on input—output procedures.

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720 - (208) 327-7900

CECIL D. ANDRUS
GOVERNOR
R. KEITH HIGGINSON
DIRECTOR

M E M O

TO: Hal DATE: December 28, 1989

FROM: Alan

SUBJECT: Watermaster Assistance

Following are the types of work we have been doing to assist watermasters in the recent past, not including those specifically agreed to with Ron in early 1988.

1. Each year recorder charts for WD-1 diversions are digitized. The number of gages to be digitized has been declining as a result of converting some of the sites to HYDROMET reporting stations.

2. Other diversion data work involves interpolating shifts in the stage-discharge relationships for most of the canals and then computing mean daily flows.

3. Unrealistic gains or losses in a river reach can distort the natural flow allocation. We frequently have to spend time checking data to try to understand what the source of the problem is. We are often involved in communicating with USGS and/or USBR regarding data problems.

   Examples include:

   (a) Outdated rating curves in HYDROMET. This has now been cured but caused a lot of problems in 1988.

   (b) Fluctuating stages on reservoirs due to wind and other factors. These can cause wild variations in computed gains. We spent a lot of effort evaluating whether to use multiple site stage observation data for American Falls. The American Falls gain problem led to complaints and meetings with lower valley canal people which also involved time.

   (c) Other river reaches where data problems occur. We arranged for, and evaluated data collected by USGS to try to understand the gain (losses) between Heise and Lorenzo.

4. Storage accounting procedures have been evolving in the past two years. These changes were instituted as a result of the system not filling in 1988. When it became apparent that a fill would not occur, disagreements on 1987 carryover became apparent. These led to numerous attempts to define the carryover procedures and responsibilities between WD-1, USBR-Burley, and us. Bob wrote a program to do the procedure and we finally got past the 1987 carryover problem in about February, 1989. We will have to be somewhat involved in the carryover computation each year.

   The carryover problem was almost immediately followed by a dispute over water bank rules on refill of storage used for downstream power. This placed us again in the position of running and rerunning the 1988 fill with differing assumptions of storage rights.

5. During the irrigation season we frequently are asked to help resolve problems which occur when some unexpected situations arise in the accounting.

6. We still provide occasional assistance to Lee Sisco on Boise River accounting.

7. As you know, we have a work request from Glen asking us to become familiar with Reid Newby's work on the Big and Little Wood.

8. There will be quite a lot of work between now and the irrigation season to get Pete Peterson set up with a new procedure. If tributaries are added we will also have to help plan the gaging as well as to include these tributaries in the accounting.

9. I believe the Big Lost problems may lead to some kind of assistance in the watermaster work there.

10. We will be providing help to Chuck Brockway and Bruce Sandoval in connection with their work on re-writing the manual for WD-1 accounting.

Ron Carlson's memo of December 5 to you indicated that the Legislature provides funds for "watermaster assistance." I had not previously been aware of that, nor of what it is intended for. I believe the kinds of work we have been doing would qualify as watermaster assistance.

ACR:cjk

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720 -(208) 327-7900

CECIL D. ANDRUS
GOVERNOR
R. KEITH HIGGINSON
DIRECTOR

M E M O

TO: Ron Carlson, Water District 1

FROM: Hydrology

DATE: December 29, 1989

SUBJECT: Watermaster Accounting and Distribution Update - Progress Report

This memo describes the status of the Work Request submitted by Water District 1 dated February 2, 1988. The Work Request consists of five items which update and improve the water right accounting.

1. Blackfoot to Neeley gain analysis - 250 man-hours: This item is complete, has been incorporated in the accounting program, and will be used for the final 1989 accounting. For a complete description of this work, see December 27, 1989 memo to Ron Carlson and Lyle Swank.

2. Lower Teton River gain analysis - 40 man-hours: Only preliminary work on this has been done. May not have this done for 1989 final accounting.

3. Willow Creek Floodway gain analysis - 40 man-hours: No work has been done. Will not have this done for 1989 final accounting.

4. Great Western waste analysis - 8 man-hours: This item has been completed and will be in final 1989 accounting.

5. Convert accounting system to IDWR DP network - 250-500 man-hours: This item is 98 percent complete. The 1989 accounting was accomplished on the IDWR system and the Auditor's IBM is no longer used. Only one or two minor programs necessary for system operation remain to be written.

Work on the above items is presently 95 percent complete. Items 2 and 3 are minor and can be accomplished quickly once they become a priority item. The entire work request has been behind schedule mainly because significant assistance was provided to Water District 1 concerning storage allocation and uses for 1987-89 resulting from low water conditions in 1988.

It should also be noted that many improvements and additions were made to the accounting procedure during conversion to the IDWR network. Even though this went beyond the requirements of the work request, it was mutually agreed upon that it was an opportune time to make these upgrades.

BS:cjk

State of Idaho
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1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720 -(208) 327-7900

CECIL D. ANDRUS
GOVERNOR
R. KEITH HIGGINSON
DIRECTOR

M E M O

TO: Ron Carlson, Lyle Swank - Water District 1

FROM: Bob Sutter - Hydrology

DATE: December 27, 1989

SUBJECT: Blackfoot to Neeley Gains

This memo describes the new procedure incorporated in the water right accounting program to compute the Blackfoot to Neeley daily reach gain. The previous method computed this gain simply from inflow-outflow and averaged it over a 15 day period. Because of gaging errors, the old method produced gains which fluctuated excessively at times. The new method, based on USGS Report 87-4063, tends to minimize this fluctuation.

As recommended by Report 87-4063 "Estimates of Gains and Losses for Reservoirs on the Snake River from Blackfoot to Milner, Idaho, for Selected Periods, 1912 to 1983," the Blackfoot to Neeley gain is based on the largest groundwater tributary, Spring Creek. The equation $Q = 2140 + 6.9\ (Q_s)$ was developed using mean monthly data from August 1980 through September 1982 where Q is the Blackfoot to Neeley ungaged gain in cfs and Q_s is the discharge of Spring Creek at Sheepskin Road in cfs minus 250 cfs. The Blackfoot to Neeley ungaged gain was computed as:

$$\text{Gain} = Q_N + D + E \pm SC - Q_B - Q_P - R \qquad (1)$$

where

Q_N = discharge of the Snake River at Neeley,
D = discharge diverted from irrigation,
E = evaporation from American Falls Reservoir,
SC = change in reservoir storage,
Q_B = discharge of the Snake River near Blackfoot,
Q_P = discharge of the Portneuf River at Pocatello, and
R = precipitation on reservoir water-surface area.

Because more data is now available, a new regression equation was computed using monthly data for water years 1981 through 1988. Data for 1984 were omitted as the computed ungaged inflows were obviously incorrect due to gaging errors. The

equation Q = 5.0 (S) + 1040 was derived where Q is the Blackfoot to Neeley ungaged reach gain and S is the discharge of Spring Creek at Sheepskin Road. The standard error of deviations was 320 cfs compared with 322 cfs using the 1980-82 data, hardly an improvement. The correlation coefficient was only 0.42, thus indicating that only about 17 percent of the variation in ungaged inflow was explained by the Spring Creek discharge.

In order to minimize the effects of erroneous end of month reservoir contents and gaging errors, the annual ungaged inflows were used in a regression with annual Spring Creek discharge for 1981-88, again dropping the 1984 year. This regression produced the equation Q = 5.2 (S) + 970 with a standard error of deviations of 119 cfs and a correlation coefficient of 0.81, thus explaining over 60 percent of the variation in ungaged inflow from Spring Creek.

The above monthly and annually derived equations are quite similar and produce almost the same estimate of ungaged inflow for a given Spring Creek flow. The annually derived equation -

$$Q = 5.2\ (S) + 970 \qquad (2)$$

was chosen to compute an initial daily cfs estimate of the ungaged inflow to American Falls (Blackfoot to Neeley gain) from Spring Creek (S) at Sheepskin Road for the water right accounting.

A procedure was then devised to modify this computed gain such that a surplus or deficit of water would not be created. The long-term (cumulative) gain must eventually become equal to the gain computed from the reach inflow-outflow (equation 1). During the daily water right accounting, the Blackfoot to Neeley gain is computed using both equation (1) and equation (2). A cumulative total of the difference in the two estimates is computed each day. A coefficient is then computed by multiplying this total by 0.0001. To compute the daily gain, this coefficient is then applied to the cumulative total difference and the resulting value is added to the gain computed from Spring Creek (equation (2)).

For example, if the inflow-outflow gain (equation (1)) is computed as 3000 cfs and the Spring Creek gain is computed as 2500 cfs, 500 cfs-days is added to the cumulative difference, say 1500 cfs-days. This gives a current cumulative difference of 2000 cfs-days. Thus far then we have underestimated the gain by 2000 cfs-days. Then compute the gain adjustment coefficient as

0.0001 (2000) or 0.2, and multiply 0.2 times 2000 for an adjustment of 400 cfs. The 2500 cfs gain is then adjusted upwards by 400 cfs to 2900 cfs. Therefore, as the cumulative difference increases, the proportion of the adjustment also increases, preventing the cumulative difference from becoming too large.

The 0.0001 factor was chosen arbitrarily and will be subject to adjustment. A cumulative gain difference of ± 2000 acre-feet will result in an adjustment of 10 percent or 100 cfs. A cumulative gain adjustment of 5000 acre-feet will result in an adjustment of 25 percent or 625 cfs. Therefore, differences below ± 2000 acre-feet will cause minor adjustments and above ± 5000 acre-feet will cause major adjustments. Increasing the 0.0001 factor will cause greater adjustment and vice-versa. The factor will be adjusted downward if the Blackfoot to Neeley gain fluctuates too greatly and upward if the cumulative gain difference grows too large.

Also attached to this memo is a copy of a memo from Bill Ondrechen concerning evaporation estimates at American Falls. We will be using Wright-Penman reference ET to estimate reservoir evaporation instead of pan evaporation. As described in the memo, this involves using a coefficient of 0.8 instead of 0.7. The reference ET values are well maintained on the Hydromet system whereas pan evaporation is not, so this should eliminate problems we have had in the past. Another change from past procedure is that precipitation at American Falls will be subtracted from evaporation to compute a net evaporation from the water surface. This will be done for April 1 through October 31 (Milner time) and the amount of precipitation that can be used to offset evaporation will be limited to the evaporation so that a net gain will not occur.

BS:cjk
Attachment

State of Idaho
DEPARTMENT OF WATER RESOURCES
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CECIL D. ANDRUS
GOVERNOR
R. KEITH HIGGINSON
DIRECTOR

M E M O

TO: Bob Sutter DATE: September 18, 1989

FROM: Bill Ondrechen

SUBJECT: Reservoir Evaporation Estimation Using Wright-Penman ET Values

Calculated values of Wright-Penman reference evapotranspiration (ETR) can serve as a reliable basis for estimating reservoir evaporation. Using evaporation pan data to estimate reservoir evaporation is an accepted practice, but data quality problems can limit its use. Modified Penman reference evapotranspiration is calculated using hourly values of wind run, humidity, solar radiation and temperature and is intended to represent maximum potential water loss. Various crops or other surfaces will lose water through ET at rates less than the potential rate. Since there is no "crop coefficient" for a reservoir, one was developed by comparing monthly values of ETR and pan evaporation multiplied by a coefficient of 0.70. In other words, modified Penman reference ET times this coefficient would yield the same value as pan evaporation times 0.70.

The following table lists the ETR to 0.7 pan coefficients derived using Aberdeen Experiment Station pan data and American Falls AGRIMET ETR data.

	MAY	JUN	JUL	AUG	SEP	
1988	.88	.85	.80	.79	.72	
1989	-	.84	.77	.78	.75	
AVERAGE	.88	.85	.79	.78	.73	OVERALL .80

I suggest using the overall average coefficient of 0.80 because the values of the pan to lake coefficient are only approximated at 0.70 on a seasonal basis, not a monthly basis.

BO:cjk

AMERICAN FALLS RESERVOIR

ET ET WATER YEAR OCTOBER 1988 TO SEPTEMBER 1989

DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.25	0.13	0.02	0.00	0.	0.09	0.09	0.21	0.27	0.35	0.26	0.30
2	0.26	0.07	0.05	0.03	0.01	0.	0.08	0.19	0.27	0.35	0.35	0.27
3	0.25	0.06	0.03	0.00	0.04	0.05	0.11	0.23	0.10	0.33	0.34	0.28
4	0.23	0.09	0.03	0.	0.02	0.08	0.14	0.23	0.19	0.35	0.33	0.34
5	0.23	0.13	0.04	0.03	0.05	0.07	0.19	0.28	0.24	0.38	0.35	0.29
6	0.22	0.06	0.03	0.	---	0.03	0.21	0.24	0.25	0.35	0.35	0.21
7	0.23	0.08	0.	0.03	0.03	0.01	0.21	0.23	0.26	0.35	0.33	0.25
8	0.22	0.07	0.00	0.04	0.06	0.07	0.20	0.27	0.32	0.36	0.30	0.25
9	0.21	0.05	0.01	0.04	0.07	0.07	0.16	0.29	0.29	0.22	0.29	0.16
10	0.20	0.04	---	0.00	0.03	0.10	0.20	0.26	0.31	0.36	0.26	0.19
11	0.21	0.05	0.	0.03	0.01	0.16	0.18	0.17	0.31	0.34	0.30	---
12	0.13	0.06	0.	0.01	0.02	0.10	0.17	0.12	0.34	0.18	0.24	---
13	0.16	0.03	0.01	0.04	0.02	0.06	0.23	0.12	0.22	0.34	0.26	---
14	0.17	0.02	0.01	0.	0.02	0.10	0.22	0.19	0.29	0.31	0.30	---
15	0.20	0.05	0.07	0.06	0.07	0.10	0.17	0.11	0.35	0.26	0.30	---
16	0.18	0.04	0.06	0.02	0.06	0.08	0.16	0.16	0.24	0.27	0.33	---
17	0.18	0.02	0.05	0.06	0.03	0.11	0.23	0.26	0.31	0.33	0.35	---
18	0.19	0.02	0.04	0.04	0.02	0.10	0.26	0.16	0.36	0.32	0.21	---
19	0.17	0.04	0.01	0.04	0.01	0.05	0.24	0.25	0.33	0.31	0.27	---
20	0.18	0.04	0.02	0.04	0.05	0.11	0.26	0.29	0.24	0.27	0.26	---
21	0.19	0.04	0.01	0.07	0.04	0.09	0.22	0.28	0.28	0.25	0.27	---
22	0.15	0.02	0.02	0.01	0.08	0.09	0.22	0.31	0.19	0.28	0.25	---
23	0.19	0.00	0.01	0.	0.05	0.13	0.14	0.22	0.21	0.32	0.17	---
24	0.21	0.03	0.04	0.01	0.09	0.10	0.24	0.21	0.25	0.36	0.14	---
25	0.18	0.05	0.01	0.05	0.09	0.04	0.16	0.25	0.28	0.33	0.22	---
26	0.18	0.02	0.	---	0.05	0.05	0.18	0.27	0.30	0.35	0.26	---
27	0.14	0.05	0.00	0.08	0.08	0.10	0.13	0.25	0.30	0.28	0.26	---
28	0.20	0.00	0.03	0.06	0.07	0.09	0.14	0.18	0.34	0.33	0.26	---
29	0.17	0.04	0.05	0.05	---	0.11	0.19	0.20	0.35	0.34	0.32	---
30	0.20	0.03	0.00	0.01	---	0.14	0.19	0.12	0.34	0.33	0.28	---
31	0.14	---	0.01	0.01	---	0.09	---	0.22	---	0.37	0.27	---
TOTAL	6.02	1.43	0.66	0.86	1.17	2.57	5.52	6.77	8.33	9.87	8.68	2.54
MEAN	0.19	0.05	0.02	0.03	0.04	0.08	0.18	0.22	0.28	0.32	0.28	0.25
MAX	0.26	0.13	0.07	0.08	0.09	0.16	0.26	0.31	0.36	0.38	0.35	0.34
MIN	0.13	0.00	0.00	0.00	0.00	0.00	0.08	0.11	0.10	0.18	0.14	0.16

WTR YR 1989 TOTAL 54.42 MEAN 0.16 MAX 0.38 MIN 0.00

PAN MAP ABERDEEN E.S. - 9.86 10.25 9.43 2.79

0.7 PAN/ET_R - .83 .73 .76 .77 .79 corr'd

AMERICAN FALLS RESERVOIR

ET ET WATER YEAR OCTOBER 1987 TO SEPTEMBER 1988

DAILY VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	0.18	0.15	0.14	0.25	0.34	0.28
2	---	---	---	---	---	---	0.19	0.20	0.17	0.36	0.37	0.25
3	---	---	---	---	---	---	0.05	0.16	0.31	0.38	0.31	0.18
4	---	---	---	---	---	---	0.05	0.15	0.31	0.35	0.34	0.25
5	---	---	---	---	---	---	0.19	0.16	0.34	0.34	0.34	0.29
6	---	---	---	---	---	---	0.22	0.11	0.32	0.31	0.26	0.32
7	---	---	---	---	---	---	0.12	0.10	0.13	0.35	0.30	0.30
8	---	---	---	---	---	---	0.12	0.14	--- .15	0.35	0.31	0.33
9	---	---	---	---	---	---	0.16	0.19	--- .20	0.37	0.35	0.35
10	---	---	---	---	---	---	0.17	0.21	0.34	0.34	0.29	0.21
11	---	---	---	---	---	---	0.20	0.22	0.29	0.32	0.34	0.17
12	---	---	---	---	---	---	0.25	0.26	0.28	0.30	0.23	0.21
13	---	---	---	---	---	0.08	0.24	0.13	0.30	0.37	0.33	0.14
14	---	---	---	---	---	0.08	0.17	0.24	0.29	0.37	0.35	0.16
15	---	---	---	---	---	0.06	0.14	0.30	0.24	0.36	0.37	0.24
16	---	---	---	---	---	0.09	0.18	0.27	0.33	0.36	0.31	0.17
17	---	---	---	---	---	0.11	0.20	0.16	0.12	0.35	0.35	0.22
18	---	---	---	---	---	0.14	0.10	0.24	0.32	0.36	0.32	0.22
19	---	---	---	---	---	0.14	0.14	0.24	0.31	0.33	0.32	0.20
20	---	---	---	---	---	0.17	0.12	0.26	0.30	0.37	0.35	0.07
21	---	---	---	---	---	0.12	0.13	0.26	0.30	0.39	0.32	0.18
22	---	---	---	---	---	0.11	0.15	0.28	0.28	0.39	0.32	0.18
23	---	---	---	---	---	0.08	0.16	0.28	0.35	0.39	0.37	0.25
24	---	---	---	---	---	0.10	0.15	0.24	0.37	0.40	0.34	0.25
25	---	---	---	---	---	0.14	0.03	0.20	0.40	0.40	0.34	0.24
26	---	---	---	---	---	0.15	0.18	0.28	0.27	0.30	0.32	0.23
27	---	---	---	---	---	0.10	0.18	0.25	0.29	0.33	0.30	0.17
28	---	---	---	---	---	0.13	0.20	0.26	0.22	0.36	0.30	0.14
29	---	---	---	---	---	0.12	0.21	0.09	0.16	0.39	0.34	0.23
30	---	---	---	---	---	0.10	0.11	0.09	0.26	0.40	0.31	0.23
31	---	---	---	---	---	0.13	---	0.15	---	0.37	0.32	---
TOTAL	0.	0.	0.	0.	0.	2.15	4.69	6.27	8.09 7.74	11.01	10.06	6.66
MEAN	0.00	0.00	0.00	0.00	0.00	0.11	0.16	0.20	0.28	0.36	0.32	0.22
MAX	0.00	0.00	0.00	0.00	0.00	0.17	0.25	0.30	0.40	0.40	0.37	0.35
MIN	0.00	0.00	0.00	0.00	0.00	0.06	0.03	0.09	0.12	0.25	0.23	0.07

WTR YR 1988 TOTAL 48.58 MEAN 0.24 MAX 0.40 MIN 0.03

PAN EVAP, ABERDEEN E.S. 7.85 9.81 12.63 11.38 6.81

.82 .85 .80 .79 .72 .81

.84 .77 .78 .75

MEMORANDUM

TO: Hal Anderson

FROM: Ron Carlson

DATE: December 5, 1989

RE: Streamgaging ?

Back in 1977 when the Department was proposing a cooperative agreement with Water District 1, one of the incentives for the agreement was a commitment to on-going technical support from the Department. While it was envisioned that the amount of dependence on technical help from the State Office would decrease over time, the availability of this assistance was part of the agreement. Consequently, the water district has never included monies for State Office assistance. There have, however, been specific items that we agreed would require a specific commitment of hydrology's time. In these cases, the work was identified and monies were specifically budgeted by the water district for these purposes. I have enclosed two past memoranda as examples.

In 1987, I asked for a cost estimate to complete five identified work items (see September 9, 1987 memo). Based upon these estimates we budgeted $25,000 to accomplish the first four and start work on #5. At this time the agreed upon work has not been accomplished. I recognize that over the past two years the hydrology staff have provided a substantial amount of assistance as the result of the drought and related controversies. From my perspective this help is

invaluable. However, I also believe that this assistance is within the scope of "assistance to watermasters" for which the Idaho Legislature provides funds.

Your memo of September 9 appears to be expressing a different opinion. While loss of support from the IDWR hydrology staff is a frightening specter, that may be where we are. There is no way I can commit any more funds for anything. Because of the Indian negotiations I am estimating a shortfall of about $150,000 for this current year. Faced with having to collect for this shortfall and budget for costs of preparing for litigation in 1990, I believe it is very unlikely that they will agree to add an additional $30,000 for anything. In any case, I will need to have a progress report on the work items the water users contracted for and an explanation of why the costs have been so much higher than originally projected.

Attachments: Your original memo of 11/16/89
Copies of memos dated 8/11/82 & 9/9/87

Alan Robertson

State of Idaho
DEPARTMENT OF WATER RESOURCES

1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720 - (208) 327-7900

CECIL D. ANDRUS
GOVERNOR
R. KEITH HIGGINSON
DIRECTOR

September 12, 1989

Ray Rigby, Esq.
RIGBY, THATCHER, ANDRUS,
RIGBY & PERKES
P.O. BOX 250
Rexburg, ID 83440

Dear Mr. Rigby: RAY

In response to your concern over the watermaster's allocation to Henry's Lake for 1989, I have reviewed the matter with the watermaster and the IDWR hydrology staff. I have concluded from this review that the watermaster properly allocated available water supplies to the seven upper Snake reservoirs according to their relative water right priorities.

As I understand it, you object to the fact that Palisades and/or American Falls water remained in Henry's Lake this year and you are arguing that had the 700 acre-feet per day not been released from American Falls last winter, all of the water in Henry's Lake would have been allocated to the Henry's Lake space holders. As it turns out this assumption is not correct. Had American Falls been shut off completely, Henry's Lake could have accrued some additional water but it still would have contained nearly 40,000 acre-feet of storage belonging to other reservoirs.

However, the more important issue relates to your contention that the watermaster is making judgment decisions that adversely affect your allocation of storage. I find that this is not the case. The process used by the watermaster recognizes all unsubordinated water rights in the system and methodically allocates water to each in order of priority. The 350 cfs released from American Falls is a negotiated reduction in the 2,700 cfs power right at Minidoka which has an earlier priority date than storage in Henry's Lake.

The space holders in all federal reservoirs pay for the loss of power at Minidoka in exchange for the right to reduce flows at American Falls below 2,700 cfs. Henry's Lake space holders also benefit but have no contractual obligation to pay for lost power production.

It appears to me that Henry's Lake, perhaps more than any other reservoir on the upper Snake, benefits from storage exchanges. Had the Henry's Lake space holders not been allowed to exchange storage with other reservoirs, Henry's Lake would have been dry at the end of 1988 and would have accrued about 22,000 acre-feet for 1989. Henry's Lake users have about 90,000 acre-feet of stored water most years because they can "borrow" from other reservoirs. The benefits of this practice are all in favor of the Henry's Lake space holders. However "borrowing" always has an associated "pay back."

If the Henry's Lake space holders have a down side, it is the specter of not being able to pay their debt and, thus, having carry-over belonging to space holders in other reservoirs visible in their reservoir.

I hope this information addresses your inquiry. If you feel that a meeting would be useful to you, I will be happy to call a meeting of the appropriate parties to review the allocation procedures and your concerns. If you then believe a hearing is needed, you can continue your request.

Very truly yours,

Norman C Young

for R. KEITH HIGGINSON
Director

RKH:cw

NORTH FORK RESERVOIR COMPANY

Member Canal Companies

Consolidated Farmers Canal Company, Ltd.
Egin Irrigation Company
Independent Canal Company
Last Chance Canal Company
Salem-Union Canal Company, Ltd.
St. Anthony Union Canal Company, Ltd.

August 24, 1989

R KEITH HIGGINSON, DIRECTOR
IDAHO DEPARTMENT OF WATER RESOURCES
STATEHOUSE MAIL
BOISE ID 83720

Dear Mr. Higginson:

Re: Water District 01 Storage Allocation

I write as attorney, board member and secretary of the North Fork Reservoir Company, which consists of six canal company stockholders, whose names are shown on this letterhead. Recently, our president, Dave Aydalch, received a report of your allocation of storage on the Snake River. Some serious questions have arisen in the minds of our directors and the officers, directors and stockholders of our stockholder companies.

During the reservoir storage season (November 1, 1988 to April 1, 1989), the Bureau of Reclamation (BOR) released 350 c.f.s. of water from American Falls Dam. This release was for power generation at that dam and at the Minidoka Plant. It was also used to dilute polution in the Burley, Rupert area.

The spring runoff was slow because of a cool spring and consequently, American Falls failed to fill and spill. Because of this operation, the storage allocation for Henry's Lake considered only the water entering Henry's Lake. As a result of your allocation, our larger stockholders had an inadequate storage supply for the 1989 irrigation season.

As a matter of fact, there are a lot of judgment decisions that must be made by the River Water Master and the BOR that affects the storage rights in Henry's Lake. For instance, this particular year the Jackson Lake Reservoir was filled, after being virtually empty for repairs; the releases at Palisades, in anticipation of the spring runoff (times and amounts), and the decision of the BOR to release 750 c.f.s. as a result of the negotiations in the Trout Unlimited case; and several other decisions that are made, results in Henry's Lake Reservoir becoming the "buffer". The evidence seems quite clear that in most cases different decisions on these matters could have resulted in the American Falls

cc: Bob Fisher, Egin, Independent, Last Chance, and
St. Anthony Canal Companies
Dale Swenson, Fremont-Madison Irrigation District
Max Vandenberg, Minidoka Project Superindendent
Dave Rydalch, North Fork Reservoir, President
Clair Blaser, North Fork Reservoir, Vice-President
Robert D. Orme, North Fork Reservoir, Director
Emerson Miller, North Fork Reservoir, Director
Ed Rindlishbacher, North Fork Reservoir, Director
Jerry Dalling, North Fork Reservoir, Director
Palisade Water Users, c/o Ron Carlson, Secretary

Where Tradition Meets the Future
1889-1989
University of Idaho

Research and Extension Center
3793 North 3600 East
Kimberly, ID 83341
(208) 423-4691

August 7, 1989

Idaho Water Resources
Research Institute

Morrill Hall 106
University of Idaho
Moscow, Idaho
83843

208-885-6429

Alan Robertson
Idaho Department of Water Resources
1301 N. Orchard St.
Statehouse Mail
Boise, ID 83720

Subject: Participation on the Advisory Committee for the Water District #1 Project to Update and Document the Snake River Water Allocation Program

Dear Alan:

Thank you for agreeing to serve on the advisory committee to provide liaison between the Department and project personnel. As we previously discussed, Water District No. 1, in cooperation with the U.S. Bureau of Reclamation and the Idaho Department of Water Resources, has undertaken a project to update and document the Snake River Water Use Accounting Program. The two year project is being conducted by the University of Idaho Water Resources Research Institute.

The program, used to allocate the natural flow and storage in the Upper Snake River system, was developed in 1977 and has been added to and changed several times since, and the original documentation is not up to date.

To assure that the program is properly documented and that beneficial changes are incorporated, an advisory committee is being formed to provide input to the University project personnel and relate progress of the project to water users and water resource agencies.

I anticipate that the committee will meet in January 1990 for the first time to receive a report and discuss the progress of the project. The graduate student working on the project is Mr. Bruce Sandoval, a Blackfoot resident and recent agricultural engineering graduate.

I will be in contact with you regarding the time and place of our first meeting.

Sincerely,

C E Brockway

C. E. Brockway, P.E.

CEB:af
cc: B. Sandoval
IWRRI

From: DWR01::UOFI 26-APR-1989 12:58:25.50
To: LINDGREN
CC:
Subj: PROPOSAL

RESEARCH PROJECT PROPOSAL

EVALUATION AND UPDATE OF THE SNAKE RIVER WATER USE ACCOUNTING PROGRAM

TO

WATER DISTRICT NO 1

BY

IDAHO WATER RESOURCES RESEARCH INSTITUTE

REVISED

APRIL 1989

Being edited
Chuck to meet w/ Dichl & Eakin Monday.

INTRODUCTION

Water distribution to irrigation systems and other users in the Upper Snake River above Milner dam involves evaluation and accounting of both natural flow availability and storage to some 2000 users. Natural flow at any point in the system is determined from discharge measurements at USGS gaging stations and river reach gains. Prior to 1978, the accounting of water use was performed manually by the watermaster and final accounting performed after the irrigation season based on final published discharge data by the USGS. This accounting was used to assess storage amounts to each user with subsequent O&M charges based on storage use. Generally, the storage used was not assigned to any particular reservoir; however, the accounting program is being changed to now reflect storage used by each user in each reservoir.

In 1978, a computerized river accounting program, developed by the Idaho Department of Water Resources, was implemented to decrease time requirements for determination of flow and storage use by each district and improve estimation of natural flow determinations using a reach water balance procedure. The goal has been to provide data on natural flow diverted and storage used on a daily basis for each user. Users can utilize this data for planning water use programs and determination of storage requirements or shortages for the remainder of the season. The computer program, operated by IDWR, utilizes streamflow and reservoir contents from

Hydromet stations and daily diversion data. Internally, the program uses ~~empirical~~ relationships and data smoothing techniques. The goal is to assure equitable distribution and assessments.

The computer program was developed in 1977-78 to be implemented with a concurrent change in Water District 1 staff and organization of the IDWR Eastern Regional office and Water District No 1 office. It has ~~not~~ been significantly altered ~~or~~ updated since that time. The input-output procedures and formats are not menu driven and lack some flexibility. Internally, the program uses a water balance computation on each designated river reach to determine natural flow at the lower end of each reach. Significant fluctuations in computed natural flow occur in specific reaches due to daily discharge measurements inaccuracies, locations of significant inflow at the lower ends of a reach and timeliness of data reporting.

NEEDS

1. The program currently utilizes a daily water balance on the Blackfoot-Neely river reach to calculate natural flow at Neely. This reach includes American Falls reservoir which experiences evaporation and/or precipitation, daily changes in storage and reach gains from springs and return flow of some 3000cfs. Calculated natural flow in this reach fluctuates as much as 800 cfs from one day to the next causing difficulty in planning by lower valley irrigation

companies. Some alternatives for improving the determination of natural flow may be applicable including incorporation of developed empirical relationships between reach gain and measured spring inflow to American Falls reservoir and additional techniques for smoothing the existing input data. Specifically, there is a need to evaluate, select, and implement procedures for improving the water balance calculation in the Blackfoot-Neely and other reaches. The Idaho Department of Water Resources Hydrology Branch is pursuing these changes and plans to have them incorporated for the 1989 irrigation season final accounting.

2. The original development of the allocation program was based on formatted input and output. There are newer procedures for improving data input, file management, and user interaction which could be implemented . These procedures can enhance use of the model, streamline input, and improve interpretation of output. There is a need to select and implement program code changes to improve operator input and evaluation of output. Water District No 1 personnel have developed and implemented some procedures for facilitating input of data and have developed a reporting scheme for the program. The District will be implementing an automatic call-up service for users whereby any user can interrogate the computer by telephone to determine the daily status of flow, storage and use-to-date.

3. An operations manual for the Snake River allocation program was drafted in 1979 just after the implementation of the model. This manual explains the general concepts and model code, assumptions and calculation procedures. However, changes made in the code subsequent to the initial draft have not been incorporated. To provide continuity in operation of the model for present and future personnel and to incorporate all updates and changes in the program, the manual should be updated with complete descriptions of all subroutines. There is a need to incorporate all new and previous changes in the river allocation program code in an update of the program operations manual. Changes made by IDWR and Water District No 1 plus other suggested changes should be incorporated in the updated manual. Additional peripheral programs such as one developed to evaluate reservoir carry-over should also be documented.

OBJECTIVES

The overall objective of this proposed study by the University of Idaho is to assist the Idaho Department of Water Resources and Water District No 1 in updating the Snake River allocation model to enhance data input and user interaction and document all new and previous changes in the program. Improvements in internal calculation procedures made by IDWR and any new improvements resulting from the study will be documented.

PROCEDURES:

It is proposed to assist the Idaho Department of Water Resources in improving the model by structuring a program for an MS level graduate student in Civil or Agricultural engineering or computer science to work cooperatively with personnel in the Hydrology Branch of the Department and in the Eastern District office. The Department has specific plans for updating and documenting the model and applying the model to other rivers but, because of personnel and time requirements, has not and ~~may not be able to~~ effect these changes in a timely manner.

1. A graduate student will be selected to work under Dr. Charles Brockway at the Kimberly Research and Extension Center. The student will work initially out of the Water District No. 1 office in Idaho Falls to become familiar with the model and daily operations and needs. He or she will maintain continuous liason with Robert Sutter and Alan

Robertson of the State office of the Department to become familiar with the model code and subsequent changes.

2. Current procedures for input and reporting will be documented and any new procedures selected for data management enhancement will be implemented and documented. Possible enhancements could include menu driven input formats and user selectable reporting alternatives.

3. Complete documentation of the program including all recent updates will be incorporated in a revised operation manual for the program. The manual will describe all basic concepts used in allocation of natural and stored water, flow charts of all processes, and instructions for operation.

4. Advisory Committee

PERIOD OF PROJECT

The project would begin June 1, 1989 and continue for two years through May 31, 1990

FACILITIES

Computer facilities of the Idaho Department of Water Resources at Boise would be used via the Eastern District Office since the current program is functional on the VAX system and the data base is also resident in that computer. The HP 1000 system at the University Research and Extension Center at Kimberly may be used for development of specific routines. It is expected that office space for the graduate assistant and computer access will be made available by the District in the Idaho Falls office.

REPORTS

Quarterly letter reports will be made documenting activities, progress and problems. These reports will be supplemented by progress meetings to discuss the project. The final report will include the operations manual and an executive summary of the project and program. It is proposed to furnish 20 copies of the operations manual and summary report. A master's degree thesis will be prepared.

FUNDING

The proposed budget includes funding for a master's degree level graduate research assistant, travel for liaison between project personnel District and IDWR personnel, and operational costs:

IDAHO WATER RESOURCES RESEARCH INSTITUTE
Morrill Hall, University of Idaho, Moscow, Idaho 83843 (208) 885-6429

Research and Extension Center
Route 1 3793 N. 3600 E.
Kimberly, ID 83341
(208) 423–4691

March 29, 1989

Mr. Ron Carlson, Watermaster
Water District No. 1
150 Shoup Avenue
Idaho Falls, Idaho 83401

Subject: Proposal for Research on Diversion Monitors - 1989

Dear Ron:

Enclosed is a draft proposal for cooperative research by the University of Idaho on diversion monitors and data retrieval for Water District No. 1 for 1989-90. I believe the proposal addresses the items which we discussed in your office on March 9, 1989.

If this meets with your approval, we can proceed either with an amendment to the existing contract or a new contract, whichever is most applicable. If we need to meet to talk about the proposal, let me know.

Sincerely,

C. E. Brockway

C. E. Brockway, P.E.

CEB:af

PROPOSED SCOPE OF WORK
PUMPING SYSTEM MONITORING
1989–90

TO

WATER DISTRICT NO. 1

IDAHO WATER RESOURCES RESEARCH INSTITUTE

C.E. Brockway, P.E.

MARCH 1989

BACKGROUND

During the 1987 and 1988 irrigation seasons, pumping system and open channel electronic monitoring devices have been developed and demonstrated on river and ground-water diversions within Water District No. 1. Electronic monitoring systems were installed on high lift installations on the Teton and Snake Rivers and exchange wells in the Teton river basin were monitored. Open channel flow measurement monitors were installed at three sites. Field equipment including microprocessors, signal conditioning equipment, solar panel arrays and sensors were developed and software to permit data input and file manipulation on the District PC was developed.

Operation manuals for pumping system and open channel monitors, exchange well monitors and an office manual are being prepared.

Experience with the monitoring systems showed that development of time-tagged discharge data, which is of primary concern to Water District No. 1, may be too expensive if closed conduit flow meters are required at each site, particularly for small diversions from 1 to 3 cfs. Closed conduit flow meters require yearly maintenance to maintain reliability and may have to be removed at the end of every season. Costs for these types of meters may also be prohibitive for small discharges. Insertion type flow meters, which are reasonably reliable, may cost up to $750 for any pipe size. Additional electronic equipment may increase the total monitoring system cost to $1,500.

The need within Water District No. 1 is for a reliable, cost effective procedure to develop time-tagged flow data from pumped systems. The procedure should not require annual removal of equipment, should provide daily average flow values, and require visitation not more frequently than every thirty days to retrieve recorded data.

A possible alternative to in-line flow meters is to develop relationships between discharge and power use and record daily values of input horsepower using recording power meters. On pumping systems with single pumps and relatively uniform operating head and lift, the power use-discharge relationships may be relatively easy to determine.

However, on multiple pump systems or on systems where discharge is varied to meet demand by throttling the pump(s) output, those relationships may not be easily determined. Ground-water pumping systems where pumping levels change radically over the season or where pumping pressure is varied may not exhibit simple power use-discharge relationships.

OBJECTIVES

The objective of the proposed project is to evaluate alternative cost effective procedures for obtaining daily time-tagged discharge data on irrigation diversions with minimum field time and minimum manual data reduction.

Specifically, the objectives are to:

1. Evaluate the feasibility of utilizing daily power use as an indicator of daily average flow on the types of pumping systems within Water District No. 1.
2. Evaluate the availability, reliability and costs of equipment to electronically log daily power use and/or discharge.
3. Develop procedures for correlating daily power use with discharge for single and multiple river pumping systems under different management scenarios and deep well systems.
4. Develop procedures for data collection, analysis, and formatting to provide publishable output.
5. Demonstrate use of selected equipment on typical pumped diversions in Water District No. 1.

PROCEDURE

1. Monitoring units for the four Teton River pumping systems, the two Snake River pumping units, and the Teton exchange wells will be installed again for the 1989 irrigation season by Water District personnel. Since the irrigation season startup time is usually very busy for District staff, the University will assist in installation

of these units and the surface diversion monitoring units to assure that all systems are functioning properly. The University will also assist District staff in seasonal maintenance problems and troubleshooting as needed.

2. Concurrent instantaneous flow and power use data obtained from the Teton River and Snake River pumping stations in 1987 and 1988 will be analyzed to determine whether the degree of correlation between the variables is acceptable or not and whether management of the system and variations in pressure head adversely affects the correlation. Simple and multiple regression techniques will be used on the data sets to evaluate types of relationships which may be applicable. Even though the data sets for the four Teton pumping systems and the two Snake River pumps are not complete for 1987 and 1988, there is ample data to perform a preliminary evaluation of procedures and determine approaches for analysis of additional data from existing or new installations.

3. Existing commercially available equipment to electronically record daily power use will be surveyed to select possible affordable units for use or evaluation. Selection of suitable meters will be based on memory capacity, data retrieval and transmission capabilities, on-board processing, and cost. Potential for future telemetering of data will be considered. Fall River Rural Electric Company utilizes electronic power meters on many of their irrigation installations; however, these meters do not have daily power usage options but this option could be added. Electronic watt meters used by Raft River Rural Electric company are capable of storing 15 minute pulse counts for up to 36 days; however, the output is only pulse counts and the power use-discharge relationships cannot be programmed in the meter. Also, there is apparently no way to query the instantaneous discharge or pulse count when visiting the site. The possibility of negotiating an agreement with the electric

utilities to modify their power use monitoring equipment to provide daily power use to the District will be explored.

4. The existing Teton River systems and additional systems with daily power logging equipment, if available, will be monitored to evaluate the impact of system operation on power-use-discharge relationships. These systems will be selected and utilized to determine variability of power-use due to throttling of pump output, operation of multiple pumps or other variations in system demand. Discharge from additional systems will be measured using either pitot type temporary discharge meters or insertion type turbine or impellor meters. Concurrent power-use and discharge measurements will be analyzed to determine procedures for obtaining power-use vs discharge functions for use in logging discharge data. The possibility of utilizing data from Raft River Rural Electric wells which have concurrent flow and power-use data will be explored.

5. Following selection and evaluation of equipment for logging power use, procedures and software for retrieval of logged discharge data and transfer to the District PC will be developed. This will include installation and start-up of any office data reading equipment and structuring of PC software for analysis, display, and production of printed reports.

6. Two prototype equipment packages will be specified for two specific sites identified by District and University personnel. Depending on the cost of the systems and timing of delivery the District may choose to install the systems to secure some data during the 1989 irrigation season. However, it is likely that the tasks outlined in procedures one through five, which are preliminary to equipment selection, will not be completed prior to the end of the irrigation season; in which

case, the equipment packages could be ready for installation during the 1990 irrigation season.

PERIOD OF THE PROJECT

This project would begin April 1, 1989 and continue through March 31, 1990.

EQUIPMENT

All equipment purchased for this project, primarily data retrieval and computer equipment will remain the property of the District.

REPORTS

Progress reports will be prepared each quarter and a draft final report prepared by February 28, 1990. The final report including full documentation of all equipment use and computer programs developed will be prepared by March 31, 1990.

PROPOSED BUDGET

PROJECT TITLE:	Flow Monitoring	
FUNDING ENTITY:	Water District No. 1	
PROJECT DURATION:	April 1, 1989 through March 31, 1990	
BENEFIT RATES		
Professional Staff	24	Percent
Research Associates	24	Percent
Graduate Assistants	11.5	Percent
Clerical	24	Percent
Irregular Help I	21.5	Percent
Irregular Help II	11.5	Percent
INDIRECT COST RATE	20	Percent

SALARIES	
Principal Investigator	
Research Associate	8,063
Graduate Assistant(s)	0
Clerical	0
Irregular Help I	3,350
Irregular Help II	0
TOTAL SALARIES	11,413
FRINGE BENEFITS	2,655
SUPPLIES	320
TRAVEL	2,100
TOTAL DIRECT COSTS	16,488
INDIRECT COSTS	3,298
EQUIPMENT Data retrieval and PC input equipment	1,200
TOTAL COST	$20,986

BEFORE THE WATER RESOURCE BOARD

OF THE STATE OF IDAHO

IN THE MATTER OF APPROVING AMENDMENTS TO THE LOCAL COMMITTEE RULES FOR THE UPPER SNAKE RIVER BASIN WATER SUPPLY BANK	)	RESOLUTION

WHEREAS, Section 42-1765, Idaho Code, authorizes the Idaho Water Resource Board (the "Board") to appoint local committees to facilitate the rental of stored water; and,

WHEREAS, on May 24, 1988, the Board by resolution authorized the continued appointment of the Committee of Nine as the local committee for the Water Supply Bank in the Upper Snake River Basin; and,

WHEREAS, the Committee of Nine has modified its local committee Water Bank Rules by the addition of two new rules; i.e., Rule 1.3 which provides that water can be obtained from the bank for any beneficial purpose and limiting the use for minimum instream flows, and Rule 3.6 which provides that storage space assigned to the water bank and evacuated for non-consumptive uses below Milner Dam shall be the last space to fill during the following year and authorizing persons assigning water to the Water Bank to limit its use from the Bank to agricultural use; and,

WHEREAS, the new Rule 1.3 reads as follows:

> 1.3 Available water supplies may be purchased from the Water Supply Bank for any beneficial purpose recognized under state law, including the maintenance of minimum

> stream flows, when all other uses have been met for available supplies. In no case will water be provided for maintaining flows greater than those established by the Water Resource Board and the Idaho Legislature, and

WHEREAS, the new Rule 3.6 reads as follows:

> 3.6. Storage space assigned to the Water Bank that is evacuated to supply water for non-consumptive uses below Milner shall be the last space to fill, in the reservoir from which the space was originally assigned, in the ensuing year. Any water bank supplier may limit the use of his space to "agricultural uses only" by so indicating at the time his space is assigned to the bank. Water sold from space assigned and restricted to agricultural uses shall bear the payment priorities set forth in Rule 6 except that anyone assigning space for agricultural purposes shall share proportionally in the proceeds from only water sold for irrigation.

WHEREAS, the Director, Idaho Department of Water Resources, has reviewed Rules 1.3 and 3.6 of the Committee of Nine and has determined them to be consistent with the Board's Water Supply Bank Rules and Regulations;

NOW THEREFORE, BE IT RESOLVED that the addition of Rules 1.3 and 3.6 to the rules of the Committee of Nine for the operation of the Water Supply Bank for the Upper Snake River Basin is hereby approved pursuant to section 42-1765, Idaho Code.

Provided, however, that the approval of Rule 3.6 is effective only through March 1, 1990; and

Further provided that this approval is conditioned upon the Board receiving an opinion from the Department's attorney that the Board has properly adopted the above rules. In the event the legal opinion indicates that these rules have not been properly

adopted, then the approval shall be null and void and the Department shall immediately commence procedures for adoption of said rules.

PASSED AND APPROVED This 15th day of September, 1989.

GENE M. GRAY, Chairman

ATTEST:

F. DAVE RYDALCH, Secretary

ATTACHMENT NO. 5 TO MINUTES OF 7-89 MEETING OF IDAHO WATER RESOURCE BOARD, Sept. 15, 1989

WATER DISTRICT 01

WATER SUPPLY BANK RULES

11. Water Supply Bank

Rule 1. AUTHORITY AND STATEMENT OF PURPOSE.

1.1. These rules and regulations have been adopted pursuant to Idaho Code, §42-1765 to assure orderly operation of the Upper Snake Water Supply Bank. Under no circumstances shall these rules and regulations be construed to limit or restrict the authority of the Director of the Department of Water Resources, the Water Resources Board, the Committee of Nine, or the Snake River watermaster in discharging their duties as set forth in the statutes of the State of Idaho.

1.2. It is the purpose of these rules and regulations to:

1. Provide a process, consistent with the Idaho Code, by which stored water supplies may be made available for a specified period of time to water users who need additional water.

2. Provide incentives for those owning reservoir space and having stored water, which is surplus to their needs, to make such space/water available to other users and uses.

3. Establish a recognized system through which water supplies can be located, identified, advertised, and subsequently bought, sold, or leased.

4. Provide a dependable source of revenue for Water District 1 to make improvements in distribution to expand water supplies or to aid in increasing efficiency in the use of water on the upper Snake River.

Rule 2. DEFINITIONS.

2.1. Acre-foot is a volume of water sufficient to cover one acre of land one foot deep and is equal to 43,560 cubic feet.

2.2. Annual refers to the period between annual meetings of Water District 1 and normally will be a period staring the first Tuesday in March and ending on the first Monday of March of the succeeding year.

2.3. Bank means the Upper Snake Water Supply Bank as operated by the Committee of Nine of Water District 1.

2.4. Board means the Idaho Water Resources Board.

2.5. Bureau means the federal Bureau of Reclamation or BOR.

2.6. Committee means the Committee of Nine unless otherwise specified.

2.7. Department means the Idaho Department of Water Resources or IDWR.

2.8. Director means the Director of the IDWR.

2.9. District means Snake River Water District 1.

2.10. Lease is the agreement through which a specific amount of storage space or/stored water is obtained from the Water Supply Bank for use during a specified period of time.

2.11. Insurance water is stored water that is made available on a continuing basis to supply additional flows for hydropower and other uses only under certain agreed upon drought conditions with payments being made to those agreeing to give up the storage for loss of production.

2.12. Lessee is the entity leasing space/water from the Water Supply Bank.

2.13. Lessor is the entity providing space/water to the Water Supply Bank.

2.14. Milner means Milner Dam or the lowest diversion in water District 1.

2.15. Mitigation means releasing water from storage pursuant to the instructions of the director, to replace projected ground water depletions.

2.16. Rental Pool Committee means a sub committee of the Committee of Nine composed of the Snake River watermaster, superintendent of the Minidoka Project, and three regular members of the Committee of Nine.

2.17. Rental Pool means the reservoir space assigned to the water bank during any given year.

2.18. Space means all or any portion of the active impoundment volume of a reservoir measured in acre-feet.

2.19. Storage means the portion of the available space that is storing water.

2.20. Rent (or rental) means lease.

2.21. Watermaster means the watermaster of Water District 1.

2.22. Sale means the acquisition of water from space assigned to the water bank.

2.23. Paid-out means the spaceholder construction contract(s) with the U.S. Government have been fulfilled.

Rule 3. GENERAL.

3.1. It is the policy of the Water Resources Board and the Committee of Nine to operate the Water Supply Bank for the maximum beneficial use of available water supplies.

3.2. Operation of the Water Supply Bank will be by and for the irrigators within Water District 1 through the Committee of Nine. All rules and regulations are designed to assure that water stored in federal reclamation reservoirs is first maintained and made available for irrigation before other uses are considered.

3.3. The operation of the Water Supply Bank shall in no way recognize any obligation to maintain flows below Milner Dam or assure the minimum stream flows established at the USGS gaging station on the Snake near Murphy unless specific arrangements to do so are made with the watermaster through valid agreements for releasing water for mitigation, insurance contacts, or annual storage lease agreements.

3.4. The operation of the "Water Bank" shall be consistent with the statutes creating the Water Supply Bank and the Rules and Regulations of the Idaho Water Resources Board and the provisions of the spaceholder contracts with the United States.

3.5. Storage space is accepted for the water bank on a contingency basis. Payments to the lessor will be made to the extent contract monies are received by the Water Bank pursuant to these rules.

Rule 4. MANAGEMENT.

4.1. The Water Supply Bank shall be operated pursuant to Idaho Code, §42-1761 to 42-1766 with all policies being established through the approval of the Committee of Nine.

4.2. A committee composed of the watermaster, the superintendent of the BOR's Minidoka Project and three members of the Committee of Nine shall be appointed by the chairman and shall have the following general responsibilities:

1. To determine general policies regarding annual storage leases which may not be covered by the adopted rules and regulations.

2. To assist the watermaster in the allocation of water leased from the bank if conflicts arise.

3. To advise the Committee of Nine on water banking activities.

4. To set policies for the disbursement of funds generated by the water bank.

4.3. The watermaster shall act as the manager of the water bank. His authority shall include accepting water into the bank, executing lease agreements on behalf of the Committee of Nine, disbursing and investing funds generated through the lease of stored water and distribution of water supplies from the water bank.

Rule 5. ASSIGNMENTS.

5.1. Any individual, irrigation district, canal company, or other entity who owns space in a reservoir located in Water District 1 may assign any portion of this space to the Water Bank.

5.2. Space assignments will be identified by reservoir. If no designation is made in assigning space in federal reservoirs to the water bank it shall be understood that American Falls' space will be assigned before Jackson and Jackson space will be assigned before Palisades' space.

5.3. Storage assignments, are subject to the acceptance of the Rental Pool Committee. Reservoir space submitted for assignment may be rejected in whole or in part by the watermaster and Rental

Pool Committee or they may place special conditions on uses, allocation, and price if, in the judgement of the Rental Pool Committee, accepting said water will not be in the best interest of the water bank.

5.4. Anyone who attempts to assign space to the bank and feels aggrieved by the decision of the Rental Pool Committee may ask for a hearing before the Committee of Nine within fifteen (15) days.

5.5. The Committee of Nine, after hearing the arguments of the one claiming to be aggrieved, shall decide the issue by majority vote.

5.6. Assignments of storage to the water bank shall be on a priority basis as set forth in rule 6.

5.7. Assignments of storage space shall be in writing on forms provided by the watermaster and shall bear the date they were received in the watermaster's office in Idaho Falls.

5.8 Assignments of reservoir space may be made for periods of up to 20 years. Any space assigned for periods in excess of two years shall be subject to Rule 9 of these Water Bank Rules and Regulations.

5.9. All space assigned to the water bank shall be under the control of the watermaster and the Rental Pool Committee for the duration of the lease.

Rule 6. PRIORITIES.

6.1. Anyone holding space in a federal or private reservoir who assigns space for annual lease and designate such space available by July 1 of any year shall share proportionally in the proceeds from the lease of all or part of the yield from such space in that year.

6.2. Anyone holding space in a federal reservoir who assign space for annual lease after July 1 of any year shall receive proceeds from the sale of all or any part of the water sold which was made available after July 1 of that year on a "first come" basis.

6.3. All water from reservoir space designated for lease before July 1 of any year will be sold before any water from space assigned after July 1 will be sold.

6.4. Whenever an assignment is made for an annual lease it will be assumed that it is the intention of the lessor to assign sufficient space to yield the amount of water designated.

6.5. If a spaceholder should chose to assign all of his space to the water bank the "yield" of that space shall be determined by the watermaster. Yield will be determined by the percentage the reservoir filled minus evaporation.

Rule 7. LESSOR PRIORITIES.

7.1. Any water available through the water bank for annual use shall be provided on a priority basis.

7.2. The first priority in acquiring water from the water bank shall be given to those irrigation water users owning space in the various storage reservoirs of the Bureau of Reclamation in the Snake River Basin above Milner Dam.

7.3. The second priority in acquiring stored water from the water bank shall be given to other irrigation water users who divert water above Milner Dam and are located within Water District 1.

7.4. Priority among water users of each priority listed above and who execute annual contracts to obtain stored water during a given year shall be determined by the date on which the water user's contract and payment is received at the office of the upper Snake River watermaster in Idaho Falls; the earlier in the year the executed lease is received by the watermaster, the higher the priority in the priority group the entity will receive.

7.5. Any water user having once initiated a contract for stored water may request water in subsequent years by confirming, in writing, that all of the information on the original lease is true and correct, and by identifying the amount of water he wishes to purchase. The priority in this case will be the date on which payment is received by the watermaster.

7.6. Space assigned to the water bank from reservoirs with paid-out federal contracts shall be first reserved for allocation for irrigation purposes. Anyone leasing water from such space for irrigation shall be subject to all applicable water laws of the State of Idaho but shall not as a result be subject to the reporting requirements of the Federal Reclamation Reform Act of 1982 (RRA). If sufficient space is not available in paid-out reservoirs and stored water is acquired from a reservoir with remaining federal repayment contracts, then anyone acquiring such water shall be responsible for compliance with the limitations and reporting requirements of the RRA.

7.7 Any water diverted within Water District 1 without adequate natural flow and storage entitlements will be charged by the watermaster as storage used. Any such unauthorized use of water shall be replaced from available water bank supplies at a cost to the user equal to the established water bank price plus fifty cents ($ .50) to cover increased administrative costs. The administrative costs may be waived by the watermaster if, in his judgement, such unauthorized use resulted from measurement or accounting errors.

7.8 Water leased under an annual lease agreement and unused for irrigation purposes may be returned to the Water Bank by September 1. Monies refunded shall be reduced to cover the estimated twenty-five cent ($ .25) administrative cost to Water District 1 and twenty-five cents ($ .25) to offset the O & M costs of the lessors.

Rule 8. LEASE PAYMENTS AND WATER COST.

8.1. The lease price of water assigned to the water bank shall be set by the Committee of Nine each year.

8.2. The price of water available from the water bank shall be set by the Rental Pool Committee and approved by the Committee of Nine each year. The established base price shall be $2.00 per acre-foot diverted plus an administrative charge of $ .50 per acre-foot.

8.3. The lease price and the administrative charges for leases in excess of one year shall be negotiated by the Rental Pool Committee and the lessee and shall remain as negotiated for the term of the lease.

8.4. The lease price for 1988 shall be $2.50 including administrative charges for both irrigation and non-irrigation water users.

8.5. Lease payments to the lessors shall be made in accordance with rule 6 and shall be based upon the data published in the annual report of the Snake River watermaster. Payments to the lessors shall be considered due and payable once the watermaster has calculated the actual water used within Water District 1 for the annual watermaster's report.

8.6. The Rental Pool Committee may authorize the watermaster to make partial payments to lessors based upon provisional data when, in the watermaster's judgement, such partial payments can be made with reasonable certainty.

Rule 9. LONG-TERM LEASES.

9.1. The Committee of Nine may arrange leases of storage space for periods not to exceed 20 years. Such long-term leases will be negotiated on a case-by-case basis and may be supplied from anticipated future annual space/water assignments to the Water Bank or from specific long-term space assignments, or a combination of the two.

9.2. Contracts for long-term leases shall not be subject to the provisions of rules 6 and 7, except that the agricultural preferences identified in rule 7 shall apply when there is competition for limited long-term supplies.

9.3. Any contract for long-term lease shall contain the following information:

A. Name and address of lessor.
B. Amount of storage space obligated.
C. The lease price.
D. The legal description of the point of diversion and place of use.
E. The duration of the lease.
F. The understanding of responsibilities and exposures if reservoir space does not fill at some time during the term of the lease.

→ Alan R.

FYI

THE BACKGROUND WATER BANK

RULE 3.6

By

Ronald D. Carlson, Watermaster
Snake River Water District 1

There inevitably arise differences in the interpretation of the laws and rules we impose upon ourselves as citizens of the United States. These differences provide the substance that keep attorneys employed. Those responsible for drafting laws and rules are aware that interpretations may result in the implementation of laws and rules that are not in keeping with the original intent. Consequently, Congress, legislative bodies, and agencies frequently prepare committee reports or similar background information to clarify their intent.

The Rental Pool Committee of the Committee of Nine, recognizing the inherent potential for misinterpretation Rule 3.6, met on June 6, 1989, to discuss the rule adopted by the water users and the Committee of Nine at the Water District Annual Meeting and proposed certain clarifying changes. However, because this Water Bank rule addresses a very complex water allocation and accounting issue that can easily be misunderstood and misinterpreted, the intent behind the rule and the changes arising from the June 6 meeting probably still need to be reduced to writing.

In discussing the intent of Water Bank Rule 3.6, one must start with the issues that precipitated the rule in the first place. The

discussions of the loss of refill priority by those supplying water for downstream uses commenced at the very first meeting of the Rental Pool Committee after proposals were made to release water for uses below Milner Dam. This concern stems from the impacts that would occur, in other reservoirs during the ensuing year, if the system does not fill. When the rules for the Water Bank were first being formulated to allow the sale of Water Bank storage to the Idaho Power Company, Fremont-Madison Irrigation District, North Fork Reservoir Company, and certain Palisades space holders expressed concern that, by allowing space to be evacuated for new uses below Milner, their subsequent refill would be adversely affected. Both Steve Allred and Ken Dunn, while Directors of the Department of Water Resources, provided assurance that other water users would be protected. They independently held that it was a matter of state law and the Water Bank could not allow space evacuated for non-consumptive uses to refill at the expense of other space holders in the system. This became known as the "last to fill principle." Because of the firm position taken by Ken Dunn and his interpretation of Idaho Code Section 42-222, and the extension to transfers in nature of use through the vehicle of the Water Bank, no specific rule was ever drafted to address the "last to fill" principle until 1988.

However, when this became an issue in the 1988 allocation and it was suggested that the "last fill" principle should be in the rules. The Rental Pool Committee met and composed language to be presented to the Committee of Nine prior to the 1989 Annual Meeting. The rule simply said: **Space assigned to the Water Bank that is evacuated to supply water for non-consumptive uses below Milner shall be the last**

space to fill in the ensuing year. This became the original Rule 3.6 which was adopted by the Committee of Nine and Water District 1.

Had the intent of the Rental Pool Committee not been know, the original Rule 3.6 could have been interpreted and implemented in at least three different ways. One method would have been to give all space, irrespective of reservoir, the system's last priority date for refill. This would have meant that all space subject to this last priority would share proportionally in any water accrued under this priority. The second method would have been to simply not credit any water to this space if the system did not fill completely. These interpretations, although possible, were not the interpretations intended by those causing Rule 3.6 to be drafted. Their intent was to maintain the same relative priorities that exist in the reservoirs. The American Falls storage right is March 31, 1921. The Palisades right is July 28, 1929.* Thus, water released from American Falls for uses below Milner will accrue water before space evacuated from Palisades, for the same purpose, will accrue water. The last fill space, therefore, is more accurately the last space to fill in the reservoir from which it was originally released. In the watermaster's water right accounting and allocation process, the space evacuated from American Falls for uses below Milner was assigned a refill priority of December 30, 1999. Palisades last fill space was assigned a December 31, 1999 priority. Ririe space assigned and released for this purpose would have a January 1, 2000 priority. The priority date itself is not important as long as all of the dates post date all other existing water rights in the system, yet retain the same relative priority positions that the reservoirs

now have.

Several questions over the meaning of the original Rule 3.6 were expressed by water users after it was adopted. The primary concern, however, was that the rule would be interpreted to allow no water to be allocated to space evacuated for uses below Milner if all other space in the system had not filled. In an effort to address this concern and to make it clear that the refill of "last fill" would be dependent upon the water supply available to each reservoir in the same relative order priority as the Upper Snake reservoir system, and not prorated as though it were a new reservoir, the Rental Pool Committee amended the language of Rule 3.6 to read: **Storage space assigned to the Water Bank, that is evacuated to supply water for non-consumptive uses below Milner, shall be the last space to fill in the reservoir from which the space was originally assigned in the ensuing year . . ..** They also added language to allow people to assign water for irrigation uses above Milner **. . .. Any water bank supplier may limit the use of his space to "agricultural uses only" by so indicating at the time his space is assigned to the bank. Water sold from space assigned and restricted to agricultural uses shall bear the payment priorities set forth in Rule 6, except that anyone assigning space for agricultural purposes shall share proportionally in the proceeds only from water sold for irrigation.**

During 1988, 162,216 AF of water was released from American Falls and Palisades for uses below Milner. This resulted in 125,594 AF and 36,621 AF, respectively, of last fill space in these two reservoirs for 1989. Under the process described above for implementing Rule 3.6, American Falls accrued 94,253 AF of water in

the 125,594 AF "last fill" space. No water accrued to the 36,621 AF of last fill space in Palisades, since Palisades did not fill on its 1939 priority water right. There is probably no reasonable interpretation of Rule 3.6 that would have changed this. Thus, under the amended Rule 3.6, water released for non-consumptive uses below Milner, may not necessarily be the last space to fill in the system. However, it will be the last to fill in the reservoir from which it was released. The accrual to this space in each reservoir will depend upon the water supply to that reservoir.

Rule 3.6 is not just an effort to include in the Water Bank Rules language consistent with the Director's understanding of state law and his obligation to assure that other water rights are not adversely affected through the change in point of diversion, place of use, period of use, or nature of use of a water right. It is an attempt to assure fairness. The Committee of Nine believes that it is not fair for entities that assign water to the Water Bank to receive the associated monetary benefits from water sales and to pass the associated risks to others.

*The contracts with the Federal Government provide for 259,000 AF of space in Palisades to fill with a July 27, 1921 priority.

Rule 3.6.

The relative priorities for filling the upper Snake reservoirs are as follows:

Priority	Reservoir	Amount (AF)
1	Jackson	298,981
2	Walcott	97,000
3	Jackson	138,829
4	Jackson	409,190
5	Henry's Lake	79,350
6	Island Park	45,000
6 (same date?)	Palisades	259,600
7	American Falls	159,400
8	American Falls	1,540,600
9	Island Park	69,000
10	Grassy Lake	15,205
11	Palisades	940,400
12	Island Park	21,000
13	Henry's Lake	10,650
14	Ririe	80,000
15	Am Falls	48,000

Whenever water is released from space in one or more of the Snake River reservoirs for uses below Milner Dam, the refill of such space shall be in the same order of priority as the space from which it was released. When refilling space from which water was released for uses below Milner, the earliest priority space shall be advanced to a date of priority later in time than the latest right shown in the records of the watermaster.

Any water bank supplier may limit the use of his space to "agricultural uses only" by so indicating at the time his space is assigned to the bank. Water sold from space assigned and restricted to agricultural uses shall bear the payment priorities set forth in Rule 6 except that any one assigning space exclusively for agricultural purposes shall share proportionally in the proceeds from only water sold for irrigation.

M E M O

TO: Norm DATE: July 21, 1989

FROM: Alan

SUBJECT: Ron's Clarification of Rule 3.6

1. If the change was to respond to the quoted concern (p. 2, 3rd sentence), it would have been much simpler to issue a statement of how the March rule 3.6 was being applied; i.e., the "power space" would fill as last priorities with water accruing to those priorities at the locations of the reservoirs involved.

2. The fill has not been computed as Ron describes. The power spaces were assigned two priorities:

American Falls	Dec. 30, 1999
Palisades	Dec. 31, 1999

This sequence resulted in American Falls filling 23,845 acre feet and Palisades zero in their "power spaces."

3. Now that the June rule is before IWRB, I suggest that Ron issue an explanatory statement as to how it will be applied. It should not include all this history and other explanations. It should be sent to Committee of Nine, Idaho Power Co., and IWRB.

Ron's note to NKY

July 19, 1989 ----Who did you want this sent to beside Rosholt?

It has been brought to my attention that there is still confusion over the intent of Water Bank Rule 3.6. Since I drafted the rule for the Rental Pool Committee, the responsibility for clarification of the rule appears to rest upon me.

In way of clarification, I believe we must start with the concern which precipitated the rule in the first place. This concern stems from the impacts that would occur, in other reservoirs, during the ensuing year. This only occurs if the system does not fill as a result of large volumes of stored water being released downstream for uses outside of the Minidoka Project area. When the rules for the Water Bank were first being formulated to provide water bank storage to the Idaho Power Company; Fremont-Madison Irrigation District, North Fork Reservoir Company, and certain Palisades space holders expressed concern that, by allowing space to be evacuated for new uses below Milner, their subsequent refill would be adversely affected. Both Steve Allred and Ken Dunn, while directors of the Department of Water Resources, gave no latitude for this argument. They independently held that it was a matter of state law that the Water Bank could not allow space evacuated for non-consumptive uses to refill at the expense on other space holders in the system. This became known as the "last to fill principle." Because of the firm position taken by Ken Dunn, in particular, in his interpretation of Idaho Code 42-222 and the extension to transfers in nature of use through the vehicle of the Water Bank, no specific rule was ever

drafted to address the "last fill" principle until 1988.

When this became an issue in the 1988 allocation, it was suggested that the "last fill" principle should be in the rules and I was asked by the Rental Pool committee to draft this rule change prior to the 1989 Annual Meeting. This became the original Rule 3.6 which was adopted by the Committee of Nine and Water District 1. However, after adoption some people expressed concern that the rule, as drafted, would be interpreted in such a way as to prevent any water accruing to space evacuated for non-consumptive uses until all other space in the system filled completely. This, of course, was not the intent. "Power space" in American Falls for example, should be entitled to store water arising below Island Park or Palisades after the other space in American Falls has been filled even though these reservoirs may not be full. To accomplish this we have arbitrarily assigned a December 31, 1999 priority right to reservoir space evacuated for uses below Milner. After the remaining space has filled in a given reservoir, the space evacuated due to uses below Milner can fill in that reservoir based upon water available in the upstream reaches. Although this "last fill space" in all reservoirs should have the same priority, it is only the "last to fill" in the reservoir from which it was released. The amount of accrual is dependent upon the water available to fill that right. This means a 1999 priority right may be filling at American Falls and 1939 at Palisades or Jackson. Thus, water released for non-consumptive uses below Milner may not necessarily be the last space to fill in the system as indicated by the original Rule 3.6, but will be the last to

fill in the reservoir from which it was released as dictated by individual water supply. I hope this helps to clarify the intent of and accounting procedures arising from Water Bank Rule 3.6.

State of Idaho
Water District 1
RONALD CARLSON
WATERMASTER
(208) 525-7172
150 Shoup Ave., Suite 15
Idaho Falls, Idaho 83402

June 20, 1989

Mr. Gene Gray, Chairman
Idaho Water Resources Board
Statehouse Mail
Boise, ID 83720

Dear Gene:

The Committee of Nine has been concerned about the actions of the Federal Energy Regulatory Commission (FERC) in its attempt to allocate water in the State and take over the water planning functions of the Idaho Water Resources Board. The FERC has, through its power licensing process, attempted to pre-empt the further allocation of water by the State and establish minimum stream flows different from those set by the Board.

The FERC now is looking at the Water Bank as a source of water for the stream flows they have established on their licenses. The Committee of Nine does not want the water bank to become a tool of the FERC and has adopted Water Bank rule 1.3 to avoid the possibility of the FERC using the water bank to establish minimum stream flows.

The Committee of Nine requests the Board's adoption of this change to the rules of the Upper Snake Water Bank.

Very truly yours,

RONALD D. CARLSON
Watermaster

RDC:rb

NELSON, ROSHOLT, ROBERTSON, TOLMAN & TUCKER
Chartered
ATTORNEYS AT LAW

THOMAS G. NELSON
JOHN A. ROSHOLT
J. EVAN ROBERTSON
STEVEN K. TOLMAN
JAMES C. TUCKER
TERRY T. UHLING
TERRY R. McDANIEL
F. BRUCE COVINGTON
JERRY JENSEN
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June 19, 1989

Idaho Water Resource Board
c/o Idaho Department of Water Resources
1301 N. Orchard
Statehouse Mail
Boise ID 83720

RE: Water District 01 -- 1989 Water Bank Rules

Dear Board Members:

While joining you in Sandpoint to discuss Water District 01 Water Bank Rules and my May 9, 1989, letter and this letter sounds good to me, my sometimes reverse priorities will not allow me to so schedule into Sandpoint.

On May 9, I wrote to you on the above subject you have now scheduled on your agenda for consideration. Since that time, the Water District has again changed their rules. Rule 3.6 was amended at their June 8, 1989, meeting to read as follows:

> 3.6 Storage space assigned to the Water Bank that is evacuated to supply water for non-consumptive uses below Milner shall be the last space to fill, in the reservoir from which the space was originally assigned, in the ensuing year. Any water bank supplier may limit the use of his space to "agricultural uses only" by so indicating at the time his space is assigned to the bank. Water sold from space assigned and restricted to agricultural uses shall bear the payment priorities set forth in Rule 6 except that anyone assigning space for agricultural purposes shall share proportionally in the proceeds from only water sold for irrigation.

The change obviously tempers the severity of the rule of March 1, 1989, which I herewith quote for your convenience:

> 3.6 Space assigned to the Water Bank that is evacuated to supply water for non-consumptive uses below Milner shall be the last space to fill in the ensuing year.

Allowing a lessor to designate "agricultural uses only" takes away the punitive nature of penalizing a lessor that could not be protected under the March 1989 version of the rule as interpreted by the Committee. The June 1989 rule also only subordinates "refill" for such lessors who lease for such non-consumptive purposes, to the reservoir from which the water is leased, thus increasing the potential for leasing, over and above the March 1989 rule.

One result of the June 1989 rule will most likely be that if the reservoirs are full, more water will be available for lease on a non-restricted basis from American Falls, since that reservoir generally refills annually. The rule still will not encourage leasing of water, but will probably not discourage leases for any purpose from lessors who own space in American Falls, or who can carry over enough water to cover the downside of the following year.

As I explained to the Board at your January meeting, my clients Twin Falls Canal Company (TFCC) and North Side Canal Company (NSCC) received a FERC license for the Milner Power Project on December 15, 1988. In essence, it provides for a 200 cfs bypass flow at Milner on a year around basis. Please understand that TFCC and NSCC did not request or support such a requirement in the license. In fact reams of documents and testimony show that TFCC and NSCC totally opposed the assertion of a bypass flow other than the 58 cfs which leaks through the dam as contrary to the State Water Plan and state water law. However, TFCC and NSCC find themselves now in a position where they must comply with the requirement until it can be changed or eliminated.

The imposition of Water District 01's rule is to discourage leases for the bypass flows. While the license does also state that we need not rent water if none is available, the appearance is that TFCC and NSCC dreamed up the rule so as to not have leasable water available and consequently to avoid FERC's requirement, especially in light of Keith Higginson's letter of September 30, 1988, to FERC (a copy of which is

Exhibit "A" hereto) which may have encouraged the FERC to mandate a flow which was larger than the leak of 58 cfs through the Milner Dam.

In summary, TFCC and NSCC support the change from the March 1989 version to the June 1989 version as an improvement. But as pointed out in the May 9, 1989, letter, a more reasonable rule would be to protect the priority in leasing for irrigation, but to not discourage a lease for any purpose so long as the water is used during the irrigation season of April 15 through October 15 of each year.

If the real purpose of the Water Bank Rule is to spite FERC, it seems to this writer that Idaho only adds fat to the fire. During the Milner licensing process, Idaho Fish & Game, Health and Welfare, and Parks and Recreation all argued for greater bypass flows than were on the table. Their recommendations were also in conflict with the State Water Plan. Perhaps the state needs its house in order so they can comment in a unified voice on a project. Such a voice should include all state agencies, political subdivisions and instrumentalities. Perhaps an M.O.U. can be developed with FERC as to future project licenses so the state doesn't have to depend on a reversal of Rock Creek to avert all out war on the issue of bypass flows, which is a current issue in every pending licensing and relicensing proceeding.

Respectfully submitted,

John A. Rosholt

JOHN A. ROSHOLT
ATTORNEY FOR TFCC & NSCC

JAR:dcb
24911

Enclosure

cc: Keith Higginson
Clive Strong

LING, NIELSEN & ROBINSON
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BRENT T. ROBINSON
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MARK A. INGRAM
RICK BOLLAR

AREA CODE 208
TELEPHONE 436-4717
FAX 436-6804

March 3, 1989

Max E. Van Den Berg
Project Superintendent
Minidoka Project
Bureau of Reclamation
1359 Hansen Avenue
Burley, Idaho 83318

Ronald D. Carlson
Watermaster
Water District No. 1
150 Shoup Avenue, Suite 15
Idaho Falls, Idaho 83402

RE: Water District 1 - Water Bank

Dear Gentlemen:

At the annual meeting of the waterusers of Water District 1 held on March 1, 1989, Rule 3.6 of the Water Supply Bank Rules and Regulations was adopted. This provision states: "Space assigned to the Water Bank that is evacuated to supply water for non-consumptive uses below Milner shall be the last space to fill in the ensuing year."

This is a new rule and should not have retroactive application. In 1988, Falls Irrigation District and A & B Irrigation District each contributed a portion of their storage to the Water Supply Bank under the rules and regulations then in effect in Water District 1. This stored water was made available to the Water Supply Bank with the knowledge that Southern Idaho was suffering from a severe drought and that other waterusers within Water District 1 may be required to rely upon water in the Water Supply Bank to realize a full water supply during the 1988 irrigation season. Neither Falls Irrigation District nor A & B Irrigation District had ever been advised that any water assigned to the Water Bank by them that was ultimately rented for power production would effect their fill rights to their space in the ensuing year. For this reason, notice is hereby given that Falls Irrigation District and A & B Irrigation District will not

accept Rule 3.6 as it applies to their fill rights in storage for the 1989 irrigation season held pursuant to contracts with the Bureau of Reclamation. If the storage rights of A & B Irrigation District and Falls Irrigation District are not allowed to fill with the priority of other spaceholders during the 1988-89 storage season, legal action will be commenced against the Watermaster and the Bureau of Reclamation to enforce their rights.

With the understanding that if Rule 3.6 is approved by the Water Resource Board under Section 42-1765, Idaho Code, then we would ask for an explanation as to how this rule would apply in the following respects:

1. May the lessor designate the reservoir from which it may assign space for rental under the Water Supply Bank?

2. If space assigned to the Water Bank is from a particular reservoir, does Rule 3.6 apply to the space in that reservoir only?

3. May a lessor designate the use to which its water assigned for lease may be used to insure that such water is not used for nonconsumptive uses below Milner?

The above issues are vital if the Water Supply Bank continues to be a viable method to utilize storage space in Water District 1. I am particularly concerned with the precedent that Rule 3.6 may create in operating the Water Bank. For instance, may a spaceholder who desires to place water in the Water Bank designate the person to whom he desires that water to be leased to? Obviously, this must be allowed at least to the extent the nature of the use may be involved to avoid the penalties provided by Rule 3.6. I am also concerned how Rule 3.6 will apply to all lessors of water through the Water Bank. For instance, if a lessor has space in American Falls Reservoir and no other reservoir on the system, how can you insure that water leased for a nonconsumptive use below Milner will be the last space to fill in the ensuing year? Obviously, this rule could be

enforced only when American Falls Reservoir does not fill from the inflow below Palisades. Again, it would not be applicable in the event any water was at any time spilled past Milner for whatever reason, as such water would be required to fill the water leased in the previous year from American Falls Reservoir.

I would appreciate your comments in regard to these matters as soon as possible.

Very truly yours,

Roger D. Ling

RDL:nk
cc: A & B Irrigation District
Falls Irrigation District

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720 - (208) 334-7900

CECIL D. ANDRUS
GOVENOR
R. KEITH HIGGINSON
DIRECTOR

September 30, 1988

Ms. Lois D. Cashell
Acting Secretary
Federal Energy Regulatory Commission
825 North Capitol Street, N.E.
Washington, D.C. 20426

COMMENTS OF THE IDAHO DEPARTMENT OF WATER RESOURCES

Re: In the Matter of the Supplement to the Draft Environmental Impact Statement No. 0048 for the Twin Falls, Milner, Auger Falls, and Star Falls Hydroelectric Projects on the Mainstem of the Snake River, Idaho

Dear Ms. Cashell:

The Idaho Department of Water Resources ("IDWR") has reviewed the new circumstances, information and staff alternatives for the referenced projects and makes the following comments regarding the Milner Hydroelectric Project (FERC No. 2899).

Maintenance of higher minimum flows at the Milner site must be done in accordance with applicable state law. The applicant has proposed minimum by pass flows of 58 cfs during the irrigation season and 150 cfs during the non-irrigation season. In the event the applicant is successful in complying with the substantive areas of state water law, IDWR has determined that there is reasonable possibility that both minimum flows can be accommodated if a supply of water can be leased or purchased.

The concept of a "Comprehensive Water Block" ("CWB") may work well in some years on the mainstem of the Snake River, it will be a challenge to structure a long-term agreement with the Water Bank to sell water to meet mitigative flows for hydroelectric projects. Currently, water bank rules provide that irrigation users have the highest priority to receive water in times of shortage, while non-consumptive, non-irrigation users maintain the lowest priority to receive water. While it is true that in most years the water bank has water for sale, this is not always the case. However, there is enough flexibility under the present system that applicants should be able to accomplish their objectives and proceed to a successful completion of the project by timely compliance with the state water laws.

EXHIBIT A

Notwithstanding the applicants increased costs in obtaining the water, it appears that structured reliance on the water bank through the comprehensive water block mechanism can be successful in meeting prescribed mitigative flows on the mainstem of the Snake River.

In closing, IDWR wishes to thank the Commission for the opportunity to submit additional testimony concerning the Draft Environmental Impact Statement issued in November, 1987.

Sincerely,

R. KEITH HIGGINSON
Director

RKH:dc
Enc.

cc: Idaho Power Co.
John Rosholt, Esq.
B. & C. Energy, Inc.
J.U.B. Engineers
Twin Falls Canal Co.
U.S. Fish & Wildlife
Bureau of Land Management, Shoshone
Idaho Dept. of Fish & Game, Boise
Environmental Protection Agency, Seattle
Idaho Dept. Health & Welfare, DEQ
Idaho Dept. of Parks & Recreation

United States Department of the Interior
BUREAU OF RECLAMATION
MINIDOKA PROJECT OFFICE
1359 HANSEN AVENUE
BURLEY, IDAHO 83318

TAKE PRIDE IN AMERICA

IN REPLY REFER TO: 407 PRJ-13.00

Ron Carlson, Watermaster
Water District No. 1
150 Shoupe, Suite 15
Idaho Falls ID 83403

Subject: Allocation Procedures (Reservoir)

Dear Ron:

I am writing to confirm the agreements made concerning 1987 carryover storage and 1988 accrual when we met on September 7, 1988. The information is from the flip charts used during the meeting. This letter was drafted soon after the meeting and was misplaced. Please accept my apology for the delay.

Storage diverted by users, who understood they were diverting natural flows because the Lorenzo gage was not corrected in the real-time data provided to Water District No. 1 by the Bureau of Reclamation, will be given to those users as natural flow. All storage in American Falls and Palisades Reservoirs will be charged a loss, proportional to reservoir capacity, to provide that storage. The total use of 17,789 acre-feet will be divided as follows: 10,358 will be charged to American Falls Reservoir and 7431 to Palisades Reservoir.

Credit to the diverters is justified in this case for 1987 carryover because of the long period over which the gage was not corrected, and the large correction that should have been applied. I do not believe that this correction procedure should be implemented in the future unless exceptional conditions exist. As we have become aware in recent weeks, the final streamflow data does not weight individual streamflow measurements as heavily as we usually do in the real-time data. In general, not applying shifts would make our data more consistent with the final data. Year end processing of diversion data usually adjusts for growth of weeds in diversion channels and reduces storage diverted by most entities leaving them with more carryover than anticipated by real-time data. For those entities that use more storage than intended water bank purchases or reduced carryover should be expected.

The division of responsibilty in determining water usage seems clear:

Water District No. 1:

Determine use of storage by diversion.

Determine accrual of water to storage rights.

Bureau of Reclamation:

Determine carryover for each contract.

Determine carryover for each reservoir.

Determine allocation of new storage accrual by contract.

The order of use of water for users with storage in more than one reservoir is as follows:

1) Water rented from the Upper Snake River Water Bank.

2) Palisades Water Users Incorporated shares if assigned to a canal by the owner of the storage.

3) The users proportionate share, by total Jackson Lake space, of the release required each year to maintain 200,000 acre-feet of space for winter flood control.

4) Lake Walcott storage contracted by the user.

5) American Falls storage contracted by the user.

6) Palisades Reservoir storage including Palisades Water Users Inc. shares if diverted by the owner.

7) Jackson Lake storage beyond the 200,000 acre feet released for flood control.

On the North Fork Snake River, Island Park Reservoir, and Grassy Lake have the same priority date. Grassy Lake is more difficult to fill. Henry's Lake also has an early priority, but is difficult to fill and its right would be damaged by Island Park Reservoir's filling if Henry's Lake carryover were held in Island Park Reservoir. I do not presently have enough information to determine carryover by reservoir on the North Fork. American Falls storage contracted to North Fork users should be used prior to their use of any North Fork storage.

I am waiting for your final report of storage use. It is my only source of Palisades Water Users Inc. distribution, water bank transactions, and North Fork allocation by diversion. As soon as I receive that data, we will complete our allocation computations.

Sincerely,

Max E. Van Den Berg

Max E. Van Den Berg
Project Superintendent

United States Department of the Interior

BUREAU OF RECLAMATION
MINIDOKA PROJECT OFFICE
1359 HANSEN AVENUE
BURLEY, IDAHO 83318

FEB 9 1989

TAKE PRIDE IN AMERICA

IN REPLY
REFER TO:
400
PRJ-13.00

Department of Water Resources
Attention: Mr. Ron Carlson
Watermaster, District 01
150 Shoup Avenue, Suite 15
Idaho Falls ID 83402

Subject: Storage Allocation, Upper Snake River System Reservoirs (Reservoir)

Dear Ron:

We share your concerns in correctly determining reservoir water storage allocation and properly identifying carryover storage in the Upper Snake River System. Our discussions of last summer led to mutually agreed upon storage carryover values for 1987 and the process by which that carryover was determined. The method to distribute new accrual was also confirmed at that time.

As discussed in your recent meeting with Alan Robertson, we will meet with you, Alan, and Bob Sutter to discuss those issues you described in your January 16, 1989 letter. This meeting will be February 15, 1989 at the Federal Building in Boise in Room No. 436, at 3:00 p.m. We intend to have Dan Yribar and Joe Wensman from our Regional Office, as well as Mike Beus and myself attend that meeting. We understand that Lyle Swank from your office will be attending as well.

Two major issues will be discussed at the February 15 meeting. They are:

1. Canal company water account deficits.

2. Solidify the permanent process for determining allocation and carryover.

We look forward to meeting with you on February 15. Continued communication and cooperation will enable all parties to stand together and operate by the same rules.

Sincerely,

Max E. Van Den Berg

Max E. Van Den Berg
Project Superintendent

cc: Idaho Dept. of Water Resources, 1301 N. Orchard, Statehouse, Boise, ID 83720, Attn: Alan Robertson

IDAHO WATER RESOURCES RESEARCH INSTITUTE
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Research and Extension Center
Route 1 3793 N. 3600 E.
Kimberly, ID 83341
(208) 423–4691

February 8, 1989

Mr. Norm Young
Idaho Department of Water Resources
1301 Orchard Ave
Boise, ID 83720

Subject: Meeting with Lower Snake River Water Users on Snake River Allocation Procedures

Dear Norm:

I met with Jack Eakin and Ted Diehl to discuss their continuing concerns about the allocation process and computer model operations on the upper Snake River. Basically, their concerns are with the procedures for calculating the natural flow at Neeley upon which their natural flow right and storage assessment are based. Difficulty in projecting natural flow or storage requirements has led to decisions to purchase storage which later turned out to be unnecessary. This has proved somewhat embarrassing, and they would like to explore alternatives to prevent the situation in the future. Granted, in good water years this situation does not occur, but we will have additional low water years in the future.

As you are aware, a number of concurrent situations or events has occurred this past year which is beginning to polarize the lower users and upper valley users regarding Snake River operations. The drought has certainly brought out the concern for equitable water distribution and adherence to the requirement to protect downstream water right holders. Serious concerns regarding the impact of future ground–water development in the non–trust water area resulted in the filing of petitions for inclusion of ground–water in Water District No 1 and a moratorium on continued development. These concerns have added to the antagonism between upper and lower valley users and the ground–water pumpers. In addition, the approval of the FERC license for the Milner power plant has been viewed by upper valley users as an attempt by the Twin Falls and Northside users to 'get in bed' with Idaho Power and somehow tie up additional upper Snake River water.

The growing concerns are creating disunity and mistrust among heretofore reasonably united irrigation entities and individuals and, if the trend is not curtailed, could lead to problems potentially overshadowing the Swan Falls debacle. I believe the approach should be to provide adequate information and education to all the players on specific concerns, and to enhance the dialog

between managers and water administrators. The meeting on February 23 was suggested for this reason and, I believe, will provide an opportunity to answer many questions not previously addressed by Ron Carlson or Department personnel.

I have enclosed a list of items which I believe should be addressed by your staff at the meeting. Both Jack Eakin and Ted Diehl would like to meet at 8:00 am, if possible, to allow a full morning for discussion if necessary. They have a Water Users Association Legislative Committee meeting at 1:30 PM.

Sincerely,

C. E. Brockway, P.E.

CEB:af
cc: Jack Eakin
Ted Diehl
Gary Slette
Alan Robertson

M E M O

TO: Ron, Lyle, Hydrology DATE: February 1, 1989

FROM: Norm

SUBJECT: Water District 1 Accounting

This is to document actions agreed upon at our January 26 meeting.

1. USBR approved carry-over accounts for October 31, 1987 will be the basis for 1988 storage accrual accounting.

2. Diversion data review will be completed by February 2.

3. Accounting will be carried at least as far as the date of storage allocation (June 1988) by February 9. Storage allocations will then be determined.

4. We will meet with USBR representatives on February 15 (IDWR small conference room, 10:00 a.m.) to discuss (1) any adjustments which may be necessary as a result of changes caused by data revisions and the revised 1987 carry-over amounts and (2) a procedure for carry-over in 1988 and in subsequent years.

5. Accounting for the remainder of 1988 will be completed prior to March 1.

6. Other time objectives in my memo of January 2 remain the same.

CONCERNS OF LOWER VALLEY WATER USERS WITH SNAKE RIVER WATER ALLOCATION PROCEDURES

1. General procedure for determination of natural flow at Neeley. How does the model work?

2. Any evidence of historical changes in spring flow?

3. Specific comparison of Newell formula and current procedure.

4. Explanation of and description of actual or potential use of Kjelstrom's approach; i.e., Spring Creek.

5. Procedures being taken to improve timeliness of data used in model; i.e., river station gages.

6. Procedures being taken to reduce large fluctuations in computed daily or short term natural flow.

6. Effect of errors in American Falls storage changes.

7. Effect of errors in estimate of American Falls evaporation estimates.

8. Procedures used to improve timeliness of information dissemination to users re: natural flow, storage charges, etc.

9. Any procedures which lower users could adopt or assist with to make the system function better.

10. Is the TFCC and NSCC natural flow right being used to 'take up all the slack' in the Upper Snake allocation system?

Expected attendance at February 23, 1989 meeting:

- Ted Diehl—Northside Canal Company
- Jack Eakin—Twin Falls Canal Company
- Gary Slette—Counsel for Canal Companies
- Chuck Brockway

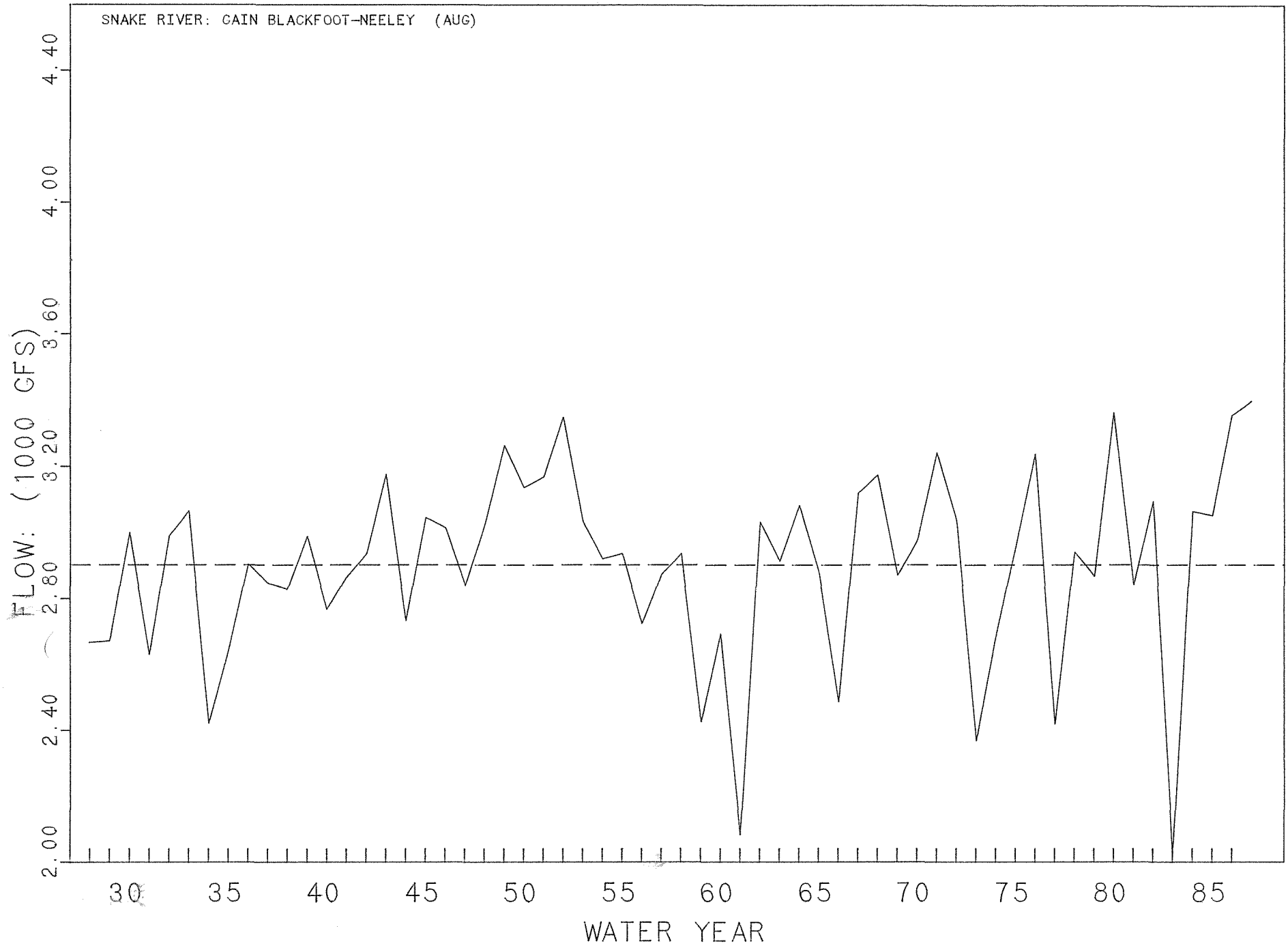
EXHIBIT A

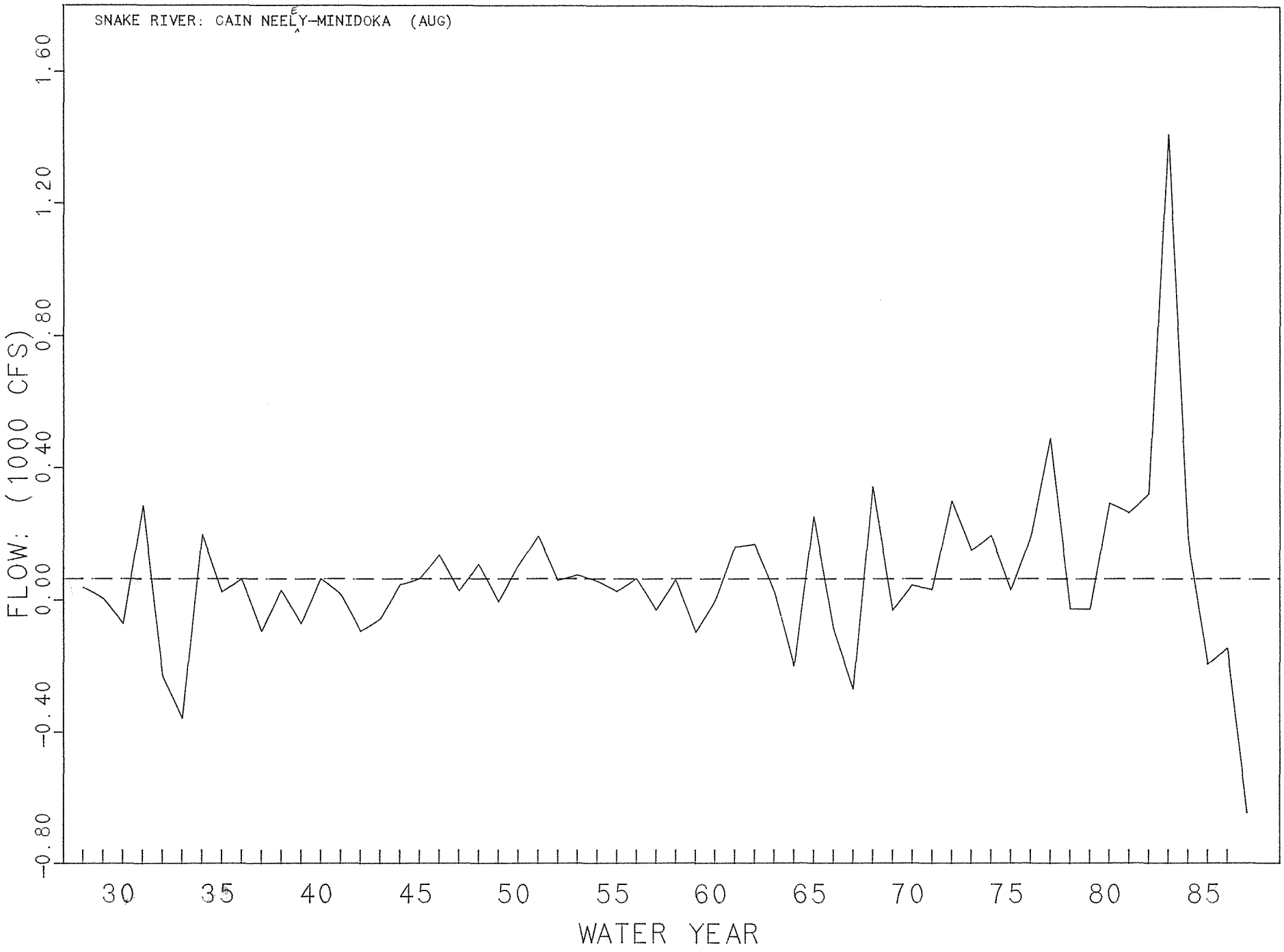
PALISADES PRELIMINARY ALLOCATION 1988 11-JAN-89 13:23:42 Pg 1

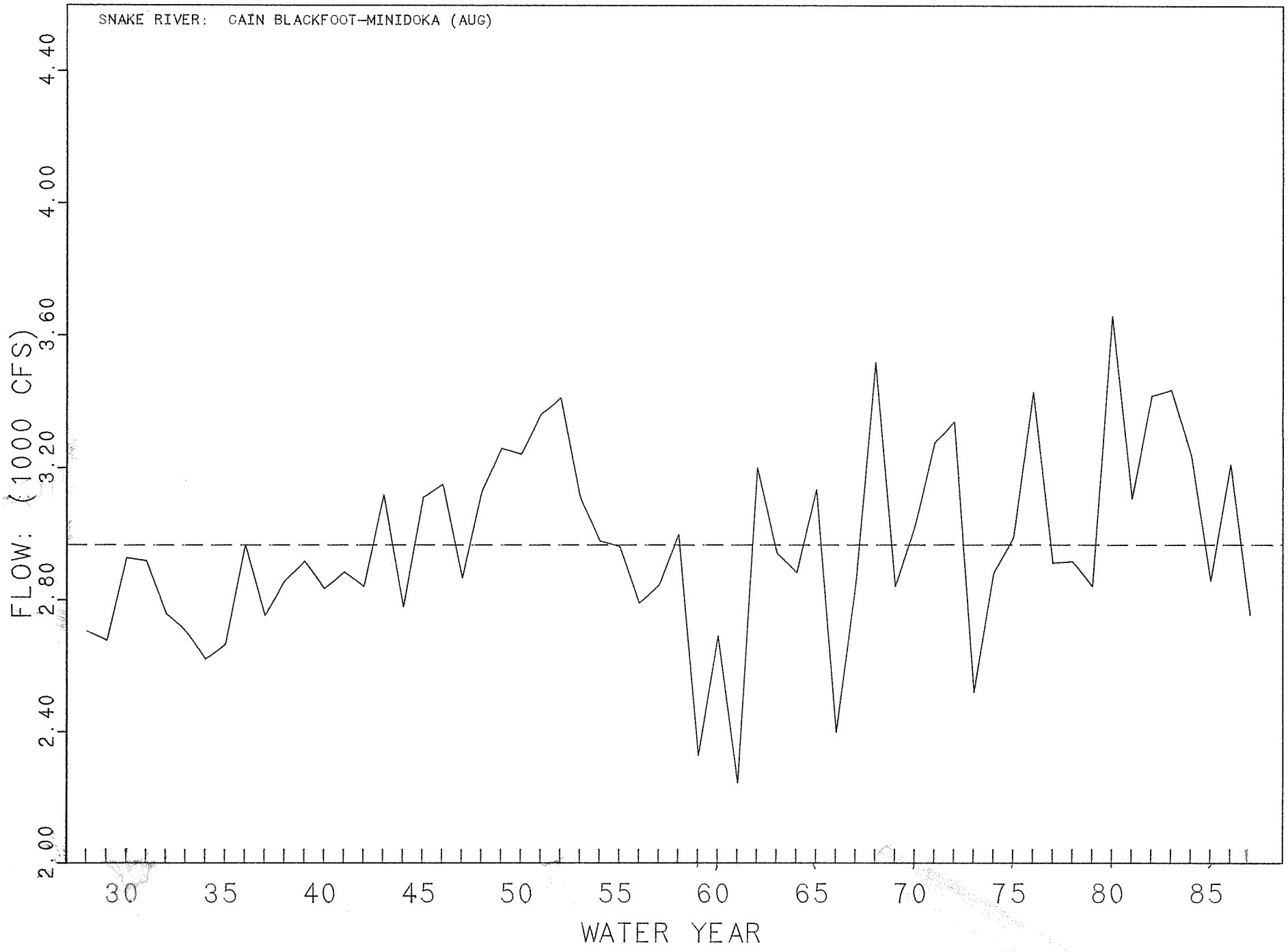
District or Company	PALISADES CONTRACTED	PALISADES CARRYOVER	WWS RIGHT	ACCRUED TO 1939 RIGHT	TOTAL PAL ALLOCATION
A and B Irrigation District	90800	38716		14513	53229
Aberdeen-Springfield Canal Co.	143278	38044	22860	22902	83805
American Falls Reservoir Dist. no. 2	0	0		0	0
Andrus, Ray Jr.	0	0		0	0
Artesian Irrigation	0	0		0	0
Blackfoot Irrigation Co.	4050	3944	4050	0	4050
Burgess Canal and Irrigating Co.	31400	1154	8000	5019	14173
Burley Irrigation District	39200	16180	2672	6266	25118
Butler Island Canal Co., Ltd.	250	0	250	0	250
Butte and Market Lake Canal Co.	44000	42743	7250	0	44000
Canyonview Irrigation	9522	4487		1522	6008
City of Pocatello	50000	16744		7992	24736
Clark and Edwards Canal Co.	800	0	660	128	788
Clement Brothers and Owners Mutual	0	0		0	0
Corbett Slough Ditch Co.	6300	4715	2180	0	6300
Craig-Mattson Canal Co.	1440	447		230	677
Danskin Ditch Co.	2350	504	2180	0	2350
Dilts Irrigation Company, Ltd.	1200	228	260	192	680
East LaBelle Irrigating Company	800	103	800	0	800
Enterprise Canal Company, Ltd.	19600	1250	1820	3133	6203
Enterprise Irrigation District	0	0		0	0
Falls Irrigation District	40900	25925		6537	32463
Farmers Friend Irrigation Co., Ltd.	9400	2127	3810	1502	7440
Food Machinery Co. (WESTVACO)	5000	1674		799	2474
Harrison Canal and Irrigation Co.	23500	4514	4640	3756	12910
Idaho Irrigation District	58800	57263	13040	0	58800
Idaho Power Company	0	0		0	0
Island Irrigation Company	4700	2027	1310	751	4089
J. R. Simplot Co.	2500	2078		400	2478
Lenroot Canal Company	7850	0	1530	1255	2785
Lowder Slough Canal Co., Ltd.	1600	11	400	256	666
Milner Irrigation District	44500	35916		7113	43028
Minidoka Irrigation District	35000	10300	5328	5594	21222
New Lavaside Ditch Company	11750	10535	2180	0	11750
New Sweden and West side Mutual	39350	29006	10920	0	39350
North Rigby Irrigation and Canal Co.	1200	277	540	192	1009
North Side Canal Co., Ltd.	116600	0	116600	0	116600
Palisades Water Users, Inc.	54130	17721	560	8652	26933
Parks and Lewisville Irrigation Co.	5500	3013	2550	0	5500
Parson Ditch Company, Ltd.	700	390		112	501
Peoples Canal and Irrigation Co.	35000	8410	6540	5594	20545
Poplar Irrigation District(RILEY CANAL)	1550	362	320	248	930
Progressive Irrigation District	28500	6879	11470	4555	22904
Rigby Canal and Irrigation Co., Inc.	6300	3685	1450	1007	6141
Riverside Ditch Company	1500	0	1180	240	1420
Rudy Irrigation Canal Company	15700	6226	2000	2509	10735
Salmon River Canal Co.	0	0		0	0
Snake River Valley Irrigation District	35300	0	7700	5642	13342
Sunnydell Irrigation District	6300	1148	1380	1007	3535
Texas Slough and Liberty Park	4700	3843	3280	0	4700
The Reid Canal Company	3150	2812	1930	0	3150
Trego Ditch Company	3200	1700	580	511	2792
Twin Falls Canal Co.	0	0		0	0
U.S. Indian Irrigation Service	83900	36192		13411	49603
Utah-Idaho Sugar Co. (Osgood)	0	0		0	0
Watson Slough Ditch and Irrigation Co.	2350	0	1090	376	1466
Wearyrick Ditch Company	600	539	580	0	600
West LaBelle and Long Island	6000	5746		254	6000
Woodville Canal Company	6000	1408	1090	959	3457
TOTALS	1148020	450983	256980	135130	814484
Unallocated	51980	50621	2620	0	51980
Grand Total	1200000	501604	259600	135130	866464

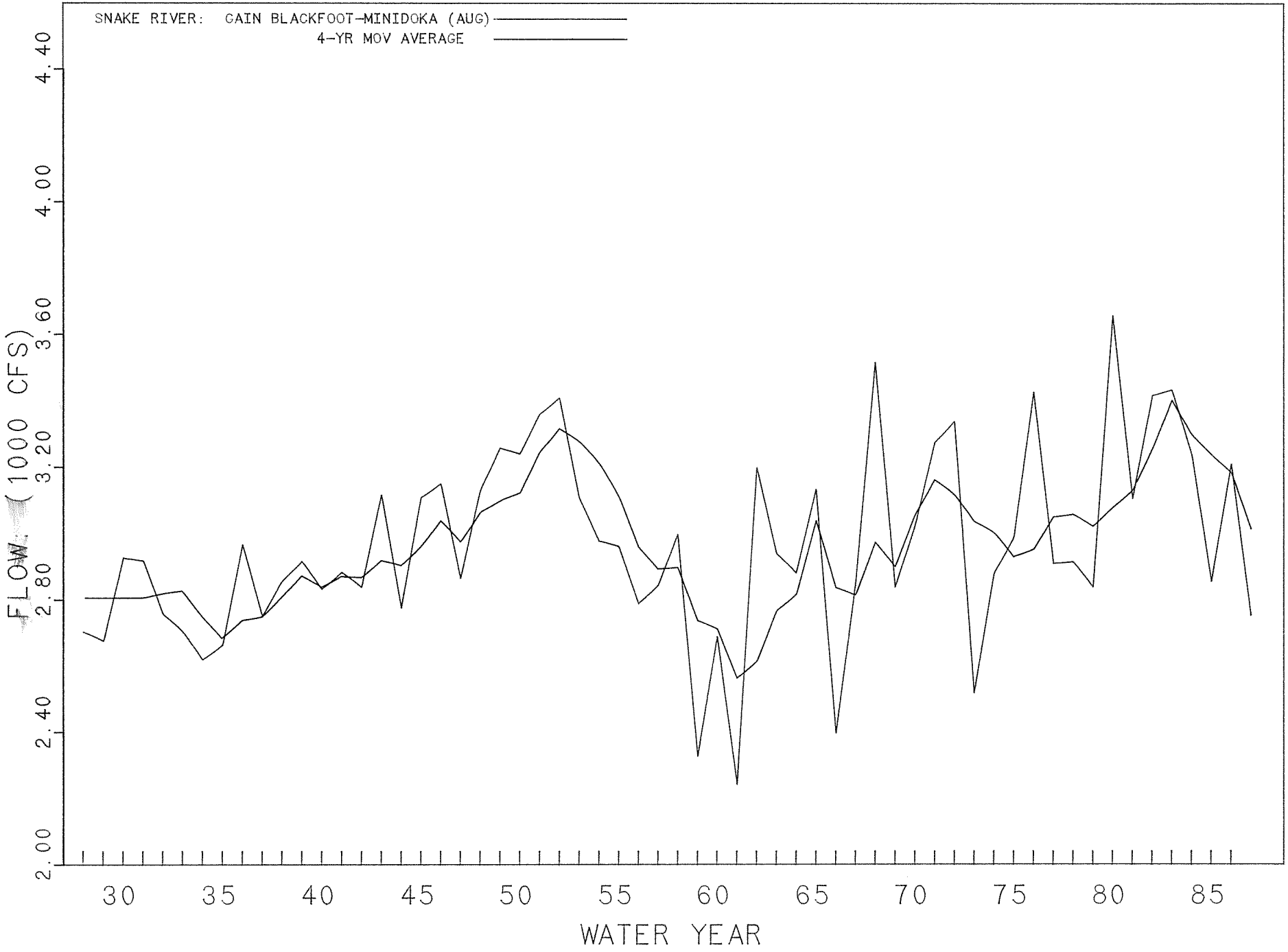
OCT 31, 1987

	ACTUAL	LATE FILL	WM CARRYOVER	SUPPLY - USE, USBR RULES CARRYOVER
JACKSON LAKE	61300	5017	56283	55261
PALISADES	349000	28509	320491	501603
HENRYS LAKE	73300	98	73202	28329
ISLAND PARK -	60900	5362	55537	} 32720
GRASSY LAKE	8027	0	8027	
AMERICAN FALLS	256100	50578	146722	34835
LAKE WALCOTT	38200	97000	0	0
RIRIE	35500	0	35500	42159
OTHER				858
TOTAL			695,762	695,765


SNAKE RIVER: CAIN BLACKFOOT-NEELEY (AUG)
FLOW: (1000 CFS)
4.40
4.00
3.60
3.20
2.80
2.40
2.00
30
35
40
45
50
55
60
65
70
75
80
85
WATER YEAR


SNAKE RIVER: CAIN NEELEY-MINIDOKA (AUG)
FLOW: (1000 CFS)
1.60
1.20
0.80
0.40
0.00
-0.40
-0.80
30
35
40
45
50
55
60
65
70
75
80
85
WATER YEAR


SNAKE RIVER: CAIN BLACKFOOT-MINIDOKA (AUG)
FLOW: (1000 CFS)
4.40
4.00
3.60
3.20
2.80
2.40
2.00
30
35
40
45
50
55
60
65
70
75
80
85
WATER YEAR


SNAKE RIVER: GAIN BLACKFOOT-MINIDOKA (AUG)
4-YR MOV AVERAGE
FLOW (1000 CFS)
4.40
4.00
3.60
3.20
2.80
2.40
2.00
30
35
40
45
50
55
60
65
70
75
80
85
WATER YEAR

January 16, 1989

Mr. Max Van Den Berg
Project Superintendent
Bureau of Reclamation
1359 Hansen
Burley, ID 83318

Dear Max:

I was pleased with the outcome of our seminar. We have gotten some very encouraging feedback. I think the presentation on storage was especially helpful and your staff is to be commended on a very creative approach to a complex matter.

However, the presentation on storage carry over raised a very serious question in my mind that I believe should be answered before we modify our original 1987 carry over numbers. After thinking about the carry over process you outlined in light of your "bean" presentation, I am convinced that the procedure of allowing paper carry over that is substantially different from the physical contents not only violates the space holder contracts but probably will result in identifiable and actionable injury to certain space holders.

My conclusion is based upon my understanding of the space holder contracts, which may very well be incomplete. But as I understand the contracts, they all specify entitlements as a percentage of the total space in a given reservoir. This, I believe is different from contracting for a unique amount of space, or the "bucket concept."

Also by allowing an earlier priority space holder to carry over his water in the space of a later priority upstream space holder, the Bureau is improperly allocating the new accrual that otherwise would have gone to the latest priority upstream space holders.

This probably can better be illustrated by example. Let us take two hypothetical reservoirs with the earlier priority reservoir (A) being located

downstream. Under the Bureau's policy of storing first as high in the system as possible (in B), with the carry over matching the contents, once reservoir A physically fills all of the water in reservoir B belongs to the space holders of B. However, if the Bureau allows some of reservoir B's water to be carried over in A, then an amount of new accrual equal to the B water carried over in A must be used to move this carry over back upstream to B, thus depriving the space holders in B of that exact amount of storage. This, of course, is what will happen in 1988 if we change the 1987 carry over pursuant to your instructions. I know of nothing in the contracts that allows using some other entities space to hold carry over. In addition, the state took the position at the time the water bank was being developed that water leased for non-irrigation purposes would be the last space to fill in the ensuing year.

I recognize that it will be awkward to change the carry over numbers after handing out the 1987 carry over numbers in the meetings in Burley and Idaho Falls. But I am now concerned that the space holders have not agreed to allowing their space to be used for someone else's carry over and that the resulting injury is easily identified and probably cannot be defended in court.

I believe there is a good reason why the Bureau instructed us years ago to make carry over match the physical reservoir contents. Palisades Water Users Inc. is only one organization that would likely seek damages from the federal government if the carry over for 1987 is allocated as you are proposing.

I suggest you reconsider your instructions before we use the revised 1987 carry over numbers in our 1988 accounting.

Very truly yours,

RONALD D. CARLSON
Watermaster

RDC:cw

bc: Norm Young

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720 - (208) 334-7900

CECIL D. ANDRUS
GOVENOR
R. KEITH HIGGINSON
DIRECTOR

M E M O

TO: Ron, Keith, Hal, Hydrology DATE: January 2, 1989

FROM: Norm NCY

SUBJECT: Water District 1 Accounting

This memo is intended to document the actions agreed upon at the December 15 meeting to strengthen the Water District 01 program. Emphasis must be place upon providing timely data to water users that is sufficiently accurate for decision making.

1. Staffing. To the extent that Account #1239 funds are available, the Water District will immediately seek to hire at least two additional temporary employees and seek approval of permanent positions at the annual meeting.

2. Data. Problems with accuracy of preliminary data must be reduced. Monitoring and coordination of incoming data should be the primary responsibility of one of the new employees. A procedure should be developed for periodically securing actual pump data or of estimating it. Pump data or estimates should be incorporated into the daily accounting program. This process will be ready by the beginning of the 1989 season.

3. 1988 Data. Diversion data for 1988 (including pump data) must be completed by January 15. USGS final data must be transferred by that date. Water District billings, target date is January 15. 2 Feb

4. 1988 Accounting. The overall objective is to complete the final 1988 accounting before March 1. Starting with carry over computed from the 1987 use sequence specified by USBR, the accounting will be carried forward to the point of 1988 storage allocation in June. At that point, I want to be informed of the magnitude of change from the preliminary 1988 accounting that appears to result from the change in carry-over procedure.

9 Feb Alloc

15 Feb - USBR mtg

24 Acc'tg Conf

Twin F. CC mtg late 15th!

5. Computer. Because of potential problems and delays in using the Idaho Falls micro-Vax, accounting work will have to begin on the 750. Sufficient space will be reserved for that purpose starting immediately.

6. Carry Over. A permanent procedure for computing carry over will be defined in a memorandum of understanding with USBR. IFFcl

7. Reach Gains. Improvement in computing reach gains would be developed and in use for final 1989 accounting.

8. Storage Reports. A procedure for disseminating data on storage accounts will be developed and in use by June 1.

9. Reports. The 1986 report is to be completed by April 15. Reports for 1987 and 1988 are to be completed by June 30.

10. A seminar will be held January 12 (Burley) and 13 (Idaho Falls) to acquaint Water District 01 water users with the procedures and planned improvements.

NCY:cjk

AGENDA
WATER DISTRICT ACCOUNTING
December 15, 1988

		Time	Staff
1.	Accounting Cycle from November 1	8:00-10:00	Ron
	Storage accrual by reservoir Unaccounted for storage Allocation of storage to users Daily natural flow, storage accounting by users Storage rentals and other adjustments End of season reservoir carry-over resolution Final accounting		
2.	Data	10:00-11:00	Alan Ron
	a. Sources HYDROMET - rivers, reservoirs, diversions Water District - other canals Water District - pumps b. Revisions HYDROMET - river, reservoir data replaced by USGS data Water District - shifts, recompute curves; recorder charts digitized		
3.	Current Work	11:00-12:00	
	a. 1988 accounting status		Ron
	b. Carryover process		Bob
	c. Transfer to VAX		Bob
	d. American Falls gains		Bob
	e. Willow Cr., Henrys Fk.		Bob
4.	Problems	1:00-2:00	All
	a. Timeliness/accuracy of information to users b. Data reliability c. Work load d. Reports backlog		
5.	Solutions	2:00-?	All

USGS SPECIAL MEASUREMENTS

AUGUST 2, 1988 - HEISE TO LORENZO

			TIME	
HEISE		12,200	11:00	QD = 120
ANDERSON	321		11:00	
EAGLE ROCK	350		1:00	
FARMERS FRIEND	338	3489	2:30	+1729
ENTERPRISE	190		7:30	
DRY BED	2290		9:00 AM	
HEISE BRIDGE		10440	10:00	
LENROOT	69		9:30	
REID	105	433	10:30	-1987
TEXAS AND LIBERTY	142		12:00	
SUNNY DELL	117		1:00	
LORENZO		8020	3:00	QD = 6350
			06	
			-.08 shift. new	
			-.39 old	
			-.08 use.	
4 Aug		7860	10:00 -.11	
		-258		-1778

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
P.O. Box 51099
Idaho Falls, ID 83402

November 4, 1988

Mr. Ron Carlson, Watermaster
Water District 01
150 Shoup Avenue, Suite 15
Idaho Falls, ID 83402

Dear Ron:

This letter is to present the results of the recent seepage measurements obtained on the Snake River and the Dry Bed Feeder Canal between the Heise and Lorenzo gages as requested by your office.

The work was performed on Thursday, October 27. The weather was clear, warm, and calm. There were no winds to complicate procedures and the measuring conditions were excellent. We deployed five teams of hydrographers; two were equipped with boats intended for use on the Snake River.

Initially, the intent was to have approximately 2000 cfs flowing in the river and around 300-400 cfs flowing in the Dry Bed, with no water in the canals. On Monday, October 24, the USBR cut the releases from Palisades Reservoir from 1900 cfs to 1700 cfs. The river then remained the same from Palisades throughout the week.

As Bill Harenberg and I visited the sites and examined the boat ramps on Wednesday, October 26, we found too little water in the Snake River to float the boats and too much water in the Dry Bed Feeder Canal to wade. Also, practically all the canals were carrying water. Upon my return to the office, I called you and we talked over the situation. Later that day, you called to inform me that the officers of the Burgess Canal assured you that they would turn the water back into the river at the Feeder Canal headgates.

On Thursday morning, October 27, the readings from the Dry Bed Feeder Canal and from the Burgess Canal showed no change, indicating no one had shut out the Burgess Canal. Since we had the equipment and personnel assembled, we decided to proceed with the measurements.

The sites on the Snake River that were measured are located in downstream order as follows:

Site 1 - Snake River near Heise gaging station.

Site 2 - Snake River in Sec. 31, T. 4N, R. 41E, just above the heading of the Eagle Rock Canal near river mile 852.

Site 3 - Snake River at the Heise bridge in Sec. 25, T. 4N, R. 40E.

Site 4 - Snake River below the Union Pacific Railroad bridge in Sec. 22, T. 4N, R. 40E.

Site 5 - Snake River at Twin Bridges Park in Sec. 21 and 16, T. 4N, R. 40E, two channels at this location.

Site 6 - Snake River in SE1/4, Sec. 1, T. 4N, R. 39E, approx. 1/3 mile below the heading of the Reid Canal.

Site 7 - Snake River in Sec. 34, T. 5N, R. 39E, at river mile 839.5 and at the South Fork Estates development.

Site 8 - Snake River at Lorenzo gaging station.

The results are listed in the following table:

LOCATION	TIME	DISCHARGE
Site #1	1030	1980
Site #2	1120	1980
Site #3	1220	658
Site #4	1205	619
Site #5	1450	599
Site #6	1530	512
Site #7	1700	444
Site #8	1600	438

The sites on the Dry Bed Feeder Canal that were measured are located in downstream order as follows:

Site #1 - Dry Bed Feeder Canal near Ririe gaging station.

Site #2 - Dry Bed in Sec. 27, T. 4N, R. 40E, below the heading of the Harrison Canal.

Site #3 - Dry Bed in Sec. 29, T. 4N, R. 40E, at the bridge crossing of the Poplar Loop 4700 E. road.

Site #5 - Dry Bed at E. edge Sec. 19, T. 4N, R. 40E, along road 250 N. at fence corner by power pole #J020.

Site #6 - Dry Bed in Sec. 13, T. 4N, R. 39E, below the bridge crossing of 4500 E. road end just above the heading of the East LaBelle Canal.

Site #7 - Dry Bed in Sec. 9, T. 4N, R. 39E, below the heading of the Parks and Lewisville Canal.

Site #8 - Dry Bed in Sec. 5, T. 4N, R. 39E, above U.S. Highway 191-20 crossings.

The results are listed in the following table:

LOCATION	TIME	DISCHARGE
Site #1	1040	969
Site #2	1015	947
Site #3	1300	951
Site #5	1455	883
Site #6	1235	782
Site #7	1425	84.2
Site #8	1500	0

Site #4 was intended to be on the Dry Bed Canal above the Burgess Canal but proved to be too much for the hydrographer to wade. The hydrographer also noted that the Burgess was turned off just prior to his arrival.

I hope that these measurements will aid you in your understanding of the losses and gains through these reaches. We stand ready to assist you in further investigations if you desire additional work after the flows in the Snake River are again decreased.

Sincerely,

Jake

Nathan D. Jacobson
Supervisory Hydrologist

cc: Alan Robertson, IDWR
Robert Harper, USGS
William Harenberg, USGS

NDJ:dg

SNAKE RIVER SEEPAGE MEASUREMENTS 10/27/88

SITE 1

(NR HEISE GAGING STATION)

HEISE CANAL

BLAKELY PUMP

ANDERSON CANAL ANCI 0 CFS

SITE 2

GAIN(1-2) = 0 CFS

(ABOVE EAGLE ROCK CANAL)

EAGLE ROCK (ERCI)	98 CFS
FARMERS FRIEND (FFCI)	95
ENTERPRISE	0
DRY BED	969 CFS

SITE 3

GAIN(2-3) = −160 CFS

(AT HEISE BRIDGE)

	26 27 88
SUNNYDELL CANAL	27 ~~11~~ 54
ARNESBERGER PUMP	0
COVINGTON PUMP	0
PARKINSON PUMP	0
SUTTON PUMP	0

SITE 4

GAIN(3-4) = + 2 CFS

(BL UPRR BRIDGE)

LENROOT CANAL	10 12

SITE 5 — GAIN (4-5) = -10 CFS

(AT TWIN BRIDGES PARK, TWO CHANNELS)

REID CANAL	0

SITE 6 — GAIN (5-6) = -87 CFS

(1/3 MI. BL REID CANAL)

TEXAS SLOUGH	2	4
LIBERTY PARK CANAL		
NELSON COREY	0	
HILL-PETTINGER	0	

SITE 7 — GAIN (6-7) = -65 CFS

(SOUTH FORK ESTATES)

SITE 8 — GAIN (7-8) = -6 CFS

(AT LORENZO GAGING SITE)

Σ = -326

State of Idaho
DEPARTMENT OF WATER RESOURCES
1301 North Orchard Street, Statehouse Mail, Boise, Idaho 83720 - (208) 334-7900

CECIL D. ANDRUS
GOVENOR
R. KEITH HIGGINSON
DIRECTOR

September 30, 1988

Ms. Lois D. Cashell
Acting Secretary
Federal Energy Regulatory Commission
825 North Capitol Street, N.E.
Washington, D.C. 20426

COMMENTS OF THE IDAHO DEPARTMENT OF WATER RESOURCES

Re: In the Matter of the Supplement to the Draft Environmental Impact Statement No. 0048 for the Twin Falls, Milner, Auger Falls, and Star Falls Hydroelectric Projects on the Mainstem of the Snake River, Idaho

Dear Ms. Cashell:

The Idaho Department of Water Resources ("IDWR") has reviewed the new circumstances, information and staff alternatives for the referenced projects and makes the following comments regarding the Milner Hydroelectric Project (FERC No. 2899).

Maintenance of higher minimum flows at the Milner site must be done in accordance with applicable state law. The applicant has proposed minimum by pass flows of 58 cfs during the irrigation season and 150 cfs during the non-irrigation season. In the event the applicant is successful in complying with the substantive areas of state water law, IDWR has determined that there is reasonable possibility that both minimum flows can be accommodated if a supply of water can be leased or purchased.

The concept of a "Comprehensive Water Block" ("CWB") may work well in some years on the mainstem of the Snake River, it will be a challenge to structure a long-term agreement with the Water Bank to sell water to meet mitigative flows for hydroelectric projects. Currently, water bank rules provide that irrigation users have the highest priority to receive water in times of shortage, while non-consumptive, non-irrigation users maintain the lowest priority to receive water. While it is true that in most years the water bank has water for sale, this is not always the case. However, there is enough flexibility under the present system that applicants should be able to accomplish their objectives and proceed to a successful completion of the project by timely compliance with the state water laws.

Notwithstanding the applicants increased costs in obtaining the water, it appears that structured reliance on the water bank through the comprehensive water block mechanism can be successful in meeting prescribed mitigative flows on the mainstem of the Snake River.

In closing, IDWR wishes to thank the Commission for the opportunity to submit additional testimony concerning the Draft Environmental Impact Statement issued in November, 1987.

Sincerely,

R. KEITH HIGGINSON
Director

RKH:dc
Enc.

cc: Idaho Power Co.
John Rosholt, Esq.
B. & C. Energy, Inc.
J.U.B. Engineers
Twin Falls Canal Co.
U.S. Fish & Wildlife
Bureau of Land Management, Shoshone
Idaho Dept. of Fish & Game, Boise
Environmental Protection Agency, Seattle
Idaho Dept. Health & Welfare, DEQ
Idaho Dept. of Parks & Recreation

Council on Environmental Quality (CEQ) regulations implementing the procedural provisions of the National Environmental Policy Act (NEPA) state that, where emergency circumstances make it necessary to take an action with significant environmental impacts without following CEQ regulations (e.g., without first preparing an FEIS), the agency taking the action should consult with CEQ regarding alternative arrangements. Such arrangements are to be limited to actions necessary to control the immediate impacts of the emergency. 3/ Pursuant to CEQ's regulations, the Commission consulted with CEQ and requested concurrence with a plan to proceed with the licensing of the Milner Project prior to completion of the FEIS on the four projects on the Snake River. 4/ Consistent with the emergency provisions CEQ's regulations, the CEQ approved the Commission's plan to license the hydroelectric facility at the Milner Dam prior to completion of the FEIS. 5/

II. Comprehensive Water Block

Commission staff has proposed development of a Comprehensive Water Block (CWB) for the four projects in the Snake River Basin included in the DEIS. As described in more detail in the Scoping Document Supplement (Supplement) prepared for this proceeding in October 1988, 6/ the objective of the CWB is to provide target flows at the projects when water is available in excess of irrigation needs. The CWB represents the combined amount of water needed to provide target flows for protection and enhancement of environmental resources associated with the four projects addressed in the DEIS. Under the CWB proposal, each of the four projects, if licensed and constructed, would provide a sub-block to the CWB; the size of the individual sub-blocks would be different for each project, due to the fact target flows would be based on what is needed to mitigate impacts at each specific project. The size of the CWB would also vary from year to year depending on the amount of flow in the river and the availability of water in excess of irrigation needs.

3/ See 40 C.F.R. § 1506.11 (1988).

4/ Letter from Martha O. Hesse, Chairman, Federal Energy Regulatory Commission, October 25, 1988).

5/ Letter from A. Alan Hill, Chairman, CEQ, October 27, 1988.

6/ Information regarding the Supplement was published in the Federal Register on October 15, 1988. See 53 Fed. Reg. 42,997. Scoping meetings on the Supplement were held in Boise and Twin Falls, Idaho, on November 2, 1988.

Project owners/licensees:
TFSS
NS
Idco

The CWB proposal would require the licensees for the four projects to lease water for the CWB from the Upper Snake Water Supply Bank (Water Bank). The State of Idaho established the Water Bank as a convenient means to allow and account for the rental of water by those irrigators in need of additional water from those who have excess water. Irrigators who estimate that their water storage rights would be in excess of their requirements in any year may place a portion of their storage right in the Water Bank, to be leased by others, with irrigators receiving first priority. Any water that is not leased in any year is lost if all of the upstream storage is refilled in the following year.

IDWR, by letter dated September 30, 1988, stated that it appears that structured reliance on the Water Bank through the CWB mechanism can be successful in meeting prescribed mitigative flows on the mainstem of the Snake River. Furthermore, Commission staff discussions with IDWR staff regarding the operation of the Water Bank revealed that: (1) water has been available for lease from the Water Bank in all years since its creation; (2) Idaho Power Company has leased water for power generation from the Water Bank in every year since its creation; (3) future water availability likely will increase due to increased irrigation efficiencies; (4) it is highly probable that water will be available in the Water Bank in excess of irrigation demand in the future, except in very bad water years; and (5) the cost of water from the bank is currently very reasonable, and is expected to remain so in the foreseeable future.

Under the CWB proposal, each licensee would be responsible for providing project-specific target flows. Target flows to be set for the projects would recognize the physical limitations of the river system so that they would not interfere with irrigation operations and would not flood low-lying areas. Flows to be released for project-specific target flows would be accounted for when the water is released from the upstream American Falls Reservoir and measured below Milner Dam. Thus, the CWB would be an accounting mechanism for licensees to equitably share the responsibility for mitigative flows, since water which is released from American Falls Reservoir would flow through all of the four proposed projects.

As discussed below, we believe the CWB proposal is an appropriate means to provide mitigative flows while recognizing the need to protect irrigation needs in the area. Accordingly, Article 401 of the license requires CC to meet the target flows specified by Article 407 of the license by renting water from the Water Bank when it is available.

development of the Milner Reservoir warmwater fishery as described in the Fisheries Management Plan. In addition, CC should fund stocking of warmwater fish species in the reservoir in cooperation with the IDFG. Stocking warmwater fish in the reservoir in cooperation with the IDFG and enhancing the reservoir habitat would be consistent with the Fisheries Management Plan. Article 405 requires CC, after consultation with IDFG, to develop, implement, and finance a warmwater fish stocking program and a habitat enhancement plan that is consistent with the Fisheries Management Plan for Milner Reservoir to mitigate the adverse effects of the project on the fishery resources.

CC should consult with IDFG and develop a plan to monitor the effectiveness of the reservoir enhancement structures and the fish stocking program. Specifically, CC should determine if additional warmwater fish stocking is necessary to meet the objectives of the Fisheries Management Plan for Milner Reservoir. The monitoring would also assist in determining the length of time the structures would remain in place and provide fish habitat. We conclude that a five-year monitoring program would provide sufficient information to determine if the mitigative measures are adequate. The monitoring also allows for correcting those that are not working. Therefore, Article 406 requires CC to conduct a reservoir fish habitat and fishery study for at least five years to determine if the fish habitat enhancement structures have remained in place and are functioning as desired and to determine if additional warmwater fish need to be stocked.

3. Instream Flow

CC proposes to release 58 cfs during the irrigation season and 150 cfs during the non-irrigation season. However, CC did not provide a biological rationale for these flow proposals or for the seasonal difference in the flows. The DEIS found that 58 cfs would prevent fish movement in the bypassed reach and would degrade fish food production by increasing channel sedimentation. 15/ The proposed 58 cfs minimum flow would provide slightly improved instream flow conditions, because it would prevent the extreme low flow events that occasionally occur.

Operating the project during the non-irrigation season with the proposed 150 cfs minimum flow would significantly reduce the amount of trout habitat in the 1.6-mile-long bypassed reach according to conventional instream flow methodologies, would severely reduce trout recruitment and use of the bypassed reach during the non-irrigation season, and would reduce invertebrate production. 16/ Proposed project operation would reduce the

15/ See Section 4.2.2.1.1.3.1 of the DEIS.

16/ Id.

amount of trout habitat and eliminate spillage over the dam much of the time and, therefore, preclude trout movement over the dam to the bypassed reach. Thus, the proposed non-irrigation season minimum flow would conflict with the management direction of the yield fishery, because trout recruitment and suitable trout habitat would not be maintained in the bypassed reach.

The DEIS recommended that CC maintain minimum flows of 58 cfs and 1,260 cfs in the irrigation and non-irrigation seasons, respectively, to protect the downstream fishery resources. 17/ The DEIS also recommended a minimum flow of 300 cfs in the irrigation season to partially mitigate the cumulative adverse impacts to the resident trout and other resources. 18/ Since the DEIS' 300 cfs recommendation to mitigate cumulative impacts superceded the 58 cfs minimum flow for fishery resource protection, the DEIS concluded that minimum flows of 300 cfs in the irrigation season and 1,260 cfs in the non-irrigation season were needed. Flows derived by the Tennant Methodology, 19/ the stream resource maintenance flow study, 20/ and the minimum flows recommended in the DEIS to protect the fishery resources in the bypassed reach during the non-irrigation season range from 720 cfs to 2,190 cfs.

Release of the above flows for fishery protection purposes during the irrigation season would interfere with irrigation and thus could have a severe impact on the farm-based economy of the area. Furthermore, the release of the flows recommended for the non-irrigation season would reduce generation and hence the revenues necessary to repair Milner Dam. We believe that the need to protect irrigation usage and provide sufficient generation outweigh the need to protect the fishery resources. Accordingly, we will not require CC to release the flows

17/ See Section 4.2.2.1.2 of the DEIS.

18/ See Section 5.1.2 of the DEIS.

19/ D.L. Tennant, 1976, Instream flow regimes for fish, wildlife, recreation, and related environmental resources, Pages 359-373. In Orsborn, J. F., and C. H. Allman, (ed.), Proceedings of the Specialty Conference on Instream Flow Needs, Volume II, American Fisheries Society, Bethesda, Maryland.

20/ T. Cochnauer, 1976, Stream Flow Investigation, Project F-9-R-1, Job I, evaluation of applicability of water surface profile predictive modeling in reference to stream resource maintenance flow (SRMF) determinations, Job II, stream resource maintenance flow determinations on the Snake River, Idaho Department of Fish and Game, Boise, Idaho, 44 pp.

referenced above. However, we are requiring CC, by Article 407, to release a target flow of 200 cfs.

The loss of trout habitat in the non-irrigation season is offset somewhat by eliminating the extreme low flows that have occurred during the irrigation season, thus allowing trout to use the bypassed reach more consistently. A stable flow of 200 cfs would slightly enhance the fishery resources by continually maintaining a limited amount of habitat that would occasionally be eliminated by the low flow events. Therefore, 200 cfs would probably maintain sufficient water quality to maintain a put-and-grow trout fishery in the bypassed reach. As just indicated, Article 407 requires CC to maintain a target flow of 200 cfs below Milner Dam. 21/

The Snake River downstream of the proposed powerhouse would benefit from the 200 cfs target flow. Releases from Milner Dam would prevent the extreme low flow periods. In addition to the releases from Milner Dam, the incentive to operate the powerhouse would provide water to downstream areas that would not typically have occurred during the irrigation season. Therefore, the fishery resources downstream of the bypassed reach would benefit more than those in the bypassed reach.

4. Trout Fishery Enhancement

The primary source of trout to the bypassed reach is recruitment from upstream areas. As mentioned above, proposed operation would reduce spill from Milner Dam and eliminate much of this recruitment.

In order to mitigate for the decreased recruitment to the downstream Snake River fishery and the loss of trout habitat in the Snake River in the non-irrigation season, CC should institute a put-and-grow trout fishery 22/ in the 1.6-mile-long bypassed reach of the Snake River. CC should consult with IDFG to determine the sizes and numbers of trout to stock and to determine the area or areas in which to stock the trout. CC should stock the trout in areas that provide easy and safe access for anglers. This would provide a high value recreational fishery in this area.

21/ The 200 cfs target flow is not a minimum flow, and CC does not have to release the flow unless water is available.

22/ The Idaho Fisheries Management Plan defines a put-and-grow fishery as one where the fish are expected to survive and grow and contribute to the fishery for a extended period of time.

Article 408 requires CC to develop and to implement a put-and-grow trout fishery in the 1.6-mile-long bypassed reach of the Snake River. We conclude that developing this trout fishery would mitigate the lost trout habitat in the Snake River resulting from reduced flows and would mitigate the reduced fish recruitment to the bypassed reach. Enhancing the trout fishery in the bypassed reach through hatchery supplementation would not conflict with the management direction for this section of the Snake River as described in the Fisheries Management Plan.

There is the possibility that the stocked fish would move downstream with the current where they would no longer be available to the anglers or where they could perish due to insufficient habitat or poor water quality. Therefore, CC should conduct a study to determine if the trout move downstream and if the trout are surviving long enough, depending on water temperature and DO concentration, to remain available to anglers.

CC should file annual reports about the survival, growth, and movement of the trout and how the water quality at 200 cfs affects their survival, growth, and movement. If it is determined that the trout stocked in the bypassed reach are not surviving, are not growing sufficiently, or are moving out immediately, then CC should consider stocking trout in other areas of the Snake River such as the head of Milner Reservoir near Burley, Idaho. In conjunction with this study, the results from the water quality monitoring required by Article 404, particularly water temperature and DO, will provide valuable information to determine if 200 cfs provides conditions conducive for establishing a year round trout fishery.

We conclude that a five-year monitoring program would provide sufficient information to determine if the trout stocking program is successful. If the results indicate that the trout stocking program is not successful, the monitoring allows for changing the stocking rates, the size and species of trout stocked, and the stocking location. Article 409 requires CC to conduct a five-year trout monitoring study and to file annual reports on the results of each years studies.

C. Ramping Rate

Rapid alteration of streamflows during project startup would strand fish in the bypassed reach when submerged areas quickly drain, because of rapid decreases in the amount of water available to maintain existing habitat. To protect the fish and other aquatic resources from rapid, project-induced flow reductions, the DEIS recommended that CC limit the maximum rate of change in the flow in the Snake River. 23/

23/ See Section 4.2.2.1.2 of the DEIS.

OCT 31, 1987

	ACTUAL	LATE FILL	WM CARRYOVER	SUPPLY - USE, USBR RULES CARRYOVER
JACKSON LAKE	61300	5017	56283	55261
PALISADES	349000	28509	320491	501603
HENRYS LAKE	73300	98	73202	28329
ISLAND PARK -	60900	5362	55537	} 32720
GRASSY LAKE	8027	0	8027	
AMERICAN FALLS	256100	50578	146722	34835
LAKE WALCOTT	38200	97000	0	0
RIRIE	35500	0	35500	42159
OTHER				858
TOTAL			695,762	695,765

OCT 31, 1987

	ACTUAL	LATE FILL	W/M CARRYOVER	SUPPLY - USE, USBR RULES CARRYOVER
JACKSON LAKE	61300	5017	56283	55261
PALISADES	349000	28509	320491	501603
HENRYS LAKE	73300	98	73202	28329
ISLAND PARK -	60900	5362	55537	} 32720
GRASSY LAKE	8027	0	8027	
AMERICAN FALLS	256100	50578	146722	34835
LAKE WALCOTT	38200	97000	0	0
RIRIE	35500	0	35500	42159
OTHER				858
TOTAL			695,762	695,765

EXHIBIT B

1988 SUPPLY, PRELIMINARY ACCRUAL, ESTIMATED LOSSES 11-JAN-89 13:31:42 Pg 1

District or Company	JACKSON FULL	JACKSON RESTRICTED	PALISADES FULL	PALISADES ALLOCATION	AMF FULL	TOTAL WITH 2% EVAP. LOSS TO AMF AND PAL
A and B Irrigation District	0	0	90800	53229	46826	98054
Aberdeen-Springfield Canal Co.	71748	24095	143278	83805	52172	157353
American Falls Reservoir Dist. no. 2	0	0	0	0	393550	385679
Andrus, Ray Jr.	111	37	0	0	187	221
Artesian Irrigation	0	0	0	0	2794	2738
Blackfoot Irrigation Co.	7469	2508	4050	4050	12558	18784
Burgess Canal and Irrigating Co.	10746	3609	31400	14173	9343	26654
Burley Irrigation District	0	0	39200	25118	155395	176902
Butler Island Canal Co., Ltd.	0	0	250	250		245
Butte and Market Lake Canal Co.	2731	917	44000	44000	4591	48536
Canyonview Irrigation	3884	1304	9522	6008	2523	9665
City of Pocatello	0	0	50000	24736		24241
Clark and Edwards Canal Co.	0	0	800	788		772
Clement Brothers and Owners Mutual	401	135	0	0	70	203
Corbett Slough Ditch Co.	1987	667	6300	6300	3342	10117
Craig-Mattson Canal Co.	0	0	1440	677		664
Danskin Ditch Co.	0	0	2350	2350		2303
Dilts Irrigation Company, Ltd.	518	174	1200	680	871	1693
East LaBelle Irrigating Company	0	0	800	800		784
Enterprise Canal Company, Ltd.	11404	3830	19600	6203	8779	18512
Enterprise Irrigation District	5962	2002	0	0	10024	11826
Falls Irrigation District	0	0	40900	32463	22925	54280
Farmers Friend Irrigation Co., Ltd.	2027	681	9400	7440		7972
Food Machinery Co. (WESTVACO)	0	0	5000	2474		2424
Harrison Canal and Irrigation Co.	12104	4065	23500	12910	11832	28312
Idaho Irrigation District	13408	4503	58800	58800	22542	84218
Idaho Power Company	0	0	0	0	44275	43390
Island Irrigation Company	0	0	4700	4089		4007
J. R. Simplot Co.	0	0	2500	2478		2428
Lenroot Canal Company	5305	1781	7850	2785	3805	8239
Lowder Slough Canal Co., Ltd.	1054	354	1600	666		1007
Milner Irrigation District	0	0	44500	43028	44951	86220
Minidoka Irrigation District	188537	63317	35000	21222	82216	164686
New Lavaside Ditch Company	0	0	11750	11750		11515
New Sweden and West side Mutual	22819	7663	39350	39350	27290	72971
North Rigby Irrigation and Canal Co.	0	0	1200	1009		989
North Side Canal Co., Ltd.	316211	106194	116600	116600	431291	643127
Palisades Water Users, Inc.	0	0	54130	26933		26394
Parks and Lewisville Irrigation Co.	0	0	5500	5500		5390
Parson Ditch Company, Ltd.	0	0	700	501		491
Peoples Canal and Irrigation Co.	20639	6931	35000	20545	21070	47714
Poplar Irrigation District(RILEY CANAL)	1610	541	1550	930	662	2101
Progressive Irrigation District	7306	2454	28500	22904	12284	36938
Rigby Canal and Irrigation Co., Inc.	0	0	6300	6141		6019
Riverside Ditch Company	0	0	1500	1420		1391
Rudy Irrigation Canal Company	3578	1201	15700	10735	2606	14276
Salmon River Canal Co.	0	0	0	0	6518	6388
Snake River Valley Irrigation District	30632	10287	35300	13342	25942	48786
Sunnydell Irrigation District	4054	1361	6300	3535		4826
Texas Slough and Liberty Park	0	0	4700	4700		4606
The Reid Canal Company	1492	501	3150	3150	2507	6045
Trego Ditch Company	768	258	3200	2792	1293	4261
Twin Falls Canal Co.	98493	33077	0	0	148747	178849
U.S. Indian Irrigation Service	0	0	83900	49603	46931	94603
Utah-Idaho Sugar Co. (Osgood)	7876	2645	0	0	3930	6496
Watson Slough Ditch and Irrigation Co.	0	0	2350	1466		1436
Wearyrick Ditch Company	0	0	600	600		588
West LaBelle and Long Island	0	0	6000	6000		5880
Woodville Canal Company	3538	1188	6000	3457	5948	10405
TOTALS	847000	284450	1148020	814484	1672590	2725616
Unallocated			51980	51980		50940
Grand Total			1200000	866464		2776556

EXHIBIT A

PALISADES PRELIMINARY ALLOCATION 1988 11-JAN-89 13:23:42 Pg 1

District or Company	PALISADES CONTRACTED	PALISADES CARRYOVER	WWS RIGHT	ACCRUED TO 1939 RIGHT	TOTAL PAL ALLOCATION
A and B Irrigation District	90800	38716		14513	53229
Aberdeen-Springfield Canal Co.	143278	38044	22860	22902	83805
American Falls Reservoir Dist. no. 2	0	0		0	0
Andrus, Ray Jr.	0	0		0	0
Artesian Irrigation	0	0		0	0
Blackfoot Irrigation Co.	4050	3944	4050	0	4050
Burgess Canal and Irrigating Co.	31400	1154	8000	5019	14173
Burley Irrigation District	39200	16180	2672	6266	25118
Butler Island Canal Co., Ltd.	250	0	250	0	250
Butte and Market Lake Canal Co.	44000	42743	7250	0	44000
Canyonview Irrigation	9522	4487		1522	6008
City of Pocatello	50000	16744		7992	24736
Clark and Edwards Canal Co.	800	0	660	128	788
Clement Brothers and Owners Mutual	0	0		0	0
Corbett Slough Ditch Co.	6300	4715	2180	0	6300
Craig-Mattson Canal Co.	1440	447		230	677
Danskin Ditch Co.	2350	504	2180	0	2350
Dilts Irrigation Company, Ltd.	1200	228	260	192	680
East LaBelle Irrigating Company	800	103	800	0	800
Enterprise Canal Company, Ltd.	19600	1250	1820	3133	6203
Enterprise Irrigation District	0	0		0	0
Falls Irrigation District	40900	25925		6537	32463
Farmers Friend Irrigation Co., Ltd.	9400	2127	3810	1502	7440
Food Machinery Co. (WESTVACO)	5000	1674		799	2474
Harrison Canal and Irrigation Co.	23500	4514	4640	3756	12910
Idaho Irrigation District	58800	57263	13040	0	58800
Idaho Power Company	0	0		0	0
Island Irrigation Company	4700	2027	1310	751	4089
J. R. Simplot Co.	2500	2078		400	2478
Lenroot Canal Company	7850	0	1530	1255	2785
Lowder Slough Canal Co., Ltd.	1600	11	400	256	666
Milner Irrigation District	44500	35916		7113	43028
Minidoka Irrigation District	35000	10300	5328	5594	21222
New Lavaside Ditch Company	11750	10535	2180	0	11750
New Sweden and West side Mutual	39350	29006	10920	0	39350
North Rigby Irrigation and Canal Co.	1200	277	540	192	1009
North Side Canal Co., Ltd.	116600	0	116600	0	116600
Palisades Water Users, Inc.	54130	17721	560	8652	26933
Parks and Lewisville Irrigation Co.	5500	3013	2550	0	5500
Parson Ditch Company, Ltd.	700	390		112	501
Peoples Canal and Irrigation Co.	35000	8410	6540	5594	20545
Poplar Irrigation District(RILEY CANAL)	1550	362	320	248	930
Progressive Irrigation District	28500	6879	11470	4555	22904
Rigby Canal and Irrigation Co., Inc.	6300	3685	1450	1007	6141
Riverside Ditch Company	1500	0	1180	240	1420
Rudy Irrigation Canal Company	15700	6226	2000	2509	10735
Salmon River Canal Co.	0	0		0	0
Snake River Valley Irrigation District	35300	0	7700	5642	13342
Sunnydell Irrigation District	6300	1148	1380	1007	3535
Texas Slough and Liberty Park	4700	3843	3280	0	4700
The Reid Canal Company	3150	2812	1930	0	3150
Trego Ditch Company	3200	1700	580	511	2792
Twin Falls Canal Co.	0	0		0	0
U.S. Indian Irrigation Service	83900	36192		13411	49603
Utah-Idaho Sugar Co. (Osgood)	0	0		0	0
Watson Slough Ditch and Irrigation Co.	2350	0	1090	376	1466
Wearyrick Ditch Company	600	539	580	0	600
West LaBelle and Long Island	6000	5746		254	6000
Woodville Canal Company	6000	1408	1090	959	3457
TOTALS	1148020	450983	256980	135130	814484
Unallocated	51980	50621	2620	0	51980
Grand Total	1200000	501604	259600	135130	866464

IDAHO DEPARTMENT OF WATER RESOURCES

MEMO-REPLY Date 26 Sep 88

Keith (initialed), Norm (initialed NCY)

RETURN TO ALAN

From Alan

☐ Take Appropriate Action
☐ Draft A Reply
☐ Action Required By ______
☐ See Me
☐ Call Me
☐ Return To Me

☐ For Your Information
☐ For Your Approval
☐ For Your Comments
☐ As You Requested
☐ Copy (____ Copies)
☐ File

Comments Ref your memo of Sep 19 regarding the meeting with Twin Falls & N. Side.

In WD-1 accounting the pumps in the river are treated like all other diversions except Ron does not get their diversion data into the system before final accounting.

Those which have only recent rights use primarily storage. It is replacement storage only in the sense that some of them have to aquire it

~~Reply~~ after the fact from the WATER BANK. In prior years the WATER BANK has had sufficient storage to cover their needs. I hope that is the case this year. In the final accounting they have no adverse impact on correct accounting for Twin Falls. In day-to-day accounting the available natural flows are under-computed by the amount of these diversions.

THIS IS THE PROBLEM TF&NS COMPLAIN ABOUT.

ISN'T THERE SOME WAY THE DAY-TO-DAY ACCOUNTING COULD ESTIMATE PUMPING THEN ADJUST LATER?

Signed Alan Date ______

Memorandum To: Staff

From : Keith

Date : September 19, 1988

Subject : Meeting with Twin Falls and North Side Canal Co. Boards on September 14

At their request I met with the combined boards in Rosholt's office in Twin Falls. It looked like the entire board of each canal was present along with Rosholt and another attorney from the firm.

They initially wanted to discuss the accounting procedures which are in use in District 01. The principle concern is with the calculation of reach gains in the Blackfoot to Neeley reach. They discussed the Newell formula which was in use for many years until replaced by the computerized calculation. I showed them Alan's plot of the calculated reach gain for 1988 compared with the formula calculation for 1977 and the fact that, if the years are in any way comparable, they would have received less water in 1988 than they were credited with.

I also showed them that have used more water in 1988 than they did in 1977 and that probably accounts for some of their concerns. They replied that the problem is caused by the fact that the information from the water district jumps around from day to day and that makes it difficult to plan. They have purchased extra water from the water bank this year and as it turns out they probably will not need it.

We discussed the problems of determination of American Falls reservoir content and I pointed out the daily changes which take place on the reservoir when the wind is blowing.

The principle concern seems to be that they feel that ground water development upstream from Milner has cut into their natural flow right. They asked about their petitioned moratorium. I told them that it would be handled as part of the trust water processing policy and that a meeting to discuss it was scheduled in Twin Falls the first week in October. They asked if our decision to not include the ground water in District 01 was subject to a hearing and I advised them that we would set the matter for hearing before our decision announced in the trust water policy document was made final.

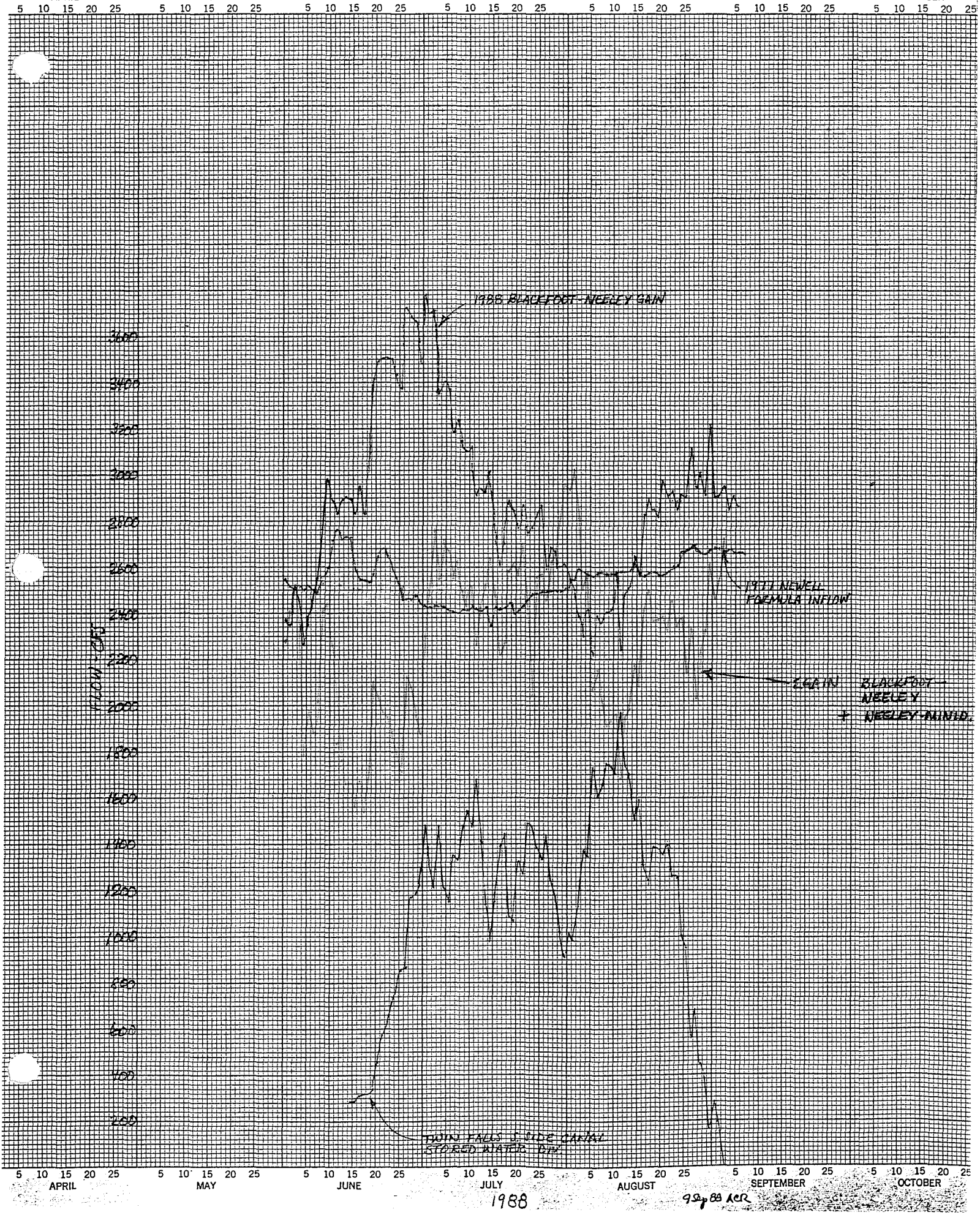
We got into a discussion of pumps in the river. I explained that it was my understanding that all such pumps were under regulation now and that they could operate when the river was in flood condition but when it went on regulation the owners of the pumps would have to provide replacement storage. That brought up the question of what should happen to the replacement storage.

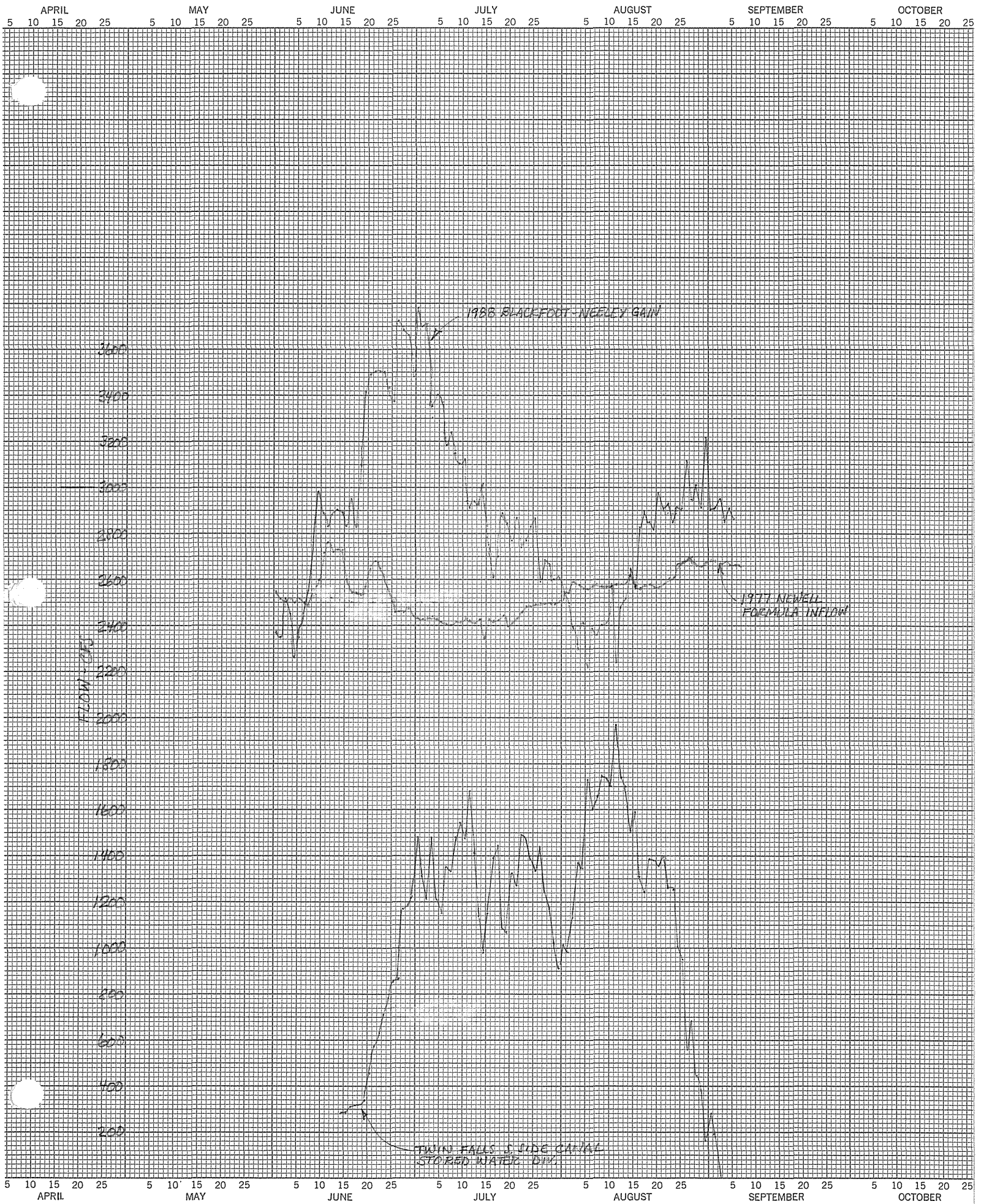
obtain storage for themselves.

Background for RKH mtg w/ Tw F C.C

During the season the watermaster must work with unreviewed HYDROMET data. HYDROMET has had a 2 to 4 week lag in getting rating curves entered into the system. HYDROMET uses the last shift until a new one is provided by USGS. USGS procedure proportions shifts between measuring dates.

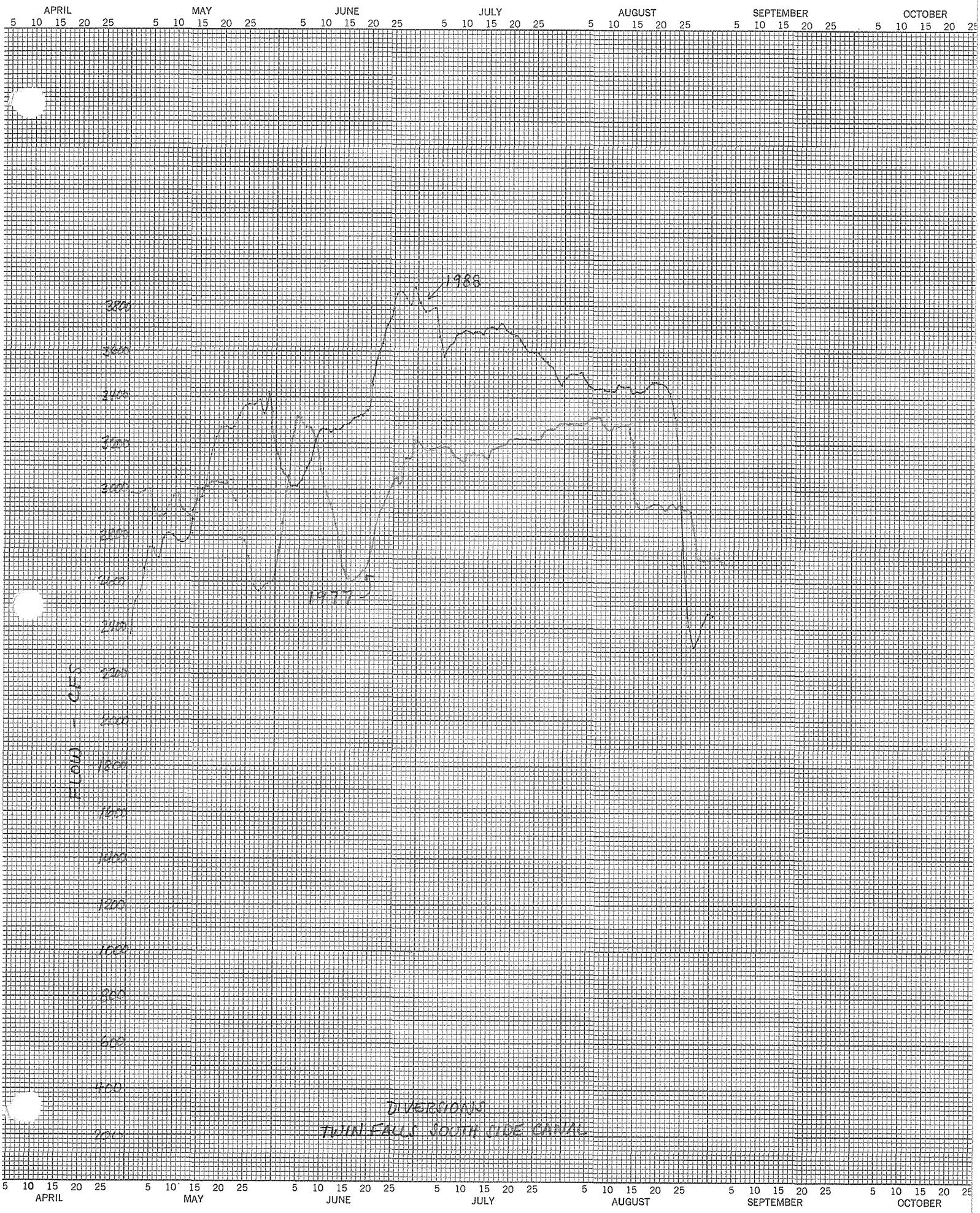
Even when final USGS data are available, an "excellent" record is only expected to be within 5% of a true value 95% of the time. A 5% error when Q = 10,000 cfs is 500 cfs. Due to the threshold nature of water right allocation, such an error can all fall on one user. With HYDROMET data we cannot expect to do this well for most gages.


APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
5 10 15 20 25
1988 BLACKFOOT-NEELEY GAIN
1971 NEWELL FORMULA INFLOW
GAIN BLACKFOOT – NEELEY + NEELEY NINID.
TWIN FALLS S. SIDE CANAL STORED WATER DIV.
CFS
3600
3400
3200
3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
1988
9 Sep 88 ACR



1988

9 Sep 88 ACR


APRIL
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SEPTEMBER
OCTOBER
5 10 15 20 25
1986
1977
CFS
DIVERSIONS
TWIN FALLS SOUTH SIDE CANAL

1

MILNER DATE		① GAIN BLACKFOOT - NEELEY	② NATURAL AT MILNER	③ TWIN FALLS DIV	④ TWIN FALLS STOR	GAIN NEELEY-MIN		RCA G. MIN-MIL
1988								
May	15	2228	13904	2956	954	483	2711	599
	16	2240	15220	2970	77	494	2734	366
	17	2000	17825	3044	44	266	2266	382
	18	1966	22166	3148	0	546	2512	427
	19	1881	25345	3227	136	448	2329	496
	20	1889	25106	3270	270	483	2372	647
	21	1801	25721	3272	272	698	2499	501
	22	1649	28239	3265	0	526	2175	513
	23	1507	28907	3270	0	574	2081	491
	24	1385	26841	3318	0	472	1857	449
	25	1228	23351	3359	0	484	1712	492
	26	1370	22259	3366	366	349	1719	505
	27	1753	23497	3367	367	111	1826	498
	28	1871	25001	3391	0	-82	1789	352
	29	1962	26583	3330	0	-446	1516	442
	30	2133	28930	3428	0	-468	1665	394
	31	2084	30538	3337	0	-253	1831	388
June	1	2370	31415	3159	0	-90	2280	566
	2	2349	37740	3074	0	56	2405	601
	3	2518	32686	3055	0	3	2521	677
	4	2447	31612	3011	0	-119	2328	567
	5	2261	29407	3010	0	-475	1786	664
	6	2353	25596	3036	0	-382	1971	543
	7	2454	21947	3094	0	-569	1885	615
	8	2546	20475	3131	131	-529	2017	726
	9	2761	23151	3219	0	-352	2409	597
	10	2978	28287	3261	0	-536	2442	578
	11	2891	29107	3260	0	-632	2259	419
	12	2830	31637	3247	0	-995	1835	408
	13	2878	29412	3262	0	-1118	1760	485
	14	2903	25768	11	0	-1244	1659	570
	15	2890	22770	3282	283	-1230	1660	719
	16	2830	21578	86	286	-1266	1564	750
	17	2953	21212	3309	309	-1281	1672	731
	18	2826	20874	3319	319	-1291	1535	718
	19	3098	20077	3321	321	-1358	1740	626
	20	3416	19644	3340	340	-1311	2105	625
	21	3487	19201	3454	464	-1445	2042	789
	22	3504	19172	3570	570	-1537	1967	744
	23	3507	-351	3631	631	-1554	1953	751
	24	3503	-611	3712	712	-1617	1886	762
	25	3431	-291	3778	778	-1632	1799	620
	26	3376	18388	3853	853	-1658	1718	721
	27	3724	18362	3863	863	-1604	2120	744
	28	3687	17741	3832	1171	-1607	2080	776
	29							

2

		1 BLAKEFT-N GAIN	2 MILNER NAT	3 DIV	4 STOR DIV	NEELEY-MIN RG	BLKFT-MIN	
	29	3660	17648	3805	1194	-1701	1959	765
	30	3483	17815	-82	1221	-1608	1875	703
JULY	1	3781	16858	3812	1478	-1481	2300	730
	2	3703	15540	3776	1313	-1228	2475	699
	3	3713	16393	3775	1214	-957	2756	744
	4	3348	15074	-87	1479	-799	2549	756
	5	3400	14353	3667	1208	-682	2718	642
	6	3372	13104	3575	1150	-703	2669	459
	7	3193	12121	3626	1346	-644	2549	365
	8	3235	12652	3643	1331	-614	2621	270
	9	3149	11632	3683	1483	-655	2494	232
	10	3104	12025	3693	1546	-670	2434	315
	11	3122	-435	-93	1475	-608	2514	261
	12	2910	11892	-75	1679	-647	2263	164
	13	2940	-572	-85	1414	-517	2423	146
	14	2927	10942	-76	1138	-403	2524	99
	15	3020	11375	3703	977	-383	2637	89
	16	2758	11145	3713	1149	-297	2456	143
	17	2607	10617	3698	1387	-386	2221	104
	18	2699	-243	3726	1442	-427	2272	19
	19	2890	-259	3691	1182	-308	2582	1
	20	2839	-233	3683	1168	-221	2618	37
	21	2770	-113	-71	1322	-191	2579	79
	22	2865	-233	-49	1267	-165	2700	135
	23	2737	9684	-25	1492	-320	2417	134
	24	2765	9442	3598	-76	-360	2045	8
	25	2833	-541	3596	1385	-274	2559	-53
	26	2863	-437	3594	1334	-262	2601	-39
	27	2590	-226	-72	1450	-135	2455	-50
	28	2687	-357	-57	1243	-65	2622	6
	29	2669	-579	-32	1177	0	2669	47
	30	2597	-366	3481	1024	212	2809	-25
	31	2607	-207	3453	912	356	2963	-83
AUG	1	2546	9355	3493	1013	388	2934	-123
	2	2506	-672	3502	980	509	3015	-157
	3	2394	352	-04	1135	414	2808	-123
	4	2302	8780	3507	1368	202	2504	-79
	5	2411	9172	3478	1344	158	2569	-151
	6	2226	8521	3450	1729	-162	2064	-113
	7	2390	-549	3440	1602	-241	2149	-66
	8	2360	-515	3442	1658	-342	2018	-4
	9	2402	-116	3435	1753	-495	1907	117
	10	2416	-367	3435	1734	-487	1929	117
	11	2581	-002	3431	1703	-622	1959	122
	12	2239	7670	3454	1967	-553	1686	189
	13	2476	-920	3451	1738	-534	1942	207
	14	2516	-737	3447	1697	-533	1983	250
	15	2647	-873	3423	1508	-477	2170	198

3

		1	2	3 TWIN FALLS DIV	4 TWIN F. STOR DIV.	NEELEY-MIN RG	BRFT-MIN RG	
	16	2561	7972	3428	1588	-475	2086	112
	17	2829	8236	3434	1307	-419	2410	51
	18	2896	8852	3444	1243	-402	2494	10
	19	2848	-619	8471	1384	-483	2365	85
	20	2816	-067	3471	1381	-448	2768	56
5-23 Σ=43591 Av=	21	2977	7802	3461	1357	-593	2384	103
	22	2909	7524	3449	1399	-585	2324	116
	23	2934	7687	3419 61995	1258 28006	-485 8336	2449	76
	24	2847	7657	3316	1247	-502	2345	74
	25	2915	7612	3071	1005	-541	2374	-32
	26	2907	7249	2678	946	-764	2143	-180
	27	3123	7313	2408	555	-794	2329	-228
	28	2949	7437	2319	686	-916	2033	-181
	29	3007	7925	2361	445	-774	2233	-62
	30	2911	8063	2430	377	-583	2328	74
	31	3218	8113	2465	162	-607	2611	-86
		2905	7965					
Sept	1	~~7965~~	~~2905~~	2456	282	-440	2465	31
	2	2914	8362	2437	189	-367	2547	6
	3	2948	8466	2393	0	-226	2722	17
	4	2857	8990	2352	0			92
	5	2911	8014	2275	0			
	6	2864	7965	2214	0			
	7	2807	7928	2214	0			
	8	2860	7012	11	0			
	9	2860	7231	11	11			
	10	2860	8037	11	11			

TWIN FALLS CANAL COMPANY

POST OFFICE BOX 326
TWIN FALLS, IDAHO, 83303-0326

July 11, 1988

Bill WTO
Bob

Board of Directors
Twin Falls Canal Company

Subject: Water Outlook 1988

Gentlemen:

Enclosed is a copy of a chart showing the record of river diversions, natural flow and storage used from the start of the season to date.

The extended stretch of hot weather without rain or cool days to relieve it have caused an increase in diversions in order to deliver the water entitlement to all stock holders. Since June 23 the total diversions have exceeded 3,600 cfs which is considered a safe maximum for the system.

The natural flow remained at 3,000 cfs until June 27 which is a week longer than last year but is dropping toward the 2,300 cfs mark which is considered an average summer flow.

47,559 acre feet of storage had been used as of July 7.

The quantity of storage water available in the Jackson sub-pool has been determined and the Twin Falls Canal Company is entitled to 11,516 acre feet at a price of $1.25 per acre feet or $14,395 if all of this storage is used.

With the Jackson sub-pool water we have 191,188 acre feet of water available for this season.

In order to assess the water supply situation the following assumptions were made:

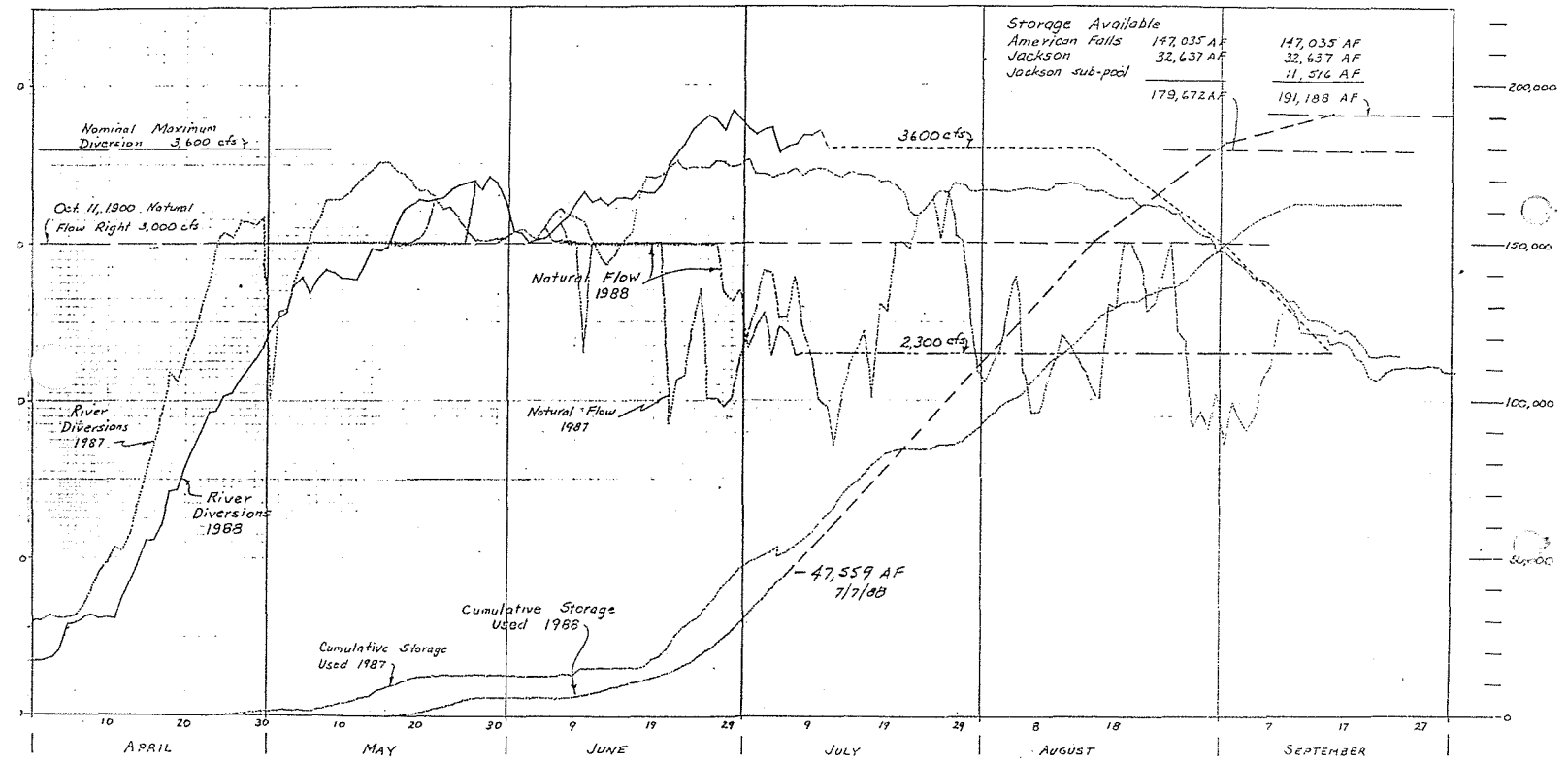
a) Diversions will average 3,600 cfs from now till August 15.
b) Diversions will uniformly decrease from 3,600 cfs to 3,000 cfs between August 15 and September 1.
c) Diversions will uniformly decrease from 3,000 cfs to 2,300 cfs between September 1 and September 15.
d) After September 15 diversions will be below 2,300 cfs.
e) Natural flow will average 2,300 cfs for the rest of the season. The natural flow last year averaged 2,271 cfs when flows of 3,000 and above, which were the result of rains, were omitted.

Under the above assumptions, all available storage, including the Jackson sub-pool water, will be used by September 15.

As of July 7, 1988 there were 236,000 acre feet of water in the water bank. 29,905 acre feet of water had been rented and a request by the Idaho Power Company for 50,000 acre feet had been approved. This left approximately 185,000 acre feet in the bank as of that date.

TWIN FALLS CANAL COMPANY

STORAGE AND NATURAL FLOW 1987 AND 1988



7/11/88

TWIN FALLS CANAL COMPANY

POST OFFICE BOX 326
TWIN FALLS, IDAHO, 83303-0326

July 26, 1988

Board of Directors
Twin Falls Canal Company

Subject: Water Outlook 1988

Gentlemen:

Enclosed is a copy of a chart showing the record of river diversions, natural flow and storage used from the start of the season to date.

In the last two weeks diversions have gradually reduced to the 3600 range. The natural flow since June 27 when it dropped below 3,000 cfs has averaged 2403 cfs. 73,399 acre feet of storage had been used as of July 19.

Using the same assumption as before:

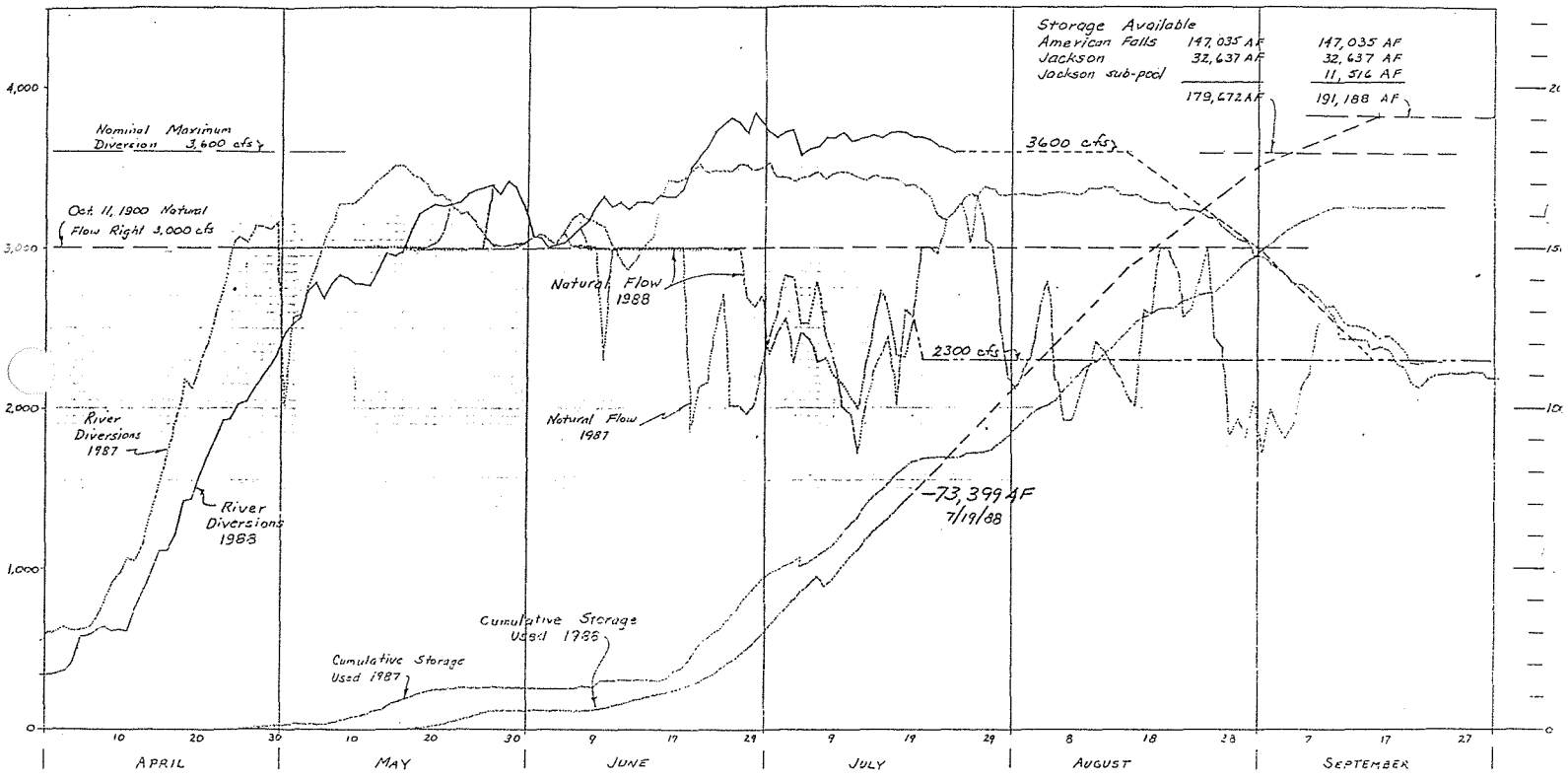
a) Diversions will average 3,600 cfs from now till August 15.
b) Diversions will uniformly decrease from 3,600 cfs to 3,000 cfs between August 15 and September 1.
c) Diversions will uniformly decrease from 3,000 cfs to 2,300 cfs between September 1 and September 15.
d) After September 15 diversions will be below 2,300 cfs.
e) Natural flow will average 2,300 for the rest of the season.

All available storage including the Jackson sub-pool water will be used by September 16.

As of today Lyle Swank of Water District No.1 reported that there is still approximately 100,000 acre feet of water in the water bank, but that there has been much rental activity lately.

TWIN FALLS CANAL COMPANY

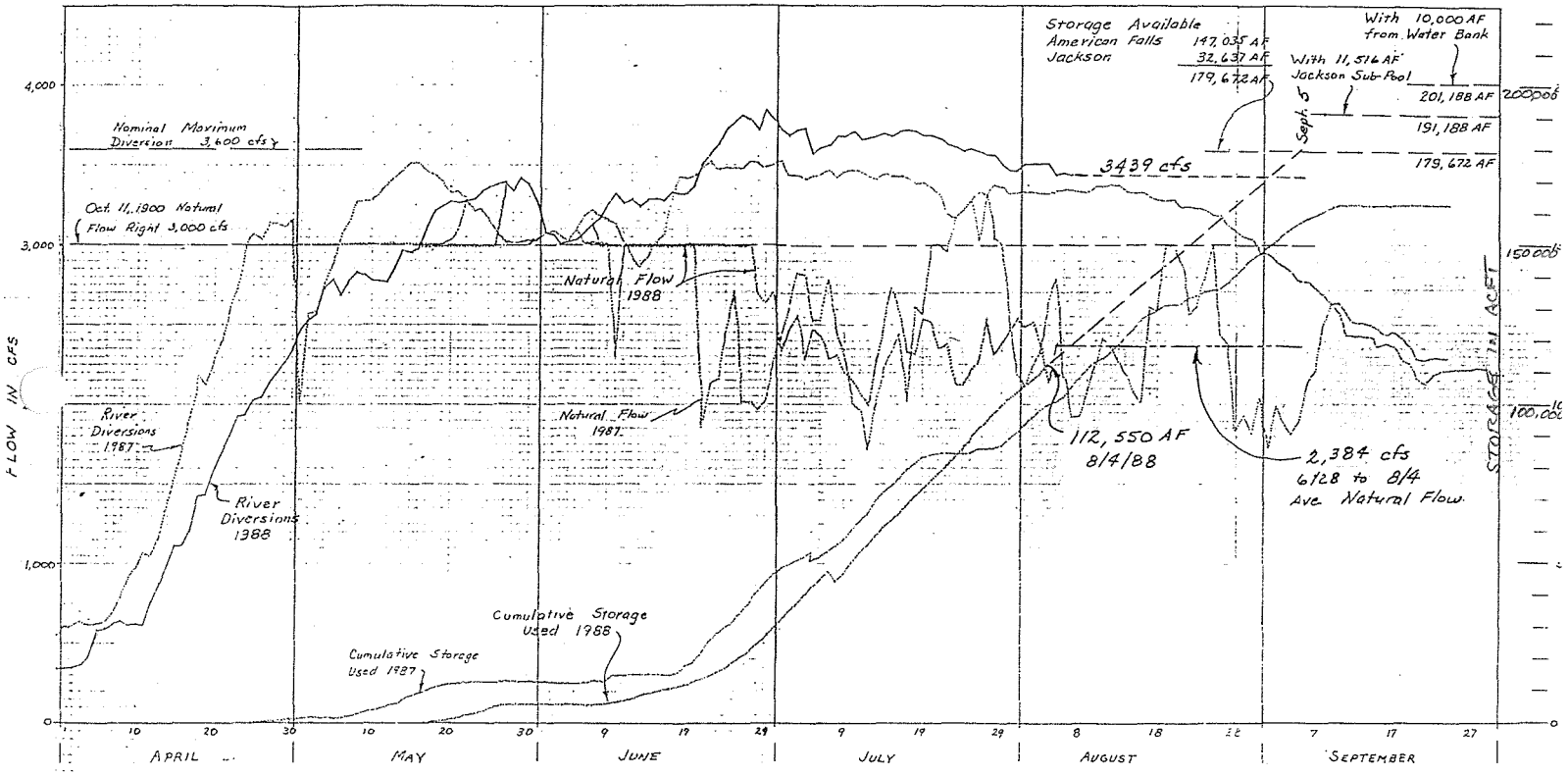
STORAGE AND NATURAL FLOW 1987 AND 1988



7/25/88

TWIN FALLS CANAL COMPANY

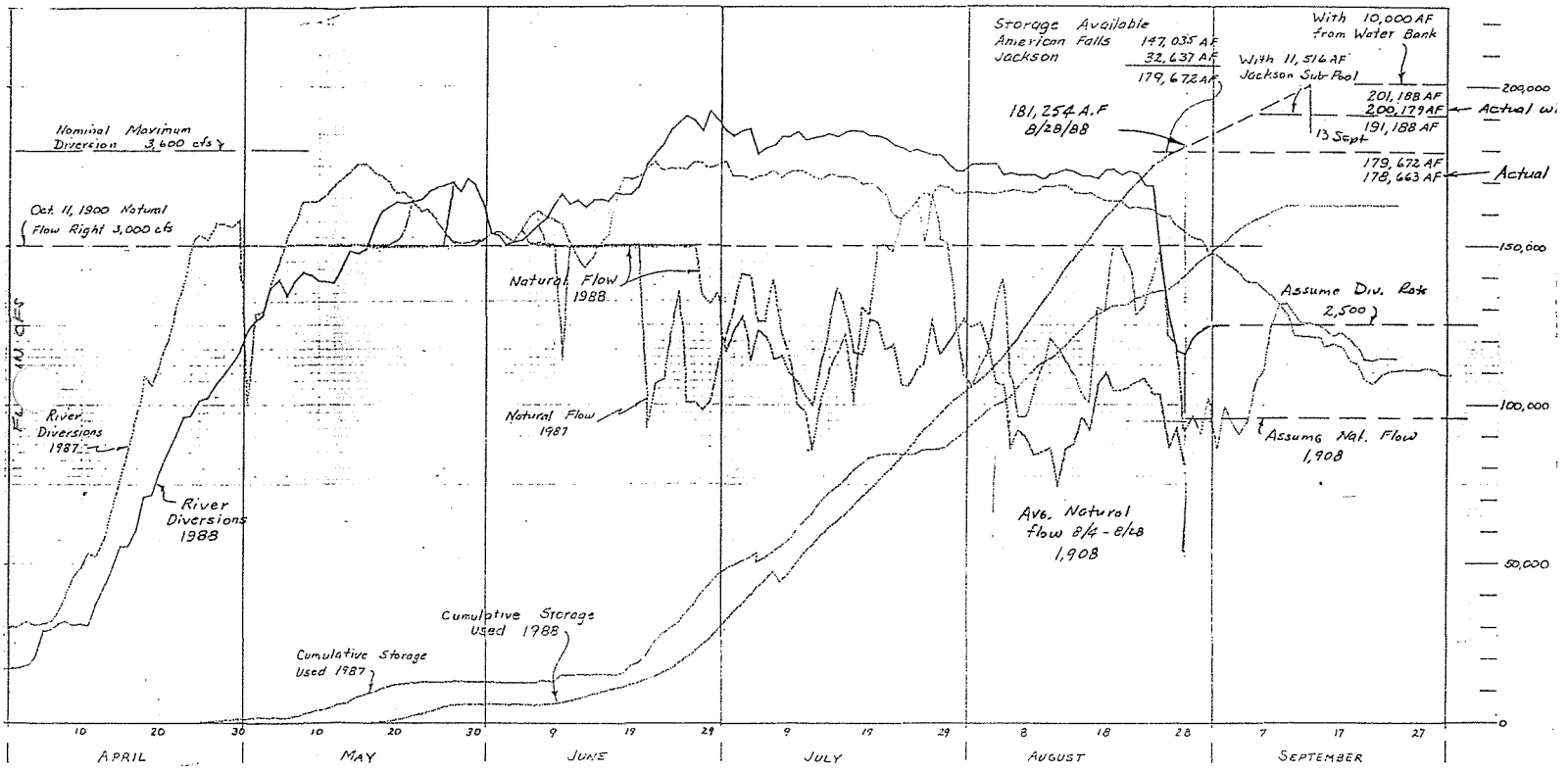
STORAGE AND NATURAL FLOW 1987 AND 1988



8/8/

TWIN FALLS CANAL COMPANY

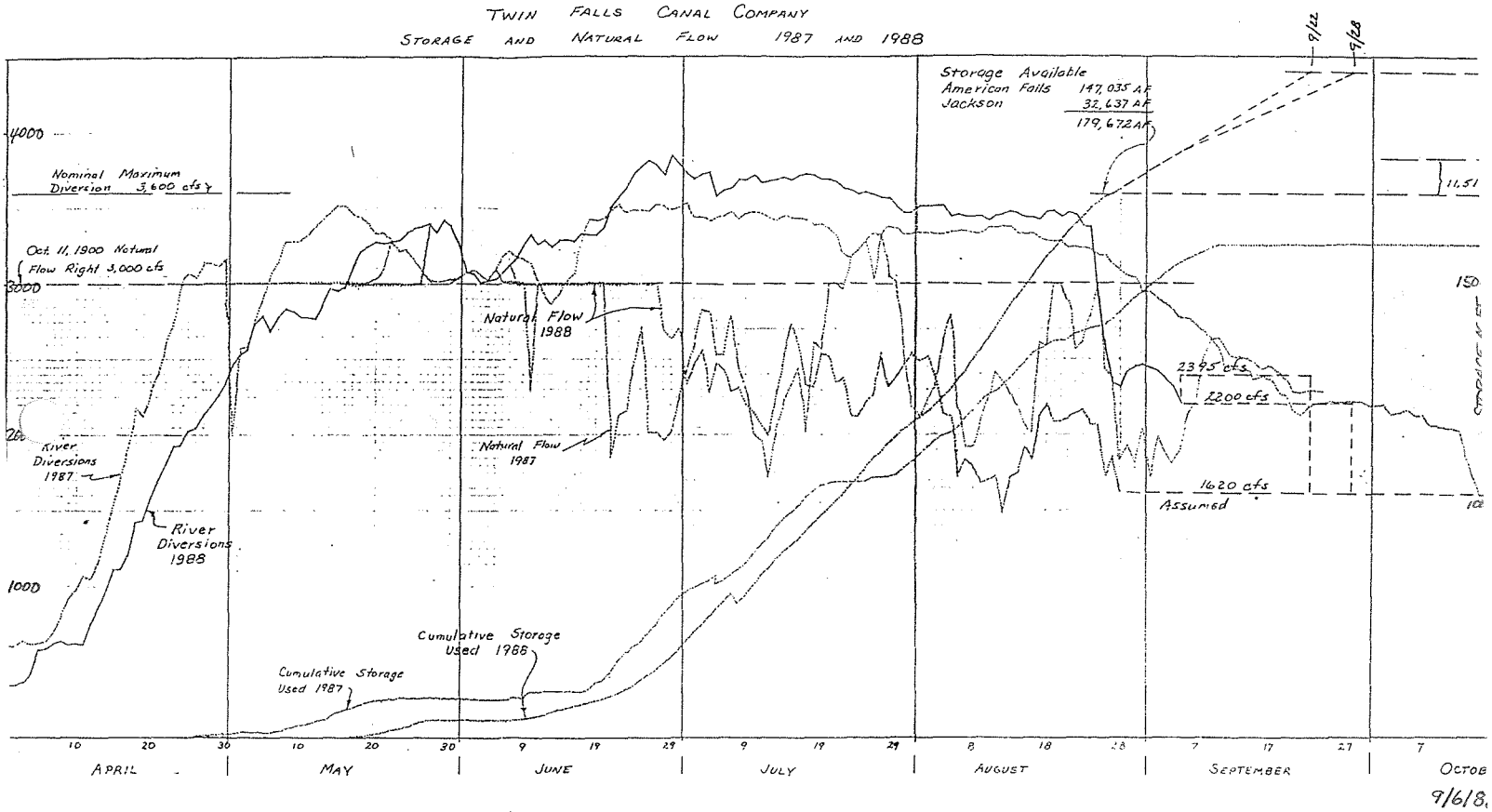
STORAGE AND NATURAL FLOW 1987 AND 1988



8/30/88

TWIN FALLS CANAL COMPANY

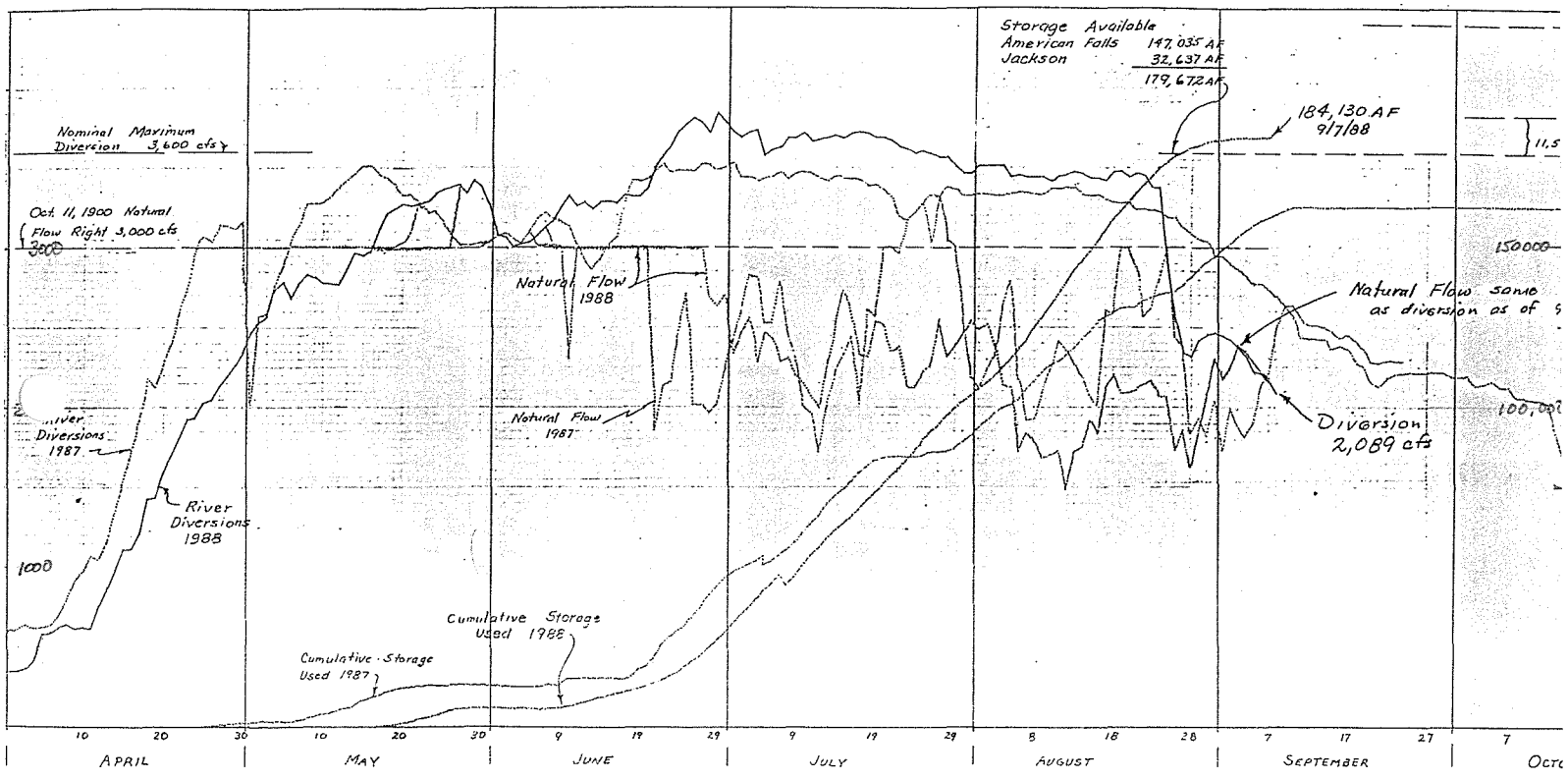
STORAGE AND NATURAL FLOW 1987 AND 1988



9/6/88

TWIN FALLS CANAL COMPANY

STORAGE AND NATURAL FLOW 1987 AND 1988



9/9/8

Memo to: Norm

From : Keith

Date : Sep 08, 1988

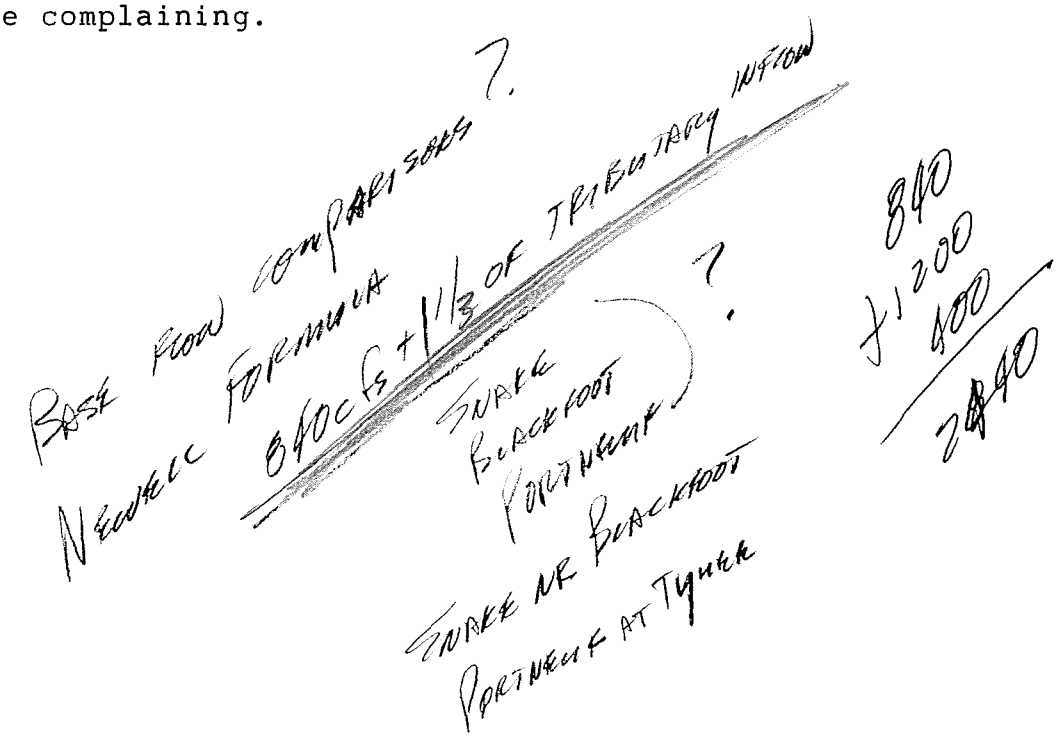
Subject: Twin Falls Canal Co. letter

By now you may have seen the letter from Jack Eakin relative to the Twin Falls CC natural flow water rights at Milner Dam. I suspect that the letter is written as further support for their petition for a moratorium on new permits for ground water tributary to the river upstream from Milner. It might have been written after TFCC received a copy of our proposed Trust water policy memo last week.

In any event, they are asking for some direct discussions with us over the matter. Note that they request me to meet with them on Tuesday. I have talked with Jack and told him that I could not meet on Tuesday but would be able to meet any other day next week. We have picked Wednesday, Sep 14 at 1:30 pm in Rosholt's office.

I called Carlson who reminded me that you have the regional manager's meeting that same day. We need to discuss whether there is a need to change either of these meetings.

I have asked Alan Robertson to bring together all the information available on TFCC and NSCC deliveries for the 1988 irrigation season. I would like information on the breakdown of natural flow calculations so that we can see the fluctuations of which they are complaining.



State of Idaho
DEPARTMENT OF WATER RESOURCES
STATE OFFICE, 1301 North Orchard Street Boise, Idaho 83706-2237 • (208) 334-4440

CECIL D. ANDRUS
Governor

R. KEITH HIGGINSON
Director

MEMORANDUM

TO: Wayne Haas

FROM: Norm Young NCY

DATE: February 16, 1988

RE: WD 01 Accounting

Attached are separate listings from Alan Robertson and Ron Carlson describing the work tasks needed to finalize the WD 01 accounting for 1987. Keith expressed a goal of having the final accounting available for the March 1st water district meeting. Ron has suggested that help is needed, probably from hydrology on tasks he labels 3, 4 and 5. I would like to review this need with you and your appropriate staff at your earliest opportunity.

Ron was describing comp'd 87 report

cc: Ron Carlson
Bob Fleenor

MEMORANDUM

TO: Norm Young FROM: Ronald Carlson

RE: 1987 Watermaster's Report DATE: February 9, 1988

I appreciate your offer to provide some additional assistance in getting the 1987 watermaster's report completed. There are a number of factors that have contributed to our being behind schedule. Primary among them was Marty Gergen's leaving during the peak of the 1987 drought, my delay in refilling his position, and the retirement of Harold Brush from the Bureau of Reclamation.

At the present time, we have several major work efforts going on in addition to the day to day public responsibilities. Major among these responsibilities is preparation for the annual meeting and other meetings which is now taking about 1.5 man days/day. The water district does not have the staff to complete the watermaster's report by March 1. I have enclosed a schematic showing the work paths and the work that has been accomplished and needs to be accomplished before we have the requisite data for the report. Starting at the left hand side of Figure 1 and moving to the right side of Figure 2, I illustrated the data flow requirements to do daily water distribution. There are two boxes on the lower right of Figure 1 that illustrate the required daily data entry for canals not on hydromet. These data are used to run the daily distribution program and to provide daily data to the respective water users via Burley, Fremont Madison, IDWR and this office. Out of necessity, daily allocations of water are done through a projection process. These projected data have to be corrected before the annual accounting can be done and final allocation and distribution numbers become available. As Figure 2 illustrates, there is a lot of data that goes into the final accounting that we do not have available for the daily distribution model. In Table 1 I have tried to tabulate the work effort associated with getting the final accounting and the 1987 watermaster's report.

Based upon the analysis of time requirements shown in Table 1, I estimate that, without considering printing, we have 23 man days of work remaining. We are presently getting about 1.5 man days per day accomplished. Thus, if we could continue at our present rate, we could (in a perfectly efficient world), without additional help, complete the 1987 watermaster's report by mid March. However, there is always turnaround time and delays that have to be factored into this process. I estimate from past experience that this will add 30 days.

Our goal has been to have the book to the printer in April. This is optimistic without additional help. Bob Sutter and hydrology are already providing an estimated 8 man days of help. The 27.1 man days we anticipate spending can be redistributed. I would suggest you talk to hydrology since they are in the best position to provide effective assistance. I believe that additional state office efforts in items 3, 4 and 5 could speed up the process by more than two weeks. With concentrated effort it is possible to have final accounting numbers before March 1, 1988.

PROPOSAL FOR ALLOCATION OF IMPROVEMENT FUNDS

PROJECT: WATERMASTER ACCOUNTING & DISTRIBUTION UPDATE

ESTIMATED TIME: 750 hrs.

ESTIMATED COST: $25,000

DATE: FEBRUARY 2, 1988

PURPOSE:

The steady state accounting procedures developed for, and used by Water District 1 attempt to model the hydrological conditions that exist each day. As technology and conditions change it is necessary to re-evaluate the model and make those changes that will improve accuracy and efficiency and reduce the amount of work associated with the accounting and record keeping.

DESCRIPTION OF WORK REQUEST:

1. Hydrology would re-evaluate the methods presently used in computing the daily Blackfoot to Neeley gains by: computing monthly and daily Blackfoot to Neeley gains for W.Y.'s 1981 through 1987 using (a) the traditional inflow-outflow method, (b) correlation with Spring Creek, and (c) the inflow-outflow method with American Falls change in storage determined from additional stage data at Aberdeen and Sterling sites.

Based upon this evaluation, the 1987 accounting would be re-run using either method (b) and (c) or a combination of the two. A method for marginally correcting departures from the actual American Falls contents would be incorporated in method (b). Evaluation of the Danielson Springs in improving the method (b) correlation should also be evaluated.

Once the evaluations are completed and a preferred method determined for computing the Blackfoot to Neeley gains, appropriate modifications would be made to the accounting code.

Estimated effort: 250 man-hours.

2. Various methods to calculate the gains in the Teton River below St. Anthony would be tested using data from the existing gaging sites on the North and South Forks of the Teton and a part-time gage below Saurey Canal on the North Fork. If it is determined that significant improvements can be made in estimating gains, modifications will be made in the computer code to allow more equitable distribution of natural flows on the lower Teton.

Estimated effort: 40 man-hours.

3. The recently installed gage at the end of the Willow Creek Floodway would be used to compute gains and losses in the floodway. If losses are significant, a procedure will be developed to deduct these losses from a combination of natural flow, stored water on the Eagle Rock Canal, and inflow to Willow Creek similar to that now used for losses from Ririe to the floodway.

Estimated effort: 40 man-hours.

4. The Snake nr Idaho Falls is scheduled to be moved above the Great Western waste way. The methods for computing the gain between Idaho Falls and Shelley need to be modified to reflect this change and the addition of a gage on the Great Western waste way. This modification needs to be implemented for the 1988 irrigation period.

Estimated effort: 8 man-hours.

5. With the availability of the IDWR DEC system and the micro Vax in the Eastern Regional Office, it is now necessary to move the water district accounting code and associated data files and links from the auditor's computer to the VAX system. The accounting code would first be placed on the IDWR DEC system for a parallel run of the 1987 accounting. Once this is successful, computer codes will be developed for requisite data retrieval, manipulation, and storage. FORTRAN programs would be developed to replace COBAL programs written for the IBM. It is likely that parallel accounting runs will be made on the State IBM system and DEC system through the 1988 irrigation season.

Estimated effort: 250-500 man-hours.

Committee of Nine Approval: _____

Date: _____

State of Idaho
DEPARTMENT OF WATER RESOURCES
STATE OFFICE, 1301 North Orchard Street Boise, Idaho 83706-2237 • (208) 334-4440

CECIL D. ANDRUS
Governor

R. KEITH HIGGINSON
Director

M E M O

TO: Hal

DATE: February 8, 1988

FROM: Alan

SUBJECT: WD1 Accounting

At the drought meeting on February 3, Keith asked that I summarize steps required to get Water District 1 accounting current. The attached list has been prepared to respond to that. We are aware that WD1 does additional work that is not included here. For example, Ron makes numerous adjustments to the various storage accounts as a result of temporary transfers and other special operations that occur each year.

AR:cjk
Attachment

State of Idaho
DEPARTMENT OF WATER RESOURCES
STATE OFFICE, 450 W. State Street, Boise, Idaho

CECIL D. ANDRUS
Governor

A. KENNETH DUNN
Director

Mailing address:
Statehouse
Boise, Idaho 83720
(208) 334-4440

M E M O

TO: Ron Carlson, Water District 1

FROM: Hydrology Section

DATE: September 9, 1987

SUBJECT: Water District 1 Water Right Accounting System Updates

This is to summarize our views of accounting improvements which should soon be possible as a result of data collection and management improvements. Among these items are (1) revision of the method used to compute the near Blackfoot to Neeley reach gain, (2) including the North and South Fork Teton River gages in the water right accounting, (3) adding the Willow Creek Floodway at end gaging station, (4) moving the accounting program and all supporting programs from the Auditor's IBM to the Department's DEC system, and (5) incorporating diversion prediction in the projection routine of the water right accounting. The first three items can probably be accomplished by mid-winter so they could be used on the 1988 accounting.

Near Blackfoot to Neeley Gain

Based on the USGS study "Water Budgets for the Snake River Reservoirs from Blackfoot to Milner, Southeastern Idaho," we would compute monthly and daily Blackfoot to Neeley gains for W.Y. 1981 through 1987 using (1) the traditional inflow-outflow method, (2) the correlation with Spring Creek, and (3) the inflow-outflow method with American Falls change in storage determined from additional stage data at the Aberdeen and Sterling sites.

Upon comparing the above gain data, the water right accounting for 1987 would be rerun using either method (2) or (3) from above, and possibly both methods. Method (2) would also incorporate a procedure to marginally correct the daily gain such that a significant departure from actual content of American Falls Reservoir will not occur.

Concerning method (2), either our office or the USGS should revise the correlation of gains with Spring Creek using additional data that has been collected since the development of the original equation. Consideration should be given to improving the correlation by using the Danielson Creek gage and/or the new Spring Creek gage (at Bronco Road). Concerning method (3), tests would be made using various running averages along with the new content values at American Falls to smooth the erratic fluctuations.

evaluate Danielson as not HYDROMET site

The approximate staff cost to do this work is $6,500.

North and South Fork Teton River

Various methods to calculate the gains in the Teton River below St. Anthony would be tested using the data from the recent gages placed on the North and South Forks of the Teton River. Assuming an accurate method of estimating the gains can be devised, the two gages will be used in the water right accounting to more fairly distribute the natural flow in the lower Teton River. Cost is estimated to be about $1,000.

include summer gage

Willow Creek Floodway

The new gage at the end of the Willow Creek floodway would be used to compute gains and losses in the floodway. If losses are significant, a procedure will be derived to deduct these losses from a combination of natural flow, stored water, or Eagle Rock canal inflow to Willow Creek similar to that now used for losses from Ririe to the floodway. Estimated cost is about $1,000.

I.F. Gage.

Conversion to IDWR DEC System

This item is by far the largest work item with the greatest unknown implications. Not only would the accounting program, but also all supporting data handling programs and data storage areas, be moved or replaced to operate on the Department's DEC system. Of greatest concern is whether the IDWR system can accommodate the large amount of data required for the water right accounting and the speed at which the data retrieval and storage will take place.

The accounting program would first be placed on the Department's DEC system and trial data (probably 1987) would be set up to test the space needs and speed of the actual accounting. Assuming this can be done satisfactorily, we will then set up all data retrieval, manipulation, and storage programs on the DEC. Most of these would be completely rewritten

in FORTRAN replacing the COBOL programs written for the IBM. Exceptions would be those programs that can be used directly from the Boise River water right accounting system, which operates on the DEC system.

It is anticipated that the new accounting programs would be used late in the 1987-88 irrigation season on a test basis and that the IBM will no longer be used after that season. In the event that space and response times are too limiting, actual conversion to the DEC system would be delayed until the system is upgraded to an acceptable level. We have not estimated the cost of this work.

Predicting Diversions

Preliminary work would be done to explore the feasibility of adding a diversion prediction routine to the projected water right accounting. This would be based on the studies done by Sung Kim of the University of Idaho. This is a long-range work item and will not be incorporated in the accounting system before the 1988-89 irrigation season. An analysis will be made of the information requirements and possible methods for predicting diversions or diversion groups, and the practicality of doing this on a daily basis. The University of Idaho prediction methods may have to be modified for use in day-to-day operations. We anticipate working closely with Sung Kim in exploring this area.

Before beginning significant work on these, or other accounting items, it would be well to discuss them in some detail. We suggest a meeting on these subjects in October.

cc: Wayne Haas
Norm Young

TWIN FALLS CANAL COMPANY

POST OFFICE BOX 326
TWIN FALLS, IDAHO, 83303-0326

September 7, 1988

State of Idaho
Department of Water Resources
Statehouse Mail
Boise, Idaho 83720

Attn: R. Keith Higginson, Director

Subject: Natural Flow Right

fax copy also rec'd Sep.

Dear Keith:

The Board of Directors of the Twin Falls Canal Company have instructed me to write to you to express their deep concern about the protection of the Company's natural flow water right.

The Twin Falls Canal Company has a natural flow right for 3,000 cfs diversion at Milner Dam with a priority date of October 11, 1900. This right, along with the natural flow right of the North Side Canal Company for 400 cfs diversion at Milner Dam with the same priority date, are the earliest priorities on the Snake River below American Falls.

It is our understanding that the natural flow at Milner Dam is made up of (1) natural flow in the Snake River entering American Falls Reservoir in accordance with the priority system, (2) inflow from springs and surface tributaries in the American Falls area, and (3) gain in the Snake River from Neeley (below American Falls Dam) to Minidoka Dam.

The values for (1) and (3) can be determined through measurements and gage readings. However the value of the inflow from springs is indeterminate as many springs are beneath the American Falls Reservoir.

The difficulty in determining the value of the flow from springs and surface tributaries at American Falls was recognized at the time of the construction of the American Falls Dam. In 1927 Thomas R. Newell, a hydraulic engineer, was engaged by a sub-committee of the Committee of Nine to conduct an investigation to determine the relationship between natural and stored ownership at American Falls.

A report on the Segregation of Water Resources of the American Falls Basin and American Falls Reservoir was issued in February 1928. This report included a formula (afterwards referred to as the Newell Formula) for the determination of the subsurface tributary inflow at American Falls, This formula is:

Subsurface tributary inflow = 840 cfs plus one-third total surface tributaries

This formula was used in computing the natural flow below American Falls from 1928 through 1977.

In 1978 the use of the Newell formula was abandoned and the reach-gain method was instituted for use throughout the water district. It is our understanding that the reason for this change was the problems associated with balancing water usage at the end of the season. Prior to 1978 the records of storage available, storage used, natural flow available and natural flow used would not balance at the end of the season. The discrepancy would then have to be adjusted or charged off as considered appropriate by the Watermaster.

With the reach-gain method, all factors are known except for the flow from springs and surface tributaries at American Falls. With only one unknown, the missing value can be computed and the records can be kept in balance on a daily basis.

We can understand the convenience and advantages of this system to the Watermaster. However we have had demonstrated to us very vividly the disadvantages of this system to the holders of natural flow rights which are based primarily on the spring and surface tributaries flows at American Falls.

Any erroneous reading, any unreported diversion of water, or any malfunction or problem within the system is resolved through adjustments in the unknown spring flow at American Falls. It appears that our 1900 water right is being used to correct all distribution errors within the entire system.

In previous discussions of the reach-gain method we were advised that the advantages of the reach-gain system could outweigh the disadvantages. It is probably true that under this method, errors that result in additional water would result in an increase in the reported natural flow. However these increases probably occur in good water years when our flow rights and storage rights are sufficient. In a water short year like 1988 we feel that we have been severely damaged. We would gladly exchange any advantages in good water years for a more dependable natural flow in water short years.

The Board has attempted to manage water deliveries to the stockholders in a conservative manner. Periodically the Board reviews the storage available, the rate of use of storage, the diversion rate and the natural flow rate in order to make prudent decisions for future system operation.

On August 9 the Board was advised that 112,550 AF of storage had been used as of 8/4/88; the Jackson sub-pool water and the 10,000 AF of storage purchased from the Water Bank, resulted in 201,188 AF of available storage; the diversion rate was 3,439 cfs; and the natural flow rate between 6/28 and 8/4 had averaged 2,384 cfs. (Prior to 6/28 the natural flow had been the full 3,000 cfs water right.) From these data it was decided that storage was sufficient to continue the same deliveries.

On August 24, fifteen days later, conditions had dramatically changed. Storage used had skyrocketed to 172,441 AF as of 8/23/88; storage available was still 201,188 AF; the diversion rate had decreased slightly to 3,373 cfs; but the natural flow rate had dropped drastically to an average of 1906 cfs between 8/5 and 8/23. A review of these data prompted the Board to direct an immediate 33 percent cut in water deliveries and to subsequently purchase an additional 20,000 AF from the Water Bank.

Such sudden and drastic decisions do not conform to the standards of management that the Board attempts to achieve and are expected of it by its stockholders.

The Twin Falls Canal Company has paid $75,000.00 to Water District No.1 for water from the Water Bank and has obligated another $14,395.00 for Jackson sub-pool water from the Bureau of Reclamation in an effort to obtain a sufficient water supply to meet the shortfall. This unexpected expenditure of some $90,000 of the funds of hard pressed farmers who up until now believed they possessed the oldest and best irrigation water right downstream from American Falls, is difficult to understand.

Even with the expenditure of some $90,000 for additional water it still appears that storage water may be exhausted by October 1, some two to three weeks prior to the termination of need for water for the late crops of sugar beets and potatoes.

From a review of the Newell report, we cannot believe that the flow from springs and surface tributaries at American Falls drop as low as 1,690 cfs at any time nor that the variations are as extreme as are now reported. In 1977, another drought year, the inflow of the springs and surface tributaries under the Newell formula was in the 2400 to 2500 cfs range except for two days in July when it dropped below 2400 cfs.

If the Department of Water Resources believes that the flow from the springs and surface tributaries in the American Falls area are correct, as evidenced by the readings this year, then our October 11, 1900 natural flow right has already been seriously eroded.

Through our attorneys John Rosholt and Gary Slette, the Twin Falls Canal Company and the North Side Canal Company in January 1988 petitioned the Department of Water Resources to enlarge Water District No.1 and to include management of groundwater with surface water. Following a meeting with you and your staff, a subsequent petition was filed to establish a moratorium on issuance or action on permits or applications to appropriate ground water which fed springs and surface tributaries in the American Falls area. To date the Department has not taken action on either petition.

Both of these petitions were efforts by the Canal Companies to protect the source of our 1900 natural flow right from future reductions. However, the natural flow readings indicate that reductions have already occurred.

TWIN FALLS CANAL COMPANY

POST OFFICE BOX 326
TWIN FALLS, IDAHO, 83303-0326

We respectfully request a response to this letter outlining the actions that the Department proposes to take to restore our October 11, 1900 natural flow right to its original status and to protect the right from future degradation.

As an interim measure it is suggested that the Newell formula be reinstated for determination of the flow from springs and surface tributaries, at American Falls and that the computer be programmed to distribute the unbalance each day in proportion to diversions so that all may share in the plusses and minuses due to internal problems of the system.

The Board considers this an extremely serious situation and are at a loss as to what to tell the local farmers who still have millions of dollars in crops in the field needing future water deliveries. Since the decrease in natural flow also effects water deliveries of the North Side Canal Company, the afternoon of Tuesday, September 13, 1988 has been reserved for a joint meeting of the two Boards of Directors. We request your personal attendance at this meeting to discuss this critical situation and to arrive at a satisfactory solution.

If you have any questions or would like to discuss this letter, please feel free to give me a call.

Very Truly Yours,

Jack H. Eakin

Jack H. Eakin
General Manager

JHE:cs
cc: Board of Directors TFCC
Board of Directors NSCC
State Senator Laird Noh
Ron Carlson, Watermaster
Water District No.1
Ted Diehl, General Manager
North Side Canal Company
John Rosholt

RKH to meet 14 Sep @ Rosholt's office.

Work Items To Bring WD1 Accounting Up To Date

	Item	Staff Requirement
1.	Complete computation and entry of all 1987 diversion data.	
	- Requires completion of gage height and shift data entry for recorder sites. This is nearly complete.	WD1
	- Run shift interpolations program	JEL, IDWR
	- Review data	WD1
	- Compute flows	JEL, IDWR
	- Review flows	WD1
	- Enter pump diversion data	WD1
	- Review HYDROMET diversion data	WD1
2.	Enter exchange well data	WD1
3.	Obtain USGS river data and transfer to HISTORY file	WD1
4.	Compute reach gains	RJS, IDWR
5.	Review gains to insure data are OK	WD1, IDWR
6.	Make data corrections	WD1
7.	Begin running 1987 accounting, making corrections as necessary.	WD1
8.	Determine 1987 carry-over	WD1
9.	Obtain USGS preliminary data and transfer to file	WD1
10.	Run accounting to date	WD1

WATER RENTAL PROPOSALS

The sale or rental of storage water from space contracted with the Bureau in Jackson Lake, Palisades, and American Falls Reservoirs is a transaction between a lessor and lessee. The Bureau, being involved in the operation and maintenance of the resource, has a particular interest in the efficient and equitable rental of available water on an annual basis. Leases and deliveries must be made in conformance with the laws of the State of Idaho. In addition to this general interest and concern, the Bureau must ascertain that such rentals are in conformance with applicable Federal laws and in accordance with the terms of its contracts with reservoir spaceholders.

To assure compliance with Federal law, the lessee must comply with all Federal Reclamation laws and regulations. This is adequately covered in paragraph (4) of the draft lease enclosed with John A. Rosholt's letter dated February 7, 1979. In addition, leased water must be supplemental to other water rights of the Snake River. This is adequately covered in paragraph (3) of the draft lease.

In accordance with spaceholders contracts, charges cannot exceed the sum of actual verifiable costs as follows:

A. the properly allocable portion of the lessor's actual annual installment to the United States for repayment of the construction charge under the applicable spaceholders contract.

B. the properly allocable portion of the lessors actual operation and management assessment from the Bureau of Reclamation. For convenience, this component of the rental rates should be based on the O&M charge for the previous year.

C. the properly allocable portion (if any) of the lessors actual costs of operation and maintenance, including administrative and overhead expenses. This portion of costs is probably nil.

D. the properly allocable portion of the costs of the District 01 watermaster in the administration and regulation of water deliveries associated with water rentals.

In addition, the Bureau has the following proposals with respect to water rentals.

Deliveries should not be made under water rental leases unless the lessee has agreed with and is in conformance with all stipulations in the lease form.

Preference in determining whom to lease rental water to in any year should be given to those who have leased water in prior years. We are in agreement with the terms proposed in the draft resolution enclosed with Field Solicitor Ben Brook's letter dated February 28, 1979.

Payments under leases are separate and distinct transactions from annual payments to the United States under reservoir contracts. Payments under spaceholder contracts shall be made by the contractor to the United States, whether or not payments are received by lessors for leased water. Payments for leased water should be made to District 01 and credited to the respective lessors.

Users of rental pool water should be charged the same fee whether or not they have executed a formal lease.

Lease agreements should not convey a right to a lessee or compromise the water rights of the lessor. This is adequately covered in paragraphs (2) and (3) of the above reference draft of John A. Rosholt.

Arrangements for water rentals should be made by a committee appointed by the chairman of the Committee of Nine and should include representatives of the watermaster, the Committee of Nine, and the Bureau of Reclamation. The water rental committee should meet and consider lease applications and make recommendations to the watermaster who will act as agent for lessors.

It is not practical to lease rental water in any one year at a large number of different rates depending on the individual allocable costs of the various lessors. The water rental committee should each year establish a rate which, in consideration of cost factors discussed

above and estimated quantities to be leased, can be expected to yield funds required to recover properly allocable costs.

We agree with the provisions of Field Solicitor Ben Brooks' draft resolution with respect to a cutoff date of July 1 for offering and requesting water for lease.

Storage water from Jackson Lake, Palisades, and American Falls Reservoirs cannot be leased for use outside the adjudicated area.

THE HISTORY OF WATER BANKING ON THE UPPER SNAKE RIVER

By

Ronald D. Carlson

March 1, 1985

The underlying philosophy of western water law is to protect the use of water for beneficial purposes in ascending order of priority. The subtle implication of this philosophy is that the right to use water for beneficial purposes does not convey title to water. Thus, when a water right holder is unable to benefit from the diversion of water he has no right, and can not assign his right to use water to someone else. The beneficial use of water under any water right is attached to the thing through which beneficial use is attained. The statutes do provide for transfers of water rights but the transfer means that the original use must cease.

Unfortunately, water rights do not assure a right holder of a water supply. During times of scarcity there may only be water available to fill the very earliest rights. This uncertainty in water supplies caused water users to look for supplemental supplies. The drought of 1905 may have been the first water shortage that caused irrigators to seriously consider the construction of supplemental storage.

STORAGE

The first storage built on the Upper Snake was a log crib dam at the outlet of Jackson Lake in 1906. This dam, unfortunately, only lasted for three years before washing out. During 1906, Lake Walcott was also constructed as a catch basin and equilizing reservoir. Over the next fifty years storage capacity totalling nearly four million acre-feet was constructed on the upper Snake to provide supplemental water to lands that had inadequate water supplies.

Legally, the only difference between a storage right and a natural flow right involves the fact that under a storage right, water is first diverted into storage, when water was available, for later use on specific lands or for other specified beneficial purposes. Stored water that was not needed in a given year could be carried-over for another year or released without beneficial use. There were no statutory provisions for "allowing" someone else to use surplus stored water. The State Constitution, in fact, made this a risky practice. Article 15, Section 4 reads as follows: "Whenever any waters have been, or shall be, appropriated or used for agricultural purposes, under a sale, rental, or distribution thereof, such sale, rental or distribution shall be deemed an exclusive dedication to such use: (emphasis added) . . . However, even with the risks, those

owning storage space did, at times, allow surplus stored water to be used by others needing supplemental water for irrigation. For while the statutes did not treat storage and natural flow differently, it was intuitively clear that they were different. It is difficult, for example, to argue that unused stored water must go to fill the right of the next appropriator. The time in retention alters the availability of stored water to the extent that generally no one is entitled to the use of surplus stored water.

RENTAL POOL

The rentals of stored water in Water District No. 1 have a long history. During the drought year of 1932, 14,700 acre-feet of storage water was rented at $ .17 per acre-foot. (Because storage space, rather than water, was leased the price per acre-foot of space leased was $ .12.) By 1934 the price had risen to $ .25 per acre-foot. That year 40,000 acre-feet of water was leased to upper valley canals to provide water at times when no other sources of water were available.

In 1937, the Upper Valley Storage Pool was formed to establish the price and policy for annual rentals of storage. The price of stored water was set at $ .50 per acre-foot measured at the point of river diversion. Because of the Bureau of Reclamation (BOR) interpretation of the storage contract with the American Falls Reservoir District any lease amount in excess of $ .12 was divided between the spaceholder and the BOR.

The rental varied from year-to-year depending upon demand. In 1938, 5,091 acre-feet of water was leased to two canals near Blackfoot for $ .13 per acre-foot measured at the canal headgates. In 1929, the rental price was raised to $ .35 per acre-foot, a rate that held through 1940 except for a $ .05 surcharge on the Teton River for use of the Cross-cut Canal. In 1942, a new arrangement was implemented for leasing space in American Falls Reservoir. The rental price was set at $ .30 per acre-foot with one-half of the lease price being retained by the federal government and the other half being reimbursed to the leasing company. This arrangement continued for the next eighteen (18) years. In 1961, the rental rate was raised to $ .50 per acre-foot where it remained through 1977.

In 1978, major changes were implemented on the upper Snake. These changes included significant tightening in regulation of diversions and recognition of water rights. Through the use of computer technology it became possible to distribute stored water with little effect on natural flow. Major changes in water rentals were also made. The rental price was set at $ .75 per acre-foot with $ .50 going to the spaceholders and $ .25 going to Water District No. 1 to cover administrative costs.

THE WATER BANK

The value of being able to lease surplus stored water within

Water District No. 1 is well established. However, over the years no significant changes in state statutes had been made to overcome the legal questions associated with the process. The Water Resources Board took the first step in the process of creating a statutory basis for water leases with the adoption of Policy 11 in the State Water Plan. This policy called for the creation of a water supply bank. In 1979, the Idaho Legislature added statutory provisions in Title 42, § 1761 through 1766 for the creation of a water supply bank and the appointment of a local committee to administer water rentals. Shortly after the enactment of this act, the Water Resources Board appointed the Committee of Nine as the local (operating) committee for the Upper Snake Water Bank. That year rules and regulations for administering the water bank were adopted and a procedure was established for setting the lease price. A price restraint remained because of the Bureau of Reclamation's restriction on "profiteering." By using a formula which had been approved by the Bureau, the Committee of Nine set the 1979 rental price at $1.19 per acre-foot. This price included $ .50 which was retained by Water District No. 1 to cover administrative costs. That year the Idaho Power Company requested, and received, 60,000 acre-feet of water. This was of a total of 73,960 acre-feet leased that year.

With the lease to Idaho Power Company came a concern over another legal problem; there were no provisions in the statutes to allow changes in the nature of use of water. Because of the apparent danger in allowing water, which had been allocated for agricultural uses, to be diverted to other uses no water was leased to the Idaho Power Company during 1980. The price to irrigators was established at $1.20 with administrative costs set at $ .56 leaving $ .64 as the net payback to the spaceholder.

In 1981, the Idaho Legislature changed Idaho Code, § 42-222 to allow for changes in the nature of use of a water right. With the statutory recognition that the nature of use of water rights could be changed without jeopardy, rentals to the Idaho Power Company were resumed. During 1981, 125,000 acre-feet of water was leased to Idaho Power. An additional 24,000 acre-feet was leased to irrigators at the established price of $2.30.

The formula adopted by the Committee of Nine for establishing the lease price allowed the lease price of water to be too variable. When the Bureau of Reclamation sanctioned a sale of storage space at $50 per acre-foot the Committee of Nine had a standard against which profiteering could be measured. Consequently, in 1983 the Committee of Nine abandoned the formula that had previously been used to establish the annual rental price and have since continued the price established in 1981 with

small adjustments for inflation. During the past two years (1983, 1984) the lease price was set at $2.40 and $2.50 per acre-foot respectively. The amount paid to the spaceholder is reduced by $. .50. Monies thus generated are allocated to Water District No. 1 improvement fund. Funds in the improvement fund are disbursed by the Snake River watermaster for such improvements as the Committee of Nine approves.

During 1983, a total of 353,084 acre-feet was leased from the water bank, of which 350,000 went to the Idaho Power Company. Similarly in 1984, the Idaho Power Company leased 275,000 acre-foot of the 277,433 acre-feet leased. However, this is a small percentage of the 800,000 acre-feet assigned to the bank.

The upper Snake Water Supply Bank is the state's only effective mechanism for the annual marketing of stored water. The water bank is recognized by the Secretary of Interior as the official mechanism through which surplus storage supplies can be reallocated without violating federal spaceholder contracts.

One of the provisions of the Swan Falls Agreement calls for the "establishment of an effective water marketing system." The question remaining should not be how can an effective water marketing system be established, but rather, what additions or modifications are needed in the upper Snake's Water Banking system to satisfy the concepts invisioned by those framing the agreement.

9. With the exception noted in Resolution No. 8, we recommend that the Committee of Nine be continued with nine regular members. The members representing the Burley and Minidoka Irrigation projects are to be alternated between the two districts as they arrange. In addition, advisory members representing the Bureau of Reclamation, Teton Basin, Gooding Canal, A & B Irrigation, and a member from the Burley or Minidoka District: whichever is not currently represented on the regular committee be included. Any canal company or district desiring to have representatives attend meetings of the Committee of Nine should notify the watermaster, who will then advise them of dates and time of committee meetings so that they may have the opportunity to attend such meetings.

10. WHEREAS, it is in the best interest of the waterusers of Water District No. 1 to account for all diversions which might adversely affect any prior natural flow or storage diversions:

BE IT RESOLVED that the watermaster shall collect records of water diversions during the entire year.

11. WHEREAS, the annual lease of stored water is the responsibility of the Committee of Nine, and:

WHEREAS, certain rules and regulations for the administration of the annual lease of reservoir space is essential to an orderly water banking process:

NOW, THEREFORE, BE IT RESOLVED that the following rules and regulations for administering storage rentals and sales be adopted.

Rule 1. A rental committee composed of the watermaster, the Superintendent of the BOR Minidoka Project and three members of the Committee of Nine shall be appointed by the chairman for the following purposes:

1. To determine general policies regarding the annual rental of storage space and sales of water from this space which are not covered by the adopted rules and regulations.

2. To assist the watermaster in the allocation of water sold from the bank.

3. To consult with the watermaster on ways to most fully utilize available storage water.

4. To advise the Committee of Nine on water banking activities.

Rule 2. The operation of the "Water Bank" shall be consistent with the statutes creating the Water Suoply Bank and the Rules and Regulations of the Idaho Water Resources Board and the provisions of the spaceholder contracts with the United States.

Rule 3. Storage space is leased by the water bank on a contingency basis and will return payments to the lessor only if the water is subsequently sold from the water bank.

Holders of space in Palisades Reservoir or in any other reservoir may notify the Upper Snake River Watermaster by July 1 of each year of reservoir space they designate as available for lease by the water bank for that year's irrigation season. All such holders will share proportionately in the proceeds from the sale of all or any part of the water sold from storage space offered by July 1 for use in that year.

Holders of space in Palisades Reservoir or other reservoirs who notify the upper Snake River Watermaster after July 1 of any year of reservoir space they desire to lease to the water bank for that year's irrigation season shall receive any proceeds from the sale of all or any part of the water sold which was made available for sale after July 1 of that year on a "first come" basis.

All of the water designated for sale before July 1 of any year will be sold before any water assigned to the bank on or after July 1 will be sold.

The lessor shall be entitled to receive payment for the percentage of his water sold from the water supply bank. Such payment shall be determined by the Renal Pool Committee and adopted by the Committee of Nine pursuant to Rule 2 above.

Rule 4. Any water available through the water bank for annual use shall be provided on a priority basis according to the following priorities:

a. First priority in purchasing water from the water bank shall be given to those water users owning space in the various storage reservoirs of the Bureau of Reclamation in the Snake River Basin above Milner Dam.

b. Second priority in acquiring stored water shall be given to other irrigation waterusers in the areas of beneficial use described in the water rights records of the Department of Water Resources for the storage reservoirs described in (a) above.

c. Priority among waterusers of each priority listed in (a) and (b) above and who execute annual contracts to obtain stored water during a given year shall be determined by the date on which the wateruser's contract and payment is received at the office of the Upper Snake River Watermaster at Idaho Falls, Idaho: the earlier in the year the executed lease is received by the watermaster, the higher priority in the priority group the enity will receive.

d. Any wateruser having once initiated a contract for stored water may request water in subsequent years by confirming, in writing, that all of the information on the original lease is true and correct, and identifying the amount of water he wishes to obtain.

e. The Committee of Nine may charge the lessor and buyer each twenty-five cents ($ .25) to cover administrative costs, costs of the Committee of Nine, and to secure funds to make such needed improvements in the water district as the committee may deem necessary and beneficial to the waterusers.

f. Any water not sold by August 15 may be provided to the highest bidder for such uses as may be determined beneficial by the Committee of Nine. Any sale of water which shall result in a price in excess of that established by the Committee of Nine, plus administrative costs, shall be held in a contingency fund and may be used to purchase storage space that comes available from time to time or for such other purposes as the Committee of Nine might determine to be of general benefit to Water District No. 1.

Rule 5. Spaceholders who wish to lease their reservoir storage space to the water supply bank on a long-term basis may request consideration by contacting the Snake River Watermaster or the Chairman of the Committee of Nine in writing. Any such request shall be reviewed by the Rental Committee and if it is deemed proper, it shall be presented at the next regular meeting of the Committee of Nine. Upon approval, the committee shall commence seeking a lessee. No lessee shall be eligible if his proposed point of diversion is outside Water District No. 1 or if the requested water will be used for non-consumptive purposes. If a suitable lessee if found, the lessor will be notified and a contract between the lessor, lessee, and the Committee of Nine shall be executed setting forth the terms of the lease, lease price, point of delivery, and place of use. Any administrative costs to be imposed by the Water Supply Bank may also be contained in said contract. The parties shall be exempt from Water Bank Rules 3 and 4, except the contracted

Rule 6. Irrigation districts will be given first opportunity to lease water to patrons within their district subject to the following conditions.

1. The total number of acres within the district is not increased.

2. The point of diversion is not under the control of the watermaster on a river or stream.

3. If it is on the river, the district will file a transfer in accordance with Idaho Code s42-222.

4. Affidavit that lands were previously irrigated and that lessee pays irrigation district assessments will be provided to the Upper Snake River Watermaster.

5. The district will be obligated to pay the minimum charge assessed by Water District No. 1 for each diversion added.

Rule 7. By July 10th of each year each person leasing storage space to the Water Bank shall be provided with a list showing all entities who have assigned space to the bank, the date their space was assigned, and the quantity assigned. At the end of each season all those who have assigned space shall receive an accounting of water banking activities including disbursements made to each lessor during that year.

Rule 8. Any time after July 1, receipts exceed $250,000 the watermaster shall call a Rental Pool Committee meeting. The committee shall evaluate the water bank status and water use forecast for the year and if it is deemed appropriate to make a partial payment to the lessors, the Committee of Nine can request the watermaster to make a partial payment to the lessors.

Rule 9. Water rental costs to the lessee shall be $2.50 per acre-foot for 1985.

12. WHEREAS, it is in the interest of all waterusers to have the water rights within Water District No. 1 delivered according to the priority system: and,