WD65 File

MEMORANDUM

TO: Dave Tuthill
Bob Sutter

FROM: TIM LUKE

DATE: August 4, 1994

RE: Payette River Diversion at Boise Cascade Emmett Plant

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Pursuant to Dave's request, I visited the Boise Cascade Emmett plant on August 3 and met with plant/regional supervisor Jim Spencer concerning their diversion. Mr. Spencer and I reviewed and toured the plant's diversion and conveyance system. A diagram of the system is attached.

Description of Diversion System and Uses:

The biggest use of the Payette River water within the plant is for the cogeneration power plant. Spencer estimates that about one-half million gallons of water per day are used for this purpose, and that total surface water use, including other uses, is perhaps near 1 million gallons per day. The cogeneration plant water requirements include mainly boiler and cooling tower make-up water. Two 60 hp pumps have been installed to divert water from the diversion system into the cogeneration plant. During my visit, only one of the pumps was in operation. This pump was operating at about 130 psi with about a 10 foot lift. These pumps are not metered.

Other uses of the surface water at the plant include dust control, fire protection, diversion to ponds for sprinkling logs, and cooling of plywood plant (sprinkle water on roof of plant). These other uses or diversions are very minor. As the sprinkling of logs uses recycled water, diversion to the ponds is only done perhaps several times per year. Watering of the logs is dependent on temperature and is usually done between March and November of each year.

Based on my review of the system, I did not find that the water is being metered or measured at any point between the headgate diversion, spill structures and the end uses. Current metering the Boise Cascade plant ditch diversion is currently the only way to measure the diversion to both Boise Cascade and the Smith Ditch. This combined diversion can be reduced by subtracting water that spills at two spillway structures. The first structure is located about 1000 ft. below the headgate structure. This spillway is a concrete dam about twenty feet wide. Spill over this structure can be estimated using a standard weir formula. The second spill site is located at the far western end of the plant, next to the heading of the Smith Ditch, and just above the City of Emmett water

treatment ponds. There is a small concrete structure here where wood stoplogs can be inserted. Spill over the stoplogs can again be estimated using a weir formula.

Comments of Jim Spencer, Boise Cascade

I could not determine really if Mr. Spencer was very concerned about the measurement of Boise Cascade's diversion. He did not appear to have a very favorable attitude toward any government agency, including Water District 65. He did not seem to be very enthusiastic about installing any standard meters or measuring devices. He doubted there was any economic incentive to install measuring devices, or help with, or participate in measuring the diversions when it is obvious that Boise Cascade is going to be charged for rental pool water whether they have accurate measurements or not. He felt that errors or differences in accuracy would not be significant when the cost of an acre-foot of storage is less than three dollars. On the other hand, I do not believe he was entirely comfortable with my suggestions about current metering and using weir formulas to estimate flows at the spill structures. I think he supported the concept of getting credit for the return flows. He did clearly state that measurement of the Smith Ditch is not Boise Cascade's responsibility, and that it probably should be measured and accounted for separately.

Spencer also stated that the fire protection element of the diversion system is critical to Boise Cascade. The water level in the ditch between the headgate and the first spill structure is intentionally maintained in order to guarantee sufficient water for fire protection. Also, because the main plant and cogeneration plant operates continuously for 24 hours per day, seven days per week, Bosie Cascade is concerned about shutting their diversion down in order to install measuring devices or equipment etc. Spencer said shutting down the water diversion for any periods of time would be expensive and disruptive to operations.

Although Mr. Spencer seemed to be non-committed to measurement, he is interested in knowing what Boise Cascade should expect as far as what their rental pool use and charges will be this year and in future years. He was very concerned about the fact that Boise Cascade lacked ownership of any storage water. He is clearly not comfortable with the rental pool situation. I advised him to contact the Bureau of Reclamation concerning the acquisition of storage water. I further advised that we can probably provide Boise Cascade with such estimates based on Bob's runs and existing data. He is also interested in obtaining any information regarding this whole matter, including being advised of any future meetings between the Department, BOR and water users, and water district advisory committee meetings.

Recommendation for Future Measurements:

Since much of the Boise Cascade conveyance system consists of large buried culverts, there are very few places where water can be conveniently measured. I recommend at this time that the water district current meter and develop a rated section on the open

ditch channel between the main headgate and the first spill structure. Credit may applied to this diversion for return flows at the two spill structures. The Smith Ditch diversion can be included in the residual Boise Cascade diversion, or measured separately. If all return flow credit is applied, and the Smith Ditch is measured separately, the water district will have to make a total of four measurements for the Boise Cascade-Smith diversion.

Rating of Boise Cascade Ditch: I have current metered the Boise Cascade diversion ditch twice this year. Measuring the ditch is difficult because water backs up the ditch as a result of the first spill structure and buried culvert diversion. There are perhaps only two practical places where this ditch can be current metered. The first is in the concrete bays of the headgate diversion structure. The second site is about 300 feet below the headgates, on the downstream side of a large submerged culvert. I have made two current meter measurements at this latter site. The first site provides a better control for a rated section, but may be less reliable at lower flows. I believe that we can develop a reasonable rating for either site.

Spill Structure Concerns: Flows at the two spill structures can be estimated using standard weir formulas. The water district and users need to be aware that these structures are not standard weir structures. The stoplogs in the second spill structure are sometimes removed. When this occurs, the return flow can only be measured by current metering the return flow channel. A standard weir could be placed further down the return flow channel and below the stoplog control structure.

Smith Ditch: This ditch is poorly maintained and has a very silty bottom. In addition, the ditch is rather flat and wide for the given range of flows encountered. There appears to be no suitable location to install a measuring device or develop a rated section anywhere near the headgate. The only accessible part of the ditch that has any measurement potential is at the main entrance to the City treatment ponds about 1500 feet below the headgate.

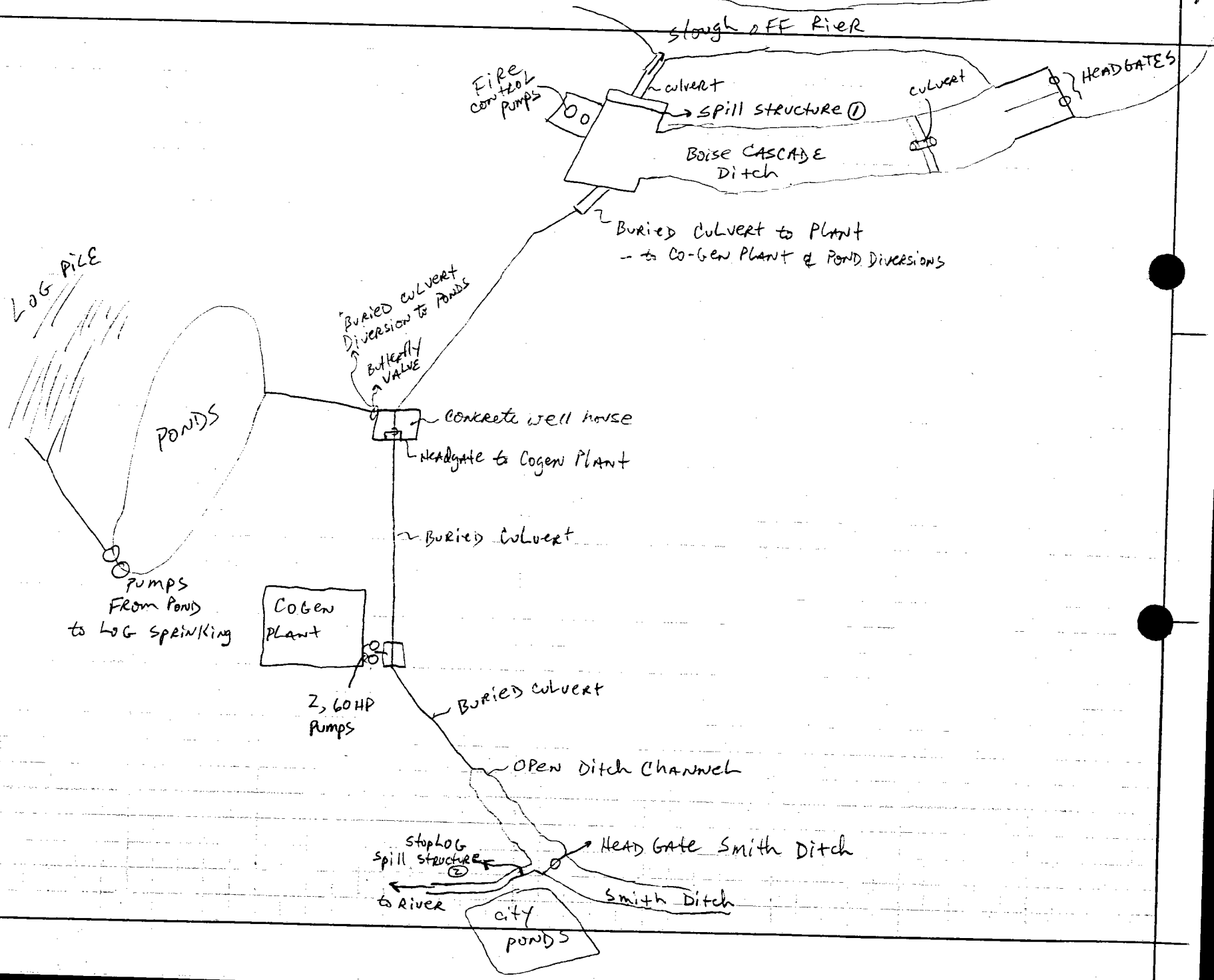
Summary of 1994 measurements:

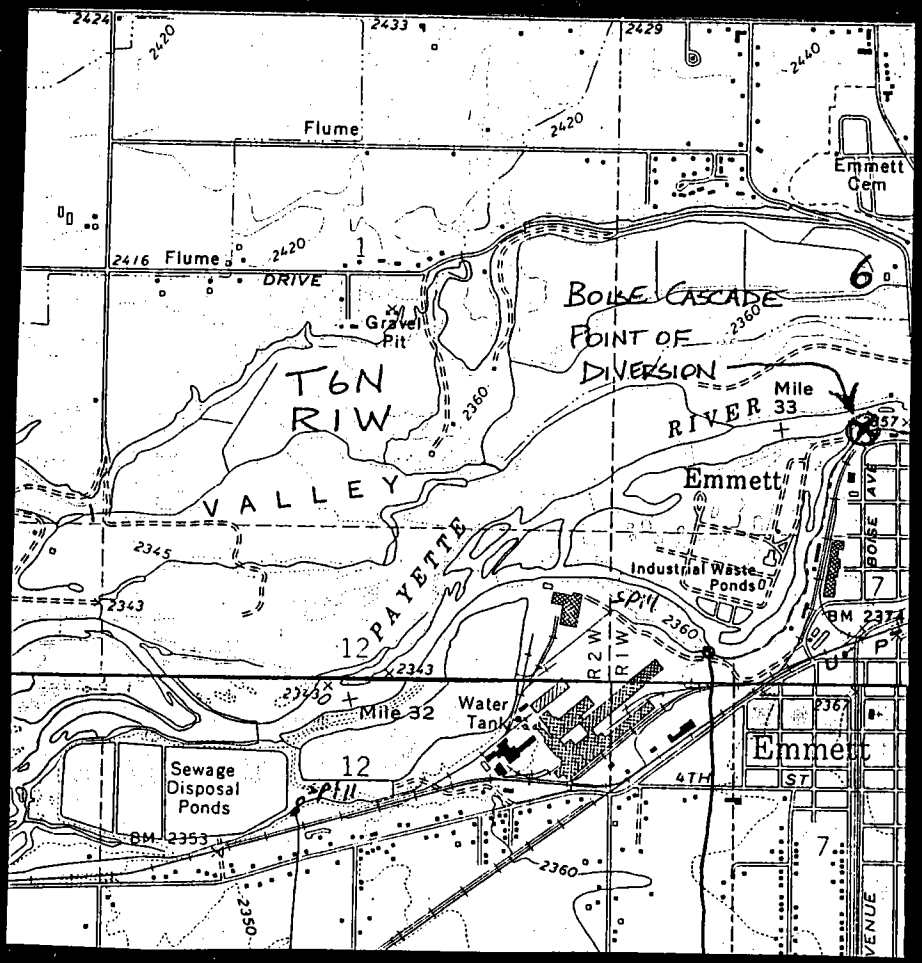
1) June 8, 1994

- Current metered 15.46 cfs at diversion ditch 300 ft. below headgate. No spill water ocurring at first spill structure. Current metered 10.58 cfs return flow at second spill site. Wood stoplogs here were either pulled or submerged and could not provide reasonable estimate using weir formula. Combined Boise Cascade-Smith Ditch use is the difference between the two measurements, or 4.88 cfs.

2) July 26, 1994

- Current metered 32.26 cfs at diversion ditch 300 ft. below headgate. Measured about 19 cfs return flow over first spill structure using weir formula. Did not measure return flow at second spill structure. Combined Boise Cascade-Smith diversion was about 13 cfs including return flow at second spill site.





Head
Smith Ditch

HEADGATE
Boise-Cascade Plant

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

MEMORANDUM

TO: Helen Bivens DATE: August 5, 1994

FROM: Bob Sutter

SUBJECT: Revised 1994 Payette River Storage Fill

Attached is the new storage fill for 1994 using the revised procedure for computing accounts within each reservoir as agreed upon at our July 29, 1994 meeting. Each fill category is filled proportional to the owner's space in that category instead of proportional to the owner's space in the entire reservoir. For 1994, the only changes are in the Cascade last-to-fill category. The changes in storage accrual are as follows:

Farmers Coop	=	+3255.1 AF
Noble	=	+785.3 AF
Lower Payette	=	+2447.5 AF
USBR uncontracted	=	-6487.9 AF

These values include estimated losses to evaporation, but do not include operational losses.

Also reflected in Table 4 of this attachment is the transfer of Upper Lakes storage from the Lower Payette Canal Co. to the other spaceholders in the Upper Lakes. This transfer was 6000.6 acre-feet. I have apportioned the Letha Irrigation District storage to their canals based on their estimated storage use.

Please check over these numbers and let me know if you feel they are correct. As soon as they are final, I will revise the storage remaining values in the daily accounting.

BS:cjk
Attachment
cc: Rick Wells
Dave Tuthill

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

MEMORANDUM

TO: Dave Tuthill DATE: March 29, 1994

FROM: Bob Sutter

SUBJECT: PAYETTE RIVER 1993 STORAGE ACCOUNTING

Attached is a comparison of the Payette River natural flow and stored water use calculations presented at the March 16 meeting of Payette River water users with those calculated by the IDWR accounting procedure. The numbers presented by Mr. Henggeler imply that storage water charges were overestimated by the IDWR procedure. These calculations are shown in the first part of the table.

For example, if the demand for water was 137,266 AF in August and the natural flow at Horseshoe Bend was 96,586 AF, storage used would be 40,680 AF; however, the IDWR procedure computed a storage charge of 57,428 AF for August. Other months show similar differences.

These differences are largely due to estimates of demand. Demand for August was estimated by IDWR at 172,799 AF based on estimates/measurements of actual diversions above Letha. This is about 35,000 AF greater than those presented at the meeting. Similarly, September was almost 60,000 AF greater. These values are shown in the second part of the attached table. The demand values presented by Mr. Henggeler are a good estimate of the flow required at Horseshoe Bend during a drought year such as 1977 when all users are making a concerted effort to conserve water. This points out the potential reduction in stored water use. For instance, in September 1977, the Black Canyon Irrigation District diverted about 34,000 AF compared to the 1993 September diversion of 59,000 AF.

The final part of the table shows the 1993 IDWR calculations at Letha since that is the key point in the river where all of the natural flow is used in late summer. Actual storage use is less than computed with Horseshoe Bend flows since there are gains/return flows which increase the natural flow supply at Letha.

BS:cjk
Attachment

ELAM & BURKE
A Professional Association
ATTORNEYS AND COUNSELORS AT LAW
Established in 1928

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702 WEST IDAHO
POST OFFICE BOX 1539
BOISE, IDAHO 83701

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208-384-5844

SCOTT L. CAMPBELL

July 7, 1994

Mr. John W. Keyes, III
Regional Director
Pacific Northwest Region
U.S. Bureau of Reclamation
1150 North Curtis Road
Boise, Idaho 83704

Dear John:

I am writing on behalf of my client, the Payette River Water Users Association, Inc., a non-profit corporation which consists of various canal companies, irrigation districts, and private water users, utilizing the surface water of the Payette River.

I am writing concerning the proposed water bank water lease agreement for 1994, dated May 19, 1994 (copy enclosed).

The purpose of this correspondence is to advise you of existing legal restrictions upon the use of water for salmon flow augmentation and to request confirmation of your acceptance and agreement with certain procedures relating to use of water from the Payette River for salmon flow augmentation.

First, you should be aware that Section 4.2 of the Water District No. 65 Rental Pool Procedures places management of the rental pool in the District No. 65 Water Master. This authority extends to distribution of rental water. Consequently, despite the language of the draft water bank water lease agreement for 1994, distribution of the water will be subject to the control of Ms. Helen Bivens, Water Master for Water District No. 65.

Second, you should be aware that Section 5.4 of the Water District No. 65 Rental Pool Procedures specifies that leases which have been accepted by the Water Master are subject to the review and approval of the Advisory Board of Water District No. 65. Accordingly, acceptance of any lease by the Water Master is contingent and conditional until the Advisory Board of District No. 65 has taken action on the lease.

Because of the concerns which my client has regarding the accounting procedures and water releases which occurred from Bureau of Reclamation facilities in 1993, we request written confirmation of the Bureau's consent to regulation of salmon flow augmentation water by the District No. 65 Water Master, pursuant to a water bank water lease agreement and the Water District No. 65 Rental Pool Procedures. Regulation of the water by the Water District No. 65 Water Master will include accounting for the quantities of water released and regulation of the flows of the Payette River based upon documented requests for release of water. This accounting will be performed in conjunction with the Western Region Office of the Idaho Department of Water Resources.

These procedures are requested of the Bureau of Reclamation in order to provide the necessary assurance to my client that the water releases will be conducted in a controlled, supervised manner. My clients have substantial concerns that if the Bureau of Reclamation does not agree to follow these procedures, other more drastic steps will have to be taken.

Thank you for your anticipated response.

Very truly yours,

ELAM & BURKE
A Professional Association

Scott L. Campbell

SLC:ma
cc: Ms. Helen Bivens, Water Master, Water District No. 65
Payette River Water Users Association, Inc.
David R. Tuthill, Jr., P.E., Western Region Manager
Idaho Department of Water Resources

MEMORANDUM

TO: DEBBIE ALLEN

FROM: TIM LUKE TL

DATE: June 7, 1994

RE: INVOICE TO WATER DISTRICT 65 FOR STAFF GAGES

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I would like the Department to submit an invoice to State Water District No. 65, Payette River Basin, for partial reimbursement of three water level gages. We provided the District with two Stevens Type A steel staff gages, 0-3.33 ft., and one Stevens Type C steel staff gage, 0-3.33 ft. Please remit a bill for the amount of $75.00 to:

Water District 65
C/O Helen Bivens
102 N. Main St.
Payette, ID 83661

IDWR cost for Type A and Type C gages is $37.00 and $27.00 each respectively. The reduced cost to the District 65 is a cost share (about 1/4 cost by IDWR) to assist district with water distribution and measurement. Water Allocations purchased gages this year from Water and Waste Water Equipment Co. in Boise. PCA code no. 56008 was used in purchasing gages and should be used in receiving any funds in resale of gages to districts.

cc: Helen Bivens, Water District 65 Watermaster

MEMORANDUM

TO: HELEN BIVENS

FROM: TIM LUKE

DATE: July 5, 1994

RE: WEIR TABLE AND REVISED RATING TABLE FOR 7 MILE SLOUGH

==========

Upon meeting with Don and Rick York on July 1, I learned that there were some incorrect discharge rates for several gage heights on the rating table for the Seven Mile Slough. Enclosed is a corrected version of the rating table.

Also enclosed is a discharge table for a 5.5 ft. rectangular contracted weir which can be used for the weir check structure in the wasteway channel above the Tunnel 7 barrels. Don and Rick had asked whether this structure could be used as a weir in lieu of establishing a rated section on the short channel near the barrels. Don stated that the new stilling well he installed near the barrels was being effected by flows in the Seven Mile Slough. We concluded that the new stilling well could not be used to help generate an accurate or reliable rating table for the barrels diversion, and that using the check structure above the barrels as a weir would be a better alternative. When using this structure, the barrels diversion will be the difference between the flows at the weir check structures above and immediately below the barrels. Don should also subtract an estimated discharge from the instream pump located between the two weir check structures.

I also suggested to Don and Rick that a sharp crested weir blade be placed along the crest and edges of the open notch of the concrete check structure. A few current meter measurements at different flows should be made just below or above this structure to verify the accuracy of the weir structure, and make any calibrations if necessary.

Call me if you have questions concerning this material.

cc: Don York
Bob Sutter
Dave Tuthill

DISCHARGE OF STANDARD CONTRACTED RECTANGULAR
Wasteway check/weir structure above Tunnel 7 Barrels
Where weir crest length (L) = 5.5 ft.

Head (H) in Feet	Discharge (Q) CFS	Head (H) in Feet	Discharge (Q) CFS
0.04	0.15	0.55	7.47
0.05	0.20	0.56	7.68
0.06	0.27	0.57	7.88
0.07	0.34	0.58	8.09
0.08	0.41	0.59	8.30
0.09	0.49	0.60	8.51
0.10	0.58	0.61	8.73
0.11	0.67	0.62	8.94
0.12	0.76	0.63	9.16
0.13	0.86	0.64	9.38
0.14	0.96	0.65	9.60
0.15	1.06	0.66	9.82
0.16	1.17	0.67	10.04
0.17	1.28	0.68	10.27
0.18	1.40	0.69	10.50
0.19	1.52	0.70	10.73
0.20	1.64	0.71	10.96
0.21	1.76	0.72	11.19
0.22	1.89	0.73	11.42
0.23	2.02	0.74	11.66
0.24	2.15	0.75	11.90
0.25	2.29	0.76	12.13
0.26	2.43	0.77	12.37
0.27	2.57	0.78	12.62
0.28	2.71	0.79	12.86
0.29	2.86	0.80	13.11
0.30	3.01	0.81	13.35
0.31	3.16	0.82	13.60
0.32	3.32	0.83	13.85
0.33	3.47	0.84	14.10
0.34	3.63	0.85	14.35
0.35	3.79	0.86	14.61
0.36	3.96	0.87	14.86
0.37	4.12	0.88	15.12
0.38	4.29	0.89	15.38
0.39	4.46	0.90	15.64
0.40	4.63	0.91	15.90
0.41	4.81	0.92	16.16
0.42	4.99	0.93	16.43
0.43	5.16	0.94	16.69
0.44	5.35	0.95	16.96
0.45	5.53	0.96	17.23
0.46	5.71	0.97	17.50
0.47	5.90	0.98	17.77
0.48	6.09	0.99	18.04
0.49	6.28	1.00	18.31
0.50	6.48	1.01	18.59
0.51	6.67	1.02	18.87
0.52	6.87	1.03	19.15
0.53	7.07	1.04	19.42
0.54	7.27	1.05	19.71

DISCHARGE OF STANDARD CONTRACTED RECTANGULAR
Wasteway check/weir structure above Tunnel 7 Barrels
Where weir crest length (L) = 5.5 ft.

Head (H) in Feet	Discharge (Q) CFS	Head (H) in Feet	Discharge (Q) CFS
1.06	19.99	1.57	36.03
1.07	20.27	1.58	36.37
1.08	20.56	1.59	36.72
1.09	20.84	1.60	37.07
1.10	21.13	1.61	37.41
1.11	21.42	1.62	37.76
1.12	21.71	1.63	38.11
1.13	22.00	1.64	38.47
1.14	22.29	1.65	38.82
1.15	22.59	1.66	39.17
1.16	22.88	1.67	39.53
1.17	23.18	1.68	39.88
1.18	23.48	1.69	40.24
1.19	23.78	1.70	40.60
1.20	24.08	1.71	40.95
1.21	24.38	1.72	41.31
1.22	24.68	1.73	41.68
1.23	24.98	1.74	42.04
1.24	25.29	1.75	42.40
1.25	25.60	1.76	42.76
1.26	25.90	1.77	43.13
1.27	26.21	1.78	43.49
1.28	26.52	1.79	43.86
1.29	26.83	1.80	44.23
1.30	27.15	1.81	44.60
1.31	27.46	1.82	44.97
1.32	27.78	1.83	45.34
1.33	28.09	1.84	45.71
1.34	28.41	1.85	46.09
1.35	28.73	1.86	46.46
1.36	29.05	1.87	46.83
1.37	29.37	1.88	47.21
1.38	29.69	1.89	47.59
1.39	30.01	1.90	47.97
1.40	30.34	1.91	48.35
1.41	30.66	1.92	48.73
1.42	30.99	1.93	49.11
1.43	31.32	1.94	49.49
1.44	31.65	1.95	49.87
1.45	31.98	1.96	50.26
1.46	32.31	1.97	50.64
1.47	32.64	1.98	51.03
1.48	32.98	1.99	51.41
1.49	33.31	2.00	51.80
1.50	33.65	2.01	52.19
1.51	33.98	2.02	52.58
1.52	34.32	2.03	52.97
1.53	34.66	2.04	53.36
1.54	35.00	2.05	53.76
1.55	35.34	2.06	54.15
1.56	35.69	2.07	54.55

LINEAR RELATIONSHIP BETWEEN DATA POINTS

COMPILED BY IDWR, JUNE 1994

Q = (GHT - 0.5315)/0.003863 for gage heights 1.35 thru 1.60 ft.
Q = (GHT - 0.758)/0.003045 for gage heights 1.61 thru 2.90 ft.

GHT	0.000	0.010	0.020	0.030	0.040	0.050	0.060	0.070	0.080	0.090
1.300						211.882	214.471	217.059	219.648	222.237
1.400	224.825	227.414	230.003	232.591	235.180	237.769	240.357	242.946	245.535	248.123
1.500	250.712	253.301	255.889	258.478	261.067	263.655	266.244	268.833	271.421	274.010
1.600	276.598	279.803	283.087	286.371	289.655	292.939	296.223	299.507	302.791	306.076
1.700	309.360	312.644	315.928	319.212	322.496	325.780	329.064	332.348	335.632	338.916
1.800	342.200	345.484	348.768	352.053	355.337	358.621	361.905	365.189	368.473	371.757
1.900	375.041	378.325	381.609	384.893	388.177	391.461	394.745	398.030	401.314	404.598
2.000	407.882	411.166	414.450	417.734	421.018	424.302	427.586	430.870	434.154	437.438