



BROCKWAY
ENGINEERING
P.L.L.C.

Hydraulics

Hydrology

Water Resources

April 23, 2008

Mr. Allen Merritt
Idaho Department of Water Resources
1341 Fillmore St., Suite 200
Twin Falls, ID 83301

RECEIVED
APR 24 2008
DEPT. OF WATER RESOURCES
SOUTHERN REGION

Re: Dry Lot LLC Transfer Application: Hiawatha Canal Loss Mitigation

Dear Allen:

Thank you for your help in evaluating the Hiawatha Canal Losses relative to the transfer of the Cutter water rights upstream in the canal. Based on your updated seepage allocation spreadsheets which now include the effect of lining of several reaches of the canal, an estimate of the additional loss which will be mitigated by the Valley Club Homeowners Association was determined.

Using your spreadsheet titled WORSTELL: Hiawatha Canal with liner, Before moving Cutter to Dry Lot, and the spreadsheet titled WORSTELL: Hiawatha Canal with liner, After moving Cutter to Dry Lot, my analysis indicates that 0.19 cfs of the 3.64 cfs should be left in the canal below the Valley Club diversion (reach #1) to mitigate for negative impacts to downstream water users. This calculates to 5.2% of the 3.64 cfs which will remain in the canal. This value results in a change from the estimated mitigation requirement submitted with the transfer application since the initial estimate was based on previous spread sheets which were not revised for canal lining and recent transfers out of the canal.

This calculation is based on the following:

Reach	Delivery loss minus Hiawatha Rights for loss-cfs	Delivery loss minus Hiawatha Rights for loss-cfs	Delivery loss minus Hiawatha Rights for loss-cfs
	After transfer	Before Transfer	Difference
1	.30	.13	.17
18	.40	.04	.36
Difference			.19

I believe this mitigation discharge is consistent with prior determinations by IDWR and provides an equitable adjustment to insure that no injury occurs to existing water rights in the canal. Whether or not the 0.19 cfs is determined to

CHARLES E.
BROCKWAY,
PH.D., P.E.

CHARLES G.
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be a water right held by the Hiawatha Canal Co. for seepage mitigation or is treated in some other fashion by IDWR will not affect the operation of the Valley Club HOA project.

I believe that the Hiawatha Canal personnel are in agreement with the proposed mitigation and you should be receiving a letter to that effect from the Company shortly.

Sincerely,

A handwritten signature in black ink, appearing to read "Charles E. Brockway".

Charles E. Brockway, P.E.

Cc: Woody Friedlander
Fritz Haemmerle
Dave Cropper
Jim Speck

Hiawatha Recommended 1883 +

<u>Right ID</u>	<u>Priority Date</u>	<u>Rate(cfs)</u>	<u>Volume(af Source</u>	<u>Water Use(s)</u>	<u>Owner(s)</u>	<u>Version</u>	<u>Source Ta App.ID</u>
606775	1881-05-01	0.02		BIG WOOI IRRIGATION	PULLEN, ANNE W (Current); PU	1	wrAdjudicationRecommendation
594699	1881-05-01	2.02		BIG WOOI AESTHETIC STORAGE, DIVE	THE VALLEY CLUB INC (Current	1	wrAdjudicationRecommendation
606776	1881-05-01	0.76		BIG WOOI IRRIGATION	COTTONWOOD CREEK INVEST	1	wrAdjudicationRecommendation
553699	1883-03-24	0.09	3.5	BIG WOOI IRRIGATION	THE CROSS CREEK TRUST (C	1	wrAdjudicationRecommendation
553818	1883-03-24	0.1		BIG WOOI IRRIGATION	SULLIVAN, COLLEEN R (Current	1	wrAdjudicationRecommendation
555614	1883-03-24	0.13	20.8	BIG WOOI IRRIGATION	WILLARD, MICHAEL E (Current)	1	wrAdjudicationRecommendation
310160	1883-03-24	0.04		BIG WOOI IRRIGATION, STOCKWATER	BAZOVSKY, JOHN (Current)	1	wrAdjudicationRecommendation
310161	1883-03-24	0.04		BIG WOOI IRRIGATION	THE JEFFREY K RICE FAMILY T	1	wrAdjudicationRecommendation
590677	1883-03-24	0.48		BIG WOOI IRRIGATION	RED DEVIL MOUNTAIN HOME	1	wrAdjudicationRecommendation
354153	1883-03-24	0.04		BIG WOOI IRRIGATION	KENNEDY, THOMAS A (Current)	1	wrAdjudicationRecommendation
610575	1883-03-24	0.04		BIG WOOI IRRIGATION	ELIZABETH MATHIEU REVOCAL	1	wrAdjudicationRecommendation
606736	1883-03-24	2.74		BIG WOOI MITIGATION	HIAWATHA CANAL WATER USI	1	wrAdjudicationRecommendation
310202	1883-03-24	1.4		BIG WOOI IRRIGATION, MITIGATION	ECCLES FLYING HAT RANCH L	1	wrAdjudicationRecommendation
313624	1883-03-24	0.9		BIG WOOI IRRIGATION	BERNHAGEN-CROPPER, LINDA	1	wrAdjudicationRecommendation
617913	1883-03-24	1.2		BIG WOOI IRRIGATION	THE VALLEY CLUB INC (Current	2	wrAdjudicationRecommendation
617916	1883-03-24	1.69		BIG WOOI IRRIGATION, RECREATION	THE VALLEY CLUB INC (Current	2	wrAdjudicationRecommendation
606746	1883-03-24	0.69		BIG WOOI IRRIGATION	COTTONWOOD CREEK INVEST	1	wrAdjudicationRecommendation
606749	1883-03-24	0.1	5.3	BIG WOOI AESTHETIC STORAGE, DIVE	WILLARD, MICHAEL E (Current)	1	wrAdjudicationRecommendation
606751	1883-03-24	0.04		BIG WOOI IRRIGATION, MITIGATION	THOMAS-STEWART FAMILY TF	1	wrAdjudicationRecommendation
617049	1883-03-24	2.86		BIG WOOI MUNICIPAL	CITY OF HAILEY (Current)	2	wrAdjudicationRecommendation
310333	1883-03-24	0.1		BIG WOOI IRRIGATION	GORMAN, DONNA F (Current); C	1	wrAdjudicationRecommendation
606278	1883-03-24	0.23		BIG WOOI IRRIGATION, STOCKWATER	KEGLEY, RODNEY (Current)	1	wrAdjudicationRecommendation
606296	1883-03-24	0.36		BIG WOOI IRRIGATION	COYOTE BLUFF HOMEOWNER	1	wrAdjudicationRecommendation
607115	1883-03-24	0.02		BIG WOOI IRRIGATION	RICHMOND, LINDA (Current); RI	1	wrAdjudicationRecommendation
225171	1883-03-24	0.04		BIG WOOI DOMESTIC	CLARK, JOHN H (Current)	1	wrAdjudicationRecommendation
310371	1883-03-24	0.26		BIG WOOI IRRIGATION	HENRICUS P BEEKWILDER FAI	1	wrAdjudicationRecommendation
607168	1883-03-24	0.15		BIG WOOI MITIGATION	HIAWATHA CANAL WATER USI	1	wrAdjudicationRecommendation
607169	1883-03-24	0.02		BIG WOOI MITIGATION	HIAWATHA CANAL WATER USI	1	wrAdjudicationRecommendation
310406	1883-03-24	0.1		BIG WOOI IRRIGATION	MIZER, MARY M (Current)	1	wrAdjudicationRecommendation
346478	1883-03-24	0.05		BIG WOOI IRRIGATION	ARGYLE, JANET LEE (Current)	1	wrAdjudicationRecommendation
607176	1883-03-24	0.06	7.28	BIG WOOI IRRIGATION	KUKURIN, JIM (Current); KUKUF	1	wrAdjudicationRecommendation
607177	1883-03-24	0.05	7	BIG WOOI IRRIGATION, MITIGATION	MARIANA S PAEN TRUST (Curri	1	wrAdjudicationRecommendation
606045	1883-03-24	0.06		BIG WOOI IRRIGATION	PASSOVOY, SUSAN J (Current)	1	wrAdjudicationRecommendation
606047	1883-03-24	0.07		BIG WOOI IRRIGATION	BRODERICK, LISA M (Current); I	1	wrAdjudicationRecommendation
606036	1883-03-24	0.07		BIG WOOI IRRIGATION	CAT TRACK SELECT LLC (Curre	1	wrAdjudicationRecommendation
606043	1883-03-24	0.07		BIG WOOI IRRIGATION	ALAN D BILLER AND NANCY T I	1	wrAdjudicationRecommendation
590632	1883-03-24	0.04		BIG WOOI IRRIGATION	CHESNEL, CONNIE (Current); C	1	wrAdjudicationRecommendation
558877	1883-03-24	0.28	10.5	BIG WOOI MITIGATION	WILLIS, WALTER BRUCE (Curre	1	wrAdjudicationRecommendation
566488	1883-03-24	0.09		BIG WOOI AESTHETIC, RECREATION,	DRAPER, PRISCILLA A (Current	1	wrAdjudicationRecommendation
571473	1883-03-24	0.19		BIG WOOI IRRIGATION	GRABHER, ELMAR (Current); GI	1	wrAdjudicationRecommendation
571474	1883-03-24	0.05		BIG WOOI IRRIGATION, MITIGATION	BURDICK, HENRY (Current); BU	1	wrAdjudicationRecommendation
569751	1883-03-24	0.13	30.8	BIG WOOI IRRIGATION	RINKER, HARRY S (Current)	1	wrAdjudicationRecommendation
606318	1883-03-24	0.06		BIG WOOI IRRIGATION	EVANS, JANET (Current); EVAN	1	wrAdjudicationRecommendation

606315	1883-03-24	0.06	BIG WOOI IRRIGATION	RASOR, ERIC N (Current); RASC	1 wrAdjudicationRecommendation
607290	1883-03-24	0.03	BIG WOOI IRRIGATION	MYLNAR, JOAN (Current); MYLN	1 wrAdjudicationRecommendation
605836	1883-03-24	0.63	BIG WOOI IRRIGATION	WILCOX, LORRAINE (Current); \	1 wrAdjudicationRecommendation
606030	1883-03-24	0.19	BIG WOOI IRRIGATION	KOSS FAMILY LTD PARTNERSH	1 wrAdjudicationRecommendation
607463	1883-03-24	1.42	BIG WOOI IRRIGATION	MARATHON PARTNERS LLC (C	1 wrAdjudicationRecommendation
605940	1883-03-24	0.03	BIG WOOI MITIGATION	THORNTON, C ROD (Current)	1 wrAdjudicationRecommendation
606004	1883-03-24	1.06	BIG WOOI IRRIGATION, MITIGATION	BLAINE COUNTY SCHOOL DIST	1 wrAdjudicationRecommendation
605945	1883-03-24	0.08	BIG WOOI MITIGATION	STURTEVANT, GREGG K (Curre	1 wrAdjudicationRecommendation
606077	1883-03-24	0.03	BIG WOOI MITIGATION	MILEY, JOHN (Current)	1 wrAdjudicationRecommendation
606132	1883-03-24	0.3	BIG WOOI AESTHETIC, IRRIGATION,	RIPHILLIPS, EVELYN (Current); PH	1 wrAdjudicationRecommendation
606131	1883-03-24	0.11	BIG WOOI AESTHETIC, IRRIGATION,	ROSEKRANS, KATHLEEN B (Cl	1 wrAdjudicationRecommendation
606129	1883-03-24	0.07	BIG WOOI AESTHETIC, IRRIGATION,	R KNIGHT, CAROL (Current); KNIC	1 wrAdjudicationRecommendation
606168	1883-03-24	0.41	BIG WOOI IRRIGATION	OLD CUTTERS INC (Current)	1 wrAdjudicationRecommendation
570360	1883-03-24	3.2	BIG WOOI IRRIGATION	OLD CUTTERS INC (Current)	1 wrAdjudicationRecommendation
570364	1883-03-24	0.39	BIG WOOI IRRIGATION	OLD CUTTERS INC (Current)	1 wrAdjudicationRecommendation
600204	1883-03-24	0.39	BIG WOOI IRRIGATION	SAVARIA, ADELE S (Current); S,	1 wrAdjudicationRecommendation
600206	1883-03-24	0.03	BIG WOOI IRRIGATION	BAILEY, JILL (Current); BAILEY,	1 wrAdjudicationRecommendation
600208	1883-03-24	0.06	BIG WOOI IRRIGATION	ALLRED II, JACKSON W (Curre	1 wrAdjudicationRecommendation
601952	1883-03-24	0.03	BIG WOOI IRRIGATION	NORTHRIDGE V SUBDIVISION	1 wrAdjudicationRecommendation
603173	1883-03-24	0.93	BIG WOOI IRRIGATION	EMB-HAILEY LP A CALIFORNIA	1 wrAdjudicationRecommendation
603175	1883-03-24	0.01	BIG WOOI IRRIGATION	NORTHRIDGE VI SUBDIVISION	1 wrAdjudicationRecommendation
607780	1883-03-24	0.11	BIG WOOI IRRIGATION, STOCKWATER	CROPPER, DAVID (Current); CR	1 wrAdjudicationRecommendation
610132	1883-03-24	0.48	BIG WOOI IRRIGATION, STOCKWATER	JOHNSON, CHARLES M (Curre	1 wrAdjudicationRecommendation
610185	1883-03-24	0.48	BIG WOOI IRRIGATION, STOCKWATER	HICKEY, LOUISE (Current); HIC	1 wrAdjudicationRecommendation

CONVEYANCE LOSS - WORSTELL

NAME OF DITCH: Hiawatha Ditch with liner BY: adm DATE: 04/18/08
Before moving Cutter to Dry Lot

REACH	LENGTH (FT)	AVE WIDTH (FT)	SEEPAGE (FT/DAY)	WORSTELL LOSS (CFS)	DELIVERY (CFS)	DELIVERY LEFT (CFS)	LOSS FACTOR	DELIVERY LOSS (CFS)	FLOW (CFS)	DELIVERY LOSS MINUS HIAWATHA RIGHTS FOR LOSS
Decree	900	24.0	10.00	2.73	0.00	22.72	0.1201	0.00	30.27	0.00
1	1910	18.0	3.00	1.30	2.88	22.72	0.0574	0.51	27.54	0.13
2	450	18.0	3.00	0.31	0.04	19.84	0.0155	0.01	23.36	0.00
3	480	18.0	3.00	0.33	0.02	19.80	0.0165	0.00	23.01	0.00
4	430	18.0	3.00	0.29	0.02	19.78	0.0148	0.00	22.66	0.00
5	1770	15.0	0.00	0.00	2.02	19.76	0.0000	0.45	22.35	0.12
6	730	15.0	0.00	0.00	1.45	17.74	0.0000	0.33	20.33	0.08
7	490	15.0	0.00	0.00	0.05	16.29	0.0000	0.01	18.88	0.00
8	1820	15.0	0.00	0.00	0.00	16.24	0.0000	0.00	18.83	0.00
9	1470	15.0	1.50	0.42	0.62	16.24	0.0257	0.15	18.83	0.04
10	4500	14.0	1.28	1.02	0.24	15.62	0.0652	0.08	17.79	0.02
11	680	12.0	1.00	0.10	2.17	15.38	0.0067	0.70	16.54	0.18
12	970	12.0	1.00	0.15	0.04	13.21	0.0111	0.01	14.26	0.00
13	350	12.0	1.00	0.05	0.13	13.17	0.0040	0.05	14.08	0.01
14	440	12.0	1.00	0.07	0.66	13.04	0.0051	0.23	13.89	0.06
15	1860	12.0	1.00	0.28	1.44	12.37	0.0228	0.53	13.16	0.14
16	530	12.0	1.00	0.08	0.82	10.93	0.0073	0.31	11.44	0.08
17	490	12.0	1.00	0.07	0.68	10.11	0.0073	0.26	10.54	0.07
18	460	12.0	1.00	0.07	4.00	9.43	0.0074	1.55	9.78	0.40
19	820	10.0	1.00	0.10	0.82	5.43	0.0191	0.33	5.71	0.09
20	650	7.0	0.66	0.04	1.55	4.61	0.0082	0.64	4.78	0.17
21	1260	4.0	0.66	0.04	0.20	3.06	0.0137	0.09	3.20	0.02
22	2900	4.0	0.66	0.10	2.86	2.86	0.0338	1.32	2.95	0.34
TOTALS	26360			7.55	22.72		0.3419	7.55		1.95

REACH = SECTION OF CHANNEL

LENGTH = LENGTH OF REACH, THE CHANNEL CAN BE DIVIDED INTO EQUAL LENGTH REACHES

OR ACTUAL LENGTHS BETWEEN DELIVERY POINTS

WIDTH = AVERAGE TOP WIDTH OF WATER SURFACE IN REACH

SEEPAGE = SOIL SEEPAGE RATE OF REACH

WORSTELL LOSS = CONVEYANCE LOSS IN REACH BASED ON WORSTELL METHOD

DELIVERY = TOTAL DELIVERIES IN REACH

DELIVERY LEFT = SUM(DELIVERIES OF CURRENT AND REMAINING REACHES)

LOSS FACTOR = WORSTELL LOSS/DELIVERY LEFT

DELIVERY LOSS = SUM(LOSS FACTORS OF CURRENT AND PREVIOUS REACHES) X DELIVERY;

REPRESENTS THE LOSSES ASSIGNED TO THE DELIVERIES IN THE REACH;

IF MULTIPLE RIGHTS WITHIN REACH, DELIVERY LOSSES SHOULD BE

PRORATED BASED ON SIZE OF DELIVERY FOR EACH RIGHT WITHIN REACH

FLOW = TOTAL FLOW AT BEGINNING OF EACH REACH

CONVEYANCE LOSS - WORSTELL

NAME OF DITCH: Hiawatha Ditch with liner BY: adm DATE: 04/18/08
After moving Cutter to Dry Lot

REACH	LENGTH (FT)	AVE WIDTH (FT)	SEEPAGE (FT/DAY)	WORSTELL LOSS (CFS)	DELIVERY (CFS)	DELIVERY LEFT (CFS)	LOSS FACTOR	DELIVERY LOSS (CFS)	FLOW (CFS)	DELIVERY LOSS MINUS HIAWATHA RIGHTS FOR LOSS
Decree	900	24.0	10.00	2.73	0.00	22.72	0.1201	0.00	30.27	0.00
1	1910	18.0	3.00	1.30	6.52	22.72	0.0574	1.16	27.54	0.30
2	450	18.0	3.00	0.31	0.04	16.20	0.0190	0.01	19.72	0.00
3	480	18.0	3.00	0.33	0.02	16.16	0.0203	0.00	19.37	0.00
4	430	18.0	3.00	0.29	0.02	16.14	0.0182	0.00	19.02	0.00
5	1770	15.0	0.00	0.00	2.02	16.12	0.0000	0.47	18.71	0.12
6	730	15.0	0.00	0.00	1.45	14.10	0.0000	0.34	16.69	0.09
7	490	15.0	0.00	0.00	0.05	12.65	0.0000	0.01	15.24	0.00
8	1820	15.0	0.00	0.00	0.00	12.60	0.0000	0.00	15.19	0.00
9	1470	15.0	1.50	0.42	0.62	12.60	0.0332	0.17	15.19	0.04
10	4500	14.0	1.28	1.02	0.24	11.98	0.0850	0.08	14.15	0.02
11	680	12.0	1.00	0.10	2.17	11.74	0.0088	0.79	12.90	0.20
12	970	12.0	1.00	0.15	0.04	9.57	0.0154	0.02	10.62	0.00
13	350	12.0	1.00	0.05	0.13	9.53	0.0056	0.05	10.44	0.01
14	440	12.0	1.00	0.07	0.66	9.40	0.0071	0.26	10.25	0.07
15	1860	12.0	1.00	0.28	1.44	8.73	0.0323	0.61	9.52	0.16
16	530	12.0	1.00	0.08	0.82	7.29	0.0110	0.36	7.80	0.09
17	490	12.0	1.00	0.07	0.68	6.47	0.0115	0.30	6.90	0.08
18	460	12.0	1.00	0.07	0.36	5.79	0.0120	0.16	6.14	0.04
19	820	10.0	1.00	0.10	0.82	5.43	0.0191	0.39	5.71	0.10
20	650	7.0	0.66	0.04	1.55	4.61	0.0082	0.75	4.78	0.19
21	1260	4.0	0.66	0.04	0.20	3.06	0.0137	0.10	3.20	0.03
22	2900	4.0	0.66	0.10	2.86	2.86	0.0338	1.52	2.95	0.39
TOTALS	26360			7.55	22.72		0.4115	7.55		1.95

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