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ENGINEERING
P.L.L.C.

Hydraulics

Hydrology

Water Resources

February 3, 2009

Mr. Lyle Swank, Regional Manager
Idaho Department of Water Resources
900 N. Skyline Drive, Suite A
Idaho Falls, ID 83402-1718

Re: Sam's Hollow Water Company – 2008 Annual Report
Project No. 370-04-2001

Dear Mr. Swank:

Enclosed please find the 2008 annual report required by the approved mitigation plan for Sam's Hollow Water Company in Bear Lake. If you have any questions or need additional information, please do not hesitate to contact me.

Cordially,

Charles G. Brockway, P.E.

Cc: Sam's Hollow Water Company (2 copies)
William D. Stock, President, Fish Haven Water Users Company (1 copy)
T. J. Budge, Atty. (1 copy)

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Department of Water Resources
Eastern Region

Project No. 370-01-1999

2008 Annual Report on Water Use and Mitigation for the Sam's Hollow Water Company

Prepared for:

**Sam's Hollow Water Company
Bear Lake, Idaho**

February 2, 2009

For information concerning this report, contact
Charles G. Brockway, Ph.D., P.E.
Greg W. Sullivan, E.I.T.



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Project No. 370-01-1999

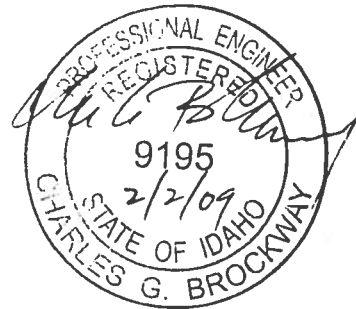
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2008 Annual Report on Water Use and Mitigation Sam's Hollow Water Company

Brockway Engineering, PLLC

February 2, 2009

Introduction

The Water Management and Operations Plan for Mitigation (the "Plan") dated June 19, 2006 for Sam's Hollow Water Company requires an annual report of water use on residences and facilities in-use during the year. The reporting requirements are outlined in the Plan, which was submitted to the Idaho Department of Water Resources. The Plan requires the submittal of the number and type of facilities (residences, commercial, and other) utilizing ground water during the year, the estimated depletion to Bear Lake resulting from the occupancy of the facilities, irrigated acres taken out of production within the project, and the volume of mitigation water returned to Bear Lake through the mitigation facilities.

The mitigation facilities consist of conveyance channel which delivers water from the end of the irrigation system to a pipeline which conveys water to Bear Lake from Fish Haven Creek. Water delivered through the irrigation system and mitigation pipeline is measured through a flow meter before it returns to Bear Lake.

Sam's Hollow Water Company has shares in Fish Haven Water Users for delivery through three ditches from Fish Haven Creek to the project. Deliveries into the ditches are measured through calibrated flumes. During 2008, deliveries through Ditch No. 1, the lower ditch, were the source of water for mitigation. A portion of the flow through Ditch No. 1 was delivered into a pond and thence through the flow meter and into Bear Lake.

Project Build-Out

In 2006 there were no homes or water-using facilities in use on the Project. Project build out during 2007 was minimal with only one residence being furnished water. In 2008 there were an additional 9 units constructed for a total of 10 residential households. Locations of the residences are shown on the attached map.

Irrigated Acres

Mitigation for water use on residential and commercial units requires that formerly irrigated acres be dried up to compensate for consumptive use depletion. The 2007 annual report documented the fact that 2.05 acres had been removed from irrigation due to construction of roadways (note that other roads were in place prior to the approved mitigation plan and are not accounted for). The area of house footprints, driveways, and other hardscape areas associated with the 10 residences is estimated to be 0.9 acres assuming 4,000 sq. ft. per residence of non-irrigated area. The total area that has been removed from irrigation is therefore 2.95 acres. Based on procedures developed by Dr. Robert Hill and adopted in the Bear River Ground Water Management Plan, the consumptive depletion for grass pasture is 1.18 ac-ft/acre/year. The 2.95 acres removed therefore resulted in a depletion reduction of 3.48 ac-ft for 2008.

Estimated Project Depletion

The estimated consumptive depletion from residences and other facilities was determined using procedures developed by Dr. Robert Hill and adopted in the Bear River Ground Water Management Plan. For the Sam's Hollow system, the depletion values for potable water and irrigation of residences and commercial facilities were developed and included in the Plan for the project. Table 1 was developed to assist in estimating depletion each year based on the facilities build out. Table 1 shows the annual unit depletion and the number of units on line in 2008. The total estimated depletion from the ten (10) units on line in 2008 is 3.14 acre feet.

Table 1. Depletion analysis for Sam's Hollow Water Company in 2008. All depletions are in acre-feet annually.

Entities with On-Site Sewage Disposal

	Unit Depletion	Occupied Units	Total Depletion
Domestic Potable Water - Homesites	0.03	1	0.03
Irrigation - Homesites	0.14	1	0.14

Entities with St. Charles Sewer District Service

	Unit Depletion	Occupied Units	Total Depletion
Domestic Potable Water - Homesites	0.19	9	1.71
Irrigation - Homesites	0.14	9	1.26

Domestic/Irrigating - Condominiums (Per Building = 4 units)	0.5	0	0.00
Irrigation - Condominiums	0.14	0	0.00

Potable Water - Commercial	2.8	0	0.00
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Total Depletion	3.14 afa
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* The annual depletion value is based on a rate of 40.2% occupancy.

Water Supply Available for Mitigation

The 140.5 shares in Fish Haven Water Users owned by Sam's Hollow Water Company can be diverted through any of three ditches: the Upper North Ditch, Number 1 Ditch, and Number 3 Ditch. Each ditch has been instrumented with water measuring flumes and flow measurements have been recorded since May 22, 2004. The flumes were installed by the Fish Haven Water Users Company with assistance from Sam's Hollow Water Company and are being monitored by Sam's Hollow Water Company

During 2008, discharge readings were obtained from June 3, 2008 through October 16, 2008 and are shown on the attached spreadsheet. This log shows that there was approximately 302.37 acre-feet of irrigation water diverted into Ditch No. 1 during the

irrigation season of 2008, of which 45.21 acre-feet was allotted to Sam's Hollow Water Company.

Mitigation Water Returned to Bear Lake

Water was returned to Bear Lake via the mitigation pipeline and was measured by the flow meter located just east of the Fish Haven Cemetery. The pipeline, conveying water from the retention pond, under the highway, and to Bear Lake is an 8-inch PVC pipe with a Siemens SITRANS FM electromagnetic water meter Type MAG 8000 installed in the pipeline (see attached photograph). The meter has a totalizer and instantaneous discharge readout which reads in gallons and gallons per minute. The meter is maintained by Sam's Hollow staff.

The meter was installed in 2007 and mitigation water for the 2008 season commenced flowing from Ditch #1 to Bear Lake on August 23, 2008. The irrigation turn terminated on August 31, 2008. Table 2 shows the mitigation pipeline flow meter readings

Table 2. Flow Meter Readings for the Sam's Hollow Mitigation pipeline

Date	Time	Totalizer Reading (gallons)	Volume (acre-feet)
7/23/2008	3:00 pm	754000	0
7/31/2008	1:00 pm	2668800	5.88

The total volume returned to Bear Lake during the 2008 irrigation season was 5.88 acre feet which more than mitigates for the depletion from the ten residential units of 3.14 acre feet. Further, the consumptive use reduction appurtenant to the 2.95 acres removed from irrigation is adequate to mitigate for the project depletion in 2008.

Projection of 2009 Sufficiency of Mitigation Water

It is estimated that the maximum mitigation requirement for 2009, based on a projected build-out comprising 5 residential homes with on-site sewage treatment and 15 homes connected to the St. Charles Sewer District for a total of 20 residential units on line, will be 5.80 acre feet. It is estimated that the seasonal water availability for Sam's Hollow in

2009 will be more than adequate to provide mitigation water for the expected number of units on-line in 2009. Currently (January 27, 2009) the Bear River Basin snow pack based on NRCS SNOTEL data is at 93% of normal. So the expected runoff for Fish Haven Creek is near normal and ample water for mitigation that is expected to be available. It is therefore expected that the diversion available to Ditch No. 1 will be ample to provide mitigation water to Bear Lake for 2009.

Regarding the consumptive use balance, 5.80 acre-feet estimated depletion in 2009 will require 4.92 acres removed from irrigation. 2.95 acres have already been removed. Therefore, an additional 2.0 acres will need to be removed from irrigation in 2009. For the projected 10 additional units on line in 2009, the per-unit hardscape of 4,000 sq. ft. will result in an additional 0.9 acres dried up. Therefore, Sam's Hollow will need to remove 1.1 acres from irrigation in 2009 at some other location to provide the consumptive mitigation water.



Terminus of the Sam's Hollow mitigation pipeline.

Note: Date on photo is incorrect. The correct date is July 2007.



The Reserve at Bear Lake

- TRAIL
- GRAVEL ROAD
- PAVED ROAD

★ Existing Homes and Lodge



2008 Measurements By The Reserve Staff

Date	Upper North Ramped Flume*					NO 1 NORTH " Parchal Flume"					No. 3 North 12" Ramped Flume					Sam's Hollow Total		
	Gage ft	Discharge cfs	Measured af/d	Estimated af/d	Sam's Hollow 99.5shares 249.5in ditch 39.9%	Gage ft	Discharge cfs	Measured af/d	Estimated af/d	Sam's Hollow 20.0shares 133.8in ditch 15.0%	Gage ft	Discharge cfs	Measured af/d	Estimated af/d	Sam's Hollow 21.0shares 255.4in ditch 8.2%	Total af/d	Hollow af/d	
1-May																		
2-May																		
3-May																		
4-May																		
5-May																		
6-May																		
7-May																		
8-May																		
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30-Jun																		
1-Jul																		
2-Jul																		

Date	Upper North Ramped Flume*					NO 1 NORTH " Parchal Flume"					No. 3 North 12" Ramped Flume					Sam's Total Hollow af/d				
	Gage ft	Discharge cfs	Measured af/d	Estimated af/d	Sam's Hollow 99.5shares 249.5in ditch 39.5%	Accum af	Gage ft	Discharge cfs	Measured af/d	Estimated af/d	Sam's Hollow 20.0shares 133.8in ditch 15.0%	Accum af	Gage ft	Discharge cfs	Measured af/d		Estimated af/d	Sam's Hollow 21.0shares 255.4in ditch 8.2%	Accum af	Total af/d
3-Jul	0.48	3.19	6.31	6.31	2.52	60.31	0.06	0.13	0.27	0.27	0.04	13.12	0.06	0.13	0.27	0.27	0.02	2.38	6.85	2.58
4-Jul			6.19	6.19	2.47	62.78				0.21	0.03	13.15			4.85	4.85	0.40	2.78	11.25	2.90
5-Jul			6.06	6.06	2.42	65.19				0.16	0.02	13.17			9.43	9.43	0.78	3.55	15.66	3.22
6-Jul			5.94	5.94	2.37	67.56				0.11	0.02	13.19			14.02	14.02	1.15	4.71	20.06	3.54
7-Jul			5.82	5.82	2.32	69.88				0.05	0.01	13.20			18.60	18.60	1.53	6.24	24.47	3.86
8-Jul	0.45	2.88	5.69	5.69	2.27	72.15	0.00	0.00	0.00	0.00	0.00	13.20	1.08	11.71	23.18	23.18	1.91	8.14	28.87	4.18
9-Jul			5.69	5.69	2.27	74.43				0.13	0.02	13.22			23.18	23.18	1.91	10.05	29.01	4.20
10-Jul	0.45	2.88	5.69	5.69	2.27	76.70	0.06	0.13	0.27	0.27	0.04	13.26	1.08	11.71	23.18	23.18	1.91	11.95	29.14	4.22
11-Jul			5.35	5.35	2.14	78.83				1.48	0.22	13.48			22.77	22.77	1.87	13.82	29.60	4.23
12-Jul			5.01	5.01	2.00	80.83				2.68	0.40	13.88			22.36	22.36	1.84	15.66	30.06	4.24
13-Jul			4.68	4.68	1.86	82.70				3.89	0.58	14.46			21.96	21.96	1.81	17.47	30.52	4.25
14-Jul			4.34	4.34	1.73	84.43				5.10	0.76	15.22			21.55	21.55	1.77	19.24	30.99	4.26
15-Jul	0.36	2.02	4.00	4.00	1.59	86.02	0.48	3.19	6.31	6.31	0.94	16.17	1.02	10.88	21.14	21.14	1.74	20.98	31.45	4.28
16-Jul			3.82	3.82	1.59	87.61				8.40	1.26	17.42			14.38	14.38	1.18	22.16	26.78	4.03
17-Jul	0.36	2.02	4.00	4.00	1.59	89.21	0.66	5.30	10.50	10.50	1.57	18.99	0.54	3.85	7.62	7.62	0.63	22.79	22.11	3.79
18-Jul			3.86	3.86	1.54	90.75				9.75	1.46	20.45			7.11	7.11	0.56	23.37	20.72	3.58
19-Jul			3.72	3.72	1.49	92.23				8.99	1.34	21.80			6.61	6.61	0.54	23.91	19.33	3.37
20-Jul			3.59	3.59	1.43	93.66				8.24	1.23	23.03			6.11	6.11	0.50	24.42	17.94	3.17
21-Jul			3.45	3.45	1.36	95.04				7.49	1.12	24.15			5.61	5.61	0.46	24.88	16.55	2.96
22-Jul	0.32	1.68	3.32	3.32	1.32	96.36	0.5	3.40	6.74	6.74	1.01	25.16	0.42	2.58	5.10	5.10	0.42	25.30	15.15	2.75
23-Jul			3.32	3.32	1.32	97.68				6.32	0.94	26.10			5.10	5.10	0.42	25.72	14.74	2.69
24-Jul	0.32	1.68	3.32	3.32	1.32	99.01	0.46	2.98	5.90	5.90	0.88	26.98	0.42	2.58	5.10	5.10	0.42	26.14	14.32	2.62
25-Jul			2.65	2.65	1.06	100.07				4.72	0.71	27.69			7.29	7.29	0.60	26.74	14.57	2.36
26-Jul			1.99	1.99	0.79	100.86				3.54	0.53	28.22			9.49	9.49	0.78	27.52	15.01	2.10
27-Jul			1.33	1.33	0.53	101.39				2.36	0.35	28.57			11.68	11.68	0.96	28.48	15.36	1.84
28-Jul			0.66	0.66	0.26	101.65				1.18	0.18	28.74			13.87	13.87	1.14	29.62	15.71	1.58
29-Jul			0.00	0.00	0.00	101.65				0.00	0.00	28.74	0.86	8.11	16.06	16.06	1.32	30.94	16.06	1.32
30-Jul			0.00	0.00	0.00	101.65				0.00	0.00	28.74			16.67	16.67	1.37	32.31	16.67	1.37
31-Jul	0	0.00	0.00	0.00	0.00	101.65	0	0.00	0.00	0.00	0.00	28.74	0.9	8.73	17.28	17.28	1.42	33.73	17.28	1.42
1-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			17.28	17.28	1.42	35.15	17.28	1.42
2-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			17.28	17.28	1.42	36.57	17.28	1.42
3-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			17.28	17.28	1.42	37.99	17.28	1.42
4-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			17.28	17.28	1.42	39.41	17.28	1.42
5-Aug	0	0.00	0.00	0.00	0.00	101.65	0	0.00	0.00	0.00	0.00	28.74	0.9	8.73	17.28	17.28	1.42	40.83	17.28	1.42
6-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			16.08	16.08	1.32	42.15	16.08	1.32
7-Aug	0	0.00	0.00	0.00	0.00	101.65	0	0.00	0.00	0.00	0.00	28.74	0.82	7.51	14.88	14.88	1.22	43.38	14.88	1.22
8-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			14.76	14.76	1.21	44.59	14.76	1.21
9-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			14.65	14.65	1.20	45.79	14.65	1.20
10-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			14.53	14.53	1.19	46.99	14.53	1.19
11-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			14.41	14.41	1.19	48.17	14.41	1.19
12-Aug	0	0.00	0.00	0.00	0.00	101.65	0	0.00	0.00	0.00	0.00	28.74	0.8	7.22	14.30	14.30	1.18	49.35	14.30	1.18
13-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			14.30	14.30	1.18	50.53	14.30	1.18
14-Aug	0	0.00	0.00	0.00	0.00	101.65	0	0.00	0.00	0.00	0.00	28.74	0.8	7.22	14.30	14.30	1.18	51.70	14.30	1.18
15-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			13.96	13.96	1.15	52.85	13.96	1.15
16-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			13.62	13.62	1.12	53.97	13.62	1.12
17-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			13.29	13.29	1.09	55.06	13.29	1.09
18-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			12.95	12.95	1.06	56.13	12.95	1.06
19-Aug	0	0.00	0.00	0.00	0.00	101.65	0	0.00	0.00	0.00	0.00	28.74	0.74	6.37	12.61	12.61	1.04	57.16	12.61	1.04
20-Aug			0.00	0.00	0.00	101.65				0.00	0.00	28.74			12.34	12.34	1.01	58.16	12.34	1.01
21-Aug	0	0.00	0.00	0.00	0.00	101.65	0	0.00	0.00	0.00	0.00	28.74	0.72	6.10	12.07	12.07	0.99	59.17	12.07	0.99
22-Aug			0.00	0.00	0.00	101.65				1.18	0.18	28.92			12.07	12.07	0.99	60.16	12.07	0.99
23-Aug			0.00	0.00	0.00	101.65				2.36	0.35	29.27			12.07	12.07	0.99	61.16	12.07	0.99
24-Aug			0.00	0.00	0.00	101.65				3.54	0.53	29.80			12.07	12.07	0.99	62.15	12.07	0.99
25-Aug			0.00	0.00	0.00	101.65				4.72	0.71	30.51			12.07	12.07	0.99	63.14	12.07	0.99
26-Aug	0	0.00	0.00	0.00	0.00	101.65	0.46	2.98	5.90	5.90	0.88	31.39	0.72	6.10	12.07	12.07	0.99	64.13	12	

Blank Cover