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Department of Water Resources  
Eastern Region

May 4, 2015

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

Re: Sam's Hollow Water Company – 2014 Annual Report  
Project No. 370-04-2001

Dear Regional Manager:

Enclosed please find the 2014 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,

Greg Sullivan, M.S., Engineer

Cc: Sam's Hollow Water Company  
Enc: Sam's Hollow Water Company-3 Final Reports  
Idaho Department of Water Resources-1 Final Report

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Project No. 370-01-1999

## **2014 Annual Report on Water Use and Mitigation for the Sam's Hollow Water Company**

Prepared for:

Sam's Hollow Water Company  
Bear Lake, Idaho

May 4, 2015

For information concerning this report, contact  
Greg W. Sullivan, M.S., Engineer  
Charles G. Brockway, Ph.D., P.E.



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# **2014 Annual Report on Water Use and Mitigation Sam's Hollow Water Company**

Brockway Engineering, PLLC  
May 4, 2015

## **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 2014, deliveries through Ditch No. 3, the lower ditch, were the source of water for mitigation. A portion of the flow through Ditch No. 3 was delivered into a pond and thence through the flow meter and into Bear Lake.

### Project Build-Out History

In 2006 there were no homes or water-using facilities in use on the Project. Project build out varies from year to year but has steadily increased. In 2011, the Club House was constructed in the Project area. Table 1 provides the year and number of residences constructed in the Project, type of wastewater treatment and if construction occurred within the current place of use of irrigation water right.

A total of 7 houses were constructed in 2014. All 7 homes constructed in the project area during 2014 are connected to the St. Charles Sewer District. The total residential households constructed in the project area are 47. Locations of the residences are shown on the attached map. A total of 12 residential homes and the clubhouse have been constructed inside of the irrigation place of use and qualify for mitigation acres.

**Table 1: Residence Units Constructed Information**

| Year  | On-site Wastewater treatment | St. Charles Wastewater treatment | Condominium | Inside Irrigation Place of Use | Total Residences |
|-------|------------------------------|----------------------------------|-------------|--------------------------------|------------------|
| 2006  |                              |                                  |             |                                | 0                |
| 2007  | 1                            |                                  |             |                                | 1                |
| 2008  |                              | 9                                |             | 5                              | 10               |
| 2009  |                              | 4                                |             | 1                              | 14               |
| 2010  |                              | 3                                |             | 2                              | 17               |
| 2011  |                              | 6                                |             |                                | 23               |
| 2012  | 7                            | 8                                |             | 2                              | 38               |
| 2013  |                              | 2                                |             | 1                              | 40               |
| 2014  |                              | 7                                |             | 1                              | 47               |
| Total | 8                            | 39                               | 0           | 12                             | 47               |

### Irrigated Acres

Mitigation for water use on residential and commercial units requires that irrigated acres formerly supplied with surface water be dried up to compensate for consumptive use depletion of the development. The 2008 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 assumed area of house footprints, driveways, and other hardscape areas per residence is 4,000 ft<sup>2</sup>. The assumed area of turf, garden area and landscaping areas per residence is 5,000 ft<sup>2</sup> for a total displaced area of 9,000 ft<sup>2</sup> per residence. The

approximate area removed from irrigation for the clubhouse, pool area and parking lot is 1.0 acres or 43,560 ft<sup>2</sup>. 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.

Table 2 provides the total accumulated mitigation from the construction of structures within the water right place of use from the start of the project until the end of the current reporting year of 2014.

**Table 2: Summary of Mitigation Provided by Construction through 2014.**

|            |    | ft <sup>2</sup> /structure | Acres | AFA  |
|------------|----|----------------------------|-------|------|
| Road Ways  |    |                            | 2.05  | 2.42 |
| Homes      | 12 | 9000                       | 2.48  | 2.93 |
| Condos     | 0  | 12000                      | 0.00  | 0.00 |
| Commercial | 1  | 43560                      | 1.00  | 1.18 |

Total Removed for Mitigation    5.53 Acres    6.52 AFA

### 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 3 was developed to assist in estimating depletion each year based on the facilities build out. Table 3 shows the annual unit depletion and the number of units on line in 2014. The total estimated depletion from the forty seven (47) units and club house on line in 2014 is 17.03 acre feet.

**Table 3. Depletion analysis for Sam's Hollow Water Company in 2014. 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           | 8              | 0.24            |
| Irrigation - Homesites             | 0.14           | 8              | 1.12            |

**Entities with St. Charles Sewer District Service**

|                                    | Unit Depletion | Occupied Units | Total Depletion |
|------------------------------------|----------------|----------------|-----------------|
| Domestic Potable Water - Homesites | 0.19           | 39             | 7.41            |
| Irrigation - Homesites             | 0.14           | 39             | 5.46            |

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

|                            |     |   |      |
|----------------------------|-----|---|------|
| Potable Water - Commercial | 2.8 | 1 | 2.80 |
|----------------------------|-----|---|------|

All Depletion Values are in Acre-Feet Annually

The annual depletion value is based on a rate of 40.2% occupancy

|                        |           |
|------------------------|-----------|
| Total Homesites        | 47        |
| Total Condominiums     | 0         |
| Total Commercial Sites | 1         |
| Total Depletion        | 17.03 afa |

### 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 2014, discharge readings were obtained from June 3, 2014 through October 30, 2014 and are shown on the attached spreadsheet. This log shows that there was approximately 2562.82 acre-feet of irrigation water diverted into Upper North Ramped Flume, Ditch No. 1 and Ditch No. 3 during the irrigation season of 2014, of which 398.53 acre-feet was allotted to Sam's Hollow Water Company.

Correspondence with Brent Skinner on March 12, 2010 indicated that 22.2 acres of previously irrigated land covered by the 140.5 shares in Fish Haven Water Users was dried up in 2009.

### **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 to record the mitigation water volume. For the 2014 season, mitigation flow commenced to Bear Lake on August 20, 2014. The mitigation flow turn terminated on September 30, 2014. Table 4 shows the mitigation pipeline flow meter readings

The total volume returned to Bear Lake during the 2014 irrigation season was 11.93 acre feet.

**Table 4. Flow Meter Readings for the Sam's Hollow Mitigation Pipeline.**

| Date      | Reading<br>(gallons) | Volume<br>(acre-feet) |
|-----------|----------------------|-----------------------|
| 8/20/2014 | 16758900             | 51.43                 |
| 9/30/2014 | 20646300             | 63.36                 |

|                         |         |       |           |
|-------------------------|---------|-------|-----------|
| Total Mitigation Volume | 3887400 | 11.93 | acre-feet |
|-------------------------|---------|-------|-----------|

The consumptive use reduction appurtenant to the 5.53 acres removed from irrigation provided 6.52 acre feet to mitigate for the project depletion in 2014, which was insufficient to provide the entire mitigation requirement. Therefore, 8.90 acres (10.51 acre feet) of additional irrigated acres beyond those dried up on the residential footprints and roadways will be added to the mitigation acres for the current development build-out.

The additional 8.90 acres of additional irrigated acres to be dried up will come from the 22.2 acres that was dried up in 2009. The remaining total of 13.30 acres of the 22.2 acres is available for future mitigation needs.

At the conclusion of 2014, total cumulative volume of water discharge into Bear Lake is 86.28 acre feet. The cumulative volume required for mitigation from project development is 74.72 acre feet. (See Figure 1)

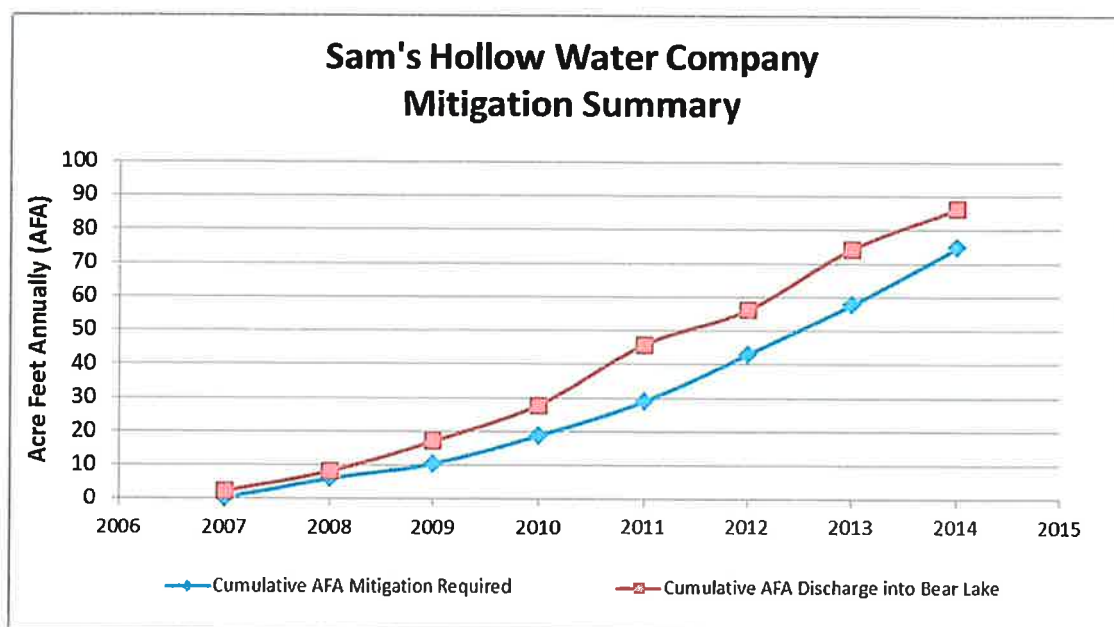


**Figure 1: Sam's Hollow Water Company Mitigation Summary**

**Projection of 2015 Sufficiency of Mitigation Water**

It is estimated that the mitigation requirement for 2015, based on a projected build-out, will be 7 additional homes comprised of 6 residential homes outside of the irrigation area and 1 residential homes within the water right place of use. Of the 7 additional homes, it is expected that there will be no additional residential homes with on-site sewage treatment. The total expected residential units online will be 54 units. The club house will continue to be utilized with no additional conversion of irrigated areas to commercial uses. The calculated depletion for residences and commercial uses under these assumptions will be 19.34 feet. It is estimated that the seasonal water availability for Sam's Hollow in 2015 will be adequate to provide mitigation water for the expected number of units on-line in 2015. Currently (April 13, 2015) the Bear River Basin snow pack based on NRCS SNOTEL data is at 54% of normal. The runoff for Fish Haven Creek will be lower than normal based on the current snow pack but ample water for mitigation is expected to be available. However, mitigation flow to Bear Lake will need to commence earlier in anticipation of possible insufficient late season water availability.

Regarding the consumptive use balance, the projected 54 units on line in 2015 (13 homes and the club house within the currently irrigated area) will provide a total of 6.77 acre-feet of the required 19.34 acre-feet estimated depletion for 2015. Therefore, 12.57 acre-feet must be provided from additional irrigation reduction in the amount of 10.65 acres. The 13.30 acres remaining from the 22.2 acres dried up in 2009 will be sufficient to mitigate for the proposed additional 2015 project depletion.



Terminus of the Sam's Hollow mitigation pipeline.

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



Development that has occurred at Sam's Hollow Water Company

Photo courtesy of *The Reserve* [reservebl.com](http://reservebl.com) 2015.

