

RECLAMATION

Managing Water in the West

**2013 Salmon Flow Augmentation Program and Other
Activities Associated with the NOAA Fisheries Service
2008 Biological Opinion and Incidental Take Statement for
Operations and Maintenance of Bureau of Reclamation
Projects in the Snake River Basin above Brownlee
Reservoir**

Annual Progress Report



INTRODUCTION

On May 5, 2008, National Marine Fisheries Service (NMFS) released a new biological opinion (2008 Upper Snake BiOp) for the continued operation and maintenance of Bureau of Reclamation projects in the Snake River Basin above Brownlee Reservoir. The incidental take statement included reasonable and prudent measures (RPMs) and associated terms and conditions to minimize incidental take to 13 listed salmon and steelhead Evolutionary Significant Units (ESUs).

This document reports the status of activities related to the incidental take statement, including Reclamation's flow augmentation program, status of new contracts, coordination activities, and conservation activities. This report meets Reclamation's responsibility to submit an annual progress report by December 31 of each year.

RECLAMATION'S 2013 SALMON FLOW AUGMENTATION PROGRAM

Overview of Salmon Flow Augmentation Program

Reclamation was able to provide 427,000 acre-feet of water for flow augmentation in 2013 (See Table 1). Water supply conditions in 2013 were well below average in all of the Snake River Basin above Brownlee Reservoir. Water shortages occurred in many of the sub basins. Fortunately the drought conditions were forecast with enough lead time to allow proper crop selection, and careful conservation stretched supplies and helped to mitigate the impacts. Nonetheless, irrigation water was turned off one to two months early in many locations. Hardest hit was Eastern Oregon where some reservoirs reached empty by early August. The water year started out on a positive note, with above average precipitation October through December, but then abruptly changed directions in January with monthly values in the 40 to 80 percent of average range for most of the remaining winter and spring. There were no flood control releases required in the Boise or Upper Snake (above Milner) Basins, and only minor releases in the Payette Basin. In the Upper Snake, the dry spring and slow snowmelt resulted in no excess flows past Milner once irrigation began in late March until flow augmentation began in early May.

November carryover storage from 2012 was near the 1981-2010 average in the Payette and Boise Basins at 96 percent and 98 percent of average, respectively, but was only 69 percent in the Upper Snake Basin above Milner. Despite the positive start to winter, noted above, snowpack began to lag behind average in January and slipped further from average as the season progressed. Snowpack on January 1 in the Payette, Boise, and Upper Snake Basins were 99, 98, and 111 percent, respectively. But by April 1, snowpacks in these three basins were down to 72, 64, and 87 percent, respectively. Observed unregulated runoff for the April through July period turned out to be even lower, with 62 percent of average for the Payette River at Horseshoe Bend, 50 percent for the Boise River near Boise, and 70 percent for the Snake River at Heise.

Due to the lower than expected runoff and early season irrigation demands, the Upper Snake above Milner reservoir system reached a maximum combined physical storage content about 921,000 acre-feet below full capacity of 4,045,695 acre-feet. The Boise system also failed to refill, coming up nearly 250,000 acre-feet below its full capacity of 949,700 acre-feet. The Payette reservoir system was able to refill completely.

The 427,000 acre-feet volume includes 60,000 acre-feet of natural flow rights, a small portion (10,500 acre-feet) of which is considered to occur outside of the April 3 to August 31 migration period.

In Season Management Considerations for Meeting Augmentation Targets

Reclamation manages its in-season storage releases for flow augmentation relying on the best data available at the time in order to set release rates. Reclamation utilizes preliminary water rights accounting provided by the state of Idaho to estimate volumes available in storage accounts and amounts delivered. This accounting is provisional and subject to change at a later date when data are finalized and after-the-fact accounting is completed. Therefore, while it is difficult to deliver the precise targeted volume on a real time basis, Reclamation strives to come as close as possible, with a typical margin of error of less than one percent.

Table 1 summarizes the source, amount, and timing for Reclamation’s 2013 salmon flow augmentation program.

Table 1. Summary of Reclamation’s 2013 Salmon Flow Augmentation Program.

SOURCE	AMOUNT (acre-feet)	DATES OF DELIVERY
Upper Snake above Milner Dam		
Reclamation Uncontracted Space	11,743	May 1 – June 4
Reclamation Powerhead Space	83,142	
Rentals – Water District 01	60,000	
Rentals – Tribes	0	
Subtotal	154,885	
Payette		
Reclamation Space	128,554	June 5 – August 31
Rentals	47,067	
Subtotal	175,621	
Boise		
Reclamation Uncontracted Space	0	May 15 – May 30
Reclamation Powerhead Space	18,845	
Rentals	0	
Subtotal	18,845	

Natural Flows		
IWRB Lease (Idaho)	60,000 ¹	April 3 – August 31
Skyline Farms (Oregon)	17,649	
Subtotal	77,649	
TOTAL	427,000	

¹ See section titled “Lease of Natural Flow Water Rights Below Milner Dam.”

Uncontracted Space and Space Reacquired for Flow Augmentation

Reclamation’s 95,608¹ acre-feet of uncontracted space assigned to flow augmentation in the Payette system fully refilled, as did 11,743 (out of a total of 22,896) acre-feet of uncontracted space in the Upper Snake above Milner. The entire accrual to these accounts was provided to the 2013 flow augmentation program. None of the 40,932 acre-feet of space reacquired for flow augmentation in the Boise system reservoirs filled in 2013 and were therefore not available.

The 17,649 acre-feet of natural flow rights Reclamation has acquired in Oregon (Skyline Farms) were fully available again in 2013.

Rentals from Shoshone–Bannock Tribes

The Shoshone-Bannock Tribes have contract space in American Falls Reservoir. They are able to rent water from this space for downstream uses in accordance with the terms of the Fort Hall Water Rights Settlement of 1990. Tribal policy requires that on-reservation water needs are served first. The Tribes’ space in Palisades Reservoir is usually adequate to meet their irrigation requirements, freeing up the space in American Falls Reservoir for potential rental. Reclamation did not negotiate rental of Tribal storage water in 2013. However, Idaho Power Company executed a lease with the Tribe for storage water and released this volume, along with other Idaho Power owned storage water, between July 22 and August 9 at various rates, but typically about 1,500 to 2,000 cubic feet per second (cfs); this water is not included in Reclamation’s 427,000 acre-foot volume.

Annual Rentals

Reclamation relies heavily each year on annual rentals from water users to acquire water for its flow augmentation program. Water availability from the Water District 1 Rental Pool (Upper Snake above Milner Dam) is determined by a chart (Attachment 1) that considers carryover storage on November 1 and the April 1 runoff forecast for the Snake River at Heise (for the April through September period) to determine contributions to the rental pool for the flow augmentation program. Use of this chart was enacted after

¹ Reclamation was able to reacquire 608 acre-feet of formerly contracted space in 2012, increasing the total uncontracted storage assigned for flow augmentation in the Payette system to 95,608 acre-feet.

negotiation of the Nez Perce Water Rights Settlement and is fully consistent with Reclamation's description of its flow augmentation program in its 2004 and 2007 Upper Snake Biological Assessments.

In 2013, the chart specified that Water District 1 would provide 60,000 acre-feet of rental water. Carryover from 2012 on November 1 was 1,254,541 acre-feet, and the April 1 runoff forecast was 3,098,000 acre-feet (82 percent of average) for the April through September period. Actual observed runoff turned out to be lower at 72%. In the Payette Basin 47,067 acre-feet was made available and rented by Reclamation, and no rental water was available from the Boise Basin in 2013 due to the drought conditions.

Powerhead Space

As part of the Nez Perce Water Rights Settlement, Reclamation may utilize powerhead space in Palisades Reservoir and Anderson Ranch Reservoir for flow augmentation. In order for Palisades Reservoir powerhead space to be used, the sum from all other sources must be less than 427,000 acre-feet, and this powerhead space cannot be used to exceed a flow augmentation total of 427,000 acre-feet. It is anticipated that this powerhead space will be used relatively infrequently, but it was necessary to use 83,142 acre-feet in 2013. This will impact the availability of this source in subsequent years until sufficient runoff occurs to refill this account.

Use of powerhead space from Anderson Ranch Reservoir is less restrictive, and can be used to provide flow augmentation volumes in excess of 427,000, if available. Reclamation considers use of this powerhead space to be undesirable due to the difficulty in refilling the water right the following year and the potential for shutting down the powerplant during a continuing drought. It was necessary to use 18,845 acre-feet in 2013.

Lease of Natural Flow Water Rights below Milner Dam

The Nez Perce Water Rights Settlement authorized the use of up to 60,000 acre-feet of natural flow rights downstream of Milner Dam for the purpose of flow augmentation. In better water years, this will increase the volume of water available for augmentation. In 2005 the Idaho Water Resources Board (IWRB) purchased approximately 98,000 acre-feet of water rights from the Bell Rapids Mutual Irrigation Company; this is water that served roughly 25,000 acres via high-lift pumps. Reclamation then entered into a 30-year lease with the State for 60,000 acre-feet of this water for salmon augmentation (IWRB Lease in Table 1).

Flow augmentation from natural flow rights downstream of Milner Dam occurs during the entire irrigation season, roughly April 1 to October 31. The IWRB Lease of 60,000 acre-feet is comprised of 49,500 acre-feet estimated to occur within the April 3 to August 31 period, and 10,500 acre-feet estimated to occur before and after the migration

period. Even though these 10,500 acre-feet are delivered outside the April 3 to August 31 period, it provides an instream benefit and continued flow augmentation.

Extraordinary Actions in 2013

Reclamation identified the sources of flow augmentation water listed in the preceding sections in its 2004 and 2007 upper Snake Biological Assessments. The sum total from these identified sources in 2013 was insufficient to meet the goal of providing 427,000 acre-feet. As in past years when this has occurred, Reclamation made a concerted effort to procure and deliver water from other sources; Reclamation terms this effort as extraordinary actions. Water availability was very limited due to the drought conditions, but Reclamation was able to provide an additional 32,946 acre-feet of flow augmentation from water stored in Reclamation held accounts in the Payette Basin. These accounts hold water that is dedicated to maintaining minimum winter releases and conservation pools to protect aquatic habitat including bull trout and are not normally used for the flow augmentation program.

Timing Considerations for Flow Augmentation Releases

The timing of flow augmentation releases depends on the individual basin and source of water. Flow augmentation releases in 2013 mark the fifth year of operations under the 2008 BiOp, in which Reclamation committed to shifting releases to earlier in the migration season when Snake River flows are more beneficial to listed fish. The primary goal of the earlier releases is to minimize the amount of warmer water provided in August and to shift releases into July or earlier. The opportunity and ability to shift the releases will vary depending on the water year type, total augmentation volume available, and by which basin the augmentation originates from. Consistent with the 2008 BiOp, not all water can be shifted from August releases, particularly in the Payette Basin. The changes in release patterns for 2013 will be highlighted in the following discussion for each basin.

As discussed in the previous section, the 60,000 acre-feet of natural flow rights from the IWRB was provided for augmentation during the irrigation season, which ends on October 31.

To the extent possible, Reclamation will strive to benefit local resources when implementing its proposed actions while also meeting its obligations under the BiOp and incidental take statement.

Upper Snake Basin:

The primary strategy for shifting augmentation releases in the upper Snake Basin above Milner involves higher release rates and a relaxation of down-ramping criteria at the conclusion of augmentation. Formerly, the down-ramping rate of 100 cfs per day was very restrictive and forced lower release rates to avoid a protracted down-ramping period.

With the restrictive rate, it was necessary to extend augmentation releases past Milner into mid to late August in most years. The BiOp anticipated that augmentation releases can be provided in May or June in most average or lower water years, and by the end of July in most wet years. Flow augmentation releases in 2013 at Milner commenced on May 1 and lasted until June 4, at a consistent rate of about 2,250 to 2,400 cfs with a day or two of ramping on either end. At the conclusion of flow augmentation, releases were reduced to 0 cfs until Idaho Power Company began releasing their own storage and leased water starting on July 22 and ending August 9 at a flow rate of about 1,500 cfs, with a two day spike to 2,700 cfs in early August. The Idaho Power releases were not counted toward Reclamation's flow augmentation volumes.

Boise Basin:

Augmentation flows began on the Boise system on May 15 and ended by May 30. The shift to earlier delivery of flow augmentation in the Boise Basin relies on a combination of two strategies. First, in flood control years when the system is assured to fill, some portion of the augmentation volume will be delivered by reserving an equivalent amount of system space that is not allowed to refill. In other words, as flood control operations near their end, releases are not cut in order to fill the last remaining space; that vacant space is considered to have been delivered as flow augmentation instead.

The second strategy for shifting augmentation timing from the Boise Basin is to increase the rate of releases. This relies on the opportunity to make higher releases before the recreational floating season begins on the river. Floating season typically begins once streamflows through the city of Boise drop below 1,500 cfs, the weather warms up, the river is inspected and hazards removed, and the county officially opens the launch facilities. Once floating season begins, flows are limited to about 500 cfs above irrigation demand for public safety concerns. Reclamation will look for opportunities to make higher releases; in flood control years this can easily be accomplished by maintaining higher releases rather than immediately ramping down at the end of flood control. In non-flood control years, it can likely be accomplished by releasing in May (or early June) before the float season begins.

There were no flood control operations in 2013 and the reservoir system failed to refill by a significant margin. Flow augmentation releases were made from May 15 to May 30 at a rate of approximately 625 cfs above irrigation demand. Due to the May release timeframe and limited volume, total flow rate through the city of Boise was less than 1,500 cfs and there were no safety concerns.

Payette Basin:

Augmentation releases from the Payette system began on June 5 after the reservoir system had filled and began to draft; releases ended by August 31. Due to water quality concerns in Lake Cascade, some amount of flow augmentation water will continue to be released in August. Strategies for shifting the timing of flow augmentation from the

Payette Basin include a combination of deliberately foregoing an amount of refill during years when the reservoirs would otherwise fill (similar to the Boise strategy), or by increasing the initial rate of release in order to “front load” a portion of the augmentation volume, primarily by holding higher releases following flood control.

This second strategy was employed in 2013, although uncertainty in the water supply and timing of reservoir fill limited the amount of water that could be “front loaded”. There were no active flood control operations required in 2013, with releases from Cascade Reservoir held at a modest 800 cfs until the reservoir system reached full on June 4, at which point releases from both reservoirs were increased to invoke drafting. The release from Cascade Reservoir was set at the maximum powerhouse capacity of approximately 2,200 to 2,250 cfs, where it remained through the end of July. Releases were reduced to about 1,800 cfs or slightly lower during August. No drafting of reservoir storage for irrigation would have been necessary prior to July 4², so all reservoir draft (including Deadwood Reservoir) up to that point (59,981 acre-feet) was for release of flow augmentation water. The flow rate credited towards augmentation water was variable depending on unregulated tributary runoff and irrigation demands, but averaged about 1,120 cfs in June and July, and about 800 cfs in August.

Mean Monthly Inflows to Brownlee Reservoir³

April	11,243 cfs
May	14,035 cfs
June	10,739 cfs
July	7,123 cfs
August	7,563 cfs

November 1 Carryover

At the end of the 2013 irrigation season (November 1, 2013), the carryover storage into the 2014 water year was as follows:

Upper Snake above Milner Dam	731,168 acre-feet
Boise River system	301,530 acre-feet
Payette River system	425,187 acre-feet

OTHER REASONABLE AND PRUDENT MEASURES

NMFS incidental take statement contains two other RPMs and associated terms and conditions to ensure that Reclamation implements its salmon flow augmentation program as described in its Upper Snake Biological Assessment (BA) and supporting documents.

² Unregulated runoff in the basin was sufficient to meet irrigation demands through July 3 according to preliminary State water accounting.

³ Source: http://www.nwrfc.noaa.gov/runoff/runoff_summary.cgi?date=2013

New Contracts for Water Stored in Reclamation Projects

RPM 13.3.1 states:

“Because Reclamation’s salmon flow augmentation program is heavily dependent on annual water rentals from Idaho’s water rental pools, which are variable and insecure sources. Due to this variability Reclamation must consult with NMFS prior to issuing a new contract that would reduce streamflows or reduce Reclamation’s ability to meet salmon flow augmentation commitments, as described in its proposed actions, or whenever Reclamation otherwise determines that listed salmon or steelhead species or critical habitat may be affected.”

NMFS Upper Snake BiOp at page 13-4.

NMFS’s intent is to ensure that any contract actions taken by Reclamation result in “an improvement or ‘zero net impact’ on Snake River flows and on Reclamation’s ability to provide up to 487,000 acre-feet for salmon flow augmentation.”

Reclamation committed in its March 2009 Decision Document to consult with NMFS before entering into new, renewed, or supplemental contracts for storage water, if Reclamation determined that it would affect its ability to provide salmon flow augmentation water as described in the Upper Snake BA, or if it determined that listed species or critical habitat may be adversely affected.

In the past year, Reclamation has not entered into any new contracts for uncontracted space in any of the reservoirs covered in the Upper Snake BiOp. Further, Reclamation has not entered into any renewed or supplemental contracts for storage water that would result in reduced streamflows or affect Reclamation’s ability to meet its salmon flow augmentation commitments.

Annual Coordination of the Salmon Flow Augmentation Program

RPM 13.3.2 states:

“Reclamation must continue to coordinate annually with the Technical Management Team (TMT) and Regional Forum when planning and implementing its annual salmon flow augmentation program.”

NMFS Upper Snake BiOp at page 13-4.

Reclamation continued to coordinate with the TMT and Regional Forum when planning and implementing its 2013 annual salmon flow augmentation program. Reclamation staff regularly attended these meetings and provided estimates and updates of the salmon flow augmentation program acquisitions and delivery.

CONSERVATION RECOMMENDATIONS

NMFS included voluntary conservation recommendations in its Upper Snake BiOp at page 12-3, recommending Reclamation's participation in Total Maximum Daily Load (TMDL) planning efforts in the Upper Snake River Basin. In its March 2009 Decision Document, Reclamation noted that it was generally amenable to implementing the conservation recommendations to the extent funding and staffing can be made available within its existing authorities. The following summarizes relevant activities that Reclamation has been involved over the past year.

As part of the Idaho and Oregon's on-going TMDL development and implementation activities, Snake River Area Office and/or Pacific Northwest Region Reclamation staff continued to participate in all appropriate watershed advisory group and watershed council meetings in the Upper Snake River Basin. These included activities in the Lower Boise River, North Fork Payette River, Lower Payette River, Mid Snake River, Lake Walcott, and American Falls Reservoir Watershed Advisory Groups, as well as the Owyhee/Malheur Watershed Council.

Reclamation continued to provide technical assistance to irrigation system operators and other appropriate entities throughout its project areas in the Upper Snake River Basin. Reclamation's Pacific Northwest Region Laboratory also provided financial assistance for analytical laboratory services to several entities in the basin in 2013. These entities included:

- Idaho Department of Environmental Quality – Twin Falls Region
- Idaho Department of Environmental Quality – Pocatello Region
- Oregon Department of Environmental Quality
- U.S. Geological Survey
- Aberdeen Springfield Irrigation District
- Owyhee Watershed Council
- A & B Irrigation District
- Minidoka Irrigation District
- Lake Walcott Watershed Advisory Group
- Malheur Soil & Water Conservation District

Upper Snake Temperature Monitoring - Project Summary

In coordination with the U.S. Geological Survey, Reclamation continued to operate a comprehensive basin-wide temperature monitoring study for the Upper Snake River Basin. Data collection at 52 sites in the Upper Snake River and major tributaries was initiated in 2004 and will continue through at least 2015. An interim summary of the data collected thus far was prepared in 2007 and further updated in 2008. In 2013, Reclamation prepared a summary report that compiled temperature trends at Snake River main-stem sites from 2004-2011. An annual report was also compiled for the 2012 data.

Reclamation is currently compiling the data collected in 2013 and will complete an annual report in early 2014. The project will culminate with a completion report describing temperature conditions in the Upper Snake River and relationships to storage, irrigation, and hydropower facilities in the basin from 2004 through 2015.

Attachment 1

Stipulated Augmentation Rental -Water District 01

Stipulated Augmentation Rental Dist 01

November 1 Carryover 1000s af	<----- April 1 Heise Forecast (Apr-Sep) 1000s af ----->						
	< 2,450	< 2,920	< 3,450	< 4,208	< 5,042	< 5,670	> 5,670
0	0	0	0	0	150000	185000	185000
100	0	0	0	0	150000	185000	185000
200	0	0	0	0	150000	185000	185000
300	0	0	0	0	150000	185000	185000
400	0	0	0	0	150000	185000	185000
500	0	0	0	0	150000	185000	185000
600	0	0	0	60000	150000	185000	185000
700	0	0	0	60000	150000	185000	185000
800	0	0	0	60000	150000	185000	185000
900	0	0	60000	60000	150000	185000	185000
1,000	0	0	60000	60000	150000	185000	185000
1,100	0	0	60000	60000	150000	185000	185000
1,200	0	0	60000	60000	150000	185000	185000
1,300	0	0	60000	60000	150000	185000	185000
1,400	0	0	60000	60000	150000	185000	185000
1,500	0	0	100000	150000	185000	185000	185000
1,600	0	0	100000	150000	185000	185000	185000
1,700	0	0	100000	150000	185000	185000	185000
1,800	0	0	100000	150000	185000	185000	185000
1,900	0	0	100000	150000	185000	185000	185000
2,000	0	0	100000	150000	185000	185000	185000
2,100	0	0	100000	150000	205000	205000	205000
2,200	0	0	100000	150000	205000	205000	205000
2,300	0	0	100000	150000	205000	205000	205000
2,400	0	0	100000	150000	205000	205000	205000
2,500	0	0	100000	150000	205000	205000	205000
2,600	0	0	185000	185000	205000	205000	205000
2,700	0	0	185000	185000	205000	205000	205000
2,800	0	0	185000	185000	205000	205000	205000
2,900	0	0	185000	185000	205000	205000	205000
3,000	60000	60000	185000	185000	205000	205000	205000
3,100	60000	60000	185000	185000	205000	205000	205000
3,200	100000	100000	185000	185000	205000	205000	205000
3,300	100000	100000	185000	185000	205000	205000	205000
3,400	100000	100000	185000	185000	205000	205000	205000
3,500	100000	100000	185000	185000	205000	205000	205000
3,600	100000	100000	185000	185000	205000	205000	205000