



— BUREAU OF —  
RECLAMATION

# **Annual Progress Report**

**2020 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**

**Columbia-Pacific Northwest Region**

## **Mission Statements**

The Department of the Interior conserves and manages the Nation's natural resources and cultural heritage for the benefit and enjoyment of the American people, provides scientific and other information about natural resources and natural hazards to address societal challenges and create opportunities for the American people, and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities to help them prosper.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

## **INTRODUCTION**

On May 5, 2008, National Oceanic Atmospheric Administration (NOAA) Fisheries 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, replacing the previous 2005 Upper Snake BiOp. In the 2008 Upper Snake BiOp, Reclamation committed to shifting flow augmentation releases to earlier in the migration season when Snake River flows are more beneficial to Federally listed fish. The incidental take statement included reasonable and prudent measures (RPMs) and associated terms and conditions to minimize incidental take to 13 stocks of listed salmon and steelhead referred to as Evolutionary Significant Units.

This document reports the status of activities related to the 2008 incidental take statement, including Reclamation's salmon flow augmentation program (flow augmentation), status of new contracts and coordination activities. This report meets Reclamation's responsibility to submit an annual progress report by December 31 of each year.

Flow augmentation releases in 2020 mark the twelfth year of operations under the 2008 Upper Snake BiOp, in which Reclamation committed to shifting flow augmentation releases to earlier in the migration season when Snake River flows are more beneficial to Federally listed salmon and steelhead.

## **RECLAMATION'S 2020 SALMON FLOW AUGMENTATION PROGRAM**

Reclamation was able to provide 487,000 acre-feet of water for flow augmentation in water year 2020 (Table 1). The water supply and operational conditions in 2020 are summarized below.

### **Basin Conditions**

At the beginning of the 2020 water year, reservoir carryover storage was near average to above average in the Snake River basin above Brownlee Reservoir. In the Payette, November carryover storage from 2019 was 99 percent of average. In the Boise and Upper Snake basins, November carryover storage from 2019 was 126 percent of average in both of those basins.

In the early winter through December, well below normal precipitation fell in all three of the basins. Snowpack at the beginning of January was 61 percent of normal in the Payette, 63 percent of normal in the Boise, and 84 percent of normal in the Upper Snake. The snowpack improved as the winter progressed, particularly in the Payette and Upper Snake, while the Boise continued to be dry. On April 1, the snowpack was 97 percent of normal in the Payette, 88 percent of normal in the Boise, and 114 percent of normal in the Upper Snake.

Observed unregulated runoff was reflective of the snowpack gained during the winter. The April through July unregulated runoff in the Payette and Boise basins was below average at 88 percent of average for the Payette River at Horseshoe Bend, and 66 percent of average for the Boise River near Boise. With a bigger snowpack, unregulated runoff in the Upper

Snake basin was above average at 106 percent for the Snake River at Heise. Flood risk management (FRM) operations were required in the Payette and Upper Snake basins but were not required in the Boise basin leading up to and during the spring runoff of 2020.

Sufficient runoff occurred to fill the Upper Snake and Payette basin reservoirs, but due to the dry conditions, refill of the Boise reservoir system was not achievable. The Upper Snake reservoir system reached a maximum combined physical storage content of 4,104,619 acre-feet, approximately 81,076 acre-feet below full capacity of 4,185,695 acre-feet, and would have filled completely but for early irrigation storage usage and early flow augmentation releases after FRM operations were completed. The Payette reservoir system reached a maximum storage content of 793,045 acre-feet, approximately 7,407 acre-feet below full capacity of 800,452 acre-feet, and would have filled completely but for early flow augmentation releases. The Boise reservoir system was not able to refill due to lack of water supply, reaching a maximum storage content of 862,779 acre-feet. The Boise reservoir system maximum storage content peaked at approximately 86,921 acre-feet below its full capacity of 949,700 acre-feet.

In Eastern Oregon, the snowpack conditions were near normal, but dry soil conditions following the summer of 2019 and a lack of any major spring rain events in 2020 resulted in below normal runoff conditions.

Despite dry conditions in the Boise basin, the above normal runoff conditions and full reservoirs in the Payette and Upper Snake basins resulted in additional rental being secured from those basins that allowed the higher threshold flow augmentation volume of 487,000 acre-feet to be targeted.

### **In-Season Management Considerations for Meeting Flow Augmentation Targets**

Reclamation manages 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 preliminary 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.

Reclamation made a concerted effort to provide early timing flow augmentation, including foregoing physical fill of the Payette reservoir system and commencing flow augmentation releases from the Upper Snake reservoir system as soon as FRM operations were complete in order to initiate flow augmentation releases in those systems as early as possible.

Reclamation was able to provide 487,000 acre-feet of water for flow augmentation in 2020. Table 1 summarizes the source, amount, and timing for Reclamation's 2020 salmon flow augmentation program.

**Table 1. Summary of Reclamation’s 2020 Salmon Flow Augmentation Releases**

<b>SOURCE</b>	<b>AMOUNT (acre-feet)</b>	<b>DATES OF DELIVERY</b>
<b>Upper Snake above Milner Dam</b>		
Reclamation Uncontracted Space	22,510	June 16 – July 22
Reclamation Powerhead Space	0	
Rentals – Attachment 1 Chart	150,000 <sup>A</sup>	
Rentals – Extraordinary Circumstances Provision	63,876 <sup>A</sup>	
<b>Subtotal</b>	<b>236,386</b>	
<b>Payette</b>		
Reclamation Uncontracted Space	95,608	June 26 – August 31
Rentals	75,900	
<b>Subtotal</b>	<b>171,508</b>	
<b>Boise</b>		
Reclamation Uncontracted Space	807	July 2 – July 10
Reclamation Powerhead Space	0	
Rentals	650	
<b>Subtotal</b>	<b>1,457</b>	
<b>Natural Flows</b>		
IWRB Lease (Idaho)	60,000 <sup>B</sup>	April 3 – August 31 <sup>C</sup>
Skyline Farms (Oregon)	17,649	
<b>Subtotal</b>	<b>77,649</b>	
<b>TOTAL</b>	<b>487,000</b>	

<sup>A</sup> The “Stipulated Augmentation Rental – Water District 01” Chart (see Attachment 1) specified Water District 01 would provide 150,000 acre-feet of flow augmentation rental. Additional rental of 63,876 acre-feet was secured through the Extraordinary Circumstances provisions of the Water District 01 Rental Pool Procedures, allowing 487,000 acre-feet to be met in 2020.

<sup>B</sup> See section titled “Lease of Natural Flow Water Rights Below Milner Dam.”

<sup>C</sup> 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. See section titled “Lease of Natural Flow Water Rights Below Milner Dam” for further explanation.

### **Uncontracted Space and Space Reacquired for Flow Augmentation**

Reclamation’s 95,608 acre-feet of uncontracted space assigned to flow augmentation in the Payette system fully refilled. In the Boise system, due to dry conditions, only 807 acre-feet of Reclamation’s 40,932 acre-feet of uncontracted space assigned to flow augmentation filled. In the Upper Snake above Milner, 22,510 acre-feet of uncontracted storage assigned to flow augmentation was allocated due to evaporation (out of a total possible of 22,896 acre-feet of space). The entire accrual to Reclamation’s uncontracted space assigned to flow augmentation in the Payette, Boise, and Upper Snake basins was used for flow augmentation. Last-to-fill space in the Upper Snake received a full allocation in 2020.

The 17,649 acre-feet of natural flow rights Reclamation has acquired in Oregon (Skyline Farms) were fully available again in 2020.

### **Annual Rentals**

Reclamation relies heavily each year on annual rentals from water users to acquire water for its flow augmentation program. Storage rentals in the Payette and Boise basins are made available by willing sellers. With full reservoirs in the Payette Basin, 75,900 acre-feet of rental water was made available. However, with dry conditions in the Boise basin and less than full reservoirs, only 650 acre-feet of rental water was made available.

Water availability from the Water District 01 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 negotiation of the 2004 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 water year 2020, the chart specified that Water District 01 would provide 150,000 acre-feet of rental water. Carryover from the 2019 water year on November 1, 2019 for purposes of the chart was 2,330,979 acre-feet, and the April 1 runoff forecast was 4,035,000 acre-feet (107 percent of average) for the April through September period. The 2020 April through September observed runoff was 3,952,509 acre-feet (104 percent of average).

With the typical rental sources exhausted, water available for flow augmentation totaled 423,124 acre-feet. With good water supplies in the Upper Snake above Milner basin, Reclamation worked closely with Water District 01 representatives to secure an additional 63,876 acre-feet of rental through the Extraordinary Circumstances provision in the Water District 01 Rental Pool Procedures. This provision allows for Reclamation to rent additional water if it is available from the Upper Snake. This additional rental allowed the 487,000 acre-feet target to be met in 2020.

### **Powerhead Space**

As part of the 2004 Nez Perce Water Rights Settlement, Reclamation may utilize powerhead space in Anderson Ranch and Palisades reservoirs for flow augmentation. In order for powerhead space to be used, the sum from all other flow augmentation sources must be less than 427,000 acre-feet, and powerhead space cannot be used to exceed a flow augmentation total of 427,000 acre-feet. In addition, Palisades Reservoir powerhead space may only be used after all other flow augmentation sources have been exhausted, including Anderson Ranch Reservoir powerhead space. The use of powerhead space was not necessary in 2020 because of the additional rental secured from the Upper Snake basin, and the powerhead accounts remained full.

### **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 Idaho 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 flow 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 of Idaho for 60,000 acre-feet of this water for flow 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.

### **Timing Considerations for Flow Augmentation Releases**

The timing of flow augmentation releases depends on the individual basin and source of water. In the 2008 Upper Snake BiOp, Reclamation committed to shifting flow augmentation releases to earlier in the migration season when Snake River flows are more beneficial to Federally listed fish. The primary goals of the earlier flow augmentation releases is to minimize the amount of warmer water provided in August and to shift it into July or earlier. The opportunity and ability to shift flow augmentation will vary depending on the water year type, total flow augmentation volume available, and by which basin the flow augmentation originates from. Consistent with the 2008 Upper Snake BiOp, not all flow augmentation can be shifted from August, particularly in the Payette basin. The changes in flow augmentation release patterns for 2020 will be highlighted in the following discussion for each basin.

As discussed in the previous sections, the 60,000 acre-feet of Idaho natural flow rights from the IWRB was provided for flow 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 2008 Upper Snake BiOp and corresponding incidental take statement.

#### **Upper Snake Basin:**

The strategy for flow augmentation releases in the Upper Snake Basin is to increase flows past Milner advantageous to downstream salmon and steelhead. The 2008 Upper Snake BiOp anticipated that flow 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 2020 at Milner commenced on June 16 following the end of FRM operations, ramping up to approximately 5,000 to 5,500 cubic feet per second (cfs) by June 19. Sadly, a

search and recovery operation downstream of Milner Dam near Twin Falls, Idaho, required releases to be decreased to aid in the recovery of a drowning victim. Releases from Milner Dam were decreased starting June 21, reaching approximately 300 to 400 cfs on June 23. Following the search and recovery operation, flow augmentation releases were increased starting on June 29, once again reaching 5,000 cfs by July 1. Flow augmentation continued at approximately 4,500 to 5,000 cfs through July 16, and were then gradually decreased, ultimately completing the flow augmentation releases on July 22. At the conclusion of flow augmentation, releases continued at an average rate of approximately 1,500 cfs to deliver water owned or leased by Idaho Power Company. The Idaho Power Company releases continued through August 6; they were not counted toward Reclamation's flow augmentation volumes.

### **Boise Basin:**

Flow augmentation releases began in the Boise system on July 2 and lasted until July 10. Delivering water during this period in the Boise basin for flow augmentation relies on a combination of two strategies. First, in years with FRM operations when the system is assured to fill, some portion of the flow augmentation volume will be delivered by reserving an equivalent amount of system space that is not allowed to refill. In other words, as FRM operations near their end, releases are not reduced 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 flow 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 (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 boat launch facilities. Once floating season begins, flows are limited to approximately 500 cfs above irrigation demand for public safety concerns. Reclamation will look for opportunities to make higher releases; in years with FRM operations, this can be accomplished by maintaining higher releases rather than immediately ramping down at the end of FRM. In non-FRM years, it can likely be accomplished by releasing flow augmentation in May (or early June) before the floating season begins.

In 2020, FRM operations were not necessary and due to very dry conditions, it originally did not appear that any flow augmentation would be available from the Boise system. However, a small amount of uncontracted and rented storage did become available for flow augmentation as the reservoirs neared their peak for the season in early July. Releases from the Boise system were increased to a release rate approximately 200 cfs higher than was necessary for irrigation requirements for a short period in early July, and flow augmentation from the Boise system was completed on July 10.

### **Payette Basin:**

Flow augmentation releases from the Payette system began on June 26 as the reservoir system neared full, with releases ending on 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), and by increasing the initial rate of release in order to “front load” a portion of the flow augmentation volume, primarily by holding higher releases following FRM operations.

Both strategies were employed in 2020. Inflows were sufficient to fill the reservoir system but refill was deliberately missed to allow for inflows to pass downstream for flow augmentation. Releases from both reservoirs were increased to invoke drafting. Discharge from Lake Cascade averaged around 1,800 cfs during the flow augmentation period in the Payette basin, less than the maximum powerhouse capacity of approximately 2,200 cfs. The flow rate credited towards flow augmentation water was variable depending upon unregulated tributary runoff and irrigation demands, but averaged approximately 2,000 cfs in June, 1,550 cfs in July, and approximately 1,000 cfs in August.

### **Mean Monthly Inflows to Brownlee Reservoir<sup>1</sup>**

April	17,738 cfs
May	20,759 cfs
June	20,466 cfs
July	12,882 cfs
August	9,384 cfs

### **November 1 Carryover**

At the end of the 2020 irrigation season (November 1, 2020), the carryover storage into the 2021 water year was as follows:

Upper Snake above Milner Dam	1,984,638 acre-feet <sup>2</sup>
Boise River system	387,587 acre-feet
Payette River system	452,451 acre-feet

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<sup>1</sup> Source: [http://www.nwrhc.noaa.gov/runoff/runoff\\_summary.php?date=10/01/2020](http://www.nwrhc.noaa.gov/runoff/runoff_summary.php?date=10/01/2020)

<sup>2</sup> This number reflects the actual November 1 carryover in the Upper Snake above Milner. For purposes of determining the quantity of storage available for flow augmentation rental in 2021 from the Water District 01 Rental Pool (Upper Snake above Milner Dam), 20,000 acre-feet will be added to actual carryover (totaling 2,004,638 acre-feet of calculated carryover) to mitigate against any impacts to flow augmentation reliability resulting from rentals for hydropower purposes in 2020.

## **OTHER REASONABLE AND PRUDENT MEASURES**

In addition to submitting an annual report documenting salmon flow augmentation releases, NOAA Fisheries Service's 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.

### **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 NOAA Fisheries 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.”

NOAA Fisheries’ 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 NOAA Fisheries 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.

Reclamation, in partnership with the Idaho Water Resource Board, proposes to raise Anderson Ranch Dam 6 feet. This raise would capture and store additional water. The proposal would create up to an additional 29,145 acre-feet of storage, study of this additional storage and operations to fill this space indicate that Reclamation’s flow augmentation deliveries would not be impacted. Formal ESA Section 7 consultation with NOAA Fisheries on the proposed action began November 9, 2020.

## **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.”

NOAA Fisheries Service Upper Snake BiOp (page 13-4)

Reclamation continued to coordinate with the TMT and Regional Forum when planning and implementing its 2020 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.

# Attachment 1

## Stipulated Augmentation Rental -Water District 01

November 1	Stipulated Augmentation Rental Water Dist 01							
Carryover	April 1 - Sept 30 Heise Forecast 1000s af							
1000s af	< 2,450	< 2,920	< 3,450	< 4,208	< 5,042	< 5,670	> 5,670	
0	0	0	0	0	0	150000	185000	185000
100	0	0	0	0	0	150000	185000	185000
200	0	0	0	0	0	150000	185000	185000
300	0	0	0	0	0	150000	185000	185000
400	0	0	0	0	0	150000	185000	185000
500	0	0	0	0	0	150000	185000	185000
600	0	0	0	60000	150000	185000	185000	185000
700	0	0	0	60000	150000	185000	185000	185000
800	0	0	0	60000	150000	185000	185000	185000
900	0	0	60000	60000	150000	185000	185000	185000
1,000	0	0	60000	60000	150000	185000	185000	185000
1,100	0	0	60000	60000	150000	185000	185000	185000
1,200	0	0	60000	60000	150000	185000	185000	185000
1,300	0	0	60000	60000	150000	185000	185000	185000
1,400	0	0	60000	60000	150000	185000	185000	185000
1,500	0	0	100000	150000	185000	185000	185000	185000
1,600	0	0	100000	150000	185000	185000	185000	185000
1,700	0	0	100000	150000	185000	185000	185000	185000
1,800	0	0	100000	150000	185000	185000	185000	185000
1,900	0	0	100000	150000	185000	185000	185000	185000
2,000	0	0	100000	150000	185000	185000	185000	185000
2,100	0	0	100000	150000	205000	205000	205000	205000
2,200	0	0	100000	150000	205000	205000	205000	205000
2,300	0	0	100000	150000	205000	205000	205000	205000
2,400	0	0	100000	150000	205000	205000	205000	205000
2,500	0	0	100000	150000	205000	205000	205000	205000
2,600	0	0	185000	185000	205000	205000	205000	205000
2,700	0	0	185000	185000	205000	205000	205000	205000
2,800	0	0	185000	185000	205000	205000	205000	205000
2,900	0	0	185000	185000	205000	205000	205000	205000
3,000	60000	60000	185000	185000	205000	205000	205000	205000
3,100	60000	60000	185000	185000	205000	205000	205000	205000
3,200	100000	100000	185000	185000	205000	205000	205000	205000
3,300	100000	100000	185000	185000	205000	205000	205000	205000
3,400	100000	100000	185000	185000	205000	205000	205000	205000
3,500	100000	100000	185000	185000	205000	205000	205000	205000
3,600	100000	100000	185000	185000	205000	205000	205000	205000