

**ROGUE BASIN PROJECT  
CONSERVATION RELEASE SEASON OPERATING PLAN  
WATER YEAR 2016**

**1. General**

Operational planning for the conservation release season for the Rogue Basin Project begins with the January forecast and continues through October. The conservation release season plan identifies flow requirements for the Rogue and Applegate Rivers and storage needs at Lost Creek and Applegate Reservoirs. The conservation release plan is developed in May with the Natural Resource Conservation Service (NRCS) May 1 water supply forecast. The plan is submitted for review and comment in mid-May and finalized about the first week in June. **Although the plan is “final”, the release plan is continuously updated as conditions change.**

The operating plan described herein is based on the NRCS May 2016 forecast for 50 percent probability of exceedance for Lost Creek and Applegate Reservoir inflows.

**a. Hydrologic Conditions.** Hydrologic conditions indicate that Water Year 2016 so far has been a higher than average flow year for the Rogue Basin. Observed inflow to Lost Creek Reservoir is about 119 percent of average so far for Water Year 2016, October through April. Inflow to Applegate Reservoir is about 145 percent of average so far for Water Year 2016, October through April. Runoff in Water Year 2016 for the Rogue Basin overall as measured at the Rogue River near Raygold gage is about 123 percent of average. Runoff in October and November was below average. Runoff from December through April has been well above average. Runoff in December, January and March was about 150 percent of average as measured at Raygold. Snow water equivalent (SWE) peaked at 110 to 115 percent of median in late March and early April. On April 1 SWE was 111 percent of median, on May 1 due to above average temperatures in April the SWE had dropped to 87 percent of median. According to the NRCS about half of the snow measurement sites in the Rogue and Umpqua basins were snow-free by May 1 and most of those sites had melted out one to two weeks earlier than normal.

The NRCS forecasts are based on a statistical correlation of current conditions with past flow outcomes in the 30-year period of record 1981 to 2010. Snow water equivalent is one of the significant variables in the computation of the forecast. As a result of the snow depletion in April the forecast went down significantly from April 1 to May 1. The forecast now indicates flows below average for the remainder of Water Year 2016.

The 2016 conservation plan was developed based on the NRCS May forecast. The forecast with 50 percent probability of exceedance for Lost Creek inflow for the May through September time period is 470,000 acre-feet, 95 percent of average. The forecast with 50 percent probability of exceedance for Applegate inflow for the May through September time period is 62,000 acre-feet, 83 percent of average.

**b. Coordination.** The Rogue Basin Projects will be operated for the congressionally authorized purposes of flood damage reduction, fisheries enhancement, irrigation, municipal and industrial water supply, water quality, hydropower, and lake recreation. The conservation plan is developed and implemented in close coordination with the State of Oregon through the Oregon Water Resources Department (OWRD).

The flow objectives for Lost Creek and Applegate are based on meeting the authorized purposes. Conservation water storage in Lost Creek Reservoir is specifically allocated to the purposes of fisheries enhancement, irrigation, and municipal and industrial water supply. Conservation water storage in Applegate Reservoir is specifically allocated to the purposes of fisheries enhancement and irrigation. The fisheries enhancement objectives associated with the releases from the Rogue Basin projects are listed in Tables 1 and 2.

## **2. Conservation Plan**

The planned releases are based on the NRCS May forecast for 50 percent probability of exceedance. This is a Lost Creek inflow volume of 470,000 acre-feet for May through September, 95 percent of average. For Applegate, this is an inflow volume of 62,000 acre-feet, 83 percent of average.

About 180,000 acre-feet is released from Lost Creek in most years to meet the authorized purposes of fisheries enhancement, irrigation, and municipal and industrial water supply. In Lost Creek Reservoir there is an additional 135,000 acre-feet of carryover storage available for the use in years of water shortage. Lost Creek Reservoir filled this spring on May 2. It is not anticipated that carryover storage will be used this year given the hydrologic conditions to date and the nearly average flow forecast. The plan assumes that a total of about 180,000 acre-feet of storage will be released from Lost Creek.

In years when Applegate fills there is about 62,000 acre-feet of storage available to meet the authorized purposes of fisheries enhancement and irrigation. Applegate has an additional 9,000 acre-feet of carryover storage. Applegate Reservoir filled this spring on May 8. The plan assumes a total of about 62,000 acre-feet of storage will be released. Typically some portion of the Applegate carryover storage is released in the fall depending on conditions before the onset of winter.

The temperature control facilities at Lost Creek and Applegate projects will be operated to achieve outflow temperature targets provided by the State of Oregon.

Table 1 and Table 2 summarize the planned releases at Lost Creek and Applegate for the 2016 conservation plan. Figures 1 and 2 illustrate the range of elevations and flows that have a 50 percent probability of occurring at Lost Creek Reservoir and Applegate Reservoir, respectively, while following the planned releases.

## **3. Management Approach**

The Corps will continue to coordinate with the State of Oregon agencies. The purpose of these meetings is to continue to assess the hydrologic situation as it develops, and if

necessary, make occasional changes to the planned releases. Weekly coordination meetings may be preceded by internal conference calls among Corps employees.

The volume of conservation storage remaining at Lost Creek and Applegate will be closely monitored through the conservation season. **If appropriate, planned releases will be adjusted to ensure objectives are met.**

**Table 1. 2016 State Recommendations for Flow Releases from Lost Creek Reservoir**

Period	Average Proposed release (cfs)	Fishery Objective	ODFW target at Agness (Max Temp.)	Period	Average Proposed release (cfs)	Fishery Objective
May 11-20 21-31	2,600	a,b	66°F/67°F	Aug 1-10	1,650	f
	2,800	a,b	67°F	11-20	2,100	e,f
				21-31	2,100	e,f
June 1-10 11-20 21-30	2,800	a,b	68°F	Sept 1-5	2,000	e,f
	2,800	a,b	68°F/69°F	6-10	1,400	d,e,f,g
	2,600	a,b	69°F	11-20	1,200	c,d,g
July 1-10 11-20 21-31	1,650	a,b,f	--	21-30	1,050	
	1,650	f	--	Oct 1-10	1,050	c,d,g
	1,650	f	--	11-20	1,000	c,d,g
				21-31	1,000	c,d,g

ODFW Fisheries Management Objectives Affected by River Flow:

- (a) Minimize pre-spawning mortality among adult spring chinook.
- (b) Minimize dewatering of juvenile salmonids.
- (c) Minimize dewatering of spring chinook redds in 2016-17.
- (d) Minimize early emergence by spring chinook fry in spring 2017.
- (e) Minimize pre-spawning mortality among adult fall chinook.
- (f) Increase survival rates of juvenile salmonids in summer.
- (g) Minimize the proportion of fall chinook that spawn above Gold Ray Dam (site).

**Table 2. 2016 State Recommendations for Flow Releases from Applegate Reservoir**

Period	Average Proposed release (cfs)	Fishery Objective		Period	Average Proposed release (cfs)	Fishery Objective
May 11-20 21-31	570	a,d		Sept 1-10	300	a
	490	a,d		11-20	250	a
				21-30	200	a
June 1-10 11-20 21-30	370	a,d		Oct 1-10	175	b
	350	a,d		11-20	175	b
	350	a		21-30	150	b
July 1-10 11-20 21-31	350	a				
	350	a				
	350	a				
Aug 1-10 11-20 21-31	350	a				
	350	a				
	350	a				
<p>ODFW Fisheries Management Objectives Affected by River Flow:</p> <p>(a) Increase summer rearing area for juvenile coho salmon, juvenile steelhead, and cutthroat trout.</p> <p>(b) Increase spawning distribution of fall chinook salmon.</p> <p>(c) Minimize dewatering loss of fall chinook eggs and fry in 2016-17.</p> <p>(d) Enhance rearing conditions for juvenile fall chinook salmon.</p>						

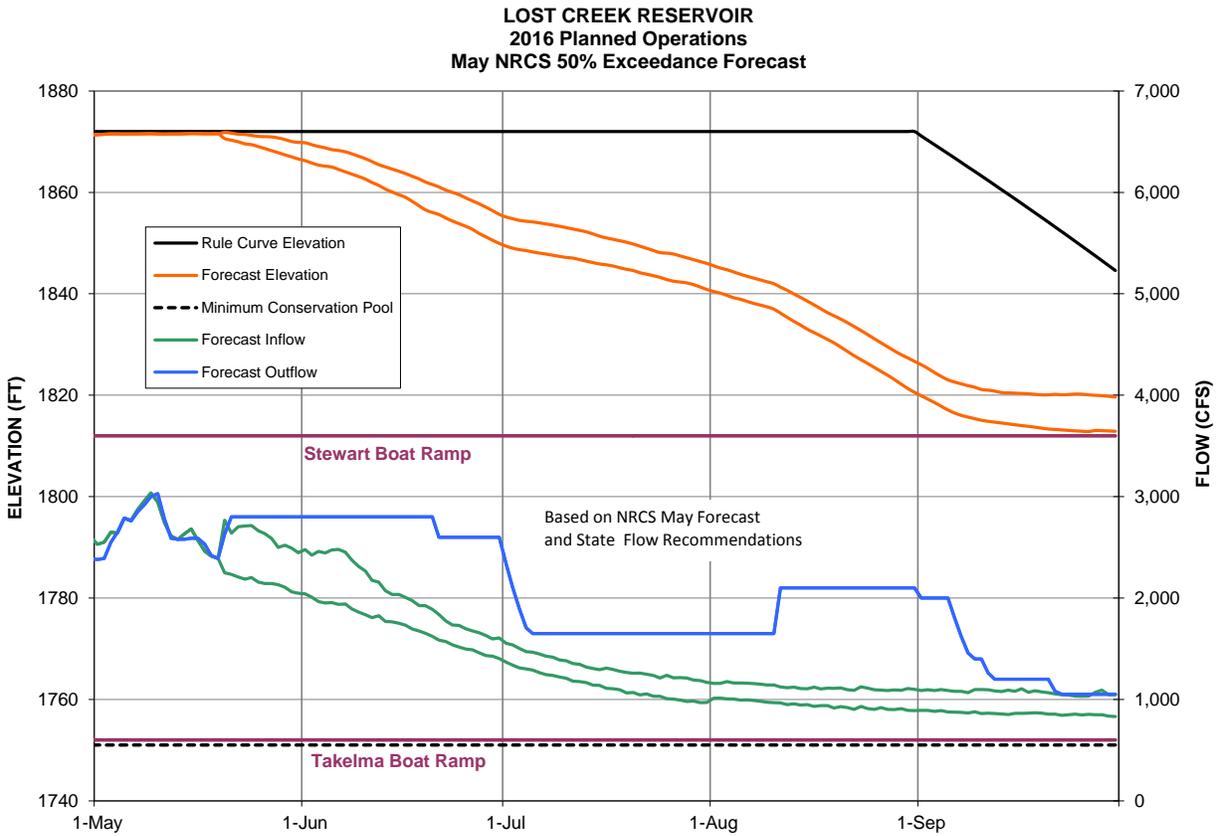


Figure 1. Lost Creek Reservoir Forecast Operations.

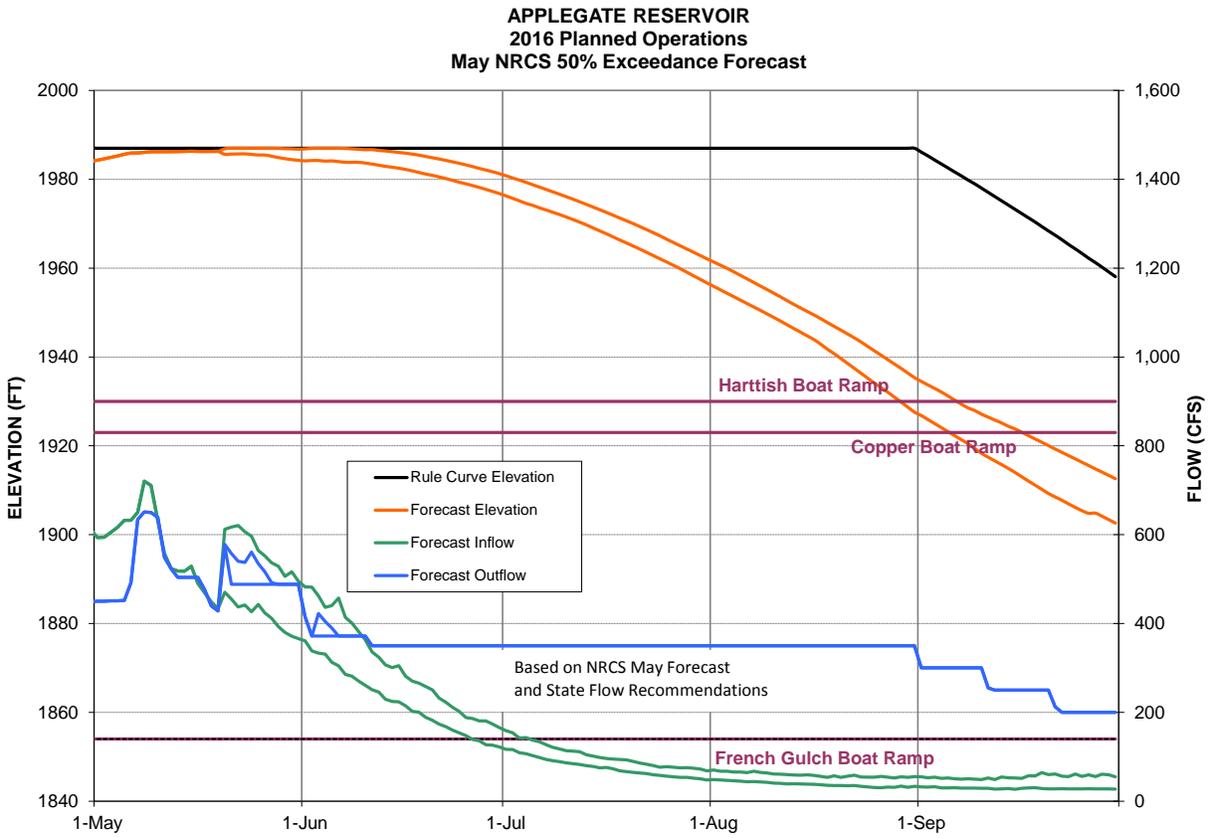


Figure 2. Applegate Reservoir Forecast Operations.