Draft Spring/Summer Update to the 2009 Water Management Plan

March 1, 2009

Introduction

This draft spring/summer update (SSU) to the 2009 Water Management Plan (WMP) provides updated information regarding how the Action Agencies will operate Federal Columbia River Power System (FCRPS) reservoirs during the 2009 spring and summer seasons. The SSU does not repeat all of the information in the WMP, but instead provides additional updated information and specifies operations based on the current water supply forecasts, flow projections, and fish research. The SSU provides water supply forecasts for the spring and summer time period that are not yet available when the WMP itself is finalized. Operations contained in the SSU are based on the most current water supply forecast; which is considered to be the best available forecast of the expected runoff water volume, and thus determines how the FCRPS can be operated in 2009. The SSU also outlines 2009 research operations planned for FCRPS projects. Fish research studies are routinely conducted to test the performance of current or new fish passage structures and/or operations and their effects on fish passage and survival. The Studies Review Work Group (SRWG) finalizes research study plans in the early spring prior to the beginning of the juvenile salmonid spring migration. This draft S/S Update summarizes project operations that support these research activities as best possible where the operations have been coordinated and finalized with regional entities.

Water Supply Forecasts (WSF)

There are four forecast points used to determine BiOp operation of the FCRPS reservoirs; Lower Granite, The Dalles, Libby, and Dworshak. The latest forecasts are presented in Table 1.

Table 1.— Latest water supply forecasts available as of March 1, 2009.

Forecast Point	Forecast Period	Forecast Date	Value (MAF)	Percent Normal[E]
Lower Granite	April – July	March early bird	16.1[A]	75
Lower Granite	April – July	Final		
The Dalles	April – August	March early bird	73.3[A]	79
The Dalles	April – August	Final		
Hungry Horse	April - August	February Final	2.10[B]	102
Hungry Horse	May - July	May Final		
Libby	April - August	February Final	5.4[C]	86
Libby	April - August	April Final		
Dworshak	April – July	February Final	2.7 [C]	100
Dworshak	April – July	May Final		

All forecasts are from the National Weather Service Northwest River Forecast Center (RFC) unless otherwise indicated:
A – RFC forecast (value used to set operations for spring flow objectives).
B – U.S. Bureau of Reclamation Forecast. The March final forecast (April –August forecast period) determines the minimum Hungry Horse and Columbia Falls flows for the remainder of the calendar year (March-December).
C – Corps of Engineers Forecast.
D – Value used to set operations for Libby sturgeon pulse.
E - Percent of normal for RFC and BOR forecasts is based on 1971 – 2000 average. Percent of normal for Corps forecasts is based on 1929 – 1999 average.

Seasonal Flow Objectives

Spring

The spring seasonal flow objectives for Lower Granite are established using the Northwest River Forecast Center's April final water supply forecast for the period of April-July. The spring seasonal flow objective for McNary is established using the Northwest River Forecast Center's April final water supply forecast for the period of April-August at The Dalles. The Priest Rapids spring seasonal flow objective is fixed and is not dependent on any water supply forecast. Based on the March Early Bird forecast, spring flow objectives are shown Table 2.

Table 2.— Spring seasonal flow objectives at Lower Granite, Priest Rapids and McNary dams.

Project	Spring Seasonal Flow Objective
Lower Granite	85 kcfs
Priest Rapids	135 kcfs
McNary	220 kcfs

Summer

The summer seasonal flow objective for Lower Granite Dam is based on the Northwest River Forecast Center's June final water supply forecast for the period of April-July. Based on the latest water supply forecast (March Early Bird), preliminary summer seasonal flow objectives are shown in Table 3. The McNary summer seasonal flow objective is always 200 kcfs and is not dependent on the water supply forecast.

Table 3.— Summer seasonal flow objectives at Lower Granite and McNary dams.

Project	Summer Seasonal Flow Objective
Lower Granite	50 kcfs
McNary	200 kcfs

Storage Project Operations

Libby Dam - Bull Trout Flows

Bull trout minimum flows are specified in the 2006 Libby Sturgeon Biological Opinion (BiOp). Per the BiOp, the project will initiate bull trout flows of 6 kcfs on May 15 and maintain the minimum flow criteria until the sturgeon pulse begins. After the sturgeon pulse, and/or July through August, the bull trout minimum will be the tiered minimum (6-9 kcfs) based upon the COE May Final WSF. For the month of September, the bull trout minimum flow will return to 6 kcfs.

Libby Dam - Sturgeon Pulse

Per the 2006 Libby Sturgeon Biological Opinion, the sturgeon pulse volume is determined from a tiered flow structure based upon the Corps' May Final WSF for the period of April-August. The sturgeon pulse volume for 2009 will not be set until May. Measurement of sturgeon volumes excludes the 4 kcfs minimum flow releases from the dam. A request with specific flow level and date recommendations will be submitted to TMT prior to initiating an operation for sturgeon.

Libby Dam - April 10 and Refill Objectives

Libby's April 10 objective is projected to be 2,441.9 ft based upon the Corps' Feb Final WSF of 5,436 KAF. The project has been on minimum flows of 4,000 cfs since January 1, 2009 and is projected to be releasing minimum flows through April 30, 2009. The current elevation at Libby is 2,406.3 ft as of February 27, 2009. Inflows have been less than the instantaneous minimum of 4,000 cfs and Libby's elevation is not projected to be at the April 10 objective. Since the project must provide sturgeon flows and is usually requested by SOR to maintain a flat flow (after the sturgeon flows) to reach 2,449 ft by the end of September, the project is often not able to refill to 2,459 ft. The volume to reach 2,449 ft is salmon flow augmentation water.

Hungry Horse Dam

Water Supply Forecast and Minimum Flows

The Bureau of Reclamation's February final WSF for April – August was 2,103 kaf (102% percent of normal). Minimum flow requirements from Hungry Horse and Columbia Falls are currently set at 900 cfs and 3,500 cfs, respectively. The March final forecast will set the minimum flow requirements from March through December.

Hungry Horse April 10 and June 30 Refill Objectives

The Bureau of Reclamation computes Hungry Horse's final April 10 elevation objective by linear interpolation between the March 31 and April 15 forecasted flood control elevations based on the March final WSF. Based on the February final WSF, the April 10 objective is elevation 3529.0 feet. Low winter stream flows coupled with required minimum discharges for Columbia Falls is expected to draft Hungry Horse below the April 10 elevation objective. Hungry Horse Dam is expected to refill by approximately June 30. A late snowmelt runoff may delay refill to sometime after June 30 in order to avoid excessive spill at the project.

Grand Coulee Dam

Grand Coulee April 10 and June 30 refill Objective

The Bureau of Reclamation computes Grand Coulee's final April 10 elevation objective by linear interpolation between the March 31 and April 15 forecasted flood control elevations based on the March final WSF for The Dalles. Based on the February final WSF and the corresponding shifted flood control elevations, the April 10 objective is elevation 1278.4 ft. Based on the February final WSF, maintaining the chum protection level below Bonneville Dam and achieving the April 10 elevation objective could be difficult. However, it is the intention and goal of the Action Agencies to fulfill both objectives as possible. Grand Coulee is expected to refill to 1,290.0 ft by approximately June 30.

Grand Coulee Summer Draft Limit

The Grand Coulee summer draft limit is set by the magnitude of the July final April – August WSF at The Dalles Dam. Based on the February final WSF at The Dalles, the summer draft limit for Grand Coulee is expected to be 1,278 ft. This draft limit will be modified if the Lake Roosevelt drawdown component of Washington's Columbia River Water Management Program (CRWMP) is implemented (WMP Section 4.6.6).

Dworshak Dam

Summer Draft for Temperature Control and Flow Augmentation

A key operation at Dworshak Dam is to draft cold water from the Dworshak reservoir in July, August, and September to cool water temperatures and provide flow augmentation in the Lower Snake River for the benefit of migrating salmon and steelhead. In-season modeling will be done to provide information to aid in making the decisions of when and how to draft Dworshak. The summer reservoir draft limit is 1,520 ft. This limit determines the maximum draft available for summer flow augmentation from Dworshak. The Action Agencies will draft Dworshak to 1,520 ft in September. The extension of the draft limit from August 31 into September reflects requirements for about 200 kaf to be held for release as defined per the Snake River Basin Adjudication Agreement.

Upper Snake River Flow Augmentation

Based on February final WSFs, the Bureau of Reclamation is hopeful that a minimum of 427 kaf and up to 487 kaf of Upper Snake River flow augmentation will be provided in 2009.

Flood Control Operations

Table 4.— Flood control elevations as of February 1, 2009.

	Date						
Project	Jan 31	Feb 28	Mar 15	Mar 31	Apr 10	Apr 15	Apr 30
MCDB							
ARDB	1430.5	1422.9		1414.6		1414.6	1414.6
LIB	2426.2	2436.4	2441.1	2441.6		2441.9	2442.2
DCDB	1839.3	1812.5	1811.6	1811.6		1811.6	1811.6
HGH	3544.1	3537.7		3531.1		3528.0	3524.7
GCL	1290.0	1290.0		1283.3		1283.2	1267.0
BRN	2077.0	2058.1		2062.4		2066.4	2068.4
DWR	1528.5	1525.6		1513.7		1500.3	1514.5

Dworshak/Grand Coulee flood control shift

To be determined.

Minimum Operating Pool (MOP)

All four Lower Snake River projects are scheduled to reach MOP elevations by April 3 (Table 5). The MOP elevation ranges will be adjusted as needed to meet authorized project purposes including navigation. At lower river flows (<40.0 kcfs) under current fish spill operations, the Little Goose reservoir MOP elevation may be adjusted as necessary to provide adequate depth over the entrance sill to the Lower Granite Dam navlock.

Table 5.— Snake River MOP elevations.

Project	Operation	Lower Range Elevation (ft)	Upper Range Elevation (ft)
Ice Harbor	MOP	437.0	438.0
Lower Monumental	MOP	537.0	538.0
Little Goose[A]	MOP	633.0	634.0
Lower Granite	MOP	733.0	734.0

A – To be adjusted as necessary to provide adequate depth over entrance sill at Lower Granite navlock.

At John Day, the forebay is being operated within a 1.5 ft range of the minimum level that provides irrigation pumping from April 10 to September 30. The initial range is 262.5 and 264.0 feet. The minimum level will be adjusted upward as necessary to facilitate irrigation pumping.

Hanford Reach

The Vernita Bar protection level flow was set at a level of 60.0 kcfs based on the 2008 redd count. This year's Vernita Bar protection operation end date will be determined in coming months.

Operation Considerations

To be determined.

Water Quality - Spill Priority List

River operations are conducted to meet State Clean Water Act total maximum daily load (TMDL) dissolved gas standards. Also, research operations at a particular dam can be impacted by involuntary spill. Thus spill at research projects is given lower priority in the hope that involuntary spill can be eliminated during research. The latest spill priority list was issued November 5, 2008 as shown below. Involuntary spill will occur in the order shown. The priorities will be modified in 2009 prior to the spill season as needed based on spill operations, status of fish migration, spill/transport strategies, and research studies.

1. Ice Harbor
2. Lower Monumental
3. Little Goose
4. Lower Granite
5. Wanapum
6. Priest Rapids
7. Rocky Reach
8. Wells
9. Rock Island
10. Bonneville
11. John Day
12. McNary
13. Grand Coulee
14. Chief Joseph
15. Dworshak
16. The Dalles

2009 Spill Operations

To be determined.

2009 Fish Passage Research

To be determined.