

Spring / Summer Update to the 2003 Water Management Plan

Introduction

The purpose of the Spring / Summer update to the Water Management plan is to provide information on how the Action Agencies plan on operating the Federal Columbia River Power System (FCRPS) reservoirs during the spring and summer seasons. The update is needed because water supply forecasts for the spring and summer time period are not available at the time the water management plan is written. The Spring / Summer update has current water supply forecasts that give the action agencies a better idea on how the FCRPS will be operated.

The Spring / Summer update does not repeat information in the Water Management plan unless more detail or changes need to be provided because of the availability of water supply forecasts and other new information.

Water Supply Forecasts

There are four forecast points that are used to determine BiOp operation of the FCRPS reservoirs. The latest forecasts are given below.

| Forecast Point | Forecast Period | Forecast Date | Value (February Final Forecast) |
|----------------|-----------------|----------------|---------------------------------|
| Lower Granite | April – July | March Final | 14.7 MAF |
| Lower Granite | April – July | March Final | 14.7 MAF |
| The Dalles | April – August | March Final | 63.7 MAF |
| The Dalles | April – August | March Final | 63.7 MAF |
| Hungry Horse | April – August | February Final | 1.53 MAF ^B |
| Libby | April - August | March | 4.2 MAF ^C |

All forecasts from Weather Service unless otherwise indicated

A – Value that is used to set operations

B – USBR Forecast C – COE Forecast

Note the March Final Forecast put out by the Weather Service assume future precipitation to be normal.

Flow Objectives

Spring

The April final water supply forecast sets the spring flow objectives for Lower Granite and McNary. The Priest Rapids spring flow objective is fixed (not dependent on the water supply forecast). Based on the February final forecast the spring flow objectives are shown below.

| Project | Spring Flow Objective |
|---------------|-----------------------|
| Lower Granite | 85 KCFS |
| McNary | 220 KCFS |
| Priest Rapids | 135 KCFS |

Summer

Based on the latest water supply forecast (February Final) the summer flow objectives are shown below. The McNary summer flow objective is fixed (not dependent on the water supply forecast).

| Project | Summer Flow Objective |
|---------------|-----------------------|
| Lower Granite | 50 KCFS |
| McNary | 200 KCFS |

Prospects For Meeting Flow Objectives

An analysis of the likelihood of meeting the flow objectives was conducted by using the Corps' QADJ runs of the HYSSR model. This model uses the volume of the current water supply forecast and applies the 59 shapes observed in the runoff record to this runoff volume. The likelihood of meeting the flow objectives and refilling the reservoirs by the targeted dates is a function of both the runoff volume and the timeframe in which the snowmelt and stream flows occur.

Summary of 18 MAR 2003 QADJ Model Runs

P
PRJTBLMR1 18-Mar-03

Assumptions:

*

Streamflows were adjusted to the March Final Water Supply Forecast and shaped 59 different ways based on observed historical runoff.

* Starting Elevations were actual Feb 28th ending elevations

*

Grand Coulee operates to meet 70 kcfs at Priest Rapids Feb - Apr 30. Coulee attempts to meet McNary flows of 220 kcfs in May to draft limit of El. 1260, and targets El. 1288, 1285, 1280, and 1278 in June, July, Aug 15, and Aug 30. .

* Hungry Horse operates to VARQ, meets minimum flows at Columbia Falls, targets full in June, El. 3550 in July, El. 3545 Aug 15, and 3540 ft by 31 Aug.

* Brownlee operates to flood control elevations.

*

Dworshak targets full in June, releases a maximum of 14,000 cfs in July - August for LWG and targets 1520 ft by 31 Aug.

* Libby operates on minimum flow (4000 cfs) or VARQ flood control March - June. Targets El. 2454 in July with minimum flow of 6000 cfs, targets El. 2449, and 2439 on Aug 15 and Aug 30.

Results:

Priest Rapids Meets Flow Objectives of 70 kcfs Jan - Apr1
and 135 kcfs Apr2 - Jun:

| Month | Occurrences out of 59 Years | Average Flow for 59 Years (kcfs) |
|--------------|--|---|
| Mar | 59 | 75 |
| Apr1 | 59 | 74 |
| Apr2 | 1 | 84 |
| May | 43 | 139 |
| Jun | 2 | 102 |

Lower Granite Meets Flow Objectives of 85 kcfs in Apr - May, 73.3 kcfs in June and 50 kcfs in Jul - Aug:

| Month | Occurrences out of 59 Years | Average Flow for 59 Years (kcfs) |
|--------------|--|---|
| Apr2 | 4 | 59 |
| May | 29 | 84 |
| Jun | 30 | 74 |
| Jul | 4 | 40 |
| Aug1 | 0 | 35 |
| Aug2 | 0 | 22 |

McNary Meets Flow Objectives of 220 kcfs in Apr2 - Jun and 200 kcfs in Jul - Aug:

| Month | Occurrences out of 59 Years | Average Flow for 59 Years (kcfs) |
|-------|-----------------------------|----------------------------------|
| Apr2 | 0 | 138 |
| May | 28 | 212 |
| Jun | 4 | 172 |
| Jul | 0 | 138 |
| Aug1 | 0 | 128 |
| Aug2 | 0 | 105 |

Bonneville Meets Flow Objectives of 125 kcfs in Feb - Apr:

| Month | Occurrences out of 59 Years | Average Flow for 59 Years (kcfs) |
|-------|-----------------------------|----------------------------------|
| Mar | 19 | 123 |
| Apr1 | 42 | 137 |
| Apr2 | 53 | 157 |

Projects Refill by June

Fill to Flood Control

| Month | Occurrences out of 59 Years | Average Elevation on 30 Jun for 59 Years | Full | Average | | Flood Control Elevation |
|--------------|-----------------------------|--|--------|-----------------------------|------------------------------------|-------------------------|
| | | | | Occurrences out of 59 Years | Elevation on 15 April for 59 Years | |
| Libby | 31 | 2457.0 | 2459.0 | 0 | 2402.8 | 2452.5 |
| Hungry Horse | 2 | 3555.4 | 3560.0 | 0 | 3507.5 | 1553.6 |
| Grand Coulee | 59 | 1288.0 | 1288.0 | 15 | 1277.6 | 1283.3 |
| Dworshak | 58 | 1599.9 | 1600.0 | 6 | 1572.3 | 1585.5 |

Note: Grand Coulee operates to meet McNary, 150 kcfs in June, measure refill at El 1288.

Storage Project Operation

Libby

Tier

The current water supply forecast (4.18 MAF) for Libby (April – August) puts Libby operations in the 1st tier of operation for sturgeon called for in the USFWS 2000 Biological Opinion. Tier 1 call for no Sturgeon flow and minimum bull trout releases in July of 6 kcfs.

Sturgeon Pulse

Based on the current water supply forecast no Libby Sturgeon pulse will occur this year.

Libby Outlook

Graph not available yet

Hungry Horse

HGH Minimum Flows

Based on the Bureau of Reclamation March forecast for April – August of 1534 kaf, the minimum outflow from Hungry Horse will be 687 cfs and the minimum flow for Columbia Falls will be 3,372 cfs.

HGH Outlook

Graph not available yet

Grand Coulee

GCL Summer Draft Limit

Based on the current April – August forecast at the Dalles, the summer draft limit for Grand Coulee is expected to be 1278 feet.

Dworshak

DWR Outlook

Graph not available yet

Summer Draft for Temperature Control

Modeling will be done to help decide how to draft Dworshak for temperature control.

Upper Snake Operation

The Bureau of Reclamation currently estimates that between 250 and 300 kaf will be available for flow augmentation in 2003.

Flood Control

The flood control elevations based on the March Final Forecast are as follows.

Note April 10th flood control elevations are interpolated. There is no official method of determining April 10th flood control elevations

| | Date | | | | | | |
|---------|--------|--------|--------|--------|--------|--------|--------|
| Project | 31-Jan | 28-Feb | 15-Mar | 31-Mar | 10-Apr | 15-Apr | 30-Apr |
| ARDB | 1435.5 | 1437.1 | | 1438.5 | | 1438.5 | 1438.5 |
| LIB | 2426.7 | 2436.4 | 2441.1 | 2448 | 2451.0 | 2452.5 | 2456.8 |
| DCDB | 1849.8 | 1828.6 | | 1830.9 | | 1830.9 | 1830.9 |
| HGH | 3548.1 | 3551.7 | | 3553 | 3555.4 | 3556.6 | 3554.3 |
| GCL | 1290 | 1290 | | 1283.3 | 1283.3 | 1283.3 | 1283.3 |
| BRN | 2077 | 2070 | | 2076.3 | | 2076.7 | 2077 |
| DWR | 1560.3 | 1565 | | 1578.9 | 1583.3 | 1585.5 | 1585.5 |

Dworshak/Grand Coulee flood control shift

No information yet.

MOP

Mop operation for the Lower Snake projects is scheduled is scheduled to start April 3rd. The table below shows currently planed MOP operations.

| Project | Lower Range | | Upper Range | |
|------------------|-------------|-----------|-------------|-----------|
| | Operation | Elevation | Operation | Elevation |
| Ice Harbor | Mop | 437 | Mop + 1 | 438 |
| Lower Monumental | Mop | 537 | Mop + 1 | 538 |
| Little Goose | Mop | 633 | Mop + 1 | 634 |
| Lower Granite | Mop | 733 | Mop + 1 | 734 |

At John Day the forebay will be operated within a 1.5 foot range between 262.5 and 265.0 feet from April 10th to September 30th.

Hanford Reach

Info not available yet

Spill for Juvenile Fish Passage

Note: Discussions are still ongoing about the spill research program this year. No information will be provided when available.

Spring

Since the forecasted average flow at Lower Granite is below 85 kcfs, there will be no spill for juvenile fish passage at Lower Granite, Little Goose, and Lower Monumental.

LWG

No voluntary spill except when Removable Spillway Weir test is ongoing. See under research below.

LGS

No voluntary spill.

LMN

No voluntary spill.

IHR

Spill to gas cap 1800 – 0500 spill limited to 45 kcfs 0500 – 1800.

MCN

Spill to gas cap 1800 – 0600.

JDA

See under research below.

TDA

Spill 40% of the outflow up to the gas cap 24 hours a day.

BON

See under research below.

Summer

Summer spill planning date is June 21 for the Lower Snake projects and July 1st for the Lower Columbia projects.

LWG

No summer spill

LGS

No summer spill

LMN

No summer spill

IHR

Spill to gas cap 1800 – 0500 spill limited to 45 kcfs 0500 – 1800.

MCN

No summer spill

JDA

See under research below.

TDA

Spill 40% of the outflow up to the gas cap 24 hours a day.

BON

See under research below.

Water Quality

Spill Priority List

In cases of involuntary spill the projects are to spill in the following order McNary, John Day, The Dalles, Bonneville, Little Goose, Ice Harbor, Lower Granite, Priest Rapids, Rocky Reach, Wells, Rock Island, Wanapum, Chief Joseph. Note this order is subject to change during the season. Also note that Lower Monumental is not on the spill priority list due tailrace erosion and repair work.

Research

Note for more detail on research see the 2003 Fish Passage Plan, Appendix A, Special Operations and Studies. Only research activities the significantly impact project operations are discussed below.

Removable Spillway Weir – Lower Granite

Proposed Operation of Lower Granite and the RSW

Due to the possible low water conditions the following protocol has been developed for testing the RSW at Lower Granite this year.

Testing Triggers

1. At the March Final forecast 14.7, if the projected runoff for the period of April to July at Lower Granite is:
 - Less than 13 MAF, then no test is proposed; or
 - **Equal to or greater than 13 MAF, then prepare for test and more to next test trigger.**

2. At the April Final Forecast (April 7 – 10th), if the projected runoff for the period of April to July at Lower Granite is:
 - Equal or greater than 16.5 million acre feet (MAF), then proceed with full season (6-week) test plan; or
 - Equal to 13 MAF² but less than 16.5 MAF, then proceed with shorter duration (3-week) test plan.

Test Plans

Full Season Test – Meets all of the objectives of the 2003 for both, survival and performance. Depending on the performance of the stand-alone RSW tests in 2003 and the plans for testing of a modified BGS in 2004, a RSW operation may be developed and implemented as early as the 2004 season.

- Duration: 6 weeks
- Experimental Test Conditions: 2 or 3 conditions (plus an alternate condition in the event flows exceed 120kcfs during the testing period. This item was introduced in the FFDRWG meeting Dec. 11, 2002, but was not included in the low flow test discussed at the Jan. 22, 2003 meeting).
- Test Flows: >70kcfs

Shorter Duration Test – Meets all of the objectives of 2003 for both, survival and performance. The data will be sufficient to provide the information desired to confirm RSW survival to keep the Ice Harbor fast track on schedule and for the development BGS 2004 test and the BGS Ice Harbor implementation schedule. The resulting data to support 2004 operation decisions for LGR RSW may not be as strong as the data from the full season test but should be sufficient to provide direction for 2004 operation.

- Duration: 3 weeks
- Experimental Test Conditions: 2 conditions (BiOp and one RSW)
- Test Flows: expected 3 week period with average flow >70kcfs, but initiate study during lower flows, 50 to 70kcfs, to avoid overlap of peak fish run. Test may be split into 3 periods to reduce the potential of spilling spill during the migration peak.

John Day Project Survival Test

Spill will alternate between 0% day / 60% night and 30% day / 30% night according to the schedule below

| Date | Spill Treatment | Date | Spill Treatment | Date | Spill Treatment |
|-----------|-----------------|-----------|-----------------|-----------|-----------------|
| 9-Jun-03 | 30 day/30 night | 26-Jun-03 | 0 day/60 night | 13-Jul-03 | 30 day/30 night |
| 10-Jun-03 | 30 day/30 night | 27-Jun-03 | 30 day/30 night | 14-Jul-03 | 30 day/30 night |
| 11-Jun-03 | 0 day/60 night | 28-Jun-03 | 30 day/30 night | 15-Jul-03 | 0 day/60 night |
| 12-Jun-03 | 0 day/60 night | 29-Jun-03 | 30 day/30 night | 16-Jul-03 | 0 day/60 night |
| 13-Jun-03 | 30 day/30 night | 30-Jun-03 | 30 day/30 night | 17-Jul-03 | 30 day/30 night |
| 14-Jun-03 | 30 day/30 night | 1-Jul-03 | 0 day/60 night | 18-Jul-03 | 30 day/30 night |
| 15-Jun-03 | 0 day/60 night | 2-Jul-03 | 0 day/60 night | 19-Jul-03 | 30 day/30 night |
| 16-Jun-03 | 0 day/60 night | 3-Jul-03 | 30 day/30 night | 20-Jul-03 | 30 day/30 night |
| 17-Jun-03 | 30 day/30 night | 4-Jul-03 | 30 day/30 night | 21-Jul-03 | 0 day/60 night |
| 18-Jun-03 | 30 day/30 night | 5-Jul-03 | 0 day/60 night | 22-Jul-03 | 0 day/60 night |
| 19-Jun-03 | 0 day/60 night | 6-Jul-03 | 0 day/60 night | 23-Jul-03 | 0 day/60 night |
| 20-Jun-03 | 0 day/60 night | 7-Jul-03 | 0 day/60 night | 24-Jul-03 | 0 day/60 night |
| 21-Jun-03 | 30 day/30 night | 8-Jul-03 | 0 day/60 night | 25-Jul-03 | 30 day/30 night |
| 22-Jun-03 | 30 day/30 night | 9-Jul-03 | 30 day/30 night | 26-Jul-03 | 30 day/30 night |
| 23-Jun-03 | 0 day/60 night | 10-Jul-03 | 30 day/30 night | 27-Jul-03 | 30 day/30 night |
| 24-Jun-03 | 0 day/60 night | 11-Jul-03 | 0 day/60 night | 28-Jul-03 | 30 day/30 night |
| 25-Jun-03 | 0 day/60 night | 12-Jul-03 | 0 day/60 night | 29-Jul-03 | 0 day/60 night |
| | | | | 30-Jul-03 | 0 day/60 night |

BON Adult Passage study

Day time spill levels will alternate between 75 KCFS (Fallback limit) (low) and spilling to the TDG Gas Cap as shown below.(high)

| Date | Spill Treatment | Date | Spill Treatment | Date | Spill Treatment | Date | Spill Treatment |
|-----------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|
| 10-Apr-03 | Low | 16-May-03 | High | 21-Jun-03 | Low | 27-Jul-03 | Low |
| 11-Apr-03 | Low | 17-May-03 | High | 22-Jun-03 | Low | 28-Jul-03 | Low |
| 12-Apr-03 | High | 18-May-03 | Low | 23-Jun-03 | High | 29-Jul-03 | High |
| 13-Apr-03 | High | 19-May-03 | Low | 24-Jun-03 | High | 30-Jul-03 | High |
| 14-Apr-03 | Low | 20-May-03 | High | 25-Jun-03 | High | 31-Jul-03 | High |
| 15-Apr-03 | Low | 21-May-03 | High | 26-Jun-03 | High | 1-Aug-03 | High |
| 16-Apr-03 | High | 22-May-03 | Low | 27-Jun-03 | Low | 2-Aug-03 | Low |
| 17-Apr-03 | High | 23-May-03 | Low | 28-Jun-03 | Low | 3-Aug-03 | Low |
| 18-Apr-03 | High | 24-May-03 | High | 29-Jun-03 | Low | 4-Aug-03 | High |
| 19-Apr-03 | High | 25-May-03 | High | 30-Jun-03 | Low | 5-Aug-03 | High |
| 20-Apr-03 | Low | 26-May-03 | Low | 1-Jul-03 | High | 6-Aug-03 | Low |
| 21-Apr-03 | Low | 27-May-03 | Low | 2-Jul-03 | High | 7-Aug-03 | Low |
| 22-Apr-03 | High | 28-May-03 | Low | 3-Jul-03 | Low | 8-Aug-03 | Low |
| 23-Apr-03 | High | 29-May-03 | Low | 4-Jul-03 | Low | 9-Aug-03 | Low |
| 24-Apr-03 | Low | 30-May-03 | High | 5-Jul-03 | High | 10-Aug-03 | High |
| 25-Apr-03 | Low | 31-May-03 | High | 6-Jul-03 | High | 11-Aug-03 | High |
| 26-Apr-03 | Low | 1-Jun-03 | Low | 7-Jul-03 | High | 12-Aug-03 | Low |
| 27-Apr-03 | Low | 2-Jun-03 | Low | 8-Jul-03 | High | 13-Aug-03 | Low |
| 28-Apr-03 | High | 3-Jun-03 | High | 9-Jul-03 | Low | 14-Aug-03 | High |
| 29-Apr-03 | High | 4-Jun-03 | High | 10-Jul-03 | Low | 15-Aug-03 | High |
| 30-Apr-03 | High | 5-Jun-03 | Low | 11-Jul-03 | High | 16-Aug-03 | High |
| 1-May-03 | High | 6-Jun-03 | Low | 12-Jul-03 | High | 17-Aug-03 | High |
| 2-May-03 | Low | 7-Jun-03 | High | 13-Jul-03 | Low | 18-Aug-03 | Low |
| 3-May-03 | Low | 8-Jun-03 | High | 14-Jul-03 | Low | 19-Aug-03 | Low |
| 4-May-03 | High | 9-Jun-03 | Low | 15-Jul-03 | High | 20-Aug-03 | High |
| 5-May-03 | High | 10-Jun-03 | Low | 16-Jul-03 | High | 21-Aug-03 | High |
| 6-May-03 | Low | 11-Jun-03 | High | 17-Jul-03 | Low | 22-Aug-03 | Low |
| 7-May-03 | Low | 12-Jun-03 | High | 18-Jul-03 | Low | 23-Aug-03 | Low |
| 8-May-03 | Low | 13-Jun-03 | Low | 19-Jul-03 | Low | 24-Aug-03 | Low |
| 9-May-03 | Low | 14-Jun-03 | Low | 20-Jul-03 | Low | 25-Aug-03 | Low |
| 10-May-03 | High | 15-Jun-03 | High | 21-Jul-03 | High | 26-Aug-03 | High |
| 11-May-03 | High | 16-Jun-03 | High | 22-Jul-03 | High | 27-Aug-03 | High |
| 12-May-03 | Low | 17-Jun-03 | Low | 23-Jul-03 | High | 28-Aug-03 | Low |
| 13-May-03 | Low | 18-Jun-03 | Low | 24-Jul-03 | High | 29-Aug-03 | Low |
| 14-May-03 | High | 19-Jun-03 | High | 25-Jul-03 | Low | 30-Aug-03 | High |
| 15-May-03 | High | 20-Jun-03 | High | 26-Jul-03 | Low | 31-Aug-03 | High |