SYSTEM OPERATIONAL REQUEST: #2008-MT-2

The following State, Federal, and Tribal Fish & Wildlife Managers have participated in the preparation and support this SOR: Montana Fish Wildlife & Parks & Kootenai Tribe of Idaho

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FROM: Jim Litchfield & Brian Marotz, State of Montana

DATE: July 2, 2008

SUBJECT: **Operation of Libby and Hungry Horse through September 2008**

Biological Objectives

For the period from July through September operate Libby and Hungry Horse reservoirs to begin partial implementation of the 2008 NOAA Biological Opinion for the FCRPS as follows. Limit outflow fluctuations by operating to ramping rates set in 2000 USFWS Biological Opinion to avoid stranding bull trout.

Hungry Horse

- Refill the reservoir while minimizing the risk of filling and spilling.
- During the period July-September plan a stable outflow of 4.5 kcfs[1].
- Review this operation periodically to balance reservoir elevations and flow rates. Provide even or gradually-declining flows during summer months and minimize the risk of a double peak in flows during the summer.
- Limit voluntary spill to avoid exceeding Montana State TDG standards of 110% to the extent possible.

Libby

- During the period July- September plan the following stable outflows.
  - June 21 – July 31 17 kcfs

[1] All planned flow rates should actually be set at appropriate turbine loadings nearest the planned rate that provide for smooth operations.

- August 1 – August 31 12 kcfs

- Flows for September will be determined in August when more is known about runoff volumes and reservoir elevations.
- Review this operation periodically to balance reservoir elevations and flow rates. Provide even or gradually-declining flows during summer months and minimize the risk of a double peak in flows during the summer.
- Limit voluntary spill to avoid exceeding Montana State TDG standard of 110 %.

Justification

Biological conditions for resident fish in Montana and the Idaho portion of the Kootenai River are greatly improved by gradually ramping down river discharge, after the spring freshet, toward stable, or gradually declining, summer flows through September (extended into October if possible). Stable or gradually declining flows are especially important during the biologically productive summer/fall months. Montana's and the Idaho portion of the Kootenai River's growing season are short; rivers become productive in late June, after the spring freshet, and remain productive until water temperature drops to 6 degrees C in October. Peak production occurs in three months, July through September.

River flows must remain above bull trout minimums to protect fish from the impacts of dewatering areas of critical habitat. Most productive riffle habitat is inundated when flows are 9 kcfs in the Kootenai and about 5.5 kcfs in the Flathead mainstem. Higher flows are slightly more productive but with diminished returns due to the channel morphology.

It is important to avoid short-term flow reductions. Short-term flow reductions dewater river substrate. When it is hot and dry (or freezing) the benthos (algae, insects etc.) dry out (or freeze) and die in just a few hours or days. It takes about a month and a half to become productive once a dewatered zone becomes wet again.

To preserve productive aquatic habitat it is important to minimize flow fluctuations. For this reason it is important to remain within allowable ramping rates when changing outflows at either Libby or Hungry Horse. River morphology causes ramp rates to be more restrictive as flows approach minimum flow and less restrictive as stage approaches bank full. This is because the wetted perimeter changes rapidly at low flows, but at higher flows, wetted perimeter changes less rapidly as flows increase.

Rationale for Implementing the Proposed Compromise Operation

The compromise operation proposed in this SOR is not the operation called for in the NOAA 2008 Biological Opinion for the FCRPS, nor is it the operation recommended by the Council in the Mainstem Amendments and supported by the Independent Science Advisory Board (ISAB). However, the proposed operation is a partial step in the direction of the Biop and Council recommendations and is designed to enhance the productivity of resident fish in this transition year between the 2004 and 2008 Biops.

The proposed operation provides additional flows out of Montana reservoirs in June and July when greater numbers of Snake River fall chinook are migrating through the lower Columbia River. The flow proposed from Libby reservoir from June 21st until July 31st is 17 kcfs. This is the same flat flow that is predicted to be needed to draft the reservoir to 20 feet from full at the end of August. Following this high flow period it is recommended to ramp flows down to 12 kcfs for August. Flows for September will be developed when more is known about runoff volumes and reservoir elevations in August.

These flows are designed to provide improved aquatic environment in both the rivers and reservoirs in Montana and areas within the Kootenai Tribe's aboriginal territory. At Hungry Horse a flat flow of 4.5 kcfs was chosen as a compromise between the 6.5 kcfs that is forecast to be required to draft the reservoir to 20 feet from full by the end of August and the 2.8 kcfs that would be the flow under the 2008 Biop. In this way the proposed compromise operation recognizes that this year is a transition year between the Montana operations called for in the 2000 Biop and the operation now in the 2008 Biop. The proposed flows are designed to provide better aquatic conditions in the rivers and reservoirs in Montana without significantly affecting flows in the Lower Columbia.

Last year's flows during July and August averaged 160 kcfs. Based on the latest STP forecast, flows this year during the same period are estimated to be 187 kcfs. This means that flows and velocities in the Lower Columbia this year will likely be 27 kcfs higher than last year and the operation proposed in this SOR will result in improved water velocities in the Lower Columbia than was achieve in 2007.

The Corps, BOR, BPA and NOAA have the flexibility to implement the proposed compromise because the Fish Operations Plan (FOP) does not provide detailed recommendations for summer operations at Libby and Hungry Horse. However, the FOP does state the following in the first paragraph:

> "Consistent with the 2004 Biological Opinion adaptive management strategy, water management and project operations for fish passage not addressed in this FOP will be consistent with the operations considered in the 2004 Biological Opinion and in particular, the 2008 Water Management Plan and 2008 Fish Passage Plan (FPP)."

The Water Management Plan does provide for drafting both reservoirs up to 20 feet from full by the end of August. However, Montana commented on this provision and those comments have yet to be factored into the summer operational plans. The compromise operation in this SOR is not full implementation of the operation called for in the 2008 Biop but instead a compromise between the full 20 foot draft at the end of August and the Council's Mainstem Amendment recommendations included in the 2008 Biop.

The FOP refers all operations not specified to the 2004 Biop. Here again there is flexibility to implement the proposed compromise in this SOR. That flexibility is found on page 46 of the Updated Proposed Action (UPA). The 2004 Biop clearly anticipate implementation of the Council's Mainstem Amendment recommendations when describing operation of Libby and Hungry Horse in Table 2.

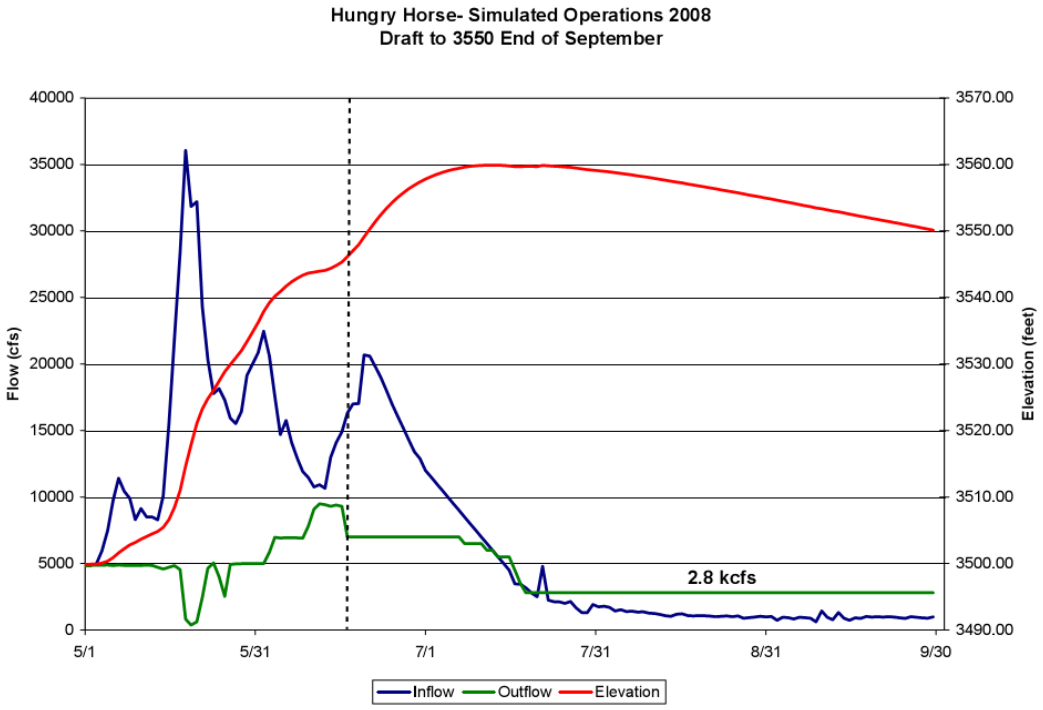
Table 2. Project Specific Operations included in the Proposed Action

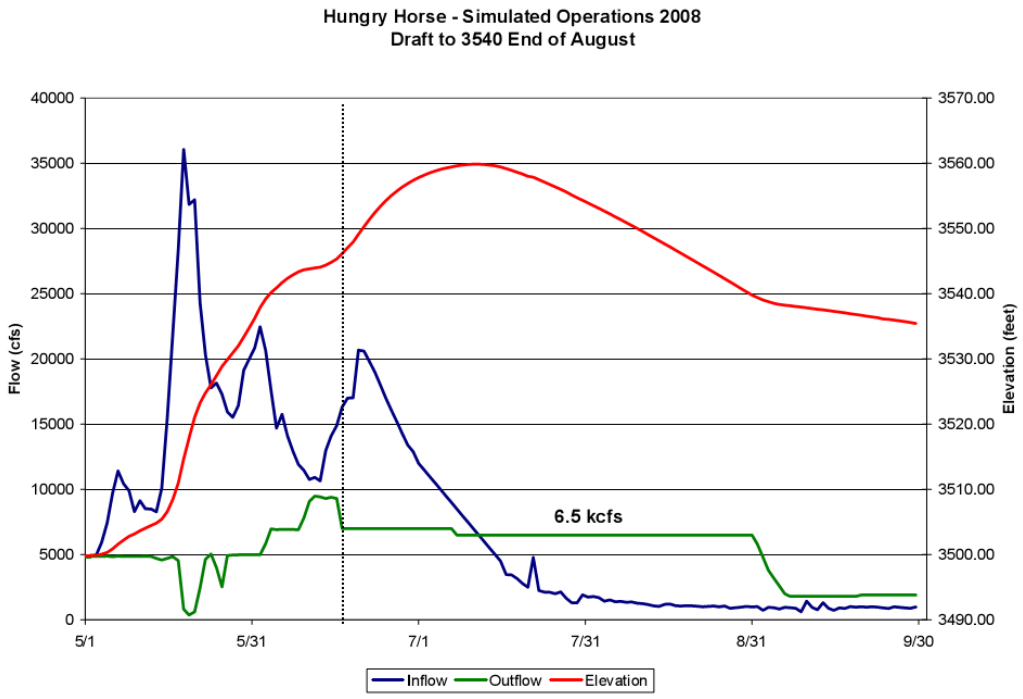
FCRPS Project	Proposed Action Operation
Libby	• Use interim variable flow (VARQ) flood control criteria. • Variable December 31 flood control curve based on runoff forecast. • Operate to achieve 75% chance of reaching upper rule curve (URC) elevation by about April 10. • Refill by about June 30 each year. • Draft to meet salmon flow objectives during July-August w/draft limit of 2439 ft. by August 31 unless modified to meet the mainstem amendment operation. • Operate to provide tiered sturgeon volumes for spawning/recruitment • Operate to provide bull trout minimum flows • Provide even or gradually- declining flows during summer months (minimize double peak). • Negotiate with Canada annually to try to implement a storage exchange. • Limit spill to avoid exceeding Montana State TDG standards of 110%.
Hungry Horse	• Use interim VARQ flood control criteria. • Maintain minimum flows for bull trout with a sliding scale based on the forecast. • Minimum flows of 3200-3500 cfs at Columbia Falls and 400-900 cfs in the South Fork Flathead River. • Operate to achieve 75% chance of reaching URC elevation by about April 10. • Refill by about June 30 each year. • Draft to meet salmon flow objectives during July-August with a draft limit of 3540 ft. by August 31 unless modified to meet the mainstem amendment operation. • Provide even or gradually-declining flows during summer months (minimize double peak). • Limit spill to maximum of 15% to avoid exceeding Montana State TDG standards of 110%.
Albeni Falls	• Use standard flood control criteria. • Operate to provide kokanee spawning conditions (winter pool levels)

This is an unusual year in that the Federal Government has made a commitment to the Court to "roll over" 2007 operations. If the federal agencies were to strictly roll over operations from 2007 to 2008 the flows at Libby would remain constant during the productive summer months. During 2007, a flat flow of 17.3 kcfs was chosen by the Federal Executives even though it might not have drafted the full 20 feet by the end of August. On August 23rd flows were ramped down to 15 kcfs with a further ramp down on August 29th and 30th to a flow of 9 kcfs on September 1st.

Hungry Horse Operations Modeling

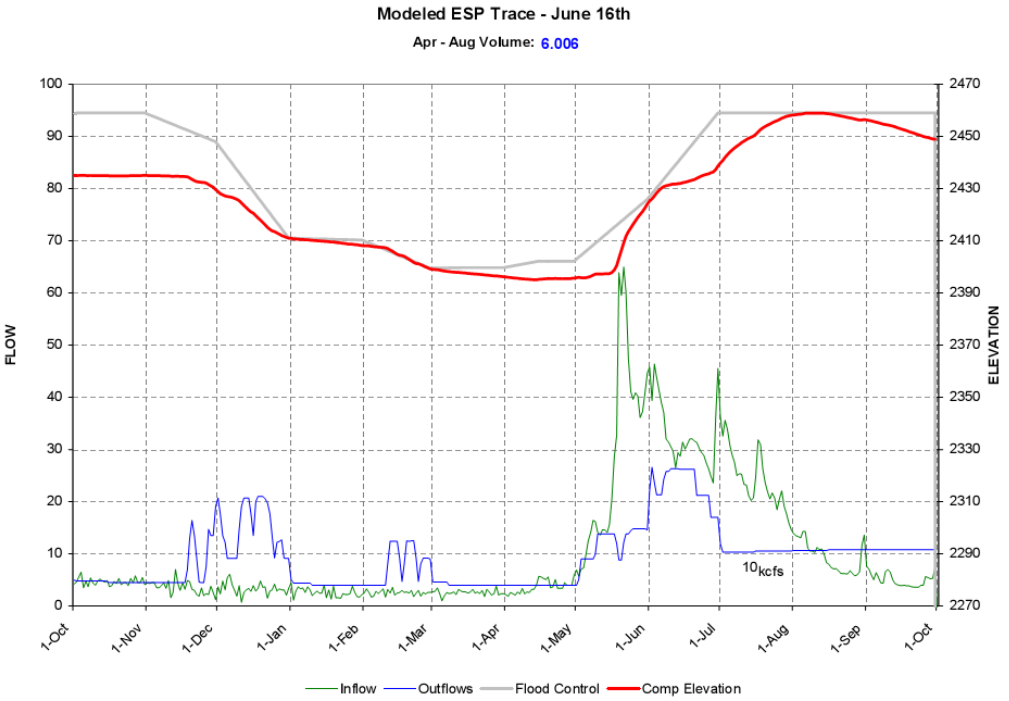
The following are modeled estimate of the flow rates that would result from implementation of the operation of Hungry Horse called for in the 2008 Biop and drafting the reservoir to 20 feet from full by the end of August. The 2008 Biop operation would provide a steady outflow of 2.8 kcfs after the project refills in mid-July until the end of September. This is compared with the 20 foot draft by the end of August that would have provided an outflow of 6.5 kcfs through August and then dropped flows to the minimum in September. The proposed 4.5 kcfs is approximately a midpoint between these two flows during July and August and extends this flow through September to protect the aquatic environment during this productive month. If in flows are as assumed the reservoir elevations should be approximately in between the levels shown in this analysis.

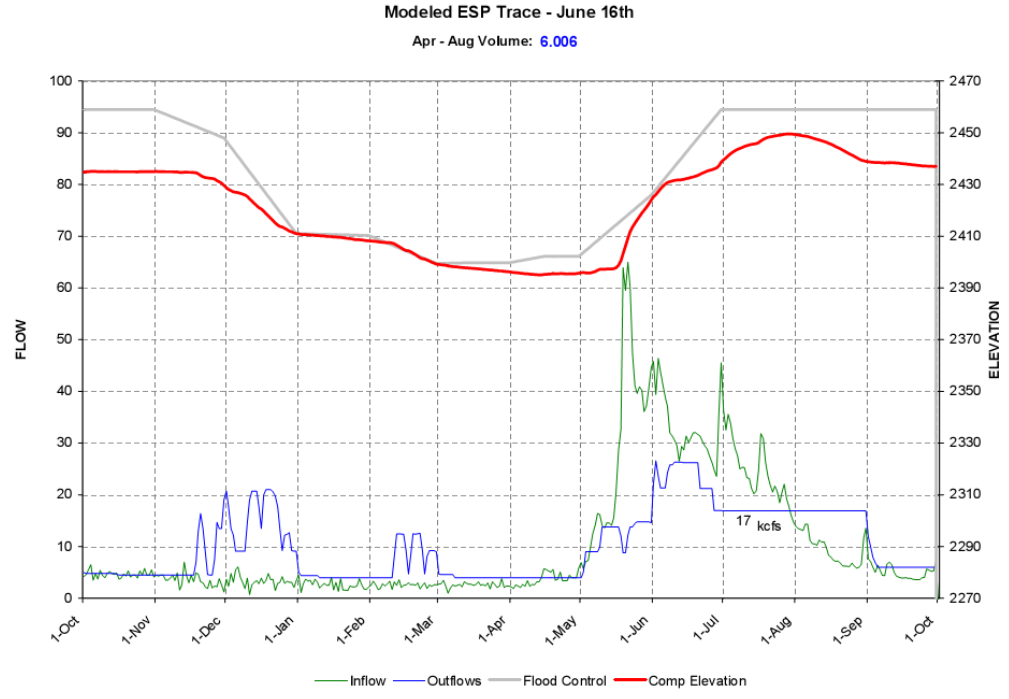




Libby Operations Modeling

The following are modeled estimate of the flow rates that would result from implementation of the operation of Libby called for in the 2008 Biop and an operation that sought to draft 20 feet from full by the end of August. The 2008 Biop operation would provide a steady outflow of 10.0 kcfs through the end of September. This is compared with the old operation that would have provided an outflow of 17.0 kcfs through August and then dropped flows to the minimum in September. The proposed operation is a compromise between these two operations because it begins at the flow that would result from the 2000 Biop operation and holds this flow during last June and early July. This will provide the flow that Snake River fall chinook would have gotten under the old Biop during the month when they are primarily migrating out of the Lower Columbia River. Recent scientific data shows that few Snake River fall chinook are migrating in August. For this reason the strategy proposed in this SOR begins to ramp down flows in late July and August to first 15 kcfs and then to 12 kcfs with a last ramp down to 10 kcfs in September. This operation provides flows for anadromous fish in June and July while also provided a reduced flow in August and September that is gradually declining to benefit resident fish. This will protect the aquatic environment for resident fish in the Kootenai River and improve reservoir refill to benefit biological productivity in the reservoir during the warm months.


Modeled ESP Trace - June 16th
Apr - Aug Volume: 6.006
FLOW
ELEVATION
10 kcfs
Inflow
Outflows
Flood Control
Comp Elevation


Modeled ESP Trace - June 16th
Apr - Aug Volume: 6.006
FLOW
ELEVATION
17 kcfs
Inflow
Outflows
Flood Control
Comp Elevation