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SYSTEM OPERATIONAL REQUEST: #MT-2014-1

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FROM: Brian Marotz & Jim Litchfield

DATE: April 16, 2014

SUBJECT: Summer and Fall Plan for Libby operations

OBJECTIVE: To maintain stable or gradually declining flows for period July through September.

SPECIFICATIONS: The Corps should develop and implement a plan of operation at Libby that will achieve the stated objectives by estimating a rate of outflow from Libby following the sturgeon operation in June that will maintain a stable outflow until the end of August and draft the project to an elevation of 2453 ±1 ft. Following this operation, the Corps should estimate an outflow for September that targets drafting the reservoir to approximately elevation 2449 ft by the end of September.

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. The growing season in the Kootenai River in Montana and the and Idaho is 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. 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.

Since 2011, the Kootenai Tribe of Idaho has requested flows from Libby Dam of 8 kcfs or less in September to allow for the implementation and construction of several habitat restoration projects to benefit endangered Kootenai River white sturgeon and other native fish species. Due to the nature of the habitat work planned for August – October 2014, flows of 8 kcfs or less are not required for implementation of the sturgeon spawning substrate enhancement project so there would be more flexibility to provide a gradual ramp down of flows to the end of September and into October. By targeting an elevation of 2453 ±1 ft by 31-Aug, releases can be held at 9 to 10 kcfs until the end of September or elevation 2449 ft is reached. Once the elevation at Libby Dam reaches 2449 ft in September releases should be reduced to 6 kcfs for the balance of the month.

The current FCRPS BiOp calls for Libby Dam to be drafted to an elevation of 2449 ft by the end of September in all but the driest water years. However, past operations that attempted to reach a fixed elevation have been problematic, because sudden changes in inflows to Koocanusa Reservoir are possible due to unpredictable precipitation events. Therefore the ending elevation should not be treated as a hard constraint but rather as a guideline for developing a stable flow during the month of September. This can be done by the Corps using the actual reservoir conditions near the end of August combined with expected inflows until the end of September to produce a stable outflow that is expected to draft the reservoir to 2449 ft. However, if actual

inflows differ from the forecast, it is more important to maintain the stable outflows than it is to hit an arbitrary reservoir elevation at the end of September.