



US Army Corps
of Engineers

Technical Team Recommendations for 2008 Sturgeon Operations at Libby Dam

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USFWS Biological Opinion

Habitat Attributes

- Depth in Braided Reach : 16.5 to 23 ft
- Temperature: 48.4° F (8°C) with no more than a 3.6°F decrease due to operations of Libby Dam
- Minimum Flow Velocity in Braided Reach : 3.3 ft/sec

Recommendations for 2008 Operations

Goal: Meet the sturgeon habitat attributes (depth, temperature, velocity, and substrate).

- After unregulated downstream tributaries increase **river flow at Bonners Ferry to 15,000 cfs during May**, and before sturgeon operations begin, use releases from reservoir storage to keep Kootenai River flows stable or increasing.
- Begin sturgeon operations at the earliest point during mid/late May when, ideally, at least the first three conditions listed below are present:
 1. There exists a high probability of **maintaining a daily average water temperature of at least 46.4° F (8° C) at Bonners Ferry** throughout the entire augmentation operation without causing a drop in temperature of more than **3.6° F** due to operations at Libby Dam.
 2. There exists a high probability that flows from Libby Dam, combined with peak low elevation run-off downstream of Libby Dam, will provide **intermittent depth of approximately 16.5 ft or greater in 60%** of the area of rocky substrate from RM 152 to RM 157 during peak augmentation flows without exceeding 1,764 ft river elevation at Bonners Ferry.
 3. There exists a high probability that **peak flows can be maintained for up to 14 days** without causing temperature reduction with pulses, primarily from variation in local inflows below Libby Dam.
 4. Implement operations to **“smooth” the transition between the end of sturgeon operations and the start of salmon operations**, and to avoid or minimize any “double peak” of flows.
 5. At least one sonic-tagged **spawning condition female (F4) sturgeon** is present or has recently been present (within 3 days) at or above Ambush Rock.

Manage peak flows during peak operations to maintain a **minimum flow at Bonners Ferry of at least 17,000 cfs**.

After peak sturgeon operations conclude, gradually reduce discharges towards stable summer flows, to no less than bull trout minimum flows.

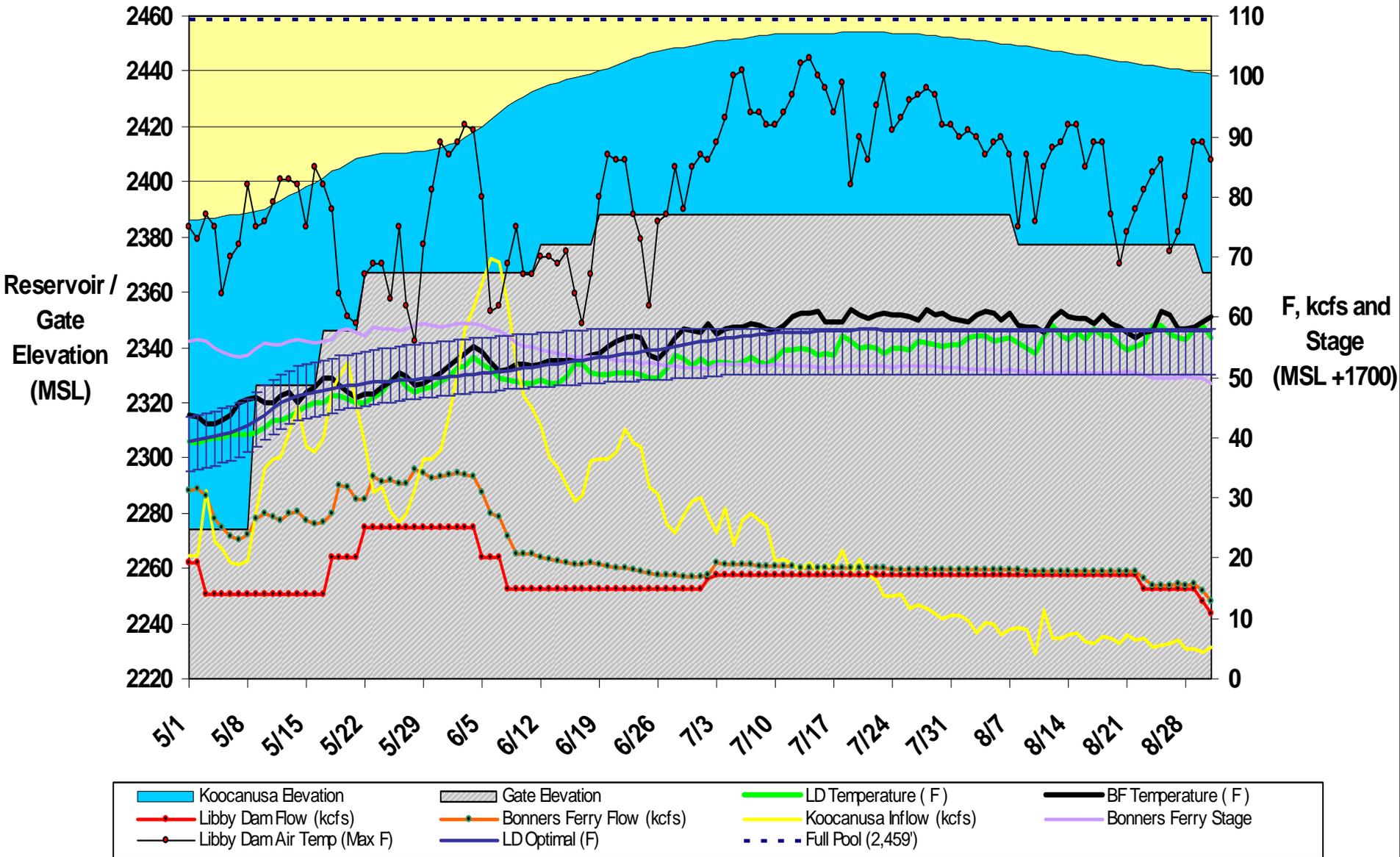
To avoid involuntary spill, operate so that the reservoir does not refill until inflows decline to turbine capacity (about mid-July).



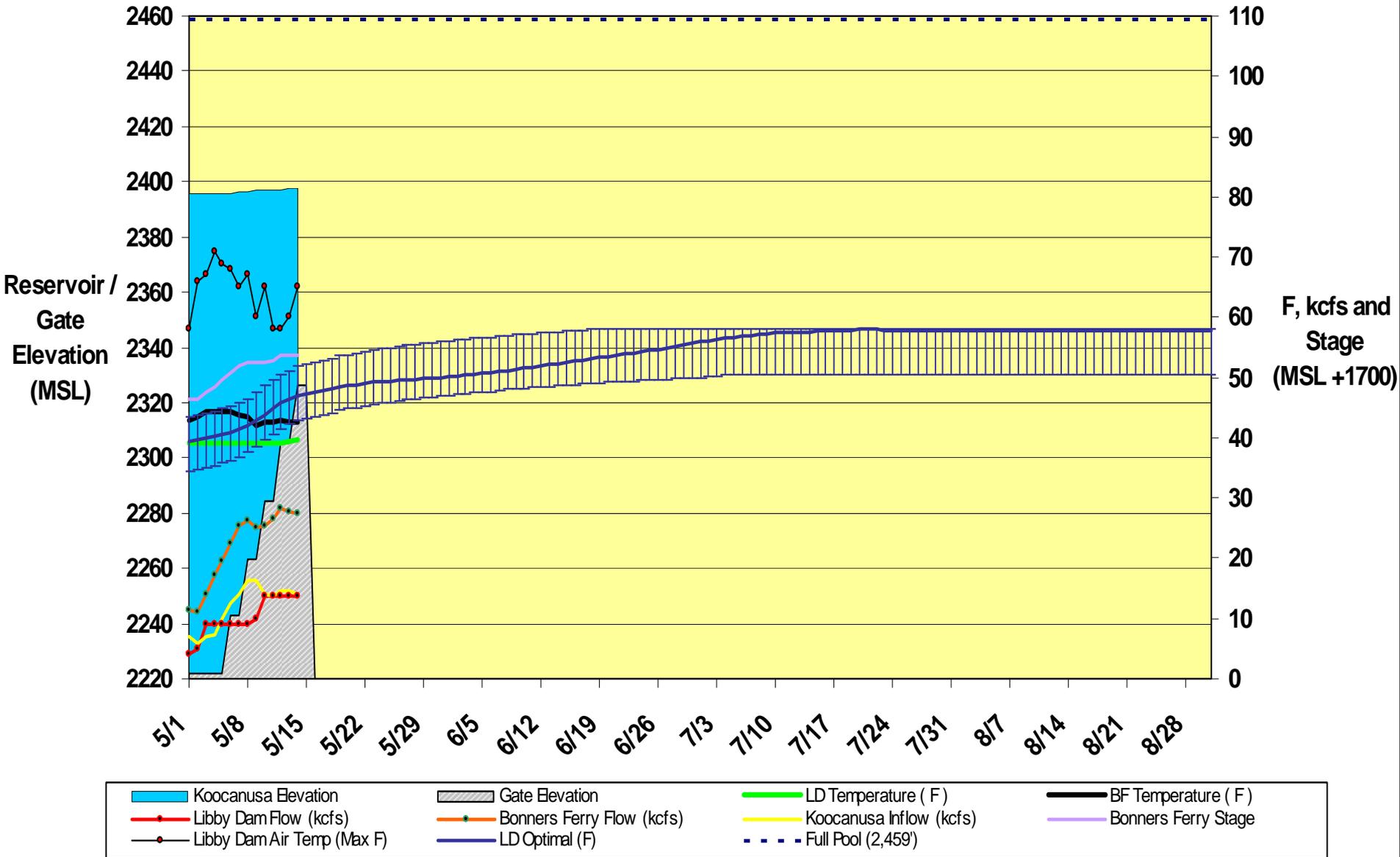
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Kootenai River and Kootanusa Reservoir Temperatures 2007 BiOp Fish Operations (1 May - 31 August)



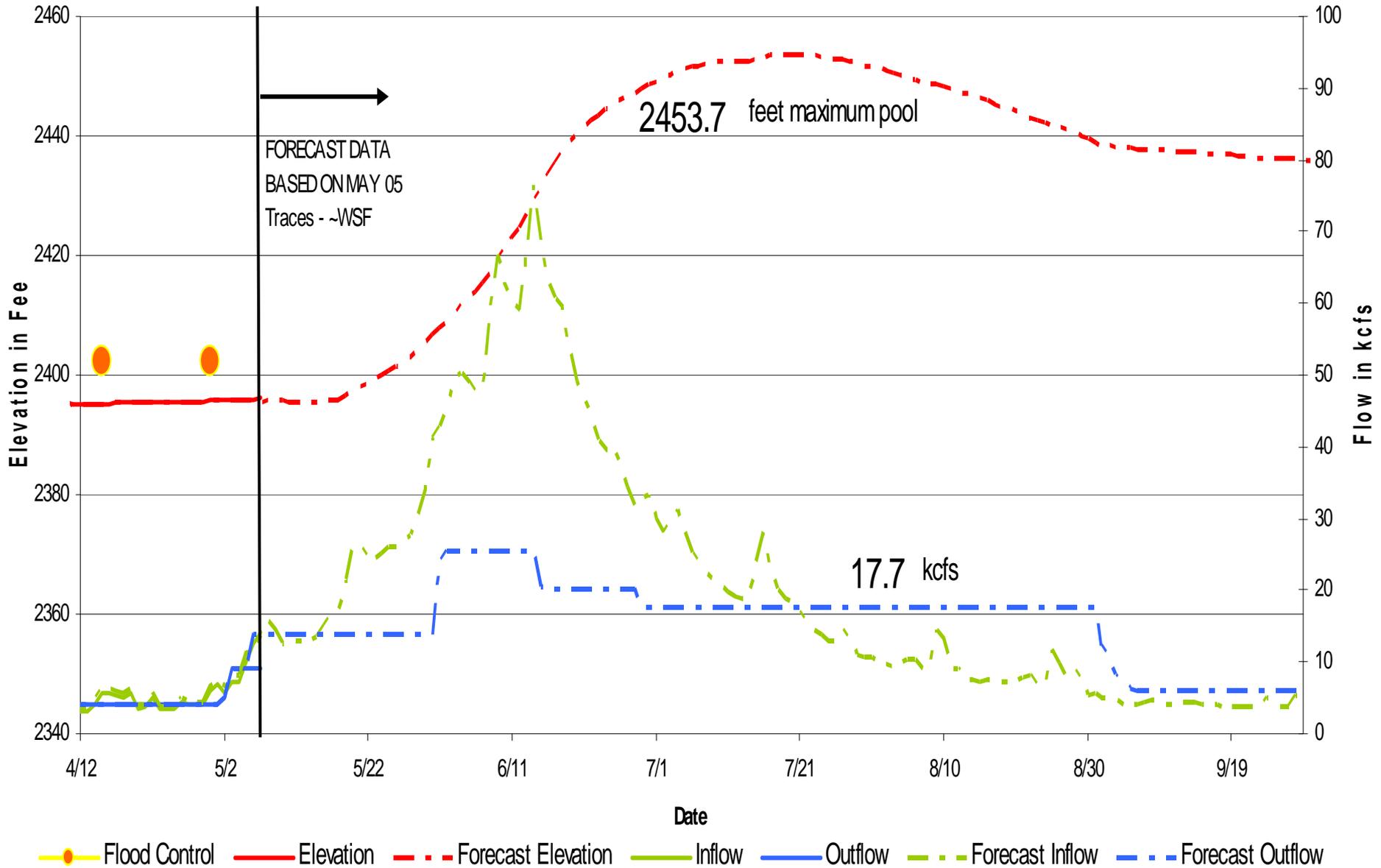
Kootenai River and Kootanusa Reservoir Temperatures 2008 BiOp Fish Operations (1 May - 31 August)



April - August Volume (KAF) = 6127

Libby Reservoir
January 01, 2008 to Sep 30, 2008

2439' End of August



April - August Volume (KAF) = 6127

Libby Reservoir
January 01, 2008 to Sep 30, 2008

2449' End of September

