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SYSTEM OPERATIONAL REQUEST: 99-C4- Addendum

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FROM: Bob Heinith and Kyle Martin, CRITFC Hydro Program

DATE: July 13, 1999

SUBJECT: **July 16-July 31, 1999**
Dworshak, Brownlee Reservoir and Lower Snake Dam Operations

SPECIFICATIONS:

The following recommendations are specified to meet essential life history and other biological requirements for Snake River adult and juvenile steelhead and fall chinook for the 1999 migration season. They are also consistent the federal government's trust responsibility to the CRITFC treaty tribes as noted in the tribes' salmon restoration plan,
Wy-Kan-Ush-Mi Wa-Kish-Wit.

The recommendations include actions to ramp flows up and down at biologically acceptable rates, and actions to control mainstem temperatures to meet water quality standards and provide good in-river conditions for migrating, rearing, fall chinook. The recommendations acknowledge the fact that fall chinook production is sensitive to the proper time and size of juvenile migrants as they enter saltwater, which is best realized by in-river migration. The recommendations also take into account the production needs for Dworshak Hatchery steelhead.

- On Friday, July 16, 8:00 AM, increase Dworshak outflows from 1.2 kcfs to 8 kcfs at a rate of 6 inches per hour as measured at the Clearwater gauge below Dworshak Dam. Maintain 8 kcfs through July 21, 8:00 AM. Gradually ramp down temperatures of Dworshak releases

over four days from 50 degrees F to 46 degrees F at a rate of 1 degree per day. These flows and temperatures should mitigate for the loss of tributary flows into the Lower Snake.

- On Wednesday July 21, 8:00 AM, increase Dworshak outflows from 8 kcfs to 10 kcfs at a rate of 6 inches per hour as measured at the Clearwater gauge below Dworshak Dam. Maintain 10 kcfs through July 26, 8:00 AM. This operation will mitigate for the expected flow reduction from the Hells Canyon Complex. If temperatures in Lower Granite reservoir are at 64-66 degrees F, gradually increase temperatures from Dworshak releases over four days from 46 degrees F to 50 degrees F at a rate of 1 degree F per day. Increasing temperatures will lend relieve to Dworshak Hatchery steelhead rearing schedules.

- On Monday , July 26 8:00 AM , increase Dworshak outflows from 10 kcfs to 12 kcfs at a rate of 6 inches per hour as measured at the Clearwater gauge below Dworshak Dam. Maintain 12 kcfs through July 31. Adjust release temperatures to meet the 68 degree water quality standard as measured in the scrollcase at Lower Granite Dam.

- At the Hells Canyon Complex, limit all flow reductions by ramping rates of no more than 6 inches per hour as measured at Lime Point.

- Beginning immediately, implement 24 hour spill at Lower Granite, Little Goose and Lower Monumental at a rate that passes at least 50% of juvenile fall chinook and protects adult fall chinook and steelhead from powerhouse passage[1]. Assuming an optimistic 2:1 fish to spill ratio, this would require 25% daily average flow in instantaneous spill. Spill should continue until 95% of the fall chinook migration has passed each individual dam as indicated by screen bypass indices and other monitoring methods.

JUSTIFICATION:

The flow regimes specified above are intended to provide good in-river conditions for migrating, rearing subyearling chinook, in a runoff year that has provided cooler that average water temperatures and sustained runoff. They attempt to utilize Brownlee water as the initial primary source and augment flow with Dworshak releases as necessary, being more conservative with Dworshak water as the tribes and IDFG's goal is to reserve about 200 kaf for adult salmon migrations in September.

We anticipate that the initial reduction of temperature from Dworshak releases, combined with the reduction of Hells Canyon Complex flows, and a National Weather Service forecast that indicates air temperatures will moderate, will achieve a 68 degree or below temperature as measured in the scrollcase at Lower Granite Dam. Apparently, moderation of air temperatures have already contributed to the reduction of Lower Granite scrollcase temperatures by 1 degree F from July 12-July 13.

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[1] Adult fall chinook and steelhead fallback through dams at very high rates. Monitoring at the Snake River dams indicates that several thousand per dam suffer this fate. Without spill, adult pass through the screen bypass systems which were constructed for juvenile salmon and have been documented to suffer visible bruises at rates of 40-50% (Wagner and Hillson 1993). Without spill, adults that are not intercepted by the screen systems pass through turbines and have been documented to suffer direct mortalities of 41% (NMFS 1995).

Because no studies have been accomplished examining the differential survival of truck transported subyearling chinook and those allowed in-river passage via spill, there is great uncertainty with respect with truck transportation of these salmon, especially from the Lower Snake dams that are hundreds of miles from saltwater. We advocate that half of the migration be spilled to "spread the risk" for passage management of the 1999 fall chinook population. This is consistent with the ISAB review of transportation that noted that spreading the risk between transportation an in-river passage was "… *advisable in the face of uncertainties associated with potential negative effects of transportation on genetic and life history diversity.* " (ISAB 1998).

Further, the ISAB noted that juvenile fall chinook should not be trucked transported at all, "…*because historical indications on truck transport are negative*" (ISAB 1998). Further, they recommended that because of the uncertainties of transportation, it should not be the sole management regime for an entire stock (ISAB 1998).

Without spill, the low guidance efficiencies for subyearling fall chinook at the Lower Snake dams force about 50% of migrants to turbine passage. NMFS pit-tag studies indicate that very few if any of the migrants that are subjected to turbine passage survive through the Snake River (Smith et al 1997). Reimers (1973), Lichatowich and Cramer (1979) and Williams et al. (1996) note the critical importance of a rearing life history for subyearling fall chinook suggesting that this parameter is very important for survival and overall stock production.

BPA has amassed nearly $200 million in reserves from river operations funds not used under the 1996 MOA. Thus, there are funds available to accommodate the modest spill regime recommended to increase Snake River fall chinook survival and production in 1999.

Implementation of the above recommendations are vital to the treaty tribes as part of the federal government's trust responsibility to shift the conservation burden away from tribal harvest and to assist tribal members in beginning to increase their standard of living and health to levels enjoyed by non-tribal peoples.

If this SOR cannot be implemented, CRITFC requests in a detailed written response from the federal operators as to why it cannot be implemented.

References

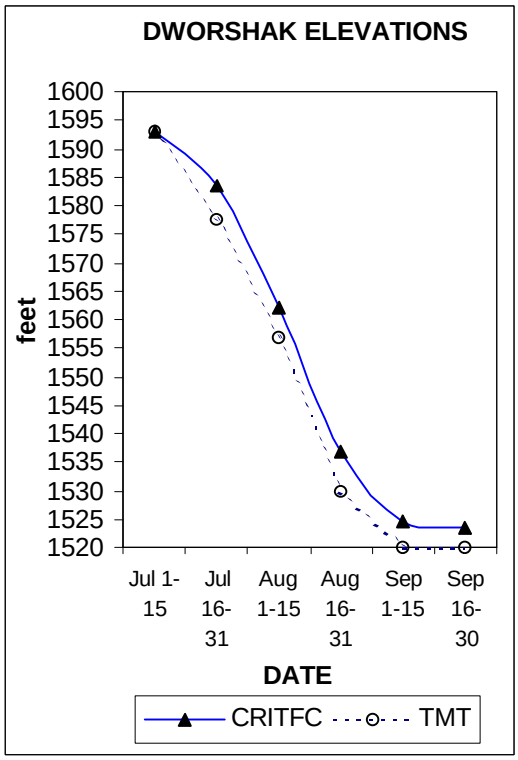
ISAB. 1998. Response to the questions of the implementation team regarding juvenile salmon transportation in the 1998 season. Report 98-2. Northwest Power Planning Council. Portland, Oregon.

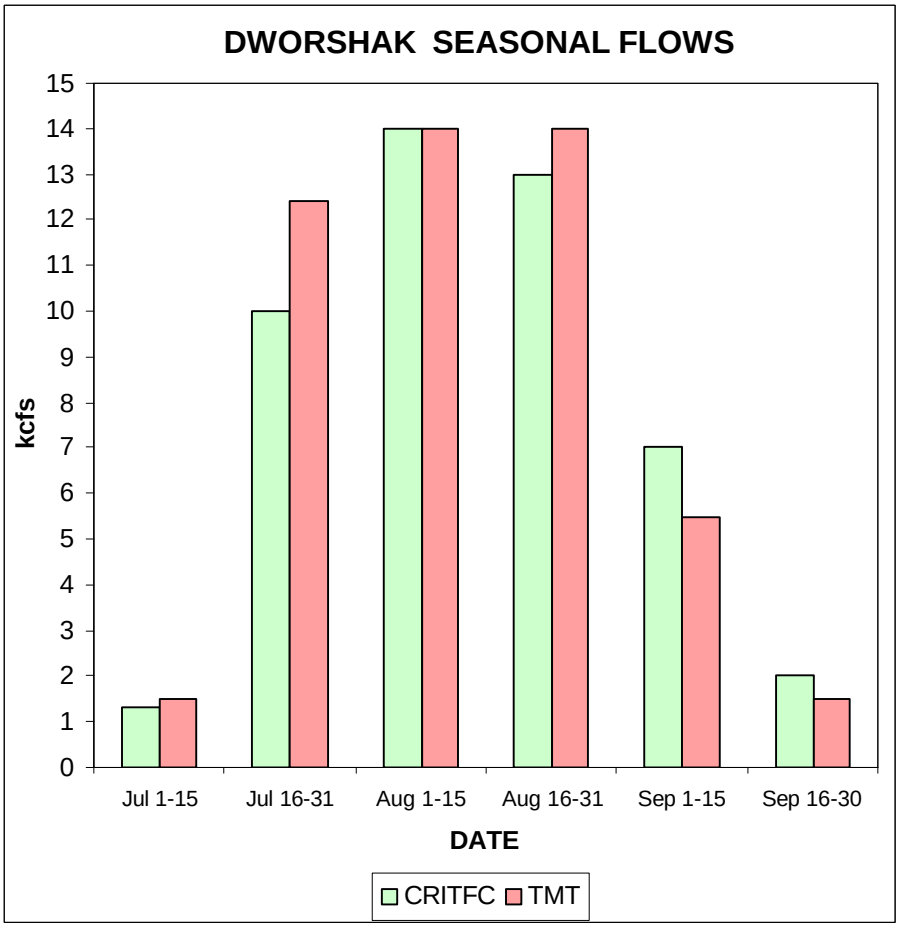
Wagner, P. and T. Hillson. 1993. 1991 Evaluation of adult fallback through the McNary Dam juvenile bypass system. Contract DACW68-82-C-0077. To the Walla Walla District, Corps of Engineers. By Washington Department of Fish and Wildlife. Olympia, Washington.

Attachment

WY 1999	N.F. Clearwater at Dworshak DWR Outflow CRITFC	TMT	DWR Pool Elevation CRITFC (feet) end-of-period	TMT
Jul 1-15	1.3	1.5	1593.0	1593.0
Jul 16-31	10	12.4	1583.5	1577.7
Aug 1-15	14	14.0	1562.0	1556.8
Aug 16-31	13	14.0	1537.0	1530.0
Sep 1-15	7	5.5	1524.5	1520.0
Sep 16-30	2	1.5	1523.5	1520.0
Total (KaF):	1431	1479		

CRITFC Hydro Program 14-Jul-99




DWORSHAK SEASONAL FLOWS
kcfs
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Jul 1-15
Jul 16-31
Aug 1-15
Aug 16-31
Sep 1-15
Sep 16-30
DATE
CRITFC
TMT