River Operations Plan

2002

Columbia River
Inter-Tribal
Fish Commission

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2002 River Operations Plan

March 1, 2002

Overview

The Columbia River Inter-Tribal Fish Commission (CRITFC) presents the 2002 River Operations Plan (Plan) for the Federal Columbia River Power System (FCRPS), the Hells Canyon Complex (FERC No. 1971) and the Priest Rapids Project (FERC No. 2114). The Plan contains recommendations for decision making, dam operations, including flows, reservoir elevations, spill and fish facility operations. It also contains recommendations for water acquisition. Each of the recommended actions will contribute to increased mainstem salmon protection.

In 2001, the region experienced alarming conditions for anadromous fish passage and survival. River operations for salmon were worse than 1977. In 1977 the region supported and the operators provided flow and spill budgets for spring migrants. In 2001, however, low runoff and financial and power emergencies declared by BPA eliminated fish flow augmentation and reduced fish spills to a fraction of those required under the NMFS 2000 Biological Opinion for the Federal Columbia Power System (FCRPS). Salmon and steelhead losses were significant. For example, the Fish Passage Center noted that only 4% of Snake River juvenile steelhead survived passage from Lower Granite to Bonneville Dam, and some 27% of Snake River juvenile chinook survived to Bonneville. Juvenile run timing was affected with the runs beginning later and with shorter passage durations. Travel times in 2001 were some of the slowest observed in the historic records. Many migrants did not arrive to downstream dams. Power peaking in the Mid-Columbia exacerbated the effects of the low flow year.

While the 2002 basin snow-pack and runoff forecast improved over 2001, the official February final January-July runoff volume for The Dalles of 101 million acre-feet (MaF) is only 94% of normal, and is likely to decline by April. CRITFC analysis of trends of historical water supply forecasts produced a series of correction curves (Martin 2002), and indicates that the final forecast for the year is likely to be near 94 MaF.

The foundation of the CRITFC 2002 Plan is a normative, natural-peaking hydrograph which offers juvenile salmon migrations a more natural flow regime to 1) reduce time of entry into saltwater and, 2) create an enhanced mainstem and Columbia River near-ocean plume to enhance critical habitat and 3) minimize predation losses (Williams et al.1996). The Plan contains bi-weekly flow and reservoir recommendations at various index points in the Basin. The Plan uses flood control flexibility and additional "pockets of water" from upper basin storage to create a normative hydrograph for virtually all major river index points. These operations assure flows for anadromous fish,

while seeking to maintain higher reservoir levels for resident fish and tribal cultural resource protection.

The spill season in the CRITFC Plan is extended and enhanced in the spring to all federal dams. The summer spill recommendations of the Plan extend spill to all federal dams except Lower Monumental., The Plan's summer spill programs are more comprehensive than those in the NMFS 2000 FCRPS Biological Opinion. The Plan also contains specific recommendations and guidelines for power peaking, water temperature criteria to meet Clean Water Act standards, water management during the treaty fisheries, fish facility operations and mainstem research. We also offer a list of key fish facility mitigation projects, that if implemented, could result in significant improvements in fish passage survival. The Plan also offers a water management paradigm that avoids the weaknesses of week-to-week trade offs common to the Technical Management Team, Implementation Team, and Regional Executive Committee forums.

Much of the available basin storage that could be used for fish flows is currently being released at most upper basin reservoirs pursuant to the Corps of Engineers' inflexible flood control operations. By early February 2002, the difference between this Plan and Corps' 2002 Water Management Plan flood control storage was about 9.2 MaF. At this writing, the difference is more than half of that or 3.8 MaF. If the Corps' flood control drafting operations continue as anticipated, by mid-March there will be no additional storage left to provide for a more normative Spring flow operation pursuant to the Plan. We believe that an additional 9.2 MaF could have been available for fish flows in 2002 without significant flood risks. As of this date, however, the normative hydrograph proposed by this Plan will have been significantly compromised by flood control drafts. Under presently anticipated circumstances, the target flows required by the 2000 FCRPS Biological Opinion will likely not be met in 2002.

Given the extreme salmon losses in 2001, it is vital that measures in the 2002 CRITFC River Operations Plan, which have not been foreclosed, should be fully implemented. The Commission urges the federal Government, Idaho Power Company, and the Mid-Columbia Public Utility Districts to cooperate in implementing the recommendations in this Plan.

Key Plan Recommendations

Decision Making

- The Technical Management Team (TMT) and Implementation Teams are useful for some regional information sharing but they do not suffice for river operations decision-making and are not government-to-government forums. The Federal operators and NMFS should use CBFWA as a technical forum to discuss river operations where tribes can have meaningful input. Disputed issues should be raised to the executive committee table.

Emergency Declarations

- The definition of "emergency" and related procedures must be recast for 2002 to exclude any BPA financial problems. The definition of "emergency" must be based on unforeseen circumstances. Any power sales revenues accruing to BPA and attributable to an emergency operation must be set aside for salmon mitigation, where such amounts will be in addition to and not in lieu of previously planned BPA expenditure levels.

Energy and Water Conservation

- Water and land acquisition programs begun in 2001 should be continued.

- BPA should renew the 1995-2001 contract with Idaho Power Company to allow flexibility in flow augmentation through power exchanges.

Runoff Forecast

- The Plan assumes that the current 95 % of normal precipitation pattern will continue into spring, while the NW River Forecast Center continues to predict "near normal" precipitation.[1] Based upon the historical flow record that shows a declining runoff pattern in average to below average years, CRITFC anticipates that a continuing pattern of below normal precipitation is likely.

- New water supply correction curves suggest a medium-low water year. Runoff in the CRITFC 2002 River Operations Plan is based on 95% of normal precipitation.

Flow and Reservoir Management

- Available storage and runoff should be shaped to meet peaking, normative hydrographs at Priest Rapids, Lower Granite, The Dalles and other index points (Attachment 1). The object is to provide flushing flows during the main portions of the juvenile and adult migrations and to leave as much storage as possible for resident fish and tribal cultural resource protection.

- Current, aggressive flood control drafts should be immediately curtailed. As opposed to the Corps' 2002 Water Management Plan that does not implement Variable Q operations, the CRITFC 2002 Plan recommends that Variable Q operations be implemented at Libby and Hungry Horse <u>without</u> compensating drafts of Lake Roosevelt (Attachment 1). This action would hold storage at upper level reservoirs consistent with historical runoff volumes for less than average water years.

[1] The Northwest River Forecast Center continues to predict close to 100% of average precipitation, but CRITFC estimates that these projections are very liberal. Flows at all basin index points in the Plan (Attachment 1) were based on runoff at about 95% of normal precipitation and snow-pack.

- As recommended in the 1995-1998 NMFS Biological Opinion for the FCRPS, in water years when the January-July forecast is less than 95 MAF at The Dalles, 500 Kaf of flood control should be shifted from Arrow to Mica (Attachment 1).

- In general, reservoirs are left at the end of the salmon migration season at or above elevations specified by the 2000 FCRPS Biological Opinion. This provides a buffer for a probable 2003 *El Niño* water year, as is being forecasted by scientists at NOAA, the Australian Bureau of Meteorology, and Canadian climatologist Dr. Landscheidt.

- Refill of Dworshak Reservoir by the end of July is a high priority (Attachment 1). Currently Dworshak is at about 1513.0 feet above mean sea level (msl). Dworshak should be refilled and held at msl 1518 feet for flood control as compared to the Corps' proposed draft to msl 1512 feet by March 31. Some volumes should be allocated for spring flows, but the majority of flow should be dedicated to summer migrants and temperature control to attempt to meet Clean Water Act standards in the Lower Snake River. Consistent with the Nez Perce-State of Idaho Plan, Dworshak should fill to msl 1600 by July 1 for juvenile and adult summer migrants and temperature control. Dworshak should be left at msl 1520 feet at the end of the September migration.

- Idaho Power Company has aggressively drafted Brownlee well below its April flood control elevation to msl 2039 (Attachment 3). Further drafting at Brownlee should end immediately and storage should accumulate so that Brownlee fills to msl 2072.5 by April 1. The 110 KaF described in the 1998 FERC Biological Assessment for the Hells Canyon Complex should augment Snake River spring flows in May. For summer flows in June and July, Brownlee should contribute an additional 237 KaF described in the 1998 Biological Assessment and should pass through 927 KaF from the upper Snake. Idaho Power Company is asked to follow plan recommendations, assuming a BPA power and water exchange contract is in place (Attachment 3). NMFS should release a biological opinion for the Hells Canyon Complex that includes Plan recommendations, with or without power/water exchange contract.

- An additional 500 KaF should be added to the 427 KaF required in the 2000 FCRPS Biological Opinion for a total of 927 KaF flow augmentation from the upper Snake from Bureau of Reclamation and Corps upper Snake reservoirs. These reservoirs will be filled in March and early April and are expected to be close to full so additional water is available through non-contracted storage and/ or irrigation buy-outs. This water should be passed through the Hells Canyon Complex to augment June, July, and August flows.

- Lake Roosevelt reservoir flood control drafts should be restricted to msl 1242 by mid-April, which allows runoff refill for spring flows, Hanford Reach juvenile out-migration protection and summer flows (Attachment 1). Lake Roosevelt is maintained at msl 1280 during the second half of July, August and September for

resident fish and cultural resources. Additional upriver storage should be provided to raise Lake Roosevelt to msl 1283 in early October for kokanee spawning.

- Banks Lake should provide 260 KaF in August for flow augmentation and energy production (Attachment 1). This volume remains in Lake Roosevelt instead of being pumped into Banks Lake.

- Canadian storage should be released in the late winter and spring in order to leave some storage in Lake Roosevelt for salmon migrations and energy needs. Consistent with the NMFS 1995-1998 FCRPS Biological Opinion for a 94 MaF runoff year, 500 KaF of flood control should be reallocated from Arrow to Mica. An additional 500 KaF from Canadian Non-Treaty storage over the 1 MaF called for by the NMFS Biological Opinions should be allocated for downstream flows.

- Libby storage should be managed for sturgeon flows, downstream salmon migrations and resident fish needs by implementing Variable Q operations. Libby should be drafted to avoid drafting Dworshak, which has substantial temperature control capacity in the lower Snake. Libby should be drafted to msl 2365.5 feet by March for flood control and then fills to msl 2440.5 feet by summer (1.5 feet higher than BiOp level), consistent with the 2000 NMFS FCRPS Biological Opinion. Minimum flows of 8 kcfs should be maintained through September.

- Hungry Horse should be managed for salmon flows and resident fish needs by implementing Variable Q operations. Hungry Horse should be drafted for flood control to msl 3511.5 feet in March and then fill to msl 3544 feet by summer, or 4 feet fuller than required in the 2000 NMFS Biological Opinion. Minimum flows of 2.5 kcfs maintained through September would benefit Columbia Falls flows.

- Power peaking should be restricted to avoid impacts to fish ladders and other fish passage facilities and to allow proper conduct of treaty fisheries.

- Meeting Clean Water Act standards for dissolved gas and temperature is a high priority. Juvenile salmon should be left in river to take advantage of cool water releases and to avoid high temperatures in screen and transportation systems.

- Lower Granite Reservoir should be drawn down to msl 723 feet during June 20 - October 31 to decrease juvenile and adult travel time and to make Dworshak cool water flows more effective.

Hanford Reach Flows

- Power peaking should be restricted to avoid stranding of Hanford Reach juvenile chinook, especially during the key fry susceptibility period (March 15 - June 10). Fluctuations during this period should not exceed stated sliding scale criterion during a 24-hour period in the USFWS and CRITFC 2002 Hanford Stranding

Operations Recommendations. (Attachment 2). Grant PUD and BPA should fully fund Reach monitoring and evaluation efforts.

Spill

- Spill has been demonstrated to be the most effective and safest means of juvenile project passage (Fishery Managers 1994; NWPPC 1999). Spill also best protects the beneficial use under the Clean Water Act by providing salmon access to lower temperatures found at depth in the reservoirs instead of higher temperatures found in dam bypass and transportation systems. Spill also provides safer downstream passage for steelhead kelts and adults that fallback over dams than powerhouse routes.

- The Corps should provide ten days of spill from about March 12-22 at Bonneville Dam to increase the survival of Spring Creek Hatchery fall chinook releases.

- CRITFC recommends provision for summer spill at Lower Granite, Little Goose and McNary dams above the requirements of the 2000 FCRPS Biological Opinion.

- CRITFC recommends provision for daytime spill at John Day, McNary and the Lower Snake River dams. When implemented, daytime spill has been demonstrated to be as successful or more so than nighttime spill at most dams.

- The Corps of Engineers should complete their timely application for a total dissolved gas waiver to the appropriate water quality agencies to allow for both spring spill at the eight federal dams and summer spill at all dams except Lower Monumental where emergency stilling basin repairs preclude spill.

Dam Facility Operations and Research

- Fish facilities should be operated according to CRITFC and other salmon managers' recommendations for the Corps of Engineers' 2002 Fish Passage Plan (Attachment 4). Inspection of facilities should be increased to three inspections per day. Salmon Corps participation in monitoring dam passage facilities should be made possible by BPA funding and Corps of Engineers' assistance.

- Fish facilities should have full components of spare parts and backup systems, consistent with CRITFC and other fishery agencies recommendations to the Corps' 2002 Fish Passage Plan.

- Monitoring systems for water quality should be installed by the federal operators throughout the dams and reservoirs with real-time tracking of data.

- Mainstem research that involves fish handing and tagging and modifications to fish protection measures should be extremely limited, should not compromise fishery operations and should meet consensus tribal and fishery agency approval.

Fish Facility Mitigation Projects

- A list of mitigation projects has been compiled for dam fish passage facilities (Attachment 5). Funding of these projects would individually and collectively increase juvenile and adult passage success and survival.

2002 FCRPS Flow Operations

That salmon flow increases survival and productivity has been established in various forums worldwide including a 1994 independent scientific review under the NWPPC and biological opinions. In thee 1995-1998 FCRPS Biological Opinion, NMFS provided minimum flow recommendations for listed salmon and established "target flow" regimes consisting of these minimum flows. The 2000 FCRPS Biological Opinion continues the concept of "target flows" for salmon, where specific seasonal average flows are to be met at Lower Granite, Priest Rapids and McNary Dam. In 2001, none of these targets were met, and in many years since the 1995-1998 Biological Opinion, these targets often have been missed.

The 2000 Opinion differs from the 1995-1998 Opinion in that the federal operators have more discretion to avoid implementing measures that will insure that flow targets are met. For example, the 1995-1998 Opinion required the Corps to shift flood control storage further down the system and modify flood control rule curves to allow reservoirs to store more of the spring runoff for fish summer flows. In the 1995-1998 Biological Opinion, Reclamation was to provide an additional 1 million acre-feet (MaF) of water from the upper Snake for salmon flows. Again, this has yet to be realized.

The 2002 River Operations Plan recommends that the Federal operators reshape runoff and reservoir storage to create a normative hydrograph for salmon with bi-weekly flow objectives that would have peak flows well below flood stages in Portland and other basin locations [2] (Figure 1). Figure 1 compares actual runoff in 2000, a water year similar to what is expected in 2002 with the normative flow operation and the 2000 FCRPS Opinion "target flows". Alternative flood control curves were modeled in GENESYS (Martin 2001), and those results feed into the attached spreadsheet.

Figure 2 illustrates the flood control risk of this water year compared to other similar water years in the historical record. CRITFC analysis indicates that in average to below average flow years, the runoff forecast declines significantly as the water year ensues. The Corps however, assumes that the water year will maintain the volume of early runoff projections, thus, the Corps evacuates storage to meet a higher level of flood control risk than is necessary.

In the CRITFC Plan, storage volumes would be increased by modifications to flood control rule curves, some which were specified in the 1995-1998 Biological Opinion, but never realized. For example, about 500 KaF of flood control storage could

[2] Flood stage is defined by the Corps as 550 kcfs measured at The Dalles Dam. Bank-full stage is defined by the Corps as 450 kcfs measured at The Dalles. The peak flow in CRITFC's 2002 River Operations Plan with modified flood control rule curves is about 430 kcfs at The Dalles, or 20 kcfs below bank-full. In the 2002 Biological Assessment for the Lower Columbia Channel Deepening, the Corps states that flood control was managed to keep peak flows at The Dalles at 550 kcfs in 1970 and prior years. In recent years the Corps has managed to keep peak flows at The Dalles at about 360 kcfs, without Congressional authorization.

be obtained from shifting flood control space from Arrow Reservoir to Mica Reservoir, and 500 KaF in flood control storage could be obtained in Brownlee Reservoir.

The CRITFC Plan offers flexibility to the Corps' extremely conservative flood control rule curves. In the CRITFC Plan, the Variable Q operation specified in the 2000 FCRPS Opinion for Libby and Hungry Horse, but not currently being followed by the Corps, would be implemented, as would flexibility in flood control rule curves for Lake Roosevelt. The Corps' ongoing river management intended to meet conservative flood control rule curves is draining critical storage from many upper basin storage reservoirs.

As of February 28, the Corps drafted Lake Roosevelt down to elevation 1257 feet—tracking a rule curve that would take the reservoir down to elevation 1241 feet by April 15. In contrast, if CRITFC's altered flood control rule curve had been followed, Lake Roosevelt would only draft to elevation 1258 on April 15, thereby saving 17 feet of storage. Similar differences exist between rule curves developed by CRITFC and the Corps at Libby, Hungry Horse, Brownlee, and Dworshak. Basin wide, we estimate that if changes in flood control rule curves were made on January 31, instead of later, 9.2 MaF of storage instead of 3.8 MaF of storage could have been available for fish flows in spring and to assure summer reservoir refill.

In the CRITFC Plan, summer fish flows would be augmented by adding drafts of upper basin storage beyond what is required in the 2000 NMFS Biological Opinion. Drafts include an additional 500 KaF from Non-Treaty Storage, an additional 500 KaF of upper Snake storage, and 237 KaF of Hells Canyon Complex storage. The resultant summer flows would be much better for salmon migration and mainstem water quality.

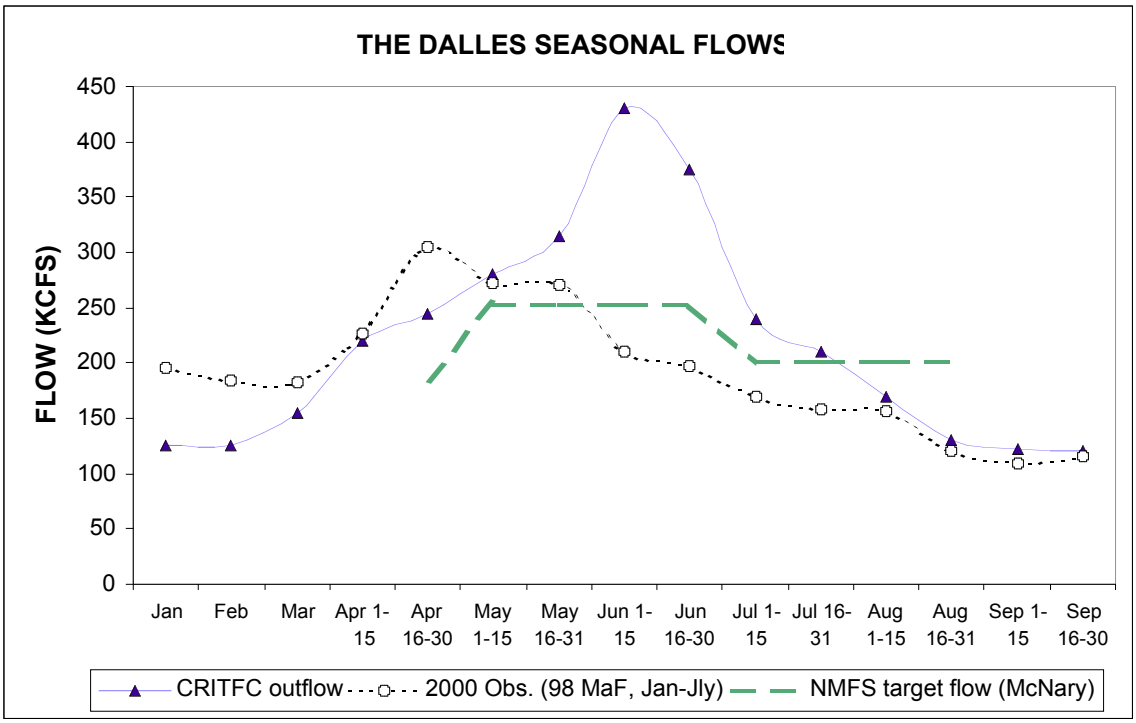

Figure 1. 2002 River Operations Plan Normative Hydrograph for Mainstem Flows at The Dalles compared to Federal Flow Targets and 2000 Water Year actual runoff. Water Year 2000 was near average and Water Year 2002 is likely to be slightly below average.

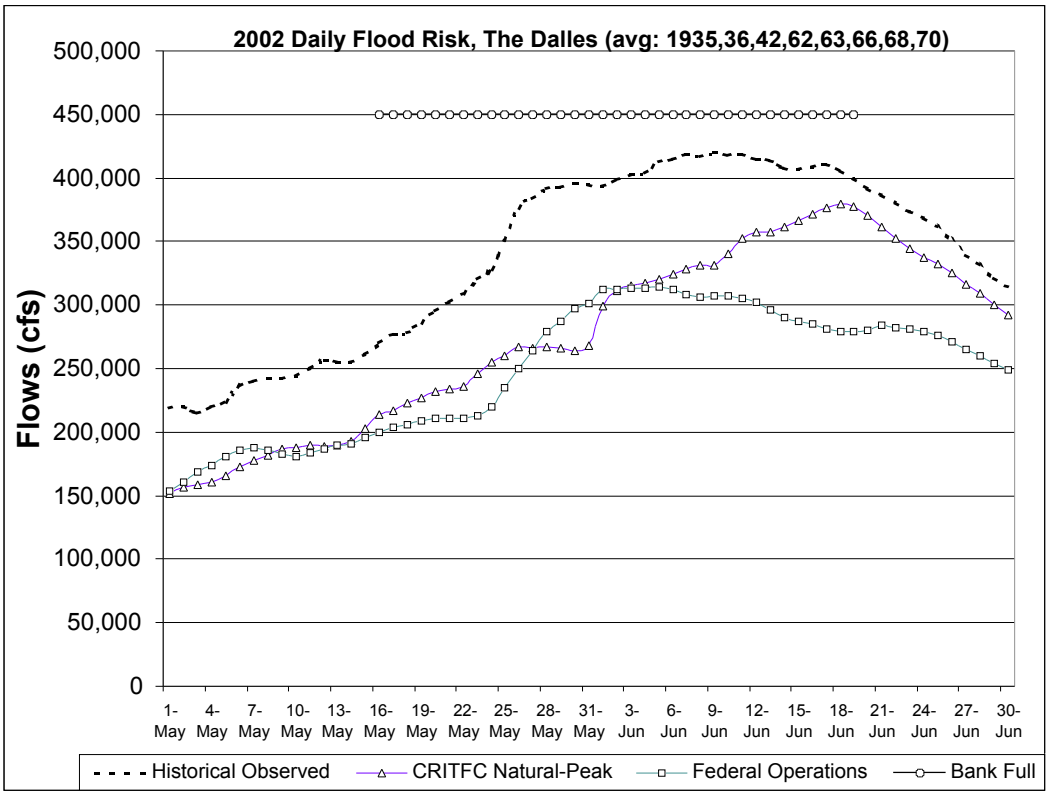

Figure 2. Estimated flood risk in the lower Columbia for GENESYS modeled flows for Water Year 2002 (average of WY 1935, 1936, 1942, 1962, 1963, 1966, 1968, and 1970).

2002 Spill Program for the FCRPS

The 2002 River Operations Plan recommends a program to increase spill at key projects in order to significantly increase overall passage success and survival for the 2002 juvenile and adult migrants. Current runoff projections for the mainstem indicate that Columbia River flows will be slightly below average with Snake Basin water supplies better than average. This should allow for more flexibility in the hydrosystem to meet increased spill levels and durations.

Principal features of this spill program include:

- Provision for summer spill at Snake River and McNary dams. The current 2002 FCRPS Biological Opinion does not require summer spill, despite the lack of scientific evidence that indicates transporting summer migrants would be advantageous compared to spilling migrants over dams. CRITFC has advocated for a summer spill program and transport study (with summer spill) in the Lower Snake River for at least the last five years. This controversy was expressed in the fall fishery negotiations in *U.S. v. Oregon* in the last several years. CRITFC will continue to oppose any Snake River or McNary transport study that does include a reasonable spill and flow component.

- Provision for daytime spill at John Day, McNary and Lower Snake River dams. When implemented, daytime spill has been demonstrated to be as successful or more so than nighttime spill at most dams.

- Extension of spill season. The Plan also recommends that the spill season be extended in duration over that offered in the 2000 FCRPS Biological Opinion. Because mainstem river temperatures have been much warmer than in past years, it is very likely that juvenile migrations will start earlier than in the past and kelts will be migrating and need downstream protection. Early spill will better protect spring chinook that fallback at dams. Spill should begin at mainstem dams around March 20, depending on the status of the migration. Spill should be extended to September 15 at lower Columbia Dams to assist millions of late migrating juvenile salmon and to reduce powerhouse injuries to adult steelhead and fall chinook that fall back at dams.

Priorities:

McNary (MCN): McNary is the only Lower Columbia dam that is not scheduled to have at least some spill 24 hours a day, unless spill is forced. This project passes a substantial number of Columbia Basin salmon from the Mid-Columbia, Snake River and Hanford Reach. The existing screened bypass system has structural and hydraulic problems; PIT-Tag studies indicate that juveniles that experience multiple screen bypass passage have lower smolt-to-adult returns than juveniles that pass thorough spill and turbines (Bouwes et al. 2002). Of about 200,000 juvenile spring chinook marked and released in 1995 from the bypass system, no adults returned. Thus, to spread-the-risk and encourage

better tailrace egress conditions to avoid predators and delay, the Plan recommends that the Corps provide daytime spill at a level commensurate with the current nighttime Biological Opinion spill operation. Further, the Plan proposes that the Corps consider removing half of the turbine intake screens.

Lower Monumental (LMN): Due to erosion in the stilling basin, the Corps' current position is that all 2002 fish spill must be terminated. The Corps has declared that there is a project safety issue at LMN, however, CRITFC has yet to receive the Corps' analysis regarding project safety for 2002. In our response to the LMN stilling basin repair environmental assessment, CRITFC recommended that the Corps complete an analysis to determine what impacts, if any, would result from reduced 2000 FCRPS Opinion spring spill. If the analysis shows little to no impacts, spring spill should proceed from the center spill bays until the stilling basin construction begins about June 1. There is a good possibility that Snake River spring flows may result in forced spill at Lower Monumental, at least for some of the spring migration.

Little Goose (LGS): Currently, under the 2000 Biological Opinion, the Corps does not provide daytime or summer spill. With smolt-to-adult returns indicating that juveniles that used the screened bypass passage routes returned in fewer numbers than those that were passed through turbines or spill, it is prudent to increase the number of juveniles passed via spill.

The Dalles (TDA): Due to concerns with juvenile turbine passage (survivals in the low 80% range; 2000 FCRPS Opinion, Appendix D), it is prudent to increase non-turbine passage routes, which include the sluiceway and spillway. Spill is the only passage route that can increased juvenile passage survival. The 1995-1998 FCRPS biological opinion required spill at 64% of daily average flow. Based upon questionable survival studies, NMFS decreased spill to 40% of daily average flow. This subjects more juveniles to turbine passage. The CRITFC Plan recommends an increase in spill from the 2000 FCRPS Opinion level from 40% to 50% of daily average flow. North loading of the spillway with these flows would avoid placing juvenile salmon toward shallow island predation zones where they were placed with the 64% spill. The 2002 research and fish passage at TDA is best served by maintaining a constant spill level during the migration season.

Lower Granite (LWG): For 2002, the Corps has installed a removable spillway weir in an attempt to increase fish passage effectiveness. CRITFC believes that the weir, with some auxiliary spill, should be tested against spill at levels that approach total dissolved gas cap limits to determine if there is a difference in project Fish Passage Efficiency (FPE). Auxiliary spill should be set at 22 kcfs to insure that juveniles are provided the best possible tailrace egress conditions.

John Day (JDA): For 2002, the federal plan is to limit John Day daytime spill to every other day because of transmission system limitations. John Day spill is very effective for passing salmon. Research in 2001 indicated that radio-tagged juveniles using the screened bypass outfall survived in the 88-92% range, while juveniles passing through

spill survived in the 98-100% range. Given this data, it is prudent to reduce the number of juveniles that must pass through the screen system. A substantial number of Columbia Basin salmon from the Mid Columbia, Lower Columbia and Snake rivers must pass John Day Dam, thus it is important to provide daytime spill through the passage season.

Refer to Table 1 for the details of project spill operations. All proposed operations conform to existing total dissolved gas constraints.

Table 1. 2002 River Operations Plan Spill Program

Project	BiOp Spill Spring	Proposed Change	BiOp Summer Spill	Proposed Change
BON				
Day	75 kcfs	75kcfs vs.120-150 kcfs	75 kcfs	75 vs. 120-150 kcfs
Night	120-150 kcfs (Cap)	120-150 kcfs (Cap)	120-150 kcfs (Cap)	120-150 kcfs (Cap)
TDA				
Day	40% of flow	50% of flow	40% of flow	50% of flow
Night	40% of flow	50% of flow	40% of flow	50% of flow
JDA				
Day	0	30% vs 60%	0	30% Vs 60%
Night	60% flow or max 180	60%	60% flow	60%
MCN				
Day	0	50%	0	50%
Night	50% flw	50%	0	50%
IHR				
Day	45 kcfs	45 kcfs	0	45 kcfs
Night	100 kcfs	100 kcfs	0	100 kcfs
LMN				
Day	40 kcfs (Gas Cap)	30 kcfs	0	0
Night	40 kcfs (Gas Cap)	30 kcfs	0	0
LGS				
Day	0	45 kcfs	0	30 kcfs
Night	45 kcfs (Gas Cap)	45 kcfs	0	45 kcfs
LGR				
Day	0	22 kcfs vs. 60 kcfs	0	22 kcfs vs. 60 kcfs
Night	60 kcfs (Gas Cap)	60 kcfs (Gas Cap)	0	60 kcfs (Gas Cap)

Attachments 1-5

References

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Attachment 1

Flows and Storage at Basin Index Points

(see separate file in the electronic version)

Attachment 2

2002 Hanford Protection Operations to Reduce Juvenile Hanford Reach Fall Chinook Stranding and Mortality

Power peaking causing flow fluctuations from federal and FERC licensed dams in the mid-Columbia River can be extreme, with shoreline water levels varying up to 13 feet over a 24 hour period. When this occurs during the early emergence and migration of Hanford fall chinook from redds, thousands of fry are stranded in pools left by the receding river. Fry are susceptible to avian predation, thermal shock and desiccation. Most of the significant stranding occurs with shoreline fluctuations of 1-3 feet.

Biological and hydrological monitoring of the stranding has occurred since 1998 with funding provided by BPA and Grant PUD. The tribes and fishery agencies initially recommended that ever increasing or stable flows be provided in the Reach, consistent with the recommendations of the NWPPC's Independent Scientific Advisory Board (Williams et al. 1998). In the CRITFC tribes' *Spirit of the Salmon* restoration plan, fluctuation of no more than 10 % of the previous day's average flow in the Reach was recommended. However, the federal and mid-Columbia FERC power operators claimed that this operation could not be accomplished because of power needs. Instead they offered regimes that targeted flow fluctuations to plus or minus 20-40 kcfs over the previous 24 hour flows. Tribes and fishery agencies were left with no recourse and could but monitor the dead and stranded salmon over the next three years.

In 1999-2001, the federal and mid-Columbia FERC power operators implemented an operational regime aimed at limiting flow fluctuations to reduce stranding. In 1999, the operators attempted to keep flow fluctuations within a plus or minus 20 kcfs range. In other words, the river flow levels from Priest Rapids dam could fluctuation up to 40 kcfs in a 24 hour period. The estimated fry "at risk" of mortality [3] from these levels for 17 miles of the Reach (about one third of the Reach) in 1999 was about 382,000 and about 255,000 in 2000. The confidence intervals around these estimates were wide because more sampling effort is needed. The overall annual fry production for the Reach has been estimated by WDFW as 16-27 million salmon.[4] The operators believed that these losses were acceptable as a cost of doing business for regional power production. To date, no compensation for these losses has been offered by the operators.

In 2001, the operators wanted greater power peaking flexibility, thus, they proposed a flow fluctuation of 40-80 kcfs in a 24-hour period. Given the extreme low flow conditions, with the second worst runoff conditions in the 60-year record, CRITFC objected to this flow band and proposed no more than a 10 kcfs fluctuation in a 24 hour period. The fishery agencies and operators agreed to proceed with up to a 40-80 kcfs

[3] "At risk" are fry that have been stranded and are not likely to get passage back to the river in time to avoid predation, thermal shock or other mortality.

[4] The reader should note the difficulties and uncertainties in deriving these estimates in footnote four and text below.

band. The result was more than a four-fold increase for "at risk" fry or an estimate of about 1,664,000 fry.

After review of the four years susceptibility data, additional information supplied by the USFWS on dewatered areas below Priest Rapids Dam and taking into account likely 2002 Hanford Reach flow regimes from 50-200 kcfs, we recommend the specific operations provided below to reduce stranding impacts on Hanford Bright fall chinook, ESA listed steehead and Pacific Lamprey. In order to achieve these flow bands, the federal operators should limit power peaking from Grand Coulee and release additional water on weekends to assure the FERC-licensed operators can keep the flows within the 10-20 kcfs flow fluctuations. If necessary, the federal operators should rely on other generation sources than Grand Coulee to meet power contract obligations to reduce flow fluctuations. In turn, the Mid-Columbia FERC operators, in particular Grant PUD, will have to fill reservoirs on Fridays to assure that appropriate Reach flows would be maintained over weekends when reduced power demand and/or flood control operations limit upriver flows from federal dams.

The following are CRITFC's and the USFWS' recommendations for 2002 operational constraints for flow releases below Priest Rapids Dam to reduce mortality of emerging and rearing juvenile fall chinook in the Hanford Reach. Additional funding is needed from the operators to assure that 2002 monitoring effort methodology is similar to that in 1999-2001.

Starting Program Operating Constraints

Seining of the six established index sites will be conducted three days per week (Monday, Wednesday, and Friday) beginning one week prior to the estimated start of emergence. Once a daily total of 50 sub-yearling fall chinook salmon fry are captured, a daily flow fluctuation constraint of 40 kcfs would be imposed. This constraint will continue until a daily total of 100 fry are captured from the index sites at which time the following proposed flow constraints will be implemented. After the 100 chinook criteria have been met, index sampling would be decreased to once weekly (Wednesday).

When PRD daily discharge is between 36 and 80 kcfs.

When average daily discharge at Priest Rapids is between 36 and 80 kcfs, the mid-Columbia projects will limit flow fluctuations to no more than 10 kcfs in a 24-hour period.

- Flow bands between 36 and 80 kcfs dewater the most area with the least amount of fluctuation and have the most potential for catastrophic fish kills.
- River configuration - long shelves, and shallow water entrapments, substrates that heat up or drain quickly.

When PRD daily discharge is between 80 and 110 kcfs.

When average daily discharge at Priest Rapids is between 80 and 110 kcfs, the mid-Columbia projects [5] will limit flow fluctuations to no more than 10 kcfs in a 24-hour period.

- Flow bands between 80 and 110 kcfs hold optimal rearing habitat. Data suggests these areas hold large entrapments and some stranding sites including backwater sloughs with good rearing habitat.
- These flow bands are located at the upper most reaches of the lower river shelves. Evaluation years 1999 and 2000, showed the highest susceptibility areas between 80 and 120 kcfs.

When PRD daily discharge is between 110 and 140 kcfs.

When daily average discharge is between 110 and 140 kcfs, the mid-Columbia projects[1] will limit fluctuations to no more than 20 kcfs in a 24-hour period.

- Data suggests that flow bands between 120 and 190 kcfs offer reduced susceptibility but not in the reach directly below Priest Rapids Dam.
- River configuration - steep banks, area of exposed shoreline drop significantly between 110 and 140 kcfs.

When PRD daily discharge is between 140-170 kcfs

When daily average discharge is between 140 and 170 kcfs, the mid-Columbia projects[1] will limit fluctuations to no more than 20 kcfs in a 24-hour period.

- Data suggests that flow bands between 120 and 190 kcfs offer reduced susceptibility in the shoals reach, but not in the reach just below Priest Rapids Dam.

When PRD daily discharge is 170 kcfs and above

When daily average discharge is 170 and above, the mid-Columbia projects[1] will limit fluctuations to no more than 20 kcfs in a 24-hour period. A minimum hourly flow of 150 kcfs will be maintained.

- Constraints will protect the backwater areas of the sloughs (Hanford Slough and White Bluffs Slough) from dewatering.

Ending Program Operating Constraints

[5] The mid-Columbia projects refer to Grand Coulee, Chief Joseph, Wells, Rocky Reach, Rock Island, Wanapum and Priest Rapids that are operated under mid-Columbia hourly coordination agreements.

CRITFC and WDFW recommend that flow constraints be terminated after the accumulation of 1400 temperature units (TU) past calculated end of spawning under the Vernita Bar Settlement Agreement.

- Evaluations from 1999, 2000, and 2001 show that susceptibility drops significantly after 1200 TU's and after 1400 TU it is assumed that susceptibility has reduced to allow for termination of constraints. The last fish found stranded and entrapped in 1999 and 2000 fell relatively close to 1400 TU's. The 2001 evaluation showed fish becoming entrapped and stranded past this deadline but at decreased rates.

Attachment 3

BPA-Idaho Power Water and Power Exchange

From the late 1980's until April 2001, BPA and Idaho Power Company (IPC) were engaged in annual exchange contracts for water and power. Typically, IPC would store water in the Hells Canyon Complex (Complex) in early spring and BPA would provide a power exchange to IPC. This storage would be released later in spring for salmon. The power generated from this release was sent back to BPA.

In the late summer, IPC would release storage and generate power, which would be sent to BPA. BPA would replace this power in September, which allowed IPC to store water to meet project elevations and assure that enough water was on hand for Hells Canyon fall chinook spawning.

In 1995, after release of the 1995-1998 FCRPS Biological Opinion, firm water exchange volumes and timing were established in contracts to meet Opinion RPAs. A five-year contract was finalized for power and water exchanges in 1996. In early May, IPC would release 110 kaf, and send power to BPA. BPA would send the power back to IPC the latter half of May and refill the Complex. In summer, IPC would 1) release 237 kaf from the Complex and 2) shape and pass 427 kaf of Bureau of Reclamation water through the Complex. The power generated from these releases was sent to Bonneville. Bonneville would send exchange power for the 237 kaf to IPC in September and send exchange power for the 427 kaf back to IPC the following winter.

Because power markets are more lucrative in summer months, BPA claimed that IPC gained a substantial financial advantage in the contract arrangement. BPA negotiated with NMFS to have the power exchange contract omitted from the 2000 Biological Opinion and the five year contract expired on April 1, 2001. During 2001 negotiations with the federal operators, the CRITFC tribes, Oregon and Idaho all pressed BPA to renew the exchange contracts with IPC. BPA claimed that they were at a financial disadvantage, thus, were unwilling to renew the contract, despite long negotiations with IPC that involved the Idaho Governor's office.

Without the contract in place, there is no leverage to 1) assure that the 427 kaf or additional upper Snake water will be shaped and passed through the Complex, 2) assure that the 110 kaf and 237 kaf will be provided in a timely manner for fish. The result, as experienced last year, is that the fish do not get the water critical to their migrations, habitat and survival.

While IPC is undergoing relicensing of the Complex, and still has yet to comply with the ESA because of FERC's and the Administration's stance on ESA consultation for the Complex, there is no regional leverage to require IPC to release water for fish. Until re-licensing or separate litigation force IPC to comply with water releases, renewal of the BPA-IPC water exchange contract is critical to provide vital flows for listed Snake River chinook and steelhead and endangered Snake River sockeye.

Attachment 4

Fish Facility Operations Recommendations

CRITFC made the following comments and recommendations to the Corps' draft 2002 Annual Fish Passage Plan. We reference these comments that highlight changes that should be made to federal dam fish passage facilities and research.

February 6, 2002

Brigadier General David Fastabend
Division Engineer
Northwest Division, Corps of Engineers
P.O. Box 2870
Portland, OR 97208-2870

RE: **Comments on Corps' 2002 Fish Passage Plan for FCRPS Dams**

Dear General Fastabend:

Thank you for providing us with a review copy of the Corps' draft 2002 Fish Passage Plan (FPP). We have reviewed the document and provide the following comments and recommendations. We request that the Corps provide us with a written, detailed response to our recommendations and comments by March 1 to facilitate discussions between the Corps and regional fishery managers in the Fish Passage Operations and Maintenance Subcommittee (FPOM) before the onset of the 2002 anadromous fish migrations. In the event the Corps cannot implement certain CRITFC recommendations, we ask that the Corps provide their rationale in writing.

General Comments

CRITFC believes that it is essential that the 2002 FPP and the Corps' 2002 Water Management Plan (WMP) are considered as interrelated parts of the same document for anadromous fish passage through the FCRPS. As such, the plans should cross-reference themselves with respect to common issues such as research, operations, criteria and structural issues. For example, new spill patterns at John Day contained in the FPP may influence John Day river operations with respect to project operations in the WMP.

The Corps should create a post season assessment report of 2002 FPP actions with a check- list. Projects and criteria that were successfully implemented should be specified as well as those projects that were not implemented. This review would

provide accountability and a focal point for end of year FPOM discussions and a preliminary framing of issues for the 2003 FPP.

Funding provided in the 2002 operations and maintenance budget for specific projects should be presented as an appendix in the 2002 FPP. A list of funded and unfunded projects is vital for the region to gain a sense of which projects have funding and where funding gaps exist that are preventing completion of important operations and maintenance projects.

Evans and Beaty (2001) noted that steelhead kelts prefer to use surface bypass routes such as sluiceways. This same research concluded that kelts that passed via spillways or sluiceways seem to have better long-term survival. Wagner and Hilson (1993) noted that a significant number of adult steelhead that fall back through turbine intake screen systems at McNary Dam suffered a high percentage of visible bruises. Thus, CRITFC recommends that all dam sluiceways be in use 24 hrs a day to insure accessibility for kelt passage and that spill be implemented at dams before April 10 if kelts are present, and after August 31 if adult fall chinook and steelhead are present.

All turbines should be operated within their 1% efficiency range during the entire juvenile and adult salmon migrations. Deviations from the 1% efficiency should only occur under emergency conditions and not for power peaking and non-emergency power production. These deviations and justifications should be recorded and reported to the fishery managers at the end of each migration season and should be included in the post-season report.

In 2001, it became evident to CRITFC that the Corps' dam biologists were short-staffed and had a difficult time maintaining a schedule which requires 3 daily inspections of all fish passage facilities. In 2001, the Corps and CRITFC combined efforts to give Salmon Corps members access to Lower Columbia dams. Salmon Corps members assisted Corps of Engineers biologists in fish facility inspections and other routine tasks. We hope that this project can continue with funds from BPA in 2002. We believe that this program should be mentioned in the FPP.

The checklist for adult/juvenile fishway inspections at each project should be included in the 2002 FPP, possibly in an appendix and should be reviewed by FPOM before the fish migration season starts.

Special low flow operations should be outlined in the 2002 FPP to take advantage of any lessons learned from low flows in 2001to insure that the facilities are operated to create the best possible passage conditions.

Pools fluctuations in Zone 6 (Bonneville to McNary Dam) during the tribal treaty fishery should be limited to a 1-2 feet draft from full pool at each project. In 2002 there will be a spring chinook fishery in April for 1-2 weeks. There will also be a fall fishery which generally occurs from the third week in August through the third week in September. The fall fishery usually occurs Tuesday through Saturdays, or as set by the

Columbia River Compact. While the in season pool elevations are set by Reservoir Control Center, the pool targets should be outlined in the special operations section of the 2002 FPP.

Under the Corps' Anadromous Fish Evaluation Program, there have been several proposals to install additional temperature monitors in reservoir and in dam juvenile and adult passage facilities. The Corps should maintain the Snake River tri-level thermograph system and the McNary Dam temperature monitoring system. The Corps should install additional temperature monitoring equipment in the south fishway at John Day, McNary and Bonneville fishways, at Snake River dam fishways and anywhere else FPOM deems appropriate. This data is critical to establish mainstem TMDLs and to comply with the Clean Water Act. Temperature data should be made available or posted on the Internet for real-time management decisions for the salmon managers. The fishways should be operated to reduce temperatures and to meet fishery agency and tribal criteria.

Specific Dam Comments

Bonneville Dam

- The daytime spill cap should be changed from 75 kcfs to the total dissolved gas level, which will likely be approved under the state water quality agency temporary waivers for fish spill. The adult passage research from 2000 and past years showed little to no correlation between increases of adult fall back and increased spill volumes. The 2002 FPDEP research plan calls for daytime spill in excess of 75 kcfs. Further, with a change from Powerhouse I priority to Powerhouse II the number of adults using the Bradford Island Facility will be greatly reduced. The Bradford Island Ladder accounts for roughly 90% of the adult fallbacks. Preliminary modeling indicates about a 10% percent improvement of survival for juveniles with a Powerhouse II operation and increase in daytime spill. This operational scenario should be verified using the NMFS' SIMPASS model.

- The Corps should ensure that the trash rack at Powerhouse II is compatible with the rake to maximize the effectiveness of debris removal when the system is raked.

- As stated above, the Powerhouse I sluiceway should be operated 24 hrs a day regardless of the powerhouse operation to improve juvenile salmon and kelt passage. The Corps should evaluate the possibility of using the sluice gate in Unit 6 to help reduce the number of salmon milling around the wing wall.

- Currently the Bonneville spill pattern is under review. If approved by FPOM, the new spill pattern should be incorporated into the 2002 FPP.

- Last year several kelts were found impinged upon the separator bars at the Powerhouse II Smolt Monitoring Facility. Corrective measures, such as improved and more frequent inspections and structural improvements, should be implemented to ensure that this does not happen this season. This might be accomplished through video as well as manual inspections. There should be explicit FPP criteria for this action.

2.2.1. Spill level changes. Any Corps decision regarding spill level changes should be made after regional discussion and consultation with the tribes, unless the spill changes are necessary to maintain the dissolved gas waiver in response to an emergency situation.

2.2.2. Powerhouse II Sluiceway Operations. High passage efficiencies have been demonstrated by use of the sluiceway and sluiceway outfall erosion control problems are minimized by high tailwater elevations that are likely to occur this spring. Thus, we recommend that the sluiceway be operated for 10 days in March 2002 for the Spring Creek Hatchery passage. Operation of the sluiceway should be investigated and considered for other times when the tailwater is elevated. In addition, for the Spring Creek Hatchery release, installation of the TIES should be reviewed. The sluiceway hydraulics are improved when the TIES are not installed in the southern units up to about unit 15. Thus, the installation schedule could be revised and some TIE installation delayed until after the Spring Creek release. Depending on the outcome of future research and review, the operational criteria of the sluiceway may change.

BON- 16…e-1; Statement says to maintain 0.3' to 1.0' …0.3'. This is much too low; possibly a target of 0.7' ± 0.2'would be better. This should be resolved with the smolt monitoring program personnel.

BON-17, 2.4.1.2.m. We are unsure if there is a method of measuring the sluicegate submergence to assure that gate criteria are being met. If this is the case then it should be specified in the FPP.

BON-20, 2.4.2.2.b. In past comments to FPPs, we stated our concerns with the actions in this section on fish unit drawdown. The FPOM task group guidelines need to be developed and included in the 2002 FPP before an emergency situation develops. The Corps should ensure that the trash rack at Powerhouse II is compatible with the rake to maximize the effectiveness of debris removal when the system is raked.

BON-22, 2.4.2.3.a. Closing the gaps found at the bottom of the vertical barrier screens (VBS) (i.e. proper seating) did not resolve the fish impingement on the perforated plate associated with the add-in water. This must be resolved prior to the start of the 2002 season so that the add-in water system can be used as it was designed.

BON-37, 3.2.2.4. and 3.3.2.4. The in-season visual inspection for diffuser malfunctions is not an adequate method for determining problems. A better method of in-season inspection is needed and should be developed by the FPOM members before the start of the passage season.

Bonn- 40 3.3.1.3.The FPP included a mid to late afternoon time frame for cleaning trashracks and picket leads. The preferred time to clean racks or leads at the exit or count station would be after dark to avoid impacts to migrating adults. Based upon adult fishway counts, early morning cleaning when crews start their shifts (before 7 A.M.) would reduce adult impacts compared to afternoon or evening cleanings.

BON-41, 3.3.2.1.c.2. Without a trash rack, flushing twice weekly is an improvement over the past criteria. However, we continue to recommend daily flushing of the chute during the peak adult passage periods.

BON-50, 5.5.1.5. We recommend that the Corps provide some guidelines for kelt identification for approval by FPOM. Kelt identification guides in Evans and Beaty (2001) are recommended.

The Dalles Dam

To our knowledge there is no turbine unit priority at The Dalles Dam. This is a critical need due to the low survival of juveniles through The Dalles turbines, and the fact that most of the Columbia River salmon migration, which includes millions of juveniles and adults, must pass this dam. We recommend that the FPP include criterion that maximize operation of the west end of the powerhouse. This will help to guide juvenile fish toward the spillway or sluiceway passage routes. This will also help guide kelts to either the spillway or the sluiceway, which has been shown to increase kelt survival.

TDA-8- 2.4.1.1. C.- We recommend that the Corps make available to FPOM corrections to ice/trash sluiceway walls and floors criteria by the February 2002 FPOM meeting.

TDA-8-2.4.1.2. a. – Has the crane used to rake Units F1 through MU5 been repaired? If so it should be included in the FPP. If not, a new criteria needs to be added specifying trash raking for Units F1 through MU5.

TDA-10- h. The Corps should repair all avian wires. If the Corps cannot achieve this action, then FPOM members need to be expediently notified to determine alternatives to remedy the situation. Tailrace predation is a very serious passage problem. In 2001, CRITFC recommended that the federal executives provide 2001 mitigation funding to resolve this problem. The executives claimed that it was already resolved, yet it still continues to be a problem.

TDA-13.. There is no comment in the FPP on the operation of the orifice gates along the collection channel. It was our understanding that they would not be operated in 2002. This criteria should be included in the FPP.

TDA-21, 4.5. As stated above, the Corps should operate all turbines within the 1% peak efficiency band during the fish passage season. Specific to The Dalles, the Corps should

have an emergency operational plan for turbine units if they are operated outside this criteria. FPOM should review and approve this plan before implementation by the Corps.

John Day Dam

The current spill pattern needs to be updated and field-verified due to the bathymetry changes in the 1:80 model at the Waterways Experiment Station (WES).

2.4.1.3.e. 8 The updated language to the FPP seems appropriate, however the number of adults removed from the sluiceway should be reported to FPOM or in the daily reports. This section should specify where the temperature is obtained as a prelude to determine if dewatering of the box should occur. The 2002 FPP should specify routine box dewaterings at appropriate times (at least once a month) to assure that adult delay and possible injury are reduced to an absolute minimum.

Holding of substantial numbers of adult steelhead and chinook in the box is not an acceptable passage condition. In 2002 we strongly recommend that the Corps begin design investigations for structural remedies to this problem. One possibility could be a crowder that could be used to carefully guide adults out of the dewatering section of the bypass, into the 30 cfs flume, and past the monitoring station.

JDA-7..2.2 Spill Management. The FPP should contain additional language to clearly specify spillway 1 operations during the adult fish migration period. We recommend continued use of spillbay 1 to provide additional attraction flow for adults. This is especially important for fall chinook and steelhead. We recommend that spillway 1 be operated from March 20 until spring juvenile spill begins and September 1 through November 30. All operations should be coordinated through FPOM.

JDA-22,23..b. North Ladder. The FPP should specify the current capability of the pump system. If more that 3 pumps can be operated, it should be described in the FPP. Final operations should be approved by FPOM.

JDA-22, 3.3.2.1.a.3 and 4. Radio-telemetry research at Corps' and Mid-Columbia dams indicates that it is advantageous to close the floating orifices before closing or raising the main entrance weirs. This should be specified in the FPP.

JDA-26-28. JDA-33-36-Spill Tables should be finalized.

Walla Walla District Projects

General Recommendations

CRITFC recommends that half of the turbine intake screens be removed from each dam to create a "spread the risk" scenario. Vertical barrier screens (VBS) inspection schedules should be explicit for each dam. Video inspections might be used where screens cannot be pulled easily to deck level to clean. The FPP should specify that screens with the most

use and/or end units generally attract more debris. These screens are the most likely ones to accumulate debris on their VBSs, thus, they should be prioritized for inspection and cleaning.

Fish Ladders. Water depth over weirs criteria of 1' to 1.3' is acceptable, however, to allow for an additional buffer each project should target 1.1 ' ± 0.1' as this more closely represents what the inspectors might find at a dam.

The FPP language should be modified regarding operation of floating gates along powerhouse collection channels at Lower Monumental and Little Goose for 2002. None will be used in 2002.

Update all FPP tables where needed and include 2000 data for migration timing, etc.

MCNARY DAM

CRITFC opposes the speed-no-load turbine operation which are suggested to help the fish barges leave the dock. This will negatively impact turbine-passed fish and violates peak efficiency turbine criteria. This should be discussed by FPOM and appropriate changes should be made to the FPP.

There is no section discussing temperature requirements for handling of juveniles. CRITFC has maintained that juvenile salmon should not be handled when temperatures reach and/or exceed 68 degrees F.

MCNARY DAM – The Corps should add language to include reference of PIT tag detection systems installed in the McNary fish ladders and the Oregon shore fish count station.

MCN-5, 2.1: The spill planning date has been revised to April 10 in the 2000 Biological Opinion. The prior planning date was April 20. Please make the necessary planning date change.

MCN-7..c5. Referring to the section, "…[P]lastic covers on orifice chutes maintained…orifice flow is visible." In general, orifice flows are visible but during facility inspections, we are unable to discern whether an orifice is plugged with debris. This is because the flow from the orifice is not a clear jet but is distorted as it discharges through the chute and into the bypass channel. Other means should be used to check for oriface blockages, such as gatewell hydraulics. Backflushing orifices should be accomplished at routine times.

MCN-26 and 27: Referring to the spill schedule - NMFS is expecting that the new general McNary model at WES will be used to develop a revised spill schedule for spring 2002, which concurrently considers adults and juvenile passage and gas abatement criteria. With the completion of the end bay flow deflectors the Corps should ensure that

any changes to the spill pattern from this work and spill schedule are included in the 2002 FPP.
Appendix A, Special Operations

Overall several critical projects are missing from this section (i.e. Lower Granite spill with the removable spillway weir, ect). This section needs to be completed and/or updated to allow comprehensive review and comments in the next two weeks.

Bon 1.2. Spill. As we previously noted, the daytime spill will vary from 75 kcfs to the gas cap for adult fallback research. The FPP must be revised to describe this operation. The estimated gas cap volume stated in the draft FPP is too low. This language should be eliminated altogether until the percent of gas saturation has been determined by field measurements.

Bon 2.1. It is our understanding that this test was put on hold. We do not support the use of Unit 8. The Corps must clarify if this work is going forward. If the test proceeds it would require the prioritization of Powerhouse I, which is counter to the best available information that indicates Powerhouse II and spill passage provide much higher passage efficiencies and survival.

JDA 2.2. CRITFC opposes this study. It should not proceed.

MCN 2.2 CRITFC opposes this study. This study would impact the spill program and it should not proceed.

LMN 1.1. While CRITFC agrees that work to repair the stilling basin should be completed we do not agree that it should impact the fish spill program. CRITFC sent January 15, 2002 comments to Lt. Colonel Wagenaar detailing our concerns with actions proposed in the Lower Monumental stilling basin environmental assessment. We reference those comments and propose that the Corps expedite a meeting with the regional fishery managers to determine the best strategy for passage at Lower Monumental in 2002. This may require alternatives such as reduced spill volumes and modification of construction dates to insure that the work can be completed in time while minimizing impact on 2002 fish passage.

Appendix B - Juvenile Fish Transportation Plan

CRITFC does not support the current juvenile transport plan and recommends in-river migration with spill for juveniles. The Corps continues to maximize transportation, especially in trucks, that does not hold up to independent scientific scrutiny. The FPP should reference the findings of the ISAB (98-2) *Response to the Questions of the Implementation Team Regarding Transportation,* with respect to juvenile transportation. There is no temperature, stress, injury or mortality criteria in the FPP for juveniles that must pass through screen and transportation facilities at the Lower Snake dams. This is a key deficiency in the FPP. Fish should not be handled, kept in screen bypass, or transportation facilities when temperatures meet or exceed 68 degrees F. However, the

FPP simply states that more care must be taken in handling salmon when these temperatures are or and exceeded in transportation facilities, which is in violation of water quality standards in the Clean Water Act.

Appendix G - Fish Sampling Protocols

It is CRITFC's understanding that a review of the current practices at the adult fish collection and monitoring facility is underway. Appendix G should be completed/updated in the next few weeks to allow FPOM the opportunity to provide a comprehensive review and comments specific to the facility.

The number of picketed leads lowered for adult guidance into adult fish collection facilities needs to be reviewed, especially if there are large numbers of migrating adults in the ladders. Operations should err on the side of caution. One option might be to start with a minimum number of picket leads (i.e. two). If sample numbers cannot be obtained during the sampling period then additional picketed leads should be utilized. FPOM should coordinate this operation and establish a criterion to determine when more picket leads should be lowered. These issues should be incorporated into the FPP.

The current FPP changes to adult handling procedures in elevated river temperatures are an improvement over past practices, but the FPP still specifies adult trapping and handling at 70ºF and above. The susceptibility of adults to bacteriophage diseases such as furunculosis and columnaris increases greatly at 68ºF (Bouck et al. 1975 in McCullough 1999). These diseases are readily transferred in water and from animal to animal. Egg viability is also compromised at these temperatures (McCullough 1999). CRITFC prefers that adults not be handled when temperatures in traps or fishways reach 68ºF. In 2001, NMFS limited adult handling in the Priest Rapids Dam trap to 69ºF in a ESA Section 10 incidental take permit. There should be a consistent temperature criterion for handling adults throughout the river, not exceeding 69ºF and preferably not exceeding 68ºF, the current water quality standard.

CRITFC is uncertain if high temperatures and handling stress can be mitigated by holding anesthetized adults in lower temperatures and then releasing them into higher temperatures in the ladders. We are concerned with the possibility of inducing a thermal shock with no way of determining the effects. Further, CRITFC has concerns with the temperature differentials between several tanks to which adults may be subjected. It remains a critical uncertainty as to whether or not the Corps' proposed 3ºF change is appropriate for adult health. We continue to recommend that a literature review of this practice be completed to see if there is scientific information to support this procedure. Until this review is completed, we cannot support the proposed action.

Winter trapping protocols. The Corps needs to ensure that adults are not held for longer than 24 hours.

Conclusion

CRITFC appreciates the opportunity to comment on the Corps' draft 2002 Fish Passage Plan. We have made many recommendations that we anticipate the Corps can incorporate into the final 2002 FPP. We stress that time is of the essence to resolve many of these passage issues before the onset of the 2002 migration season. Thus, we request written responses to our recommendations by March 1, 2002 so that the Corps and fishery managers may finalize the FPP by mid-March. With respect to policy issues such as 2002 spill at Lower Monumental, juvenile transportation and spreading the risk to in-river migrants by removing turbine intake screens and providing appropriate spill, we request that the Corps engage with CRITFC and member tribes in formal consultation.

In April 2001, during extremely low flow conditions caused by federal operator poweroperations and low runoff, CRITFC provided the federal executives with a detailed mitigation list of operations and maintenance projects recommended by FPOM. These were actions, such as installation of avian wires in tailraces, that could provide immediate survival benefits to salmon. Yet, the federal executives, including the Corps, declined the opportunity to implement these actions. From our review of the draft 2002 FPP, we note that many actions on the 2001 mitigation list still have not been implemented. The incremental per project and cumulative system salmon loss from the failure to implement these actions is significant. Many of these losses are preventable if the Corps and the other federal operators commit to funding these actions.

We look forward to working closely with the Corps staff in developing the final 2002 FPP. Should you have technical questions regarding these comments please contact Tom Lorz, Fisheries Engineer or Bob Heinith, Hydro Program Coordinator at (503) 238-0667.

Sincerely,

Don Sampson
Executive Director

Cc: Steven Wright, BPA; J. William McDonald, Reclamation; Robert Lohn, NMFS
Commissioners, tribal program managers, W. Branch, Corps NWD

Attachment 5

2002 Fish Facility Mitigation Projects

1) The Dalles Dam- Adult Collection Channel Bulkhead Replacement. Currently the project is stalled due to funding constraints. Installation would improve hydraulics in the adult fishway collection channel and allow for better emergency operations if one of the fish turbines fails. Installation would also make possible complete dewatering of the collection channel, which would allow for more timely repairs and improvements in the adult facility.

2) Bonneville Dam. Automated Chain gates at Bonneville Powerhouse I sluiceway. This would allow for improved operation and better compliance with sluiceway criteria. The sluiceway has been shown to be a passage route for both juveniles and kelts; insuring that the sluiceway stays in criteria assures better access and utilization of this passage route.

3) Bonneville Powerhouse Two. Adult fishway trash rake system. Currently the rack and the rakes are not properly meshed, thus trash raking does not work well. The fishway units have to shut down to allow debris to float off. This problem has been ongoing for several years. In the past, during the adult passage season, debris build-up in the diffusers led to a failure of the system, and the ladder was forced to operate with only the emergency auxiliary water-supply system for nearly a month and fishway criteria was not met. Purchase of a proper rake system that meshes well with the rack will help to reduce the debris problem and should halt the operation of having to turn off the fish units at night to remove the debris. This on/off operation can lead to premature failure of the units and can possibly affect night passage of adults.

4) John Day Dam- North shore fishway pump The fishway pump is currently unable to provide entrance criteria for both north shore adult entrances due to a potential constriction in the hydraulic conduit. Funds could be used to determine a remedy for this situation.

5) John Day Dam- Full Flow PIT-Tag detection on the juvenile transport flume. Currently, adults that fallback over the dam can spend extended periods of time in the juvenile system since there is no way to move them from the channel. Several hundred adults are removed each time the system is dewatered. This dewatering is stressful to adults and has led to mortality. A full flow PIT-Tag detection system would allow for operation of the juvenile facility so that adults would not hold in the dewatering section of the transport flume. Further, juvenile stress would be reduced since the dewatering structure would not need to be operated.

6) McNary Dam juvenile screen system outfall. Concern has been raised about increased avian predation in conjunction with the outfall. Methods for reducing predation should be designed, implemented and evaluated for effectiveness.

7) Bonneville Dam. Bradford Island adult ladder repair and modernization. Currently the Bradford Island ladder is the oldest in the Columbia River Basin and renovation and repairs are underway. Increased funding would assure that the work would be expedited. This ladder system passes a significant portion of all of the Basin's returning adults, thus, expedient repairs are critical.