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February 20, 2004

55-0161
FEB 23 2004

General Grisoli
Corps of Engineers

Bob Lohn
NOAA Fisheries

Steve Wright
Bonneville Power Administration

Dear General Grisoli, Mr. Lohn and Mr. Wright;

The following comments are offered in response to the federal agencies request regarding their summer spill effectiveness analysis. We recognize the significance of this analysis as it offers an innovative approach to recovering Northwest salmon. It is imperative that we evaluate the effectiveness of our actions if our goal is truly to recover threatened salmon populations. Indeed, the biggest threat facing Northwest salmon is the illusion of accomplishment without measurable performance indicators that can lull us into complacent, dogmatic thinking. This analysis is straightforward in gauging the benefits of spill. More significantly, it goes further than touting the accomplishments of a program, the analysis takes the next step to weigh the costs of the actions.

The federal analysis introduces new mitigation measures ("offsets") by presenting their biological benefits in numbers of additional fish side-be-side with the cost to be incurred by the region. These offsets have the advantage of building upon established programs that have proven effective. Until now, the region has not benefited from evaluating salmon recovery measures considering both the economics and biology. By doing so, we can find strategies that benefit fish and benefit the people of the Northwest who share the common goal of salmon recovery.

The summer spill analysis presented by the federal agencies has many merits. We support the analysis and the spirit in which it was undertaken. The modeling approach in this analysis provides a sound basis for comparing alternatives. This most recent use of the model considered a wider variety of salmon stocks, and it generated similar results to earlier incarnations. Please consider the attached technical comments as you further refine your analysis.

Sincerely,

Richard Adams
PNUCC Executive Director

Attachment

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Comments on Summer Spill Analysis by Federal Agencies

February 20, 2004

It is refreshing to see that the Federal Agencies (NOAA, BPA, COE) are reviewing the overall effectiveness of using summer spills as passage mechanism to improve survival of juvenile fall chinook. The analysis presented at both TMT and IT was the most comprehensive and detailed analysis yet conducted on the biological benefits and economic considerations attributable to the strategy of spilling water during the summer months of July and August. The use of summer spills as a passage strategy began in the mid-1990s and was included in the 2000 Biop as one of the reasonable and prudent alternatives that were necessary to improve on the survival of Snake River fall chinook listed for protection as "threatened" under the ESA.

The latest Federal Agency analysis is grounded in the very same computer model (SIMPAS) of fish passage survivals used in the 2000 Biop. However, SIMPAS was expanded to address all the major fish stocks that are migrating in the Snake and Columbia Rivers during the summer months. This expanded analysis helps to clearly show that the primary beneficiaries of the summer spill operation are Hanford Reach fall chinook. This is the strongest stock of salmon in the Columbia Basin and is currently supporting an ocean and river harvest rate that exceeds fifty percent. This harvest rate is also restricting the rate of improvement possible with listed Snake River fall chinook because they are subjected to essentially the same harvest pressures as the Hanford Reach falls.

The combination of extremely small biological benefits from summer spills for Snake River fall chinook with the harvest pressures that continue to limit this protected population make it critical that the Federal Agencies reevaluate this passage strategy. The analysis clearly shows that if summer spills are reduced or even eliminated the effects on Snake River fish can be easily compensated for by reductions in other sources of mortality at far lower cost. The Action Agencies need to factor this new analysis into their implementation plans under the current Biop. The achievement of the "performance standards" included in the Biop is of critical importance to achieving the goals of delisting the Snake River fall chinook. To be able to accomplish this goal in the shortest possible time the Federal Agencies have a management responsibility to ensure that available resources are applied in the most effective way possible. This latest analysis clearly shows that significantly greater biological benefits can be achieved at far lower cost. To continue with the current summer spill strategy will waste significant resources and delay the time when the listed fall chinook can recover.

The new analysis of the Federal Agencies should incorporate the latest scientific analysis of fish passage survivals reported by the Science Center in the NOAA Fisheries white paper entitled, "Passage of Juvenile and Adult Salmonids at Columbia and Snake River Dams", December 2003. (White Paper) This research paper provided the latest and most

credible scientific data on what is known and what remains unknown about salmon and steelhead passage survival through the Snake and Columbia dams.

It has been argued that fish that are not bypassed survive at significantly higher rates because those fish that did not experience bypass were either passed through the spillway or though the turbines. The White Paper reported that:

> "smaller fish are consistently detected at higher rates than larger ones at all three dams and for all fish groups examined (Figures 2 and 3). Coupled with the results from Zabel and Williams (2002) that larger spring/summer chinook salmon smolts return at higher rates than smaller ones, this may, at least partially, explain why multiple-bypassed fish in early analyses returned at lower rates than undetected ones (Sandford and Smith 2002)."

This helps to explain the differential survival rates for fish that were not detected when compared with those that did go through a bypass system and were thereby detected as juveniles. However the sample sizes remain small and there is an obvious need for additional research to more clearly identify the reach survival rates for fish that pass through spillways, turbines and bypass systems.

The White Paper was also clear about how much more difficult it is to monitor the movement and survivals of fall chinook when compared to spring chinook and steelhead. The complexity of the fall chinook life history was reported in the White Paper in the following way.

> "Thus, standard techniques used for yearling smolts to measure travel times or survival don't work quite as well. [for sub-yearling chinook] From 1995 to 2000, we released nearly 200,000 PIT-tagged smolts above Lower Granite Dam. Subsequently we detected only about 62,000. Of these nearly 15% were not detected at a Snake River dam until after 1 September of the year, some not until the following spring. For the "active" migrants, those that passed the Snake River dams in June, July, and August in the year of release for the hatchery fish, the median pooled travel time for all years from release to detection at Lower Granite Dam averaged 43.5 days (Smith 2003)."

Fish that are released after early July will most certainly pass through the lower Columbia dams long after the summer spill operation has stopped at the end of August. Even with the protracted migratory pattern for fall chinook the population is increasing with recent adult returns to Lower Granite shown in Figure 1.

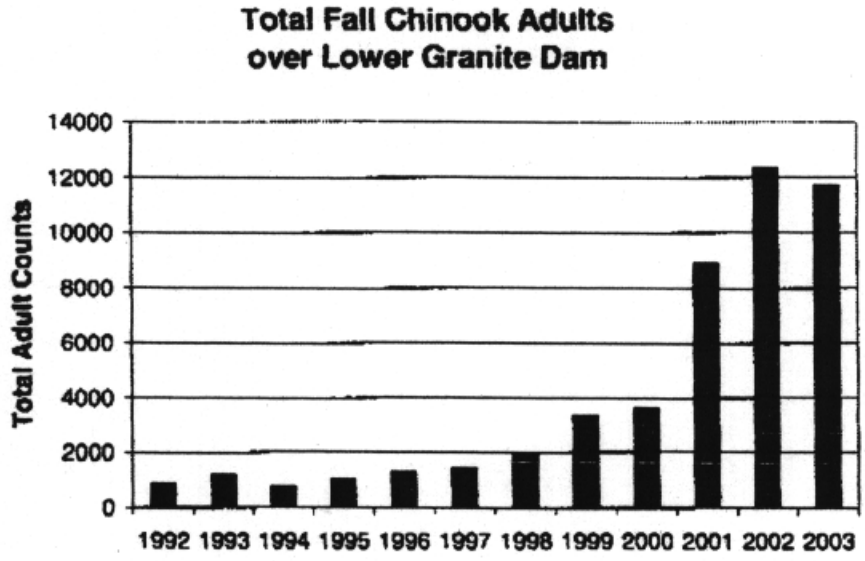

Figure 1 – Fall Chinook Adults Over Lower Granite Dam

The White Paper is also instructive on the relative survivals of Snake River fall chinook that migrate out of the system after the summer spills have stopped. The latest research is showing that while there is no survival estimate for juvenile fall chinook, those fish that migrate after summer spill has stopped currently making up 14 percent of the total adult return of PIT-tagged fish. In addition those fall chinook that are not detected at a dam (some of which undoubtedly migrate late in the year) are currently accounting for 36 percent of the total adult returns of PIT-tagged fish. The White Paper reports:

> "Migration of Snake River fall chinook is not as directed as that of spring chinook. Some percentage chose not to migrate until after water temperatures cool in September, while some do not migrate until the next spring. From the population of fish PIT-tagged between 1995 and 2000, 46,773 fish were detected passing either Lower Granite, Little Goose, or Lower Monumental Dam prior to 1 September of each year, while 5,301 were detected after 1 September. Of these, those that migrated early produced 142 adult returns, while those that migrated late produced 73, for comparative SARs of 0.32% and 1.29% respectively. Of all fish we PIT tagged over this time period, nearly two-thirds were not detected. Based on CJS survival estimates, a large number apparently died before ever reaching Lower Granite Dam.."

The White Paper also is helpful in better understanding the relative survival rates for fall chinook as they migrate through the reservoirs in the lower Columbia River. Fall chinook salmon (primarily wild fish from the Hanford Reach) were PIT-tagged at McNary Dam and released to the tailrace during most of the summer migration. Their survivals were measured to John Day dam with average survival ranging from 58% in 2001 to 78% in 1999.

SNOHOMISH COUNTY PUD PUBLIC UTILITY DISTRICT NO. 1

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SUMMER SPILL ANALYSIS

The Federal Agencies have requested comments on summer spill operations and cost effective mitigation alternatives.

Snohomish County PUD has been following the positions and actions of the Federal Action Agencies (BPA, NOAA-Fisheries and U.S. Army Corp of Engineers), regarding alternatives to summer spill which appears to be the most costly single fish passage strategy for the FCRPS ever implemented.

The efforts to review and improve summer spill operations began at least as early as August 26, 2003 when the Regional Federal Executives stated that the summer spill regime "... *appears to be excessively costly relative to the biological benefit provided.*"

We have reviewed the most recent analysis of the costs and benefits of summer spill. Those results, which are attached, show that the cost per fish is as high as $ 3 million per listed adult fish.

Whether summer spill is costing thousands or whether it is millions of dollars per fish is no longer debatable. The fundamental conclusion is that this is the most costly way to achieve a goal that can be met at far less cost to the people of the Northwest. At some point, and we have reached and past that point, the recurring, fundamental evidence is beyond dispute. /1

Debating whether the cost of summer spill to BPA and the region per year, per listed fish, under a particular set of modeling assumptions ends up being $4 million or $4 thousand begs the question as to whether a more cost effective approach can be pursued.

/1 Similiar conclusions can be drawn from past analysis. Bruce Suzumoto, Northwest Power and Conservation Council staff presented "*Fish and Energy Impacts Resulting from Reductions in Summer Bypass Spill,*" to the Council in July 2003 when the efficacy of summer spill was raised (www.nwcouncil.org\news\2203_7\spill\slide1.htm). Then, during the power crisis of 2000-01, Jim Ruff, NOAA Fisheries, presented a draft analysis "*NMFS 2001 Summer Spill Survival Analysis.*" (June 13, 2001).

The latest NOAA analysis is grounded in the same computer model (SIMPAS) of fish passage survivals used in the 2000 Biop. This analysis shows that the primary beneficiaries of the summer spill operation are Hanford Reach fall chinook. This is the

strongest stock of salmon in the Columbia Basin and is currently supporting an ocean and river harvest rate that exceeds fifty percent. This harvest rate is also restricting the rate of improvement possible with listed Snake River fall chinook because they are subjected to essentially the same harvest pressures as the Hanford Reach falls.

The combination of extremely small biological benefits from summer spills for Snake River fall chinook with the harvest pressures that continue to limit this protected population make it critical that the Federal Agencies reevaluate this passage strategy. **The analysis clearly shows that if summer spills are reduced or even eliminated, the effects on Snake River fish can be easily compensated for by reductions in other sources of mortality, at far lower cost.**

We support cost effective mitigation/offset measures such as expanding the successful program that pays anglers to catch the Northern Pikeminnow, a predator that feeds on small salmon as well as extending and expanding a successful program that protects against stranding of juvenile salmon within the Hanford Reach.

The Action Agencies need to include this new Federal analysis into their implementation plans under the current Biop. Moving toward "performance standards" in a new Biop is critical to achieve in a cost effective way the recovery and eventual delisting of the Snake River fall chinook.

To be able to accomplish this goal in the shortest possible time, the Federal Agencies should ensure that available resources are applied in the most effective way possible. This latest analysis clearly shows that equal or greater biological benefits can be achieved at far lower cost. To continue with the current summer spill strategy will waste significant resources and delay the time when the listed fall chinook can recover.

Section 4(h)(6)(C) of the Regional Power Act states: "*utilize, where equally effective alternative means of achieving the same sound biological objective exist, the alternative with the minimum cost;*"

Snohomish County PUD applauds the efforts, to date, of the Federal Agencies to examine, in depth, the issues surrounding summer spill and to take the steps necessary to achieve the Federal Executives August 26, 2003 declared, summer spill goal to "*... have a method in place by next year to ensure that biological benefits are met in the most cost effective manner available.*"

We believe it is now time to eliminate and replace it with more cost effective alternatives. The decision to modify summer spill must be made in March. Failure to act runs counter to the Federal Executives August 26, 2003 determination, with respect to summer spill, that they "*... have a responsibility to the region to devise an approach that is less costly while maintaining the ability to achieve the biological objectives for salmon and steelhead, ...*"

Adult Impacts

Affected Stock	Number of Juveniles Migrating	Percent Migrating in July and August	Number Migrating in July and August	Adult Conversions Based on a 2% SAR (Converted from Juveniles Surviving to below BON in July and August)						
					Variations of Option 2					
FALL CHINOOK				No Spill July-Aug	No IHR, No Aug, BON 0 v. BiOp, JDA 30% (Option B)	No IHR, No Aug, BON 50 v. BiOp, JDA 30% (Option C)	BiOp Spill in July, No August Spill	BiOp Spill thru Aug 15, No IHR Spill	BiOp Spill Except IHR	BiOp Spill Jul-Aug
Upriver Bright										
Priest Rapids & Ringold Springs Hatcheries	10,200,000	66%	6,763,000	79,600	81,800	82,000	82,600	83,600	83,800	83,800
Hanford Reach Natural	25,000,000	66%	16,575,000	195,200	200,600	201,000	202,400	204,600	205,600	205,600
Yakima River & Marion Drain	1,020,000	46%	468,000	5,600	5,600	5,600	5,800	5,800	5,800	5,800
Snake River Bright										
Listed Wild Snake River	1,052,000	90%	944,000	2,396	2,408	2,408	2,414	2,416	2,418	2,420
Unlisted Lyons Ferry Hatchery	3,300,000	90%	2,963,000	7,600	7,600	7,600	7,600	7,600	7,600	7,600
Unlisted Nez Perce and Big Canyon Hatcheries	2,050,000	90%	1,841,000	4,600	4,600	4,600	4,800	4,800	4,800	4,800
Mid-Columbia Bright										
Deschutes River	1,474,000	41%	599,000	7,600	8,200	8,200	8,200	8,400	8,400	8,400
Klickitat River	4,000,000	41%	1,626,000	26,400	26,600	26,800	27,000	27,000	27,200	27,200
Umatilla River	1,080,000	41%	439,000	3,400	3,800	3,800	4,000	4,200	4,200	4,200
Little White Salmon River	2,000,000	41%	813,000	13,200	13,400	13,400	13,400	13,600	13,600	13,600
SUMMER CHINOOK										
Upper-Columbia	2,574,000	66%	1,706,000	20,000	20,600	20,600	20,800	21,000	21,200	21,200
TOTAL	53,750,000	65%	34,737,000	365,400	375,400	376,200	378,800	382,800	384,400	384,400
Difference from BiOp spill				(19,000)	(9,000)	(8,000)	(6,000)	(2,000)	-	-
Cost savings from BiOp (in millions)				**$77**	**$54**	**$51**	**$42**	**$26**	**$8**	**$0**
Cost savings range (in millions)				**$55 - $92**	**$32 - $64**	**$30 - $61**	**$25 - $50**	**$15 - $32**	**$5 - $11**	**$0**

Option B	July 1-20	July 21-31	August 1-31
Bonneville	0kcfs vs BiOp		no spill
The Dalles	40% 24-hr		no spill
John Day	30% 24-hr	30% 12-hr	no spill
Ice Harbor	no spill	no spill	no spill

Option C	July 1-20	July 21-31	August 1-31
Bonneville	BiOp vs 50kcfs		no spill
The Dalles	40% 24-hr		no spill
John Day	30% 24-hr	30% 12-hr	no spill
Ice Harbor	no spill	no spill	no spill

PUBLIC POWER COUNCIL 2/20/04

The Public Power Council, representing the common interest of 114 consumer-owned utilities Pacific Northwest, is keenly aware of the effects of the federal hydrosystem on fish and wildlife resources in the Columbia River basin. We offer these comments to provide a balance of information on the issue of the summer spill program as described in the NOAA-Fisheries (NOAA-F) Biological Opinion (BiOp) for the Federal Columbia River Power System (FCRPS). We appreciate your willingness, and that of U.S. Army Corps of Engineers (USACE) and NOAA-F, to consider alternatives to mitigate adverse effects on juvenile salmonids.

Recommendation 1: The federal government should support a flexible approach to mitigating adverse effects to fish and wildlife as described in the NOAA-F 2000 BiOp and advocated by both the Northwest Power and Conservation Council (Council) and Regional Federal Executives.

There was considerable uncertainty in the benefits of various fish mitigation measures when NOAA-F issued the 2000 BiOp. NOAA-F declares, in Section 9.1.6, Monitoring, Evaluation, and Progress Reporting, that " . . . despite full use of the best science available, substantial uncertainty remains about the effectiveness of measures available to meet the biological requirements of listed ESU's." Moreover, NOAA-F says that the mitigation prescriptions are flexible and can be modified to incorporate new research. Again in Section 9.1.6: "An annual, multiyear planning process to refine, implement, evaluate, and adjust ongoing efforts is critical to achieving the FCRPS hydro and offsite performance standards within the time frame covered by this biological opinion." As more directly applied to the hydro system, in Section 9.1.2, Hydro Actions, NOAA-F maintains that "NMFS may deem other combinations of measures sufficient to meet the performance standards and avoid jeopardy."

In April 2003, the Council issued its updated mainstem amendments that call for a study of spill at federal dams. The Council said that that it "will work with the federal operating and fish and wildlife agencies, in consultation with the state fish and wildlife agencies and tribes and the Independent Scientific Advisory Board in a rigorous evaluation of the biological effectiveness and costs of spillway passage at each project and bring that information to bear in a systematic way in decisions on when, and how much, to spill. The goal of this evaluation should be to determine if it is possible to achieve the same, or greater, levels of survival and biological benefit to migrating fish as currently achieved while reducing the amount of water spilled, thus decreasing the adverse impact on the region's power supply. At the conclusion of this evaluation, the Council will conduct a public review process with the goal of providing recommendations to the federal agencies for the most biologically effective spill actions at the lowest cost possible."

On August 16, 2003, BPA, USACE and NOAA-F issued a statement describing the summer spill program as being excessively costly relative to the biological benefit provided. The agencies noted that their goal is to "have a method in place by next year to help ensure that biological benefits are met in the most cost effective manner available". They concluded that they "have a responsibility to the region to devise an approach that is less costly while maintaining the ability to achieve the biological objectives for salmon and steelhead, and will work with all interested parties in the region to accomplish this objective."

Regional representatives of NOAA-F have said that there is adequate flexibility in the 2000 BiOp to allow refinement of mitigation options. In a statement to the Council on December 11, 2003, Bob Lohn, Regional Director of NOAA-F, said, "I certainly don't foresee a future of no spill . . . there are places where spill could be reduced and you could in effect use the regional resources that are freed up because of that to produce other alternatives that are equally effective."

Recommendation 2: The federal government should acknowledge and support the cooperative effort used to assess alternatives to the summer spill program.

An ad hoc group composed of representatives from NOAA-F, BPA, USACE, the Council, U.S. Fish and Wildlife Service, state fish and wildlife management agencies, university researchers, tribal representatives and utility interest groups worked cooperatively to identify more cost-effective alternatives to the summer spill program. Various sub-groups performed an analysis to determine the effects of various hydro operations on a variety of Endangered Species Act (ESA) listed and non-listed salmon and steelhead stocks in the Columbia River basin. Alternate mitigation measures were also developed. While there may be disagreement over various policies regarding fish and wildlife mitigation, a diverse list of parties took part in assessing summer spill and its alternatives. The results of these various work efforts were presented to the Council on January 21, 2004. NOAA-F, BPA and USACE generally agreed on the results of the analysis.

Recommendation 3: The SIMPASS model should only be used to estimate the relative difference in the survival of juvenile salmonids through various passage routes.

The SIMPASS model is used by NOAA-F to estimate the relative effects of various passage routes through a specific dam on the survival of juvenile salmonids. The most useful results attained from the model are a percentage change in survival per dam, per each operation tested.

The actual number of fish exposed to each operational scenario is open to much more speculation. There are significant gaps in information regarding the productivity of wild fish and the survival of both wild and hatchery fish through various river reaches. This uncertainty is not adequately estimated in the SIMPASS model.

According to the SIMAPSS analysis, the mortality of juvenile salmonids outmigrating from the Columbia River basin will increase, if summer spill is eliminated, as follows:

* Snake River Fall chinook (both ESA-listed and non-listed) = 0.13%
* Upper Columbia River fall chinook (not ESA listed) = 3.16%
* Mid-Columbia fall chinook (not ESA listed) = 2.41-9.11%
* Upper Columbia summer chinook (not ESA listed) = 3.16%

Recommendation 4: The federal government should implement alternate mitigation options for protecting juvenile salmonids outmigrating through the FCRPS.

Summer spill is a form of mitigation. The purpose of mitigation is to increase the survival of juvenile salmonids as they outmigrate through the FCRPS. There are, however, a variety of mitigation alternatives available to the region. Barging is an accepted form of mitigation used to increase the survival of juvenile salmonids. Control of avian and piciverous predators has demonstrated a significant benefit to juvenile salmonid populations. The federal government should implement the most effective and cost-efficient combination of mitigation alternatives.

Because summer spill redirects water that would otherwise be used to produce electricity, it is the most expensive mitigation method used by federal river managers. The recent joint federal study presented to the Council on January 21, 2004, confirms that summer spill is expected to cost ratepayers about $77 million annually, while saving only 24 adult endangered fall chinook salmon. Summer spill is thus the most expensive single-fish passage strategy. Summer spill also benefits 19,000 non-listed fish (5% of last year's 384,000 returning adults). Those non-listed fish, which are commercially harvested, are returning in record numbers. The $77 million cost breaks down to $3 million for each endangered fish and $4,000 for each non-listed fish.

We advocate 1%-2 % increase in the current pikeminnow management program and implementation of the new Hanford Reach agreement to protect rearing fall chinook salmon. These two alternate mitigation measures will adequately offset any potential adverse effects to outmigrating juvenile salmonids due elimination of summer spill.

1. Expand the Northern pikeminnow management program. Northern pikeminnow are significant predators of juvenile salmonids migrating to the ocean. BPA now funds a program that pays a bounty to anglers who catch them. Increasing the harvest of these predators by 1%-2% will increase the number of fall chinook returning to the Columbia River by 500 to 8,000 adult fall chinook salmon in the first year at an estimated cost of $500,000 to $1 million.

2. Expand a fall chinook protection program in the Hanford Reach. This new springtime protection program manages water levels to ensure that juvenile salmon will not become stranded. This program is expected to protect millions of fall chinook salmon fry, resulting in an estimated additional 50,000 adult fall chinook salmon returning to the Columbia River each year at an annual cost of less than $1 million.

Despite the widely acknowledged limitations of the SIMPASS model, the region has decided to use its results to estimate the effects of modified spill operations on the adult fall chinook population returning to the river. According the federal analysis, implementing the recommended mitigation alternatives will result in a net increase in adult fall chinook returning to the Columbia River basin. This would be a significant savings to the citizens of the region.

In Summary, the alternate mitigation program provides a potential savings of over $75 million to the region, with a net benefit in the number of adult fall chinook salmon returning to the Columbia River each year. We should not measure the success of a salmon recovery program on how much money is spent, but on the results of that recovery effort.