

# ATTACHMENT 1

## Issue Summary for the Regional Implementation Oversight Group

### Introduction:

The ISAB Report (2008-5) Snake River Spill-Transport Review, released on September 16, 2008, made recommendations concerning operations of Snake River transport collector projects during spring operations. The following was developed in response to the RIOG's request for the Action Agencies NMFS to provide an issue summary upon which the RIOG will discuss near term actions and future operations

### Background:

Spill and transport operations were discussed extensively during the FCRPS BiOp remand collaboration both at the technical and policy levels. While considerable discussions took place regarding all up-river stocks, many of the key issues involved Snake River ESUs or DPSs.

During development of the Action Agencies' proposed RPA, the hydro actions work group (HAWG) identified several spill and transport options that were evaluated using the COMPASS model.<sup>1</sup> These included:

1. Base Case: 2004 Updated Proposed Action
2. 2006 Preliminary Injunction
3. 2006 Court Order as implemented through the adaptive management process
4. Temperature-Based Criteria for triggering spill/transport operations
5. The CRITFC/OR Technical Proposal
6. The CRITFC/OR Technical Proposal (with no transport)
7. The CRITFC/OR Technical Proposal (with no transport and no turbine intake screens)

As a result of these evaluations, the Action Agencies identified a spill/transport operation for the proposed RPA that was included in the Biological Assessment (BA) submitted to NMFS in August 2007. Included in the BA was a section called the "Rationale for Transport Operation" (Attachment B.2.1-1), which provided relevant information supporting the proposed transport operations. For the spring season, the BA included a 3-tier operation with each tier determined by estimated flow level for the season. The 3-tier flow levels were <65 kcfs, 65 – 80 kcfs and > 80 kcfs (*see* Enclosure 1). During the development of the BA, the Action Agencies determined that balancing spill and transport operations to enhance smolt to adult returns (SARs) of both Snake River

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<sup>1</sup> See Remand Website: /remand/working documents by group and step/step 5 hydro actions/17 august 15 2006. "Operational Scenarios from Aug15 HAWG meeting - draft 060906.xls <<https://secure.bpa.gov/SALMONRECOVERY/Default.aspx?FolderID=515&DownloadDocID=3294>> " for operational assumptions; see /remand/working documents by group and step/step 5 hydro actions "April 30 Hawg summary-Chris.Toole@noaa.gov.xls" for results.

Chinook and steelhead was challenging because the COMPASS model run demonstrated there were significant tradeoffs.

The analysis incorporated the most current research data regarding the benefits of transport vs. in-river depending on timing of juvenile migration. It indicated a 8.2% SAR improvement from the base case for Snake River spring Chinook and a -11.9% SAR reduction from the base case for Snake River steelhead (see Tables B-16 and B-18 in Appendix B pp B-22 and B-24). The base case is defined as the baseline conditions in which we assessed the relative benefits of future actions. The base case was the 2004 operations BiOp with project configuration improvements included through 2006.

The following general conclusions from the COMPASS analysis relative to expected SARs of transported fish were ascertained. First, SARs of in-river migrating Chinook were higher in April and early May, but lower in mid to late May. Second, SARs of in-river steelhead were lower throughout the year. This information was used to consider spill-transport alternatives for the proposed RPA to better protect Snake River steelhead, while maintaining benefits to Chinook.

Based upon the best available scientific information, NMFS, in coordination with the Action Agencies, considered additional spring transport operational scenarios to address the tradeoffs presented for Snake River steelhead and Chinook and identified a simpler 2-tiered operation that increased benefits to steelhead and minimized a reduction in Chinook survival (*see* Enclosure 1). The primary difference in the NMFS operation was eliminating spill at the Snake River collector projects (Lower Granite, Little Goose, and Lower Monumental dams) during the last two weeks of May, which allowed for increased transport of steelhead and Chinook when SARs of transported juveniles exceed those of in-river migrating juveniles based on current data. All other project operations remained the same during this time period.

The COMPASS model analysis of the NMFS operation suggested a 7.9% increase in SARs from the base case for Chinook and a -3.8% reduction of SARs from the base case for steelhead (see Draft SCA Hydro Modeling Appendix 1st two tables). In comparing the draft BiOp results to the BA, this reduced the adverse impact to Snake River steelhead from about -11.9% to -3.8% for SARs.

For the final BiOp, NMFS further revised the spring transport operation in the Snake River in response to comments on the draft BiOp. Again, NMFS stayed with the simpler 2-tiered operation but shifted the spill reduction time frame approximately a week earlier (Enclosure 1). Essentially, spill would be reduced at the Snake River collector projects from May 7 to May 20 rather than a week later, in order to accommodate the fall Chinook subyearling outmigration that increases during the latter part of May.

The COMPASS model analysis for the final BiOp operation indicated a 5.2% and 0.1% increase in SARs for from the base operation for Chinook and steelhead respectively. This is now the base operation in the 2008 BiOp, which is subject to adaptive management.

## **Issue Discussion:**

Through the course of the development of the draft and final BiOp, several sovereign parties expressed concern about the two week spring spill curtailment in May and requested further scientific review. NMFS agreed to review the scientific justification of the spring spill/transport operations with the Independent Scientific Advisory Board (ISAB) in March 2007 and posed several questions. Oregon and CRITFC added additional questions for the ISAB's consideration. ISAB released their final report in September 2008. In general, the ISAB concluded that the BiOp analysis relied on the best available scientific data currently available. However, the ISAB also expressed concern about potential future changes in data that might favor in-river migration in the future (based on projections from better juvenile survivals), as well as the undocumented effects of the 2 week transportation scenario on unlisted fish and sockeye. (*see* ISAB Report (2008-5) posted on RIOG website).

As a result of the recommendations of the ISAB report and implementation of the adaptive management provisions of the 2008 FCRPS BiOp, the Action Agencies and NMFS are utilizing the RIOG (sovereigns) to discuss future operations at the Snake River collector projects, including the scientific information presented by the ISAB for the spring spill and transport operations.

At the October 29, 2008 RIOG meeting in Spokane, the ISAB report was discussed and several actions were identified to resolve near term actions and future operations for discussion at the next RIOG meeting. Key action items included: (1) the Action Agencies and NMFS were to develop an issue summary presenting information on May spill curtailment, and set up the RIOG meeting to further discuss; (2) NMFS was to provide COMPASS analysis for Chinook and steelhead with and without spill at the collector projects for RIOG review; and, (3) RIOG requested a representative of the ISAB brief their report at the next RIOG meeting.

### *Action Item 1 Issue Summary*

At the October 29 RIOG meeting, the Action Agencies and NMFS presented 3 possible options for consideration by the regional sovereigns concerning 2009 May spill and transport operations. The following discussion describes these options and includes COMPASS modeling information pertaining to the options. Enclosure 2 contains the COMPASS modeling results. In addition, the Action Agencies and NMFS prepared the federal agencies' views on the pros and cons of each option in Enclosure 3. Timing of future adults return is also provided in Enclosure 4.

## **Option 1:**

Operations: Implement the operations identified in the 2008 FCRPS BiOp.

- This option would have no spill at Snake River collector projects during the May 7 to May 20 time frame (Lower Granite, Little Goose and Lower Monumental dams). Continue to collect adult information on the 06 and 07 juvenile outmigrations and assess relative benefits between spill and transport operations.

Biological Response per COMPASS Modeling:

- The same as in final 2008 FCRPS BiOp.

Adaptive Management: Consider changes to the BiOp operation based on adult return data.

- If adult returns show a change favoring in-river survival, consider changes or elimination of the 2 week transport period, in collaboration with the RIOG.

Sockeye Studies: Consider, design, and implement sockeye studies as described below.

## **Option 2:**

Operations: Modify spill operations at the Snake River collector projects in 09 during the May 7 to May 20 time frame for 1-year, and then re-evaluate based on the additional year of adult return data.

- This operation will continue the spill program during the May 7 to May 20th time frame rather than maximum transportation at the collector projects (in >65 kcfs flow years).
- The spill operations will be consistent with spill operations prior to May 7 and following May 20 as outlined in the BiOp.

Biological Response per COMPASS Modeling:

- The modeling indicates that on average, the relative impact to steelhead and yearling Chinook SARs would be about -6.4% and -1.3%, respectively (70 year water record). If Snake River flows are lower than expected, in the range of 65 to 80 kcfs, the estimated impact on SARs would be about -14% and -3%, for steelhead and spring/summer Chinook, respectively (*see* Enclosure 2).

Adaptive Management: Assess adult return information from the 06 and 07 juvenile outmigration and determine whether the relative benefits of transport and in-river operations differ significantly from the BiOp analysis. If they do, continue the spill operation and re-assess annually. If they are consistent with the BiOp analysis,

implement the BiOp transport operation in 2010, unless additional information warrants further consideration.

Sockeye Studies: Consider, design, and implement sockeye studies as described below.

**Option 3:**

Operations: Modify spill operations at the Snake River collector projects during the May 7 to May 20 time frame for two years.

- This operation will be the same as Option 2, except that two years of adult return data would be considered when evaluating future BiOp spill and transport operations.

Biological Response per COMPASS Modeling:

- The results for this option are the same as Option 2.

**Additional Information for RIOG Consideration Concerning Future Transport/In-river Information:**

Sockeye Salmon Studies: A preliminary transport/in-river survival study is being considered in regional forums for possible implementation in 2009. Additional studies may be implemented in 2010 and beyond. These studies would be designed to ensure a balance of the study design needs with the potential impacts on survival for Snake River Chinook and steelhead. They would also be conditioned on priority within AFEP and other regional processes and sufficient numbers of fish available for tagging to yield reliable results. The final results for the sockeye studies will be complete with the adult returns which is two years following the juvenile outmigration.

Ongoing Spring Chinook and Steelhead Studies: Transport/in-river survival studies continue. Results are available 2 to 3 years later for steelhead and 3+ years later for Chinook salmon. The SARs for the fish migrating during the 2006 and 2007 will be available beginning in 2009. In 2009 we will have nearly complete returns of adult steelhead and Chinook for the 06 and 07 juvenile migration.

**Biological Assessment**

		<b>Spring Migrants</b>					<b>Summer Migrants</b>		
<b>Lower Granite</b>		Spill and Bypass	Spill and Transport	Transport and No Voluntary Spill	Adaptive <sup>2/3/</sup>	Spill and Transport	Adaptive	Transport and No Spill	Adaptive
Seasonal Average flows < 65		none	none	April 3 to May 31	June	July	August	Sept	Oct
Seasonal Average Flows 65 to 80		April 3 to April 20	April 21 to April 30	May 1 to May 31	June	July	August	Sept	Oct
Seasonal Average Flows > 80		April 3 to April 20	April 21 to May 31	NA	June	July	August	Sept	Oct

**Draft BiOp**

		<b>Spring Migrants</b>					<b>Summer Migrants</b>		
<b>Lower Granite Dam</b>		Spill and Bypass	Spill and Transport	Transport and No Voluntary Spill	Adaptive <sup>2/3/</sup>	Spill and Transport	Adaptive	Transport and No Spill	Adaptive
Seasonal Average Flows < 65 kcfs		None	None	April 3 to May 31	June	July	Aug	Sept	Oct +
Seasonal Average Flows > 65 kcfs		April 3 to April 20	April 21 to May 14	May 15 to May 31	June	July	Aug	Sept	Oct +

**Final BiOp**

		<b>Spring Migrants</b>							
		Spill and Bypass	Spill and Transport	Transport and No Voluntary Spill	Adaptive <sup>2/3/</sup>	Spill and Transport	Adaptive	Transport and No Spill	Adaptive
Seasonal Average Flows < 65 kcfs		None	None	April 3 to May 31	June	July	Aug	Sept	Oct +
Seasonal Average Flows > 65 kcfs		April 3 to April 20	April 21 to May 6 and May 21 to May 31	May 7 to May 20	June	July	Aug	Sept	Oct +



2008 BiOp (with spill cessation period) vs 2008 BiOp (continuing spill from May 7-20 at the three Snake River collector projects)

Snake River Spring/Summer Chinook

Average estimates for analysis parameters

	In River Survival	"destined" for transport	Whole population LGR SAR
Extra spill	0.612	0.616	0.00902
2008 BiOp	0.608	0.604	0.00914
Absolute change	0.004	-0.067	-0.00012
Relative change from BiOp	0.7%	-9.8%	-1.3%
Extra spill	0.522	0.854	0.00825
2008 BiOp	0.519	0.887	0.00836
Absolute change	0.003	-0.033	-0.00011
Relative change from BiOp	0.5%	-3.7%	-1.3%
Extra spill	0.615	0.579	0.00855
2008 BiOp	0.604	0.725	0.00882
Absolute change	0.011	-0.146	-0.00027
Relative change from BiOp	1.8%	-20.2%	-3.1%
70 year Average			
<65 KCFS n= 13			
65-80 KCFS n= 13			
>130 KCFS n= 8			
Extra spill	0.652	0.496	0.00991
2008 BiOp	0.652	0.505	0.00993
Absolute change	0.000	-0.009	-0.00001
Relative change from BiOp	0.0%	-1.8%	-0.1%

Note: Based on the most recent long-range forecasting, "average" flows are expected in 2009. As average flows are usually in the range of about 90 to 100 cfs (Apr 10 - June 22 averages), average flows in the range of 80 to 110 kcfs are the most likely to occur in 2009.

Thus, the 80-130 category (representing over 50% of the years in the 70-year record) are most likely applicable to 2009.

Snake River Steelhead

Average estimates for analysis parameters

	In River Survival	"destined" for transport	Whole population LGR SAR
Extra spill	0.384	0.711	0.01686
2008 BiOp	0.385	0.771	0.01801
Absolute change	-0.002	-0.060	-0.00115
Relative change from BiOp	-0.5%	-7.7%	-6.4%
Extra spill	0.093	0.859	0.01744
PA	0.091	0.890	0.01810
Absolute change	0.001	-0.031	-0.00065
Relative change from BiOp	1.5%	-3.5%	-3.6%
Extra spill	0.296	0.665	0.01488
PA	0.289	0.793	0.01737
Absolute change	0.007	-0.128	-0.00248
Relative change from BiOp	2.6%	-16.1%	-14.3%
70 year Average			
<65 KCFS n= 13			
65-80 KCFS n= 13			
>130 KCFS n= 8			
Extra spill	0.613	0.619	0.01779
PA	0.617	0.628	0.01795
Absolute change	-0.004	-0.009	-0.00016
Relative change from BiOp	-0.6%	-1.5%	-0.9%

## Effects of Spring Spill Operational Changes on Snake River ESUs

December 4, 2008

	Pro	Con
<b>Option 1</b>	<ul style="list-style-type: none"> <li>• Highest survival benefits for SR sp/su Chinook and steelhead</li> <li>• Many more Chinook and steelhead are migrating than SR sockeye</li> </ul>	<ul style="list-style-type: none"> <li>• Spill stoppage occurs when many sockeye migrate</li> <li>• Survival effects on SR sockeye unknown</li> <li>• Transport may increase adult straying</li> </ul>
<b>Option 2</b>	<ul style="list-style-type: none"> <li>• At end of 2009 additional adult SAR data can be reviewed</li> <li>• Additional year of spill will provide additional in-river survival data</li> <li>• May help spread risk to SR sockeye</li> <li>• Gives time to explore sockeye RME (PIT tag study)</li> <li>• Consistent with ISAB advice</li> </ul>	<ul style="list-style-type: none"> <li>• On average, may <b>decrease</b> Chinook survival by 1.3% and steelhead survival by 6.4% for one year (COMPASS)</li> <li>• Many more Chinook and steelhead are migrating than SR sockeye</li> <li>• May result in risk to current harvest levels</li> </ul>
<b>Option 3</b>	<ul style="list-style-type: none"> <li>• At end of 2010, two additional years of adult SAR data can be reviewed</li> <li>• Two additional years of spill will provide two more years of in-river survival data</li> <li>• May help spread risk for sockeye</li> <li>• Gives more time to implement sockeye RME</li> <li>• Consistent with ISAB advice</li> </ul>	<ul style="list-style-type: none"> <li>• On average, may <b>decrease</b> Chinook survival by 1.3% and steelhead survival by 6.4% each year (COMPASS)</li> <li>• Many more Chinook and steelhead are migrating than SR sockeye</li> <li>• May result in risk to current harvest levels</li> </ul>

ENCLOSURE 3

**Adult Returns for SR Sp/Su Chinook and Steelhead in 2009 and 2010 Based on  
Ocean Residency**

December 4, 2008

- The 2006, 2007 and 2008 juvenile outmigrations had court ordered spill operations in place during the month of May.
- The majority of SR spring/summer Chinook spend 2 or 3 years in the ocean. For a particular outmigration year, in general >95% of the adults have returned after 3 years.
- The majority of SR steelhead spend 1 or 2 years in the ocean. For a particular outmigration year, in general >95% of the adults have returned after 2 years.

	<b>SR Sp/Su Chinook</b>		<b>SR Steelhead</b>	
<b>Adult Return Year</b>	<b>Outmigration Year</b>	<b>Years in Ocean</b>	<b>Outmigration Year</b>	<b>Years in Ocean</b>
2009	2006	1,2,3	2006	1,2,3
	2007	1,2	2007	1,2
	2008	1	2008	1
<b>Adult Return Year</b>	<b>Outmigration Year</b>	<b>Years in Ocean</b>	<b>Outmigration Year</b>	<b>Years in Ocean</b>
2010	2006	1,2,3,4	2006	1,2,3
	2007	1,2,3	2007	1,2,3
	2008	1,2	2008	1,2
	2009	1	2009	1

## **ATTACHMENT 2**

## Federal Recommendation on 2009 Spring Spill/Transport Operations

In the recent ISAB report regarding spill and transport, the ISAB acknowledges --- or at least does not dispute --- that the spill/transport regime in the FCRPS BiOp provides greater benefits to Snake River Chinook and steelhead during the late April through May timeframe, given the conditions under which existing data were acquired. However, because more recent structural improvements and operational changes have been implemented, the ISAB report included a recommendation to continue the 2006 and 2007 spill regime to collect data derived from these changed conditions. In addition, the ISAB also recommended continuation of the recent spring spill regime in the Lower Snake River so that additional information can be gathered about the effects on Snake River sockeye and lamprey. Since this recommendation is not purely a scientific conclusion, but represents a policy judgment about which risks should be accepted in the face of scientific uncertainty, the implementation of this recommendation is properly a matter for regional collaboration, and is therefore being brought before the Regional Implementation Oversight Group (RIOG) for consideration.

The Federal agencies' recommendation represents NOAA Fisheries' and the Action Agencies' willingness to modify operations through the BiOp's adaptive management process, and was reached after consideration of input provided thus far from the other sovereigns within the RIOG. As reflected by the differences of opinion expressed by the RIOG previously, the implementation of this recommendation does not come without potential impacts. According to COMPASS modeling, which is based on the best currently available data, maintaining spill operations in mid-May appears to have a significantly negative effect on Snake River Chinook and steelhead. Although there are a number of considerations, this modification has the potential to impact B-Run steelhead to such an extent that it may affect treaty and non-treaty harvest in future years.

The Federal agencies are prepared to implement this recommendation for the 2009 migration season and wish to obtain the views of the RIOG on this issue. The Federal recommendation is made in cognizance that at the conclusion of the 2009 operational year, there will be substantial new information regarding the full extent of the effects of this regime from 2006 and later years. Given the potential biological significance of the recommended operation, we believe that there should be a thorough review of all available survival information relating to this regime before future decisions are made regarding its continuation for a longer period of time.

### Recommendation:

- Continue spill and transport at Lower Granite, Little Goose and Lower Monumental dams outlined in RPA No. 30, Table 3 from May 7, 2009 through May 20, 2009 (unless seasonal average flows in 2009 are < 65kcs).
- This change in operations will take place for 2009 only, after which juvenile survivals from 2009 and adult returns from the 2006, 2007 and 2008 outmigrations will be evaluated.
- Explore the feasibility of implementing a Snake River sockeye transport/in-river survival study in 2009 and implement if possible. Any study would be designed to ensure a balance between study value and potential impacts to survival for steelhead and Chinook.

# ATTACHMENT 3

## FCRPS BiOp Implementation

### RIOG Conference Call 12-12-08

#### Introductions & Agenda Check (Bruce)

#### Presentation on ISAB Report (Rick Alldredge, ISAB)

- see power point presentation

#### Questions and Answers

Jim Litchfield Qs:

1. is there more of a benefit to steelhead with transportation?

A: yes, in general

2. one of the struggles we have is how to balance the various species. Did the ISAB look at the comparisons between species? Compass runs show that proceeding with ISAB recommendations, steelhead and Chinook survivals would be reduced. Did the ISAB look at those numbers and consider them to be significant?

A: ISAB did not have most recent numbers used in these Compass runs and have data on the magnitude of the differences. We do acknowledge that there will be tradeoffs and that there would need to be a policy decision about trading off benefits to one species, maybe at the expense of another.

ISAB have given Compass favorable review but acknowledge that the inputs are significant.

3. It seems that if we do not transport sockeye, there would be increased descaling through the dams

A: ISAB recommendation for more studies to understand the causes of descaling

4. Is there any data on the impact of the numbers of in-river fish on predators?

A. Rich will look at some data and forward it on.

Howard Funke Q: Is there information on the relative benefits of spill and transport on SR sockeye?

A. Very little

Ritchie Graves – since 2001 outmigration, we do not have groups to compare, for the BiOp we only had 3 returning adults – 2 from transport (SAR of about 0.4%) and 1 from inriver (SAR of about 0.03%).

Andy Kohler – noted correlations between spill (positive) and transport (negative) identified in recent FPC memos

Ritchie Graves – the management question for us – is there benefit that outweighs SARs data

Rock Peters Q: It seems that the ISAB did not have all the recent information when it made its recommendation for using spill as default.

A. ISAB considered many factors in coming to its recommendation so that the benefits of transport are large enough to . ISAB recognizes that as more information becomes available, this issue will need to be revisited. It's a fluid situation

Ritchie Graves Q: Is it an appropriate interpretation that there are situations where maximum transportation is appropriate?

A. Yes

Jim L follow-up: would you be willing to define what conditions could those be

A. Would need to ask ISAB

Ritchie - made Dr. Alldredge aware that a new PIT tag detector in the John Day River and tagging of wild steelhead from the John Day basin are showing larger straying rates than expected. This year, about 35% of these fish were detected at McNary. We should know by next summer how many of these fish ultimately entered the John Day River.

Steve Smith Q: to consider spread the risk, for each of the options, how does each one affect the spread the risk? What is the appropriate ratio of in-river to transport? It seems that spread the risk is a good strategy when we don't have sufficient information but that should be evaluated as we get more information.

Rock - those answers are in your packet

**Review of Transportation Options and Federal Recommendation (Rock Peters and Ritchie Graves)**



- Review of options and federal recommendations – see handouts

Jim L Q: we don't know what conditions will be next year so why wouldn't we wait to see if the flows are below 80 kcfs to see if we should go to max transport?

Ritchie – one important consideration is that we will be testing Little Goose and LoMo surface passage and will be spilling anyway for those tests this spring unless flows are below 65 kcfs

Steve – did NOAA do any analyses to assess the impacts of these options on long-term viability and on the trend to recovery.

Ritchie – if you just take the COMPASS results into the analysis, you would apply the reduction %s and the SARS would be basically be reduced by that much, to the extent that the average SAR trend hold true. However, we expect that river flows will be “average” and ocean conditions will likely continue to be better than indicated by the averages used in the COMPASS model. The latter should result in better than average steelhead and Chinook SARs – and increased productivity of the populations.

Steve – interested in developing good record when we diverge from the BiOp. Request for feds to include potential impacts on trends to recovery and long-term viability in the rationale for their decision.

## **RIOG Recommendations and Discussion**

### Oregon –Ed Bowles

- (see written comments) Appreciate reconsidering maximum transportation operation and advocate for spread-the-risk approach as defined in our paper. Given what we have observed, we believe the fish responded well to the court-ordered operations, and that spill should not be curtailed before these benefits are better explored and understood. Oregon recommends spill to the gas caps or other biological constraints until the full benefits of spill are better understood.

### Washington – Guy Norman

- Support option 2 with the spirit of monitoring for more data to inform adaptive management and then we can assess what to do

Montana – Jim Litchfield

- Recommend option 2 and request ISAB to take a look at what flow conditions would suggest reconsideration (in the 65 to 80 kcfs years). Based on that information, reconsider options. Do not support Option 3.

Idaho – Jim Yost

- Support federal recommendation and option 2. Agree with Montana that we need to carefully consider conditions in the 65-80 kcfs range.

Umatilla Tribes – Brent Hall

- Umatilla will support option 2 or 3

CRITFC, Warm Springs & Yakama – Chris GoLightly

- Support federal recommendation for option 2 or option 3
- Support more study for sockeye

Colville Tribes – Steve Smith

- Do not have direct stake in Snake River but it's important to developing a good record when we diverge from BiOp and impacts on trend to recovery. Recommend 2 or 3. Comfortable with maintaining spill to assist in research design. Need to get more information to develop comprehensive strategy and lay groundwork for SR sockeye. Need to
- consider impact of broodstock management program on sockeye to make sure we have enough quality fish to get good data.

Spokane Tribe – Howard Funke

- support consideration of a wider range of alternatives. Will send in recommendation by email later today.

Kootenai Tribe – Billy Barquin

- Support option 2 and get more information to inform adaptive management

Shoshone-Bannock Tribes – Andy Kohler

- Support option 3 – would like to have additional years of spill to get more information and continue evaluation on sockeye
- Support of adaptive management if flows are under 65 kcfs and under those conditions would suggest reconsideration of options and discussion of max transport

Nez Perce

- Not present

FWS – Mark Bagdovitz

- Support option 2 – as it does not preclude getting more information to resolve issues between juvenile sockeye and Chinook and steelhead adult returns. Are concerned (based on Spring Creek experience) with having annual discussions of operational issues.

**Next steps:**

- Request for RIOG discussing comprehensive strategy on sockeye. Rock indicates this is contained in the BiOp in the sense that the BiOp lays out a number of sockeye studies. 2009 is a pilot study.
- Request to follow-up with ISAB and bring back their recommendation to the RIOG.
- Request further discussion of flow threshold questions before sending a request to ISAB.
- Federal agencies will carefully consider input and will move forward with a decision shortly.