



# FISH PASSAGE CENTER

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## MEMORANDUM

TO: Rick Kruger (ODFW)

FROM: Michele DeHart

DATE: March 5, 2009

RE: Estimated spill volume at IHR under 40%/40% operations and estimated reduction in summer spill at Snake River projects due to termination of spill in August, as presented in the 2008 BiOp

On March 5, 2009, you requested that the Fish Passage Center model the total spill volume at Ice Harbor Dam (IHR), assuming a 40%/40% operation in both spring and summer seasons. Also, you requested that the Fish Passage Center estimate the total reduction in summer spill volume at Snake River projects if spill had been terminated in August, as indicated in the 2008 BiOp. Below is a brief summary of our results followed by a more detailed discussion of these analyses.

- Operating IHR at a flat 40% spill for 24-hours in spring and summer would result in an estimated 8-23% decrease in the total spill volume over what has been seen in recent years
- On average (migration years 2005-2008), the termination of summer spill under the 2008 BiOp resulted in a reduction in summer spill volumes of 25.7%, 21%, 19.1% and 15.9% at LGR, LGS, LMN, and IHR, respectively. (Note: these estimates of reductions in summer spill include 2008, which had no reductions in summer spill. See text below for a complete explanation of results)

### **IHR Operations:**

At IHR, Court Order spill has been in effect since 2005, with a comparison between operating the project at 45 Kcfs spill during daytime hours and spilling to the gas cap at night versus spilling a continual 30% spill for 24 hours. ODFW requested that the Fish Passage Center model the total spill volume if IHR were to operate at a flat spill of 40% for 24-hours. Based on data collected between 2006 and 2008, using actual operations and accounting for excess generation spill we would predict that a 40%/40% operation for spring and summer at IHR would result in an 8-23% decrease in the total spill volume over what has been seen in recent years (Table 1).

**Table 1.** Spill volumes at IHR under 2005 BiOP (Actuals) and estimated spill volumes under a flat operation of 40% spill for 24-hours in both spring and summer.

<b>Water Year</b>	<b>Actual Spill Volume (KAF)</b>	<b>Estimated Spill Volume (40%/40% Spring &amp; Summer) (KAF)</b>
2006	11,571	10,620
2007	7,904	6,059
2008	12,277	9,765

**Termination of Summer Spill:**

On August 14, 2008, the Fish Passage Center posted a memo to Ron Boyce (ODFW) that estimated the date of summer spill termination at Snake River Projects, based on language presented in the 2008 BiOp and 2008 MOA. Methods for how these dates were determined can be found in the original August 14, 2008 memo. At that time an estimated termination date for migration year 2008 was not possible. For this request, the Fish Passage Center has estimated a termination date for summer spill for migration year 2008, which is included in the following analyses.

Per your request, we have reviewed these termination dates for migration years 2005 through 2008 and estimated the total spill volume that would have been lost had spill been terminated on these dates (Table 2). On average, the termination of summer spill under the 2008 BiOp resulted in a reduction in summer spill volumes of 25.7%, 21%, 19.1% and 15.9% at LGR, LGS, LMN, and IHR, respectively. However, in migration year 2008, subyearling Chinook numbers remained high throughout the summer. Given this, summer spill would not have been terminated early at any of the Snake River projects except LGR, which would have had summer spill terminated 1 day early. Therefore, virtually no summer spill would have been lost in 2008. Without 2008, the average (2005-2007) reduction in summer spill volume is 33.9%, 28%, 25.5%, and 21.1% at LGR, LGS, LMN, and IHR, respectively.

**Table 2.** Estimated summer spill volume lost due to termination of summer spill at Snake River projects based on fish collection numbers, as presented in the 2008 BiOp.

<b>Site</b>	<b>Migration Year</b>	<b>Total Summer Spill Volume (KAF)</b>	<b>Estimated Date of Summer Spill Termination</b>	<b>Summer Spill Volume if Terminated in August (KAF)</b>	<b>Percent Loss</b>
LGR	2005	116.18	1-Aug	83.53	28.10
	2006	102.97	1-Aug	62.26	39.53
	2007	91.25	1-Aug	60.11	34.12
	2008	136.82	31-Aug	135.31	1.10
LGS	2005	93.73	4-Aug	71.78	23.42
	2006	70.88	4-Aug	51.33	27.58
	2007	55.91	6-Aug	37.45	33.01
	2008	103.27	1-Sep	103.27	0.00
LMN	2005	101.55	7-Aug	78.59	22.61
	2006	92.12	7-Aug	63.57	30.99
	2007	84.51	9-Aug	65.10	22.97
	2008	108.45	1-Sep	108.45	0.00
IHR	2005	123.77	9-Aug	99.65	19.49
	2006	135.80	9-Aug	104.57	23.00
	2007	98.61	11-Aug	77.75	21.15
	2008	211.24	1-Sep	211.24	0.00