FPP Change Request Form

Change Form # & Title:	16LMN004 – Low Flow Spill Patterns w/ No RSW
Date Submitted:	January 28, 2016
Project:	Lower Monumental Dam
Requester Name, Agency:	Corps NWW
Final Action:	**APPROVED – January 28, 2016**

FPP Section: LMN 2.4.1.2.g. RSW Operating Criteria. Add new Table LMN-11. Spill Patterns with No RSW.

Justification: The Lower Monumental RSW in Bay 8 spills a fixed rate of ~6.8 kcfs. As a result, the RSW must be closed when total spill is less than ~6.8 kcfs (i.e., during low flows). However, there are currently no patterns in the FPP for Lower Monumental spill with no RSW.

Low flow spill patterns were modeled at ERDC in October 2015. Based on the results, the recommendation is to close the RSW when total project outflow drops below 30 kcfs and go to the new low flow patterns with no RSW.

This change form adds new criteria to section 2.3.3.7 to close the RSW at total project outflow below 30 kcfs, adds new Table LMN-11 for spill patterns with No RSW, and adds a footnote to the other spill pattern tables to include this new criteria.

Proposed Changes:

2.3.3.7. Removable Spillway Weir (RSW) Operation.

i. The RSW in spillbay 8 will be in the raised position and operational on the first day of spill for juvenile fish passage.

ii. When the RSW is in operation, spill through Bay 8 is fixed at approximately 6.8 kcfs. ~~t~~The spillgate shall be raised to where it does not touch flow passing down the RSW.

iii. When the National Weather Service forecasts Lower Monumental inflows to exceed 200 kcfs, initiate aggressive forebay debris removal so that RSW operation will not be impeded and coordinate with RCC and CENWW-OD-T.

iv. Complete RSW stow (complete rotation to the landing pad) when inflows exceed 260 kcfs, upstream river gauge flows are increasing, and the NWS forecasts Lower Monumental inflow to exceed 300 kcfs.

v. On or after June 21 (start of summer spill), when average daily total project outflow is less than 30 kcfs and forecasted to remain below 30 kcfs for three days or more on a declining hydrograph, the RSW will be closed and spill will be distributed in patterns for spill with no RSW in **Table LMN-11**.

Modify Table LMN-9 (Bulk) to remove low flow patterns with RSW and refer to new Table LMN-11 for patterns with NO RSW at outflow < 30 kcfs.

Table LMN-1. [pg *1 of 3*] Lower Monumental Dam Bulk Spill Patterns with RSW. [a, b]

LMN Bulk Spill Patterns - # Gate Stops per Spillbay								Total Stops	Spill [a]
Bay 1	Bay 2	Bay 3	Bay 4	Bay 5	Bay 6	Bay 7	Bay 8 [b]	(#)	(kcfs)
~~-~~	~~1~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~RSW~~	~~1~~	~~8.6~~
~~-~~	~~2~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~RSW~~	~~2~~	~~10.1~~
~~-~~	~~2~~	~~-~~	~~-~~	~~-~~	~~1~~	~~-~~	~~RSW~~	~~3~~	~~11.9~~
~~-~~	~~2~~	~~-~~	~~-~~	~~-~~	~~2~~	~~-~~	~~RSW~~	~~4~~	~~13.4~~
~~-~~	~~2~~	~~-~~	~~-~~	~~-~~	~~3~~	~~-~~	~~RSW~~	~~5~~	~~14.9~~
	2				4		RSW	**6**	**16.3**
	3				4		RSW	**7**	**17.8**
	3			1	4		RSW	**8**	**19.6**
	3			1	5		RSW	**9**	**21.3**
1	3			1	5		RSW	**10**	**23.1**
1	1	1	1	1	6		RSW	**11**	**25.4**

a. This table defines spill patterns in increments of one gate stop per row. Spill (kcfs) is calculated as a function of total stops plus fixed RSW spill at forebay elevation 537.0 ft (based on interim spillway rating table 2-Apr-2009).

b. Bay 8 w/ RSW = fixed spill of ~6.8 kcfs at forebay 537.0 ft. Raise Bay 8 tainter gate above stop 9 to ensure free surface and debris passage. When total project outflow is < 30 kcfs, RSW will be closed and spill distributed in patterns in **Table LMN-11.**

Add new table LMN-11 for spill with No RSW:

Table LMN- 2. Lower Monumental Dam Spill Patterns with No RSW (Bay 8 Closed). [a, b]

LMN Spill Patterns w/ NO RSW - # Gate Stops per Spillbay								Total Stops	Spill [a]
Bay 1	Bay 2	Bay 3	Bay 4	Bay 5	Bay 6	Bay 7	Bay 8 [b]	(#)	(kcfs)
	1						CLOSE	**1**	**1.8**
	1					1	CLOSE	**2**	**3.6**
	1			1		1	CLOSE	**3**	**5.4**
	2			1		1	CLOSE	**4**	**6.9**
	2			1		2	CLOSE	**5**	**8.4**
	2			2		2	CLOSE	**6**	**9.9**
	2			2		3	CLOSE	**7**	**11.4**
	2			3		3	CLOSE	**8**	**12.9**
	2			3		4	CLOSE	**9**	**14.3**
	2			3		5	CLOSE	**10**	**16.0**

a. This table defines spill patterns in increments of one gate stop per row. Spill (kcfs) is calculated as a function of total stops at forebay elevation 537.0 ft (based on interim spillway rating table 2-Apr-2009).

b. When total project outflow is < 30 kcfs, RSW will be closed and spill distributed in patterns in this table.

Comments:

1/28/16 FPP Meeting: clarified criteria to close RSW (highlighted). Same for IHR and LWG.

Record of Final Action: APPROVED at FPP meeting 1/28/2016.