

## **Fish Passage Plan (FPP) Change Form**

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**Change Form # & Title:** 24MCN003 – New Spill Patterns  
**Date Submitted:** 22-Mar-2024 / **REVISED 17-Apr-2024**  
**Project:** McNary  
**Requester Name, Agency:** Chris Peery, Corps NWW  
**Final Action:**

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### **FPP SECTION:**

Chapter 5 (MCN), Section 2.2.5 and new spill pattern tables MCN-8 and MCN-8-ALT.

### **JUSTIFICATION FOR CHANGE:**

See MFR 24MCN02, emailed to FPOM on 3/22/24 and updated 4/17/2024.

This FPP Change Form adds the modified spill gate/hoist operation in section 2.2.5 and new spill patterns in Tables MCN-8 and MCN-8-ALT.

REVISED 17-APR-2024 with new info from the project. Of the 13 split-leaf gates in the upstream slot, 2 gates (bays 6 and 9) are operated with cranes, not hoists, so they are not capable of hourly adjustments and will be adjusted as often as possible, at least once per week.

**PROPOSED CHANGES:** See following pages.

### **COMMENTS:**

28-MAR-2024 – FPOM McNary Task Group meeting:

Peery noted that flow forecasts are likely low enough to use gates 1&2 this spring. Final decision will be made after 5 April forecasts are available.

Conder requested the original (pre-2021) spill patterns in Table MCN-7 re-added to the FPP to have a reference for patterns under normal operating conditions. Wright will make this change.

### **RECORD OF FINAL ACTION:**

**2.2.5. Interim Spillway Hoist Operation / Minimization of Unsafe Operating Practices:**

As an interim operation until overloaded hoists are repaired or replaced and are no longer in an overloaded condition, McNary spillway hoists are separated into two control groups: **Manual** (dogged off and manually adjusted) and **Auto**. Currently, of the 22 spillbays at McNary, three are Manual (Bays 2, 6, and 16) and two serve TSW1 and TSW2. This leaves a total of 17 spillbays with functioning hoists that can be rotated through Manual and Auto mode, as described below. During spring and summer spill, April 10– August 31, four of these spillbays will be operated in Auto mode each month according to the rotation schedule below. The change will occur during the first full week of the month. Hoists will initially be set to the average openings identified in the applicable interim spill patterns in **Table MCN-11**. Gate operation categories are as follows:

**i. Manual Gates**— manually dogged at the mid-point of the 50 kefs spill block associated with the current flow level and not adjusted for 30 days or until there is a delta of 50 kefs (+/- 25 kefs) of current settings. All Manual gates will be raised or lowered with a safety observer stationed at the spillway deck, in the event of sustained flow increases more than the difference of designated spill limits, when one or more of the following occur:

- A. Present for more than 72 hours.
- B. All Auto Gate openings exceed an increase of 2+ “stops” per Auto Gate beyond normal flow settings of Spillway Gate stops identified in Spill Pattern Table settings and if flows are expected to increase for 72 hours or more.
- C. Expected flows are at peak delta and are predicted to rise beyond a max spill delta of 30 kefs.

**ii. Auto Gates**— set at the pattern associated with the current spill and flow rate in **Table MCN-11** and left in auto-response mode for approximately 30 days before being rotated to the next spillway gate assignment.

**Rotation schedule for gates in Manual (Dogged) and Auto\* adjustment modes:**

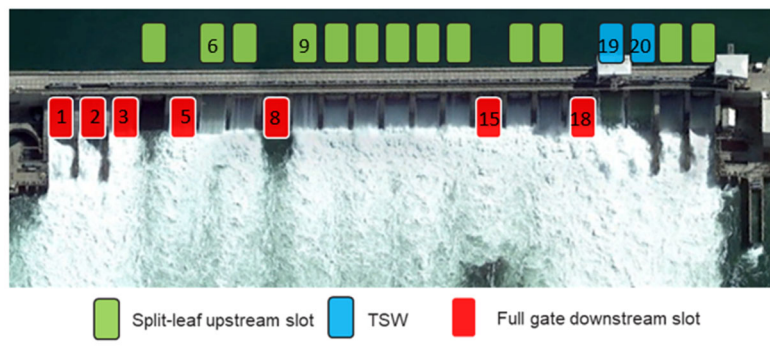
		Crane 7					No Hoist										Crane 6				TSW	TSW		
Mode	First week of:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
Macro/Dogged	April																			Open	Open			
Micro/Auto	May																			Open	Open			
	June																			Open	Open			
	July																							
	Aug																							

\*Auto mode bays will be adjusted through their operational range as required. Desired spill rates will be achieved by adjusting a single automatic bay one stop at a time. Automatic bays will operate within one stop of each other.

### 2.2.5. Interim Modified Spillway Operation

The overloaded condition of McNary Dam spillway cranes and hoists limit their use until they can be replaced. As a result, Cranes 6 and 7 and seven of the 20 hoists can only be used twice per year (no more than 2 lifts every 12 months) to move a double-leaf (full) gate, while 13 hoists cannot be used to move a double-leaf gate. Lifting the top leaf of the spill gates will not overload cranes and hoists.

Starting in spring 2024, a total of 13 spill gates will be operated in the upstream slot in split-leaf configuration, 11 of which are on hoists and may be adjusted hourly as needed to adjust spill according to patterns in **Table MCN-8**. The other two split-leaf gates (bays 6 and 9) are on Cranes 6 and 7 and will be adjusted by a crew as often as possible, at least once per week. The remaining 7 spillbays (1, 2, 3, 5, 8, 15, 18) will remain closed in the downstream slot in double-leaf configuration and only opened if needed to pass high flows using the first of two overloaded movements allowed each year. After the high flow event, each double-leaf gate will be closed using the second overloaded movement allowed that year.



If lower flows are forecasted and meet *all* hydrologic criteria below, crews will open double-leaf gates 1 and 2 in the downstream slot to 4 stops (~7 kcfs spill) each on April 10 as early as possible during daylight hours and spill will be distributed according to patterns in **Table MCN-8-ALT**. From 0001 hours until gates 1 and 2 are opened, spill will be at the FOP target using patterns in **Table MCN-8**:

- a. Official April water supply forecast for The Dalles April-August runoff below 90 MAF, and
- b. STP forecast for McNary inflow below 350 kcfs through the spring, and
- c. Internal weekly Corps system flood risk management (FRM) analyses indicates high probability of McNary inflows below 350 kcfs through the spring.

If the April WSF for The Dalles is greater than 90 MAF, or either the STP or internal Corps FRM analyses indicate flows peaking above 350 kcfs, gates 1 and 2 will remain closed in the downstream slot. Once the risk of inflows exceeding 350 kcfs has passed, and if spill gates 1 and 2 have not yet been opened, the gates will be opened to 4 stops each. Additional downstream gates can be used with a set (e.g., 4 stop) opening after the peak flow period has passed, as coordinated with FPOM. If gates 1 and 2 are needed to pass higher flows, they will be opened to a level that is expected to be sustained through spring and early summer spill based on the STP and ESP forecasts. Additional double-leaf gates in the downstream slots will be used to pass higher flows as needed.

If gates 1 and 2 are opened, they will be closed using the second of two allowed overloaded movements at the end of early summer spill on July 31 or once spill is forecast to be below 70 kcfs for the remainder of the spill season.

**Table MCN-8. McNary Dam INTERIM Spill Patterns with TSWs in Bays 19-20 and 13 Bays in Split-Leaf in Upstream Slot. <sup>a</sup>**

Table MCN-8. Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>b</sup>	20 <sup>b</sup>	21	22		
																		TSW	TSW			0	20.0
																4		TSW	TSW			4	25.0
																5		TSW	TSW			5	26.0
																5		TSW	TSW	4		9	31.0
																5		TSW	TSW	5		10	32.0
																5		TSW	TSW	5	4	14	37.0
																5		TSW	TSW	5	5	15	38.0
												4				5		TSW	TSW	5	5	19	43.0
												5				5		TSW	TSW	5	5	20	44.0
												5				6		TSW	TSW	5	5	21	45.0
												5				7		TSW	TSW	5	5	22	46.0
											4	5				7		TSW	TSW	5	5	26	51.0
											5	5				7		TSW	TSW	5	5	27	52.0
											5	6				7		TSW	TSW	5	5	28	53.0
											5	7				7		TSW	TSW	5	5	29	54.0
									4		5	7				7		TSW	TSW	5	5	33	59.0
									5		5	7				7		TSW	TSW	5	5	34	60.0
									5		6	7				7		TSW	TSW	5	5	35	61.0
									5		7	7				7		TSW	TSW	5	5	36	62.0
			4						5		7	7				7		TSW	TSW	5	5	40	67.0
			5						5		7	7				7		TSW	TSW	5	5	41	68.0
			5						6		7	7				7		TSW	TSW	5	5	42	69.0
			5						7		7	7				7		TSW	TSW	5	5	43	70.0
			6						7		7	7				7		TSW	TSW	5	5	44	71.0
			7						7		7	7				7		TSW	TSW	5	5	45	72.0
			7		4				7		7	7				7		TSW	TSW	5	5	49	77.0
			7		5				7		7	7				7		TSW	TSW	5	5	50	78.0
			8		5				7		7	7				7		TSW	TSW	5	5	51	79.0
			9		5				7		7	7				7		TSW	TSW	5	5	52	79.9
			10		5				7		7	7				7		TSW	TSW	5	5	53	80.8
			10		6				7		7	7				7		TSW	TSW	5	5	54	81.8
			10		7				7		7	7				7		TSW	TSW	5	5	55	82.8
			10		8				7		7	7				7		TSW	TSW	5	5	56	83.8
			10		9				7		7	7				7		TSW	TSW	5	5	57	84.7

<sup>a</sup> A total of 13 spill gates and hoists will be operated in the upstream slot in split-leaf configuration and adjusted hourly as needed to adjust spill. The remaining 7 spillbays (1, 2, 3, 5, 8, 15, and 18) are double-leaf gates in the downstream slot and will remain closed unless needed to pass high flows using the first of two overloaded movements allowed each year (12 months). After the high flow event, open double-leaf gates will be closed using the second of two allowed overloaded movements.

<sup>b</sup> Bays 19-20 with TSWs spill approx 19.2 kcfs (9.6 kcfs/bay) at forebay 339'. The upper TSW gates will be raised 3-5 ft above the water surface to ensure free flow over the TSW crests.

Table MCN-8. Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>b</sup>	20 <sup>b</sup>	21	22		
			10		10				7		7		7			7		TSW	TSW	5	5	58	85.6
			10		10			4	7		7		7			7		TSW	TSW	5	5	62	90.6
			10		10			5	7		7		7			7		TSW	TSW	5	5	63	91.6
			10		10			6	7		7		7			7		TSW	TSW	5	5	64	92.6
			10		10			7	7		7		7			7		TSW	TSW	5	5	65	93.6
			10		10	4		7	7		7		7			7		TSW	TSW	5	5	69	98.6
			10		10	5		7	7		7		7			7		TSW	TSW	5	5	70	99.6
			10		10	6		7	7		7		7			7		TSW	TSW	5	5	71	100.6
			10		10	7		7	7		7		7			7		TSW	TSW	5	5	72	101.6
			10		10	7		7	7		7		7		4	7		TSW	TSW	5	5	76	106.6
			10		10	7		7	7		7		7		5	7		TSW	TSW	5	5	77	107.6
			10		10	7		7	7		7		7		6	7		TSW	TSW	5	5	78	108.6
			10		10	7		7	7		7		7		7	7		TSW	TSW	5	5	79	109.6
			10		10	7		7	7		7	4	7		7	7		TSW	TSW	5	5	83	114.6
			10		10	7		7	7		7	5	7		7	7		TSW	TSW	5	5	84	115.6
			10		10	7		7	7		7	6	7		7	7		TSW	TSW	5	5	85	116.6
			10		10	7		7	7		7	7	7		7	7		TSW	TSW	5	5	86	117.6
			10		10	7		7	7	4	7	7	7		7	7		TSW	TSW	5	5	90	122.6
			10		10	7		7	7	5	7	7	7		7	7		TSW	TSW	5	5	91	123.6
			10		10	7		7	7	6	7	7	7		7	7		TSW	TSW	5	5	92	124.6
			10		10	7		7	7	7	7	7	7		7	7		TSW	TSW	5	5	93	125.6
			10		10	8		7	7	7	7	7	7		7	7		TSW	TSW	5	5	94	126.6
			10		10	9		7	7	7	7	7	7		7	7		TSW	TSW	5	5	95	127.5
			10		10	10		7	7	7	7	7	7		7	7		TSW	TSW	5	5	96	128.4
			10		10	10		7	7	7	7	7	7		7	7		TSW	TSW	6	5	97	129.4
			10		10	10		7	7	7	7	7	7		7	7		TSW	TSW	7	5	98	130.4
			10		10	10		7	7	7	7	7	7		7	7		TSW	TSW	7	6	99	131.4
			10		10	10		7	7	7	7	7	7		7	7		TSW	TSW	7	7	100	132.4
			11		10	10		7	7	7	7	7	7		7	7		TSW	TSW	7	7	101	133.3
			11		11	10		7	7	7	7	7	7		7	7		TSW	TSW	7	7	102	134.2
			11		11	11		7	7	7	7	7	7		7	7		TSW	TSW	7	7	103	135.1
			11		11	11		7	7	7	7	7	7		7	8		TSW	TSW	7	7	104	136.1
			11		11	11		7	7	7	7	7	7		8	8		TSW	TSW	7	7	105	137.1
			11		11	11		8	7	7	7	7	7		8	8		TSW	TSW	7	7	106	138.1
			11		11	11		8	8	7	7	7	8		8	8		TSW	TSW	7	7	108	140.1
			11		11	11		8	8	7	7	8	8		8	8		TSW	TSW	7	7	109	141.1
			11		11	11		8	8	8	7	8	8		8	8		TSW	TSW	7	7	110	142.1
			11		11	11		8	8	8	8	8	8		8	8		TSW	TSW	7	7	111	143.1
			11		11	11		8	8	8	8	8	8		8	8		TSW	TSW	8	7	112	144.1
			11		11	11		8	8	8	8	8	8		8	8		TSW	TSW	8	8	113	145.1
			12		11	11		8	8	8	8	8	8		8	8		TSW	TSW	8	8	114	146.0
			12		12	11		8	8	8	8	8	8		8	8		TSW	TSW	8	8	115	146.9

Table MCN-8. Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>b</sup>	20 <sup>b</sup>	21	22		
			12		12	12		8	8	8	8	8	8		8	8		TSW	TSW	8	8	116	147.8
			12		12	12		8	8	8	8	8	8		8	9		TSW	TSW	8	8	117	148.7
			12		12	12		8	8	8	8	8	8		9	9		TSW	TSW	8	8	118	149.6
			12		12	12		9	8	8	8	8	8		9	9		TSW	TSW	8	8	119	150.5
			12		12	12		9	9	8	8	8	9		9	9		TSW	TSW	8	8	121	152.3
			12		12	12		9	9	8	8	9	9		9	9		TSW	TSW	8	8	122	153.2
			12		12	12		9	9	9	8	9	9		9	9		TSW	TSW	8	8	123	154.1
			12		12	12		9	9	9	9	9	9		9	9		TSW	TSW	8	8	124	155.0
			12		12	12		9	9	9	9	9	9		9	9		TSW	TSW	9	8	125	155.9
			12		12	12		9	9	9	9	9	9		9	9		TSW	TSW	9	9	126	156.8
			13		12	12		9	9	9	9	9	9		9	9		TSW	TSW	9	9	127	157.5
			13		13	12		9	9	9	9	9	9		9	9		TSW	TSW	9	9	128	158.2
			13		13	13		9	9	9	9	9	9		9	9		TSW	TSW	9	9	129	158.9
			13		13	13		9	9	9	9	9	9		9	10		TSW	TSW	9	9	130	159.8
			13		13	13		9	9	9	9	9	9		10	10		TSW	TSW	9	9	131	160.7
			13		13	13		10	9	9	9	9	9		10	10		TSW	TSW	9	9	132	161.6
			13		13	13		10	10	9	9	9	10		10	10		TSW	TSW	9	9	134	163.4
			13		13	13		10	10	9	9	10	10		10	10		TSW	TSW	9	9	135	164.3
			13		13	13		10	10	10	9	10	10		10	10		TSW	TSW	9	9	136	165.2
			13		13	13		10	10	10	10	10	10		10	10		TSW	TSW	9	9	137	166.1
			13		13	13		10	10	10	10	10	10		10	10		TSW	TSW	10	9	138	167.0
			13		13	13		10	10	10	10	10	10		10	10		TSW	TSW	10	10	139	167.9
			14		13	13		10	10	10	10	10	10		10	10		TSW	TSW	10	10	140	168.7
			14		14	13		10	10	10	10	10	10		10	10		TSW	TSW	10	10	141	169.5
			14		14	14		10	10	10	10	10	10		10	10		TSW	TSW	10	10	142	170.3
			14		14	14		10	10	10	10	10	10		10	11		TSW	TSW	10	10	143	171.2
			14		14	14		10	10	10	10	10	10		11	11		TSW	TSW	10	10	144	172.1
			14		14	14		11	10	10	10	10	10		11	11		TSW	TSW	10	10	145	173.0
			14		14	14		11	11	10	10	10	11		11	11		TSW	TSW	10	10	147	174.8
			14		14	14		11	11	10	10	11	11		11	11		TSW	TSW	10	10	148	175.7
			14		14	14		11	11	11	10	11	11		11	11		TSW	TSW	10	10	149	176.6
			14		14	14		11	11	11	11	11	11		11	11		TSW	TSW	10	10	150	177.5
			14		14	14		11	11	11	11	11	11		11	11		TSW	TSW	11	10	151	178.4
			14		14	14		11	11	11	11	11	11		11	11		TSW	TSW	11	11	152	179.3
			15		14	14		11	11	11	11	11	11		11	11		TSW	TSW	11	11	153	180.1
			15		15	14		11	11	11	11	11	11		11	11		TSW	TSW	11	11	154	180.9
			15		15	15		11	11	11	11	11	11		11	11		TSW	TSW	11	11	155	181.7
			15		15	15		11	11	11	11	11	11		11	12		TSW	TSW	11	11	156	182.6
			15		15	15		11	11	11	11	11	11		12	12		TSW	TSW	11	11	157	183.5
			15		15	15		12	11	11	11	11	11		12	12		TSW	TSW	11	11	158	184.4
			15		15	15		12	12	11	11	11	12		12	12		TSW	TSW	11	11	160	186.2
			15		15	15		12	12	11	11	12	12		12	12		TSW	TSW	11	11	161	187.1

Table MCN-8. Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>b</sup>	20 <sup>b</sup>	21	22		
			15		15	15		12	12	12	11	12	12		12	12		TSW	TSW	11	11	162	188.0
			15		15	15		12	12	12	12	12	12		12	12		TSW	TSW	11	11	163	188.9
			15		15	15		12	12	12	12	12	12		12	12		TSW	TSW	12	11	164	189.8
			15		15	15		12	12	12	12	12	12		12	12		TSW	TSW	12	12	165	190.7
			15		15	15		12	12	12	12	12	12		12	13		TSW	TSW	12	12	166	191.4
			15		15	15		12	12	12	12	12	12		13	13		TSW	TSW	12	12	167	192.1
			15		15	15		13	12	12	12	12	12		13	13		TSW	TSW	12	12	168	192.8
			15		15	15		13	13	12	12	12	13		13	13		TSW	TSW	12	12	170	194.2
			15		15	15		13	13	13	12	13	13		13	13		TSW	TSW	12	12	171	194.9
			15		15	15		13	13	13	13	13	13		13	13		TSW	TSW	12	12	172	195.6
			15		15	15		13	13	13	13	13	13		13	13		TSW	TSW	12	12	173	196.3
			15		15	15		13	13	13	13	13	13		13	13		TSW	TSW	13	12	174	197.0
			15		15	15		13	13	13	13	13	13		13	13		TSW	TSW	13	13	175	197.7
			15		15	15		13	13	13	13	13	13		13	14		TSW	TSW	13	13	176	198.5
			15		15	15		13	13	13	13	13	13		14	14		TSW	TSW	13	13	177	199.3
			15		15	15		14	13	13	13	13	13		14	14		TSW	TSW	13	13	178	200.1
			15		15	15		14	14	13	13	13	14		14	14		TSW	TSW	13	13	180	201.7
			15		15	15		14	14	13	13	14	14		14	14		TSW	TSW	13	13	181	202.5
			15		15	15		14	14	14	13	14	14		14	14		TSW	TSW	13	13	182	203.3
			15		15	15		14	14	14	14	14	14		14	14		TSW	TSW	13	13	183	204.1
			15		15	15		14	14	14	14	14	14		14	14		TSW	TSW	14	13	184	204.9
			15		15	15		14	14	14	14	14	14		14	14		TSW	TSW	14	14	185	205.7
			15		15	15		14	14	14	14	14	14		14	15		TSW	TSW	14	14	186	206.5
			15		15	15		14	14	14	14	14	14		15	15		TSW	TSW	14	14	187	207.3
			15		15	15		15	14	14	14	14	14		15	15		TSW	TSW	14	14	188	208.1
			15		15	15		15	15	14	14	14	15		15	15		TSW	TSW	14	14	190	209.7
			15		15	15		15	15	14	14	15	15		15	15		TSW	TSW	14	14	191	210.5
			15		15	15		15	15	15	14	15	15		15	15		TSW	TSW	14	14	192	211.3
			15		15	15		15	15	15	15	15	15		15	15		TSW	TSW	14	14	193	212.1
			15		15	15		15	15	15	15	15	15		15	15		TSW	TSW	15	14	194	212.9
			15		15	15		15	15	15	15	15	15		15	15		TSW	TSW	15	15	195	213.7
			19		15	15		15	15	15	15	15	15		15	15		TSW	TSW	15	15	199	217.4
			19		19	15		15	15	15	15	15	15		15	15		TSW	TSW	15	19	203	221.1
			19		19	19		15	15	15	15	15	15		15	15		TSW	TSW	19	19	211	228.5
			19		19	19		15	15	15	15	15	15		15	15		TSW	TSW	19	19	215	232.2
			19		19	19		15	15	15	15	15	15		15	19		TSW	TSW	19	19	219	235.9
			19		19	19		19	15	15	15	15	15		15	19		TSW	TSW	19	19	223	239.6
			19		19	19		19	15	15	15	15	15		19	19		TSW	TSW	19	19	227	243.3
			19		19	19		19	19	15	15	15	15		19	19		TSW	TSW	19	19	231	247.0
			19		19	19		19	19	15	15	15	19		19	19		TSW	TSW	19	19	235	250.7
			19		19	19		19	19	19	15	15	19		19	19		TSW	TSW	19	19	239	254.4



Table MCN-8. Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>b</sup>	20 <sup>b</sup>	21	22		
			19		19	19		19	19	19	15	19	19		19	19		TSW	TSW	19	19	243	258.1
			19		19	19		19	19	19	19	19	19		19	19		TSW	TSW	19	19	247	261.8
	20		19		19	19		15	15	15	15	15	15		15	15		TSW	TSW	19	19	235	264.3
	20		19		19	19		15	15	15	15	15	15		15	19		TSW	TSW	19	19	239	268.0
	20		19		19	19		19	15	15	15	15	15		15	19		TSW	TSW	19	19	243	271.7
	20		19		19	19		19	15	15	15	15	15		19	19		TSW	TSW	19	19	247	275.4
	20		19		19	19		19	19	15	15	15	15		19	19		TSW	TSW	19	19	251	279.1
	20		19		19	19		19	19	15	15	15	19		19	19		TSW	TSW	19	19	255	282.8
	20		19		19	19		19	19	19	15	15	19		19	19		TSW	TSW	19	19	259	286.5
	20		19		19	19		19	19	19	15	19	19		19	19		TSW	TSW	19	19	263	290.2
	20		19		19	19		19	19	19	19	19	19		19	19		TSW	TSW	19	19	267	293.9
	20		19	20	19	19		15	15	15	15	15	15		15	15		TSW	TSW	19	19	255	296.4
	20		19	20	19	19		15	15	15	15	15	15		15	19		TSW	TSW	19	19	259	300.1
	20		19	20	19	19		19	15	15	15	15	15		15	19		TSW	TSW	19	19	263	303.8
	20		19	20	19	19		19	15	15	15	15	15		19	19		TSW	TSW	19	19	267	307.5
	20		19	20	19	19		19	19	15	15	15	15		19	19		TSW	TSW	19	19	271	311.2
	20		19	20	19	19		19	19	15	15	15	19		19	19		TSW	TSW	19	19	275	314.9
	20		19	20	19	19		19	19	19	15	15	19		19	19		TSW	TSW	19	19	279	318.6
	20		19	20	19	19		19	19	19	15	19	19		19	19		TSW	TSW	19	19	283	322.3
	20		19	20	19	19		19	19	19	19	19	19		19	19		TSW	TSW	19	19	287	326.0
	20		19	20	19	19		15	15	15	15	15	15		15	15	20	TSW	TSW	19	19	275	328.5
	20		19	20	19	19		15	15	15	15	15	15		15	19	20	TSW	TSW	19	19	279	332.2
	20		19	20	19	19		19	15	15	15	15	15		15	19	20	TSW	TSW	19	19	283	335.9
	20		19	20	19	19		19	19	15	15	15	15		19	19	20	TSW	TSW	19	19	287	339.6
	20		19	20	19	19		19	19	15	15	15	15		19	19	20	TSW	TSW	19	19	291	343.3
	20		19	20	19	19		19	19	15	15	15	19		19	19	20	TSW	TSW	19	19	295	347.0
	20		19	20	19	19		19	19	19	15	15	19		19	19	20	TSW	TSW	19	19	299	350.7
	20		19	20	19	19		19	19	19	15	19	19		19	19	20	TSW	TSW	19	19	303	354.4
	20		19	20	19	19		19	19	19	19	19	19		19	19	20	TSW	TSW	19	19	307	358.1
20	20		19	20	19	19		15	15	15	15	15	15		15	15	20	TSW	TSW	19	19	295	360.6
20	20		19	20	19	19		15	15	15	15	15	15		15	19	20	TSW	TSW	19	19	299	364.3
20	20		19	20	19	19		19	15	15	15	15	15		19	19	20	TSW	TSW	19	19	303	368.0
20	20		19	20	19	19		19	19	15	15	15	15		19	19	20	TSW	TSW	19	19	307	371.7
20	20		19	20	19	19		19	19	15	15	15	19		19	19	20	TSW	TSW	19	19	311	375.4
20	20		19	20	19	19		19	19	15	15	15	19		19	19	20	TSW	TSW	19	19	315	379.1
20	20		19	20	19	19		19	19	19	15	15	19		19	19	20	TSW	TSW	19	19	319	382.8
20	20		19	20	19	19		19	19	19	15	19	19		19	19	20	TSW	TSW	19	19	323	386.5
20	20		19	20	19	19		19	19	19	19	19	19		19	19	20	TSW	TSW	19	19	327	390.2
20	20		19	20	19	19		15	15	15	15	15	15	20	15	15	20	TSW	TSW	19	19	315	392.7
20	20		19	20	19	19		15	15	15	15	15	15	20	15	19	20	TSW	TSW	19	19	319	396.4
20	20		19	20	19	19		19	15	15	15	15	15	20	15	19	20	TSW	TSW	19	19	323	400.1
20	20		19	20	19	19		19	15	15	15	15	15	20	19	19	20	TSW	TSW	19	19	327	403.8

Table MCN-8. Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>b</sup>	20 <sup>b</sup>	21	22		
20	20		19	20	19	19		19	19	15	15	15	15	20	19	19	20	TSW	TSW	19	19	331	407.5
20	20		19	20	19	19		19	19	15	15	15	19	20	19	19	20	TSW	TSW	19	19	335	411.2
20	20		19	20	19	19		19	19	19	15	15	19	20	19	19	20	TSW	TSW	19	19	339	414.9
20	20		19	20	19	19		19	19	19	15	19	19	20	19	19	20	TSW	TSW	19	19	343	418.6
20	20		19	20	19	19		19	19	19	19	19	19	20	19	19	20	TSW	TSW	19	19	347	422.3
20	20	20	19	20	19	19		15	15	15	15	15	15	20	15	15	20	TSW	TSW	19	19	335	424.8
20	20	20	19	20	19	19		15	15	15	15	15	15	20	15	19	20	TSW	TSW	19	19	339	428.5
20	20	20	19	20	19	19		19	15	15	15	15	15	20	15	19	20	TSW	TSW	19	19	343	432.2
20	20	20	19	20	19	19		19	15	15	15	15	15	20	19	19	20	TSW	TSW	19	19	347	435.9
20	20	20	19	20	19	19		19	19	15	15	15	15	20	19	19	20	TSW	TSW	19	19	351	439.6
20	20	20	19	20	19	19		19	19	15	15	15	19	20	19	19	20	TSW	TSW	19	19	355	443.3
20	20	20	19	20	19	19		19	19	19	15	15	19	20	19	19	20	TSW	TSW	19	19	359	447.0
20	20	20	19	20	19	19		19	19	19	15	19	19	20	19	19	20	TSW	TSW	19	19	363	450.7
20	20	20	19	20	19	19		19	19	19	19	19	19	20	19	19	20	TSW	TSW	19	19	367	454.4
20	20	20	19	20	19	19	20	15	15	15	15	15	15	20	15	15	20	TSW	TSW	19	19	355	456.9
20	20	20	19	20	19	19	20	15	15	15	15	15	15	20	15	19	20	TSW	TSW	19	19	359	460.6
20	20	20	19	20	19	19	20	19	15	15	15	15	15	20	15	19	20	TSW	TSW	19	19	363	464.3
20	20	20	19	20	19	19	20	19	15	15	15	15	15	20	19	19	20	TSW	TSW	19	19	367	468.0
20	20	20	19	20	19	19	20	19	19	15	15	15	15	20	19	19	20	TSW	TSW	19	19	371	471.7
20	20	20	19	20	19	19	20	19	19	15	15	15	19	20	19	19	20	TSW	TSW	19	19	375	475.4
20	20	20	19	20	19	19	20	19	19	19	15	15	19	20	19	19	20	TSW	TSW	19	19	379	479.1
20	20	20	19	20	19	19	20	19	19	19	15	19	19	20	19	19	20	TSW	TSW	19	19	383	482.8
20	20	20	19	20	19	19	20	19	19	19	19	19	19	20	19	19	20	TSW	TSW	19	19	387	486.5
20	20	20	19	20	19	19	20	19	19	19	19	19	19	20	19	19	20	21	TSW	19	19	408	496.5
20	20	20	19	20	19	19	20	19	19	19	19	19	19	20	19	19	20	21	21	19	19	429	506.5
20	Free	20	19	20	19	19	20	19	19	19	19	19	19	20	19	19	20	21	21	19	19	409	536.6
20	Free	20	19	20	19	19	20	19	19	19	19	19	19	20	19	19	Free	21	21	19	19	389	566.7
20	Free	20	19	Free	19	19	20	19	19	19	19	19	19	20	19	19	Free	21	21	19	19	369	596.8
20	Free	20	19	Free	19	19	20	19	19	19	19	19	19	Free	19	19	Free	21	21	19	19	349	626.9
20	Free	20	19	Free	19	19	Free	19	19	19	19	19	19	Free	19	19	Free	21	21	19	19	329	657.0
Free	Free	20	19	Free	19	19	Free	19	19	19	19	19	19	Free	19	19	Free	21	21	19	19	309	687.1
Free	Free	Free	19	Free	19	19	Free	19	19	19	19	19	19	Free	19	19	Free	21	21	19	19	289	717.2

**Table MCN-8-ALT. ALTERNATIVE INTERIM McNary Dam Spill Patterns with TSWs in Bays 19-20 and 13 Bays in Split-Leaf (upstream slot) and Bays 1&2 Open in Double-Leaf (downstream slot).<sup>c, d</sup>**

Table MCN-8-ALT. Alternative Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot + Bays 1&2 (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>e</sup>	20 <sup>e</sup>	21	22		
																		TSW	TSW			0	19.4
																4		TSW	TSW			4	24.4
																5		TSW	TSW			5	25.4
																5		TSW	TSW	4		9	30.4
																5		TSW	TSW	5		10	31.4
																5		TSW	TSW	5	4	14	36.4
																5		TSW	TSW	5	5	15	37.4
													4			5		TSW	TSW	5	5	19	42.4
													5			5		TSW	TSW	5	5	20	43.4
													5			6		TSW	TSW	5	5	21	44.4
													5			7		TSW	TSW	5	5	22	45.4
											4		5			7		TSW	TSW	5	5	26	50.4
											5		5			7		TSW	TSW	5	5	27	51.4
											5		6			7		TSW	TSW	5	5	28	52.4
											5		7			7		TSW	TSW	5	5	29	53.4
										4		5	7			7		TSW	TSW	5	5	33	58.4
										5		5	7			7		TSW	TSW	5	5	34	59.4
										5		6	7			7		TSW	TSW	5	5	35	60.4
										5		7	7			7		TSW	TSW	5	5	36	61.4
			4							5		7	7			7		TSW	TSW	5	5	40	66.4
			5							5		7	7			7		TSW	TSW	5	5	41	67.4
			6							5		7	7			7		TSW	TSW	5	5	42	68.4
			7							5		7	7			7		TSW	TSW	5	5	43	69.4
4	4		5						4		4	4	4			4		TSW	TSW	5	5	39	71.4
4	4		5						4		4	5	5			5		TSW	TSW	5	5	41	73.4
4	4		5						5		5	5	5			5		TSW	TSW	5	5	43	75.4
4	4		5						5		5	5	7			7		TSW	TSW	5	5	45	77.4
4	4		5						5		5	7	7			7		TSW	TSW	5	5	47	79.4
4	4		5		4				5		5	5	5			5		TSW	TSW	5	5	47	80.4

<sup>c</sup> These alternate patterns in **Table MCN-8-ALT** will be used if low flows are forecasted and meet all hydrologic criteria defined in **section 2.2.5. Double-leaf** spill gates 1 and 2 will be opened once to 4 stops (~7 kcfs per bay) on April 10 through early summer spill on July 31, or when flows drop below 70 kcfs. Opening and closing gates 1&2 will use both overloaded movements allowed each year (no more than 2 lifts every 12 months).

<sup>d</sup> A total of 13 spill gates ~~and hoists~~ will be operated in the upstream slot in split-leaf and adjusted ~~hourly~~ as needed to adjust spill. The remaining 5 spillbays (3, 5, 8, 15, and 18) are double-leaf gates in the downstream slot and will remain closed unless needed to pass high flows using the first of two overloaded movements allowed each year. After the high flow event, open double-leaf gates will be closed using the second of two allowed overloaded movements.

<sup>e</sup> Bays 19-20 with TSWs spill approx 19.2 kcfs (9.6 kcfs/bay) at forebay 339'. The upper TSW gates will be raised 3-5 ft above the water surface to ensure free flow over the TSW crests.

Table MCN-8-ALT. Alternative Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot + Bays 1&2 (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>e</sup>	20 <sup>e</sup>	21	22		
4	4		6		5				5		5		5			5		TSW	TSW	5	5	49	82.4
4	4		7		5				5		5		5			5		TSW	TSW	5	5	50	83.4
4	4		7		6				5		5		5			5		TSW	TSW	5	5	51	84.4
4	4		8		6				5		5		5			5		TSW	TSW	5	5	52	85.4
4	4		8		7				5		5		5			5		TSW	TSW	5	5	53	86.4
4	4		9		7				5		5		5			5		TSW	TSW	5	5	54	87.3
4	4		9		8				5		5		5			5		TSW	TSW	5	5	55	88.3
4	4		10		8				5		5		5			5		TSW	TSW	5	5	56	89.2
4	4		10		8			4	5		5		5			5		TSW	TSW	5	5	60	94.2
4	4		10		8			5	5		5		5			5		TSW	TSW	5	5	61	95.2
4	4		10		9			5	5		5		5			5		TSW	TSW	5	5	62	96.1
4	4		10		10			5	5		5		5			5		TSW	TSW	5	5	63	97.0
4	4		10		7	4		5	5		5		5			5		TSW	TSW	5	5	64	99.2
4	4		10		9	5		5	5		5		5			5		TSW	TSW	5	5	67	102.1
4	4		10		9	6		5	5		5		5			5		TSW	TSW	5	5	68	103.1
4	4		10		10	6		5	5		5		5			5		TSW	TSW	5	5	69	104.0
4	4		10		10	7		5	5		5		5			5		TSW	TSW	5	5	70	105.0
4	4		10		10	9		5	5		5		5			5		TSW	TSW	5	5	72	106.9
4	4		10		10	7		5	5		5		5		4	5		TSW	TSW	5	5	74	110.0
4	4		10		10	7		5	5		5		5		5	5		TSW	TSW	5	5	75	111.0
4	4		10		10	7		5	5		5		5		5	6		TSW	TSW	5	5	76	112.0
4	4		10		10	7		5	5		5		5		6	6		TSW	TSW	5	5	77	113.0
4	4		10		10	8		5	5		5		5		6	6		TSW	TSW	5	5	78	114.0
4	4		10		10	7		5	5		5	4	5		6	6		TSW	TSW	5	5	81	118.0
4	4		10		10	7		5	5		5	5	5		6	6		TSW	TSW	5	5	82	119.0
4	4		10		10	7		6	5		5	5	5		6	6		TSW	TSW	5	5	83	120.0
4	4		10		10	7		6	6		5	5	5		6	6		TSW	TSW	5	5	84	121.0
4	4		10		10	7		5	5	4	5	5	5		6	6		TSW	TSW	5	5	86	124.0
4	4		10		10	7		5	5	5	5	5	5		6	6		TSW	TSW	5	5	87	125.0
4	4		10		10	7		6	5	5	5	5	5		6	6		TSW	TSW	5	5	88	126.0
4	4		10		10	7		6	6	5	5	5	5		6	6		TSW	TSW	5	5	89	127.0
4	4		10		10	8		6	6	5	5	5	5		6	6		TSW	TSW	5	5	90	128.0
4	4		10		10	8		6	6	5	5	5	6		6	6		TSW	TSW	5	5	91	129.0
4	4		10		10	8		6	6	5	5	6	6		6	6		TSW	TSW	5	5	92	130.0
4	4		10		10	8		6	6	5	6	6	6		6	6		TSW	TSW	5	5	93	131.0
4	4		10		10	8		6	6	6	6	6	6		6	6		TSW	TSW	5	5	94	132.0
4	4		10		10	8		6	6	6	6	6	6		6	6		TSW	TSW	6	5	95	133.0
4	4		10		10	8		6	6	6	6	6	6		6	6		TSW	TSW	6	6	96	134.0
4	4		10		10	9		6	6	6	6	6	6		6	6		TSW	TSW	6	6	97	134.9
4	4		10		10	9		6	6	6	6	6	6		6	7		TSW	TSW	6	6	98	135.9
4	4		10		10	9		6	6	6	6	6	6		7	7		TSW	TSW	6	6	99	136.9
4	4		11		10	9		7	6	6	6	6	6		7	7		TSW	TSW	6	6	101	138.8

Table MCN-8-ALT. Alternative Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot + Bays 1&2 (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>e</sup>	20 <sup>e</sup>	21	22		
4	4		11		10	9		7	7	6	6	6	6		7	7		TSW	TSW	6	6	102	139.8
4	4		11		10	9		7	7	6	6	6	7		7	7		TSW	TSW	6	6	103	140.8
4	4		11		10	9		7	7	6	6	7	7		7	7		TSW	TSW	6	6	104	141.8
4	4		11		10	9		7	7	7	6	7	7		7	7		TSW	TSW	6	6	105	142.8
4	4		11		10	9		7	7	7	7	7	7		7	7		TSW	TSW	6	6	106	143.8
4	4		11		10	9		7	7	7	7	7	7		7	7		TSW	TSW	7	6	107	144.8
4	4		11		10	9		7	7	7	7	7	7		7	7		TSW	TSW	7	7	108	145.8
4	4		11		10	10		7	7	7	7	7	7		7	7		TSW	TSW	7	7	109	146.7
4	4		11		11	10		7	7	7	7	7	7		7	7		TSW	TSW	7	7	110	147.6
4	4		11		11	10		7	7	7	7	7	7		7	8		TSW	TSW	7	7	111	148.6
4	4		11		11	10		7	7	7	7	7	7		8	8		TSW	TSW	7	7	112	149.6
4	4		11		11	10		8	7	7	7	7	7		8	8		TSW	TSW	7	7	113	150.6
4	4		11		11	10		8	8	7	7	7	8		8	8		TSW	TSW	7	7	114	151.6
4	4		11		11	10		8	8	7	7	7	8		8	8		TSW	TSW	7	7	115	152.6
4	4		11		11	10		8	8	7	7	8	8		8	8		TSW	TSW	7	7	116	153.6
4	4		11		11	10		8	8	8	7	8	8		8	8		TSW	TSW	7	7	117	154.6
4	4		11		11	10		8	8	8	8	8	8		8	8		TSW	TSW	7	7	118	155.6
4	4		11		11	10		8	8	8	8	8	8		8	8		TSW	TSW	8	7	119	156.6
4	4		11		11	10		8	8	8	8	8	8		8	8		TSW	TSW	8	8	120	157.6
4	4		12		11	10		8	8	8	8	8	8		8	8		TSW	TSW	8	8	121	158.5
4	4		12		12	10		8	8	8	8	8	8		8	8		TSW	TSW	8	8	122	159.4
4	4		12		12	11		8	8	8	8	8	8		8	8		TSW	TSW	8	8	123	160.3
4	4		12		12	11		8	8	8	8	8	8		8	9		TSW	TSW	8	8	124	161.2
4	4		12		12	11		8	8	8	8	8	8		9	9		TSW	TSW	8	8	125	162.1
4	4		12		12	11		9	8	8	8	8	8		9	9		TSW	TSW	8	8	126	163.0
4	4		12		12	11		9	9	8	8	8	9		9	9		TSW	TSW	8	8	128	164.8
4	4		12		12	11		9	9	8	8	8	9		9	9		TSW	TSW	8	8	128	164.8
4	4		12		12	11		9	9	8	8	9	9		9	9		TSW	TSW	8	8	129	165.7
4	4		12		12	11		9	9	9	8	9	9		9	9		TSW	TSW	8	8	130	166.6
4	4		12		12	11		9	9	9	9	9	9		9	9		TSW	TSW	8	8	131	167.5
4	4		12		12	11		9	9	9	9	9	9		9	9		TSW	TSW	9	8	132	168.4
4	4		12		12	11		9	9	9	9	9	9		9	9		TSW	TSW	9	9	133	169.3
4	4		13		12	11		9	9	9	9	9	9		9	9		TSW	TSW	9	9	134	170.0
4	4		13		13	11		9	9	9	9	9	9		9	9		TSW	TSW	9	9	135	170.7
4	4		13		13	12		9	9	9	9	9	9		9	9		TSW	TSW	9	9	136	171.6
4	4		13		13	12		9	9	9	9	9	9		9	10		TSW	TSW	9	9	137	172.5
4	4		13		13	12		9	9	9	9	9	9		10	10		TSW	TSW	9	9	138	173.4
4	4		13		13	12		10	9	9	9	9	10		10	10		TSW	TSW	9	9	140	175.2
4	4		13		13	12		10	10	9	9	9	9		10	10		TSW	TSW	9	9	140	175.2
4	4		13		13	12		10	10	9	9	9	10		10	10		TSW	TSW	9	9	141	176.1
4	4		13		13	12		10	10	10	9	10	10		10	10		TSW	TSW	9	9	143	177.9
4	4		13		13	12		10	10	10	10	10	10		10	10		TSW	TSW	10	9	145	179.7

Table MCN-8-ALT. Alternative Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot + Bays 1&2 (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>e</sup>	20 <sup>e</sup>	21	22		
4	4		13		13	12		10	10	10	10	10	10		10	10		TSW	TSW	10	10	146	180.6
4	4		14		13	12		10	10	10	10	10	10		10	10		TSW	TSW	10	10	147	181.4
4	4		14		13	12		10	10	10	10	10	10		10	10		TSW	TSW	10	10	147	181.4
4	4		14		14	12		10	10	10	10	10	10		10	10		TSW	TSW	10	10	148	182.2
4	4		14		14	13		10	10	10	10	10	10		10	10		TSW	TSW	10	10	149	182.9
4	4		14		14	13		11	10	10	10	10	10		10	11		TSW	TSW	10	10	151	184.7
4	4		14		14	13		11	10	10	10	10	10		11	11		TSW	TSW	10	10	152	185.6
4	4		14		14	13		11	11	10	10	10	11		11	11		TSW	TSW	10	10	154	187.4
4	4		14		14	13		11	11	10	10	10	11		11	11		TSW	TSW	10	10	154	187.4
4	4		14		14	13		11	11	11	10	11	11		11	11		TSW	TSW	10	10	156	189.2
4	4		14		14	13		11	11	11	11	11	11		11	11		TSW	TSW	10	10	157	190.1
4	4		14		14	13		11	11	11	11	11	11		11	11		TSW	TSW	11	10	158	191.0
4	4		14		14	13		11	11	11	11	11	11		11	11		TSW	TSW	11	11	159	191.9
4	4		15		14	13		11	11	11	11	11	11		11	11		TSW	TSW	11	11	160	192.7
4	4		15		15	13		11	11	11	11	11	11		11	11		TSW	TSW	11	11	161	193.5
4	4		15		15	14		11	11	11	11	11	12		11	11		TSW	TSW	11	11	163	195.2
4	4		15		15	14		11	11	11	11	11	11		11	12		TSW	TSW	11	11	163	195.2
4	4		15		15	14		11	11	11	11	11	11		12	12		TSW	TSW	11	11	164	196.1
4	4		15		15	14		12	11	11	11	11	11		12	12		TSW	TSW	11	11	165	197.0
4	4		15		15	14		12	12	11	11	12	12		12	12		TSW	TSW	11	11	167	198.8
4	4		15		15	14		12	12	12	11	12	12		12	12		TSW	TSW	11	11	168	199.7
4	4		15		15	14		12	12	12	12	12	12		12	12		TSW	TSW	11	11	169	200.6
4	4		15		15	14		12	12	12	12	12	12		12	12		TSW	TSW	12	11	171	202.4
4	4		15		15	14		12	12	12	12	12	13		12	12		TSW	TSW	12	12	173	204.0
4	4		16		15	14		12	12	12	12	12	12		12	12		TSW	TSW	12	12	173	204.3
4	4		16		16	14		12	12	12	12	12	12		12	12		TSW	TSW	12	12	174	205.3
4	4		16		16	15		12	12	12	12	12	12		12	12		TSW	TSW	12	12	175	206.1
4	4		16		16	15		12	12	12	12	12	12		12	13		TSW	TSW	12	12	176	206.8
4	4		16		16	15		12	12	12	12	12	12		13	13		TSW	TSW	12	12	177	207.5
4	4		16		16	15		13	12	12	12	12	12		13	13		TSW	TSW	12	12	178	208.2
4	4		16		16	15		13	13	12	12	12	13		13	13		TSW	TSW	12	12	180	209.6
4	4		16		16	15		13	13	13	12	13	13		13	13		TSW	TSW	12	12	181	210.3
4	4		16		16	15		13	13	13	13	13	13		13	13		TSW	TSW	12	12	182	211.0
4	4		16		16	15		13	13	13	13	13	13		13	13		TSW	TSW	12	12	183	211.7
4	4		16		16	15		13	13	13	13	13	13		13	13		TSW	TSW	13	12	184	212.4
4	4		16		16	15		13	13	13	13	13	13		13	13		TSW	TSW	13	13	185	213.1
4	4		17		16	15		13	13	13	13	13	13		13	13		TSW	TSW	13	13	186	214.0
4	4		17		17	15		13	13	13	13	13	13		13	13		TSW	TSW	13	13	187	214.9
4	4		17		17	16		13	13	13	13	13	13		13	13		TSW	TSW	13	13	188	215.9
4	4		17		17	16		13	13	13	13	13	13		13	14		TSW	TSW	13	13	189	216.7

Table MCN-8-ALT. Alternative Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot + Bays 1&2 (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>e</sup>	20 <sup>e</sup>	21	22		
4	4		17		17	16		13	13	13	13	13	13		14	14		TSW	TSW	13	13	190	217.5
4	4		17		17	16		14	13	13	13	13	13		14	14		TSW	TSW	13	13	191	218.3
4	4		17		17	16		14	14	13	13	13	14		14	14		TSW	TSW	13	13	193	219.9
4	4		17		17	16		14	14	14	13	14	14		14	14		TSW	TSW	13	13	195	221.5
4	4		17		17	16		14	14	14	14	14	14		14	14		TSW	TSW	13	13	196	222.3
4	4		17		17	16		14	14	14	14	14	14		14	14		TSW	TSW	14	13	197	223.1
4	4		17		17	16		14	14	14	14	14	14		14	14		TSW	TSW	14	14	198	223.9
4	4		18		17	16		14	14	14	14	14	14		14	14		TSW	TSW	14	14	199	224.8
4	4		18		18	16		14	14	14	14	14	14		14	14		TSW	TSW	14	14	200	225.7
4	4		18		18	17		14	14	14	14	14	14		14	14		TSW	TSW	14	14	201	226.6
4	4		18		18	17		14	14	14	14	14	14		14	15		TSW	TSW	14	14	202	227.4
4	4		18		18	17		14	14	14	14	14	14		15	15		TSW	TSW	14	14	203	228.2
4	4		18		18	17		15	14	14	14	14	14		15	15		TSW	TSW	14	14	204	229.0
4	4		18		18	17		15	15	14	14	14	15		15	15		TSW	TSW	14	14	206	230.6
4	4		18		18	17		15	15	15	14	15	15		15	15		TSW	TSW	14	14	208	232.2
4	4		18		18	17		15	15	15	15	15	15		15	15		TSW	TSW	15	14	210	233.8
4	4		18		18	17		15	15	15	15	15	15		15	15		TSW	TSW	15	15	211	234.6
4	4		19		18	17		15	15	15	15	15	15		15	15		TSW	TSW	15	15	212	235.5
4	4		19		19	17		15	15	15	15	15	15		15	15		TSW	TSW	15	15	213	236.4
4	4		19		19	18		15	15	15	15	15	15		15	15		TSW	TSW	15	15	214	237.3
4	4		19		19	18		15	15	15	15	15	15		15	16		TSW	TSW	15	15	215	238.3
4	4		19		19	18		15	15	15	15	15	15		16	16		TSW	TSW	15	15	216	239.3
4	4		19		19	18		16	15	15	15	15	15		16	16		TSW	TSW	15	15	217	240.3
4	4		19		19	18		16	16	15	15	15	16		16	16		TSW	TSW	15	15	219	242.3
4	4		19		19	18		16	16	16	15	16	16		16	16		TSW	TSW	15	15	221	244.3
4	4		19		19	18		16	16	16	16	16	16		16	16		TSW	TSW	15	15	222	245.3
4	4		19		19	18		16	16	16	16	16	16		16	16		TSW	TSW	16	15	223	246.3
4	4		19		19	18		16	16	16	16	16	16		16	16		TSW	TSW	16	16	224	247.3
4	4		19		19	19		16	16	16	16	16	16		16	16		TSW	TSW	16	16	225	248.2
4	4		19		19	19		16	16	16	16	16	16		16	17		TSW	TSW	16	16	226	249.1
4	4		19		19	19		16	16	16	16	16	16		17	17		TSW	TSW	16	16	227	250.0
4	4		19		19	19		17	16	16	16	16	16		17	17		TSW	TSW	16	16	228	250.9
4	4		19		19	19		17	17	16	16	16	17		17	17		TSW	TSW	16	16	230	252.7
4	4		19		19	19		17	17	17	16	17	17		17	17		TSW	TSW	16	16	232	254.5
4	4		19		19	19		17	17	17	17	17	17		17	17		TSW	TSW	16	16	233	255.4
4	4		19		19	19		17	17	17	17	17	17		17	17		TSW	TSW	16	17	234	256.3
4	4		19		19	19		17	17	17	17	17	17		17	17		TSW	TSW	17	17	235	257.2
4	4		19		19	19		17	17	17	17	17	17		17	18		TSW	TSW	17	17	236	258.1
4	4		19		19	19		17	17	17	17	17	17		18	18		TSW	TSW	17	17	237	259.0
4	4		19		19	19		18	17	17	17	17	17		18	18		TSW	TSW	17	17	238	259.9
4	4		19		19	19		18	18	17	17	17	18		18	18		TSW	TSW	17	17	240	261.7
4	4		19		19	19		18	18	18	17	18	18		18	18		TSW	TSW	17	17	242	263.5

Table MCN-8-ALT. Alternative Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot + Bays 1&2 (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>e</sup>	20 <sup>e</sup>	21	22		
4	4		19		19	19		18	18	18	18	18	18		18	18		TSW	TSW	17	17	243	264.4
4	4		19		19	19		18	18	18	18	18	18		18	18		TSW	TSW	17	18	244	265.3
4	4		19		19	19		18	18	18	18	18	18		18	18		TSW	TSW	18	18	245	266.2
4	4		19		19	19		18	18	18	18	18	18		18	19		TSW	TSW	18	18	246	267.1
4	4		19		19	19		18	18	18	18	18	18		19	19		TSW	TSW	18	18	247	268.0
4	4		19		19	19		19	18	18	18	18	18		19	19		TSW	TSW	18	18	248	268.9
4	4		19		19	19		19	19	18	18	18	19		19	19		TSW	TSW	18	18	250	270.7
4	4		19		19	19		19	19	19	18	19	19		19	19		TSW	TSW	18	18	252	272.5
4	4		19		19	19		19	19	19	19	19	19		19	19		TSW	TSW	18	18	253	273.4
4	4		19		19	19		19	19	19	19	19	19		19	19		TSW	TSW	18	19	254	274.3
4	4		19		19	19		19	19	19	19	19	19		19	19		TSW	TSW	19	19	255	275.2
4	4		19	20	19	19		15	15	15	15	15	15		15	15		TSW	TSW	19	19	243	277.7
4	4		19	20	19	19		15	15	15	15	15	15		15	16		TSW	TSW	19	19	244	278.7
4	4		19	20	19	19		15	15	15	15	15	15		16	16		TSW	TSW	19	19	245	279.7
4	4		19	20	19	19		16	15	15	15	15	15		16	16		TSW	TSW	19	19	246	280.7
4	4		19	20	19	19		16	16	15	15	15	16		16	16		TSW	TSW	19	19	248	282.7
4	4		19	20	19	19		16	16	16	15	16	16		16	16		TSW	TSW	19	19	250	284.7
4	4		19	20	19	19		16	16	16	16	16	16		16	16		TSW	TSW	19	19	251	285.7
4	4		19	20	19	19		16	16	16	16	16	16		16	17		TSW	TSW	19	19	252	286.6
4	4		19	20	19	19		16	16	16	16	16	16		17	17		TSW	TSW	19	19	253	287.5
4	4		19	20	19	19		17	16	16	16	16	16		17	17		TSW	TSW	19	19	254	288.4
4	4		19	20	19	19		17	17	16	16	16	17		17	17		TSW	TSW	19	19	256	290.2
4	4		19	20	19	19		17	17	17	16	17	17		17	17		TSW	TSW	19	19	258	292.0
4	4		19	20	19	19		17	17	17	17	17	17		17	17		TSW	TSW	19	19	259	292.9
4	4		19	20	19	19		17	17	17	17	17	17		18	18		TSW	TSW	19	19	261	294.7
4	4		19	20	19	19		18	17	17	17	17	17		18	18		TSW	TSW	19	19	262	295.6
4	4		19	20	19	19		18	18	16	17	17	18		18	18		TSW	TSW	19	19	263	296.5
4	4		19	20	19	19		18	18	18	17	18	18		18	18		TSW	TSW	19	19	266	299.2
4	4		19	20	19	19		18	18	18	18	18	18		18	18		TSW	TSW	19	19	267	300.1
4	4		19	20	19	19		18	18	18	18	18	18		18	19		TSW	TSW	19	19	268	301.0
4	4		19	20	19	19		18	18	18	18	18	18		19	19		TSW	TSW	19	19	269	301.9
4	4		19	20	19	19		19	18	18	18	18	19		19	19		TSW	TSW	19	19	271	303.7
4	4		19	20	19	19		19	19	18	18	19	19		19	19		TSW	TSW	19	19	273	305.5
4	4		19	20	19	19		19	19	19	19	19	19		19	19		TSW	TSW	19	19	275	307.3
4	4		19	20	19	19		15	15	15	15	15	15		15	15	20	TSW	TSW	19	19	263	309.8
4	4		19	20	19	19		15	15	15	15	15	15		16	16	20	TSW	TSW	19	19	265	311.8
4	4		19	20	19	19		16	15	15	15	15	16		16	16	20	TSW	TSW	19	19	267	313.8
4	4		19	20	19	19		16	16	15	15	16	16		16	16	20	TSW	TSW	19	19	269	315.8
4	4		19	20	19	19		16	16	16	16	16	16		16	16	20	TSW	TSW	19	19	271	317.8
4	4		19	20	19	19		16	16	16	16	16	16		17	17	20	TSW	TSW	19	19	273	319.6
4	4		19	20	19	19		17	16	16	16	16	17		17	17	20	TSW	TSW	19	19	275	321.4
4	4		19	20	19	19		17	17	16	16	17	17		17	17	20	TSW	TSW	19	19	277	323.2



Table MCN-8-ALT. Alternative Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot + Bays 1&2 (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>e</sup>	20 <sup>e</sup>	21	22		
4	4		19	20	19	19		17	17	17	17	17	17		17	17	20	TSW	TSW	19	19	279	325.0
4	4		19	20	19	19		17	17	17	17	17	17		18	18	20	TSW	TSW	19	19	281	326.8
4	4		19	20	19	19		18	17	17	17	17	18		18	18	20	TSW	TSW	19	19	283	328.6
4	4		19	20	19	19		18	18	16	17	18	18		18	18	20	TSW	TSW	19	19	284	329.5
4	4		19	20	19	19		18	18	18	18	18	18		18	18	20	TSW	TSW	19	19	287	332.2
4	4		19	20	19	19		18	18	18	18	18	18		19	19	20	TSW	TSW	19	19	289	334.0
4	4		19	20	19	19		19	18	18	18	18	19		19	19	20	TSW	TSW	19	19	291	335.8
4	4		19	20	19	19		19	19	18	18	19	19		19	19	20	TSW	TSW	19	19	293	337.6
4	4		19	20	19	19		19	19	19	19	19	19		19	19	20	TSW	TSW	19	19	295	339.4
4	4		19	20	19	19		15	15	15	15	15	15	20	15	15	20	TSW	TSW	19	19	283	341.9
4	4		19	20	19	19		15	15	15	15	15	15	20	16	16	20	TSW	TSW	19	19	285	343.9
4	4		19	20	19	19		16	15	15	15	15	16	20	16	16	20	TSW	TSW	19	19	287	345.9
4	4		19	20	19	19		16	16	15	15	16	16	20	16	16	20	TSW	TSW	19	19	289	347.9
4	4		19	20	19	19		16	16	16	16	16	16	20	16	16	20	TSW	TSW	19	19	291	349.9
4	4		19	20	19	19		16	16	16	16	16	16	20	17	17	20	TSW	TSW	19	19	293	351.7
4	4		19	20	19	19		17	16	16	16	16	17	20	17	17	20	TSW	TSW	19	19	295	353.5
4	4		19	20	19	19		17	17	16	16	17	17	20	17	17	20	TSW	TSW	19	19	297	355.3
4	4		19	20	19	19		17	17	17	17	17	17	20	17	17	20	TSW	TSW	19	19	299	357.1
4	4		19	20	19	19		17	17	17	17	17	17	20	18	18	20	TSW	TSW	19	19	301	358.9
4	4		19	20	19	19		18	17	17	17	17	18	20	18	18	20	TSW	TSW	19	19	303	360.7
4	4		19	20	19	19		18	18	17	17	18	18	20	18	18	20	TSW	TSW	19	19	305	362.5
4	4		19	20	19	19		18	18	18	18	18	18	20	18	18	20	TSW	TSW	19	19	307	364.3
4	4		19	20	19	19		18	18	18	18	18	18	20	19	19	20	TSW	TSW	19	19	309	366.1
4	4		19	20	19	19		19	18	18	18	18	19	20	19	19	20	TSW	TSW	19	19	311	367.9
4	4		19	20	19	19		19	19	18	18	19	19	20	19	19	20	TSW	TSW	19	19	313	369.7
4	4		19	20	19	19		19	19	19	19	19	19	20	19	19	20	TSW	TSW	19	19	315	371.5
4	4	20	19	20	19	19		15	15	15	15	15	15	20	15	15	20	TSW	TSW	19	19	303	374.0
4	4	20	19	20	19	19		15	15	15	15	15	15	20	16	16	20	TSW	TSW	19	19	305	376.0
4	4	20	19	20	19	19		16	15	15	15	15	16	20	16	16	20	TSW	TSW	19	19	307	378.0
4	4	20	19	20	19	19		16	16	15	15	16	16	20	16	16	20	TSW	TSW	19	19	309	380.0
4	4	20	19	20	19	19		16	16	16	16	16	16	20	16	16	20	TSW	TSW	19	19	311	382.0
4	4	20	19	20	19	19		16	16	16	16	16	16	20	17	17	20	TSW	TSW	19	19	313	383.8
4	4	20	19	20	19	19		17	16	16	16	16	17	20	17	17	20	TSW	TSW	19	19	315	385.6
4	4	20	19	20	19	19		17	17	16	16	17	17	20	17	17	20	TSW	TSW	19	19	317	387.4
4	4	20	19	20	19	19		17	17	17	17	17	17	20	17	17	20	TSW	TSW	19	19	319	389.2
4	4	20	19	20	19	19		17	17	17	17	17	17	20	18	18	20	TSW	TSW	19	19	321	391.0
4	4	20	19	20	19	19		18	17	17	17	17	18	20	18	18	20	TSW	TSW	19	19	323	392.8
4	4	20	19	20	19	19		18	18	17	17	18	18	20	18	18	20	TSW	TSW	19	19	325	394.6
4	4	20	19	20	19	19		18	18	18	18	18	18	20	18	18	20	TSW	TSW	19	19	327	396.4
4	4	20	19	20	19	19		18	18	18	18	18	18	20	19	19	20	TSW	TSW	19	19	329	398.2
4	4	20	19	20	19	19		19	18	18	18	18	19	20	19	19	20	TSW	TSW	19	19	331	400.0
4	4	20	19	20	19	19		19	19	18	18	19	19	20	19	19	20	TSW	TSW	19	19	333	401.8

Table MCN-8-ALT. Alternative Interim Patterns w/ 13 Gates in Split-Leaf in Upstream Slot + Bays 1&2 (# Gate Stops per Spillbay)																						Total Stops (#)	Spill (kcfs)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 <sup>e</sup>	20 <sup>e</sup>	21	22		
4	4	20	19	20	19	19		19	19	19	19	19	19	20	19	19	20	TSW	TSW	19	19	335	403.6
4	4	20	19	20	19	19	20	15	15	15	15	15	15	20	15	15	20	TSW	TSW	19	19	323	406.1
4	4	20	19	20	19	19	20	15	15	15	15	15	15	20	16	16	20	TSW	TSW	19	19	325	408.1
4	4	20	19	20	19	19	20	16	15	15	15	15	16	20	16	16	20	TSW	TSW	19	19	327	410.1
4	4	20	19	20	19	19	20	16	16	15	15	16	16	20	16	16	20	TSW	TSW	19	19	329	412.1
4	4	20	19	20	19	19	20	16	16	16	16	16	16	20	16	16	20	TSW	TSW	19	19	331	414.1
4	4	20	19	20	19	19	20	16	16	16	16	16	16	20	17	17	20	TSW	TSW	19	19	333	415.9
4	4	20	19	20	19	19	20	17	16	16	16	16	17	20	17	17	20	TSW	TSW	19	19	335	417.7
4	4	20	19	20	19	19	20	17	17	16	16	17	17	20	17	17	20	TSW	TSW	19	19	337	419.5
4	4	20	19	20	19	19	20	17	17	17	17	17	17	20	17	17	20	TSW	TSW	19	19	339	421.3
4	4	20	19	20	19	19	20	17	17	17	17	17	17	20	18	18	20	TSW	TSW	19	19	341	423.1
4	4	20	19	20	19	19	20	18	17	17	17	17	18	20	18	18	20	TSW	TSW	19	19	343	424.9
4	4	20	19	20	19	19	20	18	18	17	17	18	18	20	18	18	20	TSW	TSW	19	19	345	426.7
4	4	20	19	20	19	19	20	18	18	18	18	18	18	20	18	18	20	TSW	TSW	19	19	347	428.5
4	4	20	19	20	19	19	20	18	18	18	18	18	18	20	19	19	20	TSW	TSW	19	19	349	430.3
4	4	20	19	20	19	19	20	19	18	18	18	18	19	20	19	19	20	TSW	TSW	19	19	351	432.1
4	4	20	19	20	19	19	20	19	19	18	18	19	19	20	19	19	20	TSW	TSW	19	19	353	433.9
4	4	20	19	20	19	19	20	19	19	19	19	19	19	20	19	19	20	TSW	TSW	19	19	355	435.7
4	4	20	19	20	19	19	20	19	19	19	19	19	19	20	19	19	20	21	TSW	19	19	376	446.0
4	4	20	19	20	19	19	20	19	19	19	19	19	19	20	19	19	20	21	21	19	19	397	456.3
4	4	20	19	20	19	19	20	19	19	19	19	19	19	20	19	19	Free	21	21	19	19	377	486.4
4	4	20	19	Free	19	19	20	19	19	19	19	19	19	20	19	19	Free	21	21	19	19	357	516.5
4	4	20	19	Free	19	19	20	19	19	19	19	19	19	Free	19	19	Free	21	21	19	19	337	546.6
4	4	20	19	Free	19	19	Free	19	19	19	19	19	19	Free	19	19	Free	21	21	19	19	317	576.7
4	4	Free	19	Free	19	19	Free	19	19	19	19	19	19	Free	19	19	Free	21	21	19	19	297	606.8