# Fish Passage Plan (FPP) Change Form

**Change Form # & Title**: 23MCN003 – Summer Spill Patterns for 57% Spill

**Date Submitted**: 30-MAR-2023

**Project**: McNary Dam

**Requester Name, Agency**: Chris Peery, Corps NWW

**Final Action:**

**FPP Section**:

Chapter 5, McNary Dam, Table MCN-11 (Interim Manual/Auto Spill Patterns)

**Justification for Change**:

Adds manual/auto spill patterns with six auto adjustable bays for summer June 16-Aug 14 (57% spill).

**Proposed Changes**:

*See following pages for edits to existing FPP text in track changes.*

Table MCN-11. Interim McNary Dam Manual/Auto Spill Patterns with Bays 2, 6, and 16 Locked. See section 2.2.1.1 for more information (added July 2022).

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| **APRIL Manual/Auto Spill Patterns with TSWs (# Gate Stops per Spillbay) c Bays 2, 6, and 16 locked at 4 or 6 stops (manually adjusted)** | **Total Stops** | **Total Spill** a |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19 b** | **20 b** | **21** | **22** | **(#)** | **(kcfs)** |
| 2 | 4 | 0 | 2 | 2 | 0 | 0 | 2 | 1 | 2 | 0 | 2 | 2 | 0 | 2 | 4 | 2 | 2 | TSW | TSW | 2 | 0 | **31** | **78.5** |
| 2 | 4 | 3 | 2 | 2 | 0 | 3 | 2 | 1 | 2 | 3 | 2 | 2 | 0 | 2 | 4 | 2 | 2 | TSW | TSW | 2 | 3 | **43** | **100.9** |
| 2 | 4 | 6 | 2 | 2 | 0 | 6 | 2 | 1 | 2 | 6 | 2 | 2 | 0 | 2 | 4 | 2 | 2 | TSW | TSW | 2 | 6 | **55** | **120.1** |
| 3 | 4 | 0 | 3 | 3 | 6 | 0 | 3 | 3 | 3 | 0 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | TSW | TSW | 4 | 0 | **55** | **120.0** |
| 3 | 4 | 3 | 3 | 3 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | TSW | TSW | 4 | 3 | **67** | **142.4** |
| 3 | 4 | 6 | 3 | 3 | 6 | 6 | 3 | 3 | 3 | 6 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | TSW | TSW | 4 | 6 | **79** | **161.6** |
| 4 | 4 | 2 | 4 | 5 | 6 | 2 | 4 | 5 | 5 | 1 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | TSW | TSW | 5 | 2 | **80** | **162.5** |
| 4 | 4 | 5 | 4 | 5 | 6 | 5 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | TSW | TSW | 5 | 5 | **92** | **182.4** |
| 4 | 4 | 8 | 4 | 5 | 6 | 8 | 4 | 5 | 5 | 7 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | TSW | TSW | 5 | 8 | **104** | **201.9** |
| 6 | 4 | 3 | 6 | 6 | 6 | 3 | 6 | 6 | 6 | 2 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | TSW | TSW | 6 | 3 | **105** | **203.1** |
| 6 | 4 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | TSW | TSW | 6 | 6 | **117** | **222.4** |
| 6 | 4 | 9 | 6 | 6 | 6 | 9 | 6 | 6 | 6 | 8 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | TSW | TSW | 6 | 9 | **129** | **242.0** |
| 7 | 6 | 5 | 8 | 7 | 6 | 4 | 7 | 7 | 7 | 4 | 7 | 7 | 7 | 7 | 6 | 8 | 8 | TSW | TSW | 8 | 4 | **130** | **243.6** |
| 7 | 6 | 8 | 8 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 8 | 8 | TSW | TSW | 8 | 7 | **142** | **262.9** |
| 7 | 6 | 11 | 8 | 7 | 6 | 10 | 7 | 7 | 7 | 10 | 7 | 7 | 7 | 7 | 6 | 8 | 8 | TSW | TSW | 8 | 10 | **154** | **282.3** |

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| **MAY Manual/Auto Spill Patterns with TSWs (# Gate Stops per Spillbay) c Bays 2, 6, and 16 locked at 4 or 6 stops (manually adjusted)** | **Total Stops** | **Total Spill** a |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19 b** | **20 b** | **21** | **22** | **(#)** | **(kcfs)** |
| 2 | 4 | 2 |   | 2 | 0 | 3 | 2 | 1 |   | 2 | 2 | 1 |   | 2 | 4 |   | 2 | TSW | TSW | 2 |   | **31** | **78.5** |
| 2 | 4 | 2 | 3 | 2 | 0 | 3 | 2 | 1 | 3 | 2 | 2 | 1 | 3 | 2 | 4 | 3 | 2 | TSW | TSW | 2 |   | **43** | **100.7** |
| 2 | 4 | 2 | 6 | 2 | 0 | 3 | 2 | 1 | 6 | 2 | 2 | 1 | 6 | 2 | 4 | 6 | 2 | TSW | TSW | 2 |   | **55** | **120.1** |
| 3 | 4 | 3 | 0 | 3 | 6 | 3 | 3 | 3 | 0 | 3 | 3 | 3 | 0 | 3 | 4 | 0 | 4 | TSW | TSW | 4 | 3 | **55** | **120.0** |
| 3 | 4 | 3 | 3 | 3 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | TSW | TSW | 4 | 3 | **67** | **142.4** |
| 3 | 4 | 3 | 6 | 3 | 6 | 3 | 3 | 3 | 6 | 3 | 3 | 3 | 6 | 3 | 4 | 6 | 4 | TSW | TSW | 4 | 3 | **79** | **161.6** |
| 4 | 4 | 5 | 1 | 5 | 6 | 5 | 4 | 5 | 2 | 4 | 5 | 4 | 2 | 4 | 4 | 1 | 5 | TSW | TSW | 5 | 5 | **80** | **162.5** |
| 4 | 4 | 5 | 4 | 5 | 6 | 5 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | TSW | TSW | 5 | 5 | **92** | **182.4** |
| 4 | 4 | 5 | 7 | 5 | 6 | 5 | 4 | 5 | 8 | 4 | 5 | 4 | 8 | 4 | 4 | 7 | 5 | TSW | TSW | 5 | 5 | **104** | **201.9** |
| 6 | 4 | 6 | 3 | 6 | 6 | 6 | 6 | 6 | 3 | 5 | 6 | 6 | 3 | 6 | 6 | 3 | 6 | TSW | TSW | 6 | 6 | **105** | **203.1** |
| 6 | 4 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | TSW | TSW | 6 | 6 | **117** | **222.4** |
| 6 | 4 | 6 | 9 | 6 | 6 | 6 | 6 | 6 | 9 | 5 | 6 | 6 | 9 | 6 | 6 | 9 | 6 | TSW | TSW | 6 | 6 | **129** | **242.0** |
| 7 | 6 | 8 | 5 | 7 | 6 | 7 | 7 | 7 | 4 | 7 | 7 | 7 | 4 | 7 | 6 | 5 | 8 | TSW | TSW | 8 | 7 | **130** | **243.6** |
| 7 | 6 | 8 | 8 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 8 | 8 | TSW | TSW | 8 | 7 | **142** | **262.9** |
| 7 | 6 | 8 | 11 | 7 | 6 | 7 | 7 | 7 | 10 | 7 | 7 | 7 | 10 | 7 | 6 | 11 | 8 | TSW | TSW | 8 | 7 | **154** | **282.3** |

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| **JUNE Manual/Auto Spill Patterns with TSWs (# Gate Stops per Spillbay) c Bays 2, 6, and 16 locked at 4 or 6 stops (manually adjusted)** | **Total Stops** | **Total Spill** a |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19 b** | **20 b** | **21** | **22** | **(#)** | **(kcfs)** |
| 2 | 4 | 2 | 2 | 0 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 2 | 0 | 2 | 4 | 2 | 0 | TSW | TSW | 2 | 2 | **31** | **78.5** |
| 2 | 4 | 2 | 2 | 3 | 0 | 2 | 2 | 3 | 2 | 1 | 3 | 2 | 0 | 2 | 4 | 2 | 3 | TSW | TSW | 2 | 2 | **43** | **100.7** |
| 2 | 4 | 2 | 2 | 6 | 0 | 2 | 2 | 6 | 2 | 1 | 6 | 2 | 0 | 2 | 4 | 2 | 6 | TSW | TSW | 2 | 2 | **55** | **120.1** |
| 3 | 4 | 3 | 3 | 0 | 6 | 3 | 3 | 0 | 3 | 3 | 0 | 3 | 3 | 3 | 4 | 3 | 1 | TSW | TSW | 4 | 3 | **55** | **120.0** |
| 3 | 4 | 3 | 3 | 3 | 6 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | TSW | TSW | 4 | 3 | **67** | **142.4** |
| 3 | 4 | 3 | 3 | 6 | 6 | 3 | 3 | 6 | 3 | 3 | 6 | 3 | 3 | 3 | 4 | 3 | 7 | TSW | TSW | 4 | 3 | **79** | **161.6** |
| 4 | 4 | 5 | 4 | 2 | 6 | 5 | 4 | 2 | 5 | 4 | 2 | 4 | 5 | 4 | 4 | 4 | 2 | TSW | TSW | 5 | 5 | **80** | **162.5** |
| 4 | 4 | 5 | 4 | 5 | 6 | 5 | 4 | 5 | 5 | 4 | 5 | 4 | 5 | 4 | 4 | 4 | 5 | TSW | TSW | 5 | 5 | **92** | **182.4** |
| 4 | 4 | 5 | 4 | 8 | 6 | 5 | 4 | 8 | 5 | 4 | 8 | 4 | 5 | 4 | 4 | 4 | 8 | TSW | TSW | 5 | 5 | **104** | **201.9** |
| 6 | 4 | 6 | 6 | 3 | 6 | 6 | 6 | 3 | 6 | 5 | 3 | 6 | 6 | 6 | 6 | 6 | 3 | TSW | TSW | 6 | 6 | **105** | **203.1** |
| 6 | 4 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | TSW | TSW | 6 | 6 | **117** | **222.4** |
| 6 | 4 | 6 | 6 | 9 | 6 | 6 | 6 | 9 | 6 | 5 | 9 | 6 | 6 | 6 | 6 | 6 | 9 | TSW | TSW | 6 | 6 | **129** | **242.0** |
| 7 | 6 | 8 | 8 | 4 | 6 | 7 | 7 | 4 | 7 | 7 | 4 | 7 | 7 | 7 | 6 | 8 | 5 | TSW | TSW | 8 | 7 | **130** | **243.6** |
| 7 | 6 | 8 | 8 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 8 | 8 | TSW | TSW | 8 | 7 | **142** | **262.9** |
| 7 | 6 | 8 | 8 | 10 | 6 | 7 | 7 | 10 | 7 | 7 | 10 | 7 | 7 | 7 | 6 | 8 | 11 | TSW | TSW | 8 | 7 | **154** | **282.3** |

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| **Manual/Auto Spill Patterns with NO TSWs (# Gate Stops per Spillbay) c Bays 2, 6, and 16 locked at 3 or 5 stops** | **Total Stops** | **Total Spill** a |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **(#)** | **(kcfs)** |
| 3 | 5 | 0 | 2 |   | 3 | 2 | 0 | 2 |   | 2 | 2 | 0 | 3 | 2 | 3 | 2 |   | 3 | 0 | 2 |   | **36** | **68.0** |
| 3 | 5 | 1 | 2 |   | 3 | 2 | 1 | 2 |   | 2 | 2 | 1 | 3 | 2 | 3 | 2 |   | 3 | 1 | 2 |   | **40** | **76.0** |
| 3 | 5 | 2 | 2 |   | 3 | 2 | 2 | 2 |   | 2 | 2 | 2 | 3 | 2 | 3 | 2 |   | 3 | 2 | 2 |   | **44** | **83.6** |
| 3 | 5 | 3 | 2 |   | 3 | 2 | 3 | 2 |   | 2 | 2 | 3 | 3 | 2 | 3 | 2 |   | 3 | 3 | 2 |   | **48** | **90.4** |
| 3 | 5 | 4 | 2 |   | 3 | 2 | 4 | 2 |   | 2 | 2 | 4 | 3 | 2 | 3 | 2 |   | 3 | 4 | 2 |   | **52** | **96.8** |
| 4 | 5 | 2 | 2 | 3 | 3 | 3 | 0 | 3 | 2 | 2 | 3 | 0 | 3 | 3 | 3 | 3 | 2 | 3 | 0 | 3 | 2 | **54** | **101.0** |
| 4 | 5 | 3 | 2 | 3 | 3 | 3 | 1 | 3 | 2 | 2 | 3 | 1 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 3 | 2 | **58** | **108.7** |
| 4 | 5 | 4 | 2 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | **62** | **116.0** |
| 4 | 5 | 5 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | **66** | **122.7** |
| 4 | 5 | 6 | 2 | 3 | 3 | 3 | 4 | 3 | 2 | 2 | 3 | 4 | 3 | 3 | 3 | 3 | 2 | 3 | 4 | 3 | 2 | **70** | **129.1** |
| 4 | 5 | 3 | 4 | 3 | 3 | 4 | 2 | 4 | 3 | 3 | 4 | 2 | 3 | 3 | 3 | 4 | 3 | 4 | 2 | 3 | 3 | **72** | **132.5** |
| 4 | 5 | 4 | 4 | 3 | 3 | 4 | 3 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 3 | 3 | **76** | **139.2** |
| 4 | 5 | 5 | 4 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 3 | 4 | 4 | 3 | 3 | **80** | **145.6** |
| 4 | 5 | 6 | 4 | 3 | 3 | 4 | 5 | 4 | 3 | 3 | 4 | 5 | 3 | 3 | 3 | 4 | 3 | 4 | 5 | 3 | 3 | **84** | **152.0** |
| 4 | 5 | 7 | 4 | 3 | 3 | 4 | 6 | 4 | 3 | 3 | 4 | 6 | 3 | 3 | 3 | 4 | 3 | 4 | 6 | 3 | 3 | **88** | **158.4** |

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| **Manual/Auto Spill Patterns for 57% SUMMER SPILL (June 16-Aug 14) c Bays 2, 6, and 16 locked** | **Total Stops** | **Total Spill** a |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **(#)** | **(kcfs)** |
| 3 | 5 | 0 | 3 |   | 3 | 2 | 0 | 2 |   | 3 | 2 | 0 | 3 | 0 | 3 | 2 |   | 3 | 0 | 0 | 2 | **36** | **67.5** |
| 3 | 5 | 1 | 3 |   | 3 | 2 | 1 | 2 |   | 3 | 2 | 1 | 3 | 1 | 3 | 2 |   | 3 | 1 | 1 | 2 | **42** | **79.5** |
| 3 | 5 | 2 | 3 |   | 3 | 2 | 2 | 2 |   | 3 | 2 | 2 | 3 | 2 | 3 | 2 |   | 3 | 2 | 2 | 2 | **48** | **90.9** |
| 3 | 5 | 3 | 3 |   | 3 | 2 | 3 | 2 |   | 3 | 2 | 3 | 3 | 3 | 3 | 2 |   | 3 | 3 | 3 | 2 | **54** | **101.1** |
| 3 | 5 | 0 | 4 | 4 | 4 | 2 | 0 | 2 | 4 | 4 | 2 | 0 | 3 | 0 | 3 | 4 | 4 | 3 | 0 | 0 | 3 | **54** | **98.9** |
| 3 | 5 | 1 | 4 | 4 | 4 | 2 | 1 | 2 | 4 | 4 | 2 | 1 | 3 | 1 | 3 | 4 | 4 | 3 | 1 | 1 | 3 | **60** | **110.9** |
| 3 | 5 | 2 | 4 | 4 | 4 | 2 | 2 | 2 | 4 | 4 | 2 | 2 | 3 | 2 | 3 | 4 | 4 | 3 | 2 | 2 | 3 | **66** | **122.3** |
| 3 | 5 | 3 | 4 | 4 | 4 | 2 | 3 | 2 | 4 | 4 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | **72** | **132.5** |
| 3 | 5 | 2 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 4 | 2 | 3 | 2 | 3 | 4 | 4 | 4 | 2 | 2 | 4 | **74** | **135.4** |
| 3 | 5 | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 4 | **80** | **145.6** |
| 3 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | **86** | **155.2** |
| 3 | 5 | 5 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 5 | 3 | 5 | 3 | 4 | 4 | 4 | 5 | 5 | 4 | **92** | **164.8** |

**a** Spill (kcfs) is calculated as a function of the total number of gate stops + TSW spill at forebay elevation 339 ft.

b Bays 19-20 with TSWs = approx 19.2 kcfs spill (9.6 kcfs/bay) at forebay 339'. Raise tainter gates 3-5 ft above water surface to ensure free flow through the TSWs.

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

**COMMENTS**:

**RECORD OF FINAL ACTION**: