# Willamette Fish Operations Plan (WFOP) Change Request Form

**Change Form # & Title**: 18NS004 – NMFS/ODFW/USACE

**Date Submitted**: 23 January 2018

**Project**: North Santiam - Big Cliff

**Requester Name, Agency**: Chris Walker, USACE

**Final Action:**

**WFOP Section**:

Chapter 2, Section 3.3.2

**Justification for Change**:

Implement temperature targets developed by the North Santiam water temperature task group.

 **Proposed Change**:

#### *Operational Water Temperature Management*

Interim temperature control operations consist of using the existing outlet configuration at the dam; spillway, powerhouse, and upper ROs. When inflow exceeds the projects ability to regulate temperatures and/or flood damage reduction operations are required, the projects evacuate water as required to meet reservoir operations rule curve requirements.

Detroit Dam interim temperature control operations varies from a pulsing-type operation with release through a single spill bay, cycling open and closed on a daily basis, to a continuous-type operation with release through a single bay at a set gate opening for multiple days. Mixing occurs in Big Cliff pool and outflow is released below Big Cliff Dam to attain temperature targets.

On 01 June, water temperature management operations will commence. A blend of spillway and turbine releases should be discharged from Detroit Dam in order to manage for downstream water temperatures and meet temperature targets (Table NS-3) throughout the summer/fall. Operators should target the upper end of the water temperature target ranges shown in Table NS-3. By following this strategy, large amounts of warm water can be evacuated from the reservoir without creating too warm of conditions downstream. This operation should be carried out until Detroit Reservoir is drawn down below spillway crest.

Once below spillway crest, water temperature management operations will shift to powerhouse-only discharges. This operation should be continued until mid to late October or until outflow water temperatures reach 52°F. Once outflow water temperatures near 52°F, the upper regulating outlet should be operated, in conjunction with the powerhouse, to keep downstream water temperatures below 52°F from mid to late October through approximately 20 November (Table NS-3). Adaptive management should be used to blend discharges from these outlets to ensure that water temperatures stay below 52°F.

Big Cliff will be used to moderate downstream flows so that they are consistent and meet instream tributary flow requirements. At no time will water temperature management operations be allowed to violate the current engineering and operational restrictions in place for Detroit/Big Cliff Dams and Reservoirs. Continuity of the operation is contingent upon meeting other critical operating purposes, specifically, but not necessarily limited to, flood damage reduction. Flood reduction operations would result in temporary termination of the operation. Should any flow management of dam safety concerns arise during this study, these operations will be modified or suspended.

[Add temperature target table]

Table NS-3. Monthly Temperature Targets for North Santiam River below Big Cliff Dam

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | **Month** | **Temperature Maximum/Minimum** |
|  | **°F** | **°F** |
|  | January | 42 | 38 |
|  | February | 42 | 38 |
|  | March | 44 | 42 |
|  | April | 46 | 42 |
|  | May | 50 | 46 |
|  | June | 54 | 48 |
|  | July | 55 | 52 |
|  | August | 55 | 52 |
|  | September | 54 | 48 |
|  | October | 52 | 46 |
|  | November | 46 | 42 |
|  | December | 46 | 41 |

**Comments**:

**Record of Final Action**: