

Delta

OMR Management

Reclamation and DWR propose to operate the CVP and SWP in a manner that maximizes exports while minimizing entrainment of fish. Old and Middle River Reverse Flows (OMR) provide a surrogate indicator for how export pumping, inflow, and the spring-neap tidal cycle influence hydrodynamics in the south Delta. The management of OMR, in combination with other environmental variables, can minimize or avoid the entrainment of fish in the South Delta and at CVP and SWP salvage facilities. Reclamation and DWR propose to maximize exports by incorporating real-time monitoring of fish distribution, hydrodynamic models, and entrainment models into the decision support for the management of OMR to focus protections for fish when necessary and provide flexibility where possible, consistent with the WIIN Act Sections 4002 and 4003. Reclamation would make a modification to exports within XX hours.

- Reclamation and DWR propose to operate to an index equation for OMR. An OMR index allows for short-term operational planning and real-time adjustments.
- Onset of OMR Management: Reclamation and DWR shall maximize exports up to an OMR no more negative than -5,000 cfs (Grimaldo, 2017), with the exception of storm-event flexibility, as described below. OMR management to -5,000 cfs would start when one or more of the following conditions have occurred, as described below, and would continue until the end of OMR management.
 - First Flush - After December 1, and when the 8 hour average turbidity is 12 NTU or greater at Prisoner's Point, Holland Cut, and Bacon Island.
 - Winter-Run - After January 1 and when more than 5% of wild young-of-year¹ winter-run Chinook salmon have migrated past Knights Landing. This 5% estimate will come from fish distribution estimates made by the multi-agency Delta-focused technical team.
 - Spring-Run - After April 1 and when more than 5% of spring-run Chinook salmon have migrated past Knights Landing. This 5% estimate will come from fish distribution estimates made by the multi-agency Delta-focused technical team.
 - San Joaquin Steelhead - After April 1 and when more than 5% if San Joaquin Origin steelhead have migrated past Vernalis.
 - Add Sacramento-basin trigger, or generalize to steelhead overall? Sac-basin onset might be a bit sooner than SJ-basin onset?
- Additional Real-Time OMR Restrictions: Reclamation and DWR shall manage to a more positive OMR based on the following conditions:

¹ No hatchery onset because 5% of wild winter-run expected well before 5% of hatchery entry to the Delta, so will be the controlling onset criteria.

- First Flush and Turbidity Bridge Avoidance: Reclamation and DWR propose to operate to an OMR index of -2000 cfs for 14 days when 8 hour average turbidity is 12 NTU or greater at Prisoner's Point, Holland Cut, and Bacon Island or other predictors of a turbidity bridge. When water temperature reaches 12 degrees Celsius based on a three station daily mean at Mossdale, Antioch, and Rio Vista, or when Delta Smelt spawning starts (indicated by spent females in the Spring Kodiak Trawl or at Jones or Banks), this action would no longer be triggered.
- San Joaquin Origin Steelhead Protections: Reclamation and DWR would operate to OMR of -2,500 cfs for 5 days whenever natural-origin steelhead (any steelhead) loss between April 1 to May 31 exceeds 10 steelhead per TAF, \. The timing of this action is intended to provide protections to San Joaquin basin steelhead, but the loss-density trigger is based on loss of all steelhead since there is currently no protocol to distinguish San Joaquin-basin and Sacramento-basin steelhead in salvage.
- Salvage Thresholds: To backstop real-time operations, Reclamation and DWR have established cumulative salvage loss threshold as follows: 0.8% of the juvenile production estimate for Winter-run Chinook salmon; and operate as follows:
 - Reclamation and DWR may operate to a more positive OMR when the daily salvage loss indicates that continued OMR of -5,000 cfs may exceed cumulative salvage loss thresholds.
 - Reclamation and DWR shall schedule export reductions to restrict OMR to -3,500 cfs when cumulative salvage loss exceeds 50 percent of the threshold. If Reclamation desires a different restriction, Reclamation will confer with USFWS and/or NMFS, depending upon species. The OMR restriction to -3,500 cfs will persist until the species-specific offramp is met (e.g., 95% of winter-run passing Chipps Island
 - Schedule export reductions to restrict OMR to -2,500 cfs (or more positive if determined by Reclamation) when cumulative salvage loss exceeds 75 percent of the threshold. If Reclamation desires a different restriction, Reclamation will confer with USFWS and/or NMFS, depending upon species.
- Winter-run: 0.9% WR JPE -- offramp = 95% of winter-run past Chipps
- Spring-run: 0.45% of SR surrogate group (s?) -- offramp = 3 weeks after threshold exceeded?
- Steelhead: 1800 for steelhead – offramp =95% of steelhead past Chipps
- Green Sturgeon: None
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- Storm-Related OMR Flexibility: If Reclamation and DWR are not implementing additional real-time OMR restrictions, consistent with other applicable legal requirements, Reclamation and DWR may operate to a more negative OMR up to a maximum export rate of -10,800 cfs (which could result in a range of OMR values) to capture peak flows during storm-related events. Reclamation and DWR will continue to

monitor fish in real-time and would change operations in accordance with “Additional Real-time OMR Restrictions”, above.

- End of OMR Management: OMR shall no longer control operations after June 15, or when all of the following have occurred:
 - Delta Smelt - when the 3-day mean water temperature at Clifton Court Forebay reaches 25° C.
 - Winter-Run - When more than 95 percent of winter-run Chinook salmon have migrated past Chipps Island. This 95% estimate will come from fish distribution estimates made by the multi-agency Delta-focused **technical team**.
 - Spring-Run - When more than 95 percent of spring-run Chinook salmon have migrated past Chipps Island. This 95% estimate will come from fish distribution estimates made by the multi-agency Delta-focused **technical team**. If the team’s estimate is a range of percentages, the lowest percentage will be used to test this criteria.
 - San Joaquin Steelhead - When more than 95 percent of San Joaquin Origin steelhead have migrated past Chipps Island. This 95% estimate will come from fish distribution estimates made by the multi-agency Delta-focused **technical team**.