



— BUREAU OF —  
RECLAMATION

## Salmon Monitoring Team (SaMT) Weekly Meeting

Teams call: 3/5/24 at 9:00 a.m.

### Objective

Provide information to the Water Operations Management Team (WOMT), the U.S. Bureau of Reclamation (Reclamation) and California Department of Water Resources (DWR) on measures to reduce adverse effects from Delta operations of the Central Valley Project (CVP) and the State Water Project (SWP) on salmonids and green sturgeon. Final versions of the Proposed Action Assessment, and Fish and Water Operations Outlook will be posted to [Reclamation's Delta Monitoring Work Group](#) webpage, while final version of the Meeting Notes will be posted to Reclamation's [Salmon Monitoring Team](#) webpage. Meeting participants include representatives from: California Department of Fish and Wildlife (CDFW), DWR, National Marine Fisheries Service (NMFS), State Water Resources Control Board (SWRCB), Reclamation, and the U.S. Fish and Wildlife Service (USFWS).

### Agenda Items

1. Introductions
2. Housekeeping
3. Updates on Water Operations and Biological Conditions
4. Open Discussion on Species Status
5. Live-edit Assessments (Proposed Action Assessment and ITP Risk Assessment)
6. Additional Considerations/Other Topics
7. Items to Raise to WOMT
8. Next Meeting

#### Agenda Item 2. Housekeeping

- N/A

#### Agenda Item 3. Updates on Water Operations and Biological Conditions

- The Fish and Water Operations Outlook document was reviewed. Please refer to the Operations Outlook, PA Assessment, and ITP Risk Assessment documents. All flows and releases, unless otherwise noted, are reported as approximated daily averages.
- Sacramento River flows at Freeport are approximately 65,700 cfs and expected to decrease through the week.

- San Joaquin River flows are approximately 9,700 cfs with potential to increase to over 11,000 cfs.
- Clifton Court Forebay (CCF) exports were 2,700 cfs on 3/4/24 and will be 3,500 cfs on 3/5/24. Exports are targeting the OMRI of -2,500 cfs on a 14-day average.
- Delta Outflow as of 3/4/24 was 106,000 cfs and is expected to decrease through the week.
- QWEST is at a peak level of approximately +19,350 cfs and expected to range down to +9,000 cfs this week.
- Rio Vista flows were 87,000 cfs on 3/4/24 and is expected to decrease through the week.
- For details on salvage that occurred in the past week please refer to the Operations Outlook, PA Assessment, and ITP Risk Assessment documents. Additionally, all salvage information can be found online at <https://filelib.wildlife.ca.gov/Public/salvage/>.

### ***Actions Currently in Effect***

- The Interim Operations Plan (IOP) is currently in effect resulting from a court order issued on 2/28/2023 and in effect until 3/31/2024 or until the Court issues a ruling on the 2024 IOP. Reclamation shall adopt the following provisions of the SWP ITP:
  - 8.5.2 Larval and Juvenile Delta Smelt Protection
  - 8.6.1 Winter-run Single-year Loss Threshold
  - 8.6.2 Early-season Natural Winter-run Chinook Salmon Discrete Daily Loss Threshold
  - 8.6.3 Mid- and Late-season Natural Winter-run Chinook Salmon Daily Loss Threshold<sup>1</sup>
  - 8.6.4 Daily Spring-run Chinook Salmon Hatchery Surrogate Loss Threshold
  - 8.7 OMR Flexibility During Delta Excess Conditions
  - 8.8 End of OMR Management
- **Delta Cross Channel (DCC) Gate operations (PA 4.10.5.3):** See Outlook and Assessment for more information.
- **ITP Winter-run Single-year Loss Threshold (COA 8.6.1):** DWR will operate Banks Pumping Plant consistent with Condition of Approval 8.6.1 of the ITP. These values are based on the juvenile production estimate (JPE). The final JPE for brood year 2023

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<sup>1</sup> The SWP ITP was amended for WY 2024 on 12/22/2023 which modifies the winter-run daily loss threshold calculations for COA 8.6.3. and furthermore, lowers the daily loss thresholds that were originally agreed upon in the 2023 IOP extension. Because this new amendment was not part of the original 2023 IOP Extension agreed to by Reclamation and the State and ordered by the Court on 2/28/2023, it is not included in the current operation of the 2023 IOP Extension. Operating the CVP to this new amendment would be inconsistent with the current court order; therefore, CVP will operate to COA 8.6.3, excluding the 12/22/2023 amendment but including WY 2023 SWP ITP amendment that was signed on 1/20/23, in to maintain operations under the 2023 IOP Extension.

natural-origin winter-run Chinook salmon has been estimated at 234,896. The below thresholds are based on the final JPE.

- The ITP natural-origin Winter-run Single-year Loss Threshold for this year is loss of unclipped length-at-date (LAD) winter-run Chinook salmon from the CVP and SWP greater than or equal to 1.17% of the winter-run Chinook salmon JPE (loss  $\geq 2,748.28$ ). If 50% of the threshold is exceeded (loss  $\geq 1,374.14$ ), the required response is to reduce SWP exports by its proportional share, according to the coordinated operations agreement (COA), that would be required to reach a 14-day average OMR of -3,500 cfs. If 75% of this threshold is exceeded (loss  $\geq 2,061.21$ ), the required response is to reduce SWP exports by its proportional share, according to the COA, that would be required to reach a 14-day average OMR of -2,000 cfs.
- The ITP hatchery-origin Chinook salmon Single-year Loss Threshold for this year is loss of clipped LAD winter-run Chinook salmon from the CVP and SWP greater than or equal to 0.12% of the winter-run Chinook salmon hatchery-origin JPE (loss  $\geq 232.30$ ). If 50% of the threshold is exceeded (loss  $\geq 116.15$ ), the required response is to reduce SWP exports by its proportional share, according to the coordinated operations agreement (COA), that would be required to reach a 14-day average OMR of -3,500 cfs. If 75% of this threshold is exceeded (loss  $\geq 174.23$ ), the required response is to reduce SWP exports by its proportional share, according to the COA, that would be required to reach a 14-day average OMR of -2,000 cfs.
- **ITP Mid- and Late-season Natural Winter-run Chinook Salmon Daily Loss Threshold (COA 8.6.3):** From 2/1/24 – 2/29/24, DWR will operate Banks Pumping Plant consistent with Condition of Approval 8.6.3 of the ITP. The ITP Daily Loss Threshold for March is loss of older juvenile Chinook salmon from CVP and SWP greater than 0.00231% of the winter-run Chinook salmon JPE. If the threshold is exceeded (loss  $> 8.74$ ), the required response is to reduce SWP exports by its proportional share, according to the COA, that would be required to reach an OMR of no more negative than -3,500 cfs for five consecutive days. DWR shall restrict exports in response to the initial LAD identification of natural older juvenile Chinook salmon and the thresholds described above. If genetic analysis of an individual natural older juvenile Chinook salmon observed in salvage at the SWP or CVP indicates that it is not a winter-run, that individual shall not count toward the daily loss threshold and continued export restrictions under this COA are not required if the daily loss threshold has consequently not been met.

***Weekly Fish and Water Operations Outlook, Current Operations***

- SaMT reviewed and updated the Outlook document. The updated Outlook document will be distributed to the SaMT via email by close of business (COB) 3/6/24.
- SaMT discussed Fish Monitoring Gear Efficiency/Disruptions as addressed within the Operations Outlook and updated accordingly.

**SaMT Estimates of Fish Distribution**

- SaMT estimates of the current distribution of listed Chinook salmon and CCV steelhead, as a percentage of each population, are based on recent monitoring data and historical migration timing patterns. Estimates this week are based on YOY winter-run and YOY spring-run as well as natural origin steelhead at the real-time monitoring locations. These estimates are reported in the final Assessment document, available on the [Delta Monitoring Workgroup](#) webpage.

Location	Yet to Enter Delta	In the Delta	Exited the Delta past Chipps Island
Young-of-year (YOY) winter-run Chinook salmon	Current: 1-5% Last week: 1-10%	Current: 75-89% Last week: 75-94%	Current: 10-20% Last week: 5-15%
YOY spring-run Chinook salmon	Current: 38-54% Last week: 45-60%	Current: 45-60% Last week: 40-55%	Current: 1-2% Last week: 0%
YOY hatchery winter-run Chinook salmon	Current: 95-100% Last week: 95-100%	Current: 0-5% Last week: 0-5%	Current: 0% Last week: 0%
Natural-origin steelhead	Current: 25-40% Last week: 20-35%	Current: 35-60% Last week: 45-60%	Current: 15-25% Last week: 10-20%

**Rationale for distribution**

- Wild winter-run Chinook Salmon
  - 7 wild winter-run were captured at the Lower Sacramento RST, 3 were captured at Chipps Island, 1 at EDSM, 1 at the Sacramento Trawl and 3 at Knights Landing. Since winter-run were observed at monitoring locations upstream and within the Delta and since LAD winter-run have been observed in salvage in high numbers over the previous week, SaMT estimated that an additional 5% of winter-run Chinook salmon in the Delta have moved into the Delta and exited past Chipps Island. Due to the DatCall not trapping in the previous week, SaMT agreed that it is likely that more winter-run would have been observed if trapping had occurred. Due to moving 5% through the system past Chipps Island the total in the Delta estimation was moved to 75-89% and total exited past Chipps Island to 10-20%.
- Wild spring-run Chinook Salmon
  - 4 wild spring-run Chinook salmon were observed at Knights Landing RST, 8 were captured at the Beach Seines, 20 at the Lower Sacramento RST, 1 at Chipps Island, and 7 at the Sacramento Trawl, and 4 at the Lower Feather RST. SaMT estimated the range of fish within the Delta increased by 5% this week to a total of 45-60%. Since 1 spring-run was observed at Chipps Island, SaMT estimated that 1-2% of spring-run Chinook salmon have exited past Chipps Island.
- Hatchery winter-run Chinook Salmon
  - CalFishTrack showed 1 hatchery winter-run Chinook salmon enter the Delta during the previous week. SaMT decided to keep the range of 0-5% for hatchery winter-run that have moved into the Delta.

- Natural-origin Steelhead
  - Natural-origin Steelhead were observed at the Feather River and Yuba River RSTs and 1 at the Mossdale Trawl, as well as a high number in salvage. Looking at historical data, 36% are typically past Chipps Island at this time. SaMT estimates an additional 5% have migrated past Chipps Island for a total of 15-25% for fish that have exited the Delta and 35-60% present in the Delta.

#### **Agenda Item 4. Open Discussion on Species Status**

##### ***Salvage Update for 2/26/24 – 3/3/24***

- Salvage and loss totals are detailed in the Salvage update shared via email. Please refer to the email for specific figures.
- Wild older juvenile Chinook salmon and wild Steelhead were observed in salvage.
- Tagged Chinook salmon observed during the reporting period were confirmed to be from the San Joaquin Restoration Project, CDFW's SCARF Facility, and USFWS's Coleman National Fish Hatchery.
- Hatchery-origin Steelhead were also observed in salvage.
- CDFW is working to correct programming issues from the previous week that may still be impacting salvage and loss totals.
- No other operational variances or reduced counts were reported at the fish collection facilities during the reporting period.

#### **Agenda Item 5. Live edit Assessments**

##### ***Proposed Action Assessment***

- SaMT reviewed and updated the current week's Proposed Action Assessment document. The updated Proposed Action Assessment will be distributed to the SaMT via email by COB 3/6/24. The final assessment will be posted to [Reclamation's Delta Monitoring Workgroup](#) webpage.

##### ***ITP Risk Assessment***

- The draft ITP Risk Assessment will be distributed on 3/5/24 with comments due COB Thursday (3/7/24). Past ITP Risk Assessments can be found at [CDFW's Water Project Operations](#) webpage.

#### **Agenda Item 6. Additional Considerations/Other Topics**

- USBR requested SaMT members to begin thinking about management for LAD winter-run that will be controlling after March 31.

## Agenda Item 7. Items to Raise to WOMT

- SaMT discussed the recommendation to WOMT for the minimization of entrainment of Steelhead through March. SaMT members shared the following points and drafted language around them to present to WOMT:
  - A primary goal of the recommendation is to avoid reaching the Incidental Take Limit (ITL), detailed in Table 140 of the 2019 NMFS BiOp<sup>2</sup>.
  - In the previous week, Steelhead average loss was 53.55 fish per day, which was approximately a total loss of 350 steelhead last week. At this rate of loss, the NMFS ITL will be exceeded before 3/31/24. Currently, loss is approximately 600 fish away from exceeding the ITL.
    - To avoid exceeding the ITL, loss would need to decrease to no higher than an average of 21 fish per day.
  - SaMT has observed a trend of increased exports coinciding with an increase of Steelhead in salvage. As of 3/3/24, the December 1-March 31 seasonal cumulative loss of natural-origin Steelhead is 2,152.81 fish.
    - Suggestion to target an OMR Index between 0 cfs and -500 cfs.
    - According to the Tillotson model results, OMR flows from 0 cfs to -500 cfs show an average weekly loss of 349.23 fish.
    - SaMT decided that after increasing OMR Index to more positive than -500 cfs, SaMT would then evaluate the loss next week and compare rates to reassess OMR Index as needed.
  - Based on the Tillotson modeling results, SaMT theorized that a more positive OMR Index would decrease loss of Steelhead and be beneficial for the species. SaMT discussed that the Tillotson Model shows the likelihood of exceeding the ITL would still be high unless exports were reduced to minimum health and safety (combined exports of 1,500 cfs). Even with combined exports at minimum health and safety, loss of ~30 fish per day is still estimated to occur which would still exceed the ITL. However, since the Tillotson model does have limitations and assumptions, SaMT agreed that dropping to minimum health and safety exports may not be needed if by increasing to a more positive OMR Index than -500 cfs is made and Steelhead salvage decreases to less than 21 fish per day.
  - CDFW and Reclamation provided a few charts illustrating daily loss and daily exports as well as the relevant table that shows loss in relation to the Annual Loss Thresholds and ITL from the Proposed Action Assessment (see Figures below).
  - What OMR or export value would result in a decrease in Steelhead loss?

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<sup>2</sup> <https://www.fisheries.noaa.gov/resource/document/biological-opinion-reinitiation-consultation-long-term-operation-central-valley>

- CDFW shared that any decrease in loss of steelhead would be beneficial to the species since the 75% and 100% Annual Loss Thresholds have been exceeded.
- NMFS mentioned that dropping exports at the CVP may be helpful at decreasing steelhead loss.
- SaMT members shared different views around estimating the number of Steelhead still upstream, with some citing high levels of uncertainty partially due to minimal monitoring tools.
- USBR mentioned that the Tillotson Model has been slightly underestimating loss the past few weeks.
- NMFS mentioned that if there were tag errors at the hatchery this year then potentially these natural-origin Steelhead that are being observed at the export facilities could be hatchery-origin fish. However, there has been no evidence of any issues with tagging operations this year. NMFS suggested that rapid genetic testing on Steelhead could be helpful in this scenario, but without it, SaMT assumes that the Steelhead are natural-origin.
  - CDFW countered that it would likely not make a difference since loss levels have exceeded the 75% and 100% Annual Loss Threshold and are close to exceeding the ITL.
- Concern expressed whether SaMT should make a specific recommendation due to the number of variables involved and the levels of uncertainty. Suggestion to provide multiple recommendations tailored to different scenarios.
  - Example: At the current continued OMR Index of -2,500 cfs, the ITL is likely to be exceeded, and then present evidence to support that statement.
- Draft language for SaMT's recommendation to WOMT is included here:
  - *Reclamation is elevating the alternations of the operational plan due to exceeding the steelhead ITL to WOMT.*
  - *The current average loss of CCV Steelhead is 53.55 per day over the last week while limiting an OMR of no more negative than -2,500 cfs with a total loss of 2,152.81. At this rate, the NMFS ITL of 2,760 for the December-to-March period will be exceeded before 3/31/24. To remain under the ITL, loss needs to be at an average of 21 fish per day or less. According to the Tillotson Model runs, an increase in OMR flow (resulting in a more positive flow) would decrease the loss of Steelhead. Looking at the Tillotson Model results, an OMR of 0 to -500 cfs would have an average loss of 49.89 per day. At an export level of 1,500 cfs (OMR of +3,900 cfs), the Tillotson Model predicts an average loss of 30.75 per day. Since the 100% threshold has been exceeded and the ITL is likely to be exceeded this month, any decrease in loss of Steelhead would benefit the species.*

- *Therefore, SaMT recommends taking action to avoid exceeding the annual ITL by implementing an OMRI from 0 cfs to -500 cfs; then reassessing next week to see if a decrease in salvage has occurred and compare loss rates relative to the Tillotson Model predictions.*
- *Figures included for reference.*



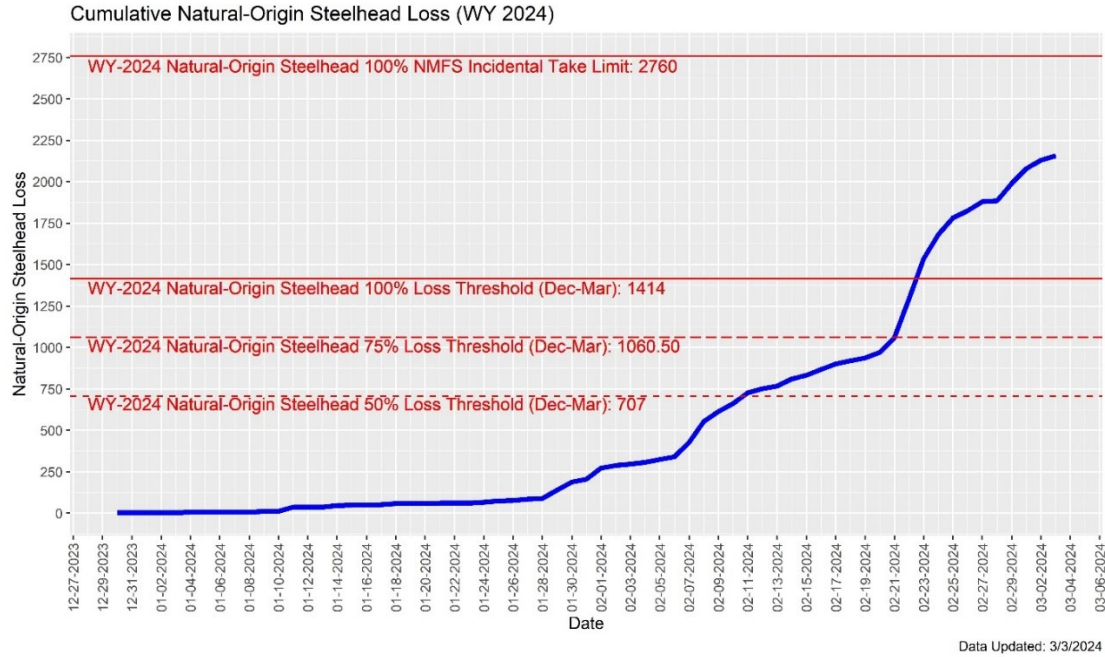


Figure 1. Cumulative Natural-Origin Steelhead Loss for Water Year 2024.

Figure 1 is a line graph showing an increase in natural-origin steelhead loss from December 27, 2023, to March 6, 2024.

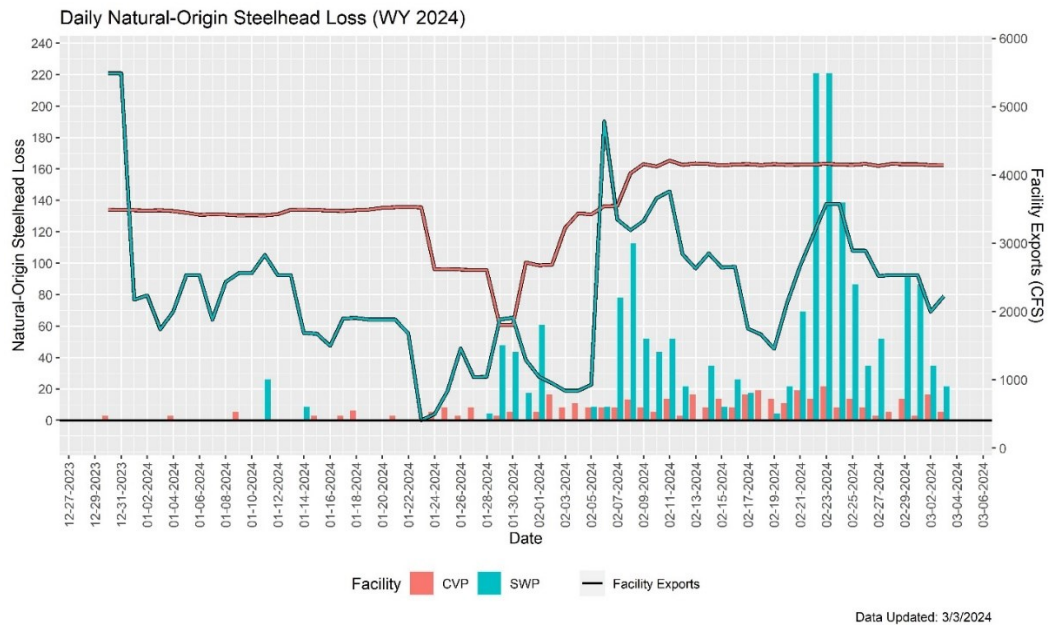


Figure 2. Daily Natural-Origin Steelhead Loss for Water Year 2024.

Figure 2 is a complex line graph showing the natural-origin steelhead loss as compared to the facility exports (cfs) from December 27, 2023, to March 6, 2024.

### **Agenda Item 8. Next Meeting**

- The next SaMT meeting will be held on Tuesday, 3/12/24 on Microsoft Teams.