

PARTICIPANTS

- California Department of Fish and Wildlife (CDFW)
- California Department of Water Resources (DWR)
- National Marine Fisheries Service (NMFS)
- State Water Resources Control Board (SWRCB)
- U.S. Bureau of Reclamation (USBR)
- U.S. Fish and Wildlife Service (USFWS)
- Kearns & West (KW)

ACTION ITEMS

- DWR to perform Particle Tracking Model (PTM) run as requested.
- USFWS to share Brown et al. 1996 publication that provides historical context for fish <20 mm not being considered in salvage.

MEETING SUMMARY

PART 1: Updates on Water Operations and Biological Updates

Relevant Actions & Triggers

USBR reported on Old and Middle River (OMR) management measures. Turbidity Bridge Avoidance is in effect to maintain average daily turbidity in Old River at Bacon Island (OBI) at a level of no more than 12 FNU to minimize risk to adult DS in the OMR corridor where they are subject to higher entrainment risk. CDFW reported on the Incidental Take Permit (ITP) Conditions of Approval (COA) that are in effect including 8.5.1 Turbidity Bridge Avoidance, 8.5.2 Larval and Juvenile DS Protection, and 8.4.2 Larval and Juvenile Longfin Smelt Entrainment Protection. COA 8.12 (Barker Slough Pumping Plant Longfin and Delta Smelt Protection) is active from January 15th to March 31st for LFS, and as of March 1st it is also active for Delta Smelt (DS) through June 30th.

Proposed Action

OMR Management Measures	Requirement	Time Frame	Trigger	Triggered?
Integrated Early Winter Pulse Protection (“First Flush” Turbidity Event)	Reduce exports for 14 consecutive days so that the 14-day averaged OMR index for the period shall not be more negative than -2,000 cfs	Dec 1 to Jan 31	(1) Running three-day average of daily flows at Freeport >25,000 cfs; and (2) Running three-day average of daily turbidity at Freeport ≥50 Nephelometric Turbidity Units (NTU ¹); or (3) Real-time monitoring indicates a high risk of migration and dispersal into areas at high risk of future entrainment or a spent delta smelt (DS) has been collected in monitoring surveys.	Triggered 12/18/21; last day of action was 1/2/22
OMR Management	Manage to a more positive OMR than -5,000 cfs	From the onset of OMR management to the end		In effect
Turbidity Bridge Avoidance (“South Delta Turbidity”)	If the daily average turbidity at Bacon Island cannot be maintained less than 12 NTU, manage exports to achieve an OMR no more negative than -2,000 cfs until the daily average turbidity at Bacon Island drops below 12 NTU.	After the first flush or Feb 1 (whichever comes first) and until a ripe or spent female is detected or April 1 (whichever is first)	Average daily turbidity in Old River at Bacon Island (OBI) at a level of more than 12 NTU.	In effect as of 1/3/22
Larval and Juvenile Delta Smelt	Run hydrodynamic models and forecasts of entrainment, informed by the EDSM or other relevant survey data to estimate the percentage of larval and juvenile delta smelt that could be entrained. If necessary, manage exports to limit entrainment to be protective based on the modeled recruitment levels.	On or after March 15 of each year until off-ramp criteria are met	If QWEST is negative AND larval or juvenile delta smelt are within the entrainment zone of the pumps based on real-time sampling of spawning adults or young of year life stages	Not active

¹ The current instrumentation measures turbidity in Formazin Nephelometric Units (FNU).

OMR Management Measures	Requirement	Time Frame	Trigger	Triggered?
End of OMR Management	OMR criteria may control operations until June 30 (for Delta Smelt and Chinook salmon), until June 15 (for steelhead/rainbow trout), or when the species-specific off ramps have occurred, whichever is earlier.	During OMR management to June 30, or when the DS temperature off ramp has been reached.	DS: when the daily mean water temperature at Clifton Court Forebay reaches 77°F for 3 consecutive days	Not active

TTP Conditions of Approval

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.1.5.2 (Smelt Monitoring Team Risk Assessment) Triggered	Outlines contents for weekly risk assessments of Delta Smelt and Longfin Smelt (LFS) required under 8.1.5 and 8.1.1	Nov 1 st through June 30 th or until off-ramped by 8.8		Yes
8.3.1 (Integrated Early Winter Pulse Protection)	Reduce south Delta exports for 14 consecutive days to maintain a 14-day average OMR index no more negative than -2,000 cfs, and convene the Smelt Monitoring Team within one day of triggering. After maintaining a 14-day average OMR index no more negative than -2,000 cfs for 14 days, Permittee shall maintain a 14-day average OMR index no more negative than -5,000 cfs, initiating the OMR Management season.	Dec 1 to Jan 31	Three-day running average daily flows at Freeport greater than, or equal to, 25,000 cfs, AND Three-day running average of daily turbidity at Freeport is greater than, or equal to, 50 FNU OR The Smelt Monitoring Team determines that real-time monitoring of abiotic and biotic factors indicates a high risk of DS migration and dispersal into areas at high risk of future entrainment.	Triggered 12/18/21; last day of action was 1/2/22

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.3.3 (Adult Longfin Smelt Entrainment Protection)	After December 1, if an Integrated Early Winter Pulse Protection (Condition of Approval 8.3.1) has not yet initiated, Permittee shall reduce south Delta exports to maintain a 14-day average OMR index no more negative than -5,000 cfs and initiate OMR Management if: Cumulative expanded salvage, Dec 1 st through Feb 28 th , exceeds most recent Fall Midwater Trawl (FMWT) Index divided by 10, or Smelt Monitoring Team (SMT) determines that there is a high risk of entrainment.	Dec 1 through Feb 28 th	Salvage threshold for WY 2022 is one.	Off-ramped due to trigger of 8.3.1
8.4.1 (OMR Management for Adult Longfin Smelt)	The SMT shall conduct weekly risk assessments and decide whether to recommend and OMR flow requirement to minimize entrainment of adult LFS. The SMT may provide advice to restrict south Delta exports for seven consecutive days to achieve a seven day-average OMR index within three risk categories: Low risk: OMR between -4,000 cfs to -5,000 cfs Medium risk: OMR between -2,500 cfs to -4,000 cfs High risk: OMR between -1,250 cfs to -2,500 cfs	Onset of OMR management through Feb 28 th	SMT recommendation based on weekly risk assessment	Off-ramped by larval detections in SLS 12
8.4.2 (Larval and Juvenile Longfin Smelt Entrainment Protection)	If triggered, it will restrict south Delta exports for seven consecutive days in order to maintain a seven-day average OMR index no more negative than -5,000 cfs and convene the SMT to recommend an OMR flow limit between -1,250 and -5,000 cfs.	January 1st through June 30th or until the temperature offramp occurs	(1) Longfin Smelt larvae or juveniles are found in four or more of the 12 SLS or 20 mm stations in the central or south Delta, Or (2) Longfin Smelt catch per tow exceeds five larvae or juveniles in two or more of the 12 stations in the central or south Delta. The relevant stations are: 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918 and 919	Triggered 1/20/22, 1/31/22, and 2/28/22

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.4.3 High flow offramp for Longfin Smelt	If triggered, Conditions of Approval 8.4.1 and 8.4.2 are not required or would cease if previously required.	Throughout OMR management	When river flows are (a) greater than 55,000 cfs in the Sacramento River at Rio Vista or (b) greater than 8,000 cfs in the San Joaquin River at Vernalis. If flows subsequently drop below 40,000 cfs in the Sacramento River at Rio Vista or below 5,000 cfs in the San Joaquin River at Vernalis, the OMR limit previously required as a part of Conditions of Approval 8.4.1 and 8.4.2 shall resume.	Active, Not Triggered
8.5.1 Turbidity Bridge Avoidance	maintain daily average turbidity in Old River at Bacon Island (OBI) at a level of less than 12 NTU. If the daily average turbidity at OBI is greater than 12 NTU, Permittee shall restrict south Delta exports to achieve an OMR flow that is no more negative than -2,000 cfs until the daily average turbidity at OBI is less than 12 NTU.	After the first flush or Feb 1 until end of OMR management or until CDFW is in agreement that the action may be ended or modified.	Turbidity at OBI > 12 FNU	In effect as of 1/3/22

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.5.2 (Larval and Juvenile Delta Smelt Protection)	If triggered, this Condition of Approval will restrict south Delta exports for seven consecutive days in order to maintain a seven-day average OMR index no more negative than -5,000 cfs and SMT members will meet to assess the risk of entrainment. The SMT may provide further advice to restrict exports in order to maintain an OMR index more positive than -5,000 cfs. In their assessment, SMT members will determine if risk of entrainment is low, medium, or high; subsequent OMR restrictions will be based on level of risk. Furthermore, if salvage of Delta Smelt exceeds 11 in three days, this Condition of Approval will restrict south Delta exports for seven consecutive days in order to maintain a seven-day average OMR index no more negative than -3,500 cfs.	Nov 1 st through June 30 th or until off-ramped by 8.8	When the five-day salvage of juvenile Delta Smelt is greater than or equal to one plus the average prior three years' FMWT index (rounded down). The 2021 FMWT index for Delta Smelt zero.	Active, not triggered
8.8 (End of OMR Management)	If triggered, OMR Management would be off-ramped for Longfin and Delta Smelt.	From the onset of OMR management through June 30 th	Daily mean water temperature at Clifton Court Forebay is >25° C for three consecutive days.	Not active
8.12 (Barker Slough Pumping Plant Longfin and Delta Smelt Protection)	Barker Slough Pumping Plant will reduce exports so the maximum 7-day average is <60 cfs.	From January 15 through March 31 in dry and critical water years for Longfin Smelt, and from March 1 st through June 30 th for Delta Smelt	Larval Smelt are detected at SLS Station 716 during the period identified for each species, and/or when recommended by the SMT	Active, Triggered 2/14/22

Current Operations & Outlook

USBR and DWR shared operations updates from the Outlook. Their observations included:

- USBR Central Valley Office (CVO) reported a generally dry pattern with mild temperatures. There are slight chances of precipitation in northern California and along the Sierra spine in the six-day outlook, but no significant rainfall on the valley floor.
- Releases from Whiskeytown Dam on Clear Creek are currently 200 cfs. No modifications expected.
- Releases on the Sacramento River from Keswick Dam are currently 3,250 cfs. No modifications expected.
- American River releases from Nimbus Dam are 2,000 cfs and USBR is looking for opportunities to decrease for storage conservation.
- Releases from Goodwin Dam on the Stanislaus River are currently 700 cfs with a reduction to 600 cfs scheduled for March 9th and 500 cfs on the 10th in response to the March Vernalis flow objective.
- Vernalis flows remain stable at 1,150 cfs after the Stanislaus River action last week.
- Freeport flows were around 12,700 cfs yesterday.
- Jones Pumping Plant exports are 800 cfs as of March 8th and will incrementally rise to 900 cfs by the 9th.
- Delta Cross-channel (DCC) gates are currently closed. No modifications expected.
- Operations will transition in the coming week as new requirements go into effect. Operators anticipate receiving the updated Eight River Index later today, which will inform the number of Chipps days required for March before operations are controlled by conditions at Collinsville.
- DWR reported that Feather River releases are 5,250 cfs with decreases possible, may be around the 12th, depending on the number of Chipps days. Releases could decrease to a low of 2,000 cfs.
- Clifton Court Forebay (CCF) flows fluctuated from 200 to 800 cfs last week.
- QWEST has been around 1,900 cfs and will remain positive for the upcoming week. Depending on upstream flows it may be possible to see brief periods of negative flows before returning positive.
- The OMR Index was -600 to -1,200 cfs with -3,000 cfs possible for a day or two.
- X2 is 74 km and is expected to transition upstream with the tidal cycle.
- Light winds increased turbidity in Franks Tract, but no significant turbidity was observed at OBI.
- DWR confirmed for USFWS that the Suisun Marsh Salinity Gate operations were suspended as of 10:00 AM on March 8th.
- No edits were made to the survey status table.

Review of Environmental Conditions and Survey Updates

CDFW delivered catch updates on relevant surveys to the SMT.

- SLS 4 started on February 22nd and ran to the 28th. Processing is complete for all stations except for the Napa River station.
 - LFS larvae distribution appears to be moving westward as evidenced by Stations 504 and 501 detecting 218 and 106 LFS larvae respectively.
 - No DS were detected.
 - No LFS or DS were detected at Station 716. There was a detection at a nearby station.
 - Station 723: One LFS
 - Station 711: None
- SLS 5 is on the water now. Updates include:
 - Six of the 12 priority stations (Stations 809, 815, 902, 906, 912, 910) have already been processed. There were detections at three of the six processed stations:
 - Station 809: 14 LFS

- Station 902: One LFS
 - Station 815: One LFS larvae (6 mm)
- The most recent Larval Entrainment Pilot Study (LEPS) detection was a nine mm LFS larvae on February 25th. No yolk sac was present. There is no end date for LEPS at this time. One more 24-hour sampling period is desired, but it is unlikely the program will continue into April.

USFWS provided catch updates on the Enhanced Delta Smelt Monitoring Program (EDSM).

- EDSM sampled from Monday to Thursday, completing 34 sites. Two planned sites in the south Delta were missed due to wind. Results are as follows:
 - Suisun Marsh
 - DS: One (79 mm and marked)
 - LFS: 15 (59 to 89 mm)
 - Suisun Bay
 - LFS: 3 (69 to 77 mm)
 - Sacramento Deepwater Shipping Channel (SDWSC)
 - DS: Four (66 to 84 mm, all adipose clipped)
- The abundance estimate last week was 7,336 based on five fish and a full week of sampling effort.
- EDSM crews detected five DS in the SDWSC on March 8th (two VIE tagged and three adipose clipped).
- Chipps Island completed all 50 scheduled tows last week. A total of one LFS was captured with a length of 117 mm. FCCL is looking to fulfill its permit take allowance for the season, which equates to 20 additional fish for brood stock. The LFS from last week was then transferred to FCCL.
- Chipps Island Trawl was cancelled March 7th due to wind, and it is unclear if they will be able to make this day up.

CDFW provided a salvage and larval facilities update (February 28th to March 7th).

- LFS larvae were detected at the Tracy Fish Collection Facility on March 4th, 6th, and 7th.
 - March 4th: Two (19 and 17.5 mm)
 - March 6th: One (14.5 mm)
 - March 7th: Two (12.8 and 16 mm).
- No osmerid larval detections greater than 20 mm have been reported since last week.

USBR shared environmental data updates as of March 7th.

- Three-station daily average water temperature: 12.71° C.
- Three-day running average turbidity at OBI: 3.24 FNU.
- Current turbidity at OBI: 3.6 FNU.
- X2 is 74 km.
- Weather forecast out of Antioch is sunny and clear with north-northwest to north winds from five to 20 mph and gusts up to 26 mph on March 10th.
- Weather forecast out of Stockton is sunny and clear with north-northwest to north winds from five to 21 mph and gusts up to 26 mph on March 10th.

PART 2: Open Discussion on Species Status (Structured-Unstructured Time)

USBR reported that conditions are similar to last week. The OMR Index could briefly become more negative than -2,000 cfs (as negative as -3,000 cfs) which would make a turbidity bridge avoidance measure possible. However, anticipated conditions are unlikely to trigger a turbidity bridge avoidance action. CDFW agreed, noting the minor

wind event which could impact turbidity later in the week, and the colder temperatures having a positive impact for the fish.

CDFW opened up a discussion on a PTM run for the coming week. The SMT discussed if the standardized stations (Stations 812, 815, and 902) are still suitable for the model. CDFW noted the absence of detections at Station 815 since SLS 2, but the group ultimately decided that it would be included as an injection site due to its ideal location and to allow for comparisons with previous PTM runs using the same three injection sites. The SMT agreed that stations 812 and 902 are still acceptable. One scenario will be conducted with an OMR Index of -1,250 cfs as the most protective option available and the other scenario will be based on the most negative feasible OMR Index.

USFWS shared findings on the relationship between turbidity and detection of DS and LFS as reported by [Mahardja et al. 2017](#). The conclusion in the paper was that young-of-year LFS distribution is as closely related to turbidity as DS distribution. DWR highlighted that any turbidity bridge measure taken for DS would likely have some benefit for LFS as larval fish in the system would make use of turbidity to avoid predation.

PART 3: Live-edit Assessments

Proposed Action Weekly Evaluation of Delta Smelt, including Distribution, Abiotic Conditions, Risk Assessment Questions, and Executive Summary

USBR reviewed proposed changes to the PA Assessment, which include the latest dates, detections, and data as well as:

- Updated language under Biological Conditions to only include DS detections within the last two weeks.
- Evaluation question 2 was edited to remove language on the OMR Index being more positive than possible under a turbidity bridge avoidance action. Furthermore, content was added on turbidity remaining low in the south and central Delta therefore it is unlikely DS will migrate into the region.
- The Executive Summary was updated to reflect new detections, and to note that DS are unlikely to move into the south and central Delta since turbidity remains low.

ITP Longfin Smelt Risk Assessment

The SMT reviewed and discussed updates to the ITP Risk Assessment.

Section 1-A: Risk of entrainment into the central Delta and export facilities for DS and LFS in the Sacramento River and Confluence

- Exposure Risk (hydrology)
 - DS: Remains low. Updated to include date of last detection.
 - LFS: Remains low. No changes since last week.
- Routing Risk (behavior and life history)
 - DS: Remains low. Updated to reflect that DS are unlikely to move into the lower San Joaquin River since turbidity remains low in the area.
 - LFS: Risk remains low. Language added to acknowledge that adult detections are declining and spawning is ongoing.
- Overall entrainment risk for DS or LFS.
 - DS: Remains low. No changes since last week.

- LFS: Remains low. Revised to address shifting outflow requirements and uncertain hydrologic conditions including an OMR Index possibly fluctuating between -1,000 cfs to -3,000 cfs, QWEST potentially turning negative, and X2 likely shifting upstream.

Section 1-B: Risk of entrainment into the export facilities for DS and LFS in the central Delta

- Exposure Risk
 - DS: Remains low. Revised to note that the OMR Index could vary between -1,000 to -3,000 cfs during the week ahead due to changes in operations.
 - LFS: Remains low for adults and subadults. The SMT agreed risk for larvae in the lower San Joaquin River should be elevated from low to low to moderate citing observations in the lower San Joaquin River by SLS 4, the OMR Index possibly approaching -3,000 cfs, and the potential for QWEST to trend negative due to changing outflow requirements. The SMT also agreed risk is high for larvae in the OMR corridor. Language was also added to note a PTM run was requested by the SMT this week which will inform future risk assessments.
- Change in exposure from last week
 - DS: Remains low. Updated to noted X2 shifted slightly downstream.
 - LFS: Language was added to note the following:
 - The SMT expects to see more frequent detections at the fish facilities as larvae grow.
 - Although exports and turbidity remain low, larvae have been detected in the OMR corridor and at the facilities.
 - As exports increase, the risk of entrainment for LFS larvae in the south Delta may be high or increase to high.

USFWS recommended the SMT track juvenile LFS salvage totals and OMR Index values on a weekly basis. CDFW shared a summary of salvage data from 2020, highlighting that April and May were the peak of juvenile LFS salvage and salvage was observed at the CVP a few weeks earlier than at the SWP. CDFW also noted that in 2021 the first LFS juveniles were observed in salvage in mid-March.

The LFS executive summary was revised to reflect the language discussed by the SMT while updating sections 1-A and 1-B.

Part 4: Additional Considerations/Discussion

Agencies reported no items for elevation to WOMT.