

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

- CDFW to confirm if plans exist to make up Smelt Larval Survey (SLS) 1.
- USBR to contact federal facilities about possible incoming larval sampling request.
- CDFW to review Old and Middle River (OMR) Index scenarios and injection points from last year's Particle Tracking Model (PTM) runs.

MEETING SUMMARY

PART 1: Updates on Water Operations and Biological Updates

Relevant Actions & Triggers

USBR reported on 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 NTU 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. COA 8.4.2 Larval and Juvenile Longfin Smelt (LFS) Entrainment Protection is under consideration for the South and Central Delta. 8.5.1 Turbidity Bridge Avoidance is in effect with 8.5.2 Larval and Juvenile DS Protection being active. CDFW also noted that COA 8.12 Barker Slough Pumping Plant Longfin and Delta Smelt Protection will not be active in January based on the Sacramento Valley Water Year Type Index (SVI) for January, which is below normal.

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

IIP 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 FMWT Index divided by 10, or Smelt Monitoring Team (SMT) determines that there is a high risk of entrainment.	Dec 1 through Feb 28th	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	Active, Not Triggered

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	Not active

Current Operations & Outlook

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

- USBR Central Valley Office (CVO) reported dry weather conditions for the remainder of the week.
- 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 currently at 4,000 cfs with a change order issued for January 20th targeting 3,500 cfs in response to declining inflows. There is no longer flood space encroachment at Folsom.
- Releases from Goodwin Dam on the Stanislaus River are currently 200 cfs. No modifications expected.
- As of yesterday (January 17th), Freeport flows were approximately 15,500 cfs.
- Vernalis flows are 940 cfs.
- Jones Pumping Plant exports are currently targeting 4,200 cfs, but actual flows are slightly below.
- Delta Cross-channel (DCC) gates are currently closed. No modifications expected.
- DWR reported that Feather River releases are currently at 950 cfs. No modifications expected.
- Clifton Court Forebay (CCF) flows as of January 18th are 1,300 cfs with the average approximating 1,700 cfs as operations target the -5,000 OMR Index.
- X2 is 76 km and will likely be move upstream as flows decrease.
- Delta outflows are 10,800 cfs and will decrease later in the week after the Nimbus change order comes through on the 20th.
- The QWEST seven-day average is -2,000 cfs. QWEST is anticipated to stay close to this value or perhaps trend negative over time.
- Rio Vista flows are currently in the 12,000 cfs range with sustained decreases expected.
- The 14-day OMR Index average was -4,962 cfs.
- CDFW requested that LFS larvae detections in the outlook be updated to reflect recent Central and South Delta catches by SLS at Mildred Island and Larval Entrainment Pilot Study (LEPS).
- The following edits were made to the survey status table.
 - As of January 18th, LEPS is active.
 - SLS is active.
 - SLS 2 is scheduled for the week of January 24th.
 - As of January 18th, the Spring Kodiak Trawl (SKT) is active.

Review of Environmental Conditions and Survey Updates

CDFW delivered updates on relevant surveys to the SMT.

- No new data to report for surveys given COVID interruption last week.

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

- EDSM captured one 85 mm adipose clipped DS the morning of January 18th in Suisun Marsh.

CDFW provided a salvage update (January 11th to January 17th).

- One 54 mm adipose clipped DS was salvaged on January 16th at the federal facility.

DWR provided updates on the DS experimental release program.

- A hard release occurred on January 11th and 12th. 12,416 adipose clipped and 384 visible implant elastomer tagged DS were released.
- The next release is still scheduled for week of January 24th.
- CDFW pointed out that the experimental DS are considered subadult and not juvenile, since they are not young-of-year fish, hence COA 8.5.2 would not be triggered by the DS detected in salvage on January 16th.

USBR shared environmental data updates as of January 17th.

- Three-station daily average water temperature: 10.41° C.
- Three-day running average turbidity at OBI: 5.17 FNU.
- Current turbidity at OBI: 6.0 FNU.
- X2 is 77 km.
- Weather forecast out of Antioch is mostly sunny and clear with northwest winds from 8 to 10 mph.
- Weather forecast out of Stockton is patchy fog and partly cloudy to sunny with west to northwest winds between 3 to 6 mph.

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

USBR requested feedback on how to discuss the salvaged experimental DS.

- CDFW noted the overall movement and behavior of experimentally released DS may not be following expectations, navigating to surprising regions of the Delta and seemingly unresponsive to environmental cues that trigger specific behaviors in wild DS.
- USFWS indicated no clear conclusions can be derived from DS releases given the very low number of recaptured fish
- DWR inquired if captured DS will undergo genetic analysis and if so, how long it would take.
 - USBR clarified that all captured fish will be genetically tested eventually, but the timeline for receiving adults is uncertain. USBR is coordinating with University of California Davis to confirm their process for and timelines. At this point, genetics cannot be used to distinguish between experimental release groups.
- CDFW suggested reviewing the [Damon, 2016](#) paper on DS fecundity to help predict spawning behavior.

CDFW commented that larval sampling at the facilities could provide the SMT with an additional data source given the changing hydrology and lack of sampling data due to cancelled surveys last week.

- CDFW remarked that the SMT can look at data from the Effects Analysis to determine when larval LFS detections would be expected while LEPS data is processed.
- USFWS noted it could be valuable to have concurrent samplings at the facilities and from LEPS.
 - CDFW agreed.
- USBR pointed out that larval sampling at the facilities began in early February last year. DWR highlighted that the first detections occurred in late February at the federal facility and early March at the state facility.
- DWR recently reached out to state facility staff to let them know the SMT may request larval sampling soon; USBR will do the same for the federal facility.

CDFW inquired about what other data sources could be used to assess risk given insufficient distribution data to inform a PTM run given the cancellation of SLS 1.

- The SMT agreed that attempting to do a PTM without fundamental data (i.e., recent distribution data to inform injection sites) would be ineffective. The SMT will wait until more data is available next week to decide on conducting a PTM run.
- DWR recommended the SMT create a more structured process for developing PTM runs in order to ensure consistency between runs.

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.

- The abundance estimate calculation was updated based on sampling from January 10th to 13th.
- The assessment was updated throughout to reflect the recent DS detections in Suisun Marsh and at the federal facility. The south Delta was added to the list of regions where subadult DS have been detected.
- Table 6 was updated to include a row to track recent subadult detections, given the cultured DS detected in salvage did not meet the 58 mm threshold yet is not young of year.
 - The SMT noted there is no length threshold that marks the juvenile to subadult transition and agreed to consider subadults to be fish from the previous year's cohort based on size and timing of collection. Young of year are considered juveniles and larvae.
- Evaluation Question two was updated to address that since an experimentally released DS was salvaged in the south Delta under low turbidity conditions (<12 FNU) there is uncertainty about how experimentally released fish may behave or move after release. Additionally, language was added noting that turbidity in Clifton Court has increased over the previous seven days, but remained separated from turbidity north of the OMR corridor.
- Evaluation Question five was updated to reflect the latest dates and data; there were no changes to the responses to the remaining questions.
- The executive summary was updated to acknowledge DS are present in the south Delta.
- The SMT agreed that the likelihood of entrainment for DS remains low despite the detection in the south Delta due to low turbidity.

ITP Longfin Smelt Risk Assessment

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

Section 1-A

- Exposure Risk
 - No changes for LFS
 - No changes for LFS.
- Routing Risk
 - No changes for DS.
 - Routing risk for LFS was updated to note increase in X2 of about 10 km over the last week was insufficient to increase likelihood of adult and subadult movement into the south and central Delta.
- There were no changes to overall entrainment risk for DS or LFS.

Section 1-B

- Exposure risk
 - Language about DS was updated to note that DS are present in the south Delta based on the detection of a marked fish in salvage. Likelihood of entrainment for both adults and subadults remains low, though there is a high degree of uncertainty regarding the response of cultured fish to environmental cues typically applied to wild DS.
 - The LFS section was not changed.

- Change in exposure from last week
 - No changes for DS. The detection in salvage may represent a short-term increase in risk however does not provide sufficient information to inform long term risk of entrainment.
 - For LFS, language was added to note that hydrodynamically QWEST becoming more negative represents an increase in risk of entrainment for larvae, however, this risk may have been offset by favorable hydrology over previous weeks. The lack of larval fish survey data limits the SMT's ability to assess the current spawning distribution.
- The LFS executive summary was modified to note the current X2 position. Language referencing predicted hydrology was removed due to it no longer being favorable. The SMT also agreed to add language consistent with the discussion above to describe how QWEST recently turned negative, yet the increase in entrainment risk associated with negative QWEST may have been offset by favorable hydrology observed over prior weeks.

Part 4: Additional Considerations/Discussion

Agencies reported no items for elevation to WOMT.