

## PARTICIPANTS

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

## ACTION ITEMS

- USFWS to confirm if UC Davis Fish Conservation and Culture Laboratory (FCCL) brood stock collection is complete for this season.
- CDFW to share what part of the lunar cycle is associated with Longfin Smelt (LFS) spawning.
- CDFW and USFWS to review literature and regulatory documents for information on why 20 mm is the size threshold used to delineate juveniles from larvae.

## 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 (8.5.1 Turbidity Bridge Avoidance and 8.5.2 Larval and Juvenile DS Protection). As of February 28<sup>th</sup>, Smelt Larval Survey (SLS) 4 triggered COA 8.4.2 Larval and Juvenile Longfin Smelt Entrainment Protection when detecting larvae at five of twelve central and south Delta stations. COA 8.12 (Barker Slough Pumping Plant Longfin and Delta Smelt Protection) is active from January 15<sup>th</sup> to March 31<sup>st</sup> for LFS, and as of March 1<sup>st</sup> it is also active for Delta Smelt (DS) through June 30<sup>th</sup>. SLS 4 did not trigger COA 8.12.

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 <sup>1</sup> ); 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

<sup>1</sup> The current instrumentation measures turbidity in Formazin Nephelometric Units (FNU).

<b>OMR Management Measures</b>	<b>Requirement</b>	<b>Time Frame</b>	<b>Trigger</b>	<b>Triggered?</b>
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**

<b>Condition of Approval</b>	<b>Requirement</b>	<b>Time Frame</b>	<b>Trigger</b>	<b>Triggered?</b>
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 <sup>st</sup> through June 30 <sup>th</sup> 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 <sup>st</sup> through Feb 28 <sup>th</sup> , 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 <sup>th</sup>	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 <sup>th</sup>	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 <sup>st</sup> through June 30 <sup>th</sup> 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 <sup>th</sup>	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 <sup>st</sup> through June 30 <sup>th</sup> 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) noted precipitation forecasted for the spine of the Sierras in the six-day weather outlook totaling approximately one inch and decreasing dramatically towards 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 800 cfs with a reduction to 700 cfs scheduled for March 3<sup>rd</sup> in response to a D-1641 modification.
- Jones Pumping Plant exports are targeting 800 to 900 cfs. Exports dropped to 0 cfs on Sunday due to challenging outflow conditions. Pumping resumed Monday morning with a one-unit configuration, which is still in place today.
- Delta Cross-channel (DCC) gates are currently closed. No modifications expected.
- DWR reported that Oroville releases increased last week to 5,000 cfs. Flows may be modified depending on Sacramento River upstream conditions later in the week.
- As of February 28<sup>th</sup>, Freeport flows were 12,500 cfs and should remain steady.
- Vernalis flows remain stable at 1,150 cfs after the Stanislaus River action last week.
- Clifton Court Forebay (CCF) flows have increased from 500 cfs on February 28<sup>th</sup> to 700 cfs as of March 1<sup>st</sup> after several days at 0 and 200 cfs last week. Variability is anticipated for the next seven days with flows between 0 to 1,000 cfs.
- Delta outflows were 11,800 cfs yesterday. The 3-day average on February 27<sup>th</sup> was 11,430 cfs.
- QWEST has been positive around 2,000 cfs and will remain positive for the upcoming week.
- The OMR Index was as high as -370 cfs over the weekend and trended more negative as it reached -800 on February 28<sup>th</sup> with March 1<sup>st</sup> flows reaching -1,000 cfs.
- X2 is 78 km and is expected to continue downstream movement reaching 74 km due to the tidal cycle.
- DWR clarified that operations in the next week will likely be controlled by the D-1641 requirements with the intention of meeting as many Chipps Island days as possible at the beginning of the month and remaining responsive for the rest of March. When the updated river index is released, this may change the operational requirements.
- 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 22<sup>nd</sup> and ran to the 28<sup>th</sup> instead of the 25<sup>th</sup> to make up a few stations. The density of LFS in the south Delta increased relative to SLS 3 while there were no DS detections. Stations of interest are below:
  - Station 809: 32 LFS larvae (16 of 32 had yolk sac present)
  - Station 812: Nine LFS larvae (Five of nine had yolk sac present)
  - Station 901: Six LFS larvae
  - Station 902: One LFS larvae (Had yolk sac present)
  - Station 915: Two LFS larvae
  - Station 706: 35 LFS larvae
  - Station 716: No osmerids detected
- Processing of catches at other stations is ongoing.
- Average fork length for LFS larvae to date is six to eight mm. The maximum catch size is 10 mm and the minimum is five mm. CDFW emphasized that the equipment used for detections lacks efficiency at sizes greater than 11 mm. The eight to 10 mm range is where SLS detections are strongest.
- No updates from Spring Kodiak Trawl (SKT) 2. SKT 3 is scheduled to go on the water March 14<sup>th</sup>.

- The most recent Larval Entrainment Pilot Study (LEPS) detections were on February 17<sup>th</sup>. No yolk sacs were present.

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

- EDSM sampled from February 22<sup>nd</sup> to the 25<sup>th</sup>, completing 34 sites. Two planned sites in the south Delta were missed due to wind. Results are as follows:
  - Suisun Marsh
    - DS: Five (65 to 86 mm and adipose clipped)
    - LFS: Six (66 to 81 mm)
  - Suisun Bay
    - LFS: 29 (67 to 88 mm)
  - Sacramento Deepwater Shipping Channel (SDWSC)
    - DS: Four (57 to 80 mm and adipose clipped)
- Sampling the week of February 28<sup>th</sup> is on track.
- Anecdotally, the physiology of the released DS that have been caught appears to be normal or even on the “chunky” side, not looking “skinnier” than when released.
- Chipps Island sampled from February 22<sup>nd</sup> to the 26<sup>th</sup> with all 50 scheduled tows completed. A total of nine LFS were captured ranging from 74 to 99 mm. No fish were transferred to FCCL for brood stock.
- Chipps Island Trawl sampling for the week of February 28<sup>th</sup> is anticipated to continue as scheduled.
- The abundance estimate last week was 27,148 based on nine fish and 34 sites.

CDFW provided a salvage and larval facilities update (February 21<sup>st</sup> to February 27<sup>th</sup>).

- No salvage of DS or LFS at either facility.
- No osmerid larval detections have been reported.

USBR shared environmental data updates as of February 28<sup>th</sup>.

- Three-station daily average water temperature: 12.06° C.
- Three-day running average turbidity at OBI: 4.46 FNU.
- Current turbidity at OBI: 5.10 FNU.
- X2 is 78 km.
- Weather forecast out of Antioch is mostly sunny with rain predicted for March 3<sup>rd</sup> amounting to less than one tenth of an inch with winds from north northwest to west northwest from three to 14 mph.
- Weather forecast out of Stockton is partly sunny with rain predicted for March 3<sup>rd</sup> and west to northwest winds from five to nine mph.

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

USBR noted that conditions and operations are similar to last week. The OMR Index is expected to remain more positive than -2,000 cfs. There have been large catches of DS, but USBR suggested these detections are not informative of overall behavior.

- CDFW highlighted the lack of detections of DS in the central and south Delta or any additional salvage of DS to support no increase in risk since last week.
  - USFWS requested that language in the Outlook be edited to reflect that Delta Smelt (DS) have been found in the system rather than are expected to be in the system. The SMT agreed. USFWS recommended that a time window be established for DS presence, suggesting since January 1<sup>st</sup>.



- DWR wished to retain language noting that hatchery fish behavior does not translate to that of wild DS or vice versa. USBR agreed.

CDFW observed that SLS 4 LFS densities were greater than in SLS 3 and consequently triggered COA 8.4.2. CDFW suggested that risk appears to be increasing from SLS 3 to SLS 4 based on increased detections in the OMR corridor but it is uncertain whether a recommendation would push those fish out. QWEST will remain positive and the OMR Index has been less negative. CDFW asked the SMT if requesting a Particle Tracking Model (PTM) run would support their ability to assess risk.

- The SMT agreed that a PTM run would be informative, but the current weather forecast lacks promise for sufficient precipitation to increase exports such that there would be a difference in modeled scenarios. Given the uncertainty in the forecast and that achieving a sustained OMRI of -2,000 cfs is unlikely, the SMT agreed the best action is to wait to request a PTM run at next week's meeting when hydrologic conditions are less uncertain.

### 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:

- Update language throughout to reflect DS are present rather than expected to be present, per the discussion in Part 2.
- Evaluation question 2 was revised to remove a reference to historical distribution patterns and note recent detections were of experimentally released fish.

The SMT discussed the length threshold for delineating larvae from juvenile fish.

- USFWS pointed out the scientific literature is not in agreement; some papers consider fish to be juveniles at 15 mm while others use a threshold of 20 or 30 mm TL.
- Interagency Ecological Program (IEP) permits considers fish <20 mm to be larvae.
- CDFW requested documentation that supports using 20 mm as the cutoff between larvae and juvenile fish.
- USFWS recommended focusing on clarifications that will improve protections.
- USFWS and CDFW agreed to research this topic.

#### 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 note presence of DS in lower Sacramento River and highlight that lower exports indicate a low risk of entrainment.
  - LFS: Remains low. No changes since last week.
- Routing Risk (behavior and life history)
  - DS: Remains low. No changes since last week

- LFS: Risk remains low. No changes since last week.
- Overall entrainment risk for DS or LFS.
  - DS: Remains low. No changes since last week.
  - LFS: Remains low. No changes since last week.

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

- Exposure Risk
  - DS: Remains low. No changes from last week.
  - LFS: Remains low. Survey and detection information was updated clarifying that fish at stations 901, 902, and 915 are unlikely to escape the OMR Corridor given current conditions and that larvae are planktonic and cannot avoid entrainment once in the corridor. A future PTM run will inform risk of entrainment.
- Change in exposure from last week
  - DS: Remains low. Notes the slight shift downstream.
  - LFS: Remains low. Language was added to note this is due to current hydrology in addition to low exports.

The LFS executive summary notes that the X2 has remained stable since last week and SLS 4 triggered COA 8.4.2. Furthermore, LFS larvae were detected in the OMR corridor, but given minimal exports and a positive QWEST the SMT is not making a recommendation.

The section on COA 8.12 (Barker Slough Pumping Plant Longfin and Delta Smelt Protection) is updated to note that it was not triggered by SLS 4.

USFWS pointed out that not only is there a likely difference in behavior between wild and cultured DS populations, but the behavior of wild DS populations has also changed since the 2012-2017 drought given the greatly reduced population size. USFWS cautioned against making assumptions based on historical patterns.

#### Part 4: Additional Considerations/Discussion

Agencies reported no items for elevation to WOMT.