

## 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

- USFWS to circulate manuscripts regarding Longfin Smelt (LFS) salvage when available.

## MEETING SUMMARY

### PART 1: Updates on Water Operations and Biological Updates

#### Relevant Actions & Triggers

USBR reported on Old and Middle River (OMR) management measures. Under the end of OMR Management action, OMR criteria may control operations until June 30<sup>th</sup> or until the daily mean water temperature at Clifton Court Forebay (CCF) reaches 77° F for three consecutive days. CDFW reported on the Incidental Take Permit (ITP) Conditions of Approval (COA) that are in effect including 8.4.2 Larval and Juvenile LFS Entrainment Protection which was triggered on April 26<sup>th</sup> by 20 mm Survey 3, 8.5.2 Larval and Juvenile Delta Smelt (DS) Protection, and 8.12 Barker Slough Pumping Plant Longfin and Delta Smelt Protection.

#### 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 3-day average of daily flows at Freeport >25,000 cfs; and (2) Running 3-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 DS has been collected in monitoring surveys.	Triggered 12/18/21; last day of action was 1/2/22

<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>
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.	Triggered on 1/3/22; Off-ramped by SKT 3 on 3/17/22
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 DS 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 DS are within the entrainment zone of the pumps based on real-time sampling of spawning adults or young of year life stages	In effect
End of OMR Management	OMR criteria may control operations until June 30 (for DS 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 CCF reaches 77°F for 3 consecutive days	In effect

#### ITP 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)	Outlines contents for weekly risk assessments of DS and LFS required under 8.1.5 and 8.1.1	Nov 1 <sup>st</sup> through June 30 <sup>th</sup> or until		Triggered

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
		off-ramped by 8.8		
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 SMT 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	3-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 SMT 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
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 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 an 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	Onset of OMR management through Feb 28 <sup>th</sup>	SMT recommendation based on weekly risk assessment	Off-ramped by larval detections in Smelt Larval Survey (SLS) 12

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
	High risk: OMR between -1,250 cfs to -2,500 cfs			
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) LFS 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) LFS 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, 2/28/22, 3/11/22, 3/29/22, 4/11/22, and 4/26/22
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 at 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 agrees that the action may be ended or modified.	Turbidity at OBI > 12 FNU	In effect as of 1/3/22; off-ramped April 1 <sup>st</sup> .
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	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 DS is greater than or equal to one plus the average prior three years' FMWT index (rounded down).	Active, not triggered

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
	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 DS 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.		The 2021 FMWT index for DS was zero.	
8.8 (End of OMR Management)	If triggered, OMR Management would be off-ramped for LFS and DS.	From the onset of OMR management through June 30 <sup>th</sup>	Daily mean water temperature at CCF 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 LFS, and from March 1 <sup>st</sup> through June 30 <sup>th</sup> for DS	Larval Smelt are detected at SLS Station 716 during the period identified for each species, and/or when recommended by the SMT	Active, Triggered for LFS 2/14/22, 3/11/22, and DS on 3/23/22

## Current Operations & Outlook

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

- USBR reported on weather conditions noting warming temperatures and breezy conditions starting May 4<sup>th</sup> with a chance of slight rainfall on the 6<sup>th</sup>.
- Releases from Whiskeytown Dam on Clear Creek are currently 200 cfs. No changes expected for the next seven-day period.
- Releases from Keswick Dam on the Sacramento River are currently 3,250 cfs. No changes expected for the next seven-day period.
- Releases from Nimbus Dam on American River are holding at 1,000 cfs. No changes expected for the next seven-day period.

- Releases from Goodwin Dam on the Stanislaus River are currently averaging 500 cfs today with an increase to 1,250 cfs before returning to 500 cfs by the end of the week as part of the ongoing pulse flow.
- Federal facility exports are targeting 900 cfs with no changes expected for the week ahead.
- Delta Cross Channel gates are closed and will remain closed through May 20<sup>th</sup>.
- DWR reported that Feather River releases are 800 cfs.
- Freeport flows are around 6,400 cfs and will likely remain stable.
- San Joaquin flows at Vernalis were 920 cfs on May 2<sup>nd</sup> and will fluctuate with pulses from the Stanislaus River.
- State facility exports are 600 cfs and will remain constant for the week.
- Delta outflows are 5,100 cfs and will continue in the 5,000 to 4,000 cfs range through the week.
- As of May 2<sup>nd</sup>, QWEST was approximately 800 cfs and will fluctuate between 500 to 1,000 cfs.
- The daily OMR Index was -1,300 cfs on May 2<sup>nd</sup>.
- X2 is upstream of Collinsville.
- No edits to the survey table.

## Review of Environmental Conditions and Survey Updates

CDFW delivered catch updates on relevant surveys to the SMT.

- 20 mm Survey 1 is now fully processed with no new osmeridae to report.
- 20 mm Survey 2 and 3 are still being processed.
  - 20 mm Survey 3 has new DS detections at the following stations:
    - Station 724: 2
    - Station 726: 1
- 20 mm Survey 4 is out on the water this week.
- Spring Kodiak Trawl (SKT) 5 starts May 9<sup>th</sup>

USFWS provided catch updates on the Enhanced Delta Smelt Monitoring (EDSM) Program and Chipps Island Trawl.

- Due to high numbers of LFS caught during the week of April 18<sup>th</sup> EDSM is currently behind in processing. Over 1,800 LFS were detected in Suisun Marsh alone.
- No DS or LFS have been detected so far during initial processing of last week's EDSM data.
- Some fish primarily identified as DS were confirmed to be other species. EDSM Phase 2 has detected a total of three DS so far this season:
  - Two larval DS detected on April 5<sup>th</sup> in Suisun Bay (confirmed)
  - One juvenile DS detected on April 18<sup>th</sup> in the Sacramento Deep Water Shipping Channel (preliminary)
- The abundance estimate for the week of April 18<sup>th</sup> was 1,652 based on one 28 mm DS detected on April 18<sup>th</sup>.
- The first day of EDSM Phase 3 will be July 5<sup>th</sup>.
- Chipps Island Trawl crews missed one day of sampling last week due to high winds. Thirteen LFS were detected.

CDFW provided a salvage and qualitative larval sampling update (April 25<sup>th</sup> to May 1<sup>st</sup>).

- No smelt larvae detected at either facility.
- No DS detected at either facility.

- Weekly salvage of LFS >20 mm occurred every day last week.
  - Federal Facility: 252
  - State Facility: 540
  - Weekly Total for both facilities 792
- The season total LFS juvenile salvage is 6,075 for both state and federal facilities.
- USFWS noted that also last week did not represent a peak in salvage, the total still represents greater than 10% of total salvage for the water year which is non-negligible.

USBR shared environmental data updates as of May 2<sup>nd</sup>.

- Three-station daily average water temperature: 17.77° C.
- CCF daily average temperature: 18.50° C.
- Current turbidity at OBI: 2.47 FNU.
- X2 is > 81 km. Estimated at approximately 86 km.
- Weather forecast out of Antioch is clear and sunny with northwest winds from 10 to 20 mph and a high of 84° F.
- Weather forecast out of Stockton is clear and sunny with northwest winds from 15 to 25 mph and a high of 84° F.

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

Regarding DS, USBR noted there have been no significant changes since last week. CDFW concurred and cited a lack of new survey or salvage detections. CDFW also noted that temperatures are starting to warm.

CDFW shared updated graphs of LFS juvenile salvage with exports and OMRI and noted that salvage for the current water year to date exceeds the total salvage in the previous two years. Despite salvage looking like it tapered off last week it remains elevated despite minimum exports and OMRI being between -1,000 to -1,500 cfs. The current salvage to FMWT Index ratio is 18.8 which is not as high as 2020 or 2021 but does remain higher than previous drought years of 2013 to 2015.

DWR shared the March 22<sup>nd</sup> Particle Tracking Model (PTM) hindcast which was produced in light of a number of model variables and assumptions being inaccurate in hindsight. The PTM run compared historical operations with a scenario representing conditions if the SMT's recommendation to limit exports had remained in effect. The results showed significant entrainment at Station 902 and at three weeks out there was a 1% difference in total entrainment (i.e., particles entrained by the projects and particles in the OMR corridor) between the two scenarios. The PTM hindcast offers a better representation of the sort of protection the recommendation would have offered fish than the original PTM run conducted on March 22<sup>nd</sup>.

The SMT agreed to continue the recommendation for LFS under COA 8.4.2 given elevated salvage at both facilities.

USFWS provided an update on inviting guest speakers to the SMT to discuss LFS salvage data trends. The researchers recommended by USFWS staff are still writing their manuscripts and unable to share information at this time. Their research centers around the previous drought period and does not cover the last three years. Using extrapolation of cumulative LFS salvage in 2022 and mark-recapture results for juvenile DS, USFWS estimated that nearly three million juvenile LFS could have entered Clifton Forebay so far this year. However, pre-screen losses in the OMR corridor are not well understood to extrapolate total LFS losses based on LFS salvage at both fish facilities. USFWS will update the SMT when the manuscripts are available.

CDFW highlighted that more Wakasagi were detected at the facilities this week but reporting wakasagi salvage to the SMT will be halted due to the lack of evidence that it acts as a proxy for DS entrainment.

## 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:

- Evaluation Question 8 was updated to remove language referencing detections in the lower San Joaquin River and add a date for the most recent detection in the OMR corridor.
- Executive Summary was revised to clarify that larval DS in the OMR corridor are at an increased likelihood of entrainment and adults and sub-adults are less likely to move due to lower turbidity.

### ITP Longfin Smelt Risk Assessment

The SMT reviewed and discussed updates to the ITP Risk Assessment for LFS, which include the latest dates, detections, and data as well as:

The SMT maintains its advice to WOMT, citing continued salvage of LFS, and acknowledges that while there is no trigger met to offer advice for DS there is risk to larval DS in the OMR corridor which would otherwise merit a recommendation.

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: No changes since last week.
  - LFS: No changes since last week.
- Routing Risk (behavior and life history)
  - DS: No changes since last week.
  - LFS: No changes to risk since last week. The SMT believes larger juveniles now have volitional movement and adult detections are declining in the central Delta.
- Overall entrainment risk for DS or LFS.
  - DS: No changes since last week.
  - LFS: 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:
    - Adults and sub-adults: No changes to risk since last week.
    - Larvae: No changes to risk since last week. Abiotic conditions such as X2 and QWEST were updated, and new language was added to note that no larvae have been detected in the Lower San Joaquin River region.
  - LFS:
    - No changes to adult risk since last week. Language was updated to reflect no recent detections of adults or subadults in the central Delta.
    - No changes since last week for larvae and juveniles in the lower San Joaquin River.
    - No changes since last week for larvae and juveniles in the OMR corridor. This section was revised to note that larvae have not been detected at either facility this week, however overall salvage remained elevated.



- Change in exposure from last week
  - DS: No changes since last week.
  - LFS: No changes since last week.
- The executive summary notes that the SMT believes peak spawning has likely passed for the season due to increased water temperatures and a lack of recent smaller larval detections.

#### Part 4: Additional Considerations/Discussion

CDFW inquired if qualitative larval sampling should be concluded soon given the lack of recent larval detections in surveys. USFWS suggested the program could stop once the OMR management off-ramp three-day temperature criteria is met, noting the very large sampling volume of water by the qualitative larval sampling data provides a valuable parallel to field surveys. DWR agreed it would be worthwhile to continue qualitative larval sampling for now, but perhaps not for the entire remainder of the OMR management season. The SMT will revisit this discussion in a few weeks.

Agencies reported no items for elevation to WOMT other than maintaining a recommendation under COA 8.4.2 to manage the seven-day average OMR Index to be no more negative than -1,250 cfs for the protection of larval and juvenile LFS.