

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

- CDFW to circulate ideas for pre-season workshop topics.
- KW to support the collection of off-season topics for Smelt Monitoring Team (SMT) consideration.
- SMT to revisit discussion of when to cease qualitative larval sampling for the season at the next meeting.
- USBR to update Tracy Fish Facility staff that qualitative larval sampling will continue for now.

MEETING SUMMARY

PART 1: Updates on Water Operations and Biological Updates

Relevant Actions & Triggers

USBR is at the end of Old and Middle River (OMR) Management action, in which OMR criteria may control operations until June 30th 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, 8.5.2 Larval and Juvenile DS Protection, 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 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 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.	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

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 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

IIP Conditions of Approval

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
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 st through June 30 th or until off-ramped by 8.8		Triggered
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

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 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 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 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 Smelt Larval Survey (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 1 st through June 30 th 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

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 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 st .

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 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.	Nov 1 st through June 30 th 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). The 2021 FMWT index for DS was zero.	Active, not triggered
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 th	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 st through June 30 th 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 dry, breezy conditions impacting evapotranspiration for the region early this week with colder temperatures and possible precipitation north of the I-80 corridor later in the week.
- 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 were increased to 3,750 cfs in response to dry weather conditions.
- Releases from Nimbus Dam on the American River flow are 1,500 cfs and holding.
- Releases from Goodwin Dam on the Stanislaus River were increased to 700 cfs this morning to meet the Vernalis D-1641 flow objective.
- Federal facility exports are at 900 cfs with no changes expected for the week ahead.
- Delta Cross Channel (DCC) gates will be opening on Friday, May 27th and closing again on Tuesday, May 31st.
- DWR reported that Feather River releases are 2,200 cfs. No changes expected for the next seven-day period.
- May 23rd Freeport flows were approximately 7,500 cfs and will likely fluctuate.
- San Joaquin flows at Vernalis were 580 cfs on May 23rd and will fluctuate up or down by a few hundred cfs as flows in the Stanislaus River change over the week.
- State facility exports are 600 cfs. Operations have returned to normal after last week's outage.
- Delta outflows were 4,600 cfs on May 23rd and will vary in response to Freeport flows.
- As of May 24th, QWEST is -300 cfs, but the opening of the DCC gates will result in flows of about 2,000 cfs.
- The daily OMR Index is near -1,700 cfs and will remain variable with San Joaquin flows and gross channel depletions.
- Rio Vista flows are currently about 5,000 cfs, but with the DCC gates open, flows will decrease to around 2,000 cfs.
- The next few days will mark the bottom of the neap tidal cycle, and then the system will enter a weak spring cycle by the end of the week.
- X2 is upstream of Collinsville.
- The SMT briefly discussed why the current OMR Index differs from the current exports. DWR noted that the combination of the San Joaquin River being lower in previous weeks and the gross channel depletions is resulting in the OMR Index becoming more negative. The gross channel depletions peak in mid- to early July at 4,400 cfs with one-fourth of that value incorporated into the OMR Index equation. The OMR Index equation will also change when the Grant Line Barrier is completed in early June; this will lead to OMR Index values to become -200 cfs more negative.
- No edits were made to the survey table.

Review of Environmental Conditions and Survey Updates

CDFW delivered catch updates on relevant surveys to the SMT.

- 20 mm Survey 5 was on the water May 16th to the 19th. Processing is ongoing, preliminary results are as follows:
 - No DS detections
 - LFS
 - Central and South Delta
 - Station 809: 1 (23 mm)

- Sacramento River System
 - Station 703: 1
 - Station 704: 67
 - Station 705: 3
 - Station 706: 220
 - Confluence
 - Station 801: 40
- Results from 20 mm Surveys 2, 3, and 4 are still being processed. There have been delays in all processing due to COVID-related staffing issues.
- Peat debris reduced the tow times for many stations in 20 mm survey 5. The presence of peat may be due to recent high winds.

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

- There have been six new DS detections in the Sacramento Deep Water Ship Channel (SDWSC) since last week resulting in a WY 2022 total of 72 DS.
 - April 22nd: 1
 - May 9th: 1
 - May 10th: 4
- Some fish collected this season were confirmed as DS according to EDSM identification protocols, but not all reviewers agreed on the final ID. These fish will undergo genetic testing at the end of the season to confirm their ID.
- The juvenile DS abundance estimate for the previous week is 13,086 based on eight detections in the SDWSC.
- EDSM experienced a spike in LFS detections last week. With processing partially complete there are over 200 LFS detections, 168 of which were in Suisun Marsh.
- Chipps Island Trawl results are as follows:
 - LFS
 - Adult: 1
 - Juvenile: 24

CDFW provided a salvage and qualitative larval sampling update (May 16th to the 22nd).

- No larval osmerids or DS detected at either facility.
- Weekly salvage of LFS ≥ 20 mm:
 - Federal Facility: 8
 - Salvage occurred May 17th and 21st.
 - State Facility: 158
 - Salvage occurred May 20th, 21st, and 22nd.
 - Salvage outage May 16th- 19th.
 - Weekly total for both facilities: 166
- The seasonal total LFS juvenile salvage is 7,384 for both state and federal facilities.
- USFWS shared that based on a [mark-recapture study](#) on juvenile DS, an estimated ~10,000 fish would need to enter the forebay in order to see the 158 juvenile LFS observed in salvage at the SWP last week. USFWS also pointed out that a smaller percentage of fish released in CCF are recaptured in salvage when exports are lower, indicating an inverse relation between the level of exports and pre-screen losses.

- USFWS and CDFW noted the challenges of incorporating pre-screen losses and issues with calculating entrainment during the recent facility outage. An important distinction to note is that salvage estimates are based on fish in hand and loss estimates attempt to take pre-screen losses into account.

USBR shared environmental data updates as of May 23rd.

- Three-station daily average water temperature: 20.90° C.
- CCF daily average temperature: 21.80° C.
- Current daily average turbidity at OBI: 3.06 FNU
- Current turbidity at OBI: 3.60 FNU.
- X2 is approximately 90 km.
- The weather forecast out of Antioch is sunny and clear turning to sunny and mostly clear by the end of the week with winds from the north to northwest from 10 to 17 mph and gusts up to 22 mph.
- The weather forecast out of Stockton is sunny, clear, and hot turning to sunny and mostly clear by the end of the week with winds from the north to northwest from 5 to 13 mph and gusts up to 18 mph.

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

The SMT discussed the merits of continuing or concluding qualitative larval sampling for the season.

- USFWS emphasized the importance of continuing sampling while larval osmerids are present in the system.
- To this point, CDFW shared graphs of historical (1995 to 2019) 20 mm Survey DS data (figure 24 from the Smelt Effects Analysis). Detections historically peak in 20 mm Survey 7 and catch can continue into June and July. In one year (1995), sampling took place in August and resulted in 126 detections.
- USFWS suggested it would be worthwhile discussing which gear would be most effective for detecting fish after the 20 mm surveys are complete for the season.
- DWR advocated that sampling stop for the season given the increasing temperatures, lack of recent larval detections in the south Delta, and considerable resources expended to run the program. Osmerids have not been seen in qualitative larval sampling for the last five weeks.
- USBR noted the OMR Guidance Document sets the charge of the SMT including starting and ending qualitative larval sampling as the team sees fit.
- USBR also shared that staff from the Tracy Fish Facility are ready to end sampling for the year.
- CDFW suggested that while this year is an exception relative to the average it may in fact be more consistent with the norm moving forward. If this is the case, it may benefit the SMT to continue with qualitative larval sampling to best track any shifts in osmerid life stage development.
- DWR raised questions around how data from the qualitative larval sampling process supports the analysis of risk for DS.
- CDFW highlighted that last year the SMT requested sampling conclude on June 1st. However, the data that can be compiled in the next few weeks could be valuable for supporting future Larval Entrainment Pilot Study sampling in the future as well as informing risk for the SMT.

The SMT decided to continue qualitative larval sampling for the time being and will revisit this topic on a weekly basis going forward.

CDFW noted that while LFS salvage looks like it is declining it is still relatively high compared to previous years. USFWS pointed out that given the elevated pre-screen losses at the SWP over the past week, recent salvage trends are less reliable to infer trends in entrainment losses. The SMT agreed spawning is likely slowing down given increasing water temperature and recent larvae detections falling near the larvae-juvenile size threshold.

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 seven was updated to note that the DCC gates are planned to open on May 27th which may result in QWEST flows trending towards 2,000 cfs.
- The executive summary was revised notes the six newly reported DS detected by EDSM on April 22nd, May 9th, and May 10th.

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:

Advice to WOMT and LFS Executive Summary

- The SMT is not issuing advice to WOMT, as neither COA 8.4.2 nor COA 8.12 were triggered by 20 mm Survey 5.
- Language was revised to highlight the SWP outage which resulted in increased pre-screen losses. The SMT is concerned that there may be unaccounted for losses given the salvage data does not reflect the pre-screen losses that occurred during the SWP outage.

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 in risk since last week.
 - LFS: No changes in risk since last week.
- Routing Risk (behavior and life history)
 - DS: No changes in risk since last week.
 - LFS: No changes in risk since last week.
- 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 in risk since last week.
 - Juveniles: No changes in risk since last week.
 - Larvae: No changes to risk since last week.
 - LFS:
 - No changes to adult risk since last week. Content in the section was added to note declining detections in this region.
 - No changes since last week for larvae and juveniles in the lower San Joaquin River. Language was included to highlight the impact of the DCC gate operations on QWEST flows.

- No changes in risk since last week for larvae and juveniles in the OMR corridor. Modifications focused on clarifying that salvage is likely higher than what is reported due to the SWP outage last week.
- Change in exposure from last week
 - DS: No changes since last week.
 - LFS: No changes since last week. New content acknowledges that salvage is expected to decrease as water temperatures approach the upper thermal limit for LFS survival. Additionally, text was added to highlight the difference in state and federal salvage rates despite the SWP facility outage last week.
- DWR suggested the SMT consider how to phrase assessments of high risk for next season.
 - CDFW agreed, expressing interest in better understanding how the SMT's recommendations may influence the number of fish that enter the OMR corridor.
 - CDFW suggested that lower exports may give some fish in the OMR corridor time to grow large enough to swim out of the area.
 - USFWS emphasized the importance of understanding the flux of fish from lower risk areas to higher risk areas and noted it is not yet clear if fish observed in salvage were spawned in the south Delta or if they moved into the region later in life.
 - DWR noted the hypothesis that fish given time to grow in the OMR corridor will be able to escape still needs to be tested. This is likely a topic worthy of discussion in the off-season.

Part 4: Additional Considerations/Discussion

Agencies reported no items for elevation to WOMT.