

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 (K&W)

ACTION ITEMS

- Federal agencies will brief WOMT representatives and request guidance on the Turbidity Bridge Avoidance Action off-ramp requirements with the recent detection of a ripe cultured female Delta Smelt (DS).

MEETING SUMMARY

PART 1: Updates on Water Operations and Biological Updates

Relevant Actions & Triggers

The Smelt Monitoring Team (SMT) discussed the status of the federal Turbidity Bridge Avoidance Action.

- USFWS requested clarification regarding whether this action has been off-ramped as a result of the recent detection of a ripe cultured female DS by Spring Kodiak Trawl (SKT). Some cultured fish released in January were observed to be releasing eggs in the carboy, possibly due to stress. USFWS noted that while both wild and cultured DS are considered the same for regulatory purposes, the SMT has previously acknowledged behavioral difference between the wild and cultured fish.
- USBR indicated their management directed them to follow the Proposed Action (PA).
- The SMT agreed that federal agency staff would brief their WOMT representatives and request guidance.
- CDFW noted there is precedence for the detection of a ripe or spent female DS to serve as a soft off-ramp for this action and will look in previous years meeting notes for relevant information and follow up with SMT.

The descriptions below are intended as summaries of relevant actions and do not provide all the details related to each action or trigger. For full descriptions, please see the Old and Middle River (OMR) Guidance Document or Incidental Take Permit (ITP) as needed.

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 cubic feet per second (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 Delta Smelt (DS) has been collected in monitoring surveys.	Off-ramped, triggered 12/31/22 (starting January 3 rd through 16 th EOD)
OMR Management	Manage to a more positive OMR than -5,000 cfs.	From the onset of OMR management to the end.		Active as of 1/17/23
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 DS 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 1/17/23 to 2/8/23
Larval and Juvenile Delta Smelt	Run hydrodynamic models and forecasts of entrainment, informed by the Enhanced Delta Smelt Monitoring (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.	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 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 Clifton Court Forebay (CCF) 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)	Outlines contents for weekly risk assessments of DS 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		Active
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 (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.	Off-ramped, triggered 12/31/22 (starting January 3 rd through 16 th EOD)
8.3.3 (Adult Longfin Smelt Entrainment Protection)	After December 1, if an Integrated Early Winter Pulse Protection (Condition of Approval (COA) 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 water year (WY) 2023 is 40.	Off-ramped with COA 8.3.1 triggering on 12/31/22

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.4.1 (OMR Management for Adult Longfin Smelt)	<p>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:</p> <p>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</p>	Onset of OMR management through Feb 28 th	SMT recommendation based on weekly risk assessment.	Off-ramped with detection of LFS larvae 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 1st through June 30th or until the temperature off-ramp 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.	Active, not triggered
8.4.3 High flow offramp for Longfin Smelt	If triggered, COA 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

Condition of Approval	Requirement	Time Frame	Trigger	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	Active, triggered 1/17/23 to 2/8/23
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 trigger (2) or (3) are met, this Condition of Approval will restrict south Delta exports to maintain a seven-day average OMR index no more negative than -3,500 cfs until the average Secchi depth is greater than 1 meter in the south Delta stations in a subsequent SLS or 20 mm survey. If average south Delta Secchi depth continues to be less than or equal to 1 meter in a subsequent SLS or 20mm survey then Permittee shall continue restrictions and request a risk assessment by the Smelt Monitoring Team to determine if additional advice and subsequent restrictions are warranted and provide advice to WOMT.	Nov 1 st through June 30 th or until off-ramped by 8.8	(1) 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 2022 FMWT index for DS was zero. Or (2) when a larval/juvenile DS is detected in SLS/20 mm Or (3) the 3-day average water temperature at Jersey Point is $\geq 12^{\circ}\text{C}$ and Secchi from the most recent SLS/20 mm survey is $\leq 1\text{m}$ averaged across the 12 stations (809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, and 919)	Active, not triggered

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.8 (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.	Not active; water year type is above normal as of 02/01/23

Current Operations & Outlook

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

- USBR reported on weather conditions noting colder weather with a chance of light precipitation along the north coast region.
- Releases from Whiskeytown Dam on Clear Creek are currently 200 cfs.
- Releases from Keswick Dam on the Sacramento River are 3,250 cfs.
- Releases from Nimbus Dam on the American River are 4,000 cfs with possible reductions.
- Releases from Goodwin Dam on the Stanislaus River are 200 cfs.
- Delta Cross Channel (DCC) gates remain closed. No changes expected for the next seven-day period.
- Tides are emerging from a neap cycle with a new moon and strong spring tide on February 19th.
- The federal facility is exporting 4,200 cfs.
- DWR reported that State facility exports are approximately 3,500 cfs and will decrease with San Joaquin River flows as exports target an OMR index of -5,000 cfs.
- Feather River releases are holding at 950 cfs.
- As of February 13th, Sacramento River flows at Freeport were approximately 22,000 cfs with a slow decline to 15,000 cfs likely in the next six-day operations window.
- San Joaquin River flows at Vernalis were 4,200 cfs as of February 13th and will continue to decrease.
- Delta outflows were 18,700 cfs as of February 13th, and will continue to diminish.
- As of February 13th, QWEST was around +2,300 cfs with flows expected to decrease to no less +1,500 cfs.
- Rio Vista flows were 15,000 cfs as of February 13th.
- Turbidity at OBI is approximately nine FNU with environmental conditions holding stable and dry.
- X2 is just above 65km, upstream of Port Chicago.
- Controlling factor is -5,000 cfs OMRI.
- The expected daily OMR index values as of February 13th are -4,800 to -5,000 cfs.
 - February 11th OMR at USGS gauge:
 - Daily: -5,800 cfs
 - Five-Day: -5,300 cfs
 - 14-Day: -5,400 cfs

- February 11th OMR Index:
 - Daily: -5,000 cfs
 - Five-Day: -4,700 cfs
 - 14-Day: -4,800 cfs
- February 13th OMR Index:
 - Daily: -5,000 cfs
 - Five-Day: -5,000 cfs
 - 14-Day: -4,900 cfs

Updates to the survey table include the following:

- Tracy Fish Facility: Partial Interruption
 - February 8th 1600 to 1800: Debris management.
 - February 12th 0800 to 1400: All counts missed due to staffing issues.

Review of Environmental Conditions and Survey Updates

CDFW delivered catch updates on relevant surveys to the SMT.

- SLS 2 was on the water from January 17th to the 19th. Updated detections are as follows:
 - LFS larvae
 - San Pablo Bay (Station 335): Six
- SLS 3 was on the water from January 30th to February 1st completing all stations. Processing is ongoing.
 - LFS larvae
 - Suisun Bay and West: 153
- SLS 4 is on the water this week.
- Spring Kodiak Trawl (SKT) 2 was on the water from February 6th to the 9th.
 - DS (February 8th detections)
 - Lower Sacramento River (Station 704): One ripe female (Fork length (FL)=54mm, Right orange posterior VIE)
 - Sacramento Deep Water Shipping Channel (SDWSC) (Station 719): One (FL=104mm, Left orange anterior VIE)
 - DWR noted that one of the ripe DS was 54 mm long, which is typically smaller than usually observed for spawning.
 - CDFW clarified that the gamete expression could be the result of hatchery conditions being optimal for spawning and may not be representative of wild DS behavior. Clifton Court Forebay was already at 12C, which is optimal spawning temperature for DS, when the cultured fish were released. The wild population were still experiencing water temperature a few degrees cooler and not yet in the optimal spawning conditions.
 - LFS
 - Lower Sacramento River (Station 707): One (FL=85 mm)
 - Confluence and downstream: 18 (FL=65 to 104 mm)

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

- EDSM was on the water from February 6th to February 10th completing 35 sites. Detections were as follows:
 - DS

- Cache Slough/Liberty Island: One (FL=69 mm, VIE-tagged left, orange, anterior)
 - Suisun Marsh: One (unmarked/unclipped – no length recorded; fish was transferred to Fish Conservation and Culture Laboratory for potential broodstock)
- LFS (FL=67 to 95 mm)
 - Suisun Bay: 15
 - Suisun Marsh: Four
 - Western Delta: Two
- EDSM is scheduled to sample February 13th to the 16th.
- DJFMP sampled Monday, Wednesday, and Friday from February 6th to February 10th at Chipps Island completing 30 of 30 tows. Results are as follows:
 - LFS
 - 35 (FL=75 to 114 mm)
- Chipps Island Trawl will sample Sunday, Monday, Tuesday, Thursday, and Friday this week.
- The DS abundance estimate for the week of February 13th was 4,028.

CDFW provided a salvage update (February 6th to February 13th).

- DS Salvage:
 - Federal Facility: Three
 - One marked DS on February 12th at 63 mm with a right orange posterior dorsal tag
 - Two marked DS on February 13th at 59-69mm with a right orange posterior dorsal tag
 - State Facility: One
 - February 8th at 73 mm with a right orange posterior dorsal tag
 - All DS salvaged this week were from the Rio Vista hard release on January 18th and 19th.
- LFS Salvage:
 - None
- Season Total:
 - DS
 - State facility season total: Four
 - Federal facility season total: 16
 - LFS
 - State facility season total: Four
 - Federal facility season total: 16
- Outages
 - February 8th 1600 to 1800: Debris management
 - February 12th 0800 to 1400: All counts missed due to staffing issues.
 - CDFW noted that at the 1600 count there were five largemouth bass in the holding tank collected in the 10 hours between the 0600 count and the 1600 count, thus the reliability of salvage data from the 1600 count is unreliable especially considering that there was a DS salvaged after this event. Any smelt salvaged during that 10 hours between counts would likely have been eaten by the largemouth bass.

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

Delta Smelt

CDFW shared a map of where experimentally released DS have been recaptured so far this water year. Comments shared by the SMT include:

- CDFW noted that all of the salvaged DS have come from the Rio Vista releases. DS from the first Rio Vista releases on November 30th have distributed the furthest, while most of the other fish seem to be caught relatively near their release site.
- DWR pointed out that all salvaged fish to date are from the hard releases. Additionally, turbidity was much lower (five to six NTU) during the first November release.

CDFW noted that although turbidity is decreasing, the water temperatures are nearing those suitable for spawning according to [Damon et al. 2016](#). This indicates that spawning may onset soon. This may increase risk as DS move locally looking for spawning sites and mates, while X2 shifts upstream and the OMR index remains at -5,000 cfs. Furthermore, once spawning starts the more upstream location of X2 in coming weeks and an OMR of -5,000 cfs will result in increased risk for the offspring of DS currently in the Central and South Delta. [SacPAS](#) data shows that historically the 50th percentile of adult DS salvage occurred in late February and early March, so we can most likely expect more DS salvage in the coming weeks.

DWR clarified that the QWEST calculation does not include tidal effects. While operating to an OMR index of -5,000, QWEST is anticipated to remain positive between 1,000 to 2,000 cfs, gradually decreasing as the week continues.

DWR also pointed out that the new ITP language for COA 8.5.2 referencing water temperatures $\geq 12^{\circ}$ C at Jersey Point reflects that water temperatures at this location are intended to be a surrogate for larval presence. Water temperatures pushed past 10° C on February 13th. While there may be intermittent spawning there is likely no need to begin managing for larvae at this point.

DWR acknowledged that there is a data gap in understanding how cultured fish respond to environmental cues. A hypothesis for the recent salvage detections argues that the fish were drawn into the OMR corridor by the high turbidity, and when the water began to clear fish rapidly migrated upstream, contrary to what would be expected from wild fish. Despite this behavior, DWR suggests that risk remain the same for DS in the OMR corridor and Lower San Joaquin River. The SMT agreed risk for DS has not changed since last week.

CDFW and DWR agreed that spawning has likely not started, but temperatures are conducive to spawning and therefore indicate spawning will start soon. CDFW communicated that an OMR of -5,000 cfs may contribute to ongoing DS salvage.

Longfin Smelt

With no recent detections in salvage and the population distribution moving further downstream, CDFW expressed reduced concern this week. By late February and early March juvenile risk may increase, but risk has not shifted this week. DWR agreed that risk for LFS remains the same.

Guidance on Requesting Particle Tracking Model (PTM) Runs

DWR provided an overview of the process for requesting PTM runs. The current template for PTM runs includes a comparison of up to three scenarios: one base case reflecting current operations and two based on potential recommendations. Simulations are run for these three operational scenarios with three sampling sites. Last year, the SMT used sites 812, 815, and 902. DWR recommended running the PTM on Mondays to make use of the most recent hydrologic information while still returning results to the SMT prior to their weekly meetings. Conducting PTM runs with more than three sampling sites, or more than three scenarios would require more than one day to run the model.

CDFW reminded the SMT that sites 812, 815, and 902 were selected due to the frequency of LFS larvae. Stations 812 and 815 are located in the main stem of the lower San Joaquin River with 812 just north of Franks Tract and 815 is directly east of the Old River confluence. Lastly, station 902 is south of Franks Tract so it provides an idea of how particles operate at the head of the OMR corridor. These three stations build a reasonable picture of

how many particles are pulled into the OMR corridor and are retained there, how many travel to the facilities, and how many flux past Chipps Island. CDFW recommended using the same three sites this year.

The SMT agreed that the most likely scenarios for future PTM runs would be an OMR index of -5,000 cfs (base case), -3,500 cfs, and -2,000 cfs, with the former two being common protective recommendations made by the SMT. The SMT will discuss operational scenarios on a case-by-case basis and make adjustments to these standard scenarios as appropriate.

DWR encouraged other agencies to request PTM runs any time before the meeting if it seems pertinent for the meeting, especially for information like SLS detections in the South Delta.

[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, conditions, data, and reflects the discussion documented in Part 2 above.

ITP Longfin Smelt and Delta Smelt Risk Assessment

The SMT reviewed and discussed updates to the ITP Risk Assessment for DS and LFS, which include the latest dates, detections, conditions, data, and reflects the discussion documented in Part 2 above.

[Part 4: Additional Considerations/Discussion](#)

USFWS and USBR will brief their WOMT representatives on questions regarding whether the recent detection of a ripe cultured DS meets the off-ramp criteria for the federal Turbidity Bridge Avoidance Action.