Smelt Monitoring Team – Tuesday, January 17th, 2023

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

- Kearns & West to distribute invite for off-cycle meeting on January 19th. (Complete)

MEETING SUMMARY

PART 1: Updates on Water Operations and Biological Updates

Relevant Actions & Triggers

The federal Integrated Early Winter Pulse Protection (IEWPP) action and the State Incidental Take Permit (ITP) Condition of Approval (COA) 8.3.1 (Integrated Early Winter Pulse Protection) were off-ramped on January 16th. Elevated turbidity at Bacon Island triggered the federal Turbidity Bridge Avoidance action and ITP COA 8.5.1 (Turbidity Bridge Avoidance) on January 17th. The descriptions below are intended as summaries and do not provide all the details related to each action or trigger. For full descriptions, please see the OMR Guidance Document or 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.	Active, triggered 12/31/22

[1] The current instrumentation measures turbidity in Formazin Nephelometric Units (FNUs).

OMR Management Measures	Requirement	Time Frame	Trigger	Triggered?
OMR Management	Manage to a more positive OMR than -5,000 cfs.	From the onset of OMR management to the end.	N/A	Not active
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.	Active, triggered 1/17/23
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
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

ITP 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 1st through June 30th or until off-ramped by 8.8	N/A	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 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 3rd through 16th EOD)
8.3.3 (Adult Longfin Smelt Entrainment Protection)	After December 1, if an Integrated Early Winter Pulse Protection (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 1st through Feb 28th, 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 28th	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)	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 28th	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.	Triggered but not controlling

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
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 1st through June 30th 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 September through November FWMT 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 ≥12°C and Secchi from the most recent SLS/20 mm survey is ≤1m 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 30th	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 1st through June 30th 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 below normal as of 01/01/23

Current Operations & Outlook

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

- USBR reported on weather conditions noting a shift from consistent storms to drier conditions with below normal likelihood of precipitation and lower ambient temperatures.
- Releases from Whiskeytown Dam on Clear Creek are currently 200 cfs with continued spillway releases contributing to increased flows of up to 2,000 cfs.
- Releases from Keswick Dam on the Sacramento River are 4,050 cfs. Flows may decline in response to changes in weather patterns.
- Releases from Nimbus Dam on the American River are 10,000 cfs. Flows may decline in response to changes in weather patterns.
- Releases from Goodwin Dam on the Stanislaus River are 1,950 cfs.
- Delta Cross Channel (DCC) gates remain closed. No changes expected for the next seven-day period.
- Spring tides are approaching with a new moon on January 21st resulting in a king tide.
- The federal facility is exporting 3,500 cfs with the potential to modify flows in reaction side flow activity in the southern Delta.
- DWR reported that state facility exports were approximately 4,500 cfs, but San Joaquin River flows have elevated exports to 8,300 cfs as of January 17th with 9,500 cfs possible by the 18th.
- Feather River releases are holding at 950 cfs.
- As of January 16th, Sacramento River flows at Freeport were approximately 80,000 cfs.
- San Joaquin River flows at Vernalis were 18,400 cfs yesterday and may peak to around 24,000 cfs in next few days. These high San Joaquin flows are allowing for higher exports. OMRI is targeting -2,000 cfs this week and exports will be at maximum physical capacity if high flows continue.
- Approximately 69,000 cfs is flowing into the Yolo Bypass.
- Delta outflows were 172,000 cfs as of January 16th.
- As of January 16th, QWEST was +36,000 cfs, and will remain positive for the next week around +20,000 cfs.
- Rio Vista flows were 136,000 cfs as of January 16th.
- X2 is downstream of Martinez (< 56 km).

- The daily OMR index value as of January 16th are -1,970 cfs and may trend towards +500 cfs with peak San Joaquin River flows.
    - January 14th OMR at USGS gauge:
        - Daily: -2,600 cfs
        - Five-Day: -1,400 cfs
        - 14-Day: -2,400 cfs
    - January 14th OMR Index:
        - Daily: -2,200 cfs
        - Five-Day: -2,100 cfs
        - 14-Day: -2,400 cfs
    - January 16th OMR Index:
        - Daily: -1,000 cfs
        - Five-Day: -1,800 cfs
        - 14-Day: -2,000 cfs

No updates were made to the survey table.

Review of Environmental Conditions and Survey Updates

CDFW delivered catch updates on relevant surveys to the SMT.

- SLS 1 was on the water from January 3rd to the 6th. Processing is ongoing and eight new detections have been made since the last SMT meeting.
    - LFS
        - Suisun Bay: Four
        - Lower Sacramento River: Two (Stations 703 and 704)
- SLSL 2 is on the water from January 17th to the 19th. No data is available yet.
- Spring Kodiak Trawl (SKT) was on the water from January 9th to the 13th. All stations were sampled. No DS were detected.
    - LFS
        - Suisun Bay: 11 (73 to 109 mm)
        - All osmerids will be taken to lab for QC and verification due to the high number (>80) of Wakasagi present in the Sacramento Deep Water Shipping Channel.

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

- EDSM was on the water from January 10th to the 13th completing 32 of 36 scheduled tows with weather complicating operations. At least three sites were sampled in all strata.
    - DS
        - None
    - LFS
        - Suisun Bay and Marsh: 20 (60 to 92 mm)
- EDSM is scheduled to sample January 17th to the 20th pending any weather complications. Starting this week, crews will also sample the Western Delta stratum due to the current X2 position.
    - One preliminary detection of an unmarked adult DS in the South Delta was made on January 17th during the meeting.
        - CDFW noted that the VIE tags may be hard to detect, possibly due to pigment breaking down, so thorough QC is advised.

        - The fish is being transferred to FCCL for potential broodstock. If possible, genetics will be run as well.
- Chipps Island Trawl was on the water last week completing 20 of 30 scheduled tows. Boat issues precluded completion of some sites.
    - LFS
        - Eight (75 to 112 mm)
- Chipps Island Trawl will sample January 18th to the 20th.
- The DS abundance estimate for the week of January 9th was zero due to no detections.
    - The last non-zero abundance estimate is from the week of November 7th at 1,240.

CDFW provided a salvage update (January 9th to the 15th).

- The federal facility reported two LFS detections:
    - January 14th at 1200 hours (70 mm)
    - January 15th at 1200 hours (81 mm)
        - Since both were detected during routine hours the salvage associated with the detections is equal to eight making the annual total salvage 12.
- The state facility reported one LFS detection on January 17th (101 mm).

Experimental Release Update

- Week of January 16th
    - A hard release of 13,750 fish is planned for January 18th and 19th at Rio Vista.
    - A fish transport trailer pilot release of 3,112 fish is planned for the week of January 16th.
- Week of January 23rd
    - A hard and soft release of 14,000 fish is planned for the week of January 23rd at the Sacramento Deep Water Shipping Channel.

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

The SMT focused discussions on the current conditions in the Delta and correlated risk to DS.

- CDFW proposed elevating risk to high given the preliminary detection of an unmarked DS by EDSM in conjunction with a broad population distribution due to high turbidity throughout the Delta and pumping levels.
- DWR noted that elevated flows in the San Joaquin River will prohibit the SMT from advising any actions that could significantly impact turbidity in the Delta. Turbidity in the OMR corridor and recent detections merit caution, but hydrologic conditions overall are favorable for DS and do not justify elevating risk.
- USFWS agreed with CDFW that a detection within the zone of entrainment at an OMR index of -2,000 cfs could merit elevating risk to high and stated the importance of reinstating a barrier to dispersal in the South Delta.
- DWR suggested that the preliminary DS detection by EDSM does not fall in the zone of entrainment when the OMR index is at -2,000 cfs and reminded the SMT that entrainment is governed by OMR flows and not exports.
- CDFW directed the SMT to Grimaldo, 2021 et al. which makes the argument that salvage is more correlated with exports than OMR flows, and reminded the group that there are far more DS in the system than what is detected by salvage and surveys. Operating to an OMR index of -5,000 cfs is appropriate only when the SMT concludes that there is low risk to DS.
    - USFWS agreed.
- DWR agreed that there is a strong case to be made for high risk for DS in the OMR corridor.

    - USBR agreed.
- The SMT agreed that DS in the South Delta are currently at high risk of entrainment.

The SMT discussed options for recommendations if turbidity at OBI is still elevated after the initial five-day turbidity bridge avoidance action.

- DWR reiterated that that there is no evidence that SMT recommendations can influence turbidity given the current conditions. DWR suggested the SMT recommend operating to an OMR index of -3,500 cfs if turbidity at OBI remains elevated after the initial five days of the Turbidity Bridge Avoidance action.
- CDFW responded that while a -3,500 cfs OMR index may have been sufficiently protective under last week's conditions (i.e., when fish were at moderate risk), the preliminary detection of a DS in the South Delta indicates an OMR index of -3,500 cfs may not be sufficiently protective. CDFW suggested that given the uncertainty in assessing the increase in entrainment risk associated with -3,500 cfs, maintaining an OMR index of -2,000 cfs would be preferred.
- USFWS proposed the SMT should focus on recommendations that would reduce turbidity in the Central and South Delta. USFWS also acknowledged that actions which could optimize turbidity could at the same time increase the risk of entrainment.
- DWR recalled previous discussions related to turbidity events and subsequent salvage in 2015 and 2016 and noted some DS remained in areas of high risk even after a turbidity bridge dissipated. While there is concern that spawning will take place in the South Delta, the evidence is lacking to make an actionable decision at this time.
- The SMT agreed to continue the conversation during an off-cycle meeting on Thursday, January 19th when additional information may be available to better inform decision making around a potential recommendation.

The SMT discussed risk for subadult and adult LFS.

- CDFW proposed that with increased detections in salvage the risk to LFS should be increased to moderate.
- DWR noted that there are no longer any active protections for adult LFS, and it would be difficult to make a case to modify risk to protect adults at this point in the season. Furthermore, current OMR index and QWEST values are favorable for adult fish.
- CDFW pointed out that the mechanism for migration into the zone of entrainment may be behavioral, in which case it is likely that more LFS could travel into the zone of entrainment in response to flows and elevated turbidity. CDFW acknowledged that DWR is correct, there is no COA active at this time for the SMT to make a recommendation for the protection of adult and sub-adult LFS. However, risk still needs to be assessed and recommended the SMT elevate risk to moderate due to the increase in salvage in the last week.
- The SMT agreed to increase risk to moderate for subadult and adult LFS in the OMR corridor and low risk for LFS elsewhere in the system.

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 the following:

- Evaluation questions 2 and 6 were updated to note the continued presence of a turbidity bridge in the OMR corridor which triggered a Turbidity Bridge Avoidance action on January 17th.
- Executive summary was updated to note high risk for DS in the South Delta and moderate elsewhere as a Turbidity Bridge Avoidance action was initiated to mitigate abiotic conditions which may further increase risk.

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, and data as well as:

Advice to WOMT

- No advice to WOMT.

Sections 1-A and 1-B

- 1-B (Central Delta)
    - DS subadult and adult exposure risk was increased to high for fish in the South Delta given the recent salvage on January 7th and preliminary detection by EDSM on the 17th. The continued presence of a turbidity bridge increases the possibility that DS could migrate into the Central and South Delta. Risk is moderate for DS in the Central Delta.
    - LFS subadult and adult exposure risk was increased to moderate for fish in the OMR corridor given recent salvage and detection in the lower San Joaquin River. The continued presence of a turbidity bridge increases the possibility that LFS could migrate into the Central and South Delta.

Change in exposure from last week

- Risk for DS in the South Delta increased to high based on recent salvage and detection which in the presence of increased turbidity across the system increase the likelihood of entrainment. Risk in the Central Delta remains moderate.
- Risk for adult and subadult LFS in the OMR corridor increased to moderate based on recent salvage.

Executive Summary

- The LFS and DS executive summaries note the triggering of a Turbidity Bridge Avoidance action as well as recent detections, salvage, and distribution.

Part 4: Additional Considerations/Discussion

Agencies reported no items for elevation to WOMT.