Smelt Monitoring Team – Tuesday, December 28th, 2021

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

- None

MEETING SUMMARY

PART 1: Updates on Water Operations and Biological Updates

Relevant Actions & Triggers

USBR reported on Old and Middle River (OMR) management measures. At this point the Integrated Early Winter Pulse Protection action is active as an operational protection. The purpose is to minimize project influence on migration or dispersal of Delta Smelt (DS). CDFW reported on the Incidental Take Permit (ITP) Conditions of Approval that are in effect. Flow and turbidity measured on December 17th, 2021 triggered Condition of Approval (COA) 8.3.1 requiring south Delta exports be reduced for 14 consecutive days to maintain a 14-day average OMR index no more negative than -2,000 cfs. Exports were adjusted to comply on December 20th, 2021. Starting January 3rd, 2022 the Smelt Monitoring Team (SMT) will consider COA 8.5.1 Turbidity Bridge Avoidance, 8.4.2 Larval and Juvenile Longfin Smelt (LFS) Entrainment Protection, and 8.5.2 Larval and Juvenile DS Entrainment 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 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[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.	Triggered 12/18/21
OMR Management	Manage to a more positive OMR than -5,000 cfs	From the onset of OMR management to the end		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 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.	Not active
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

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

OMR Management Measures	Requirement	Time Frame	Trigger	Triggered?
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

ITP Conditions of Approval

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
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 1st through June 30th 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

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 1st through Feb 28th, exceeds most recent FMWT Index divided by 10, or SMT determines that there is a high risk of entrainment.	Dec 1 through Feb 28th	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 28th	SMT recommendation based on weekly risk assessment	Off-ramped by larval detections in SLS 12

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
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 Smelt Larval Survey (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	Not active
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.	Not active
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	Not active

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 1st through June 30th 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 30th	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 1st through June 30th 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	Not active

Current Operations & Outlook

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

- USBR Central Valley Office reported that 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 increased to 1,750 cfs today and will increase to 5,000 cfs by Thursday due to flood space encroachment at Folsom and sustained inflows.
- Releases from Goodwin Dam on the Stanislaus River increased to 800 cfs today in response to inflows at Tulloch reservoir.
- As of December 24th, Delta CVP exports increased to two units with planned increases to 3 units on December 29th depending on Vernalis projections. Operations will continue to target an OMR Index of -2,000 cfs through January 2nd.
- DWR reported that Feather River releases are currently at 950 cfs.
- Freeport flows were just under 35,000 cfs on Monday, and expected to decrease through the week.
- San Joaquin River flows at Vernalis were 1,600 cfs.
- Clifton Court Forebay exports are 800 cfs with a downward trend to 300 cfs anticipated for the week to fulfill the -2,000 OMR pumping action.
- Delta outflows as of December 27th were slightly below 43,000 cfs and will decrease to approximately 20,000 cfs by early next week depending on forecasted precipitation.
- X2 is just upstream of Port Chicago at 68 km, and may shift further west or remain stable in the next seven days.
- QWEST as of December 27th was 11,000 cfs with a 7-day average near 6,400 cfs. Flows will remain mostly positive through the week and could shift negative depending on conditions next week.
- Rio Vista flows are near 30,000 cfs and will decrease to 20,000 cfs as Sacramento River flows decline.
- The OMR Index has remained near -2,000 cfs since the 20th and is tracking appropriately in accordance with the pumping action.
- DWR provided updates on forecasted precipitation at the request of CDFW, noting the next storm event that could bring meaningful precipitation is anticipated to occur from January 3rd to 5th. There is also a chance of a quarter of an inch of rain accumulating in the Delta between December 28th and then.
- There were no updates to the survey status table.

Review of Environmental Conditions and Survey Updates

CDFW delivered updates on relevant surveys to the SMT.

- SLS 13 is currently in the field, but findings have not yet been reported.
- SLS 12 has no new data to report regarding samples collected. Processing is still ongoing.
- The launch for the Larval Entrainment Pilot Study (LEPS) is now January 3rd in response to early LFS detections at stations 809 and 812 in the lower San Joaquin River.
- Fall Midwater Trawl (FMWT) Indices are available:
    - DS: 0
        - This is the fourth consecutive year with a FWMT index of zero for DS.
    - LFS: 323
        - Note that most of the catch contributing to the index occurred in November and December downstream of the confluence.
- A newly revised midseason memo was released redacting the misidentified LFS found in the Sacramento Deep Water Shipping Channel (SDWSC) and identifying the species as Wakasagi.
    - FMWT memos are available online: https://www.dfg.ca.gov/delta/data/fmwt/bibliography.asp.
- No new information on the Bay Study.

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

- EDSM catch totals for the week of December 13th:
    - Four adipose-clipped cultured DS
        - Two in the Sacramento River.
        - One in the SDWSC.
        - One in the lower San Joaquin River (Confluence of the Mokelumne and San Joaquin Rivers).
        - Three of the four DS were less than 58 mm (two were 53 mm and one was 54 mm).
    - 12 LFS
        - Five in Suisun Bay.
        - Two in Suisun Marsh.
        - Five in lower Sacramento River.
- Two more DS have been detected on December 28th near the experimental release site (50 mm and 74 mm).
- Chipps Island Trawl detections for the week of December 13th:
    - 94 LFS caught in total.
        - 42 were transferred to FCCL.
            - Note that more LFS were large enough to qualify for transfer to FCCL, but ultimately were not due to logistical challenges.
    - Sampling will move forward Sunday to Thursday this week. Wednesday will not be skipped given the holiday on Friday.
- USBR requested clarification on reporting procedures for detections that occur on the day of the SMT meeting. CDFW noted that the ITP protocol is reporting fish detected on the day of SMT meetings with a note clarifying that while the new detections do not appear on the catch table this week they will be recorded next week.

CDFW provided a salvage update (December 20th to 27th).

- No salvages at either facility.

USBR shared environmental data updates as of December 27th.

- Three-station daily average water temperature: 9.33° C.
- Three-day running average discharge at Freeport: 32,727 cfs.
- Three-day running average turbidity at Freeport: 57.0 FNU.
- Daily average turbidity at OBI: 2.99 FNU.
- Current turbidity at OBI: 2.50 FNU.
- X2 is 68 km.
- Weather forecast out of Antioch is rain tonight with southeast to east southeast winds around 7 mph. Clear and sunny for rest of the week with rain possible at beginning of next week.
- Weather forecast out of Stockton is rain tonight with southeast winds from 13 to 15 mph. Mostly clear and sunny for rest of week with rain possible at beginning of next week.

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

USBR noted that last year larval sampling at the two fish facilities initiated in February, and this may be a topic worthy of discussion for the SMT. The SMT agreed that at this point discussions on larval sampling can be delayed until a meeting date closer to the program going into effect. Last year, facility staff needed 15 days' notice to initiate sampling.

DWR provided updates on future DS experimental releases.

- The next release of 12,800 fish will occur on the week of January 10th with a hard release on the 12th and soft release on the 13th.
- The third release will be on the week of the 24th.
- A fourth release has not been confirmed at this point.

CDFW pointed out two main points pertaining to LFS:

1. Chipps Island Trawl detected a quite a few fish over 100 mm. The size and behavior of the fish is in line with the conceptual model described in the effects analysis. Migration and spawning can be anticipated soon.
2. Key hydrological conditions this week are exports, which remain controlled by the first flush action, and positive QWEST values.

PART 3: Live-edit Assessments

ITP Longfin Smelt Risk Assessment

The SMT reviewed and discussed updates to the ITP Risk Assessment.

- CDFW updated the life stages for DS adding adult due to the size distribution of recent detections.
- Section 1-A
    - DWR recommended addressing all life stages currently present for each type of risk (i.e., exposure risk, routing risk, and overall entrainment risk).
        - USBR suggesting using citations (e.g., the effects analysis) to provide context.
    - USBR proposed differentiating between the *likelihood* of movement of fish and the *risk* of entrainment.
        - CDFW agreed to use "risk" only when discussing entrainment and to use "likelihood", "potential", etc. when talking about movement.
    - Exposure risk remains low for LFS with new language added to noting that QWEST is positive and additional information on adult and sub-adult entrainment likelihood can be found in the "Routing Risk" section of the Risk Assessment.
    - Routing risk modified to low for LFS with new language added highlighting that larvae do not exhibit swimming behavior that would result in volitional movement into areas with a higher risk of entrainment.
    - Overall entrainment risk modified to clarify that adult, sub-adult, and larvae entrainment risk is low due to exports remaining low, a lack of detections in the lower San Joaquin River and south Delta, and that adult salvage has been rare following the pelagic organism decline.
- Section 1-B
    - Exposure risk for LFS remains low for larvae in the lower San Joaquin River due to favorable hydrology.
    - The change in exposure from previous week for DS reflects language in the PA assessment and LFS remain the same as last week.
- Summary
    - The summary was updated to reflect the discussion above, the new X2 location, and low risk of entrainment for adult and sub-adults.

    - Additional language was added to clarify that although dry hydrology has been observed this season, LFS protections would be relaxed under wet conditions described in COA 8.4.3. However, these thresholds described within COA 8.4.3 have not been met.
- CDFW updated the SMT on the COA 8.5.2 DS salvage threshold, which is 1 based on the FMWT index.

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.

- Language describing DS detections was updated through the entire document to include preliminary data on DS detections from the current week.
- The Biological Conditions section was updated to include adult DS detected in the lower San Joaquin River and remove language linking X2 position to DS distribution. Sommer et al. 2011 was retained as a reference for the movement of DS in response to first flush conditions.
- Only OBI turbidity will be included in abiotic conditions going forward; the SMT no longer needs to track conditions at Freeport since first flush conditions were met.
- Evaluation question 2 was updated to clarify the impact of low export values noting that the zone of influence of the export facilities has been reduced making DS less likely to be entrained.
- Evaluation questions 3 and 5 were updated to reflect the latest dates and data.
- USFWS noted that captured DS are measured by EDSM crews, but expression is not evaluated in the field. UC Davis will assess maturation in the lab after they receive fish from the survey crews. There is no current timeline on when data from the UC Davis assessments will be shared with SMT.
- Detailed information on DS detections captured later in the assessment document was removed from the executive summary to avoid redundancy.

Part 4: Additional Considerations/Discussion

The SMT concluded that next week is a better time to consider particle tracking model (PTM) runs given updated population information from SLS 13 will be available for decision making and operations will change January 3rd once the first flush actions expire.

Agencies reported no items for elevation to WOMT.