State Water Project Incidental Take Permit Risk Assessment for Delta Smelt and Longfin Smelt

Section 1: Overview

Date: December 8, 2020

Life Stages Present:

Delta Smelt: Adult

Longfin Smelt: Adult

Advice to WOMT:

No advice is warranted for south Delta or Barker Slough operations.

Risk Assessment:

Risk of entrainment into the central and south Delta or into the export facilities in the south Delta is low across the range of expected OMR Index levels.

Delta Smelt: Based on distribution patterns over the past decade and limited recent detection data, Delta Smelt are unlikely to be prevalent in the south Delta. Limited detection data support Delta Smelt being present in Suisun Marsh and west of the Sacramento-San Joaquin confluence. High X2 position could mean that distribution of Delta Smelt extends further upstream of the confluence. However, there is a low risk of entrainment into the south Delta based on the lack of detections in the south Delta monitoring coupled with the projected less negative OMR Index values and low turbidity in regional Delta waterways. Within the next seven days no precipitation is anticipated and changes in Freeport flow and turbidity are not expected to reach "First Flush" conditions.

Longfin Smelt: Evaluation of recent catch data does not indicate that Longfin Smelt have entered the central or south Delta, however it is likely that they have begun migrating upstream. At this time of year, the SMT looks to the Chipps Island survey to predict Longfin Smelt migration upstream into the Delta. Chipps Island Survey collected one adult LFS (FL = 108 mm) on 11/25/2020. Other surveys (FMWT, Bay Study, and EDSM) collected LFS of smaller fork lengths in Suisun Bay, Suisun Marsh and farther downstream. The ITP Effects Analysis identifies early to mid-December as the time when Longfin Smelt are expected to migrate upstream into the Delta. See section 4-B below for catch details.

Section 1-A: Sacramento River and Confluence

Risk of entrainment into central Delta and export facilities for Delta Smelt and Longfin Smelt in Sacramento River (8.1.5.2 C ii, iii, iv)

- Exposure Risk:
  - Delta Smelt: Low
  - Longfin Smelt: Low
- Routing Risk:
  - Delta Smelt: Low
  - Longfin Smelt: Low
- Overall Entrainment Risk
  - Delta Smelt: Low
  - Longfin Smelt: Low

Section 1-B: Central Delta

Risk of entrainment into the export facilities for Delta Smelt and Longfin Smelt in the central Delta

- Exposure Risk:
  - Delta Smelt: Low
  - Longfin Smelt: Low
- Change in exposure from previous week:
  - Delta Smelt: No change
  - Longfin Smelt: No change
- Reporting Old and Middle River Index (OMRI) *(Number and range of OMRI bins will vary based on anticipated hydrology and operations)*
  - OMRI is approximately -1,800 cfs and projected to remain between -1,000 cfs and -3,500 cfs. An increase in exports is unlikely without precipitation.
  - OMRI *(*Export Scenario OMRI = -1,800 cfs)
    - Delta Smelt: Low Risk
    - Longfin Smelt: Low Risk

Section 2: Basis for Advice

The 2020 Incidental Take Permit for Long-Term Operation of the State Water Project in the Sacramento-San Joaquin Delta 2081-2019-066-00 (ITP) states that advice to Water Operations Management Team (WOMT) shall be based the following Conditions of Approval:

List relevant Condition of Approval number and title based on species/life stage, time of year, etc.

8.1.5.2 Smelt Monitoring Team Risk Assessment

8.3.1 Integrated Early Winter Pulse Protection.

Between December 1 and January 31 each year Permittee shall 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 the following criteria:

- 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 Nephelometric Turbidity Units (NTU), 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.

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, until the OMR Management Season ends (Condition of Approval 8.8).

The Integrated Early Winter Pulse Protection Action may only be initiated once during the December 1 through January 31 time period each year.

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 been 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 (Condition of Approval 8.3) if:

- Cumulative combined LFS expanded salvage (total estimated LFS counts at the CVP and SWP salvage facilities beginning December 1 through February 28 exceeds the most recent Fall Midwater Trawl (FMWT) LFS index[1] divided by 10, OR
- Real-time monitoring of abiotic and biotic factors indicates a high risk of LFS movement into areas at high risk of future entrainment, as determined by DWR and CDFW Smelt Monitoring Team staff.

When evaluating the possibility of LFS movement into areas that may be subject to an elevated risk of entrainment, the Smelt Monitoring Team shall evaluate catch of LFS with fork length ≥ 60 mm by the Chipps Island Trawl (conducted by USFWS) as an early warning indicator for LFS migration movement into the Delta, in addition to other available survey and abiotic data. The Smelt Monitoring Team shall communicate the results of these risk assessments and advice to the WOMT (Condition of Approval 8.1.3), and operational decisions shall be made as described in Condition of Approval 8.1.4 (Collaborative Approach to Real-Time Risk Assessment).

[1] The Fall Midwater Trawl (FMWT) Survey annual abundance index for LFS is calculated as the sum of September through December monthly abundance indices and is typically reported at about the same date as adult salvage begins in December. The FMWT Index available beginning on December 1 each year shall be used to establish this threshold.

Discussion of Conditions of approval
Provide sentence or two addressing criteria for each Condition of Approval listed in "Basis for Advice" section. Refer to data below where appropriate.

SMT will conduct weekly risk assessments as described in Condition of Approval 8.1.5.2.

8.3.1 Environmental conditions have not exceeded the thresholds identified in this condition. The SMT examined abiotic conditions and determined that risk is low for Delta Smelt.

8.3.3 No LFS have been salvaged this water year. The cumulative expanded salvage threshold is 2 based on the most recently available FMWT Index. The November Index, which was reported to the SMT via email on 11/25/2020, will be used until the annual index is finalized in late December or early January. The SMT examined abiotic conditions and determined that risk is low for Longfin Smelt. See section 4-B for the discussion of the FMWT Index.

Section 3: Hydrology and Operations

Assessment of hydrologic, operational, and meteorological information. 8.1.5.2 A.

Section 3-A: Water operations conditions. 8.1.5.2.A. i

- Antecedent Actions: *(e.g. DCC gate closure and actions such as integrated early winter pulse protection, etc.)*
    - DCC gates will remain closed for the remainder of the season (through May 20, 2021 per the PA description for DCC gate operations) but may be opened to maintain water quality as per D-1641 and the PA in December and January.
    - Grantline Canal agricultural barrier was breached on 11/11/2020. The OMRI equation was adjusted accordingly to accommodate the change in barrier status.
- Controlling Factors: Delta outflow and water quality
- Water Temperature:
    - CCF = 10.8°C (*Condition of Approval 8.8: Daily average temperature at CCF exceeds 25°C for 3 consecutive days*)
    - 3 Station Average = 10.57°C
- Tidal Cycle: Entering a neap tidal cycle which may reduce salinity within the western Delta.
- Turbidity:
    - 8.3.1 Freeport 3-day average = 2.65 FNU
    - *8.5.1 Turbidity at OBI Feb 1 to April 1*
- Salinity: *X2* is upstream of Collinsville and is likely higher than 90 km on the Sacramento River.
- Hydrologic Footprint:
    - No PTM models were run this week. CDFW will request PTM runs if any LFS are collected in the San Joaquin River or central/south Delta.

Section 3-B: Water operations outlook. 8.1.5.2.A. ii

- Outages
  - SWP: No export or salvage outages reported for the period of 11/30/20 to 12/06/20.
  - CVP: No export or salvage outages reported for the period of 11/30/20 to 12/06/20.
- Exports
  - CCF: 800 cfs
  - CVP: 800 cfs.
  - Barker Slough: Not reported. Will begin reporting when Barker Slough Condition of Approval go into effect January 15th.
- Meteorological Forecast: Clear or partially cloudy for the remainder of the week.
- Storm Event Projection: No substantial precipitation is expected for the next week.

Section 3-C: Projected conditions. 8.1.5.2.A. iii

- DCC Gates position: Closed for season (through May 20, 2021)
- Sacramento River flow at Freeport: Approximately 8,000cfs. Flow is expected to decrease slightly but is projected to remain above 7,500 cfs
- San Joaquin River flow at Vernalis: 800 cfs
- Qwest: - 180 cfs. Projected to remain stable.
- Old River at Bacon Island Turbidity: Not reported
- Freeport Turbidity (3-day average): 2.65 FNU. Turbidity is not expected to increase
- Expected changes in South Delta Exports: Exports are not expected to increase until some precipitation occurs which causes Delta inflows to increase. NDOI: 5,000 cfs. Expected to remain near this level to meet Delta outflow criteria.

Table 1: Comparison of OMR and OMR Index (5-day and 14-day averages reported on *SacPAS website*, accessed Dec 8, 2020)

Date	Averaging Period	USGS gauges (cfs)	Index
12/07/2020	Daily	Not Reported	-1,600 cfs
12/06/2020	5-day	Not Reported	-2,510 cfs
12/06/2020	14-day	Not Reported	-3,180 cfs
NA	Daily	Not Reported	Not Reported
12/05/2020	5-day	-2,640 cfs	-2,720 cfs
12/05/2020	14-day	-3,280 cfs	--3,300 cfs

Section 4: Distribution and Biology.

8.1.5.2.B. Assessment of biological information for Delta Smelt and Longfin Smelt

Section 4-A: Delta Smelt population status 8.1.5.2.B. i

- EDSM did not collect any Delta Smelt last week (11/30/2020 – 12/4/2020).
- Delta Smelt LCM discussion. Not Discussed.
- Biological Conditions: None reported.
- % in Delta zones: SMT did not discuss distribution in terms of percentage in Delta zones.
- Other Surveys: No Delta Smelt detections were reported in recent sampling including Bay Study and FMWT. FCCL brood stock collection has not detected any Delta Smelt in the lower Sacramento River after 5 days of sampling.
- Salvage: No Delta Smelt have been detected at either salvage facility this season.

Section 4-B: Longfin Smelt population status 8.1.5.2.B. ii.

- FMWT Index: The November FMWT Index is 21.7. Indices for September and October were zero. November FMWT catch reported 7 Longfin Smelt, 3 were collected in Suisun Bay and 4 were collected in San Pablo Bay. December FMWT began 11/30/2020 and the annual index is typically distributed in late December or early January.
- Bay Study: During November sampling, 42 Longfin Smelt were collected. One was collected in Carquinez Strait. The rest were collected in San Pablo and San Francisco Bays. December Bay Study began 12/01/2020.
- Other Surveys: EDSM reported 1 Longfin Smelt (66mm) collected in in Montezuma Slough on 11/30/2020. Chipps Island reported 1 Longfin Smelt (108mm) on 11/25/2020.
- December SLS is scheduled to begin on 12/14/2020, approximately 2.5 weeks after the detection at Chipps Island. There will be a second December SLS survey beginning on 12/28/2020. Both December SLS surveys will only be conducted in the south and central Delta. January SLS is scheduled to begin 2 weeks after the second December SLS survey.
- Salvage: No Longfin Smelt have been detected at either salvage facility.

Section 4-C: Additional data sources to assess sensitivity to entrainment Delta. 8.1.5.2.C & D. i

- SMT estimated X2 using a tool developed by DWR staff that applies the same methodology used to calculate X2 reported on CDEC. There is interest in validating the results of this tool.

Notes: This is the first meeting conducted using the newly updated OMR Guidance Document and Agenda. Construction at the DCC began yesterday (12/7/2020) and any relevant updates will be communicated to the SMT. State wide “safer at home” orders implemented to slow the spread of COVID-19 are not expected to disrupt field sampling conducted by EDSM, FMWT and SLS, however, sample processing may be slowed when 20-mm Survey begins. CDFW will prioritize samples collected at stations in the south and central Delta. FCCL brood stock collection efforts have not resulted in any Delta Smelt catch. Other Interagency Ecological Program groups, including EDSM and CDFW Fish Restoration Program, may assist in brood stock collection. FCCL did not reach its goal of 100 Delta Smelt last year despite increased effort.

The group continued discussion of historical correlations between X2 and fish distribution as described in Jassby 1995, Sommer et al 2011, Dege & Brown 2004 and the ITP Effects Analysis, as well as how to interpret the X2 estimate calculated using the X2 estimation tool developed by DWR. There is interest in validating the tool, however, CDFW suggested that until then, it should be considered an estimate used to gauge the magnitude of distance between Collinsville and X2 when it is upstream of the confluence.

Attachments:

Insert catch reports, PTM results, Salvage tables, etc.