

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

Section 1: Overview

Date: December 1, 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, the projected less negative OMR Index limits and low turbidity create a low risk of entrainment based on the lack of detections in the south Delta. No precipitation is anticipated and changes in Freeport flow and turbidity are not expected to reach “First Flush” conditions within the next seven days.

Longfin Smelt: Evaluation of recent catch 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 Chipps Island survey to predict Longfin Smelt migration. 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 currently -3,600 cfs and projected to remain between -1,500 cfs and -4,000 cfs. An increase in exports is unlikely without precipitation.
 - OMRI (Export Scenario OMRI = -3,500 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 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 index¹ 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 were open during the holiday weekend and closed December 1st. They are scheduled to remain closed for the remainder of the season (through May 21, 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 = 11.4°C (*Condition of Approval 8.8: Daily average temperature at CCF exceeds 25°C for 3 consecutive days*)
 - 3 Station Average = 11.02°C
- Tidal Cycle: Not expected to affect operations
- Turbidity:
 - 8.3.1 Freeport 3-day average = 2.86 FNU
 - 8.5.1 Turbidity at OBI Feb 1 to April 1
 - A localized spike in turbidity was reported at Clifton Court Forebay. Turbidity reached 11.2 NTU. Turbidity at other central and south Delta stations remained low and has been in the single digits recently. There is no evidence of a turbidity bridge forming.
- Salinity: X2 is upstream of Collinsville. Approximately 90 km on Sacramento River based on DWR interpolation tool.
- 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
 - CVP: No export or salvage outages reported
- Exports
 - CCF: 2,500 cfs, decreasing to 1,100 cfs by next week
 - CVP: 1,000 cfs. Expected to remain between 800 and 1,800 cfs
 - Barker Slough: Not reported. Will begin reporting when Barker Slough Condition of Approval go into effect January 15th.
- Meteorological Forecast: Sunny with potential wind gusts less than 6 mph.
- Storm Event Projection: No substantial precipitation is expected.

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

- DCC Gates position: Closed for season (through May 21, 2021)
- Sacramento River flow at Freeport: 8,651 cfs. Flow is expected to decrease with reduced upstream releases.
- San Joaquin River flow at Vernalis: 900 cfs
- Qwest: Currently 563 cfs. Projected to become negative and remain between -800 cfs and -1200 cfs following the DCC gates closing.
- Old River at Bacon Island Turbidity: Not reported
- Freeport Turbidity (3-day average): 2.86 FNU. Turbidity is not expected to increase
- Expected changes in South Delta Exports:
 - CCF: decreasing from 2,500 cfs to 1,100 cfs by next week.
 - Tracy: 1,000 cfs. Expected to remain between 800 cfs and 1,800 cfs
 - Exports are not expected to increase until some precipitation occurs.
- NDOI: Currently 4,300 cfs. Expected to remain near this level. May need to reduce exports to maintain minimum NDOI monthly average in the absence of precipitation.

Table 1: Comparison of OMR and OMR Index (data reported on [SacPAS website](#), accessed Dec 1, 2020)

Date	Averaging Period	USGS gauges (cfs)	Index
12/01/2020	Daily	Not Reported	-3600
NA	5-day	Not Reported	Not Reported
NA	14-day	Not Reported	Not Reported
NA	Daily	Not Reported	Not Reported
11/28/2020	5-day	-3,620 cfs	-3,590 cfs
11/28/2020	14-day	-3,460 cfs	-3,370 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 (11/23/2020 – 11/27/2020).
- 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.
- 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 3 Longfin Smelt (54 - 78mm) collected in Suisun Marsh last week and one (66 mm) 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. There will be second December SLS survey beginning 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: USBR circulated a list of data sources available to the SMT which will be updated as needed. Regular turbidity reports, developed by DWR, will be circulated to the group. CDFW requested that Chipps Island catch and QWEST be added to the list of regularly reported data. USBR and FWS will facilitate data reporting. Chipps Island Survey is expected to increase sampling frequency on 12/06/2020.

The group discussed the relationship between X2 and Delta Smelt distribution as described in [Sommer et al. 2011](#). This discussion indicated that the distribution of Delta Smelt may extend upstream of the confluence of the Sacramento and San Joaquin Rivers even though the only detection on 11/9/2020 was downstream in Suisun Marsh.

Attachments:

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