

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

## Section 1: Overview

**Date: February 23, 2021**

### **Life Stages Present:**

Delta Smelt: Adult, Juvenile [Enhanced Delta Smelt Monitoring (EDSM) has collected two Delta Smelt in the juvenile size bin]

Longfin Smelt: Adult, Larvae

### **Advice to WOMT:**

Condition of Approval 8.4.2 was triggered based on data collected by Smelt Larva Survey 4 (SLS 4). The SMT is recommending that operations target an OMR Index (OMRI) no more negative than -2,500 cfs for the protection of juvenile and larval Longfin Smelt under Condition of Approval 8.4.2. No advice was provided for the protection of Delta Smelt or for Barker Slough Pumping Plant Operations.

### **Risk Assessment:**

Risk of entrainment into the central and south Delta or into the export facilities in the south Delta is low for Delta Smelt (DS) across the range of expected OMRI levels and high for Longfin Smelt (LFS) at OMRI levels more negative than -2,500 cfs.

*Delta Smelt:* Based on distribution patterns over the past decade and recent detections, DS are unlikely to be prevalent in the South Delta. Limited detection data supports DS being present in Suisun Marsh, west of the Sacramento-San Joaquin confluence, and within the Sacramento Deep Water Ship Channel. The distribution of DS is expected to extend upstream of the confluence which is supported by historical Spring Kodiak Trawl (SKT) data analysis. High north winds on Wednesday (2/24/2021) may influence turbidity at the Old River at Bacon Island location (OBI), but it is unlikely to reach 12 Formazin Nephelometric Units (FNU) in the next 7 days. The likelihood of DS adult entrainment is slightly elevated relative to the previous seven days due to seasonal timing. The more negative limits of the OMRI increase the potential for entrainment of DS in the central Delta, which includes the lower San Joaquin River, into the south Delta.

*Longfin Smelt:* Smelt Larva Survey 4 (SLS 4) sampled all 12 stations listed in Condition of Approval 8.4.2 on 2/22/2021. Samples collected at five of those stations had been processed at the time of the call and larval Longfin Smelt (LFS) were detected at 4 of those stations. This meets one of the criteria to trigger Condition of Approval 8.4.2, Larval and Juvenile Longfin Smelt Entrainment Protection. The SMT determined that risk of entrainment into the export

facilities was high for larvae in the central Delta at an OMR Index more negative than -2,500 cfs and recommends that operations not exceed this level.

SLS 4 reported 18 LFS at station 809 [Total Length (TL) = 6-8 mm], 8 LFS at station 812 (TL = 7-8 mm), 1 LFS at 901 (TL = 16 mm), and 2 LFS at station 902 (TL = 7 mm). Of the 29 larvae collected, 15 had yolk sacs present and none were larger than 8 mm total length, indicating that they recently hatched and would behave similarly to passive particles. The SMT reviewed new PTM runs and determined that the -3,500 cfs OMR scenario is not representative of prior conditions and would underestimate entrainment due to the prior week's operations targeting an OMR Index of -5,000 cfs. Exports are projected to decrease over the next week; however, the OMR Index is not projected to be equal to or more positive than -2,500 cfs until the end of the week. Water temperatures within the Delta are currently within the range associated with LFS spawning and hatching, and the Chipps Island Trawls detected a ripe adult female LFS on 2/16/2021. This indicates that more LFS spawning may be occurring and that additional larvae may emerge in the lower San Joaquin River. The SMT determined that an OMR Index no more negative than -2,500 cfs would reduce the risk of entrainment into the export facilities for LFS larvae in the central Delta.

### **Section 1-A: Sacramento River and Confluence**

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

- Exposure Risk (Hydrology):
  - Delta Smelt: Low
  - Longfin Smelt: Low
- Routing Risk (Behavior and life history):
  - Delta Smelt: Low
  - Longfin Smelt: Moderate risk of LFS adults moving from the confluence into the Central Delta of their own volition. Chipps Island Trawl detected a ripe adult female LFS on 2/16/2021. Delta water temperature is within the range associated with LFS spawning.
- Overall Entrainment Risk
  - Delta Smelt: Low
  - Longfin Smelt: Low

## Section 1-B: Central Delta

Risk of entrainment into the export facilities for DS and LFS in the central Delta

- Exposure Risk:
  - Delta Smelt: Low
  - Longfin Smelt: High
- Change in exposure from previous week:
  - Delta Smelt: Slightly elevated due to seasonal timing and previously elevated turbidity in the central Delta.
  - Longfin Smelt: Risk has increased compared to last week due to increased larval density in the lower San Joaquin River (stations 809, 812), Franks Tract (station 901) and Old River (station 902).
- Reporting OMRI (*Number and range of OMRI bins will vary based on anticipated hydrology and operations*)
  - OMRI is projected to reach -2,500 cfs towards the end of the week.
  - Scenario OMRI > -2,500 cfs
    - Moderate risk of entrainment for OMRI less negative than -2,500 cfs. A more negative OMRI creates a high risk of entrainment into the facilities for LFS larvae in the central Delta.
    - Newly hatched LFS larvae are present in the central Delta as far upstream as Old River at Holland Cut (station 902). SLS 4 data for stations farther upstream were not available at the time of the call. The full extent of larval distribution in the central and southern Delta is unknown.
      - Recent salvage of juvenile Steelhead was attributed to the more negative OMRI over the prior week. Larval LFS are more susceptible to entrainment than juvenile Steelhead.
    - Approximately 50% of LFS larvae reported for SLS 4 (15 out of 29) had yolk sacs present. All LFS larvae were smaller than 8 mm TL. This indicates that they were recently hatched, making them highly susceptible to hydrologic influence.
    - Projected operations will result in an OMRI more negative than -2,500 cfs for the next several days.
    - There is potential for continued spawning and hatching in the region. Chipps Island Trawl collected a ripe adult female LFS and water temperature is within the range at which Longfin Smelt spawn.
  - Scenario OMRI = -3,500 cfs
    - Delta Smelt: Low
    - Longfin Smelt: High risk of entrainment
      - -3,500 cfs OMRI scenario modeled in PTM is not representative of prior conditions and may underestimate entrainment due to operations targeting an OMRI of -5,000 cfs for the past several days.

## 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 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**

### **8.3.3 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 OMRI 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 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 SMT shall evaluate catch of LFS with fork length  $\geq 60$  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 SMT 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).

### **8.4.2 Larval and Juvenile Longfin Smelt Entrainment Protection.**

From January 1 through June 30, when a single SLS or 20 mm Survey (20 mm) sampling period exceeds one of the following thresholds:

- LFS larvae or juveniles found in four or more of the 12 SLS or 20 mm stations in the central Delta and south Delta (Stations 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919), or
- LFS catch per tow exceeds five LFS larvae or juveniles in two or more of the 12 stations in the central Delta and south Delta (Stations 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919).

Permittee shall restrict south Delta exports for seven consecutive days to maintain a seven-day average OMRI no more negative than -5,000 cfs. Permittee shall also immediately convene the SMT to conduct a risk assessment (see Condition of Approval 8.5.1.2) to assess the risk of larval and juvenile LFS entrainment into the South Delta Export Facilities, determine if an OMRI flow restriction is warranted, and recommend an OMRI flow limit between -1,250 cfs and -5,000 cfs. The SMT risk assessment and operational advice shall be reviewed by the WOMT (Condition of Approval 8.1.3) via the Collaborative Real-time Decision-making process (Condition of Approval 8.1.4). Permittee shall operate to the export restriction and OMRI flow target approved through Conditions of Approval 8.1.3 and 8.1.4. Each week the SMT shall convene to conduct a new risk assessment and determine whether to maintain, or off ramp from, export restrictions based on the risk to LFS, or until the DS and LFS off-ramp has been met as described in Condition of Approval 8.8 (End of OMR Management).

From January 1 through June 30, DWR and CDFW SMT staff shall conduct weekly, or more often as needed, risk assessments (see Condition of Approval 8.5.1.2) to assess the risk of larval and juvenile LFS entrainment into the South Delta Export Facilities. As a part of the risk assessment, the SMT shall provide advice on the appropriate OMRI flow targets to minimize LFS entrainment or entrainment risk, or both. The SMT shall provide its advice to WOMT (Condition of Approval 8.1.3) and use the Collaborative Approach to Real-time Risk Assessment process described in Condition of Approval 8.1.4 to determine if an OMRI flow restriction is warranted and determine an OMRI flow limit between -1,250 cfs and -5,000 cfs. The OMRI flow limit shall be in place until the next risk assessment conducted by the SMT determines that it is no longer necessary to minimize take or related impacts to LFS, or until the DS and LFS off-ramp has been met as described in Condition of Approval 8.8 (End of OMR Management).

#### **8.5.1 Turbidity Bridge Avoidance.**

The purpose of this Condition is to minimize the risk of entrainment of adult DS in the corridors of the Old and Middle rivers into the south Delta export facilities. This Condition is intended to avoid the formation of a turbidity bridge from the San Joaquin River shipping channel to the south Delta export facilities, which historically has been associated with elevated salvage of pre-spawning adult DS.

After the Integrated Early Winter Pulse Protection (Condition of Approval 8.1.3) or February 1 (whichever comes first), until April 1, Permittee shall manage exports to maintain daily average turbidity at OBI to a level less than 12 NTU<sup>1</sup>. If the daily average turbidity at OBI is greater than 12 NTU, Permittee shall restrict south Delta exports to achieve an OMRI flow that is no more negative than -2,000 cfs until the daily average turbidity at OBI is less than 12 NTU.

If, after five consecutive days of OMRI flow that is less negative than -2,000 cfs, the daily average turbidity at OBI is not less than 12 NTU the SMT may convene to assess the risk of entrainment of DS (Condition of Approval 8.1.5.2). The SMT may provide advice to WOMT regarding changes in operations that could be conducted to minimize the risk of entrainment of

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<sup>1</sup> Current instrumentation uses Formazin Nephelometric Units (FNU).

DS (Condition of Approval 8.1.3). The SMT may also determine that OMRI restrictions to manage turbidity are infeasible and may instead provide advice for a different OMRI flow target that is between -2,000 cfs and -5,000 cfs and is protective based on turbidity and adult DS distribution and salvage to the WOMT for consideration (Condition of Approval 8.1.3). Operational decisions shall be made following the process described in Condition of Approval 8.1.4 (Collaborative Real Time Risk Assessment).

Turbidity readings at individual sensors can generate spurious results in real time. Spurious results could be incorrectly interpreted as a turbidity bridge, when in fact the cause is a result of local conditions or sensor error. To assess whether turbidity readings at OBI are attributable to a sensor error or a localized turbidity spike, Permittee, in coordination with Reclamation, may consider and review data from other nearby locations and sources. Additional information that will be reviewed include regional visualizations of turbidity, alternative sensors, and boat-based turbidity mapping, particularly if there was evidence of a local sensor error. Permittee may bring data from these additional sources to the Smelt Monitoring Team for consideration during the development of a risk assessment to be provided to the WOMT for evaluation (Condition of Approval 8.1.3).

Permittee shall use the decision-making process described Condition of Approval 8.1.4 (Collaborative Real-time Risk Assessment) to determine if south Delta exports may increase after five-days of OMRI no more negative than -2,000 cfs, or to determine that this action is not warranted due to a sensor error or localized turbidity event. Permittee shall implement this action until CDFW is in agreement that the action may be ended or modified.

### **8.5.2 Larval and Juvenile Delta Smelt Protection.**

If the five-day cumulative salvage of juvenile DS at the CVP and SWP facilities is greater than or equal to one plus the average prior three years' FMWT index (rounded down), Permittee shall restrict south Delta exports for seven consecutive days to maintain a seven-day average OMRI no more negative than -5,000 cfs. Additionally, if the five-day cumulative salvage threshold is met or exceeded, Permittee shall immediately convene the SMT to conduct a risk assessment (Condition of Approval 8.1.5.2) and determine the future risk of entrainment and take of larval and juvenile DS. The Smelt Monitoring Team may provide advice to further restrict south Delta exports to maintain a more positive OMRI than -5,000 cfs. The SMT may provide advice for further restrictions within three risk categories:

- Low risk: Limit OMRI between -4,000 cfs to -5,000 cfs
- Medium risk: Limit OMRI between -2,500 cfs to -4,000 cfs
- High risk: Limit OMRI between -1,250 cfs to -2,500 cfs

The duration and magnitude of operational advice shall be provided to the WOMT (Condition of Approval 8.1.3) and decisions shall be made following the process described in Condition of Approval 8.1.4 (Collaborative Real Time Risk Assessment). When conducting risk assessments to evaluate the risk of entrainment and take of juvenile DS, the SMT shall evaluate the following

information sources, in addition to any other models or surveys they deem appropriate and those listed in Condition of Approval 8.1.5.2:

- Results from a CDFW approved DS life cycle model.
- DS recruitment levels identified by the Smelt Monitoring Team using the CDFW-approved life cycle model that links environmental conditions to recruitment, including factors related to loss as a result of entrainment such as OMRI flows. In this context, recruitment is defined as the estimated number of post-larval DS in June per number of spawning adults in the prior February-March period.
- Hydrodynamic models and forecasts of entrainment informed by the EDSM or other relevant survey data to estimate the percentage of larval and juvenile DS that could be entrained.

If expanded salvage at the CVP and SWP facilities of juvenile DS exceeds 11 within a three-day period under this condition, Permittee shall restrict south Delta exports for seven consecutive days to maintain a seven-day average OMRI no more negative than -3,500 cfs. If juvenile DS continue to be salvaged at the CVP and SWP facilities during the seven days of OMRI restrictions, 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 (see Condition of Approval 8.1.3) and follow the decision-making process described in Condition of Approval 8.1.4.

#### **8.12 Barker Slough Pumping Plant Longfin and Delta Smelt Protection.**

Permittee shall operate the Barker Slough Pumping Plant (BSPP) to protect larval LFS from January 15 through March 31 of dry and critical water years. Permittee shall operate to protect larval DS from March 1 through June 30 of dry and critical years. If the water year type changes after January 1 to below normal, above normal or wet, this action will be suspended. If the water year type changes after January to dry or critical, Permittee shall operate according to this Condition of Approval.

From January 15 through March 31 of dry and critical water years, Permittee shall reduce the maximum seven-day average diversion rate at BSPP to less than 60 cfs when larval LFS are detected at station 716. In addition, in its weekly meetings from January 15 through March 31, the Smelt Monitoring Team shall review LFS abundance and distribution survey data and other pertinent abiotic and biotic factors that influence the entrainment risk of larval LFS at the BSPP. When recommended by the SMT, and as approved through the decision-making processes described in Conditions of Approval 8.1.3 and 8.1.4, Permittee shall reduce the maximum seven-day average diversion rate at BSPP according to the advice provided by the Smelt Monitoring Team.

From March 1 through June 30 of dry and critical water years, Permittee shall reduce the maximum seven-day average diversion rate at BSPP to less than 60 cfs when larval DS are detected at station 716. In addition, in its weekly meetings from March 1 through June 30, the SMT shall review DS abundance and distribution survey data and other pertinent abiotic and

biotic factors that influence the entrainment risk of larval DS at the BSPP (including temperature and turbidity). When recommended by the SMT, and as approved through the decision-making processes described in Conditions of Approval 8.1.3 and 8.1.4, Permittee shall reduce the maximum seven-day average diversion rate at BSPP to less than 60 cfs. The DS requirements described in this condition may be adjusted to align with USFWS requirements to minimize take of DS through an amendment to this ITP.

### **8.13 Water Year Type Definition.**

All references to water year type in this ITP shall be defined based on the Sacramento Valley Index unless otherwise noted.

### **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 did not exceed the thresholds identified in this condition during Water Year 2021. This Condition of Approval terminated on 1/31/2021.

8.3.3 No LFS have been salvaged this water year. The cumulative expanded salvage threshold is 3 based on the most recently available FMWT Index. The annual index for 2020 is 28 and was reported to the SMT via email on 1/4/2021. The SMT examined abiotic conditions and determined that risk is low to moderate for adult Longfin Smelt. See section 4-B for the discussion of the FMWT Index.

8.4.1 This Condition of Approval begins with the onset of OMR management and terminates when spawning is detected in the system. The second December SLS detected larval LFS in the lower San Joaquin River on 12/28/2020, which terminated this Condition of Approval.

8.4.2 SLS 4 completed sampling at the 12 stations listed in this Condition of Approval and reported that larvae were detected at four of the five stations for which data was available. The SMT reviewed results from a new PTM run, projected operations and available distributional data, and determined that an OMR restriction was warranted to reduce risk of entrainment for LFS larvae in the central Delta. The SMT recommended that operations target an OMRI no more negative than -2,500 cfs.

8.5.1 This Condition of Approval has not been triggered. Turbidity at OBI was below 12 FNU on 2/1/2021 and continues to remain below the trigger threshold. Turbidity exceeded 14 FNU on 1/27/2021 before decreasing below the threshold on 1/29/2021.

8.5.2 The three-year average FMWT Index for DS is zero, resulting in a salvage threshold of one for juvenile DS. Young of year DS are not expected to be present at this time of year.



8.12 The restriction associated with this Condition of Approval is no longer in effect. No LFS larva were collected at station 716 during SLS 3 and SLS 4 has yet to sample the region. The SMT determined that further restriction was not necessary.

### 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.)
  - ITP Condition of Approval 8.3.2 Salmonid Presence limits exports to maintain a 14-day running OMRI average no more negative than -5,000 cfs as of 1/1/2021.
  - DCC gates will remain closed for the remainder of the season (through May 20, 2021 per the PA description for DCC gate operations).
  - 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 X2Water Temperature:
  - CCF = Not discussed (*Condition of Approval 8.8: Daily average temperature at CCF exceeds 25°C for 3 consecutive days*)
  - 3 Station Average = 12.28°C
- Tidal Cycle: Not discussed
- Turbidity:
  - 8.3.1 Freeport 3-day average = Not reported. 8.3.1 terminated without being triggered.
  - 8.5.1 OBI Turbidity = 3.41 FNU
    - Reached a peak of 14.19 FNU on 1/27/2021 before decreasing below the 12 FNU threshold before 2/1/2021
- Salinity: X2 = 80 km
- Hydrologic Footprint:
  - The SMT reviewed a PTM run with two scenarios. OMRI = -5,000 cfs and OMRI = -3,500 cfs with particles injected at stations 809, 812 and 901.

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

- Outages
  - SWP: No export or salvage outages reported for the period of 2/16/2021 to 2/22/2021
  - CVP: No export or salvage outages reported for the period of 2/16/2021 to 2/22/2021
- Exports
  - CCF: Variable operations to maintain an Net Delta Outflow Index (NDOI) of 7,100 cfs.
  - Jones: Decreased from 3,330 cfs to 2,550 cfs on Monday, February 22, 2021. Will continue to decrease through the week before reaching 1,000 cfs on Friday (2/26/2021).
- Meteorological Forecast: High winds are forecast for Wednesday 2/24/2021, which may result in a wind driven turbidity event in the OMR corridor (OBI location).
- Storm Event Projection: No precipitation is in the forecast for the next 7 days.

**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: 9,900cfs
- San Joaquin River flow at Vernalis: 1,500 cfs
- Qwest: -800 cfs as of 2/22/2021. Qwest has been negative since 2/16/2021 and was more negative than -2,000 cfs for four days (2/18/2021 through 2/22/2021)
- Old River at Bacon Island Turbidity: 3.41 FNU.
- Expected changes in South Delta Exports: Exports will vary to maintain an NDOI of 7,100 cfs.
- NDOI: 7,400 cfs. Will decrease to 7,100 cfs.

Table 1: Comparison of OMR and OMR Index (5-day and 14-day averages OMR Index and USGS gauge reported on [SacPAS website](#), accessed 2/23/2021)

Date	Averaging Period	USGS gauges (cfs)	Index (cfs)
2/23/2021	Daily	Not Reported	-2,900 cfs
2/20/2021	5-day	-4,700 cfs	-4,930 cfs
2/20/2021	14-day	-3,730 cfs	-3,920 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 DS during sampling conducted from 2/16/2021 through 2/19/2021. No abundance estimate was calculated
- The 2020 Annual FMWT Index for DS is zero for the third consecutive year.
- Delta Smelt LCM discussion. Not Discussed.
- Biological Conditions: Not Discussed
- % of population in Delta zones: SMT did not discuss distribution in terms of percentage in Delta zones.
- Other Surveys: The last DS detection was on 1/21/2021 by Fish Conservation and Culture Laboratory (FCCL) broodstock collections.
- Salvage: No DS have been detected at either salvage facility this season. No DS have been detected in larval sampling at the Tracy Fish Collection Facility (CVP). Larval sampling began at Skinner Fish Facility (SWP) on 2/22/2021.

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

- FMWT Index: The FMWT Annual Index for LFS is 28. Monthly indices for September and October are zero, the index for November is 22 and index for December is 6.
- Bay Study: In February, Bay Study collected 5 adult Longfin Smelt [ Fork Length (FL) = 85-90 mm]; two in the lower Sacramento River, two in Suisun Bay, and one in South Bay. They also collected 19 juveniles (FL = 60-82 mm): seven in Suisun Bay, seven in Central Bay, and five in South Bay.
- Other Surveys:
  - Chipps Island Trawl collected five LFS last week. Fork lengths ranged from 75 – 112 mm. The three largest were retained for FCCL and not checked for reproductive status. One of the two smaller fish expressed eggs when checked for reproductive status.
  - EDSM did not collect any LFS during sampling conducted from 2/15/2021 through 2/19/2021.
  - SLS 3 sample collection and processing is complete. For stations relevant to 8.4.2; 11 LFS larvae were collected at station 809 and one was collected at station 812. No LFS larvae were collected at station 716 which informs Condition of Approval 8.12. In total, 308 LFS larvae were collected ranging in size from five to 11 mm. See Attachment 1 for SLS 3 catch details.
  - SLS 4 began 2/22/2021 and sample collection and processing are ongoing. At the time of the call, data from five of the 12 stations listed in 8.4.2 was available. SLS 4 reported 18 LFS at 809 [Total Length (TL) = 6-8 mm], 8 LFS at 812 (TL = 7-8 mm), 1 LFS at 901 (TL = 16 mm), 2 LFS at 902 (TL = 7 mm). Of the 29 larvae collected, 15 had yolk sacs present and none were larger than 8 mm total length.

- February Spring Kodiak Trawl sampled from 2/1/2021 through 2/5/2021 and collected 1 LFS at station 501.
- Salvage: No LFS have been detected at either salvage facility for this water year.

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

## Notes

The SMT ITP Risk Assessments can be accessed on the CDFW [Water Branch website](#).

## Survey Updates:

SLS 4 and EDSM may be delayed due to high winds forecasted for Wednesday (2/24/2021). Both are expected to complete sampling by the end of the week.

SLS 5 is scheduled to start 3/8/2021. SLS 6 will be conducted 1 week early due to logistical constraints associated with COVID-19 safety protocols. SLS 6 is scheduled start 3/15/2021 and will not overlap with the first 20mm survey which is scheduled to start 3/22/2021. CDFW noted that there is no language in the ITP regarding the dates on which SLS or 20mm survey sample. Spring Kodiak Trawl 3 (SKT) is scheduled to start next week.

EDSM has received a request from FCCL to retain any adult Delta Smelt alive for broodstock collection. The EDSM collection permit has been updated to allow for the retention of live Delta Smelt. EDSM crews will not check reproductive status or measure fork lengths of captured fish to reduce handling stress. This may interfere with the data stream that the SMT relies on. Delta Smelt reproductive status informs the turbidity bridge avoidance off ramp. FCCL is no longer conducting broodstock collection on their own.

## Attachments

Attachment 1: Longfin Smelt catch per station from 2021 Smelt Larva Survey, Survey 3, which sampled 2/8/2021 – 2/10/2021.

Year	Survey	Station	Turbidity	Sample Status	Species	Smelt Catch	Min Length	Max Length	Avg Length
2021	3	405	16.1	Processed	Longfin Smelt	2	9	9	9
2021	3	411	29.1	Processed	Longfin Smelt	2	8	10	9
2021	3	418	12.5	Processed	Longfin Smelt	3	8	8	8
2021	3	501	17.6	Processed	Longfin Smelt	25	7	10	8.4
2021	3	504	15	Processed	Longfin Smelt	8	7	9	8
2021	3	508	36.1	Processed	Longfin Smelt	12	7	9	8
2021	3	513	17.4	Processed	Longfin Smelt	17	6	11	7.176471
2021	3	519	41.5	Processed	Longfin Smelt	11	6	8	7.454545
2021	3	520	21.8	Processed	Longfin Smelt	20	6	9	7.4
2021	3	602	32.4	Processed	Longfin Smelt	75	6	10	8.28
2021	3	606	41.2	Processed	Longfin Smelt	30	7	11	8.7
2021	3	609	23.8	Processed	Longfin Smelt	3	7	8	7.333333
2021	3	610	16.4	Processed	Longfin Smelt	12	7	8	7.5
2021	3	703	15.9	Processed	Longfin Smelt	6	8	9	8.166667
2021	3	704	21.8	Processed	Longfin Smelt	14	6	10	7.642857
2021	3	705	8	Processed	Longfin Smelt	1	7	7	7
2021	3	706	11.1	Processed	Longfin Smelt	10	6	9	7.1
2021	3	707	9.1	Processed	Longfin Smelt	2	7	7	7
2021	3	711	6.7	Processed	NA	No Smelt Catch	NA	NA	NA
2021	3	716	10	Processed	NA	No Smelt Catch	NA	NA	NA

Year	Survey	Station	Turbidity	Sample Status	Species	Smelt Catch	Min Length	Max Length	Avg Length
2021	3	723	9.8	Processed	Longfin Smelt	2	5	6	5.5
2021	3	801	17.2	Processed	Longfin Smelt	33	6	10	7.636364
2021	3	804	11.4	Processed	Longfin Smelt	8	6	8	7.375
2021	3	809	12.2	Processed	Longfin Smelt	11	7	10	8.2
2021	3	812	13.9	Processed	Longfin Smelt	1	7	7	7
2021	3	815	9.9	Processed	NA	No Smelt Catch	NA	NA	NA
2021	3	901*	5.9	Processed	NA	No Smelt Catch	NA	NA	NA
2021	3	902	4.4	Processed	NA	No Smelt Catch	NA	NA	NA
2021	3	906*	5.6	Processed	NA	No Smelt Catch	NA	NA	NA
2021	3	910	11.1	Processed	NA	No Smelt Catch	NA	NA	NA
2021	3	912	9.8	Processed	NA	No Smelt Catch	NA	NA	NA
2021	3	914	5.2	Processed	NA	No Smelt Catch	NA	NA	NA
2021	3	915	4.8	Processed	NA	No Smelt Catch	NA	NA	NA
2021	3	918	5.2	Processed	NA	No Smelt Catch	NA	NA	NA
2021	3	919	10.4	Processed	NA	No Smelt Catch	NA	NA	NA