

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

Section 1: Overview

Date: January 26, 2021

Life Stages Present:

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

Longfin Smelt: Adult, Larvae

Advice to WOMT:

Condition of Approval 8.4.2, Larval and Juvenile Longfin Smelt Entrainment Protection, has been triggered by the detection of Longfin Smelt larvae at four of the relevant stations. This Condition of Approval limits OMR to -5,000 cfs on a running 7-day average and tasks the SMT with recommending an OMR level between -1,250 cfs and -5,000 cfs that is sufficiently protective. Projected Operations are expected to maintain an OMR Index of -2,500 up until the weekend, which is considered sufficiently protective. The SMT will re-examine hydrological conditions on Friday to determine if a flow recommendation is warranted. Because of uncertainty associated with the upcoming storm event, the SMT is not making an OMR recommendation at this time. Condition of Approval 8.12, Barker Slough Pumping Plant operations is still in effect. This Condition of Approval limits Barker Slough Pumping Plant exports to be less than 60 cfs on a 7-day running average. The SMT will review Smelt Larva Survey 2 results and other relevant data during the next scheduled call to determine if Condition of Approval 8.12 should remain in effect.

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 and low to high for Longfin Smelt across the range of expected OMR Index levels.

Delta Smelt: Based on distribution patterns over the past decade and four recent detections, Delta Smelt are unlikely to be prevalent in the South Delta. Limited detection data supports Delta Smelt being present in Suisun Marsh, west of the Sacramento-San Joaquin confluence, and within the Sacramento Deep Water Ship Channel. The distribution of Delta Smelt is expected to extend upstream of the confluence which is supported by historical Spring Kodiak Trawl data analysis. Precipitation is anticipated later this week and changes to the Freeport flows and turbidity are not expected to reach "First Flush" conditions within the next seven days. The likelihood of Delta Smelt adult entrainment is slightly elevated relative to the previous seven days due to seasonal timing and increased localized turbidity due to the upcoming storm system. The overall probability of Delta Smelt moving into the south Delta is low. The projected OMR Index limits are at a level that is sufficiently protective of Delta Smelt. Both precipitation and wind driven turbidity could push turbidity in the central Delta to

potentially reach Old River at Bacon Island (OBI) by 2/1/2021. On 1/26/2021, a Delta Smelt was collected in the Sacramento Deep Water Ship Channel by EDSM.

Longfin Smelt:

Smelt Larva Survey 2 (SLS 2) detected Longfin Smelt (LFS) larvae at 4 of the stations listed in Condition of Approval 8.4.2. Twenty-two were collected at station 809, 8 were collected at 812, 2 were collected at 815 and two were collected at 901. This meets the criteria to trigger this Condition of Approval which limits the 7-day average OMR Index to be no more negative than -5,000 cfs. Larval density has increased in the central Delta compared to SLS 1 and larvae have been detected as far upstream as Franks Tract and Prisoners Point. The Particle Tracking Model (PTM) run conducted earlier in the season may no longer reflect hydrologic conditions going forward due to a substantial precipitation event expected to arrive the evening of 1/26/2021. In Delta precipitation is expected to turn Qwest positive which, under current export levels, may facilitate downstream transport of larval LFS in the central Delta. However, increased exports will increase the risk of entrainment. As a result, the SMT determined that an OMRI level of -5,000 cfs would pose a high risk of entrainment for larvae in the central Delta. The SMT also acknowledged that the runoff from the upcoming precipitation event will not affect operations until later in the week and that a more informed decision would be possible once the impact of the storm is more fully understood. The SMT will re-evaluate hydrologic conditions on Friday, 1/29/2021, and communicate via email to determine if the OMR Index will become substantially more negative and if a recommendation from the SMT is warranted. The updated flow and operations data, to be considered on 1/29/2021, will also inform a Particle Tracking Model request. At the time of this week's call, there was too much uncertainty to determine which scenarios would best represent future conditions. The SMT will request a PTM run at the next scheduled meeting based on updated hydrology.

Enhanced Delta Smelt Monitoring (EDSM) detected a ripe LFS in the lower Sacramento River on 1/20/2021 and two more age-1+ LFS in Suisun Marsh on 1/21/2021. Chipps Island Trawl detected 10 LFS during sampling conducted from 1/20/2021 to 1/25/2021 with fork lengths ranging from 65 to 105 mm. The presence of adult fish, including a ripe female, indicates that spawning is ongoing.

SLS 2 sample collection and processing is ongoing and the station used to inform Barker Slough operations (716) has not yet been sampled. The data will become available later this week. The SMT will determine if advice for Barker Slough operations is still warranted at the next scheduled SMT meeting.

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 (Hydrology):
 - Delta Smelt: Low
 - Longfin Smelt: Low
- Routing Risk (Behavior and life history):
 - Delta Smelt: Low
 - Longfin Smelt: Moderate risk of adults moving from the confluence into the Central Delta of their own volition. Adults have been detected in the Sacramento DWSC (SKT 1) which indicates that migration is well underway, and presence of larvae in the lower San Joaquin River indicates that adults have entered the Lower San Joaquin and successfully spawned. A ripe female was detected by EDSM in the Lower Sacramento River.
- 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: Slightly elevated due to seasonal timing.
 - Longfin Smelt: Risk is similar to last week, but may increase over the weekend if exports increase. Onset of hatching in the lower San Joaquin River exposes larvae to entrainment, however, anticipated OMR Index levels are sufficiently protective until runoff from the approaching storm system begins to affect operations this weekend. The SMT will re-evaluate conditions as new data becomes available.
- Reporting Old and Middle River Index (OMRI) (*Number and range of OMRI bins will vary based on anticipated hydrology and operations*)
 - OMRI is approximately -2,600 cfs and projected to remain stable until runoff from the approaching storm reaches the Delta later this week. Exports may increase depending on the amount of precipitation, water quality and other controlling factors.
 - OMRI (Export Scenario OMRI = -2,500 cfs)
 - Delta Smelt: Low Risk
 - Longfin Smelt: Low Risk
 - Qwest is projected to turn positive which may facilitate downstream transport of larvae in the central Delta
 - OMRI (Export Scenario OMRI = -5,000 cfs)
 - Delta Smelt: Low
 - Longfin Smelt: High
 - Conditions are uncertain due to forecasted storm and potential turbidity increase. SMT will re-examine data as it becomes available.

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 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).

8.4.1 OMR Management for Adult Longfin Smelt.

From the onset of OMR Management (Condition of Approval 8.3) through February 28, the Smelt Monitoring Team shall conduct weekly, or more often as needed, risk assessments (see Condition of Approval 8.1.5.2) and decide whether to recommend an OMR flow requirement between - 5,000 cfs and -1,250 cfs to minimize entrainment and take of adult LFS. The Smelt Monitoring Team 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

If a risk assessment conducted by the Smelt Monitoring Team determines that a more restrictive OMR flow requirement is needed to minimize take of adult LFS, the Smelt Monitoring Team shall provide its advice to WOMT (Condition of Approval 8.1.3) and operational decisions shall be made following the process described in Condition of Approval 8.1.4 (Collaborative Approach to Real-time Risk Assessment).

This Condition will terminate when a high-flow off-ramp occurs (Condition of Approval 8.4.3), or when LFS spawning has been detected in the system, as determined by the Smelt Monitoring Team, or, if there is disagreement and resolution is not reached within WOMT, as determined by CDFW. The Smelt Monitoring Team shall consider results from Additional LFS Larval Sampling (Condition of Approval 7.6.1) to inform its assessment of the start of LFS spawning.

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.

After LFS spawning has been observed, Permittee shall implement Condition of Approval 8.4.2 to minimize take of larval and juvenile LFS.

8.4.2 Larval and Juvenile Longfin Smelt Entrainment Protection.

From January 1 through June 30, when a single Smelt Larva Survey (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 OMR index no more negative than -5,000 cfs. Permittee shall also immediately convene the Smelt Monitoring Team 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 OMR flow restriction is warranted, and recommend an OMR flow limit between -1,250 and -5,000 cfs. The Smelt Monitoring Team 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 OMR flow target approved through Conditions of Approval 8.1.3 and 8.1.4. Each week the Smelt Monitoring Team 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 Smelt Monitoring Team 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 Smelt Monitoring Team shall provide advice on the appropriate OMR flow targets to minimize LFS entrainment or entrainment risk, or both. The Smelt Monitoring Team 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 OMR flow restriction is warranted and determine OMR flow limit between -1,250 and -5,000 cfs. The OMR flow limit shall be in place until the next risk assessment conducted by the Smelt Monitoring Team 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 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.

If, after five consecutive days of OMR flow that is less negative than -2,000 cfs, the daily average turbidity at OBI is not less than 12 NTU the Smelt Monitoring Team may convene to assess the risk of entrainment of DS (Condition of Approval 8.1.5.2). The Smelt Monitoring Team may provide advice to WOMT regarding changes in operations that could be conducted to minimize the risk of entrainment of DS (Condition of Approval 8.1.3). The Smelt Monitoring Team may also determine that OMR restrictions to manage turbidity are infeasible and may instead provide advice for a different OMR flow target that is between -2,000 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 OMR 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 OMR index no more negative than -5,000 cfs. Additionally, if the five-day cumulative salvage threshold is met or exceeded, Permittee shall immediately convene the Smelt Monitoring Team 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 OMR than -5,000 cfs. The Smelt Monitoring Team may provide advice for further restrictions within three risk categories:

- Low risk: Limit OMR between -4,000 cfs to -5,000 cfs
- Medium risk: Limit OMR between -2,500 cfs to -4,000 cfs
- High risk: Limit OMR 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 Smelt Monitoring Team 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 OMR 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 OMR index 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 OMR 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 Smelt Monitoring Team, 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 Smelt Monitoring Team 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 Smelt Monitoring Team, 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 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 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 1/4/2020. The SMT examined abiotic conditions and determined that risk is low to moderate for 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 This Condition of Approval was triggered by the detection of larval LFS at 4 of the criteria stations. Smelt Larva Survey 2 (SLS 2) detected Longfin Smelt (LFS) larvae at 4 of the stations listed in Condition of Approval 8.4.2. Twenty-two were collected at station 809, 8 were collected at 812, 2 were collected at 815 and two were collected at 901. The SMT did not make an OMR recommendation and will monitor conditions and communicate via email as new data becomes available.

8.5.1 This Condition of Approval goes into effect 1/2/2021.

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

8.12 This condition was triggered by the detection of one LFS larva at station 716 which was collected during SLS 1. The detection of an additional larva at station 723, and adults detected during SKT 1 in the Sacramento DWSC suggest that spawning has occurred in the region and more individuals are likely present. At the time of today’s SMT call, no new data was available to inform Barker Slough operations. The SMT will determine if the Barker Slough export limit should continue at the next scheduled meeting. This Condition of Approval is in effect during dry and critically dry years, as defined by the [Sacramento River Valley Water Year Type Index](#). LFS are exposed to greater risk of entrainment at Barker Slough during dry and critical years due to the proximity to low salinity habitat at multiple life stages.

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 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) but may be opened to maintain water quality during drought conditions for up to 5 days and for up to 2 events as per the PA in December and January. If DCC gates are opened between December 1 and January 31, the CVP and SWP will divert at Health and Safety pumping levels.
 - 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: Water quality
- Water Temperature:
 - CCF = Not discussed (*Condition of Approval 8.8: Daily average temperature at CCF exceeds 25°C for 3 consecutive days*)
 - 3 Station Average = 10.15°C
- Tidal Cycle: Not discussed
- Turbidity:
 - 8.3.1 Freeport 3-day average = 3.93 FNU as of 1/25/2021
 - 8.5.1 OBI Turbidity = 3.13 FNU as of 1/25/2021
- Salinity: X2 is upstream of Collinsville and was estimated to be 95.2 km on the Sacramento River and 97.0 km on the San Joaquin River.
- Hydrologic Footprint:
 - No new PTM runs were conducted. The SMT received PTM results via email on 1/8/2021 to inform risk of entrainment for larval Longfin Smelt present in the lower San Joaquin River near Jersey Point. Operations are not expected to result in a more negative OMR Index until runoff from the approaching storm system reaches the Delta near the end of the week. The extent to which hydrologic conditions will change are unknown. The SMT will request a new PTM run at the next meeting once the effects of the approaching storm are better understood.
- High winds are forecasted during the impending precipitation event. There is potential for hydrologic and wind driven turbidity to reach the Delta this week.

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

- Outages
 - SWP: No export or salvage outages reported for the period of 1/20/2021 to 1/25/2021
 - CVP: No export or salvage outages reported for the period of 1/20/2021 to 1/25/2021
- Exports
 - CCF: 1,500 cfs, exports may increase if conditions allow
 - CVP: 1,650 cfs exports may increase if conditions allow
 - Barker Slough: Seven-day running average = 58 cfs as of 1/25/2021.
- Meteorological Forecast: Seven-day weather forecast for Antioch predicts high winds and substantial precipitation.
- Storm Event Projection: A large, cold storm is predicted to arrive in the area the evening of 1/26/2021. Low snow levels may reduce the amount of flow immediately entering the Delta from tributaries, however, in Delta precipitation is expected to turn Qwest positive.

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: Expected to remain in the 7,000 cfs range until Friday. It is expected to reach 15,000 cfs and may get as high as 20,000 cfs as runoff from the approaching storm reaches the Delta
- San Joaquin River flow at Vernalis: 800 cfs, will increase as runoff enters the Delta and may reach 3,000 cfs this weekend.
- Qwest: Qwest is expected to be positive because of in Delta precipitation and may become as high as + 9,000 cfs.
- Old River at Bacon Island Turbidity: 3.13 FNU.
- Freeport Turbidity (3-day average): 3.93 FNU.
- Expected changes in South Delta Exports: Exports may increase if conditions allow, however, there is a high degree of uncertainty regarding if exports will increase before the next SMT call.
- OMR Index is projected to remain stable at -2,600 cfs, however there is potential for it to reach -5,000 cfs. Water quality and other requirements may prevent exports from increasing above current levels. There is a high degree of uncertainty associated with forecasted precipitation event.
- NDOI: Will increase from 5,500 cfs and may peak around 30,000 cfs over the weekend depending on precipitation.

Table 1: Comparison of OMR and OMR Index (5-day and 14-day averages OMR Index reported on [SacPAS website](#), accessed 1/26/2021. Values for USGS gauge data were calculated based data reported on [CDEC Website](#), accessed on 1/26/2021.)

Date	Averaging Period	USGS gauges (cfs)	Index (cfs)
1/25/2021	Daily	1,545 cfs	-1,900 cfs
1/24/2021	5-day	-2,759 cfs	-2,670 cfs
1/24/2021	14-day	-2,425 cfs	-2,270 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 collected 1 Delta Smelt (FL = 47 mm) in the Sacramento DWSC on 1/26/2021. Previously, EDSM collected 1 Delta Smelt (FL = 51 mm) in the Sacramento DWSC on 1/6/2021.
- FCCL Broodstock collection reported one Delta Smelt collected in the Sacramento DWSC on 1/21/2021, for a total of two for the season.
- The 2021 Annual FMWT Index for Delta Smelt is zero for the third consecutive year.
- Delta Smelt LCM discussion. Not Discussed.
- Biological Conditions: The Delta Smelt collected in the Sacramento DWSC, on 1/26/2021, was well below the 58mm cutoff used to distinguish between adults (> 58mm) and juveniles. Detecting a Delta Smelt that small at this time of year is extremely rare.
- % of population in Delta zones: SMT did not discuss distribution in terms of percentage in Delta zones.
- Other Surveys: Other than EDSM and FCCL broodstock collection, no Delta Smelt detections were reported in recent sampling including, Chipps Island Trawl, SLS, and SKT.
- 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 FMWT Annual Index for Longfin Smelt is 28. Monthly indices for September and October are zero, the index for November is 22 and index for December is 6.
- Bay Study: Bay Study is off the water due to COVID restrictions. The most recent Bay Study data was collected in early November and is not likely to reflect current distribution. 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 but was interrupted after two days of sampling. No Longfin Smelt were detected by Bay Study in December.
- Other Surveys: Chipps Island Survey collected 10 LFS (FL = 65 – 105 mm) during sampling conducted from 1/20/2021 to 1/25/2021. EDSM collected one LFS (FL = 71 mm) in the lower Sacramento River on 1/20/2021 that was expressing eggs, and two more LFS (FL = 77 – 88 mm) in Suisun Marsh on 1/21/2021.
- SLS 2 sample collection and processing is ongoing. At the time of the call, 5 samples collected at the 12 south and central Delta stations had been processed. SLS 2 reported 22 LFS at station 809, 8 at station 812, 2 at station 815 and 2 at station 901.
- January Spring Kodiak Trawl (SKT) collected 11 Longfin Smelt in Suisun Bay and Marsh and the Sacramento Deep Water Ship Channel. See previous week's Risk Assessment for catch details.

- 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.
- SMT referenced an unpublished USFWS analysis of Delta Smelt and Longfin Smelt. The analysis showed that Delta Smelt catch in SKT was not correlated with X2 and distributed upstream of the confluence from January through May (2002 through 2014). Longfin Smelt SKT catch exhibited a statistically significant correlation with X2.

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

The SMT noted that larval LFS catch in the central Delta during SLS 1 and 2 is higher than when compared to the same time last year, however, one larva was detected further upstream (south) last year. This WY being a drier year to date, the distribution of LFS would be expected to be centered further upstream compared to last year. OMR flows were significantly more negative during December and January of the previous water year. CDFW staff will compile and circulate LFS catch data and look for comparable events in coordination with other SMT members. Qwest was near zero at the time of the most recent PTM run but is projected to become substantially more positive due to in-Delta precipitation. This may reduce risk of entrainment for larval LFS in the central Delta under current operations. Projected Operations are expected to be stable and sufficiently protective until the weekend. The SMT will re-examine conditions on Friday to determine if a flow recommendation is warranted.

SLS 2 is scheduled to run through Wednesday but will likely be delayed due to weather. They are expected to complete sampling on Thursday. Sample processing for SLS 1 is complete. See attached catch table for details.

EDSM did not sample the far west stratum last week. Two crews were on the water today and a third crew will join them tomorrow, weather permitting.

Attachments:

Attachment 1: Spring Kodiak Trawl Longfin Smelt catch for Survey 1, 2021 (1/5-1/8). Data is preliminary and subject to change.

Station	Number of Longfin Smelt collected	Range of Fork Lengths (mm)
340	0	NA
405	0	NA
411	0	NA
418	0	NA
501	0	NA
504	1	115
519	0	NA
602	1	71
606	4	51 – 82
609	0	NA
610	0	NA
508	0	NA
513	0	NA
520	0	NA
801	0	NA
804	0	NA
704	0	NA
706	0	NA
707	0	NA
711	0	NA
712	0	NA
713	0	NA
715	0	NA
716	0	NA
719	5	90 – 100
724	0	NA
809	0	NA
812	0	NA
815	0	NA
902	0	NA
906	0	NA
910	0	NA
912	0	NA
914	0	NA
915	0	NA
919	0	NA
920	0	NA
921	0	NA
922	0	NA
923	0	NA

Spring Kodiak Trawl Sampling Stations

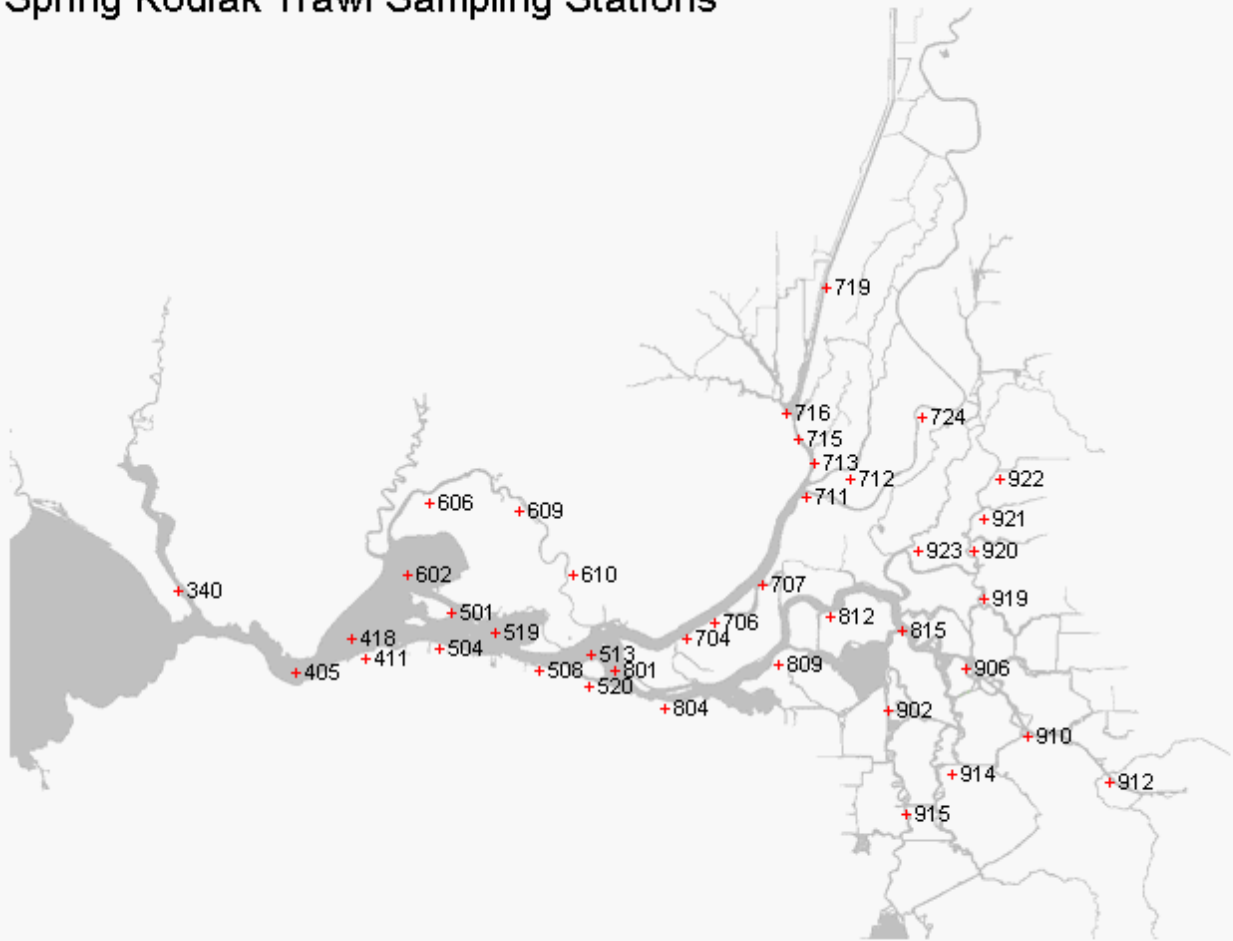


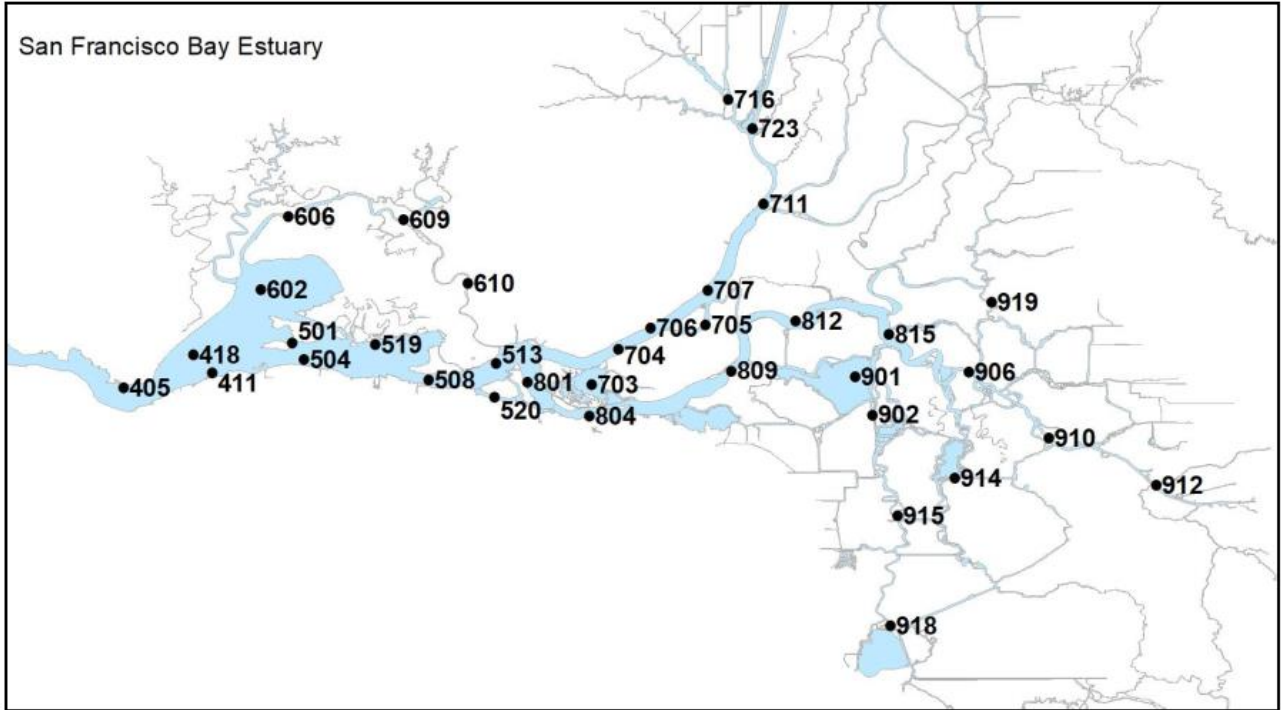
Figure 1. CDFW's Spring Kodiak Trawl Station Locations

Attachment 2: Longfin Smelt catch per station from 2021 Smelt Larva Survey, Survey 1,
1/11/2021 - 1/13/2021

Study Year	Survey #	SLS Station	Turbidity	Sample Status	Species	Smelt Catch	Minimum Length	Maximum Length	Average Length
2021	1	405	9.2	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	411	12.2	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	418	10.2	Processed	Longfin Smelt	1	8	8	8
2021	1	501	11.9	Processed	Longfin Smelt	4	6	7	6.75
2021	1	504	7.9	Processed	Longfin Smelt	8	5	8	7.125
2021	1	508	9.3	Processed	Longfin Smelt	22	6	8	7.181818182
2021	1	513	9.4	Processed	Longfin Smelt	27	6	8	7.037037037
2021	1	519	9.7	Processed	Longfin Smelt	5	6	8	7.4
2021	1	520	12.2	Processed	Longfin Smelt	7	6	8	6.714285714
2021	1	602	25.4	Processed	Longfin Smelt	2	8	8	8
2021	1	606	25.4	Processed	Longfin Smelt	4	7	9	8
2021	1	609	21.9	Processed	Longfin Smelt	3	7	8	7.666666667
2021	1	610	14.6	Processed	Longfin Smelt	6	6	7	6.333333333
2021	1	703	9.6	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	704	9.8	Processed	Longfin Smelt	9	6	8	6.666666667
2021	1	705	7.5	Processed	Longfin Smelt	7	6	9	7.428571429
2021	1	706	10.6	Processed	Longfin Smelt	2	7	7	7
2021	1	707	5.9	Processed	Longfin Smelt	2	8	8	8
2021	1	711	5.4	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	716	6.4	Processed	Longfin Smelt	1	6	6	6
2021	1	723	6.7	Processed	Longfin Smelt	1	6	6	6
2021	1	801*	8	Processed	Longfin Smelt	2	7	8	7.5

Study Year	Survey #	SLS Station	Turbidity	Sample Status	Species	Smelt Catch	Minimum Length	Maximum Length	Average Length
2021	1	804	10.8	Processed	Longfin Smelt	1	8	8	8
2021	1	809	8.7	Processed	Longfin Smelt	6	6	8	6.7
2021	1	812	4.7	Processed	Longfin Smelt	2	6	7	6.5
2021	1	815	3.4	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	901*	6.5	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	902	3.3	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	906	5.7	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	910*	5.9	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	912	4.6	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	914*	2.0	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	915	2.2	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	918	2.7	Processed	NA	No Smelt Catch	NA	NA	NA
2021	1	919	2.6	Processed	NA	No Smelt Catch	NA	NA	NA

Processing is complete through 1/25/2021



Smelt Larva Survey station locations.