Weekly Assessment of CVP and SWP Delta Operations on ESA-listed Species

1. Executive Summary

a. Operations anticipated during the week

The DCC gates were closed on 12/1/20 and are expected to remain closed through mid-May 2021. A positive impact of the DCC gate closure is to prevent entrainment through the DCC route of any juvenile CCV steelhead, winter-run Chinook salmon, and young of year (YOY) spring-run Chinook salmon into the Delta interior from the Sacramento River basin.

b. Winter-run Chinook Salmon summary

No loss of natural winter-run Chinook salmon (by length at date, LAD) has occurred in the past week at the State or Federal fish salvage facilities. Loss of natural winter-run Chinook salmon at the Central Valley Project (CVP) and State Water Project (SWP) fish collection facilities is unlikely to occur over the next week. 1-5% of juvenile natural winter-run Chinook salmon from brood year (BY) 20 are estimated to be present in the Delta. The Delta Cross Channel (DCC) gates closure for the season reduces exposure of winter-run Chinook salmon juveniles that are potentially present in the Sacramento River near the DCC gates into the interior Delta. The effects of DCC closure for the season would be positive, if juveniles are present. SaMT also discussed thiamine issue and effects on survival. The agencies in SaMT had questions on how this may be addressed in the JPE. Adult winter-run are beginning to enter the Delta based on historical information.

c. Spring-run Chinook salmon summary

No loss of natural Central Valley (CV) YOY spring-run Chinook salmon has occurred in the past week at the State and Federal fish salvage facilities. Loss of Central Valley spring-run Chinook salmon at the CVP and SWP fish collection facilities is unlikely to occur over the next week. 0-2% of spring-run Chinook salmon are estimated to be in the Delta. It is unlikely that juvenile natural spring-run Chinook salmon from BY 20 near the DCC gates based on regional monitoring data; CV spring-run Chinook salmon adults spawning is ending in mid-November in upstream spawning reaches. YOY spring-run Chinook salmon are emerging and beginning to move downstream. The agencies at SaMT discussed the effects of DCC closure to spring-run Chinook salmon are similar to the effects on winter-run Chinook salmon and exposure is unlikely for natural YOY spring-run Chinook salmon. Yearling spring-run are being detected in the Butte Creek rotary screw trap (RST) and the fyke trap at Parrot Phelan Dam and flow conditions are suitable based on tributary flows in Mill and Deer creeks to stimulate the movement in Sacramento River tributaries. If present near the DCC, spring-run would benefit from closure of the DCC gates for the season. Yearling spring-run Chinook salmon were released on 12/3/2020 from the SCARF facility.

d. Central Valley Steelhead summary

No loss of natural California CV (CCV) steelhead has occurred in the past week at the State and Federal fish salvage facilities. Loss of CCV steelhead at the Central Valley Project (CVP) and State Water Project (SWP) fish collection facilities is unlikely to occur over the next week. 0-1% of juvenile CCV Steelhead are estimated to be present in the Delta. DCC closure for the season reduces exposure into the Interior Delta to CCV steelhead juveniles that are potentially present in the Sacramento River near the DCC gates. The effects of DCC gate closure are likely to be positive if juvenile CCV steelhead are present. Early spawning of adult steelhead is likely occurring in the tributaries.

e. Green Sturgeon summary

No loss of green sturgeon has occurred in the past week at the State and Federal fish salvage facilities. Loss of green sturgeon at the Central Valley Project (CVP) and State Water Project (SWP) fish collection facilities is unlikely to occur over the next week. Green sturgeon are more likely to be salvaged during the summer although salvage may occur at any time of year.

f. Delta Smelt summary

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 the 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 to the Freeport flows and turbidity are not expected to reach "First Flush" conditions within the next seven days.

g. Monitoring Teams summary

There were no non-consensus issues to report from the Salmon Monitoring Team.
There were no non-consensus issues to report from the Smelt Monitoring Team.

2. Operational and Regulatory Conditions

See Weekly Fish and Water Operation Outlook document for December 8 – December 14.

3. Biology, Distribution, and Evaluation

Winter-run Chinook salmon, Spring-run Chinook salmon, Central Valley Steelhead

POPULATION STATUS

- Winter-run Chinook salmon
  - **Delta Life Stages**:
    - Juveniles, Adults
  - **Brood Year 2020 Productivity:**
    - Natural winter-run Chinook salmon: Juvenile production estimate (JPE) calculations have not been established for brood year (BY) 2020 winter-run Chinook salmon. The agencies in the SaMT discussed the thiamine vitamin deficiency that is being observed again in broodstock at the Livingston Stone NFH similar to last year's observations. Last year the thiamine vitamin deficiency appeared to negatively affect survival of juvenile fish as they migrate downstream towards the Delta. Observed winter-run Chinook salmon at Red Bluff Diversion dam (RBDD) is greater than recent years (BY 2014 – 2018) with the exception of BY 2019. On 12/01/2020, 1,835,780 winter-run Chinook salmon were estimated to have passed RBDD compared to a cumulative passage of 3,620,540 winter-run Chinook salmon RBDD on 12/02/2019.
    - Hatchery winter-run Chinook salmon: No hatchery winter-run Chinook salmon have been released in WY 2021.
- Spring-run Chinook salmon
  - **Delta Life Stages:**
    - Young-of-year (YOY) and Yearlings
    - First hatchery releases from the SCARF facility occurred on 12/3/20
  - **Brood Year 2020 Productivity:**

- Natural spring-run Chinook salmon: No JPE has been established for spring-run Chinook salmon. Approximately 17.2% juvenile spring-run sized Chinook salmon have been observed passing Red Bluff Diversion dam as of 12/6 (see Ops Outlook).
- Hatchery spring-run Chinook salmon surrogates: No hatchery spring-run surrogates Chinook salmon have been released in WY 2021.
- The agencies in the SaMT discussed the thiamine vitamin deficiency that is also currently being observed again in winter-run Chinook salmon broodstock at the Livingston Stone NFH similar to last year's observations. Last year the thiamine deficiency appeared to negatively affect survival of juvenile fish as they migrate downstream towards the Delta. The thiamine deficiency issue is also likely impacting spring-run Chinook Salmon. The Feather River Fish Hatchery is currently experiencing issues with infertile males. It is unlikely that they will meet their production goals. On the Feather River, a larger than historical number of spring-run adults that entered the system and were tagged appear to be spawning in-river instead of returning to the hatchery. This is one reason that low returns are being observed at the hatcheries.

- Central Valley Steelhead
  - **Delta Life Stages**:
    - Spawning Adults, Kelts, Juveniles
  - **Brood Year 2020 Productivity:**
    - Spawner abundance: There is limited information about the adult steelhead population. It is estimated to be small, contributing to the limited productivity of the population.
    - Natural steelhead: No JPE has been established for steelhead. Data are limited.
    - Hatchery steelhead: Reclamation's Proposed Action has no hatchery steelhead triggers.

DISTRIBUTION

- Winter-run Chinook Salmon
  - **Current Distribution:**

    On 12/8/2020, SaMT estimated 1-5% of juvenile winter-run Chinook salmon were present in the Delta (Table 1). In October, the Glenn Colusa Irrigation District (GCID) RSTs observed 583 winter-run Chinook salmon juveniles (by length at date criteria) in their daily catches. In November, the GCID RSTs observed 138 winter-run Chinook salmon juveniles (by length at date criteria) in daily catches. In December (through 12/7/2020), the GCID RSTs have observed 74 winter-run Chinook salmon juveniles (by length at date criteria) in daily catches. Since few winter-run Chinook salmon have been observed in RST monitoring locations farther downstream (0 at Tisdale 12/1/2020 -12/6/2020 and 0 at Knights Landing 12/1/2020 - 12/6/2020, the fish appear to still be holding in the middle reaches of the Sacramento River.

    Catch indices are calculated daily for juvenile winter-run Chinook salmon observed in RSTs at Knights Landing (Knights Landing Catch Index, KLCI)

and Sacramento Trawl and Beach Seine (Sacramento Seine Catch Index, SCI Trawl and SCI Beach Seine) monitoring locations (Table 2). No catch indices for juvenile salmonid migration were triggered during the past week.

Mean daily flow and percent change (Wilkins Slough (WLK), Deer Creek (DCV), Mill Creek (MLM); cfs from CDEC) and temperature and percent change (Knights Landing RST (KL); °F from RST) are monitored as alerts for juvenile salmonid migration (Table 3). Mill and Deer Creek Alerts for juvenile salmonid migration were triggered 5 of the 7 days during the past week.

- **Historic Trends**
  Based on historical trends in salvage, 0% of winter-run Chinook salmon should have been observed in salvage by this time of the water year (Table 4). If historic trends in salvage were to continue winter-run Chinook salmon loss is expected to remain the same over the next week. Hatchery winter-run Chinook salmon have not been released into the Sacramento River in WY 2021.

- **Forecasted Distribution within Central Valley and Delta regions**
  Movement of winter-run Chinook salmon juveniles into the lower reaches of the Sacramento River and upper Delta are likely to occur with precipitation events and increasing river flows and turbidity. However, the agencies in the SaMT believe significant precipitation events are unlikely to occur over the next week (see Ops Outlook). The STARS model projects route-specific proportion of entrainment, survival, and travel times (Table 5). This model does not estimate entrainment into the lower Sacramento River sloughs (i.e. Three-Mile Slough). The DCC gates were closed 12/1/20 and are expected to remain closed through mid-May 2021.There is little precipitation forecasted for December and there may be a need to open the DCC gates to meet D-1641 water quality standards.

- <u>Spring-run Chinook salmon</u>
  - **Current Distribution**
    On 12/08/2020 SaMT estimated 0-2% of juvenile CV spring-run Chinook salmon were present in the Delta (Table 1). Mill Creek flows were recorded higher than 95 cfs five times over the past week. Deer Creek flows were not recorded higher than 95 cfs over the past week (11/30/2020 – 12/06/2020; Table 3). This is indicative yearling spring-run Chinook salmon may begin to move out of tributaries into the mainstem Sacramento River, yearling spring-run Chinook salmon have also been detected in the Butte Creek monitoring locations. No unmarked spring-run Chinook salmon were observed at the Knights Landing RST or Tisdale in the past week.

    No juvenile young-of-year CV spring-run Chinook salmon (LAD) have been observed near the DCC gates. Yearling CV spring run Chinook salmon may be migrating downstream based on increased flows in the Sacramento River tributaries and have been observed at the Butte Creek monitoring locations. Historical monitoring data does not detect YOY spring-run Chinook salmon in the Delta at this time. Mill Creek flows were greater than 95 five days during the

past week indicating that downstream migration of yearling spring-run Chinook salmon may occur soon.

- **Historical Trends**
  Based on historical trends in salvage, 0% of spring-run Chinook salmon should have been observed in salvage by this time of the water year (Table 4). If historic trends in salvage were to continue spring-run Chinook salmon loss is expected to remain the same over the next week. Spring-run surrogate Chinook salmon have not been released into the Sacramento River in WY 2021.

- **Forecasted Distribution within Central Valley and Delta regions**
  Movement of juvenile spring-run Chinook salmon into the lower reaches of the Sacramento River and upper Delta are likely to occur with precipitation events and increasing river flows and turbidity. However, the agencies in the SaMT believe significant precipitation events are unlikely to occur over the next week (see Weekly Fish and Water Operation Outlook document).

- Central Valley Steelhead
  - **Current Distribution**
    On 12/08/2020 SaMT estimated 0-1% of juvenile CCV steelhead were present in the Delta (Table 1).

  - **Historical Trends**
    Based on historical trends in salvage, 0% of juvenile CCV steelhead should have been observed in salvage by this time of the water year. If historic trends in salvage were to continue juvenile CCV steelhead loss is expected to remain the same over the next week.

  - **Forecasted Distribution within Central Valley and Delta regions**
    No juvenile Central Valley steelhead have been observed near the DCC gates in regional monitoring efforts and historical monitoring data does not detect juvenile steelhead in the Delta at this time. However, SaMT estimated that 0-1% of the population of CCV steelhead may be present in the Delta at this time. Closure of the DCC gates would reduce exposure and possible entrainment of juvenile CCV steelhead into the interior Delta via the DCC gates.

TABLE 1. Distribution estimates

Location	Yet to Enter Delta (Upstream of Knights Landing)	In the Delta	Exited the Delta (Past Chipps Island)
Young-of-year (YOY) winter-run Chinook salmon	95-99%	1-5%	0%
YOY spring-run Chinook salmon	98-100%	0-2%	0%
YOY hatchery winter-run Chinook salmon	N/A	N/A	N/A

Location	Yet to Enter Delta (Upstream of Knights Landing)	In the Delta	Exited the Delta (Past Chipps Island)
Natural origin steelhead	99-100%	0-1%	0%

TABLE 2. Catch indices for juvenile winter-run Chinook salmon observed in RSTs at Knights Landing (Knights Landing Catch Index, KLCI) and Sacramento Trawl and Beach Seine (Sacramento Seine Catch Index, SCI Trawl and SCI Beach Seine) monitoring locations

Date	KLCI Winter Chinook	KLCI Older Chinook	SCI Trawl	SCI Beach Seines	Trigger Exceeded: Catch Index > 5	Trigger Exceeded: Catch Index 3 < X ≤ 5
2020-12-06	0	0				
2020-12-05	0	0				
2020-12-04	0	0	0	0		
2020-12-03	0	0	0			
2020-12-02	0	0		0		
2020-12-01	0	0				
2020-11-30	0	0	0	0		

TABLE 3. Mean daily flow and percent change (Wilkins Slough (WLK), Deer Creek (DCV), Mill Creek (MLM); cfs from CDEC) and temperature and percent change (Knights Landing RST (KL); °F from RST)

Date	MLM mean daily flow (cfs)	MLM flow % change	MLM Alert	DCV mean daily flow (cfs)	DCV flow % change	DCV Alert	WLK mean daily flow (cfs)	KL water temp (F)	WLK-KNL: Alert
12/6/2020				89.3	0.2%		3982.9		
12/5/2020				89.2	0.0%		4087.5	49.4	
12/4/2020	104.1	0.0%	Flow>95cfs	89.2	-0.8%		4026.8	49.6	
12/3/2020	104.1	-0.5%	Flow>95cfs	89.9	0.4%		4059.6	49.6	
12/2/2020	104.6	-0.5%	Flow>95cfs	89.6	-0.4%		4090.0	49.7	
12/1/2020	105.1	0.5%	Flow>95cfs	89.9	0.0%		4092.8	49.4	
11/30/2020	104.6	0.0%	Flow>95cfs	89.9	-0.4%		4088.5	49.4	

TABLE 4. Historic migration and salvage patterns.

Date (12/06)	Red Bluff Diversion Dam	Tisdale RST	Knights Landing RST	Sac Trawl (Sherwood) Catch Index	Chipps Island Trawl Catch Index	Salvage
Chinook, Winter-run, Unclipped	92.0% (87.6%, 96.4%)	41.1% (19.1%, 63.1%)	39.0% (14.6%,6 3.5%)	13.9% (-7.0%, 34.8%)	0% (0%, 0%)	0.8% (-0.5%, 2.1%)
Chinook, Spring-run, Unclipped	17.2% (3.7%, 30.7%)	8.3% (-7.6%, 24.1%)	3.6% (-3.0%, 10.3%)	0.7% (-0.4%, 1.8%)	0.0% (0.0%, 0.0%)	0.0% (0.0%, 0.0%)
Steelhead, Unclipped	97.5% (93.5%, 101.6%)	100.0% (100.0%, 100.0%)	93.6% (82.2%, 105.0%)	100.0% (100.0%, 100.0%)	98.0% (93.3%, 102.6%)	2.2% (-0.2%, 4.5%)

TABLE 5. STARS model output

Date (12/6)	DCC	Georgiana Slough	Sacramento River	Sutter and Steamboat
Proportion of Entrainment	NA	31%	45%	25%
Survival	NA	16%	49%	36%
Travel Time	NA	18.7 d	11.4 d	11.8 d

EVALUATION

- **(1) After January 1, are more than 5% of juveniles from one or more salmonid species present in the Delta?**
  This question is not applicable until 1/1/2021. No greater than 5% of juveniles from all salmonid species are estimated to be present in the Delta.

- **(2) After January 1, are more than 5% of juveniles from one or more salmonid species present in the Delta? Does the operational outlook's ranges impact fish movement and change the potential distribution of fish?**
  - **(i) Potential effects within the 7 days (near-term) in the operations outlook.**
    This question is not applicable until 1/1/2021. However, up to 5% of juveniles winter-run may be in the Delta. SaMT estimated that less than 5 % of all other salmonids present in the Delta.
  - **(ii) Potential effects longer than the 7 days (longer-term) in the operations outlook.**
    Not applicable, see response above to (2)(i).

- **(3) What is the likelihood of increased loss exceeding the next annual loss threshold (50%, 75% or 90% of threshold) resulting in OMR management actions based on population distribution, abundance, and behavior of fish in the Delta?**
  - Reduced exports at the facilities reduces risk of entraining ESA-listed species.
  - Winter-run Chinook salmon

Currently, total juvenile winter-run Chinook salmon (LAD) loss is 0 fish (as of 12/6/2020). No loss of juvenile winter-run Chinook salmon has occurred in the past week at the CVP and SWP fish salvage facilities. Juvenile production estimate (JPE) calculations have not been established for brood year (BY) 2020 winter-run Chinook salmon. The agencies in the SaMT assessed the likelihood of exceeding the next annual loss threshold and believes that loss occurring in the next week is unlikely to lead to exceedance of the 50% single-year loss threshold.

- Spring-run Chinook salmon
  Currently, total juvenile spring-run Chinook salmon (LAD) loss is 0 fish (as of 12/6/2020). No loss of juvenile spring-run Chinook salmon has occurred in the past week at the CVP and SWP fish salvage facilities. The agencies in the SaMT assessed the likelihood of exceeding the next annual loss threshold and believes that loss occurring in the next week is unlikely to lead to exceedance of the 50% single-year loss threshold. No spring-run surrogate hatchery fish have been released.
- Central Valley Steelhead
  Currently, total juvenile steelhead loss is 0 fish (as of 12/6/2020). No loss of juvenile steelhead has occurred in the past week at the CVP and SWP fish salvage facilities. The agencies in the SaMT assessed the likelihood of exceeding the next annual loss threshold and believes that loss occurring in the next week is unlikely to lead to exceedance of the 50% single-year loss threshold.

- **(4) If an annual loss threshold has been exceeded, do continued OMR restrictions benefit fish movement and survival based on real-time information?**
  - Winter-run Chinook salmon
    The annual loss threshold for winter-run Chinook salmon has not been exceeded in WY 2021.
  - Spring-run Chinook salmon
    The annual loss threshold for spring-run Chinook salmon has not been exceeded in WY 2021.
  - Central Valley Steelhead
    The annual loss threshold for steelhead (December 1 – March 31) has not been exceeded in WY 2021.

(5) If OMR is more negative than -5,000 cfs are there changes in spawning, rearing, foraging, sheltering, or migration behavior beyond those anticipated to occur under OMR management at -5,000 cfs?
Expected OMR flows are more positive than -5,000 cfs for the next week, this question is not applicable until 1/1/2021.

Green Sturgeon

POPULATION STATUS

- **Delta Life Stages:**
  - Adults and Juveniles
- **Juvenile Abundance:**
  - No empirical estimates of the juvenile population (ages 0 – 3) in the Delta are available. Information about their rearing and distribution patterns within the

Delta is limited. In 2019, 73 larval green sturgeon and six juvenile green sturgeon were observed at the Red Bluff Diversion Dam fish monitoring RSTs in the upper Sacramento River. In WY 2019, no green sturgeon were observed at the Delta fish salvage facilities. In WY 2020, two green were caught at the Delta fish salvage facilities (salvage = 8).

DISTRIBUTION

- **Current Distribution**
  Juvenile and adult green sturgeon are present in the San Joaquin and Sacramento rivers and Delta during the next week. Acoustically tagged green sturgeon have been detected and remain in the vicinity of Sherman Island.

- **Historical Trends**
  Juvenile and adult green sturgeon are historically present in the San Joaquin and Sacramento rivers and Delta in December.

- **Forecasted Distribution within Central Valley and Delta regions**
  Juvenile and adult green sturgeon are present in the San Joaquin and Sacramento rivers and Delta during the next week.

EVALUATION

- **(1) Is there likely to be salvage that may exceed the annual loss limit?**

Currently, green sturgeon salvage is 0 fish (as of 12/6/2020). No salvage of green sturgeon has occurred in the past week at the CVP and SWP fish salvage facilities. The agencies in the SaMT assessed the likelihood of salvage occurring in the next week is unlikely to occur.

Delta Smelt

POPULATION STATUS

- **Delta Smelt Life Stages:**
  - Subadult/Adult
- **Brood Year 2020:**
  - **Abundance estimate**: The most recent population abundance estimate for Delta Smelt was 1,249. This estimate was calculated from the sampling between 11/9/2020-11/13/2020. EDSM last collected a juvenile Delta Smelt (57mm) on 11/9/2020 in the Suisun Marsh stratum.
  - **Biological Conditions**: The Smelt Monitoring Team discussed the most recent monitoring data (Table 4) and considered professional opinion on the historical trends in regional distribution. Based on those discussions, the agency participants on SMT estimate Delta Smelt subadult/adults should be holding in the Suisun Marsh and west of the Sacramento-San Joaquin confluence in anticipation of migration.

DISTRIBUTION

- **Current Distribution**
  - Real time detection data is currently limited to EDSM sampling, FMWT and the Bay Study. Few recent detections have limited the Smelt Monitoring Team's capacity to estimate where Delta Smelt are within the Delta.

- The last Delta Smelt detection occurred on juvenile Delta Smelt (57mm) on 11/9/2020 in the Suisun Marsh stratum.
- Larval sampling is not being conducted at the state or federal salvage facilities.

TABLE 6. Summary of recently reported detections of Delta Smelt by Region and Salvage Facilities between 12/1/2020 and 12/7/2020. Start and End dates reflect period of time between updates to SMT. Regional categories are determined from EDSM sampling.

Life Stage	North	South	West	Far West	Salvage
Adult	0	0	0	0	0
Larvae/Juvenile	0	0	0	0	0

TABLE 7. Summary of recent Delta Smelt detections reported since last assessment and the total detections for the current water year. Notes reflect latest information on reported detections or completion of survey for the water year and include both larval and adult detections.

Sampling Method	New Detections	WY2021	Notes
EDSM	0	1	Phase 1 begins 11/30/20 Last Detection: 11/9/2020
SKT	0		No Dec. SKT. Begin 01/4/2021
SLS	0		Begins: 12/14/2020 Only South and Central Delta
20-mm	0	0	Begins: March
Bay Study	0	0	Began: 12/1/2020 Ends 12/9/2020
FMWT	0	0	10 Day sampling ends 12/11/202
Chipps Island Trawl	0	0	5 Day Sampling began 12/7/2020

- **Historical Trends**

Based on Sommer et al. (2011), the centroid of Delta Smelt distribution is anticipated to be near X2 which is currently estimated to be at 90 km which indicates Delta Smelt could be upstream of the Sacramento-San Joaquin confluence.

- **Forecasted Distribution within Central Valley and Delta regions**

Delta Smelt distribution is not expected to change in the next seven days since first flush conditions that would trigger migration are not anticipated. However, predicting the distribution is currently difficult because detection data is limited to one individual and historic patterns may not be representative of the low population levels of Delta Smelt.

ABIOTIC CONDITIONS

- **Turbidity**
  - No precipitation is predicted and changes in Freeport flows and turbidity (Table 6) that would create "First Flush" conditions are not expected by the agency representatives of the SMT.
  -
- **X2 Conditions**
  - X2 is estimated to be greater than 10 km upstream of the confluence of San Joaquin and Sacramento Rivers.

TABLE 8. Relevant Environmental Factors to the current management actions for Delta Smelt.

Date Reported	FPT 3 Day Running Avg. of Daily Flows (cfs)	FPT 3 Day Running Avg. of Turbidity (FNU)
12/8/2020	8122	2.65

- **Other Environmental Conditions**
  - The Smelt Monitoring Team expects environmental conditions for the next seven days to remain stable with continued seasonally decreasing temperatures.
  - The Fish and Water Operation Outlook OMR Index values are expected to range between -1,000 and -3,500 cfs between 12/1/2020 and 12/7/2020.
  - Real time tracking of environmental conditions, relevant thresholds and Delta Smelt catch data are updated daily and are available online.

EVALUATION

1. **Between December 1 and January 31, has any first flush condition been exceeded?**
   The running 3-day average flows and running 3-day average turbidity at Freeport (Table 6) have not exceeded the triggers for "First Flush" conditions. Based on the weather forecast "First Flush" conditions are not expected in the next seven days.

2. **Do DSM have a high risk of migration and dispersal into areas at high risk of future entrainment? (December 1- January 31)**
   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. Based on Sommer et al. (2011), the centroid of Delta Smelt distribution is anticipated to be near X2 which is currently estimated to be at 90 km which indicates they could be upstream of the Sacramento-San Joaquin confluence. Since "First Flush" conditions are not expected to be met within the next seven days, it is unlikely that Delta Smelt will migrate into areas with a high risk of entrainment. The range of OMR is expected to be -1,000 and -3,500 and QWEST is expected to be slightly negative over the next seven days. As the season progresses, the risk that Delta Smelt may migrate even if "First Flush" conditions are not met will increase.
   Sommer, T., Mejia, F. H, Nobriga, M. L, Feyrer, F., & Grimaldo, L. (2011). The Spawning Migration of Delta Smelt in the Upper San Francisco Estuary. *San Francisco Estuary and Watershed Science*, 9(2). doi:https://doi.org/10.15447/sfews.2014v9iss2art2 Retrieved from https://escholarship.org/uc/item/86m0g5sz
3. **Has a spent female been collected?**
   This question is not applicable until Turbidity Bridge Avoidance begins.

4. **If OMR of -2000 does not reduce OBI turbidity below 12NTU/FNU, what OMR target is deemed protective between -2000 and -5000?**
   This question is not applicable until Turbidity Bridge Avoidance begins.

5. **If OBI is 12NTU, what do other station locations show?**
   This question is not applicable until Turbidity Bridge Avoidance begins.

6. **If OBI is 12NTU, is a turbidity bridge avoidance action not warranted? What is the supporting information?**

This question is not applicable until Turbidity Bridge Avoidance begins.

7. **After March 15 and if QWEST is negative, are Larval or juvenile DSM within the entrainment zone of the CVP and SWP pumps based on surveys?**
   This question is not applicable until March 15th.

8. **Based on real-time spatial distribution of Delta Smelt and currently available turbidity information, what is the OMR level between -3,500 and -5,000 cfs that manages weekly entrainment in the context of annual larval and juvenile entrainment levels?**
   This question is not applicable until March 15th.

9. **What do hydrodynamic models, informed by EDSM or other relevant data, suggest the estimated percentage of larval and juvenile DSM that could be entrained may be?**
   This question is not applicable until March 15th.

4. Attachment A: Monitoring Disruptions

Fish Monitoring Gear Efficiency/Disruptions: COVID-19 or air quality impacts.

Monitoring Survey	**Status (as of 12/08/20)**
Delta	
SWP regular counts, CWT reading, and larval sampling	Ongoing
CVP regular counts, CWT reading, and larval sampling	Ongoing
Smelt Larval Survey	Begins 12/14 (south and central Delta in early Dec)
20mm Survey	Begins in March
Bay Study	
DJFMP- Chipps and Sacramento Trawls	Ongoing; sampling 5 days a week
DJFMP- Seines	Suspended with the exception of the seine locations that inform the SCI
EDSM	Ongoing
EMP	December surveys canceled
Mossdale	Next sampling date scheduled TBD
USGS Flow monitoring	Continuous monitoring continues
Sacramento River	
Red Bluff Diversion Dam screw trap	Ongoing
Knights Landing screw trap	Ongoing through modified staffing
Tisdale screw trap	Ongoing through modified staffing
Redd dewatering and stranding surveys	Ongoing
Sacramento Carcass and Redd Surveys	Continuing
Spring Kodiak Trawl	Typically sample in Dec but starting in Jan this year
San Joaquin River	
SJRRP CDFW Field Monitoring	Start 10/6/20
SJRRP USFWS and USBR Field Monitoring	Since 8/31 with some interruption due to air quality