

SMELT WORKING GROUP
Wednesday, December 10, 2014

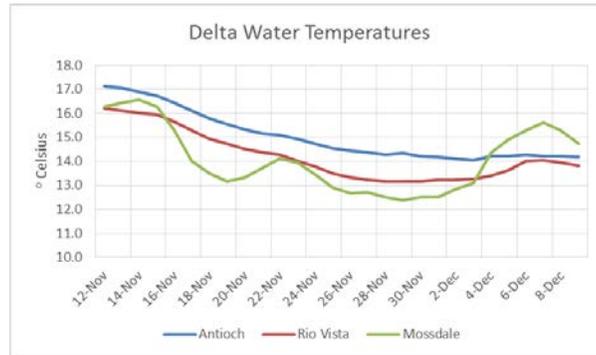
Meeting Summary:

This was a special meeting of the Working Group. The Service requested that the Working Group discuss and respond to two questions that will assist the Service in making a decision for Delta Smelt regarding current entrainment risk. The Working Group discussed current Delta conditions, salvage, and survey results. The Working Group is anticipated to meet again Monday, December 15, 2014.

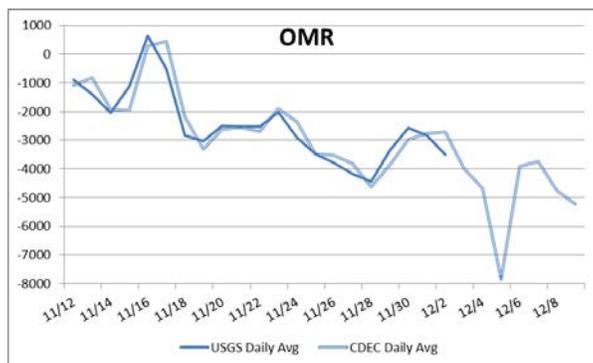
Reported Data:

1. Current environmental data:

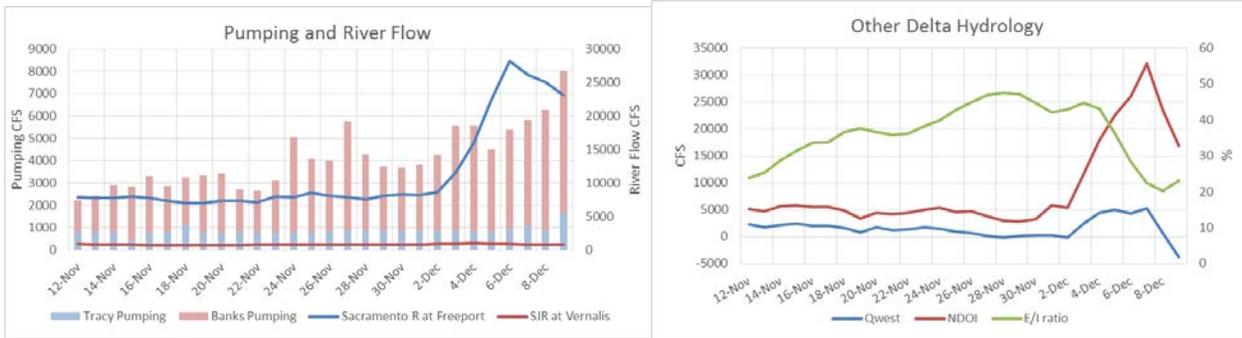
- Water Temperatures are as follows:



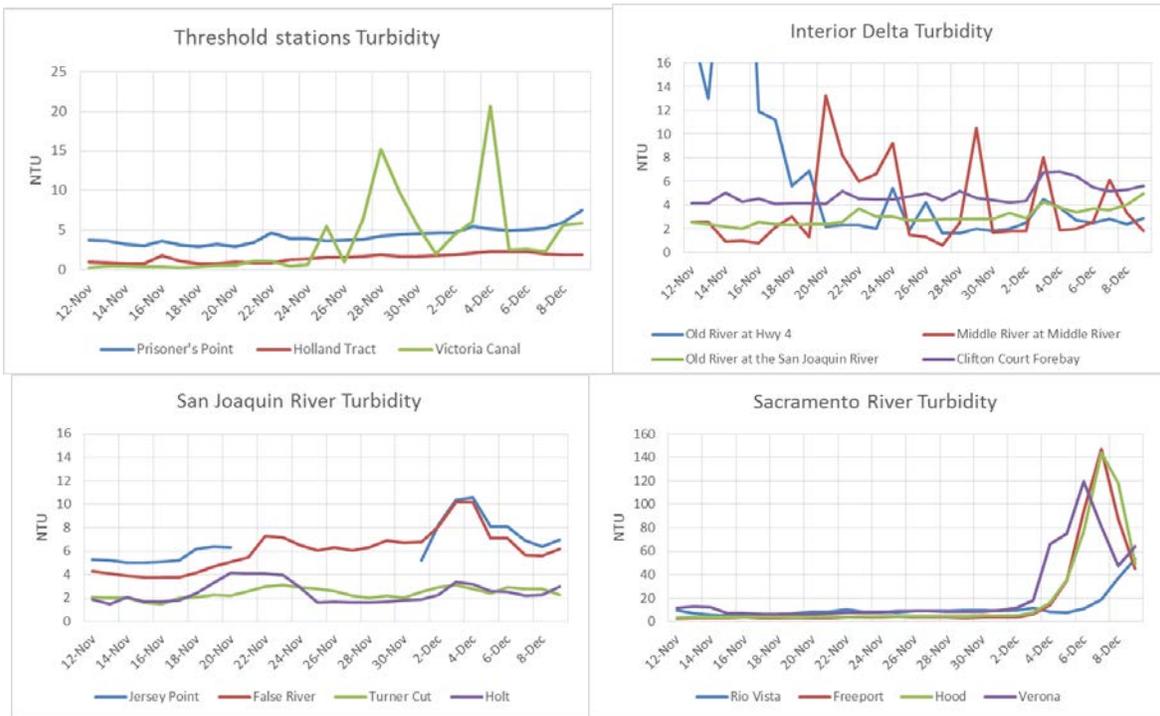
- OMR Flow: USGS tidally-averaged daily OMR as of December 2 is -3510 cfs. CDEC daily OMR flow as of December 9 is -5222 cfs



- River Flows: Sacramento River inflow is 23,065 cfs and San Joaquin River is 826 cfs. X2 calculation from CDEC remains upstream of 81 km. The graphs below show the most recent trends in Delta hydrology and water quality that were evaluated by the Working Group



- **Turbidity:**



2. Delta Fish Monitoring:

Spring Kodiak Trawl will begin sampling the week of December 15. The SKT shadowed the FMWT this week through this morning. On December 8, the SKT shadowing collected one Delta Smelt at station 508 (57mm). On December 9, the SKT collected 24 Delta Smelt at Sacramento River stations 701, 703, 704, 705, 707, and 711 (53-68mm). This morning, the SKT did not collect Delta Smelt from stations in the lower San Joaquin River and south Delta. Sampling tomorrow will be delayed until next week due to the anticipated severe weather conditions.

The Smelt Larva Survey will begin sampling the week of January 5.

The 2014 Fall Midwater Trawl has completed sampling for September, October, and November. Catches have been very low, on par with POD years' catch results. The 2014 Annual Fall Midwater Trawl Index will be generated using catch results from September through December tows and is anticipated to be released after January 1, 2015.

In the interim, CDFW calculated a partial Delta Smelt index based on the sum of September and October indices (the annual abundance index will be the sum of September through December indices). The September and October index is 8, which is consistent with some of the lower indices encountered since

the POD.

The USFWS, as part of the Delta Smelt recovery plan, developed an alternate index based on catch at a subset of FMWT stations during September and October, referred to as the Delta Smelt Recovery Index. The 2014 Delta Smelt Recovery Index (based on September and October) is 5. More information on the Recovery Index can be found on the Bay-Delta Office's web site at http://www.fws.gov/sfbaydelta/species/delta_smelt.cfm.

CDFW indicated that the September and October Index (based on the FMWT results) for Longfin Smelt is nine. The Longfin Smelt Incidental Take Permit for the SWP indicates that the concern level for take is reached when salvage surpasses 5 times the FMWT index, so the current level of concern is a cumulative salvage of 45. Calculation of the final concern limit will include additional FMWT survey results for November and December, but is anticipated to be relatively small. Larval protection for Longfin Smelt will begin in January.

The Service began the Early Warning Study on December 1, 2014, alternating sampling days at Jersey Point and Prisoner's Point. Sampling currently is ongoing daily until further notice.

3. Salvage:

No salvage has occurred for either Delta Smelt or Longfin Smelt for WY2015. Current longfin smelt and delta smelt salvage information can be downloaded from DFG's salvage FTP site at <ftp://ftp.dfg.ca.gov/salvage/Daily%20Smelt%20Summary/> or queried from DFG's salvage web page at <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>

4. Expected Project Operations:

Combined SWP/CVP exports today are 9300 cfs. This level of pumping is anticipated through at least Friday. Operators indicated they anticipate an OMR of -8500 cfs and Qwest of -5500 cfs in response to this pumping rate.

Operators indicated another very wet storm is anticipated to move into the area on Thursday, which should bring 3 to 4 inches of rain to the Sacramento River system and 1 to 2 inches of rain for the San Joaquin River system. Sacramento River at Bend is expected to peak above 100,000 cfs in association with the runoff from this storm and San Joaquin River at Vernalis is anticipated to peak at 1700 cfs.

5. Discussion:

The Working Group reviewed and discussed all relevant data from Delta monitoring, salvage, field surveys, and planned Project operations. The Working Group then discussed each of the two questions posed them by the Service.

Question #1: Given the early timing and pre-storm conditions associated with this week's storm, do you think it will stimulate Delta Smelt spawning movement?

After a brief discussion, the Working Group agreed that there was between a moderate to high likelihood that Delta Smelt would be stimulated to begin spawning migration in response to the recent and anticipated hydrology.

Members indicated a high likelihood that turbidity would increase across the system in response to the anticipated storm this week. Members indicated the anticipated change in turbidity increases the possibility for the start of spawning migration. Members expressed the moderate to high risk for a contiguous high level of turbidity from the lower Sacramento River through the

lower San Joaquin River and even into the southern Delta. Members indicated that even if runoff-related turbidity didn't reach the southern Delta, the high winds anticipated in the next day or two would likely create widespread high turbidity levels throughout the Delta, including the central and southern Delta. This would also result in an increased risk of fish moving into the sphere of influence of the export pumps. Members also expressed concern that turbidity levels, as seen so far this month, appear to be similar to turbidity levels in December 2012, which coincided with movement of Delta Smelt into the Central and South Delta culminating in a large and protracted salvage event.

Members indicated if Delta Smelt began migrating into the central Delta, the Early Warning Sampling being done at Jersey Point and Prisoner's Point would have the best chance in detecting them. As fish move into the southern Delta and eventually the export facilities, the likelihood of detection would be expected to be much lower at the salvage facilities, due to multiple factors.

Question #2: If so, to what factors do you think we should pay close attention to in order to gauge the risk of substantial smelt movement into the south Delta?

After a fairly extensive discussion, members indicated factors that the Service should pay attention to would be turbidity levels, OMR flow, size and condition of fish caught in surveys, very low population abundance level, distribution results from field surveys, position of X2, and intensity (and anticipated flash-flows creating high turbidity) of storm tomorrow and Friday.

Members were in agreement that turbidity levels are anticipated to rise across the system in response to conditions created by the upcoming storm and that this was a factor that the Service should weigh heavily. Members indicated that turbidity could move through Three-Mile Slough and carry Delta Smelt with it, and therefore, into the lower San Joaquin River. Surveys currently indicate a presence of Delta Smelt in the Sacramento River near the northern end of three mile slough. It was suggested that turbidity in this area could be monitored and assume that Delta Smelt are present with higher turbidity as it moves through the three mile slough corridor. This could provide some early warning that a portion of the population is at increased risk of entrainment. Members indicated that the intense nature of the storm expected tomorrow would likely result in even greater turbidity levels than in the earlier storm event.

Members also agreed that the anticipated highly negative OMR levels would increase the risk of entrainment for the species. At the levels indicated by operators, flow would be pulled from the lower Sacramento River. Members suggested that a large portion of the lower San Joaquin River would be subject to pull from the export pumps as well, especially considering that more than half of the water exported is anticipated to be pulled across the Delta from the Sacramento River. This hydrology would, at a minimum, put the Delta Smelt currently in the lower San Joaquin (as documented by the Early Warning sampling at Jersey Point) at a high risk of being entrained into the South Delta.

Members indicated some concern regarding the size and condition of the few fish that have been captured in field surveys. Members were unclear what this might mean as far as when fish might be motivated to begin spawning migration. However, it was indicated that under the anticipated OMR flows, fish could be pulled from the lower Sacramento River and carried into the zone of entrainment if they are not exhibiting tidal surfing behavior.

Members reminded the Service that the population abundance levels are at an all-time low. At current levels, and with the very low numbers caught in field surveys, members indicated it was exceedingly difficult to draw many conclusions and extrapolate the results to the population as

a whole. Members indicated that due to the presence of Delta Smelt in the southern trawl of the Early Warning surveys at Jersey point, coupled with high OMR, they would expect some salvage within the next 7 to 10 days, since the southern side of the channel is more hydrologically connected to tidal flow into the southern Delta. However, members recognized that at currently low abundance levels, it is also possible that entrained individuals might be missed by salvage sampling.

Field surveys the past week indicate that Delta Smelt are in the Sacramento River and the lower San Joaquin River. However, members are mindful that the low overall abundance numbers make extrapolation of sample density to the entire population very challenging. Some members indicated that they view Delta Smelt sampled in the Early Warning Study to be an indicator of presence, rather than an estimation of local abundance, due to the extremely low overall numbers. Members asked how many fish per trawl do we need to see in order to indicate the start of spawning migration into the lower San Joaquin River? Although no members offered a precise answer, some members indicated that any increase in fish per trawl could indicate the start of spawning migration into the lower San Joaquin River.

Some members indicated that the position of X2 was a concern. X2 is presently upstream of 81km, which would move Delta Smelt distribution upstream, potentially closer to the zone of influence of the export facilities.

After the discussion of these two questions, members added they are concerned that high levels of pumping under the conditions expected with the storm will pull a sizeable number of adult Delta Smelt into the central and southern Delta, creating a high risk for increased entrainment both now, and in the coming months, especially if these individuals manage to spawn in the central or southern Delta.

Some members indicated their concern over what they expected to be discussed during today's call. Members reiterated the discussion and decision at the last call on December 8 was that we were to meet today to discuss risk of entrainment and a potential recommendation on implementation of Action 1, Part A of the Biological Opinion. Some members requested that the Service respond to the Working Group with an explanation on why the group was tasked with responding only to the two questions posed to them.

The Working Group will continue to monitor conditions and smelt distribution and return to their normal meeting protocols on Monday, December 15, 2015.