



## Weekly Fish and Water Operations Outlook

2/7/2023 – 2/13/2023

### Water Project Operational Intent for Week

- Combined CVP/SWP exports scheduled so that the 5-day average OMR is less negative or equal to -5,000 cfs.

### Biological Justification

- The Turbidity Bridge Avoidance Action has been in effect from 1/17/2023 – present as warranted by turbidity conditions (OBI Daily Average > 12 FNU). The Projects operated at -2000 cfs for 19 consecutive days (starting 1/3/2023, first flush for 14 days, then turbidity bridge avoidance for 5 days), at OMR no more negative than -3500 cfs for an additional 5 days, through 1/26/2023, and at OMR no more negative than -5000 cfs thereafter.
- Turbidity values at OBI remain above 12 FNU (13.3 FNU on 2/5/2023) and may decrease over the next week. A turbidity bridge persists but has started to weaken.
- One unmarked adult Delta Smelt was detected in the Lower San Joaquin River near Antioch on 1/31/23 and one unmarked adult Delta Smelt was detected in the South Delta on 1/17/2023 near Franks Tract. Historical data suggests that migration typically lasts 1-4 weeks after first flush conditions and is thus likely ending (Sommer et al. 2011). Once Delta Smelt move upstream, they generally have limited movements (Polansky et al. 2017). However, the extent of, and variability in, migration under the current flow and turbidity conditions is highly uncertain. Additionally, some of the observed distribution of recently detected released fish could be in response to disorientation or stress from release. Fish released in the last few weeks have distributed widely.
- Although the possibility exists for Delta Smelt to become entrained into the OMR Corridor from the lower San Joaquin River, turbidity is decreasing across the Delta and Delta Smelt are likely at or near the end of migration and unlikely to be moving greater distances once they have completed their migration. There have been no recent detections of Delta Smelt near the entrance to the OMR Corridor or in the OMR Corridor or in salvage. Therefore, risk of additional Delta Smelt getting entrained into the interior Delta or salvage is low.

### Forecasted Weather

Dry weather through the week, with cool nights and daytime high temperatures at or above normal levels.

## Tables

Table 1: Anticipated weekly operational ranges by tributary. Environmental and fish conditions updated by respective watershed groups at varying intervals that may not coincide with the weekly range of Water Operations

Tributary/Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
Clear Creek	<ul style="list-style-type: none"> <li>• Current Release: 200 cfs.</li> <li>• Anticipated Weekly Range of Releases: 200 cfs.</li> </ul>	<ul style="list-style-type: none"> <li>• Spring-run Chinook Salmon fry are rearing.</li> <li>• Fall-run Chinook Salmon fry are emerging from redds and are rearing/emigrating.</li> <li>• Late fall-run Chinook Salmon are spawning, and eggs are incubating in the gravel.</li> <li>• O. mykiss adults are entering and are beginning to spawn. Eggs are incubating in the gravel.</li> </ul> <p><i>(Updated 2/1/2023)</i></p>
Sacramento River	<ul style="list-style-type: none"> <li>• Shasta Storage: 2.601 MAF</li> <li>• Current Release: 3,250 cfs</li> <li>• Anticipated Weekly Range of Releases: 3,250 cfs.</li> </ul>	<ul style="list-style-type: none"> <li>• Spring-run Chinook salmon fry have completed final redd emergence and are rearing or migrating downstream.</li> <li>• Winter-run Chinook juvenile salmon are migrating downstream. Winter-run and spring-run Chinook salmon (length-at-date) juveniles are being caught in low numbers and genetics being taken to confirm run assignment.</li> <li>• Fall-run Chinook salmon spawning is complete. Carcass surveys for fall-run have ended. Fall-run juveniles from October spawners have emerged, Nov-Dec spawner juveniles remain in the gravel for up to another few weeks.</li> <li>• Late fall-run Chinook salmon are spawning and eggs in gravel. Carcass surveys are underway. Late-fall spawning can occur up to late March but majority of spawning will be complete by the end of January.</li> <li>• Fall-run juveniles, according to length-at-date-criteria, are being caught at increasing numbers at the RBDD rotary traps.</li> </ul> <p><i>(Updated 2/6/23)</i></p>
Feather River	<ul style="list-style-type: none"> <li>• Oroville Storage: 2.353 MAF</li> <li>• Current Release: 950 cfs</li> <li>• Anticipated Weekly Range of Releases: 950 cfs</li> <li>• Daily temperature maximum: 55 F at Fish Hatchery</li> </ul>	<ul style="list-style-type: none"> <li>• Fall-run Chinook salmon fry are emerging and are rearing/moving downstream.</li> <li>• Spring-run Chinook salmon fry are emerging and are rearing/moving downstream.</li> <li>• O. mykiss Adults are spawning, eggs are in gravel and incubating.</li> </ul> <p><i>(Updated 2/6/2023)</i></p>

Tributary/Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
American River	<ul style="list-style-type: none"> <li>• Folsom Storage: 500 TAF</li> <li>• Current Release: 4,000 cfs</li> <li>• Anticipated Weekly Range of Releases: 3,000 cfs to 4,000 cfs</li> </ul>	<ul style="list-style-type: none"> <li>• Adult fall-run Chinook Salmon have completed spawning. Eggs are incubating in gravel and fry are emerging from redds.</li> <li>• Redd and carcass surveys have ended.</li> <li>• Juvenile and adult O. mykiss are present. Adult steelhead are spawning in river.</li> </ul> <p><i>(Updated 1/30/23)</i></p>
Stanislaus River	<ul style="list-style-type: none"> <li>• New Melones Storage: 1.009 MAF</li> <li>• Current Release: 200 cfs</li> <li>• Anticipated Range of Weekly Releases: 200 cfs.</li> </ul>	<ul style="list-style-type: none"> <li>• Juvenile and adult O. mykiss are present.</li> <li>• Adult fall-run Chinook salmon spawning has ended. Eggs are incubating in gravel. Fry are beginning to emerge from redds.</li> </ul> <p><i>(Updated 2/6/23)</i></p>
Delta	<ul style="list-style-type: none"> <li>• Freeport: 15,000 to 22,000 cfs</li> <li>• Vernalis: 5,000 to 6,500 cfs</li> <li>• Delta Outflow index: 15,000 to 22,000 cfs</li> <li>• Combined Exports: 7,000 to 9,900 cfs</li> <li>• JPP: Current 4,200 cfs, Range 3,500 cfs – 4,200 cfs</li> <li>• CCF: Current 5,700 cfs Range 3,500 cfs to 5,700 cfs</li> <li>• Expected Daily OMR Index Values: -4,800 to -5,000 cfs</li> <li>• DCC Gates: Closed as of 11/28 and expected to remain closed for seasonal operation.</li> </ul>	<ul style="list-style-type: none"> <li>• Adult O. mykiss present.</li> <li>• Spring-run and winter-run Chinook salmon juveniles are moving downstream and into the Delta.</li> <li>• Adult and juvenile Green Sturgeon present</li> <li>• Adult Delta Smelt migration is likely starting to end. DJFMP Chipps Island trawl caught an experimentally released adult DS on 1/19/23. EDSM caught an unmarked adult DS in the lower San Joaquin River on 1/31/23 and in the South Delta on 1/17/23. EDSM also caught nine marked DS in the lower Sacramento River, Liberty Island, and Suisun Bay during the week of 1/30/23. The salvage of a cultured DS adult at CVP occurred on 1/7/23. Experimental releases are complete with the most recent having been in the Sac DWSC 1/25-26/23.</li> <li>• Longfin Smelt sub-adults and adults have recently been detected in the lower San Joaquin River, Chipps, the lower Sacramento River, the Western Delta, and Suisun Marsh and Suisun Bay. Spawning is ongoing and LFS larvae have most recently been detected in the lower San Joaquin River, confluence, Suisun Bay, and downstream to San Pablo Bay. Four adult LFS have been salvaged at the CVP and 1 adult LFS at SWP this WY for an expanded total of 20.</li> </ul> <p><i>(Updated 2/6/2023)</i></p>

Table 2a-b: WY 2023 relevant Fish and Environmental Criteria and Status in 2019 Reclamation LTO Action Cumulative loss for the duration of 2019 Biological Opinion began upon signature of ROD, 2/19/2020.

Table 2a: WY 2023 Salmonid Current Loss and Delta Smelt Abiotic Conditions. Additional Real-Time OMR Restrictions and Performance Objectives (4.10.5.10.2, 4.10.5.10.3) and Onset of OMR Management (4.10.5.10.1). Genetic identification of salmon is not used in calculating loss, but results are included in the Assessment as they become available.

\*The Final WR JPE for BY2022 is 49,924.

Species/run	Threshold	Current Status	Weekly Trend	Updated
Green sturgeon	WY 2023 salvage = 74	WY 2023 salvage = 0 (0%)	No change expected	2/6/2023
Natural winter-run Chinook Salmon	WY 2023 loss = 292 (50% of 1.17% of JPE)	WY 2023 loss = 50.91 (17.4%)	Possible salvage	2/6/2023
Natural Steelhead	Dec 1 – Mar 31 = 707 (50% of 1,414) Apr 1 – June 15 = 776 (50% of 1,552)	WY 2023 loss = 100.2 Dec 1 – Mar 31 = 100.2 (14.17%) Apr 1 – June 15 = 0 (0%)	Possible salvage	2/6/2023
Sacramento River Hatchery winter-run Chinook salmon	WY 2023 loss = 114.6 (50% of 0.12% of JPE)	WY 2023 loss = 0 (0%)	Possible salvage	2/2/2023
Battle Creek Hatchery winter-run Chinook salmon	WY 2023 loss = 40 (1% of JPE)	WY 2023 loss = 0 (0%)	No change expected	2/6/2023
Proposed Action Hatchery yearling spring-run Chinook salmon surrogates	> 0.5% of each release group 1) 12/5/2022 group 1: 71,057 = 355.3 2) 12/23/2022 group 2: 66,735 = 333.7 3) 1/13/2023 group 3: 60,712 = 303.6	WY 2023 loss = 1) 127.5 (35.9%) 2) 141.3 (42.3%) 3) 0 (0%)	Possible salvage	2/6/2023
Delta Smelt	After Dec. 1: Running 3-day avg. flows at Freeport >25,000 cfs  Running 3-day avg. turbidity at Freeport =>50 FNU	Freeport 3-day avg. Flow = Not relevant Turbidity = Not relevant	Triggered 12/31/22, ended 01/16/23	1/23/2023 Data from 1/22/2023
Delta Smelt	Daily avg. Turbidity at OBI=>12 FNU	OBI daily Avg Turbidity = 13.3 FNU	Triggered; Turbidity Bridge Avoidance implemented 1/17/23 – Present Decreasing	2/6/2023
Delta Smelt	Daily avg. Temperature at CCF > 25°C for three consecutive days	CCF daily avg. Temperature = Not relevant	Not relevant	12/20/2022

Table 2b. 10-Year Salmonid Cumulative Loss

Species/run	Threshold	Current Status	Updated
Natural winter-run Chinook salmon	Loss = 8,738	Cumulative loss = 309.76 (3.5%)	2/6/2023
Hatchery winter-run Chinook salmon	Loss = 5,356	Cumulative loss = 6.71 (0.13%)	2/6/2023
Natural steelhead	Loss = 6,038 (Dec 1 – Mar 31) Loss = 5,826 (Apr 1 – June 15)	Cumulative loss = 641.33 (10.6%, Dec 1 – Mar 31) 474.5 (8.1%, Apr 1 – June 15)	2/6/2023

Table 3a-d: Relevant Water Year 2023 Fish Criteria and Status for Listed Fish under the SWP Long-Term Incidental Take Permit.

Table 3a: Chinook Salmon

\* Based on NMFS letter received on 1/20/2023, Final WR JPE for BY2022 is 49,924.

\*\* Based on the lab results received (up to sample date 1/17/23), there was no natural WR identified through genetic verification process

Action	Timeframe	Current Action Status	Threshold(s)	Current Relevant Data	Weekly Trend	Last Updated	Comments
OMR Mgmt. triggered (8.3.2)	Jan. 1 - Jun. 30 <i>(when ≥ 5% of spring-run or winter-run in Delta)</i>	Not in effect	-5% of the Winter-run or Spring-run population in Delta	N/A	N/A	12/18/22	N/A
Winter-run yearly loss (8.6.1)	Nov. 1 - Jun. 30	In effect	584.11 (based on final JPE)*	WR loss: 50.19**	Possible salvage	1/6/23	Based on salvage data from 1/29/23
Winter-run discrete daily loss (8.6.2)	Nov. 1 - Dec. 31	Not in effect	12/1-12/31: loss of 26/day unclipped older juv. Winter-run	Daily loss from 12/18 unclipped WR salvage: 17.54 fish/TAF < 26 fish/TAF	Possible salvage	1/3/23	Based on salvage data from 12/18/22

Action	Timeframe	Current Action Status	Threshold(s)	Current Relevant Data	Weekly Trend	Last Updated	Comments
Mid and late season Winter-run daily loss threshold (8.6.3)	Jan 1 – May 31	In effect	2/1/23 - 2/28/23 Daily loss of older juvenile greater than 4.95  Updated with genetic results as they become available. If genetics confirms the older juvenile is NOT a WR then COA will offramp.	Salvage of older juvenile with loss of 3.60 on 1/29/23	Possible salvage	2/6/23	Based on the genetic result, the action from trigger exceedance was offramped
Spring-run surrogate protection (8.6.4)	Feb. 1 - Jun. 30	In effect	TBD (based on the number of fish released*)	N/A	N/A	2/6/23	*Releases have not occurred yet for COA 8.6.4.

Table 3b: Delta Smelt

Action	Timeframe	Current Action Status	Threshold(s)	Current Relevant Data	Weekly Trend	Last Updated	Comments
Integrated Early Winter Pulse Protection ('First Flush') (8.3.1)	Dec. 1 - Jan. 31	Off-ramped 1/17/2023	- three-day Freeport daily flow running avg >= 25,000 AND  [three-day Freeport turbidity running avg >=50 NTU OR Smelt Monitoring Team recommendation]	FPT flow: Not relevant  FPT turbidity: Not relevant	Decreasing	1/30/23	N/A
Turbidity Bridge Avoidance (8.5.1)	Dec. 15 - Apr. 1	In effect, triggered; implemented 1/17/2023-Present	Occurs after the Integrated Early Winter Pulse protection or February 1 (whichever comes first) until April 1 -avg. OBI turbidity > 12 FNU	OBI = 13.3 FNU	Decreasing	2/6/23	Data from 2/5/23

Action	Timeframe	Current Action Status	Threshold(s)	Current Relevant Data	Weekly Trend	Last Updated	Comments
Larval and/Juvenile Delta smelt Protection (8.5.2)	ongoing	In effect, not triggered	- If 5-day cum. salvage of juv.DS >= 1 [average 3-yrFMWT index + 1], then – 5000 OMR - If DS in SLS/20mm or 3-d temp at Jersey Point >= 12C, and SLS/20mm Secchi for 12 south delta stations <= 1m, then –3500 OMR	Current 5-day salvage = 0  3-day SJJ temp = 8.9  SLS 2 avg Secchi = 25 cm	No change expected	2/6/23	Data from 2/5/23

Table 3c: Longfin Smelt

Action	Timeframe	Current Action Status	Threshold(s)	Current Relevant Data	Weekly Trend	Last Updated	Comments
Early Adult Protection (8.3.3)	Dec. 1 - Feb. 28	Off-ramped	-Cum. salvage > [most recent FMWT/10] =40 fish (Sept.-Dec. Index) OR -Smelt Monitoring Team determines high likelihood of LFS movement into high-risk areas	Cum salvage total = 20	No change expected	2/6/23	First salvage on 1/1/23.
OMR Mgt. for Adults (8.4.1)	Dec. 1 -Feb. 28	Off-ramped	-Smelt Monitoring Team recommendation	N/A	N/A	12/27/22	N/A
Larval and Juvenile Longfin Smelt Entrainment Protection (8.4.2)	Jan 1 – Jun 30	In effect, not triggered	-LFS larvae or juveniles in >=4 SLS or 20 mm stations in central and south Delta, OR -LFS catch/tow >5 larvae or juveniles in >=2stations	SLS #3: 2 larvae at station 809 and 2 at 812 in central and south Delta	None expected	2/6/23	SLS 3 was in the field 1/30- 2/3
High Flow OMR Off-Ramp for Longfin Smelt (8.4.3)	Based on the status of 8.3.3, 8.4.1, & 8.4.2	Triggered, not controlling	-Sac. R. at Rio Vista>55,000, OR  SJR at Vernalis >8,000	Rio Vista = 15,000 – 20,000 cfs SJ = 5,000 to 6,500 cfs	N/A	2/6/23	N/A

Table 3d: OMR

Action	Timeframe	Current Action Status	Threshold(s)	Current Relevant Data	Weekly Trend	Last Updated	Comments
OMR Storm Flexibility (8.7)	Jan 1 – Jun 30	Not in Effect	-Delta is in excess -QWEST is > 0 -Measurable amount of precipitation has occurred -None of COA's are controlling operations (8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, 8.6.4) -Cumulative salvage at CVP and SWP of yearling CNFH LFR Chinook salmon (as yearling CHNSR surrogates) is < 0.5% with any of the release groups -Risk Assessments conducted by the SaMT/SMT determines no changes in spawning, rearing, foraging, sheltering, or migration behavior as a result of OMR Flex operations beyond those are likely to occur.	N/A	N/A	1/3/23	Based on storm conditions
OMR Mgmt. Offramp (8.8)	Jun. 1 – Jun. 30	Not in effect	->95% of the Winter-run and Spring run populations have migrated past Chipps Island AND -Current daily average water temperature at Mossdale and Prisoners Point. • Days exceeded: Criteria met as of 6/16/2022		N/A	10/10/22	

Table 4: Fish monitoring gear efficiency and disruptions. Status Categories: [1] Active (ongoing sampling), [2] Partial Interruption (some sampling interruptions), [3] Interrupted (sampling fully suspended), [4] Not Active (sampling not scheduled)

Monitoring survey	Region	Notes (as of 2/7/2023)	Status
SWP regular counts, CWT reading	Delta	Active	1
SWP larval sampling	Delta	Not Active	4
CVP regular counts, CWT reading	Delta	Active	1
CVP larval sampling	Delta	Not Active	4
Smelt Larval Survey	Delta	Active	1
LEPS	Delta	Active	1



Monitoring survey	Region	Notes (as of 2/7/2023)	Status
20mm Survey	Delta	Not Active	4
Spring Kodiak Trawl	Delta	Active	1
Fall Mid-water Trawl	Delta	Not Active	4
Summer Townet Survey	Delta	Not Active	4
Bay Study	Delta	Active	1
DJFMP- Chipps and Sacramento Trawls	Delta	Active (sampling three days a week starting in May)	1
DJFMP- Seines	Delta	Active	1
EDSM	Delta	Active	1
EMP	Delta	Active	1
Mosssdale	Delta	Active	1
USGS Flow monitoring	Delta	Active	1
Red Bluff Diversion Dam Rotary Screw Trap (RST)	Sacramento River	Active	1
Knights Landing RST	Sacramento River	Active	1
Tisdale RST	Sacramento River	Active	1
GCID RST	Sacramento River	Not Active (Traps pulled out of river due to high flows on 12/27)	4
Yuba River (Hallwood) RST	Yuba River	Active – weekdays only	1
Redd dewatering and stranding surveys	Sacramento River	Not Active	4
Sacramento Carcass and Redd Surveys	Sacramento River	Active	1
Lower Sacramento RST	Sacramento River	Active	1
Feather River (upper DWR) RST	Sacramento River	Active	1
Feather River (lower CDFW) RST	Sacramento River	Active	1
SJRRP CDFW Field Monitoring	San Joaquin River	Active	1
SJRRP USFWS and USBR Field Monitoring	San Joaquin River	Not Active	4
Stanislaus Fish Weir	San Joaquin River	Active	1

## Delta Smelt References

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