2024 SWP ITP Operations Summary and Chinook Salmon Assessment

Date: 11/12/2024

Summary for the Water Operations Management Team (WOMT):

For the week beginning 11/12/24, D-1641's Delta Outflow is controlling exports at the Central Valley Project (CVP) and the State Water Project (SWP). Combined exports on 11/12/24 are 4,300 cfs resulting in an Old and Middle River Index (OMRI) of -6,600 cfs and 40.4% of inflow diverted (3-day average). The Delta Cross Channel (DCC) gates were closed on 11/11/24 but will re-open on 11/15/24. The SWP is exporting this week and no outages are planned.

Spring-run Chinook Salmon (SR) risk into the central Delta and the CVP and SWP export facilities remain low this week. SR are anticipated to still be rearing and emerging upstream in the mainstem Feather and Sacramento Rivers, along with Battle Creek, Clear Creek and Butte Creek tributaries.

Winter-run Chinook Salmon (WR) are beginning to migrate into the Delta. There are small numbers of Winter-run Chinook Salmon in the system at the moment; therefore, no thresholds for WR are likely to be exceeded in the upcoming week.

Thresholds for Relevant Conditions of Approval (COAs)

COA 8.17 2024 Early Season Natural Winter-run Chinook Salmon Discrete Daily Loss Threshold

- November Daily Loss Threshold: 6 older juvenile Chinook Salmon
    - Highest Daily Loss: 0
    - This COA will be in effect and implemented through 12/20/24 or until the ROD is signed. COA 8.2.1 will not be implemented until then.

COA 8.2.1 Natural-origin Winter-run Chinook Salmon Early Season Weekly Loss Thresholds

- Not applicable until 12/21/24 or when the ROD is signed.

COA 8.4.3 Winter-run Chinook Salmon Annual Loss Thresholds

- Natural-origin WR: N/A [0.05% of the natural-origin WR Juvenile Production Estimate (JPE)]
    - Current Annual Loss: N/A
        - 50% Threshold based on natural-origin WR JPE: N/A
            - Risk of exceeding threshold: N/A
            - Days Threshold was exceeded in previous week:
            - Days Operated to Threshold after Exceedance:
        - 75% Threshold based on natural-origin WR JPE: N/A
            - Risk of exceeding threshold: N/A
        - 100% Threshold based on natural-origin WR JPE: N/A
            - Risk of exceeding threshold: N/A
- Hatchery WR: N/A [0.12% of the Livingston Stone National Fish Hatchery (LSNFH) hatchery release JPE]
    - Current Annual Loss: N/A
    - 50% Threshold based on hatchery WR JPE: N/A
        - Risk of exceeding threshold: N/A
    - 75% Threshold based on hatchery WR JPE: N/A
        - Risk of exceeding threshold: N/A

    - 100% Threshold based on hatchery WR JPE: N/A
        - Risk of exceeding threshold: N/A

COA 8.4.5 Spring-run Chinook Salmon Protection Action and Surrogate Annual Loss Threshold

- Hatchery Origin Yearling SR Surrogates (0.25% of total in-river FR releases for each release group from Coleman National Fish Hatchery (CNFH):
    - Group 1 Loss Threshold: N/A
        - Highest Daily Loss: N/A
- Hatchery Origin Young-of-Year SR Surrogates (0.25% of total in-river FR releases for each release group from Coleman National Fish Hatchery (CNFH):
    - Group 1 Loss Threshold: N/A
        - Highest Daily Loss: N/A
- Hatchery Origin Young-of-Year SR Surrogates (0.25% of total in-river SR releases for each release group from Feather River Hatchery (FRH):
    - Group 1 Loss Threshold: N/A
        - Highest Daily Loss: N/A

Spring-run Chinook Salmon Risk Assessment for 11/12/24-11/18/24

Section 1: Sacramento River and Confluence

Assessment of risk of entrainment into the central Delta for SR in the Sacramento River:

- Exposure Risk:
    - SR: Low
- Routing Risk:
    - SR: Medium
- Overall Entrainment Risk:
    - SR: Low
- Change in risk of entrainment into the central Delta (increased/decreased risk compared to last week):
    - SR: Similar to previous week
        - Exposure Risk is estimated as low this week. SR are not estimated to be in the Delta this week due to seasonal timing. SR adults spawning is nearly complete, and eggs are still in gravel. Routing Risk is estimated as medium this week based on hydrologic conditions. Although the DCC gates are projected to re-open for weekend operations and Freeport flows remain low, SR are not anticipated to be migrating downstream where they would be affected by Delta operations. Therefore, the overall entrainment into the central Delta is low.

Section 2: Facilities Risk

Central Valley Project/State Water Project (CVP/SWP) facilities entrainment risk for WR and SR in the central Delta over the next week:

- Exposure Risk:
    - SR: Low
- Reporting OMR/Export Risk:
    - Baseline OMR (-3,600 cfs)
        - SR: Low
    - Scenario 1 OMR: (-3,500 cfs)
        - SR: Low

    - Scenario 2 OMR: (-5,700 cfs)
        - SR: High
- Overall Entrainment Risk:
    - SR: Low
- Change in risk of entrainment into the facilities (increased/decreased risk compared to last week):
    - SR: Similar to previous week
        - Exposure Risk are both low this week due to no WR salvage occurring for water year (WY) 2025. Reporting OMR/Export Risk is high this week due to a more negative than -5,000 cfs OMRI anticipated this upcoming week and exports estimated to be high. No SR have been observed at the export facilities for WY 2025 and it is unlikely for SR to be near the export facilities due to seasonal timing. Therefore, the overall entrainment risk into the facilities is estimated to be low this week.

Section 3: Distribution and Biology

- Adult escapement:
    - Adult SR will likely complete their spawning by mid-November.
- Redd distribution and fry emergence timing:
    - SR eggs are incubating in the gravel. There have been no detections of early emergence based on lack of detections in the real-time monitoring stations.
- Hatchery releases (Feather River Fish Hatchery and Coleman National Fish Hatchery):
    - No releases so far this WY.
- Distribution of length-at-date (LAD) natural-origin young-of-year (YOY) and yearling SR:
    - Feather River: Lower Feather RSTs will begin trapping on 11/24/24. Juveniles are beginning to emerge from redds and in gravel.
        - Butte Creek: Last week of Butte Creek Carcass Surveys was the week of 10/28/24. Only 20 carcasses were observed as of 10/28/24. No juvenile salmonids have been observed passing through the RSTs as of 11/4/24.
    - Sacramento River: Carcass surveys still ongoing. Red Bluff Diversion Dam (RBDD) RSTs are observing juveniles passing through.
        - Mill and Deer Creek: As of 11/13/24, no juveniles have been observed at the Mill and Deer Creek RSTs.
- Distribution of natural-origin yearling SR:
    - Yearling SR are likely to be migrating downstream into the Delta with the continued rain events that have occurred in the past week and will continue to occur in the upcoming week. However, LAD yearling fall-run Chinook Salmon, which have the potential to be yearling SR, have not been observed in any of the real-time monitoring stations so far the WY.
    - Any genetic SR that is larger than the LAD YOY SR, according to the Delta Model, will be classified as a yearling SR.

Hydrology and Operations Updates

Water Operations

<u>Weather Conditions:</u>

- Meteorological Forecast on 11/12/24:
    - *"Dry and seasonable weather today ahead of another weather system occurring Wednesday into the weekend bringing periods of rain with isolated thunder chances, mountain snow, and breezy winds."*
    - *NOAA - National Weather Service Forecast*

Antecedent Actions: (e.g., Actions such as integrated early winter pulse protection, etc.)

- N/A

Exports and OMRI Ranges:

- Exports: 11/12/24 – 11/18/24
  - SWP: 500 to 1,500 cfs
  - CVP: 2,700 to 3,500 cfs
- For previous 30 day CVP and SWP operation updates: Operations and Delta Status

OMRI: 11/12/24 – 11/18/24

- Expected Daily Values: -2,500 cfs to -4,000 cfs

DCC Gates position:

- DCC gates closed 11/11 and will re-open on 11/15.

Freeport flows: 8,700 cfs

Georgiana Slough Migratory Barrier (BAFF):

- Georgiana BAFF will be installed and begin operating on 11/15/24.
- Releases of acoustically-tagged hatchery fish are anticipated to occur from December through March to study the effectiveness of the BAFF. These studies will be included in a table in this section once releases occur.

Real-time Monitoring Data

SacPAS Tools

Section 1: STARS Model

Available on SacPAS at: Delta STARS Model

Table 1. STARS Model

Date: (11/12/24)	DCC Gates	Georgiana Slough	Sacramento River	Sutter and Steamboat Slough	Yolo Bypass
Late Fall-Run Proportion of Entrainment	0.21	0.19	0.34	0.25	N/A
Late Fall-Run Survival	0.11	0.14	0.35	0.32	N/A
Winter-Run Proportion of Entrainment	N/A	0.13	0.58	0.14/0.15	N/A
Winter-Run Survival	N/A	0.06	0.26	0.32/0.31	N/A

Section 2: Historical Migration

Knights Landing RST and Chipps Island Trawls Historical Timing from Brood Years 2009-2023. Available at: Unclipped Winter Chinook Cohort Juvenile Migration Timing and Conditions Graph and Table: SacPAS Sacramento Prediction and Assessment of Salmon and other fishes

Delta Monitoring Stations

Rotary Screw Trap Data

*Due to the Monday holiday, data were not available before the SaMT meeting; therefore, table has not been updated to include recent catch this week.

Red Bluff Diversion Dam RST: Estimated juvenile WR passage at Red Bluff Diversion Dam for 11/3/24 is 348,758 fish.

Table 2. *Fish monitoring data for RST data for the 10/29/24 SaMT meeting. The following table presents fish monitoring data summarized over the past week. Unless otherwise noted, reported sizes are fork length. FR = fall-run, WR = winter-run, SR = spring-run, LFR = late-fall-run.*

Location	Butte Creek RST*	Tisdale RST*	Knights Landing RST*	Lower Sac RST*	Lower Feather RST	Feather at Herringer RST	Feather at Eye-Side RST
Sample Date	N/A	10/23/24 - 10/27/24	10/23/24 - 10/27/24	10/24/24 - 10/30/24	N/A	N/A	N/A
Chinook Adults	0	0	0	0	N/A	N/A	N/A
FR Chinook	0	0	0	0	N/A	N/A	N/A
SR Chinook	0	0	0	0	N/A	N/A	N/A
WR Chinook	0	1	0	5	N/A	N/A	N/A
LFR Chinook	0	0	0	0	N/A	N/A	N/A
Chinook (ad-clip)	0	0	0	0	N/A	N/A	N/A
Steelhead (wild)	0	0	0	0	N/A	N/A	N/A
Steelhead (ad-clip)	0	0	0	0	N/A	N/A	N/A
Green Sturgeon	0	0	0	0	N/A	N/A	N/A
Flows (avg. cfs)	N/A	N/A	4,485	7,700	N/A	N/A	N/A
W. Temp. (avg. °F/C)	N/A	N/A	14.1 °C	14.6 °C	N/A	N/A	N/A
Turbidity (avg. NTU)	N/A	N/A	6.6	3.4	N/A	N/A	N/A

Delta Trawl and Seine Data

Table 3. *Fish monitoring data for trawl and seine data for the 10/29/24 SaMT meeting. The following table presents fish monitoring data summarized over the past week. Unless otherwise noted, reported sizes are fork length. FR = fall-run, WR = winter-run, SR = spring-run, LFR = late-fall-run.*

Location	Chipps Island Midwater Trawl	Mossdale Kodiak Trawl	Beach Seines	Sac Trawl
Sample Date	10/20/24-10/26/24	10/20/24-10/26/24	10/20/24-10/26/24	10/20/24-10/26/24
Chinook	0	0	0	0

Location	Chipps Island Midwater Trawl	Mossdale Kodiak Trawl	Beach Seines	Sac Trawl
Adults				
FR Chinook	0	0	0	0
SR Chinook	0	0	0	0
WR Chinook	0	0	0	0
LFR Chinook	0	0	0	0
Chinook (ad-clip)	0	0	0	0
Steelhead (wild)	0	0	0	0
Steelhead (ad-clip)	0	0	0	0
Green Sturgeon	0	0	0	0
Flows (avg. cfs)	N/A	N/A	N/A	N/A
W. Temp. (avg. °F/C)	N/A	N/A	N/A	N/A
Turbidity (avg. NTU)	N/A	N/A	N/A	N/A

Hatchery Release Information

Telemetry Data:

Information for telemetry data can be found at: CalFishTrack

The Central Valley Enhanced Acoustic Tagging Project has not tagged any fish so far this WY; therefore, there are no updates to the telemetry data this week.

Tracking Hatchery Releases:

Currently there have not been any hatchery releases so far this WY.

Table 4. Hatchery salmon release data for BY 2024 and WY 2025.

Release Date	Hatchery	Race	CWT	Marked Release Number	Total Release	Percent Marked	Release Location	Mark	Agency	Release Type
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 5. Hatchery steelhead release data for BY 2024 and WY 2025.

Release Date	Hatchery	CWT	Marked Release Number	Total Release	Percent Marked	Release Location	Mark	Agency	Release Type
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 6. COA 8.4.5 Young-of-Year Spring-run Chinook Salmon Hatchery Surrogate Summary Table, WY 2025.

Hatchery	Release Group	Date	Race	Total Fish Released	CWT Fish	Tag Codes	Loss Threshold
Coleman National Fish Hatchery (Fall-run Chinook Salmon)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Feather River Fish Hatchery (Spring-run Chinook Salmon)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Feather River Fish Hatchery (Fall-run Chinook Salmon)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

LAD/Genetic Loss Data for Older Juvenile Chinook Salmon and Spring-run Chinook Salmon

No loss of LAD or genetic WR or SR in the previous week.

- SacPAS - Salvage Timing

2024 SWP ITP COAs Currently in Effect

The 2024 Incidental Take Permit for Long-Term Operation of the State Water Project in the Sacramento-San Joaquin Delta 2081-2023-054-00 (SWP ITP). This week's operations summary and assessment is based on the following COAs which are currently applicable:

COA 8.2.1 Natural-origin Winter-run Chinook Salmon Early Season Weekly Loss Thresholds

To minimize entrainment and loss of early-migrating natural-origin CHNWR, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -5,000 cfs for seven consecutive days, when the genetically verified 7-day rolling sum of CHNWR loss, calculated daily, exceeds the following thresholds (see calculation details and survival variables in Attachments 2 and 6):

- *From November 1 through November 30: Product of November Multiplier and the Red Bluff Diversion Dam juvenile CHNWR brood year passage total at the end of the second biweekly period in October, whereby the November Multiplier is: November Multiplier = 0.0011 x 0.25 x SurvivalFry-to-Smolt x SurvivalSmolt*
- *From December 1 through December 31: Product of December Multiplier and the Red Bluff Diversion Dam juvenile CHNWR brood year passage total estimated at the end of the second*

biweekly period in November, whereby the December Multiplier is: December Multiplier = 0.0021 x 0.25 x SurvivalFry-to-Smolt x SurvivalSmolt

If the 7-day rolling sum of CHNWR loss, calculated daily, is exceeded during a period of reduced exports, Permittee shall, in coordination with Reclamation, continue to adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -5,000 cfs, until seven days after the most recent exceedance. Loss shall be calculated for the south Delta export facilities using the 2018 CDFW loss equation (Attachment 8). Permittee shall, in coordination with Reclamation, initially adjust exports in response to meeting the thresholds above based on length-at-date identification of natural-origin older juvenile Chinook Salmon. If genetic analysis of natural-origin juvenile Chinook Salmon observed in salvage at the SWP or CVP subsequently indicates that any given Chinook Salmon is not a genetically confirmed CHNWR, that fish will not count toward the loss threshold exceedance, and continued export adjustments pursuant to the OMR limit may not be required. While a new, more rapid genetic method, SHERLOCK, undergoes field testing, both it and the current genetic method, GT-seq, shall be used to determine the final identification. In the event that SHERLOCK and GT-seq provide different run assignments, the results from the GT-seq method shall be used to determine the final run assignment for the purposes of implementing Condition of Approval 8.2.1. If a fish is not genetically identifiable or if genetic identification is pending, then the Delta model length-at-date criteria shall be used to classify the race of the juvenile Chinook Salmon in salvage for the purposes of implementing Condition of Approval 8.2.1.

COA 8.4.3 Winter-run Chinook Salmon Annual Loss Thresholds

To minimize entrainment and loss of juvenile CHNWR, Permittee shall, in coordination with Reclamation, adjust south Delta exports to manage the OMR index to avoid exceeding the following annual loss thresholds:

- *Natural-origin CHNWR Loss Threshold: 0.5% of JPE*
- *Hatchery-origin CHNWR Loss Threshold: 0.12% of JPE*

JPEs and annual loss thresholds will be calculated for natural-origin CHNWR, for hatchery-origin CHNWR from Livingston Stone National Fish Hatchery (LSNFH) released into the Sacramento River near Redding, and for LSNFH hatchery-origin CHNWR released into Battle Creek. The JPE for natural and hatchery-origin CHNWR is calculated by the JPE Subteam annually, consistent with Attachment 2, and is described in the yearly recommendation letter produced by the JPE Subteam and transmitted to NMFS and CDFW. NMFS and CDFW issues an Annual JPE Letter, with the JPE Subteam recommendation included as an enclosure to the letter, to Permittee and Reclamation. Hatchery releases of CHNWR are tracked individually, and Permittee shall sum cumulative loss, confirmed by coded wire tag (CWT), across release groups with the same JPE and annual loss threshold. Permittee shall calculate loss for the south Delta export facilities using the 2018 CDFW loss equation (Attachment 8). Permittee shall count annual loss of natural and hatchery-origin CHNWR at the SWP and CVP salvage facilities for each brood year, starting July 1 of the calendar year through June 30 of the following calendar year. If cumulative loss of either natural or hatchery-origin CHNWR in a brood year exceeds 50% of the annual loss thresholds, then Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -3,500 cfs for seven consecutive days. If a CHNWR is salvaged during the 7-day action, the action will be extended for another seven days. At the conclusion of the action, Permittee, in coordination with Reclamation shall revert to the weekly distributed loss

threshold until the 75% threshold is reached or throughout the end of the OMR Management season (Condition of Approval 8.6).

COA 8.4.5 Spring-run Chinook Salmon Protection Action and Surrogate Annual Loss Thresholds

To minimize entrainment and loss of juvenile CHNSR, Permittee shall, in coordination with Reclamation, restrict exports based on the presence of hatchery-origin CHNSR and associated yearling late fall-run and young-of-year fall-run Chinook Salmon surrogate groups at the SWP and CVP salvage facilities. Permittee shall, in coordination with CDFW, Reclamation, USFWS, and NMFS through the SaMT, select CHNSR yearling and young-of-year surrogate groups. Yearling CHNSR surrogates shall be selected from late fall Chinook Salmon in-river release groups from the Coleman National Fish Hatchery. Young-of-year CHNSR and associated surrogate groups shall be selected from fall- and spring-run Chinook Salmon in-river release groups from the Feather River Fish Hatchery and Coleman National Fish Hatchery.

From November 1 through the end of OMR Management (Condition of Approval 8.6) each water year:

(1) If a cumulative loss threshold for a surrogate release group is exceeded in November or December, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -5,000 cfs for seven consecutive days; and

(2) If a cumulative loss threshold for a surrogate release group is exceeded after the onset of OMR Management (Condition of Approval 8.3), or on or after January 1 through the end of OMR Management or June 30, whichever comes first, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7- day average of the OMR index no more negative than -3,500 cfs for seven consecutive days.

The cumulative loss threshold for CWT CHNSR surrogate groups at the SWP and CVP salvage facilities is greater than 0.25% for each release group:

- *Yearling CHNSR surrogates: WOMT, with input from SaMT, shall select three inriver releases of late fall-run Chinook Salmon from Coleman National Fish Hatchery from November through February to use as yearling CHNSR surrogates. Input from SaMT may include a proposal with several alternatives. If three in-river releases appropriately distributed from November through February are not achievable in a given year because of hatchery limitations, then an alternative plan shall be developed to ensure the adequate characterization and minimization of natural-origin yearling CHNSR can still be achieved that year. This plan shall be subject to CDFW approval.*
- *Young-of-year CHNSR surrogates: WOMT, with input from SaMT, shall select six in-river releases comprised of CHNSR and fall-run Chinook Salmon from the Feather River Fish Hatchery and fall-run Chinook Salmon from the Coleman National Fish Hatchery from March through May to use as young-of-year CHNSR surrogates. Input from SaMT may include a proposal with several alternatives. If six in-river releases appropriately distributed from March through May are not achievable in a given year because of hatchery limitations, then an alternative plan shall be developed to ensure the adequate characterization and minimization of natural-origin young-of-year CHNSR can still be achieved that year. This plan shall be subject to CDFW approval.*

Permittee shall, in coordination with Reclamation and SaMT, use real-time monitoring data, relevant tools, and new science gained through ongoing efforts to develop a CHNSR JPE and LCM to inform weekly risk assessments (October through June) for natural-origin juvenile CHNSR. If the risk assessment or WOMT representatives identifies a more positive OMR flow may be needed to minimize take of natural-origin juvenile CHNSR, WOMT may consider a more positive OMR flow requirement.

COA 8.17 2024 Early Season Natural Winter-run Chinook Salmon Discrete Daily Loss Threshold:
From the effective date of this ITP through December 20, 2024 Permittee shall, in coordination with Reclamation, adhere to the following criteria to minimize take of early migrating CHNWR. To minimize entrainment, salvage, and take of early-migrating natural CHNWR, Permittee shall restrict south Delta exports for five consecutive days to achieve a five-day average OMR index no more negative than -5,000 cfs when daily loss of older juveniles (natural older juvenile Chinook Salmon70 and yearling CHNSR used as a surrogate for CHNWR) at the SWP and CVP salvage facilities exceeds the following thresholds:

- *From November 1 – November 30: 6 older juvenile Chinook Salmon*
- *From December 1 – December 31: 26 older juvenile Chinook Salmon*

All natural older juvenile Chinook Salmon juveniles shall be identified based on the Delta Model length-at-date criteria. Loss shall be calculated for the South Delta Export Facilities using the equation provided in CDFW 2018 (Attachment 8). From the effective date of this ITP through December 20, 2024, or finalization of a new ROD, whichever occurs first, Permittee shall not be required to implement Condition of Approval 8.2.1 (Natural-origin Winter-run Chinook Salmon Early Season Weekly Loss Thresholds). This Condition of Approval carries forward Condition of Approval 8.6.2 from the 2020 ITP for Long-term Operation of the SWP in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00 and is applicable only for the time period described in this Condition of Approval