

**Delta Operations for Salmonids and Sturgeon (DOSS) Group**  
**Conference call: 12/3/2019 at 9:00 a.m.**

**Objective:** Provide advice to the Water Operations Management Team (WOMT) and National Marine Fisheries Service (NMFS) on measures to reduce adverse effects from Delta operations of the Central Valley Project (CVP) and the State Water Project (SWP) on salmonids and green sturgeon. DOSS will work with other technical teams. DOSS notes and advice can be found here: [CCV Water Operations DOSS page](#).

**CDFW:** Ken Kundargi, Duane Linander, Kyle Griffiths, Jonathan Williams, Page Uttley

**DWR:** Bryant Giorgi, Mike Ford, Kevin Reece, Brittany Davis, Ian Uecker

**NMFS:** Jeff Stuart, Kristin Begun

**Reclamation:** Tom Patton, Suzanne Manugian, Elissa Buttermore

**SWRCB:** Michael Macon, Chris Carr, Craig Williams

**USFWS:** Felipe Carrillo, Craig Anderson

**Agenda Items:**

1. Agenda review and introductions
2. RPA Implementation review (For the DOSS Dashboard, click on the "Triggers & Indices" tab at: [Bay Delta Live](#))
3. Current Operations
4. Smelt Working Group
5. Fish Monitoring: RSTs/trawls/seines
6. Fish Monitoring: Salvage
7. DOSS Estimates of Fish Distribution
8. Risk of Entrainment
9. Other Topics
10. DOSS Advice
11. Next DOSS Meeting

**Agenda Item 2.**

**RPA Implementation Review**

**Delta RPA Actions affecting operations during November/December:**

**Action IV.1.1 Alerts that indicate the Delta Cross Channel (DCC) gate operations may be triggered soon<sup>1</sup>:**

- The First Alert has two components. Capture of yearling-sized spring-run Chinook salmon at the mouths of natal tributaries between October and April indicates that emigration from the tributaries has started or is occurring. As an environmental surrogate to the capture of the yearling-sized spring-run Chinook salmon, which are difficult to capture in the rotary screw traps, tributary flow increases are used to signal conditions conducive to emigration. The First Alert is triggered if either the first component (greater

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<sup>1</sup> For details, see pages 60-61 in Enclosure 2 of the [2011 Amendments to the 2009 RPA document](#). Note that in October 2014, NMFS approved a modification of the first component of the first alert to a 95 cfs mean daily flow threshold in either Mill Creek or Deer Creek in lieu of operating the Mill and Deer Creek rotary screw traps.

than 95 cfs flow threshold) or second component (greater than 50% change in mean daily flow) are exceeded. The First Alert was triggered (yellow highlights) this past week due to flows greater than 95 cfs, as well as exceeding a 50% increase in mean daily flows on 12/2/2019.

Date	Mill Creek (MLM)		Deer Creek (DCV)	
	mean daily flow (cfs)	change in mean daily flow	mean daily flow (cfs)	change in mean daily flow
11/26/2019	124	3%	117	5%
11/27/2019	131	6%	130	11%
11/28/2019	129	-2%	124	-4%
11/29/2019	127	-2%	121	-3%
11/30/2019	126	-1%	119	-1%
12/1/2019	171	36%	178	49%
12/2/2019	270	58%	283	59%

- The Second Alert is triggered only if **both** Wilkins Slough flows are greater than 7,500 cfs and Knights Landing temperature is less than 56.3°F. The second alert is in effect beginning 10/1/2019, and has not been triggered.

Date	Wilkins Slough (WLK)	Knights Landing (KL)
	Mean Daily Flow (cfs)	Daily water temperature (°F)
11/26/2019	4,404	51.1
11/27/2019	4,474	49.2
11/28/2019	4,759	48.6
11/29/2019	5,147	47.0
11/30/2019	5,249	46.9
12/1/2019	5,589	46.5
12/2/2019	6,043	47.0

**Action IV.1.2<sup>2</sup> (DCC gate operations):**

- On 11/27/2019, 7 winter-run Chinook salmon were caught at the Sacramento seines. Sacramento Catch Index (SCI) was 9.33 fish, requiring DCC gate closure. NMFS was not notified via email until 11/29/2019. However, DCC gates were scheduled to be closed on 12/1/2019.
- DCC gates will remain closed per operations described in RPA IV.1.2 starting 12/1/2019 and are expected to remain closed until mid-May.

**Action IV.3<sup>3</sup> (Reduce likelihood of entrainment or salvage at the export facilities, including alert that indicates that export operations may need to be altered):**

<sup>2</sup> For details, see pages 62-66 in Enclosure 2 of the [2011 Amendments to the 2009 RPA document](#).

<sup>3</sup> For details, see pages 79-80 in Enclosure 2 of the [2011 Amendments to the 2009 RPA document](#).

- The third alert [November 1-February 28 Knights Landing Catch Index (KLCI) or Sacramento Catch Index (SCI) >10] was not triggered this past week.
- Since the action went into effect on 11/1/2019, no salvage-based triggers that would require export reduction have been exceeded.

**Agenda Item 3.**  
**Current Operations (12/3/2019)**

SWP		CVP	
<b>Exports (cfs)</b>			
Clifton Court Forebay	5,500*	Jones Pumping Plant	3,400**
<b>Reservoir Releases (cfs)</b>			
Feather - Oroville	3,000	American - Nimbus	2,500
		Sacramento - Keswick	5,000
		Stanislaus - Goodwin	2,000***
		Trinity - Lewiston	300
<b>Reservoir Storage (TAF)</b>			
San Luis (SWP)	640	San Luis (CVP)	255
Oroville	1,932	Shasta	3,209
New Melones	2,007	Folsom	495
<b>Delta Operations</b>			
DCC	Closed	Sacramento River at Freeport (cfs)	17,000
Outflow Index (cfs)	11,000	San Joaquin River at Vernalis (cfs)	2,100
E:I	63% (14-day avg.)	X2	>81 km

\*SWP exports are scheduled to increase tomorrow (12/4/2019) up to 6,680 cfs likely and remain at this level through the week depending on inflow.

\*\*CVP exports will remain at this level through the week. Capacity is limited by the maintenance of 2 pumping units.

\*\*\*Goodwin releases will hold for the next couple of days, then increase up to ~4,000 cfs to reduce reservoir volume to comply with flood control space requirements.

**Factors controlling Delta exports:**

- 11/26/2019: Delta outflow as a function of Delta inflow (outflow equal to 50% of inflow) under the USFWS' Delta Smelt biological opinion RPA November Fall X2 action obligations.
- 11/27/2019 – 12/3/2019: E/I ratio. After 12/4/2019 the physical capacity of the Projects will be limiting.

Approximate OMRs as of 11/30/2019:

	USGS gauges (cfs)	Index (cfs)
Daily	-6,800	-7,500
5-day	-6,600	-6,900
14-day	-4,500	-4,900

Approximate OMRs as of 12/2/2019:

	Index (cfs)
Daily	-7,700
5-day	-7,300
14-day	-5,300

*Weather Forecast*

The forecast for the Sacramento valley shows a chance of showers today and tomorrow. Another winter storm will approach on Thursday evening into the weekend bringing an increase in precipitation and wind. Snow levels in the Sierra will be around 5,500 feet on Saturday.

**Agenda Item 4.  
Smelt Working Group**

The Smelt Working Group met on Monday, 12/2/2019.

The Smelt Working Group (SWG) reviewed current Delta conditions, survey data, expected exports, and forecasted weather. The SWG indicated that the precipitation forecasted for this week would be minor, and a “first flush” event is unlikely to occur this week. Field surveys have not detected any Delta Smelt outside of Suisun Marsh and the lower Sacramento River. Additionally, the moderate rise in turbidity levels in the south and central Delta is expected to be short-lived and wind-driven. The SWG concluded that the risk for Delta Smelt entrainment is low.

The SWG does not believe that a recommendation under Action 1 (adult pre-spawning Delta Smelt) is necessary to protect Delta Smelt at this time. The SWG will continue to monitor Delta Smelt survey and salvage data and Delta conditions. The group will meet again on Monday, 12/9/2019 at 10 am.

**Agenda Item 5.**

**Fish Monitoring:** The following table presents fish monitoring data summarized over the past week.

Location	GCID RST <sup>A</sup>	Tisdale RST <sup>B</sup>	Knights Landing RST <sup>C</sup>	Beach Seines <sup>D</sup>	Sacramento Trawl <sup>D</sup>	Chippis Is. Midwater Trawl <sup>D</sup>	Mossdale Kodiak Trawl <sup>D</sup>
<b>Sample Date</b>	11/25-12/1	11/25-12/2	11/25-12/2	11/25-11/27, 11/29	11/25, 11/27, 11/29	11/25, 11/27, 11/29	11/25-11/27
<b>FR Chinook</b>	4 smolts						
<b>SR Chinook</b>	10 juveniles						

<b>WR Chinook</b>	272 juveniles			7			
<b>LFR Chinook</b>	5 juveniles						
<b>Chinook (ad-clip)</b>							
<b>Steelhead (wild)</b>							
<b>Steelhead (ad-clip)</b>							
<b>Green Sturgeon</b>							
<b>Flows (avg. cfs)</b>	714	5,284	5,038				
<b>W. Temp. (avg. °F)</b>	49.7	47.1	48.0				
<b>Turbidity (avg. NTU)</b>	6.7	4.5	5.78				

<sup>A</sup> GCID was sampling at half cone this past week. On 11/26 the GCID RST cone was raised at 7 pm due to extremely heavy debris. The RST cone was lowered on 11/27 at 1 pm. On 12/1 the RST cone was raised in anticipation of high flows and heavy debris.

<sup>B</sup> Tisdale RST sampling period was from 11/25 at 9:30 am to 12/2 at 10:00 am.

<sup>C</sup> Knights Landing RST sampling period was from 11/25 at 10:15 am to 12/2 at 10:00 am. Cone effort was 50% from 11/27 to 12/2.

<sup>D</sup> Data reported in the 11/24 to 11/30 DJFMP sampling summary.

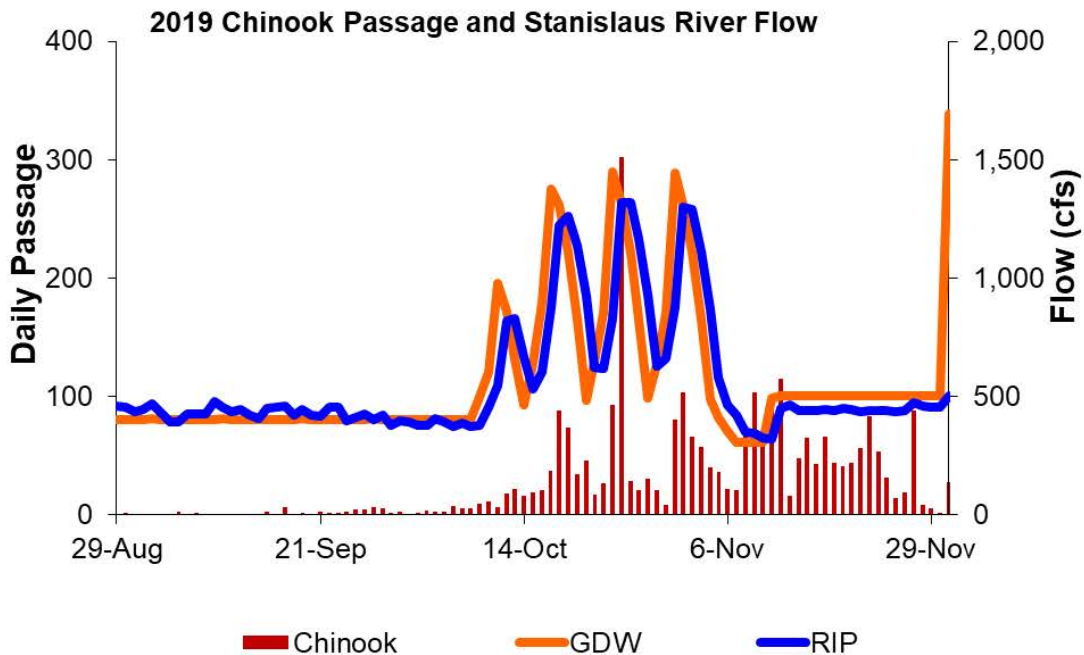
**Red Bluff Diversion Dam (RBDD) – (Received after completion of the DOSS call)**

USFWS biweekly report (11/19/2019-12/2/2019) for preliminary estimates of passage by brood-year and run for unmarked juvenile Chinook salmon captured by rotary screw traps at RBDD included:

<b>Run and Species</b>	<b>Biweekly Total</b>	<b>Brood Year Total (90% CI)</b>
Winter-run Chinook (BY2019)	108,341	3,793,199 (2,512,915-5,073,482)
Spring-run Chinook (BY2019)	12,714	236,969 (151,028-322,911)

**Stanislaus River Weir**

Monitoring at the weir near Riverbank (for upstream passage of adult salmonids) began on 8/29/2019. Over the last week (11/25/2019-12/1/2019), 162 adult fall-run Chinook salmon and 2 *O. mykiss* were observed passing upstream of the weir. Neither of the 2 *O. mykiss* were adipose fin clipped and both were greater than 16 inches in length (indicating that they are natural steelhead). The cumulative net upstream passage through 12/1/2019 is 2,637 Chinook salmon (20% were adipose fin clipped, indicating a hatchery origin), and 33 steelhead (data provided by FISHBIO in their 12/2/2019 Stanislaus Weir Update). 20 of 33 total *O. mykiss* this season were unclipped and 13 were clipped, indicating hatchery origin. 10 of the 17 fish >16 inches in length were adipose fin clipped. Of note, a Chum salmon was observed passing upstream through the counting weir on 11/26/2019, bringing the season total to 2 fish for WY20.



### CDFW Lower American River Carcass Survey

Reporting for survey period 11/25/2019-11/27/2019:

- 963 observed carcasses
  - 332 female
    - 171 unclipped
    - 161 clipped
  - 279 males
    - 102 unclipped
    - 177 clipped
  - 352 carcasses too deteriorated to determine sex
  - 332 female carcasses evaluated for spawn condition
    - 91/332 (27%) prespawn mortalities
    - 35/332 (11%) partially spawned
    - 201/332 (61%) spawned
    - 5 were too deteriorated to determine spawn condition.
- Temperatures at Hazel during the survey period\*:
  - Minimum: 54.6°F
  - Mean: 55.5°F
  - Maximum: 56.6°F

\*Please note there is about a 1°F discrepancy between the CDEC gauge reporting at Hazel and the USGS gauge reporting at Fair Oaks. Actual in-river temperatures may be 1°F higher than reported on CDEC.

### Agenda Item 6.

**Fish Monitoring: Salvage**

Griffiths (CDFW) provided the following salvage summary for the period of 11/25/2019-12/1/2019.

No listed fish species were observed this week.

*Operations:*

The SWP has been reducing counts due to heavy vegetation this past week.

Operations at the CVP were reduced on 11/26/2019 for screen maintenance, resulting in 60 minutes of unscreened export affecting one count.

## DOSS Weekly Salvage Update

Reporting Period: November 25-December 1, 2019

Prepared by Kyle Griffiths on December 2, 2019 14:56

Preliminary Results -Subject to Revision

Criteria	25-Nov	26-Nov	27-Nov	28-Nov	29-Nov	30-Nov	1-Dec	Trend	
<b>Loss Densities</b>									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0.00
Wild steelhead	0	0	0	0	0	0	0	→	0.00
<b>Exports</b>									
SWP daily export	9,627	9,637	11,066	12,006	12,856	14,032	11,009	↗	11,462
CVP daily export	1,840	3,634	3,595	3,675	3,625	3,626	3,621	↘	3,374
SWP reduced counts	100%	100%	100%	100%	100%	100%	100%		
CVP reduced counts	0	8%	0	0	0	0	0		

Loss Density = fish lost/TAF; water export = AF; Trend = compared to previous week; wild = adipose fin present

Loss = estimated number of fish lost at the CVP and SWP Delta export facilities based on estimated salvage (see below)

Reduced counts = percentage of time that routine salvage sample time were less than 30 min per 2 hours of salvage and export operations

Yellow highlighted dates indicate TFCF salvage outage occurred

## Chinook Salmon Weekly/Season Salvage and Loss

Combined salvage and loss for both CVP and SWP fish facilities

Race determined by size at date of capture; hatchery = adipose fin missing;

Category	Weekly Total			Season Total	
	Salvage	Loss	Trend	Salvage	Loss
<b>Wild</b>					
Winter Run	0	0	→	0	0
Spring Run	0	0	→	0	0
Late Fall Run	0	0	→	0	0
Fall Run	0	0	→	0	0
Unclassified	0	0	→	0	0
<b>Total</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>
<b>Hatchery</b>					
Winter Run	0	0	→	0	0
Spring Run	0	0	→	0	0
Late Fall Run	0	0	→	0	0
Fall Run	0	0	→	0	0
Unclassified	0	0	→	0	0
<b>Total</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>

Trend = weekly loss per race; Salvage = estimated number of fish collected by the CVP and SWP fish protective facilities per unit of time

NC = cannot be calculated; hatchery salmon salvage and loss estimates have been corrected using CWT readings when available

## Steelhead Weekly/Season Salvage and Loss

Combined salvage and loss for both CVP and SWP fish facilities

Category	Weekly Total			Season Total	
	Salvage	Loss	Trend	Salvage	Loss
Wild	0	0	→	0	0
Hatchery	0	0	→	4	3
<b>Total</b>	<b>0</b>	<b>0</b>		<b>4</b>	<b>3</b>

State Water Project loss = salvage x 4.33; Central Valley Project loss = salvage x 0.68



**Agenda Item 7.**

**DOSS Estimates of Fish Distribution**

DOSS estimates of the current distribution of listed Chinook salmon and steelhead, as a percentage of the population, are based on recent monitoring data and historical migration timing patterns.

<b>Location</b>	<b>Yet to Enter Delta (Upstream of Knights Landing)</b>	<b>In the Delta</b>	<b>Exited the Delta (Past Chipps Island)</b>
<i>Young-of-year (YOY) winter-run Chinook salmon</i>	91% (Last week: 93%)	9% (Last week: 7%)	0% (Last week: same)
<i>Young-of-year (YOY) spring-run Chinook salmon</i>	97% (Last week: 98%)	3% (Last week: 2%)	0% (Last week: same)

**Rationale for changes in distribution**

*Wild winter-run Chinook salmon:*

Nearly 3.8 million Brood Year 2019 (BY19) winter-run Chinook salmon have passed RBDD this year, approximately 6,300 BY19 winter-run Chinook salmon have been captured by the GCID RSTs since 8/1/2019, and 62 at the Knights Landing RSTs since 9/5/2019. In the last week, 272 length-at-date winter-run Chinook salmon were captured at GCID, 7 at the beach seines, and at no other monitoring locations in the Delta. Since more winter-run Chinook salmon were observed over the past week, DOSS estimates that an additional 2% has entered the Delta. Since the valley has received a couple of rain events and another event is in the forecast over the next weekend, increased river flows will likely trigger more winter-run to migrate into the Delta over the next week.

*Wild spring-run Chinook salmon:*

Ten length-at-date spring-run Chinook salmon were observed at the GCID RSTs this past week, and at no other monitoring locations. Since few spring-run Chinook salmon were observed this past week, DOSS estimates that an additional 1% of the spring-run Chinook salmon population has moved into the Delta. Since more precipitation is in the forecast, increased river flows could trigger part of the spring-run population to migrate into the Delta over the next week.

**Agenda Item 8.**

**Risk of Entrainment**

*Risk of entrainment of listed salmonids into Central and South Delta:*

The risk of entrainment to fish that are present in the lower Sacramento River and upper Delta waterways is higher than last week, but still considered low. Sacramento River inflows to the Delta are increased compared to last week (~17,000 cfs), and are expected to increase further with continuing runoff and the upcoming rain event. DCC gates are closed, which will help prevent juveniles from straying into the south Delta. Fish are expected to increase their movements into the Delta with these first rain storms of the water year. With DCC gates closed, access to the Delta interior is primarily through Georgiana Slough. Increasing flows on the Sacramento River will start to mute tidal influence in this section of the Sacramento River. Overall risk of juvenile winter-run Chinook salmon entrainment into the interior Delta is

considered low as a percentile of population but absolute numbers may increase due to a larger population of young-of-year winter-run Chinook salmon this year.

*Export Risk:*

The overall export risk is slightly higher than last week but still considered low, based on export levels increasing at SWP from 5,500 cfs to approximately 6,680 cfs by 12/4/2019. CVP exports are expected to remain at 3,400 cfs for the next several weeks. Combined exports will be approximately 10,000 cfs, leading to more negative OMR flows (~ -8,000 cfs). The percentage of Delta inflow exported will be increasing (currently 63% averaged over 14 days). San Joaquin River flows at Vernalis are expected to increase to approximately 4,000 cfs due to the increased releases from New Melones Reservoir. QWEST flows are more positive due to river inflows. Fish in the vicinity of the exports' area of influence have an increased risk of entrainment due to increased exports this week.

**Agenda Item 9.**

**Other Topics**

Stuart (NMFS) informed the group a JPE PWT call is scheduled this week.

Reece (DWR) asked if the first spring-run surrogate release from Coleman National Fish Hatchery (CNFH) has been scheduled. Stuart has not seen any dates from Niemela (USFWS) on actual release dates, but they will follow similar release dates as previous years. Stuart will email Niemela about release dates. Information from CNFH staff was received after the conclusion of the DOSS call. The production release of approximately 825,000 hatchery late fall-run Chinook salmon into Battle Creek will occur on 12/5/2019. The first release of surrogate spring-run Chinook salmon (late fall-run Chinook salmon from CNFH) is tentatively scheduled for Monday, 12/9/2019.)

**Agenda Item 10.**

**DOSS Advice to WOMT and NMFS:**

No operational advice to NMFS or WOMT but a "heads up" due to fish movement in response to the first rain events of the water year. There is potential for exceeding KLCI or SCI triggers, and risk of fish in salvage increasing due to rains and seasonal timing.

**Agenda Item 11.**

**Next Meeting:** The next DOSS conference call will be on **12/10/2019 at 9am.**