

**Delta Operations for Salmonids and Sturgeon (DOSS) Group**  
**Conference call: 12/20/2016 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 and the State Water Project on salmonids and green sturgeon. DOSS will work with other technical teams. DOSS notes and advice can be found at: [http://www.westcoast.fisheries.noaa.gov/central\\_valley/water\\_operations/doss.html](http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/doss.html).

**CDFW:** Bob Fujimura, Ken Kundargi, Duane Linander, Jason Julienne

**DWR:** Bryant Giorgi, Dan Yamanaka, Farida Islam, Kevin Reece, Reza Shahcheraghi

**NMFS:** Barb Byrne, Kristin McCleery

**Reclamation:** Tom Patton, Towns Burgess, Mike Hendrick, Josh Israel

**SWRCB:** Chris Kwan, Chris Carr

**USFWS:** Craig Anderson, Leigh Bartoo

**Agenda Items**

1. Agenda review and introductions
2. RPA Implementation review (For the DOSS Dashboard, click on the "Triggers & Indices" tab at: [www.baydeltalive.com/djfmj](http://www.baydeltalive.com/djfmj))
3. Current Operations
3. Smelt Working Group update
4. Current Operations
5. Hatchery Releases
6. Fish Monitoring: Salvage
7. Fish Monitoring: RSTs/trawls/seines
8. DOSS Estimates of Fish Distribution
9. Interim implementation of JPE-based triggers in IV.2.3
10. DOSS advice
11. Next DOSS meeting

**Agenda Item 2.**

**RPA Implementation Review**

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

**Action IV.1.2<sup>1</sup> (DCC gate operations):**

- From December 1 to January 31, the gates will remain closed, with limited exceptions.

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<sup>1</sup> For details, see pages 62-66 in Enclosure 2 of the 2011 Amendments to the 2009 RPA document at: [http://www.westcoast.fisheries.noaa.gov/publications/Central\\_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711\\_ocap\\_opinion\\_2011\\_amendments.pdf](http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf)

**Action IV.3<sup>2</sup> (Reduce likelihood of entrainment or salvage at the export facilities, including alert that indicates that export operations may need to be altered)**

- The third alert (November 1-February 23: Knights Landing Catch Index (KLCI) or Sacramento Catch Index (SCI) >10) was triggered twice over the past week (on 12/13/16 and 12/16/16; see table below).

Date	KLCI	Seine SCI	Trawl SCI
12/13/2016	19.2	no sampling	no sampling
12/14/2016	3.5	6.0	2
12/15/2016	3.0	no sampling	no sampling
12/16/2016	4.8	11.2	0
12/17/2016	7.8	no sampling	no sampling
12/18/2016	0.0	no sampling	no sampling
12/19/2016	2.6	TBD	0

- Since the action went into effect on 11/1/16, no salvage-based triggers that would require export reduction have been exceeded.

**Agenda Item 3.**

**Smelt Working Group update**

Bartoo (USFWS) provided the following summary from the 12/19/16 Smelt Working Group meeting:

The Working Group reviewed current Delta conditions, survey data, and forecasted weather and maintains their December 13, 2016 recommendation that the Service implement Action 1 of the RPA (-2,000 cfs OMR for 14 days with a corresponding 5 day average OMR of -2,500 cfs) as soon as practicable.

The Working Group is following guidance for entrainment protections from Action 1 (adult Delta Smelt). The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions, and will meet again on Tuesday, December 17, 2016 at 10 am, or sooner, if conditions warrant.

**Agenda Item 4.**

**Current Operations (12/20/16)**

SWP		CVP	
<b>Exports (cfs)</b>			
Clifton Court Forebay	3,500	Jones Pumping Plant	3,500
<b>Reservoir Releases (cfs)</b>			
Feather - Oroville	1,750	American - Nimbus	20,000*
		Sacramento - Keswick	5,000**
		Stanislaus - Goodwin	200
		Trinity - Lewiston	300

<sup>2</sup> For details, see pages 79-80 in Enclosure 2 of the 2011 Amendments to the 2009 RPA document at: [http://www.westcoast.fisheries.noaa.gov/publications/Central\\_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711\\_ocap\\_opinion\\_2011\\_amendments.pdf](http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf)

<b>Reservoir Storage (in TAF)</b>			
San Luis (SWP)	770	San Luis (CVP)	374
Oroville	1,882	Shasta	3,311
New Melones	598	Folsom	520
<b>Delta Operations</b>			
DCC	Closed	Sacramento River at Freeport (cfs)	~81,600
Outflow Index (cfs)	~106,000	San Joaquin River at Vernalis (cfs)	~1,450
E:I	14% (14-day avg.)	X2	>57 km

\*Reservoir releases are expected to decrease through the week.

\*\*Releases will increase to 10,000 cfs on 12/21.

Factors controlling Delta exports:

**12/13/16 – 12/14/16:** No regulatory factors controlling exports; exports at limit of operational capacity.

**12/15/16 – 12/16/16:** Exports reduced by 1,000 cfs each day at SWP for the protection of longfin smelt.

**12/17/16 – 12/19/16:** Voluntary export reductions to 3,500 cfs at each project (7,000 cfs combined exports) for OMR and turbidity management for the protection of Delta smelt.

**Agenda Item 5.**

**Hatchery Releases**

DOSS recommends that the Coleman National Fish Hatchery release the second spring-run surrogate group in anticipation of the rain event forecasted for Friday (12/23/16).

**Agenda Item 6.**

**Fish Monitoring: Salvage**

No listed juvenile Chinook salmon were salvaged over the past week.

### DOSS Weekly Salvage Update

Reporting Period: December 12-December 18, 2016  
 Prepared by Bob Fujimura on December 19, 2016 22:12  
 Preliminary Results -Subject to Revision

Criteria	12-Dec	13-Dec	14-Dec	15-Dec	16-Dec	17-Dec	18-Dec	Trend	
<b>Loss Densities</b>									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0
Wild steelhead	0	0	0	0	0	0	0	→	0
<b>Exports</b>									
SWP daily export	13,215	12,688	12,963	11,316	8,757	7,065	6,767	↘	10,396
CVP daily export	6,672	6,675	8,060	8,090	8,067	8,037	7,264	↗	7,552
SWP reduced counts	0%	0%	0%	0%	0%	0%	0%	→	0%
CVP reduced counts	0%	0%	0%	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 brief salvage facility 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	15	NC	↗	68	NC
<b>Total</b>	<b>15</b>	<b>0</b>		<b>68</b>	<b>0</b>
<b>Hatchery</b>					
Winter Run	4	18	↗	4	18
Spring Run	0	0	→	0	0
Late Fall Run	42	100	↗	42	100
Fall Run	22	54	↗	22	54
Unclassified	0	0	→	6	NC
<b>Total</b>	<b>68</b>	<b>172</b>		<b>74</b>	<b>172</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 = can not be calculated

### 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	→	4	17
Hatchery	0	0	→	0	0
<b>Total</b>	<b>0</b>	<b>0</b>		<b>4</b>	<b>17</b>

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

Generated by Bob Fujimura on December 19, 2016

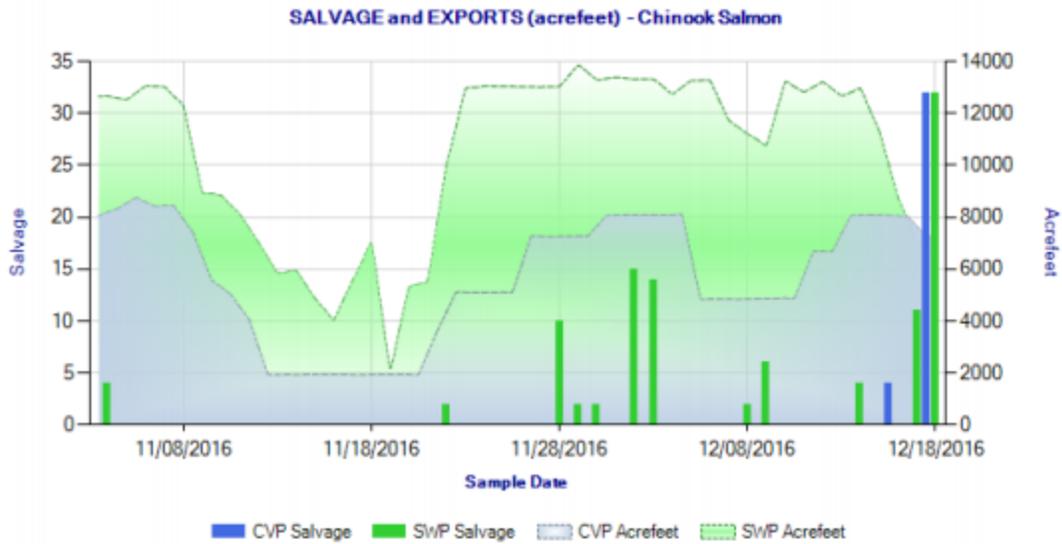


Figure 1. Daily salvage of Chinook Salmon (all races) and water exports from the state and federal fish salvage facilities during Nov 4 through Dec 18, 2016. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

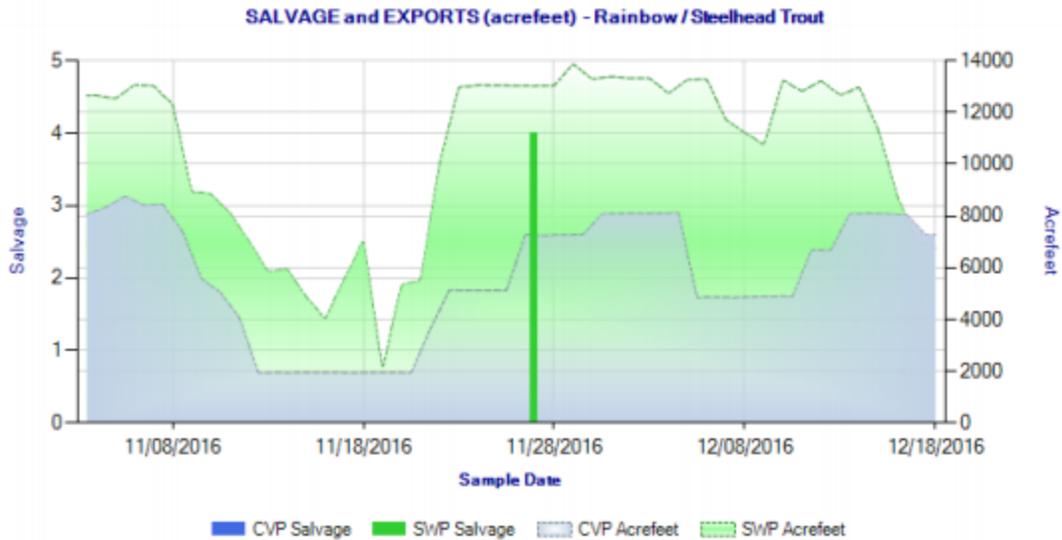


Figure 2. Daily salvage of Steelhead and water exports from the state and federal fish salvage facilities during Nov 4 through Dec 18, 2016. Graph obtained from the DFG salvage monitoring web-page: <http://www.dfg.ca.gov/delta/apps/salvage/SalvageExportCalendar.aspx>.

**Agenda Item 7.**

**Fish Monitoring:** The following table presents fish monitoring data summarized over the identified sampling dates. Unless otherwise noted, any reported sizes are fork length.

Location	Chippis Is. Midwater Trawl <sup>A</sup>	Sacramento Trawl <sup>A</sup>	Beach Seines <sup>A</sup>	Knights Landing RST <sup>B</sup>	Tisdale RST <sup>C</sup>	GCID RST <sup>D</sup>	Mossdale Kodiak Trawl <sup>A</sup>
Sample Date	12/12, 12/14, 12/16	12/12, 12/14, 12/16	12/12-12/16	12/12-12/18	12/9-12/17	12/10, 12/13	12/12, 12/14, 12/16
FR Chinook		6	21	61	1		
SR Chinook		7	7	55	2	1 juvenile	
WR Chinook			14	23	2	2 juveniles	
LFR Chinook	6*	4	2	10			
Ad-Clipped Chinook	71*	18	4	5 FR 70 LFR	1		
Delta Smelt	1						
Longfin Smelt							
Steelhead (ad-clip)							
Steelhead (wild)							
Green Sturgeon							
Flows (avg. cfs)				23,186	24,425	1,592	
W. Temp. (avg. °F)				50.6	48	51.9	
Turbidity (avg. NTU)				167.8	45.9	33.3	

<sup>A</sup>Data reported in the 12/11 to 12/17 DJFMP sampling summary.

<sup>B</sup>Knights Landing RST sampling period was from 12/12 at 3:15 pm to 12/18 at 2:15 pm. Traps were raised on 12/17 at 2:30 pm due to heavy debris and increased flow.

<sup>C</sup>Tisdale RST sampling period was from 12/9 at 9:45 am to 12/17 at 9:00 am. On 12/11, a tree became tangled in the anchor chain and the trap was pulled to shore and cones raised. On 12/12 to 12/17 the cones were modified to 50 percent catch.

<sup>D</sup>GCID sampling occurred on 12/10 at 8:00 am, however, the cone was packed with debris and no fish were collected; the trap was pulled due to potential fish mortality. On 12/13 at 1:00 pm, the trap was fished for 4 hours and then removed from the bypass channel due to predicted high flow.

\*Data were corrected to 6 and 71 from 3 and 47 after the DOSS call, based on the corrected data sheet from USFWS.

**Red Bluff Diversion Dam (RBDD)**

USFWS biweekly report (12/2/16-12/16/16) 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 (BY2016)	8,985	507,556 (382,804-632,308)
Spring-run Chinook (BY2016)	3,619	47,971 (29,620-66,322)

**Enhanced Delta Smelt Monitoring (EDSM) Summary**

Sampling began last week on 12/15. 1 spring-run-sized Chinook salmon was caught on the San Joaquin River near Twitchell Island. Only the "high risk, high density" stratum was sampled last week.

EDSM data will be posted at:

[https://www.fws.gov/lodi/juvenile\\_fish\\_monitoring\\_program/jfmp\\_index.htm](https://www.fws.gov/lodi/juvenile_fish_monitoring_program/jfmp_index.htm)

**Agenda Item 8.**

**DOSS Estimates of Fish Distribution**

DOSS estimates of the current distribution of listed Chinook, 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>Wild young-of-year (YOY) winter-run Chinook salmon</i>	35% - 45% (Last week: 50% - 55%)	55% - 65% (Last week: 45% - 50%)	0% (Last week: same)
<i>Wild young-of-year (YOY) spring-run Chinook salmon</i>	70%-80% (Last week: 85%-90%)	20%-30% (Last week: 10%-15%)	0% (Last week: same)

**Rationale for changes in distribution**

Wild winter-run Chinook: Over the past week, 23 juvenile winter-run were observed at Knights Landing, 2 at Tisdale, 2 at GCID, and 14 were observed in the Beach Seines. Because of this observed catch and recent conditions (higher flows and turbidities in the Sacramento River), DOSS shifted the distribution ranges into the Delta. Young-of-year winter-run-sized fish have not yet been observed exiting the Delta at Chipps Island, so DOSS estimates that 0% have exited the Delta.

Wild spring-run Chinook: Over the past week, 55 juvenile spring-run were observed at Knights Landing, 1 at GCID, 2 at Tisdale, and 14 at Beach Seine and Sac Trawl monitoring locations. The high catch of spring-run-sized fish at Knights Landing indicates movement into the Delta. No spring-run have been observed at Chipps Island and are not expected to have exited the Delta this early in the season.

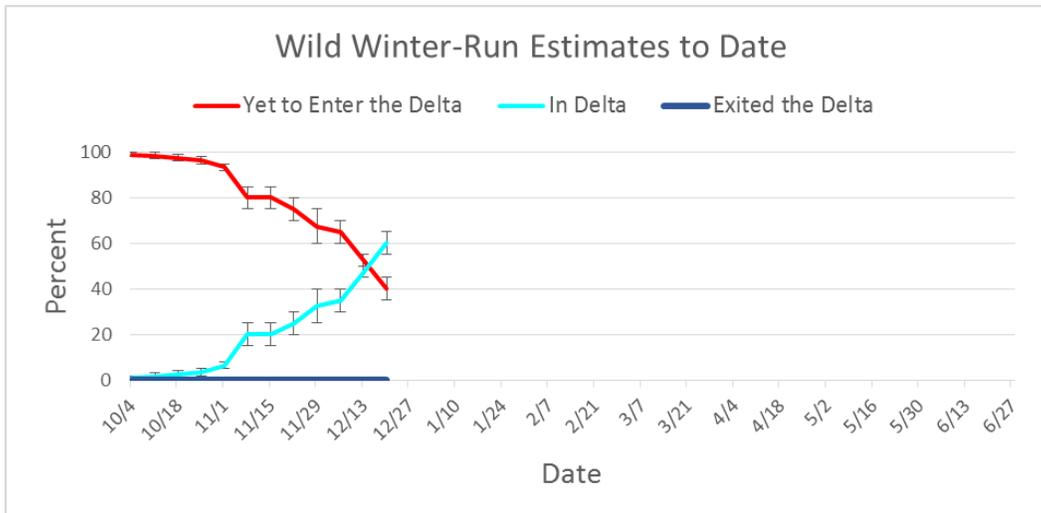


Figure 3. WY 2017 wild winter-run distribution estimates to date.

**Agenda Item 9.**

**Interim Implementation of JPE-based triggers in IV.2.3**

The DOSS group discussed interim implementation of the JPE-based triggers in RPA Action IV.2.3 (OMR Management) if the official JPE letter from NMFS is not issued prior to the first of the year, when implementation of Action IV.2.3 begins. The DOSS group provided advice to NMFS and WOMT. See DOSS advice (Agenda Item 10).

**Agenda Item 10.**

**DOSS Advice to NMFS and WOMT:**

**DOSS advises that, if the official JPE for winter-run Chinook salmon is not available by January 1, 2017, Action IV.2.3 be implemented using the minimum trigger values for the JPE-based triggers. (See full DOSS advice attached below)**

**Agenda Item 11.**

**Next Meeting:** The next DOSS conference call will be on **12/27/16 at 9am.**

## DOSS ADVICE RE: AN INTERIM JPE-BASED TRIGGER FOR IMPLEMENTATION OF ACTION IV.2.3

12/20/2016

### Background

Action IV.2.3<sup>1</sup> of the Reasonable and Prudent Alternative (RPA) of the 2009 NMFS Biological Opinion on Long-Term Operations of the Central Valley Project and State Water Project (NMFS BiOp) requires Old and Middle River flows more positive than -5,000 cfs when specified action triggers are exceeded. Action IV.2.3 includes four distinct first-stage action triggers, and three distinct second-stage action triggers. Both the first- and second-stage sets of triggers include a trigger based on the Juvenile Production Estimate (JPE) for winter-run Chinook salmon, in which the trigger threshold is calculated as 2% of the winter-run JPE divided by 2,000 (for the first-stage trigger) or by 1,000 (for the second-stage trigger). Minimum trigger values are 2.5 fish per thousand acre-feet (TAF) for the first-stage trigger and 5.0 fish per TAF for the second-stage trigger<sup>2</sup>.

If the official JPE for winter-run Chinook salmon is not available by January 1, 2017, the Delta Operations for Salmonids and Sturgeon technical team (DOSS) advises implementation of the JPE-based trigger as described below.

### DOSS Advice

Last year, passage of brood year 2015 winter-run Chinook juveniles past RBDD as of 12/16/15 was estimated to be 312,038<sup>3</sup>. This year, passage of brood year 2016 winter-run Chinook juveniles past RBDD as of 12/16/16 was estimated to be 507,556<sup>4</sup> – 1.6 times the RBDD passage estimate for brood year 2015 juveniles. Applying that same factor to the brood year 2015 JPE estimate of 101,716, the brood year 2016 JPE is roughly estimated to be 101,716\*1.6, or 162,745.

At a JPE of 250,000, the JPE-based triggers in Action IV.2.3 are calculated<sup>5</sup> to be at the minimum trigger values of 2.5 fish/TAF and 5.0 fish/TAF. At any JPE lower than 250,000, the JPE-based triggers in Action IV.2.3 will be less than the minimum trigger values.

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<sup>1</sup> See pages 74-79 of Enclosure 2 of the 2011 RPA Amendments, available online at: [http://www.westcoast.fisheries.noaa.gov/publications/Central\\_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711\\_ocap\\_opinion\\_2011\\_amendments.pdf](http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf)

<sup>2</sup> The minimum threshold for the second-stage JPE-based trigger in IV.2.3 is 5.0 fish/TAF, not the 2.5 fish/TAF listed in the 2011 RPA Amendments. The 1/24/12 DOSS notes ([http://www.westcoast.fisheries.noaa.gov/publications/Central\\_Valley/Water%20Operations/Delta%20Operations%20for%20Salmonids%20and%20Sturgeon/DOSS%20WY2012/final\\_notes\\_012412.pdf](http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Delta%20Operations%20for%20Salmonids%20and%20Sturgeon/DOSS%20WY2012/final_notes_012412.pdf)) acknowledge this clarification.

<sup>3</sup> <https://www.fws.gov/redbluff/RBDD%20JSM%20Biweekly/2015/BiWeekly20151203-20151216.pdf>

<sup>4</sup> <https://www.fws.gov/redbluff/RBDD%20JSM%20Biweekly/2016/BiWeekly20161202-20161216.pdf>

<sup>5</sup> First-stage trigger:  $(0.02 \times 250,000)/2000 = 2.5$ ; Second-stage trigger:  $(0.02 \times 250,000)/1000 = 5.0$

In anticipation that the brood year 2016 JPE will be less than 250,000, and thus that the first- and second-stage JPE-based triggers in Action IV.2.3 will be less than the minimum trigger levels, **DOSS advises that, if the official JPE for winter-run Chinook salmon is not available by January 1, 2017, Action IV.2.3 be implemented using the minimum trigger values for the JPE-based triggers**, as follows:

- The first stage minimum action trigger is daily SWP/CVP older juvenile Chinook salmon loss density<sup>6</sup> of 2.5 fish per TAF exported; exceedance would require OMR to be no more negative than -3,500 cfs for at least five days.
- The second stage minimum action trigger is daily SWP/CVP older juvenile Chinook salmon loss density<sup>6</sup> of 5.0 fish per TAF exported; exceedance would require OMR to be no more negative than -2,500 cfs for at least five days.

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<sup>6</sup> Loss density to be evaluated according to the implementation procedures described in the 11/21/16 letter from NMFS to Reclamation regarding rapid genetic analysis:  
[http://www.westcoast.fisheries.noaa.gov/publications/Central\\_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/nmfs\\_response\\_to\\_reclamation\\_s\\_request\\_to\\_implement\\_rapid\\_genetic\\_analysis\\_in\\_wy\\_2017\\_-\\_november\\_21\\_2016.pdf](http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/nmfs_response_to_reclamation_s_request_to_implement_rapid_genetic_analysis_in_wy_2017_-_november_21_2016.pdf)