Salmon Monitoring Team (SaMT) Weekly Meeting
Conference call: 6/2/20 at 9:00 a.m.

Executive Summary:

- DSM2 runs for the assessment assessed the impacts of Old and Middle River (OMR) flows ranging from -1,500 cfs to -5,000 cfs.
- No Delta performance measures have been exceeded.
    - The Delta Performance threshold with the highest potential for exceedance is the 50% of single year natural steelhead loss threshold for the period of April 1 through June 15.
        - Preliminary estimate indicates that current (through 5/31/20) steelhead loss (324 fish) is approximately 42% of the threshold (776 fish) set between April 1 and June 15.
- On 6/1/20 SaMT began to track temperature conditions which could trigger the end of OMR Flow Management for Juvenile Salmonids.
- SaMT did not have any recommendations for Water Operations Management Team (WOMT) or any advice to change Delta Operations.

Objective: Provide information to the WOMT, the U.S. Bureau of Reclamation (Reclamation) and California Department of Water Resources (DWR) 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. SaMT notes and other meeting materials (e.g., weekly outlook and assessment) will be accessible on Reclamation's web page.

- **California Department of Fish and Wildlife (CDFW):** Adam Chorazyczewski, Kristal Davis-Fadtke, Kyle Griffiths, Sheena Holley, Jason Julienne, Vanessa Kollmar, Duane Linander, Lauren McNabb, Paige Uttley, Johnathan Williams
- **DWR**: Chris Cook, Brittany Davis, Bryant Gyorgi, Farida Islam, Kevin Reece, Reza Shahcheraghi, Ian Uecker
- **Kearns & West:** Matt Marvin
- **National Marine Fisheries Service (NMFS):** Kristin Begun, Garwin Yip
- **Reclamation:** Towns Burgess, Elissa Buttermore, Suzanne Manugian, Tom Patton
- **State Water Resources Control Board (SWRCB):** Chris Carr, Michael Macon, Craig Williams, Stanley Mubako
- **US Fish and Wildlife Service (USFWS):** Geoff Steinhart, Katherine Sun

Agenda Items:

1. Introductions
   Purpose: Provide an accurate record of who is attending these calls.

2. Relevant Actions and Triggers
   Purpose: Review of relevant actions and triggers status and discuss any changes.

3. Outlook, Project Operations, and Weather Forecast

Purpose: Review operations and weather sections on Weekly Outlook. Discuss Delta operations to consider context for evaluating Assessment questions about Delta operation effects.

4. Review of Environmental Data
   Purpose: Review environmental data to consider context for evaluating Assessment questions about Delta operations effects.

5. Fish Abundance and Distribution
   Purpose: Review fish monitoring data to inform fish distribution estimates, fish exposure, and behaviour cues that is part of the next section.
   a. Hatchery Releases
   b. Historical Fish Monitoring Data
   c. Fish Monitoring: RSTs/trawls/seines
   d. Fish Monitoring: Salvage
   e. Migration Status: Estimates of Fish Distribution

6. Fish Exposure and Behavioural Cues
   Purpose: Assist in assessing entrainment risk of Delta operations on salmonids and sturgeon. Complete Evaluation section questions of the Assessment. Review draft Assessment.
   a. Historical Patterns (Comparison of abundance, timing, and loss to prior years)
   b. Current Conditions (DSM2, Entrainment Models)
   c. Sensitivity to Operational Actions - review Assessment document

7. Other Topics
   Purpose: Identify additional topics that are not in the regular agenda.

8. Considerations for WOMT
   Purpose: Highlight information that SaMT would like WOMT to consider related to changes to Delta water operations.

9. Next SaMT Meeting

Agenda Item 2.
Relevant Actions and Triggers Review

Delta Cross Channel (DCC) Gate Operations

- DCC gates were opened on 5/22/20 at 1000 hours for the Memorial Day weekend and then closed on 5/26/20 at 1000 hours. Gates will then be closed throughout the week, and opened for weekends at 1000 hours on Saturday morning and closed at 1000 hours on Monday morning until 6/15/20.

OMR Flow Management

- Implementation of this action in water year (WY) 2020 began on 1/1/20 under the 2009 NMFS Long Term Operations (LTO) biological opinion and was superseded by Reclamation's Proposed Action section 4.10.5.10 (OMR Management) on 2/18/20 following the signing of the Record of Decision, and requires that OMR flow be no more negative than -5,000 cfs. OMR flows are reported weekly with the OMR index and the tidally filtered U.S. Geological Survey (USGS) gauges at the daily, 5-day and 14-day running averages.
- Reclamation's Proposed Action section 4.10.5.10.4: End of OMR flow Management occurs on June 30 (for Chinook salmon), or June 15 (for steelhead/rainbow trout), or when the following species-specific off ramps have occurred, whichever is earlier:
    - when more than 95 percent of salmonids have migrated past Chipps Island, as determined by their monitoring working group, or
    - after daily average water temperatures at Mossdale exceed 71.6° F for 7 days during June (the 7 days do not have to be consecutive).
- DWR's Incidental Take Permit (ITP) Section 8.8: End of OMR Flow Management:
    1) More than 95% of winter-run and spring-run migrated past Chipps Island, AND
    2) Daily average water temperatures at Mossdale exceed 22.2°C for 7 days in June (days do not have to be consecutive), AND
    3) Daily average water temperatures at Prisoner's Point exceed 22.2°C for 7 days in June (days do not have to be consecutive).
- On 3/27/20, NMFS provided a revised winter-run Chinook salmon juvenile production estimate (JPE) letter (Revised JPE letter) to Reclamation reflecting updated hatchery information. The revised JPE letter provides the Reclamation with the revised JPE and incidental take limit for hatchery origin juvenile Sacramento River winter-run Chinook salmon for WY 2020 based on the estimated number of hatchery fish released.
    - The revised incidental take for juveniles released from Livingston Stone National Fish Hatchery into the Sacramento River is **923 hatchery-produced (adipose fin clipped)** winter-run Chinook salmon.
    - The revised incidental take of juveniles released into Battle Creek is **622 hatchery produced (adipose fin clipped and left ventral fin clipped)** winter-run Chinook salmon.
- On 5/11/20, a preliminary injunction required the CVP to operate to the San Joaquin River inflow to export (I:E) ratio in the 2009 NMFS Biological Opinion reasonable and prudent alternative action IV.2.1, which is 2:1 for a dry water year type.
- Refer to the weekly operations and fish outlook for more triggers relevant to the CDFW ITP and the 2019 ROC Proposed Action (see Agenda Item 3), which will be posted to Reclamation's web page
- DWR's ITP was signed on 3/31/20 and can be found online here: Incidental Take Permit for Long Term Operations of the State Water Project

Agenda Item 3.

Weekly Fish and Water Operations Outlook.

SaMT reviewed the Outlook document. The Outlook document will be posted to the WOMT web page.

Project Operations

Operations Category	Location	Operations on 5/26/20	Operations on 6/2/20
Clifton Court Inflow	Clifton Court Forebay	600 cfs. Likely holding through the end of May into June.	600 cfs and holding
SWP Reservoir Releases	Feather – Oroville	2,050 cfs. Releases will likely increase by 500 cfs by the end of week (5/29/20).	3,000 cfs
SWP Reservoir Storage	San Luis (SWP)	911 TAF	889 TAF
SWP Reservoir Storage	Oroville	2,449 TAF	2,421 TAF
Environmental Parameters	Sacramento River at Freeport	10,900 cfs	11,450 cfs
Environmental Parameters	San Joaquin River at Vernalis	1,850 cfs	1,790 cfs
Environmental Parameters	Delta Outflow Index	11,050 cfs	9,320 cfs
Environmental Parameters	E:I (14-day)	9% (14-day average)	10% (14-day average)
Environmental Parameters	X2	80 km currently, expected to move upstream with decreasing Delta outflow	79 km, expected to shift upstream with the high tides on 6/6/20 and 6/7/20
CVP Exports	Jones Pumping Plant	900 cfs and holding through end of May.	900 cfs. Scheduled to increase to 1,800 cfs on 6/3/20 and to increase again to 2,700 cfs on 6/4/20
CVP Reservoir Releases	American – Nimbus	1,250 cfs currently. Releases scheduled to increase to 1,750 cfs on 5/28/20.	1,750 cfs and holding

Operations Category	Location	Operations on 5/26/20	Operations on 6/2/20
CVP Reservoir Releases	Sacramento – Keswick	8,000 cfs currently. Releases scheduled to increase to: 9,000 cfs on 5/27/20; 9,500 cfs on 5/28/20; and 10,000 cfs on 5/29/20.	10,500 cfs and holding
CVP Reservoir Releases	Stanislaus - Goodwin	1500 cfs and holding.	1,500 cfs and holding. Evaluating plans to decrease releases to fluctuate between weekends and weekdays.
CVP Reservoir Releases	Trinity - Lewiston	900 cfs. Scheduled pulse flows continuing into June.	Last month of pulse flow. 850 cfs currently. One more pulse anticipated for June. Decreases to minimum flows expected in July.
CVP Reservoir Storage	San Luis (CVP)	449 TAF and decreasing	404 TAF and decreasing
CVP Reservoir Storage	Shasta	3,568 TAF and decreasing	3,531 TAF and decreasing
CVP Reservoir Storage	Folsom	775 TAF and increasing	791 TAF and increasing
CVP Reservoir Storage	New Melones	1,858 TAF and decreasing	1,835 TAF and decreasing
CVP	DCC Gates	Gates closed as of 10am 5/26/20 following opening for the Memorial Day weekend. Weekend openings continuing until 6/15/20.	Closed, weekend opening scheduled continuing until 6/15/20.

cfs = cubic feet per second
MAF = million acre feet
TAF = thousand acre feet
km = kilometer
Location of X2 measured from the Golden Gate

Factors controlling Delta exports, 5/26/20 – 6/1/20: Controlling factors for the previous week include Delta water quality criteria that may have limited exports [i.e., Emmaton electrical conductivity (EC), Delta outflow, Collinsville EC]. Controlling factors remained the same through the end of May (5/31/20). Beginning on 6/1/20, the preliminary injunction and ITP cease to be controlling factors, however water quality constraints [i.e., Delta outflow, Emmaton electrical conductivity (EC), and Collinsville EC] will remain as controlling factors.

Agenda Item 4.
Review of Environmental Data
OMR Index and USGS Tidally Filtered Values are displayed on SacPAS.
http://www.cbr.washington.edu/sacramento/data/delta_loss.html

Approximate OMR gauge data as of 5/30/20

	USGS gauges (cfs)	**Index (cfs)**
Daily	-300 cfs	-1,300 cfs
5-day	-1,200 cfs	-1,200 cfs
14-day	*N/A	-1,100 cfs

* Missing data from 5/19/20 and 5/20/20.

Approximate OMRs as of 6/1/20:

	Index (cfs)
Daily	-1,500 cfs
5-day	-1,300 cfs
14-day	-1,200 cfs

Average Daily Water Temperature as of 6/1/2020:
http://cdec.water.ca.gov/dynamicapp/staMeta?station_id=MSD
http://cdec.water.ca.gov/dynamicapp/staMeta?station_id=PPT

- Closure of Grant Line Canal on 6/1/20 was included in OMR calculations.
- Daily average water temperatures at Mossdale were 68.5 degrees Fahrenheit (20.3 degrees Celsius) on 6/1/20. Also noted Figure 2 in the Assessment.
- High tide occurring the weekend of 6/6/20 to 6/7/20.
- Daily average water temperatures at Prisoners Point were 73.2 degrees Fahrenheit (22.9 degrees Celsius) on 6/1/20. Also noted in Figure 2 in the Assessment.

Agenda Item 5.

Fish Abundance and Distribution

Hatchery Releases

On 5/28/20, CDFW released approximately 485,000 brood year 2019 fall-run Chinook salmon from Mokelumne River Fish Hatchery into the San Francisco Bay at Fort Baker. This release included 25% adipose fin clip and Coded Wire Tagged (CWT) fish.

Fish Monitoring

Historical Fish Monitoring Data

Average percent of annual emigrating population for juveniles of each species of interest (based on LAD) captured at the following locations by 5/31 for the years 2005 to 2018. SacPAS Migration Timing Website

Species	Red Bluff Diversion Dam	Tisdale RST	Knights Landing RST	Sac Trawl (Sherwood)	Chipps Island Trawl	Average Percent Salvaged at SWP and CVP Delta Facilities
Winter-run Chinook salmon	100%	100%	100%	100%	100%	100%
Spring-run Chinook salmon	99.9%	100%	100%	100%	99.9%	98.5%
Steelhead	22.7%	92.5%	98.7%	98.7%	99%	93.9%

Current Fish Monitoring Data

Location	Feather River RST Eye Channel [A]	Feather River RST Herringer [B]	GCID RST[C]	Tisdale RST[D]	Knights Landing RST [E]	LAR RST [F]	Sacramento Trawls [G]	Chipps Island Midwater Trawl [G]
Sample Dates	5/26/20-5/29/20	5/26/20-5/29/20	5/26/20-5/29/20	5/25/20-5/26/20	5/25/20 – 5/29/20	5/27/20 – 5/29/20	5/24/20 – 5/30/20	5/24/20 – 5/30/20
Chinook								
FR Chinook	483	143	134 juv.			69 juv.	9	61
SR Chinook								
WR Chinook								
LFR Chinook	4	1						
Chinook (ad-clip)								19
Steelhead (natural)	2		2 juv.					
Steelhead (ad-clip)								
Green Sturgeon								
Flows (avg. cfs)	650	2,050	976	7,491	5,801			
W. Temp. (avg. °F)	63	67	62.8	70.0	72			
Turbidity (avg. NTU)	1.5	2.0	6.6	5.7	6.2			

[A] Feather River RST data from Eye Side Channel sampling period was from 5/26/20 at 11:30 to 5/29/20 at 12:09. Traps began sampling after Memorial Day holiday 5/26/20. Traps pulled for flow increase on 5/29/20. No weekend trapping for the remainder of the season.
[B] Feather River RST data at Herringer sampling period was from 5/26/20 at 10:40 to 5/29/20 at 11:50. Traps began sampling after Memorial Day holiday 5/26/20. Traps pulled for flow increase on 5/29/20. No weekend trapping for the remainder of the season.
[C] GCID RST sampling period was from 5/26/20 to 5/29/20. RST operating at half cone. 5/29/20 cone raised due to heavy debris and the increase in flow over the weekend. 6/1/20 cone lowered.
[D] Tisdale RST sampling period was from 5/25/20 at 9:30 to 5/26/20 at 11:30. RST operating at full cone. Trapping ended on 5/26/20 due to river temperatures reaching 70F. Sampling complete for season, to resume when water temperatures allow (August or September).
[E] Knights Landing RST sampling period was from 5/25/20 at 8:00 to 5/29/20 at 10:30. RST operating at half cone. Trapping ended on 5/29/20 due to elevated water temperatures. Sampling complete for season, to resume when water temperatures allow (August or September).
[F] Lower American River RST sampling period was from 5/27/20 to 5/29/20.
[G] DatCall sampling data period was from 5/24/20 to 5/30/20.

Fish monitoring gear efficiency, COVID-19 impacts, current status:

Monitoring Survey	Status (6/2/20, new changes in green)
Delta	
SWP regular counts, CWT reading, and larval sampling	Ongoing through modified staffing
CVP regular counts, CWT reading, and larval sampling	Ongoing through modified staffing.
Smelt Larval Survey	Suspended temporarily. Completed data analysis ongoing.
20mm Survey	Starting 4/13/20, modified (prioritizing South/Central Delta). Starting on 5/11/20, increased to predominantly an entire survey with 44 of 47 stations representing all strata.
Bay Study	Suspended temporarily
DJFMP - Chipps and Sacrament Trawls	Occurring
DJFMP- Seines	Suspended since 3/17/20
EDSM	Occurring
EMP Continuous	Occurring
EMP Discrete	Suspended temporarily
Mossdale	Suspended since 3/16/20
USGS Flow monitoring	Occurring
Sacramento River	
Acoustic tagging - Battle Creek "Jumpstart" hatchery winter run Chinook	Tagged ~ 250 fish
Acoustic tagging - Offsite Release study of fall run Chinook	Postponed until 2021
Acoustic tagging - Spring run Chinook	CDFW taking on tagging in Butte (14 tagged 5/15/20, 9 tagged 5/18/20) – as fish come into trap and as staff are available
Acoustic tagging - Pulse Flow experiment	Approximately 623 fish tagged.
Red Bluff Diversion Dam screw trap	Suspended since 3/26/20
Knights Landing screw trap	**Sampling completed for WY 2020.**
Tisdale screw trap	**Sampling completed for WY 2020.**
Redd dewatering and stranding surveys	Suspended March and April of 2020. Resumed May 2020
Sacramento Carcass and Redd Surveys	Carcass surveys continuing. Redd surveys suspended March and April but resumed and partially in May 2020 An aerial survey occurred last week.
San Joaquin River	
SJRRP CDFW and USFWS Field Monitoring	On hold until further notice
SJRRP USBR Field Monitoring	Ongoing with modified staffing
San Joaquin River Steelhead (Mokelumne Hatchery) acoustic tagging	Cancelled

Green Sturgeon

- One juvenile green sturgeon captured on 5/26/20. Four juveniles captured on 5/28/20. All captured near Sherman Island on the Sacramento River.

DOSS Weekly Salvage Update

Reporting Period: May 25-May 31, 2020

Prepared by Kyle Griffiths on June 1, 2020 15:23

Preliminary Results -Subject to Revision

Criteria	25-May	26-May	27-May	28-May	29-May	30-May	31-May	Trend	
Loss Densities									
Wild older juvenile CS	0	0	0	0	0	0	0	→	0.00
Wild steelhead	0	0	0	0	0	0	0	↘	0.00
Exports									
SWP daily export	1,268	1,200	989	1,233	1,088	747	1,136	↗	1,094
CVP daily export	1,789	1,799	1,791	1,791	1,791	1,795	1,798	→	1,793
SWP reduced counts	0	0	0	0	0	0	0		
CVP reduced counts	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 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;

		Weekly Total			Season Total		Season Total - LAD	
Category		Salvage	Loss	Trend	Salvage	Loss	Salvage	Loss
Wild								
	Winter Run	0	0	→	45	80	107	196.71
	Spring Run	4	4	↗	171	478	2265.25	4168.33
	Late Fall Run	0	0	→	12	8	12	8.36
	Fall Run	8	7	↘	3,142	5,319	986	1,513
	Unclassified	0	0	→	0	0	0	0
	Total	**12**	**10**		**3,370**	**5,885**	**3,370**	**5,886**
Hatchery								
	Winter Run	0	0	→	18	16	80	94.3
	Spring Run	0	0	→	1,177	1,595	1048	1473.12
	Late Fall Run	0	0	→	195	153	186	143.62
	Fall Run	0	0	→	49	35	125	88
	Unclassified	0	0	→	0	0	0	0
	Total	**0**	**0**		**1,439**	**1,799**	**1,439**	**1,799**

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

	Weekly Total			Season Total		Season Total > Apr.1	
Category	Salvage	Loss	Trend	Salvage	Loss	Salvage	Loss
Wild	0	0	↘	300	726	149	324
Hatchery	0	0	→	428	659		
Total	**0**	**0**		**728**	**1,385**		

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

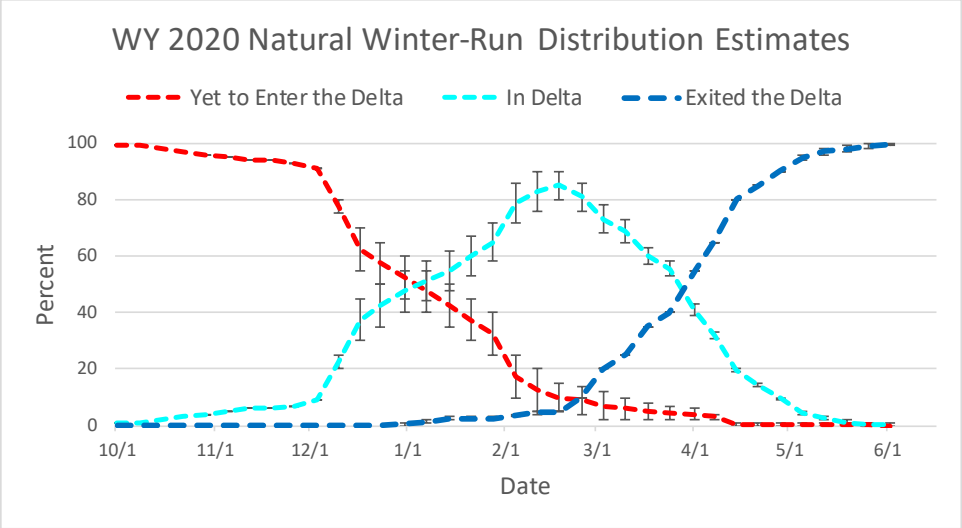
SaMT Estimates of Fish Distribution
SaMT estimates of the current distribution of listed salmonids, as a percentage of the population, are based on recent monitoring data and historical migration timing patterns.

Location	Yet to Enter Delta (Upstream of Knights Landing)	In the Delta	Exited the Delta (Past Chipps Island)
Young-of-year (YOY) winter-run Chinook salmon	0% Last week: 0-1%	0-1% Last week: 0-1%	99-100% Last week: 98-100%
YOY spring-run Chinook salmon	0-5% Last week: 0-5%	5-15% Last week: 10-25%	85-90% Last week: 75-85%
YOY hatchery winter-run Chinook salmon	0% Last week: 0-1%	0-1% Last week: 0-1%	99-100% Last week: 98-100%
Natural origin steelhead	0-5% Last week: 0-5%	20-40% Last week: 25-50%	55-80% Last week: 50-70%

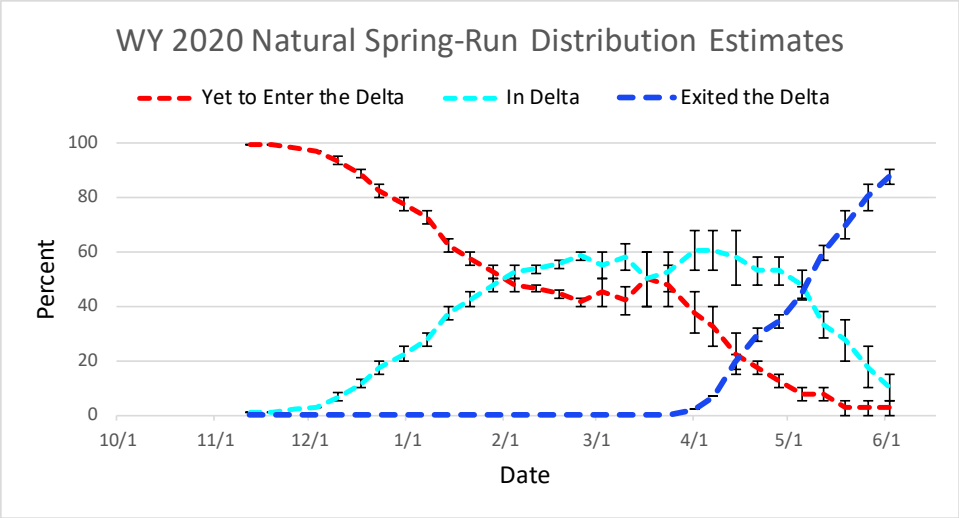
Rationale for changes in distribution

Described in the Assessment document in abundance and distribution sections. A draft Assessment document is sent to SaMT members prior to the weekly call. Final weekly Assessment documents will be posted to the WOMT web page.

Distribution estimate figures
Distribution estimate figures for natural winter-run and spring-run Chinook salmon as discussed during the SaMT meetings.



WY 2020 natural winter-run Chinook salmon distribution



WY 2020 natural spring-run Chinook salmon distribution

Agenda Item 6.
Fish Exposure and Behavioral Cues:
Historical Patterns

Described in Assessment document in abundance and distribution sections (Figures 3 and 4).

Current Conditions
Entrainment into the Interior Delta:
Described in Assessment document.

DSM2
DSM2 – Results are provided in the Assessment document weekly on Mondays and Fridays.

Sensitivity to Operational Actions - SaMT Feedback on Entrainment Risk
SaMT was provided a draft Assessment on the previous Friday. Input that was received last Friday was incorporated into the draft Assessment document that SaMT reviewed during the call on Tuesday morning. This week's Assessment document will be posted to the WOMT web page.

Agenda Item 7.
Other Topics

SaMT discussed DWR's ITP categorization for entrainment, exposure, export, and overall risk.

8.1.5.1.C. Assessment of risk of entrainment into the central Delta and CVP/SWP facilities for winter-run Chinook salmon and spring-run Chinook salmon in the Sacramento River over the next week:

8.1.5.1.C.ii. Exposure Risk:	Winter-run Chinook salmon: N/A Spring-run Chinook salmon: Low
8.1.5.1.C.iii. Routing Risk:	Winter-run Chinook salmon: N/A Spring-run Chinook salmon: Low
8.1.5.1.C.iv. Overall Risk:	Winter-run Chinook salmon: N/A Spring-run Chinook salmon: Low

8.1.5.1.D. CVP/SWP facilities entrainment risk for winter-run Chinook salmon and spring-run Chinook in the central Delta over the next week:

8.1.5.1.D.iii. Exposure Risk Assessments:	Winter-run Chinook salmon: N/A Spring-run Chinook salmon: Low
8.1.5.1.D.iv. Reporting OMR/Export Risk:	
OMR -1,500 cfs:	Winter-run Chinook salmon: N/A Spring-run Chinook salmon: Low
OMR -3,000 cfs:	Winter-run Chinook salmon: N/A Spring-run Chinook salmon: Low
OMR -5,000 cfs:	Winter-run Chinook salmon: N/A Spring-run Chinook salmon: Medium
8.1.5.1.D.v. Overall Entrainment Risk:	
OMR -1,500 cfs:	Winter-run Chinook salmon: N/A Spring-run Chinook salmon: Low
OMR -3,000 cfs:	Winter-run Chinook salmon: N/A Spring-run Chinook salmon: Low
OMR -5,000 cfs:	Winter-run Chinook salmon: N/A Spring-run Chinook salmon: Low

- SaMT discussed Salmon and Smelt Monitoring Team Expectations and Group Norms document. SaMT members indicated a Monday pre-call may be needed to meet the guidance in the document to "discuss uncertainties, ambiguities, or issues ahead of meeting".
- The timing of the last SaMT call of 2020 will depend on when OMR Flow Management ends. The assignment of specific portions of the annual report will be discussed at the last call.

Agenda Item 8.
Considerations for WOMT

- No recommendations to change Delta Operations.

Agenda Item 9.
Next SaMT Meeting is scheduled for Tuesday, 6/9/20 at 9:00 a.m.