

American River Group

Thursday, March 19, 2020

1:30 PM – 3:30 PM

Webinar URL: join.me/kearnswest

Conference Line: 1-415-594-5500; Conference ID: 490-125-520 #

Agenda

1) Introductions

2) Presentation

2019 Modified Flow Management Standard
Jeffrey Weaver, HDR

3) Fisheries Update

a) CDFW

b) CFS

c) PSMFC

4) Operations Forecast

a) SMUD

b) PCWA

c) Central Valley Operations

5) Central Valley Operations

a) Temperature Management

b) Exceedance Forecast

6) Discussion

a) Flow Reduction

b) COVID-19

7) Next Meeting: Thursday, April 16, 2020 from 1:30 PM – 3:30 PM



CDFW Fisheries Update

Nimbus Fish hatchery released approximately 465,000 brood year 2019 steelhead at the Sunrise Ave boat launch on February 19-21, 2020. All fish were marked with an adipose clip.

Lower American River 2020 Steelhead Spawning Survey Summary

Spawning

Steelhead, Chinook salmon, Lamprey, unknown, and test redd counts during 2020 spawning surveys.

Dates	Steelhead	Chinook	Lamprey	Unknown	Test	Total
Jan 8-10	8	2	0	1	0	11
Jan 21-23	12	1	0	0	1	14
Feb 4-6	24	1	0	0	0	25
Feb 18-20	3	0	0	0	0	3
March 3-5	5	0	0	0	0	0
<i>March 16-18</i>	<i>0</i>	<i>0</i>	<i>2</i>	<i>1</i>	<i>0</i>	<i>3</i>

**Italics indicate that this is draft information; these data have not been post-processed.*

- Spawning surveys occurred this week (March 16-18). The next surveys will occur the week of May 30-April 3.

Stranding

Isolated pool data for 2020 standing surveys.

Dates	Location (river mile)	Nimbus Basin (22)	Upper Sailor Bar (22)	Upper Sunrise Side channel Island (21)	Above Lower Sunrise Side Channel (19)	Lower Sunrise Side Channel Island (19)	Sacramento Bar (18)	El Manto to San Juan Rapids (18)	Below San Juan Rapids (17)	Upper River Bend Side Channel (14)	Lower Riverbend Side Channel (13)	Below Riverbend (12)	Below Riverbend Mined Side Channel Outlet (12)	Paradise Beach (5)
3/16 - 3/18	total stranded salmonids (steelhead)			4,000 (50)		20 (0)					27 (0)			

- We conducted stranding surveys in conjunction with spawning surveys on Feb 18-20.
- We observed 4 isolated pools – 1 at the Upper Sunrise Side Channel Island, 1 at the Lower Sunrise Side Channel Island, and 2 at the Lower Riverbend Side Channel.
- Estimated 4,047 juvenile salmonids stranded (50 steelhead).
- Water quality (temperature, dissolved oxygen) in stranding pools has not reached stressful levels (Upper Sunrise: temperature 10.3 °C, DO 10.32 mg/L)

Pacific States Marine Fisheries Commission

Fisheries Update

Catch summaries for species of interest captured between January, 8 and March, 18 from the American River Watt avenue screw traps.

Year to date, we have captured a total of 135,787 length-at-date (LAD) fall-run Chinook, 106 LAD spring-run Chinook, 170 LAD winter-run Chinook Salmon as well as 20 natural origin Steelhead button-up fry and 1 smolt.

Date	Unmarked Juvenile Chinook Salmon					Unmarked Steelhead				Recaptured CS		Marked Salmonids	
	Fall	Spring	Winter	Late-fall	Total CS Catch	Fry	Smolts	Adults	Total SH Catch	BBY CS	VIE CS	CS Ad-Clip	SH Ad-Clip
	135,787	106	170	0	136,063	20	1	0	21	576	0	0	434

SMUD Upper American River Project Update

Conditions – 18 March 2020:

March precipitation through 3/18/2020 7:00:00 AM is 8.77 in., which is 97% of the March average of 9.06". Precip for the water year to date is 24.20" which is 55% of average to date (43.62") and 42% of the entire water year average of 57.32".

Combined reservoir storage for Loon Lake, Union Valley and Ice House Reservoirs:

- 219,120 acre feet
- 58% capacity
- 90% historical average (18 March historical average: 242,621 AF / 64%)
- 1% increase in storage since last week
- Note: Ice House is at 34% capacity. Using IH to meet flow requirements due to UV work.

Individual reservoir storage:

- Loon Lake: 39,478 AF
- Ice House: 20,903 AF
- Union Valley: 150,092 AF

Last year today, storage was at 62% (236,688 AF).

**Total WINTER capacity of the three reservoirs is 329,210 acre feet.*

February 2020 releases:

- 372 cfs average flows below Chili Bar
- 21,422 total AF released below Chili Bar

March releases (March 1-17):

- 511 cfs average flows below Chili Bar
- 17,215 total AF released below Chili Bar
- On 3/17, Chili Bar was releasing an average of 1197 cfs

Runoff into the storage reservoir basins is 67% of median to date through Mar 17. The snowpack is 29% of average at selected snow sensors.

Runoff Forecast (in cfs, daily average forecast)

<i>basin</i>	Fri 3/20	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar
SFA above Slab	58.5	58.4	59.0	73.1	77.9	82.4
Slab Creek	102.1	93.7	89.6	87.0	87.8	299.4
Combined South Fork	161	152	149	160	166	382

PCWA MFP OPERATIONS OVERVIEW for American River Operations Group March 19, 2020

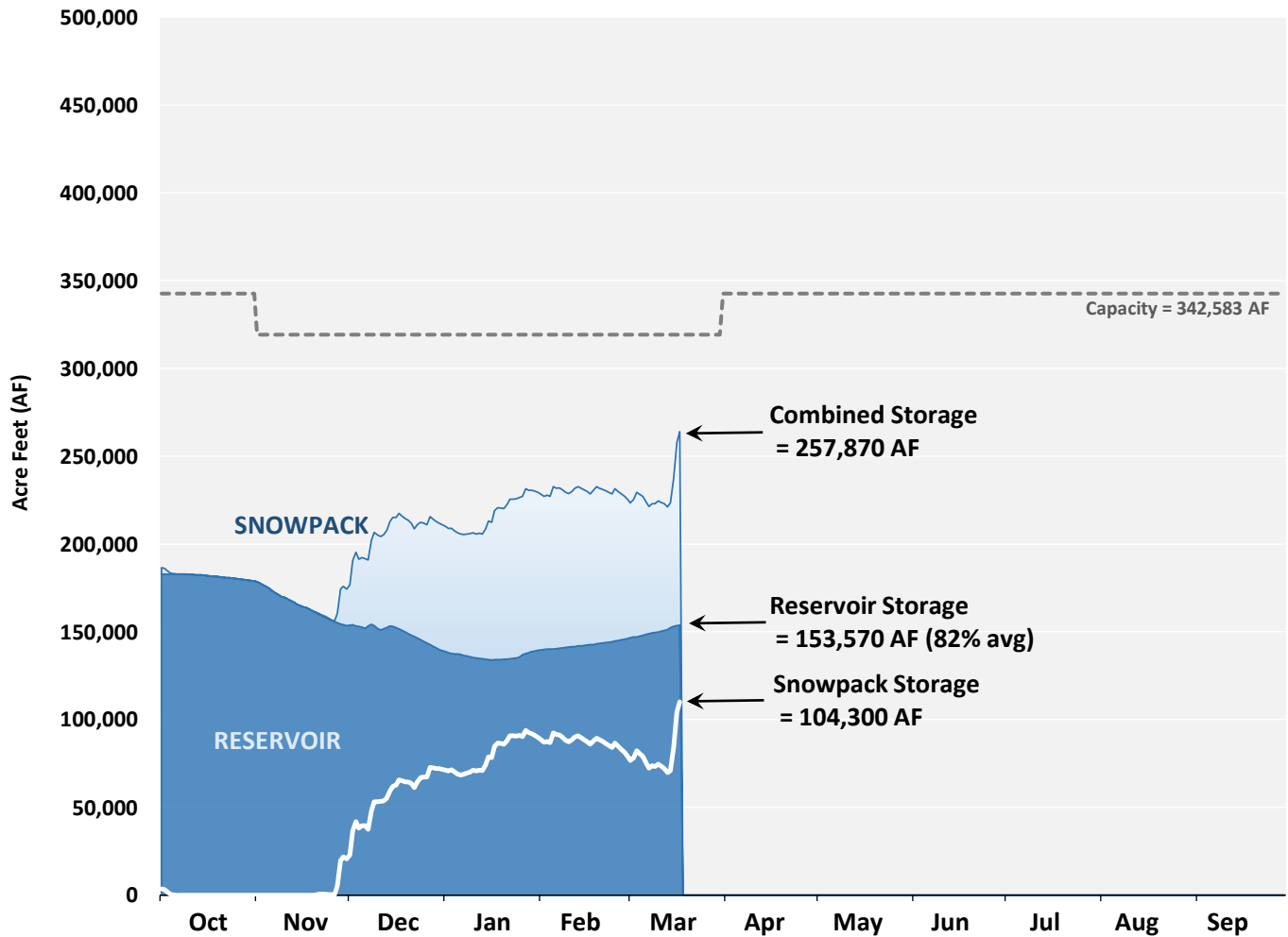
- ❖ **French Meadows Storage = 64,000 AF of 136,405 AF = ~47% Capacity**
 - MFAR above FM Inflow (R24) = 50 cfs
- ❖ **Hell Hole Storage = 91,000 AF of 207,590 AF = ~44% Capacity**
 - Five Lakes Inflow (R23) = ~50 cfs
 - Rubicon Inflow (R22) = ~50 cfs
- ❖ **Combined Storage (FM+HH) = 155,000 AF/342,590 AF = ~45% Capacity = ~83% of AVG**
 - **1975-2016 AVERAGE for March 19th = 186,000 AF**
- ❖ **POWER PRODUCTION** – Minimal power production; conservation of storage operations.
- ❖ **MFAR @ R11**: Last 7 days AVG= 550 cfs

WY 2020 MFP Reservoir Operations

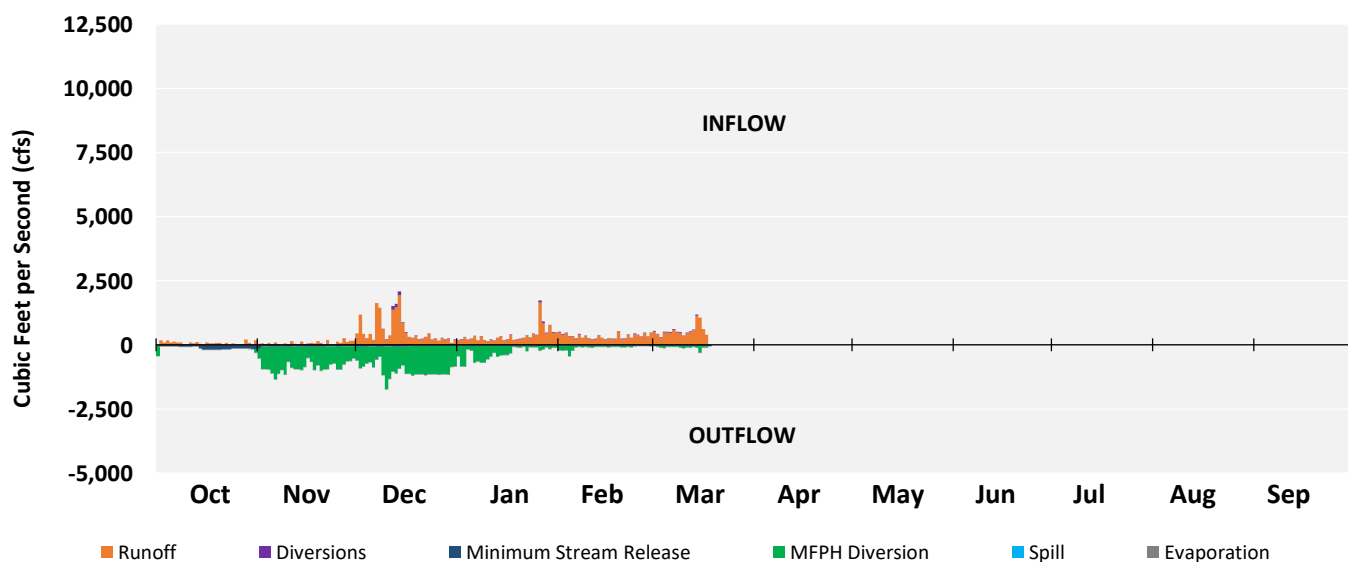


Updated through: 3/17/2020

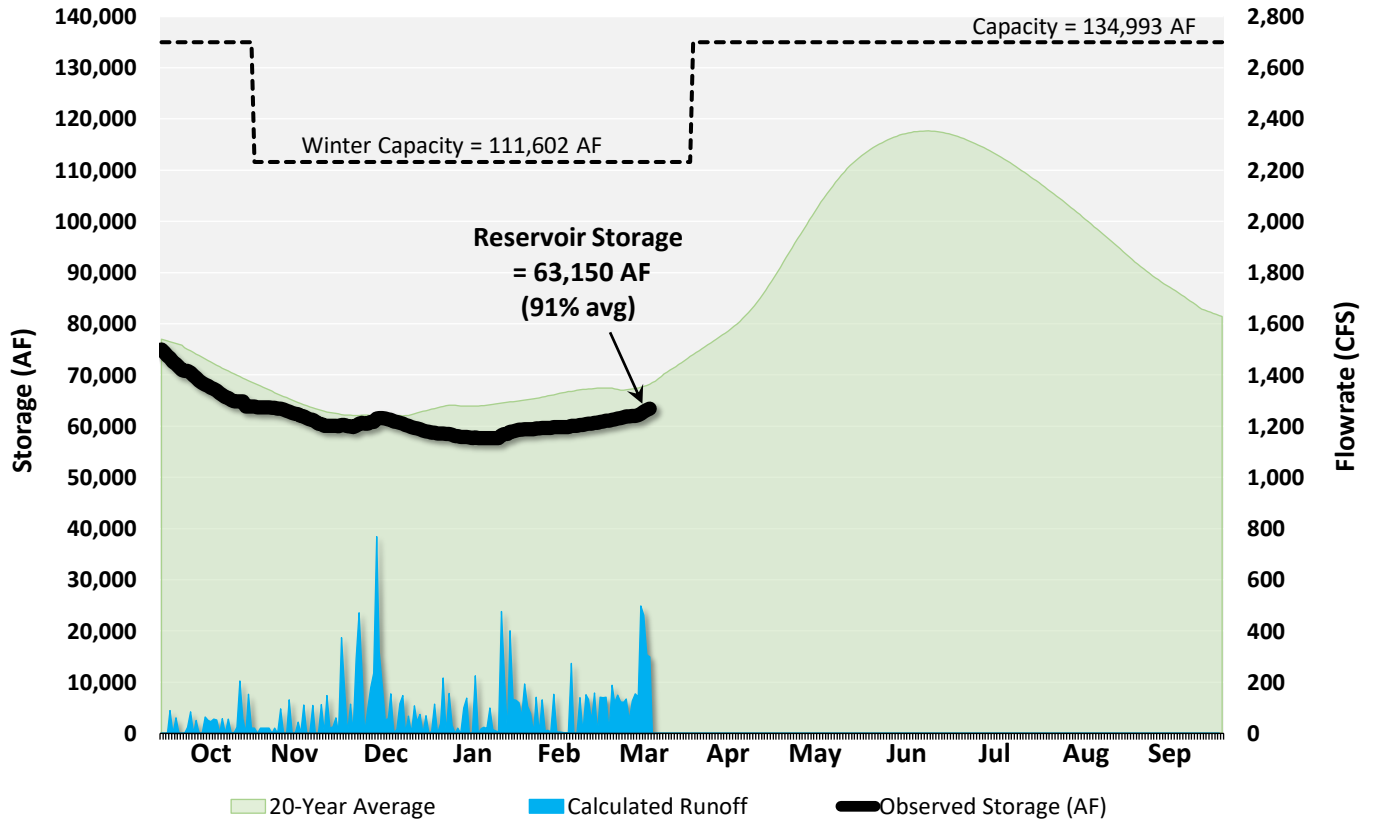
MFP Reservoir and Snowpack Storage



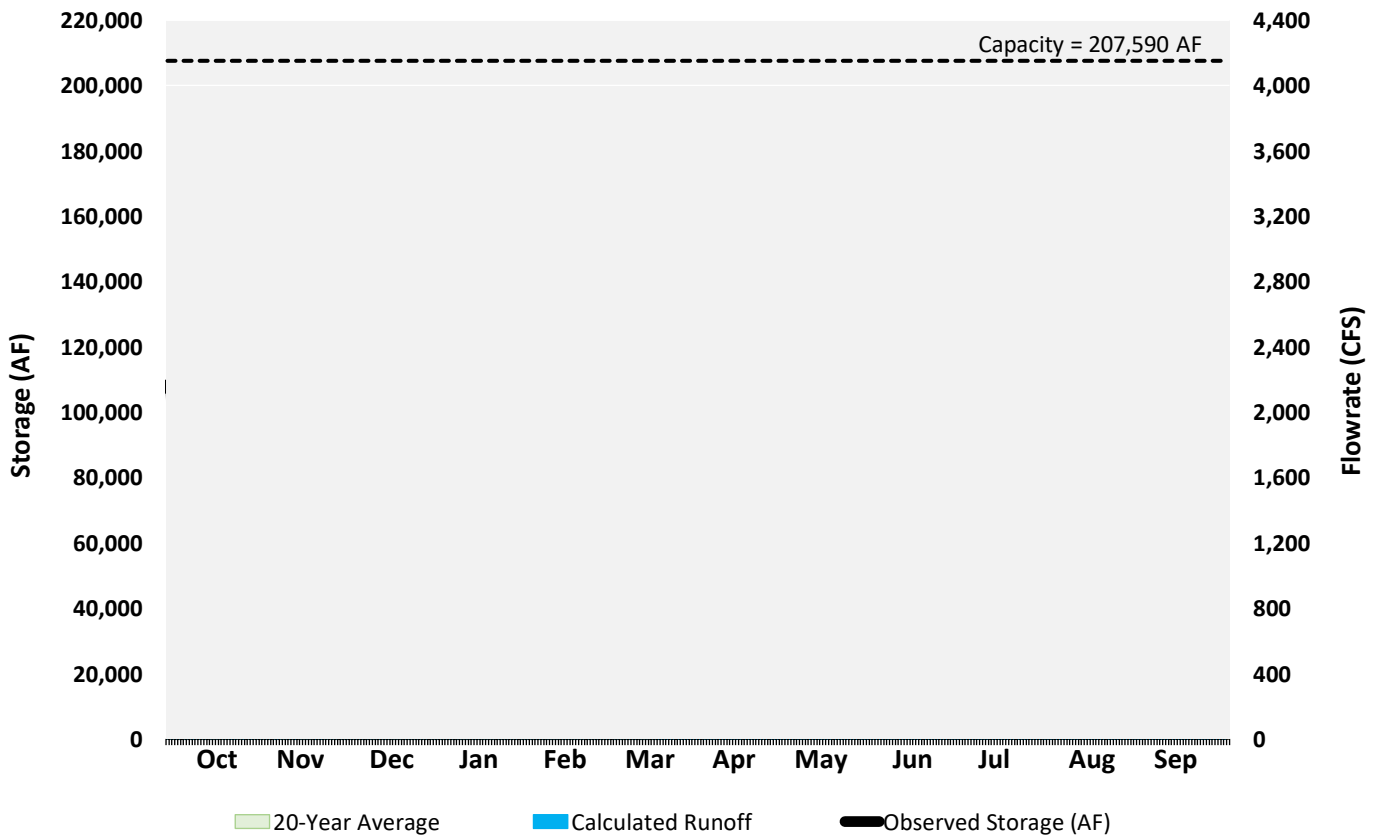
MFP Storage Inflow and Releases



French Meadows Reservoir



Hell Hole Reservoir



American River Summary Conditions – Mar (On-going):

- February was driest February on record.
- Just had a decent precip event, storage increase of 32 TAF so far from increased runoff.

Storage/Release Management Conditions

- Releases were reduced on Wednesday March 15, 2020 to 1500 cfs.
- Discuss new FMS MRR under the new Biological Opinion

Temperature Management:

- Time to start building cold water pool.

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA

DAILY CVP WATER SUPPLY REPORT

MARCH 17, 2020

RUN DATE: March 18, 2020

RESERVOIR RELEASES IN CUBIC FEET/SECOND

RESERVOIR	DAM	WY 2019	WY 2020	15 YR MEDIAN
TRINITY	LEWISTON	283	300	300
SACRAMENTO	KESWICK	24,238	4,597	3,788
FEATHER	OROVILLE (SWP)	6,000	1,750	1,750
AMERICAN	NIMBUS	5,873	1,499	1,680
STANISLAUS	GOODWIN	4,506	209	229
SAN JOAQUIN	FRIANT	1,817	260	260

STORAGE IN MAJOR RESERVOIRS IN THOUSANDS OF ACRE-FEET

RESERVOIR	CAPACITY	15 YR AVG	WY 2019	WY 2020	% OF 15 YR AVG
TRINITY	2,448	1,682	1,833	2,020	120
SHASTA	4,552	3,422	3,796	3,539	103
FOLSOM	977	566	633	454	80
NEW MELONES	2,420	1,549	2,034	1,891	122
FED. SAN LUIS	966	713	965	471	66
TOTAL NORTH CVP	11,363	7,933	9,261	8,375	106
MILLERTON	520	318	430	278	87
OROVILLE (SWP)	3,538	2,332	2,664	2,261	97

ACCUMULATED INFLOW FOR WATER YEAR TO DATE IN THOUSANDS OF ACRE-FEET

RESERVOIR	CURRENT WY 2020	WY 1977	WY 1983	15 YR AVG	% OF 15 YR AVG
TRINITY	211	67	1,097	498	42
SHASTA	1,733	1,287	6,091	2,785	62
FOLSOM	566	182	3,107	1,230	46
NEW MELONES	269	----	1,012	405	67
MILLERTON	326	105	1,411	411	79

ACCUMULATED PRECIPITATION FOR WATER YEAR TO DATE IN INCHES

RESERVOIR	CURRENT WY 2020	WY 1977	WY 1983	AVG (N YRS)	% OF AVG	LAST 24 HRS
TRINITY AT FISH HATCHERY	13.27	8.67	45.04	25.29 (58)	52	0.63
SACRAMENTO AT SHASTA DAM	25.04	9.78	90.36	49.02 (63)	51	1.40
AMERICAN AT BLUE CANYON	29.13	14.11	85.19	52.13 (45)	56	0.05
STANISLAUS AT NEW MELONES	17.17	----	37.49	21.64 (42)	79	1.31
SAN JOAQUIN AT HUNTINGTON LK	17.87	9.50	67.30	31.91 (45)	56	1.99

D A T E	Mean Daily Temperatures (°F)							Release (CFS)	Storage (TAF)	Unit Shuter Position / Load Percentage						Isobath Plot				
	Water						Air			Percentage										
	NFA	ARP	AFD ¹	AHZ	AWP	AWB	CSU			Nimbus	Folsom	Unit 1		Unit 2		Unit 3				
Jan	44.8	44.3	50.3	49.8	50.2	49.6	48.6	2087								>70 68-70 66-68 64-66 62-64 60-62 58-60 56-58 54-56 52-54 50-52 48-50 46-48 <46				
02/01	46.6	45.8	50.0	49.8	50.6	50.4	52.7	1910	487	B	57	M	22	M	21					
02/02	46.1	45.2	50.0	49.8	50.0	49.7	50.1	1912	488	B	25	M	66	M	9					
02/03	44.3	42.7	50.2	49.1	49.0	48.3	44.4	1909	487	B	14	M	38	M	47					
02/04	43.0	41.6	50.2	48.4	48.3	47.6	44.7	1917	487	B	54	M	23	M	23					
02/05	42.6	42.2	49.9	48.4	48.8	48.1	46.4	1770	486	B	21	M	16	M	64					
02/06	42.9	43.0	50.1	48.9	49.5	49.0	49.5	1745	485	B	63	M	19	M	18					
02/07	43.3	42.8	50.0	49.2	49.9	49.4	51.0	1765	484	B	29	M	49	M	22					
02/08	43.6	43.0	49.9	49.4	50.1	49.7	50.4	1726	484	B	53	M	29	M	17					
02/09	43.6	43.1	50.4	49.4	49.7	49.2	53.5	1726	483	B	16	M	67	M	17					
02/10	43.3	43.2	50.2	49.2	49.9	49.4	55.3	1744	482	B	20	M	51	M	29					
02/11	43.5	44.1	49.9	49.3	50.0	49.8	54.3	1756	481	B	32	M	34	M	34					
02/12	44.0	44.9	49.9	49.6	50.5	50.2	53.3	1747	480	B	33	M	33	M	33					
02/13	44.4	45.0	49.5	49.8	50.7	50.4	51.3	1741	478	B	11	M	36	M	52					
02/14	? 44.8	45.3	49.5	49.7	50.5	50.3	50.7	1751	476	B	13	M	62	M	24					
02/15	45.0	45.1	49.4	49.7	50.6	50.4	52.7	1752	475	B	7	M	31	M	62					
02/16	46.2	46.2	49.4	49.5	50.7	50.9	55.8	1746	474	B	15	M	26	M	58					
02/17	46.4	46.2	49.9	49.6	50.5	50.4	56.3	1750	472	B	53	M	23	M	23					
02/18	46.4	46.6	49.6	49.6	50.7	50.5	53.0	1748	471	B	18	M	57	M	26					
02/19	46.6	46.9	49.7	49.5	50.5	50.3	52.0	1755	469	B	43	M	34	M	23					
02/20	47.0	47.5	49.5	49.7	50.7	50.5	54.0	1753	467	B	1	M	65	M	34					
02/21	47.5	48.2	49.8	49.7	50.9	50.9	57.0	1749	465	B	48	M	34	M	18					
02/22	48.1	48.5	49.7	49.9	51.2	51.3	56.4	1745	464	B	17	M	46	M	37					
02/23	48.3	47.4	49.7	49.9	51.0	51.1	52.7	1914	462	B	16	M	62	M	22					
02/24	48.6	47.5	50.0	50.1	51.2	51.2	56.7	2001	459	B	22	M	28	M	50					
02/25	48.6	48.1	49.9	50.2	51.4	51.5	58.6	1998	457	B	20	M	27	M	52					
02/26	49.1	49.2	51.1	50.1	51.4	51.6	59.4	1828	454	B	45	M	35	M	19					
02/27	49.7	50.0	52.0	50.3	51.6	51.7	58.8	1997	452	B	17	M	54	M	30					
02/28	50.2	50.2	52.0	51.0	52.0	51.9	60.2	2009	449	B	44	M	40	M	15					
02/29	50.9	50.3	51.3	51.5	52.8	52.8	56.0	1996	447	B	14	M	60	M	26					
-																				
-																				
Feb	46.0	45.9	50.1	49.7	50.5	50.3	53.3	1823								02/01	02/29			

Legend

- ? = 1-9 hours of data missing
- ! = 10 or more hours of data missing
- # = Station out of service
- = Monthly Averages

- A = All Shutters Lowered
- T = Top Shutter Raised
- M = Middle Shutter Raised
- B = Bottom Shutter Raised
- O = Unit Outage

Notes

- 1 AFD is a weighted average using hourly flow values
- 2
- 3
- 4
- 5
- 6

D A T E	Mean Daily Temperatures (°F)							Release (CFS)	Storage (TAF)	Unit Shuter Position / Load Percentage						Isobath Plot				
	Water						Air			Percentage										
	NFA	ARP	AFD ¹	AHZ	AWP	AWB	CSU			Nimbus	Folsom	Unit 1		Unit 2		Unit 3				
Feb	46.0	45.9	50.1	49.7	50.5	50.3	53.3	1823								>70 68-70 66-68 64-66 62-64 60-62 58-60 56-58 54-56 52-54 50-52 48-50 46-48 <46				
03/01	50.3	48.8	52.4	51.9	52.6	52.4	52.8	1999	446	B	26	M	26	M	48					
03/02	49.3	46.9	52.8	51.5	52.3	51.9	59.1	2000	444	B	44	M	36	M	20					
03/03	49.7	48.3	52.3	51.3	52.5	52.4	59.3	2001	442	B	32	M	54	M	15					
03/04	50.7	49.3	52.4	52.3	53.6	53.5	60.7	2005	439	B	30	M	20	M	49					
03/05	51.4	50.6	52.4	52.5	53.9	54.0	58.5	1999	437	B	58	M	20	M	22					
03/06	51.7	51.0	52.0	52.6	53.8	53.7	54.3	2004	434	B	15	M	25	M	60					
03/07	51.3	49.8	51.9	52.5	53.0	52.8	50.8	2004	433	B	18	M	52	M	30					
03/08	51.0	48.8	52.5	52.1	53.0	52.7	51.8	2002	433	B	58	M	19	M	23					
03/09	51.4	49.3	52.7	51.9	53.3	53.3	57.0	1995	431	B	32	M	32	M	36					
03/10	51.7	50.4	53.1	52.3	53.7	53.6	58.2	1773	429	B	24	M	46	M	30					
03/11	52.6	51.9	53.4	53.0	54.7	54.9	61.4	1744	428	B	24	M	29	M	46					
03/12	53.5	53.5	53.5	53.3	55.0	55.2	62.1	1747	426	B	24	M	35	M	41					
03/13	53.8	53.5	52.6	53.7	55.2	55.6	56.1	1754	425	B	32	M	29	M	39					
03/14	52.4	51.7	52.5	53.8	54.0	53.6	50.3	1752	425	B	27	M	71	M	2					
03/15	49.5	49.2	52.6	52.8	53.4	52.9	48.6	1530	434	B	23	M	67	M	10					
03/16	46.3	47.2	53.4	51.8	51.8	51.2	43.4	1497	447	B	16	M	57	M	27					
03/17	45.2	46.9	52.7	51.3	52.1	51.5	46.8	1499	454	B	35	M	31	M	34					
03/18																				
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03/31																				
Lower River Outlet																				

Legend

- ?

!

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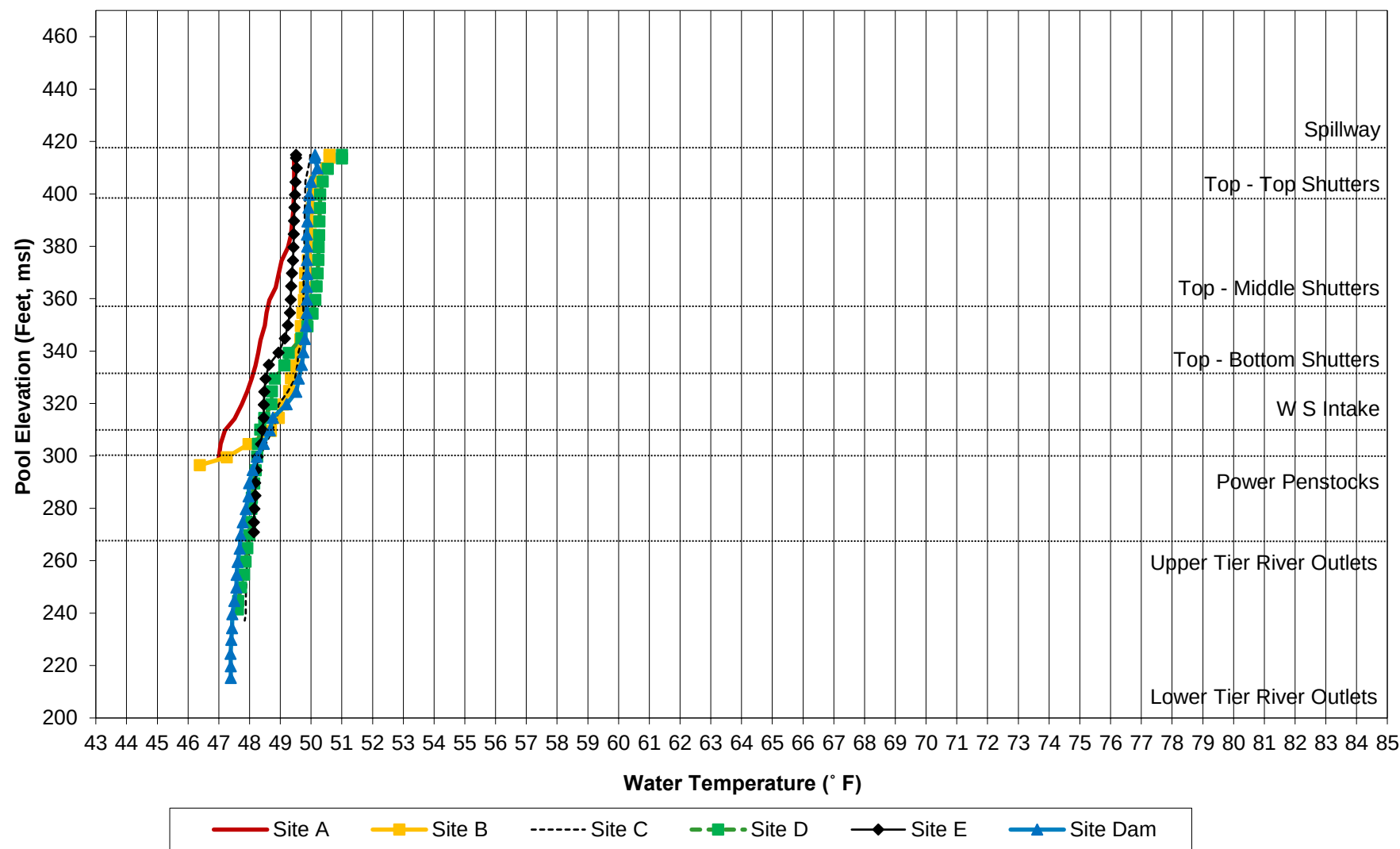
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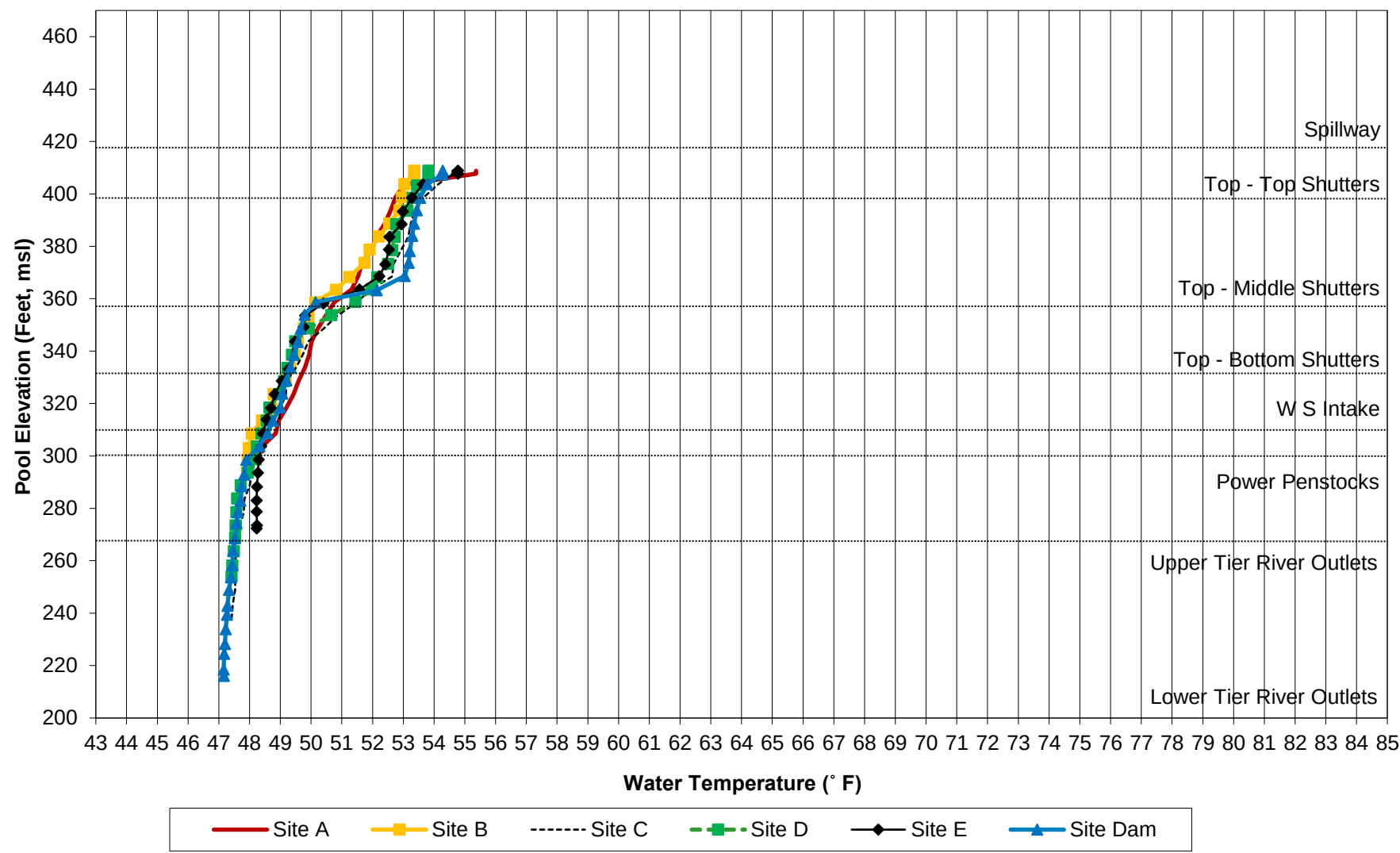
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Folsom Lake Temperature Profiles: 05-Feb-2020

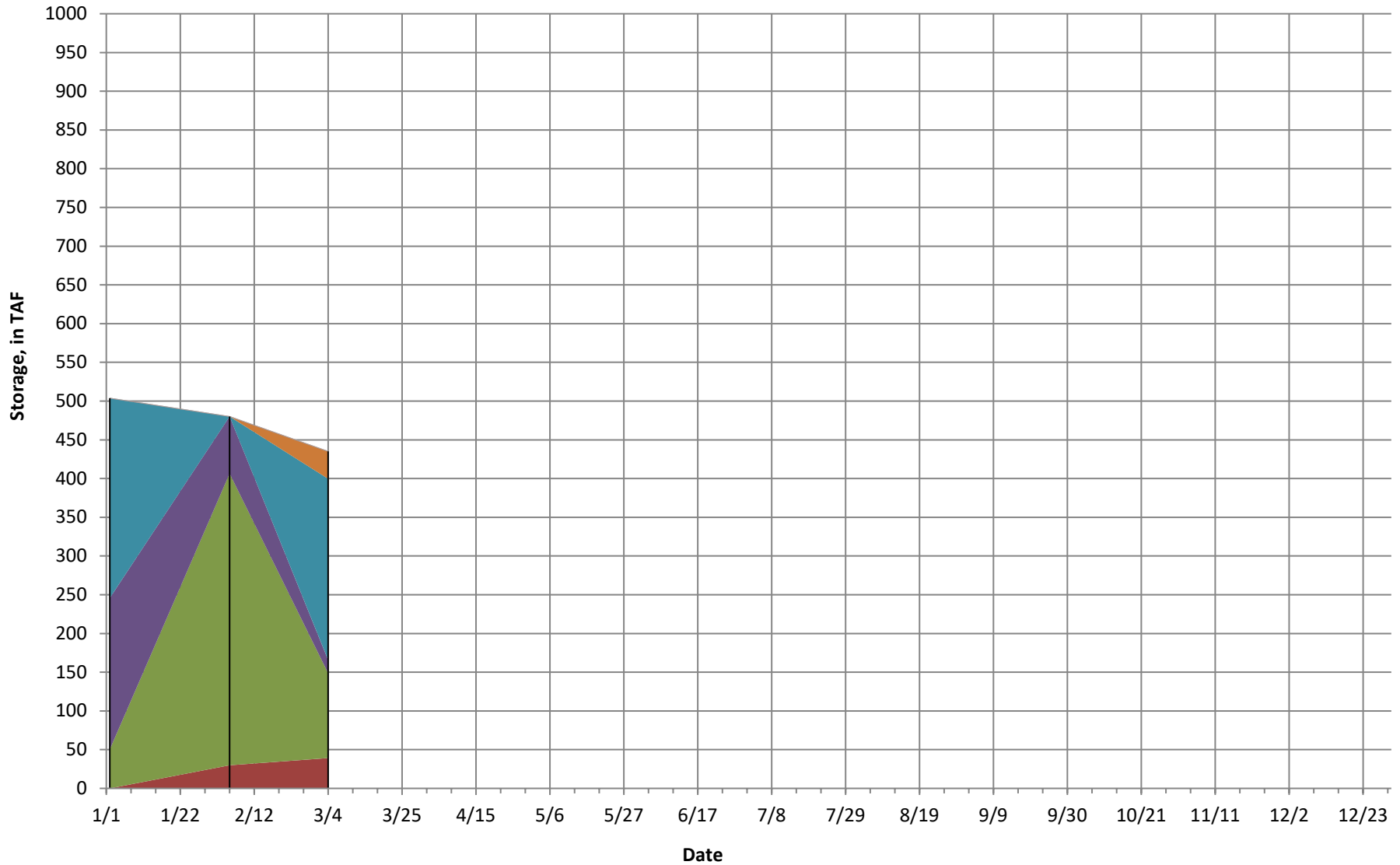


Folsom Lake Temperature Profiles: 04-Mar-2020



Folsom Lake Isothermobaths - 2020

(Water Temperature, in ° F)



Folsom Cold Water Pool

Folsom Reservoir: Cold Water Volume

Profile Date	Volume less than 58°F (TAF)
3/4/20	435

Penstock Elevation (ft)	Volume (TAF)	Approximate Max. Temp (F)
327	83	49.2

Proposed Power Generation Bypass/Lower River Outlet for Temperature Management

Date	Bypass/Lower River Outlet (cfs)	Temperature not to exceed downstream of Nimbus Dam (°F)	Cumulative Use of Cold Water Pool Volume (TAF)

DRAFT March 2020

90% Runoff Exceedance Outlook:

Inflow based on 90% historical average runoff for all months.

Federal End of the Month Storage/Elevation (TAF/Feet)

		Mar	Apr	May	June	July	Aug
Folsom	447	445	485	467	425	331	259
Elev.		409	415	412	407	392	380

Monthly River Releases (cfs)

American	1505	1434	1544	1425	2105	1700
MRR	964	964	964	887	1325	1325

50% Runoff Exceedance Outlook:

Inflow based on 50% historical average runoff for all months.

Federal End of the Month Storage/Elevation (TAF/Feet)

		Mar	Apr	May	June	July	Aug
Folsom	447	429	495	535	510	376	336
Elev.		407	416	421	418	399	393

Monthly River Releases (cfs)

American	1600	1500	1644	1501	3000	1500
MRR	964	964	964	887	1325	1325

Please note:

CVP actual operations do not follow any forecasted operation or outlook; actual operations are based on real-time conditions.

CVP operational forecasts or outlooks consider general system-wide dynamics and do not necessarily address specific watershed/tributary details.

CVP releases represent monthly averages.

CVP operations are updated monthly as new hydrology information is made available December through May.

Shaded area represents less confident hydrologic inputs of the future water year.