



— BUREAU OF —  
RECLAMATION

## American River Group

1:30 p.m.–3:30 p.m.

Conference Line: +1 (321) 209-6143; Access Code: 985 598 947#

Webinar: [Join Microsoft Teams Meeting](#)

**Thursday, December 15th, 2022**

### Agenda

1. Introductions
2. Announcements
  - a. USBR, New MRR will be able to be calculated January 9th
3. Housekeeping
  - a. Meeting will be recorded for notetaking purposes
4. Fisheries Update
  - a. CDFW
  - b. CFS
  - c. PSMFC
5. Operations Forecast
  - a. SMUD
  - b. PCWA
6. Central Valley Operations
7. Discussion
  - a. Results of Power Bypass
8. Next Meetings:
  - a. Thursday, January 19th, 1:30-3:30pm.

**Provisional Data Subject to Revision**

**FALL-RUN CHINOOK CARCASS SURVEY**

Presented by Emily Fisher, CDFW, 916-272-4113, [emily.fisher@wildlife.ca.gov](mailto:emily.fisher@wildlife.ca.gov)

- Survey began 10/17/2022

Table 1. Preliminary count of Chinook Salmon carcasses processed during the 2022 lower American River escapement survey

Survey Period	Dates	Nimbus Basin	Section 1A	Section 1B	Section 2	Section 3	Total Carcasses Processed
1	Oct 17-20	2	11	2	7	5	27
2	Oct 24-27	1	8	3	3	1	16
3	Oct 31-Nov 4	4	22	2	6	2	38
4	Nov 7-10	9	21	12	4	3	49
5	Nov 14-18	22	158	81	9	12	282
6	Nov 21-25	52	550	311	NR	NR	913
7	Nov 28 – Dec 2	159	1095	671	348	NR	2273
8	Dec 5-9	124	1218	602	NR	NR	1944
	Total	373	3083	1686	377	23	5542

Table 2. Preliminary count of female Chinook Salmon carcasses assessed for spawning condition during the 2022 lower American River escapement survey

Date	Survey Period	Unspawned	Partial	Spawned	Total
Oct 17-20	1	2	1	1	4
Oct 24-27	2	2	0	0	2
Oct 31-Nov 4	3	2	1	0	3
Nov 7-10	4	18	4	4	26
Nov 14-18	5	14	14	45	73
Nov 21-25	6	26	22	145	193
Nov 28-Dec 2	7	49	22	196	267
Dec 5-9	8	6	10	76	92
	Total	120	73	466	661
	%	18.2	11.0	70.5	

Data and annual reports available on CalFish:

<https://www.calfish.org/ProgramsData/ConservationandManagement/CentralValleyMonitoring/SacramentoValleyTributaryMonitoring/LowerAmericanRiver.aspx>

**Provisional Data Subject to Revision**

**LOWER AMERICAN RIVER REDD SURVEY**

Presented by Nick Bauer, CDFW, 916-282-8598, [nick.bauer@wildlife.ca.gov](mailto:nick.bauer@wildlife.ca.gov)

- Survey began 10/21/2022
- Cramer Fish Science has been conducting bi-weekly redd surveys
- 104 redds marked by Cramer have been tallied by staff and are not included in the table below
- \*Carcass staff witnessed a redd being actively defended in section 3, we were unable to locate that redd

Table 3. Preliminary count of Chinook Salmon redds measured during the 2022 lower American River redd survey

Survey Period	Dates	Nimbus Basin	Section 1A	Section 1B	Section 2	Section 3	Total Redds
1	Oct 17-21	0	0	0	0	0	0
2	Oct 24-28	0	0	0	0	0	0
3	Oct 31-Nov 4	2	8	1	0	0	11
4	Nov 7-11	3	15	30	4	N/A	52
5	Nov 14-18	50	124	NA	NA	2	176
6	Nov 21-23	NA	NA	123	31	NA	154
7	Nov 28-Dec 02	51	104	12	0	NA	167
8	Dec 05-09	13	129	22	41	*	205
	<b>Total</b>	<b>119</b>	<b>380</b>	<b>188</b>	<b>76</b>	<b>2</b>	<b>765</b>

**NIMBUS FISH HATCHERY**

Presented by Emily Fisher, CDFW, 916-272-4113, [emily.fisher@wildlife.ca.gov](mailto:emily.fisher@wildlife.ca.gov)

- Fall-run Chinook Salmon spawning began 11/1/2022
- 11,583,033 eggs collected thus far
- Last day of Chinook Salmon spawning is 12/15/2022
- Steelhead spawning begins

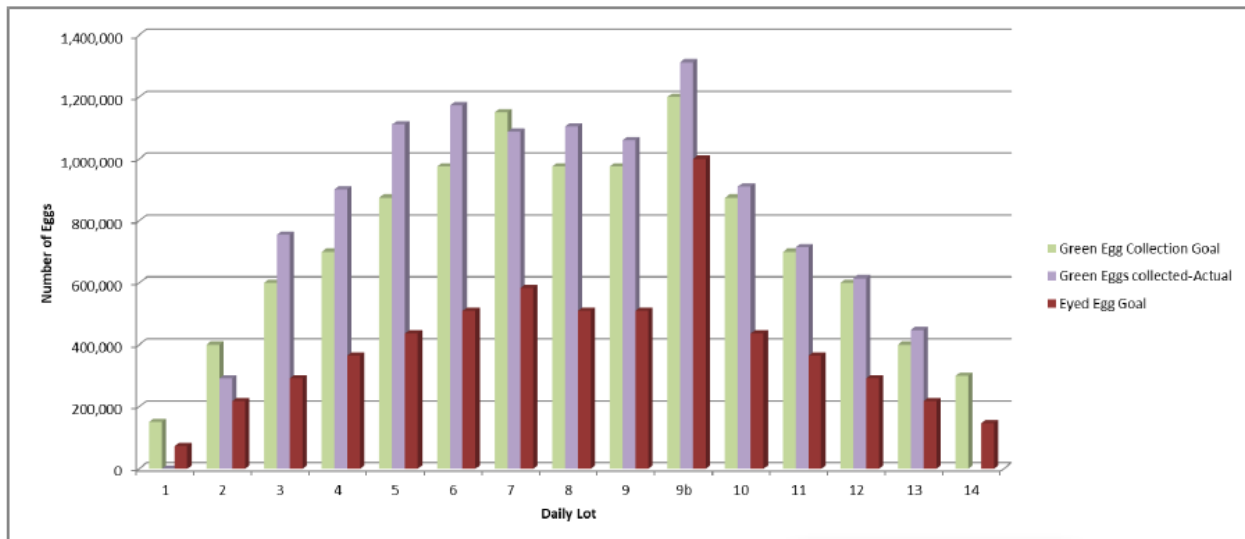


Figure 1. Fall-run Chinook Salmon egg collection goals and eggs collected per spawning at Nimbus Fish Hatchery

## SMUD Upper American River Project Update

Conditions – Tuesday 13 December 2022

December precip Water Year to date (through 12/11) is 17". Last water year we were also at 17" on this date. This is 5" over the median precip amount to date. There are no serious storms in the forecast at this time. Runoff is 72.4% of median to date, but snowpack is 141.4% of average at Crystal Basin sensors.

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

- 236,421 acre feet (13 November was 242,689 acre acre feet)
- 62.4% full
- 104% of historical average (Dec 12 historical average: 227,698 AF)

### Individual Reservoir Storage

- Loon Lake: 41,784 AF
- Ice House: 29,282 AF
- Union Valley: 165,365 AF

Last year (on December 12, 2021), total storage was at 57% (215,634 AF). \*Total capacity: 329,210 AF.

## Chili Bar releases into the South Fork American River

(Previous month) November 2022 releases:

- Daily average flow: 386 cfs
- Total releases: 22,966 AF

(Current month) December 2022 releases (December 1-12)

- Daily average flow so far: 830 cfs
- Total releases so far: 19,755 AF

Table 4. South Fork American River Natural Runoff Forecast (in cfs, daily average forecasted flow, forecast 2022-11-15)

Basin	Fri Dec 16	17-Dec	18-Dec	19-Dec	20-Dec	21-Dec
SFA above Slab	133	129	126	122	120	118
Slab Creek Reservoir	47	46	45	44	43	42
Combined South Fork	180	175	170	166	163	160

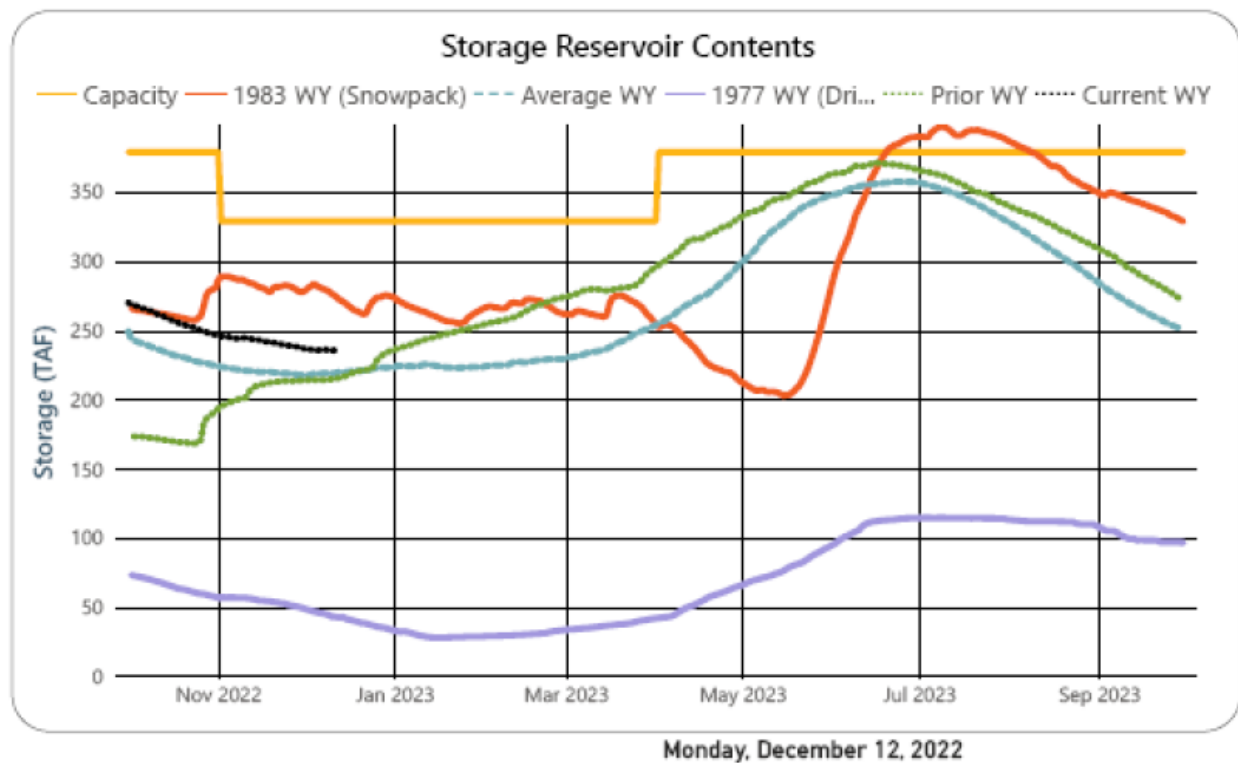


Figure 2. December 12, 2022 reservoir storage

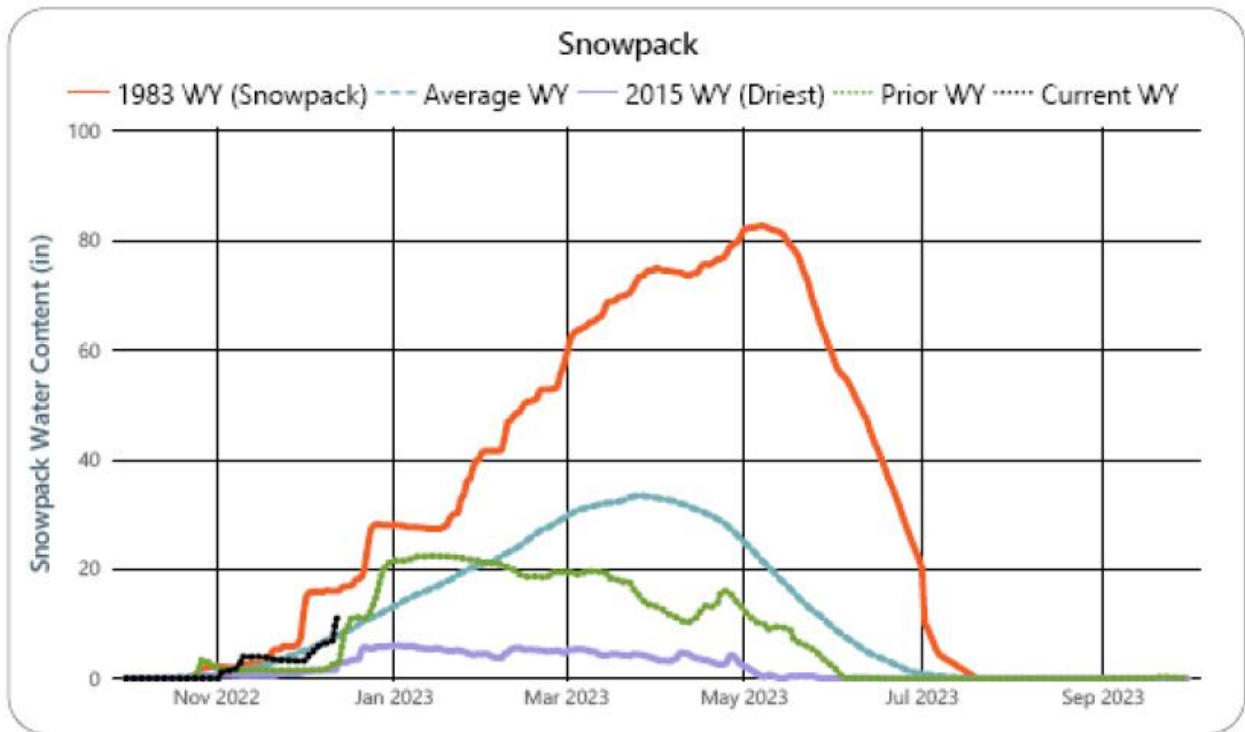
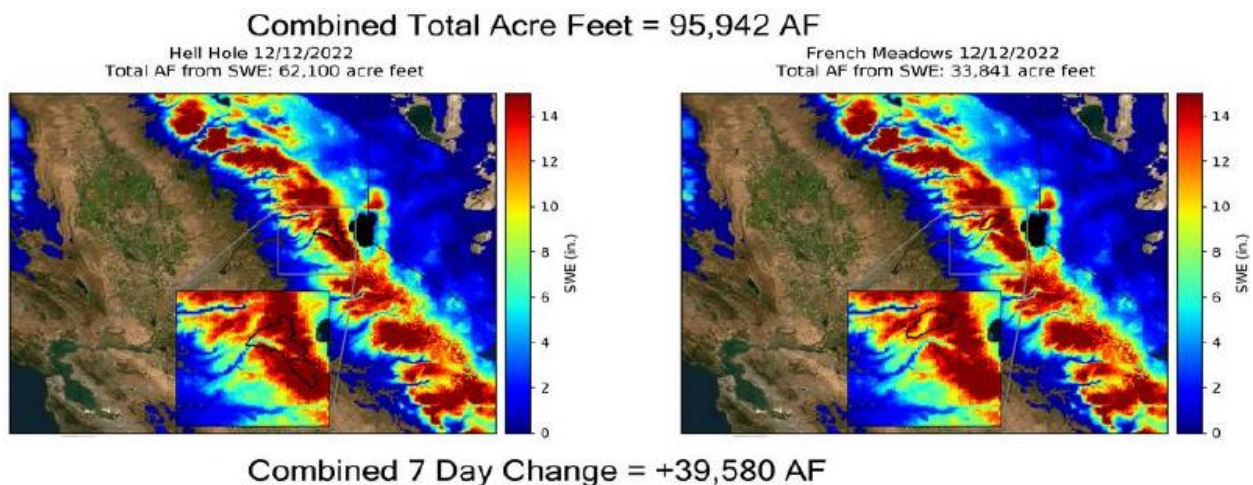


Figure 3. December 12, 2022 snowpack

# PCWA MFP Operations Overview for American River Operations Group

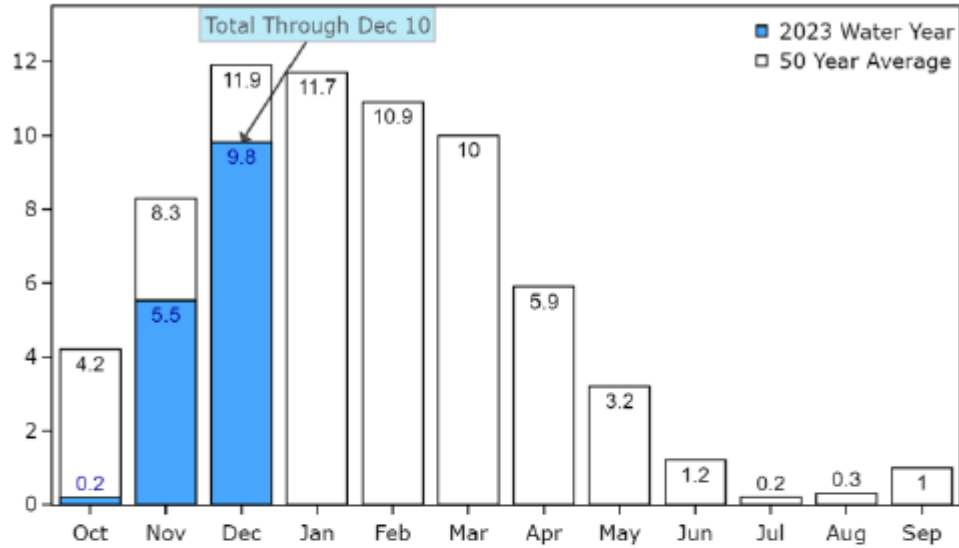
## (Real Time Data as of December 13, 2022)

- French Meadows Storage = 71,000 AF of 136,405 AF = 52% Capacity
  - MFAR above FM Inflow (R24) = 7-day AVG ~35 cfs
- Hell Hole Storage = 92,000 AF of 207,590 AF = 44% Capacity
  - Five Lakes Inflow (R23) = 7-day AVG ~50 cfs
  - Rubicon Inflow (R22) = 7-day AVG ~55 cfs
- Combined Storage (FM+HH) = 163,000 AF/342,590 AF = 48% Capacity; ~94% of AVG
- MFAR @ R11: 7-day daily average 675 cfs
- The MFP is still offline awaiting PG&E restoration of the 230kV transmission line – the current Transmission Induced Generator Outage (TIGO) card in the CAISO system expires 12/30.

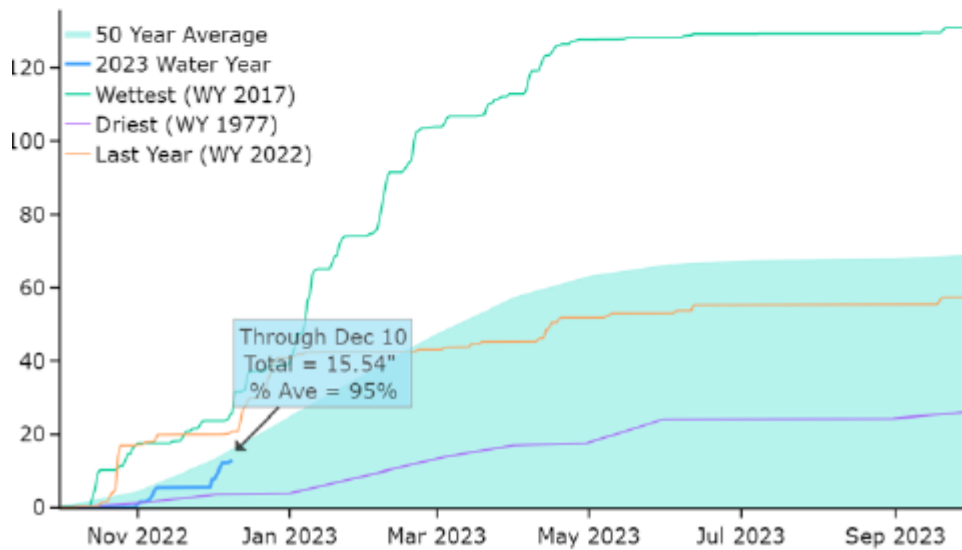


Maps showing Hell Hole 12/12/2022 and French Meadows 12/12/2022; Combined Total Acre-feet = 95,942 AF; Combined 7-Day Change = 39,580 AF

### Lake Spaulding Precipitation: Water Year 2023



### Lake Spaulding Precipitation: Water Year 2023



Lake Spaulding Precipitation: Water Year 2023 – Total through Dec 10 are 9.8 with a 50-Year average of 11.9



### Reservoir Releases in Cubic Feet/Second

Reservoir	Dam	WY 2022	WY 2023	15 Yr Median
Trinity	Lewiston	299	295	305
Sacramento	Keswick	3,308	3,295	4,029
Feather	Oroville (SWP)	1,500	950	1,650
American	Nimbus	559	1,326	1,785
Stanislaus	Goodwin	210	200	210
San Joaquin	Friant	601	547	352

### Storage in Major Reservoirs in Thousands of Acre-Feet

Reservoir	Capacity	15 Yr Avg	WY 2022	WY 2023	% of 15 Yr Avg
Trinity	2,448	1,234	707	525	43
Shasta	4,552	2,219	1,146	1,438	65
Folsom	977	387	377	277	72
New Melones	2,420	1,218	877	608	50
Fed. San Luis	966	403	52	204	51
Total North CVP	11,363	5,461	3,159	3,052	56
Millerton	521	258	318	312	121
Oroville (SWP)	3,538	1,428	1,089	1,021	72

### Accumulated Inflow for Water Year to Date in Thousands of Acre-Feet

Reservoir	Current WY 2023	WY 1977	WY 1983	15 Yr Avg	% of 15 Yr Avg
Trinity	17	100	284	87	19
Shasta	410	593	1,654	626	65
Folsom	152	47	1,009	219	69
New Melones	61	N/A	321	97	63
Millerton	94	27	344	116	81

## Accumulated Precipitation for Water Year to Date in Inches

<b>Reservoir</b>	<b>Current WY 2023</b>	<b>WY 1977</b>	<b>WY 1983</b>	<b>Average (N Years)</b>	<b>% of Average</b>	<b>Last 24 Hours</b>
Trinity at Fish Hatchery	6.07	7.64	17.59	31.87 (60)	19	0.00
Sacramento at Shasta Dam	8.13	8.10	36.34	61.76 (65)	13	0.00
American at Blue Canyon	17.16	8.07	37.22	68.13 (46)	25	0.00
Stanislaus at New Melones	8.57	NA	12.65	28.09 (43)	31	0.00
San Joaquin at Huntington Lk	12.80	4.40	19.20	42.47 (47)	30	0.00

Bureau of Reclamation  
 Historical Archive and Report Database

December 2022 | Folsom Lake Daily Operations | Run Date: 12/14/2022

Day	Elev	Storage (1000 Acre-Feet) in Lake	Storage (1000 Acre-Feet) Change	Computed* Inflow C.F.S.	Release - C.F.S. River Power	Release - C.F.S. River Spill	Release - C.F.S. River Outlet	Pump-ing Plant	Evap. - C.F.S.	Evap. - Inches	Precip Inches
		246.7									
1	377.14	246.5	-0.2	1,191	1,214	0	0	53	0	0.00	0.95
2	377.06	246.1	-.04	1,188	1,307	0	0	52	31	0.19	0.01
3	377.16	246.6	0.5	1,859	1,558	0	0	48	0	0.00	1.74
4	377.76	249.7	3.0	2,729	1,115	0	0	46	53	0.32	0.38
5	378.37	252.7	3.1	2,857	1,254	0	0	49	0	0.00	0.23
6	378.62	254.0	1.3	1,937	1,251	0	0	46	0	0.00	0.23
7	378.62	254.0	0.0	1,402	1,355	0	0	47	0	0.00	0.00
8	378.63	254.1	0.1	1,457	1,385	0	0	46	0	0.00	0.06
9	378.77	254.8	0.7	1,737	1,334	0	0	44	0	0.00	0.06
10	379.43	258.2	3.4	2,721	969	0	0	44	0	0.00	1.66
11	381.81	270.6	12.5	7,316	986	0	0	45	0	0.00	0.70
12	382.78	275.8	5.2	3,884	1,220	0	0	44	0	0.00	0.70
13	382.97	276.8	1.0	1,990	1,423	0	0	50	2	0.01	0.00
Totals			30.1	32,268	16,371	0	0	614	86	0.52	6.72
Acre-Feet		30,140	64,004	32,472	0	0	1,218	171			

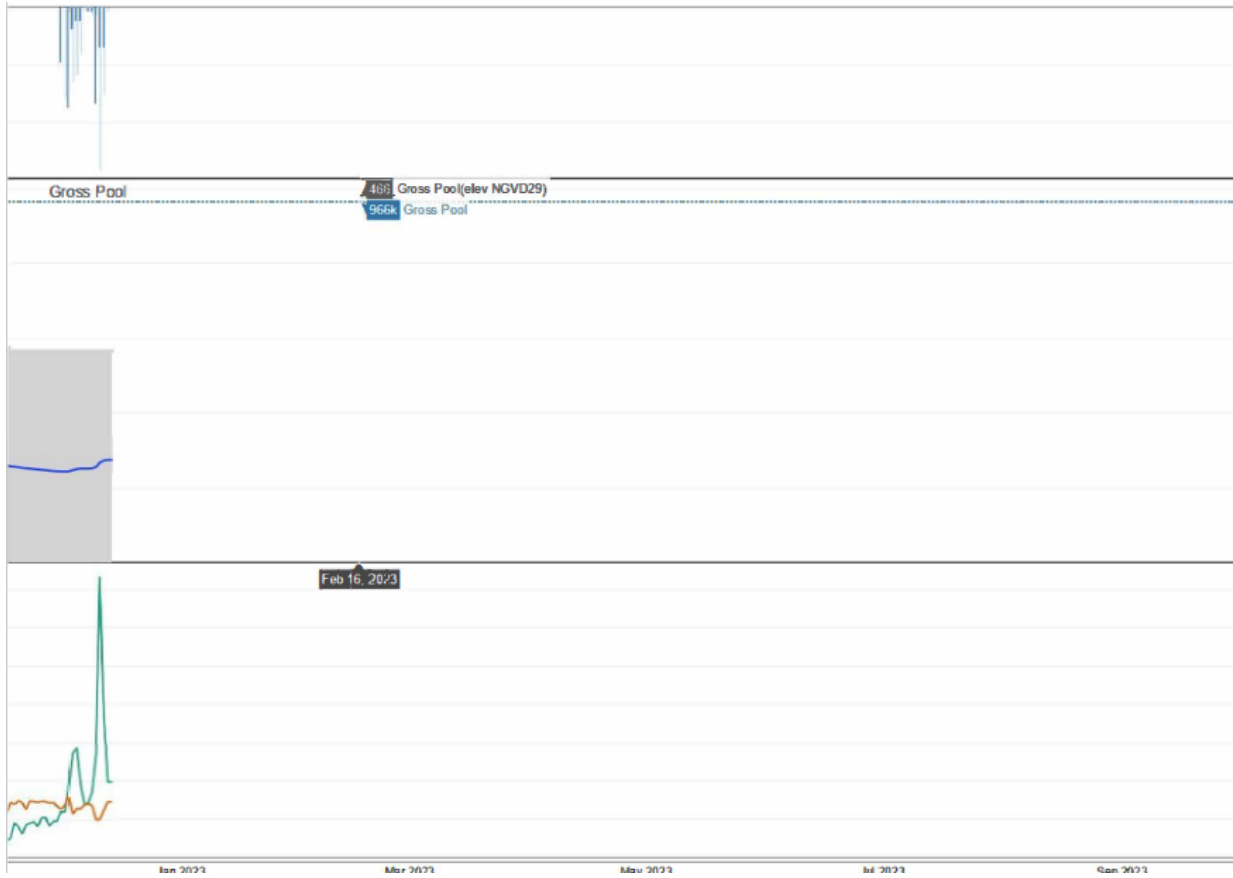
\* Computed inflow is the sum of change in storage, releases, pumping, and evaporation

### Summary: Release (acre-feet)

Power	32,472
Spill	0
Outlet	0
Pumping Plant	1218
Total Releases	33,690

### Summary: Precipitation (Month/Inches)

This month	6.72
October 1, 2022 to date	8.93



Folsom Dam & Lake – American River Basin  
2022-12-14 11:06:09-0800

## Isobath 10/1–10/31 (Mean Daily Temperature, Release, Storage, Unit Shutter Position/Load Percentage)

MDT = Mean Daily Temperature (°F)

USP/LP = Unit Shutter Position/Load Percentage

Date	MDT, Water, NFA	MDT, Water, ARP	MDT, Water, AFD <sup>1</sup>	MDT, Water, AFO	MDT, Water, AWP	MDT, Water, AWB	MDT, Air, CSU	Release (CFS) Nimbus	Storage (TAF) Folsom	USP/LP Unit 1	USP/LP Unit 2	USP/LP Unit 3
Oct	62.4	55.9	63.1	64.4	64.9	65.4	65.4	1440				
11/01	53.0 ?	50.5	59.5	60.1	59.5	59.2	53.5	1454	287	B 32	B 65	B 2
11/02	52.9 ?	50.3	59.0	59.2	58.6	58.3	51.0	1441	285	B 31	B 68	B 1
11/03	52.6?	50.8	58.5	58.5	57.9	57.6	48.3	1437	383	B 38	B 61	B 2
11/04	52.1?	50.1	58.5	58.3	57.6	57.3	50.4	1416	280	B 39	B 60	B 2
11/05	51.6?	49.7	58.7	58.1	57.4	57.2	54.6	1419	278	B 44	B 55	B 1
11/06	52.5?	51.0	58.4	58.2	58.1	58.1	54.4	1405	277	B 37	B 62	B 2
11/07	52.6?	50.7	58.0	58.0	57.3	57.1	51.7	1427	275	B 46	B 53	B 2
11/08	51.8?	50.0	57.9	57.5	56.4	56.0	48.8	1433	274	B 43	B 55	B 2
11/09	51.6?	48.8	57.2	57.2	56.6	56.0	49.1	1281	273	B 45	B 53	B 2
11/10	50.6?	48.5	57.7	56.9	56.1	55.9	46.4	1308	272	B 48	B 42	B 10
11/11	49.3?	47.6	57.6	56.8	55.8	55.4	47.0	1309	271	B 44	B 54	B 2
11/12	49.2?	47.7	57.5	56.8	55.9	55.6	48.5	1320	269	B 51	B 47	B 1
11/13	48.9?	47.6	57.7	56.7	55.8	55.4	48.6	1310	268	B 1	B 97	B 1
11/14	47.8?	46.4	57.3	56.7	55.6	55.1	46.5	1320	266	B 96	B 2	B 2
11/15	47.1?	45.5	57.2	56.7	55.6	55.2	50.4	1314	264	B 19	B 49	B 32
11/16	46.6?	45.3	56.9	56.7	55.7	55.3	48.9	1314	263	B 33	B 63	B 3
11/17	46.3?	45.7	56.5	56.6	55.7	55.4	48.5	1316	262	B 43	B 39	B 19
11/18	46.4?	45.3	56.3	56.6	55.6	55.2	50.0	1324	260	B 1	B 58	B 40
11/19	45.9?	44.5	56.0	56.4	55.3	54.8	47.2	1328	259	B 42	B 2	B 57
11/20	45.1?	44.1	55.9	56.0	54.9	54.5	45.2	1327	257	B 55	B 44	B 1
11/21	44.7?	43.5	55.6	55.6	54.5	54.1	45.0	1335	256	B 1	B 55	B 43
11/22	44.4?	43.1	55.4	55.4	54.3	53.9	46.7	1319	255	B 32	B 2	B 67
11/23	44.7?	43.6	55.6	55.3	54.4	54.0	48.5	1336	254	B 55	B 32	B 13
11/24	44.8?	43.7	55.5	55.2	54.5	54.2	49.5	1340	253	B 14	B 51	B 35
11/25	44.9?	43.8	55.3	55.2	54.5	54.2	49.3	1343	251	B 19	B 35	B 45
11/26	45.2?	44.0	55.1	55.3	54.7	54.4	50.6	1340	251	B 20	B 79	B 1
11/27	45.2?	43.8	54.7	55.3	54.4	54.2	48.8	1341	250	B 1	B 65	B 34
11/28	44.9?	43.5	54.5	55.1	54.3	54.0	48.0	1334	248	B 2	B 39	B 58
11/29	44.4?	42.6	54.3	54.8	53.8	53.4	44.7	1337	247	B 3	B 57	B 39

Date	MDT, Water, NFA	MDT, Water, ARP	MDT, Water, AFD <sup>1</sup>	MDT, Water, AFO	MDT, Water, AWP	MDT, Water, AWB	MDT, Air, CSU	Release (CFS) Nimbus	Storage (TAF) Folsom	USP/LP Unit 1	USP/LP Unit 2	USP/LP Unit 3
11/30	43.8?	42.2	53.9	54.4	53.3	52.8	45.5	1333	247	B 3	B 33	B 64
Nov	48.0	46.5	56.7	56.6	55.8	55.5	48.8	1352				
Total AF								80451				

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

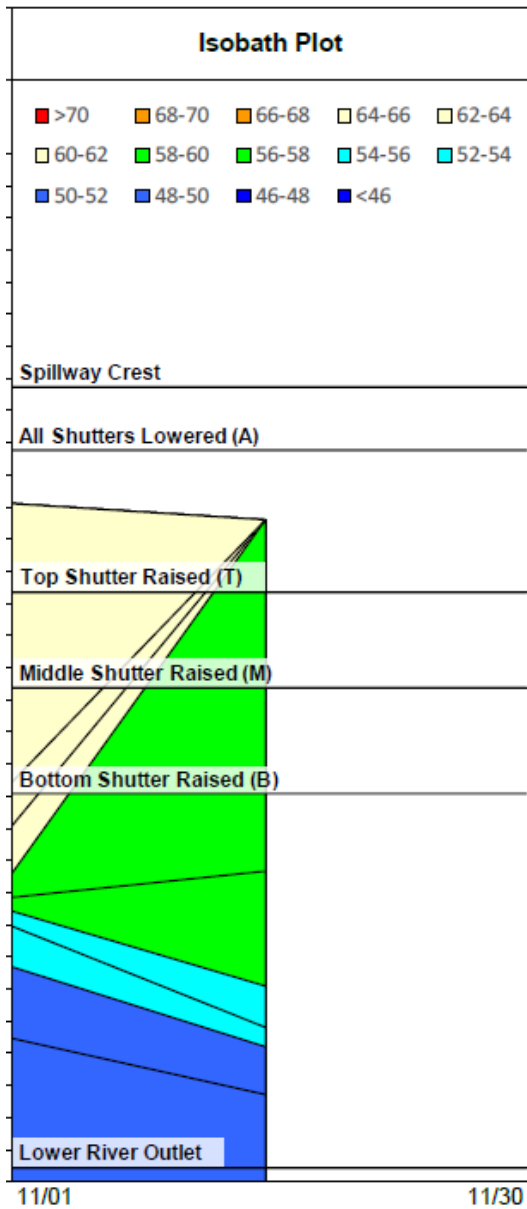
M = Middle Shutter Raised

B = Bottom Shutter Raised

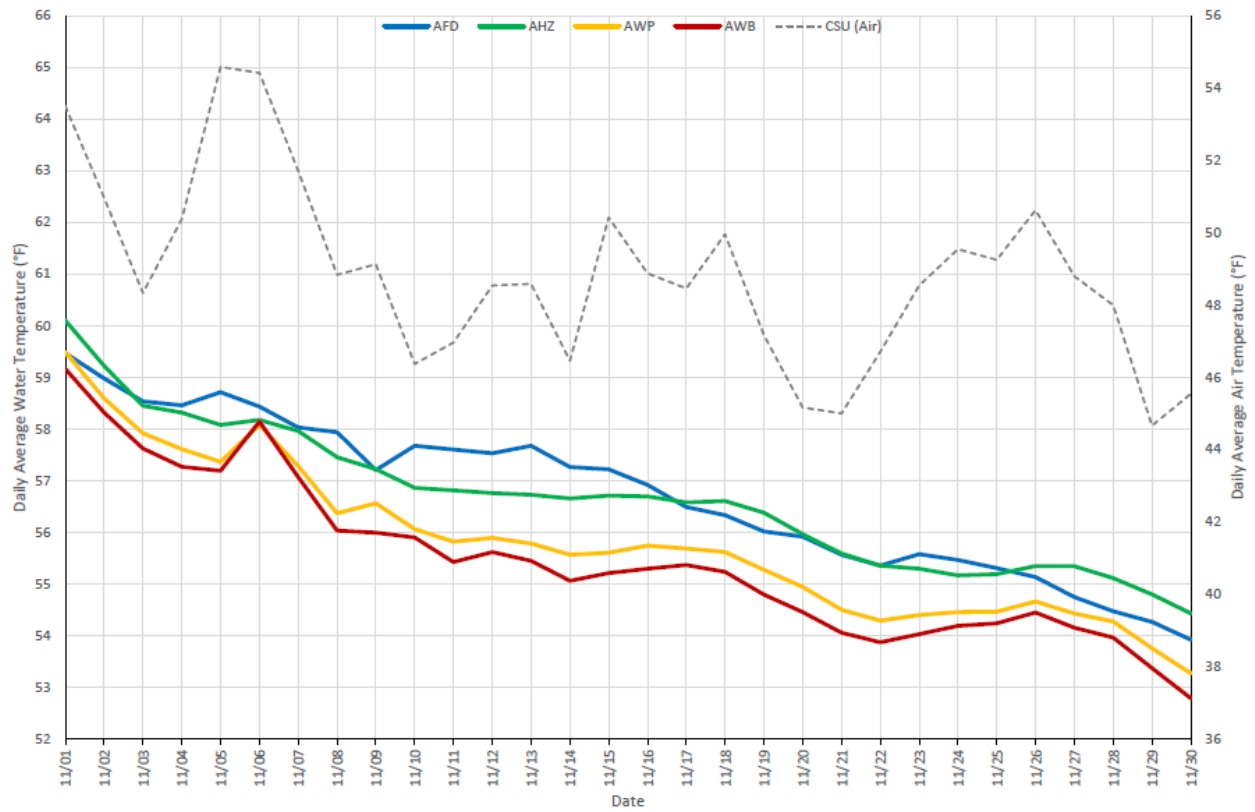
O = Unit Outage

Notes:

<sup>1</sup> AFD is a weighted average based on hourly flow values, including generation, bypass and spill



Isobath Plot 11/01-10/30 (Showing Spillway Crest, All Shutters Lowered (A), Top Shutter Raised (T), Middle Shutter Raised (M), Bottom Shutter Raised (B), and Lower River Outlet)



American River Daily Average Water and Air Temperatures (2022) - November 01 through November 30



# Isobath 12/1–12/13 (Mean Daily Temperature, Release, Storage, Unit Shutter Position/Load Percentage)

MDT = Mean Daily Temperature (°F)

USP/LP = Unit Shutter Position/Load Percentage

Date	MDT, Water, NFA	MDT, Water, ARP	MDT, Water, AFD <sup>1</sup>	MDT, Water, AFO	MDT, Water, AWP	MDT, Water, AWB	MDT, Air, CSU	Release (CFS) Nimbus	Storage (TAF) Folsom	USP/LP Unit 1	USP/LP Unit 2	USP/LP Unit 3
Nov	53.0	46.5	56.7	56.6	55.8	55.5	48.8	1352				
12/01	44.3?	43.4	53.5	54.0	52.9	52.6	46.5	1340	247	B 3	B 62	B 34
12/02	44.6?	42.9	53.4	53.5	52.4	51.8	40.2	1334	246	B 3	B 29	B 67
12/03	44.5?	42.9	53.1	53.0	51.9	51.6	41.9	1329	247	B 3	B 62	B 36
12/04	46.3?	45.6	52.8	52.9	52.1	51.8	47.9	1343	250	B 3	B 36	B 61
12/05	46.7	45.0	52.6	53.0	52.6	52.6	51.1	1331	253	B 4	B 59	B 37
12/06	?	44.8	52.3	53.1	52.6	52.7	48.5	1324	254	B 3	B 31	B 66
12/07	?	43.7	51.9	53.0	52.3	52.1	44.8	1327	254	B 2	B 67	B 31
12/08	?	42.8	51.6	52.7	51.8	51.6	47.0	1331	254	B 1	B 30	B 68
12/09	?	43.5	51.4	52.6	52.2	52.2	50.0	1329	255	B 2	B 68	B 30
12/10	?	44.1	51.0	52.3	51.9	52.0	51.8	1330	258	B 45	B 26	B 29
12/11	?	45.2	51.2	52.1	51.6	51.6	47.5	1329	271	B 14	B 67	B 19
12/12	44.8?	44.4	51.1	52.0	51.3	51.4	45.7	1325	276	B 42	B 57	B 1
12/13	43.8	43.0	50.3	51.5	50.5	50.3	41.2	1326	277	B 49	B 50	B 1
12/14										B	B	B
12/15										B	B	B
12/16										B	B	B
12/18										B	B	B
12/19										B	B	B
12/20										B	B	B
12/21										B	B	B
12/22										B	B	B
12/23										B	B	B
12/24										B	B	B
12/25										B	B	B
12/26										B	B	B
12/27										B	B	B
12/28										B	B	B
12/29										B	B	B
12/30										B	B	B
12/31										B	B	B
Dec	45.0	44.0	52.0	52.7	52.0	51.9	46.5	257				
							Total AF	34310				

Legend:

? = 1-9 hours of data missing

! = 10 or more hours of data missing

# = Station out of service

**November Monthly Averages**

A = All Shutters Lowered

T = Top Shutter Raised

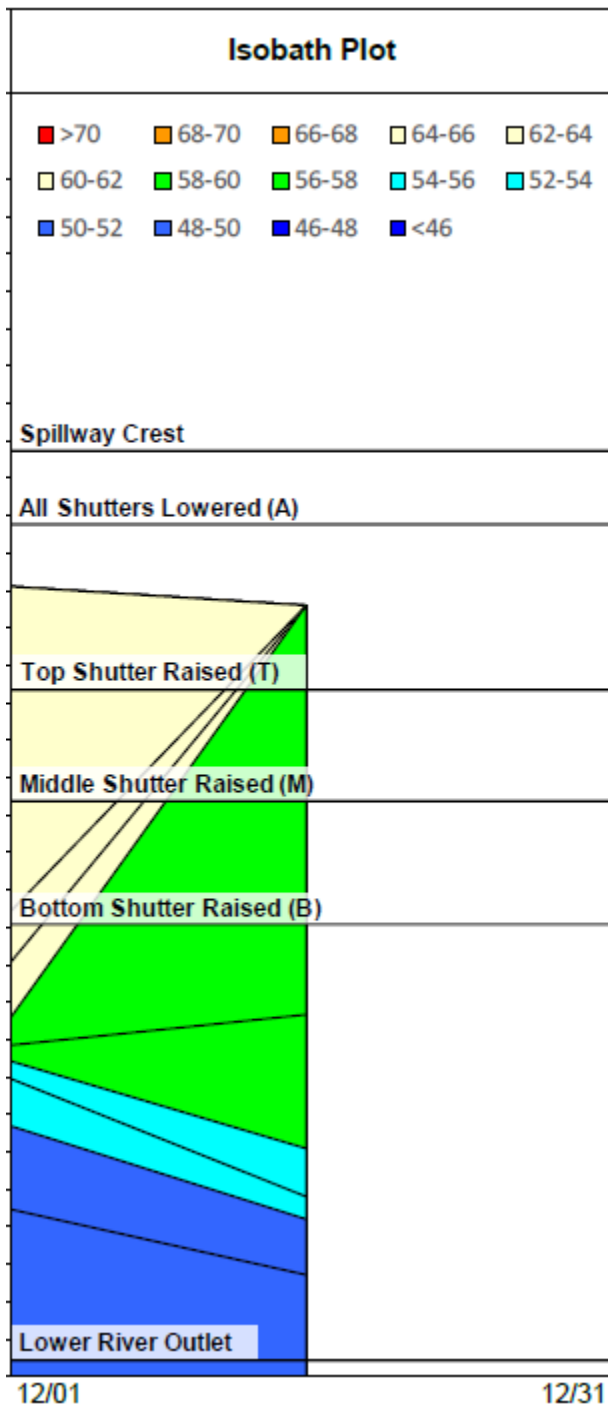
M = Middle Shutter Raised

B = Bottom Shutter Raised

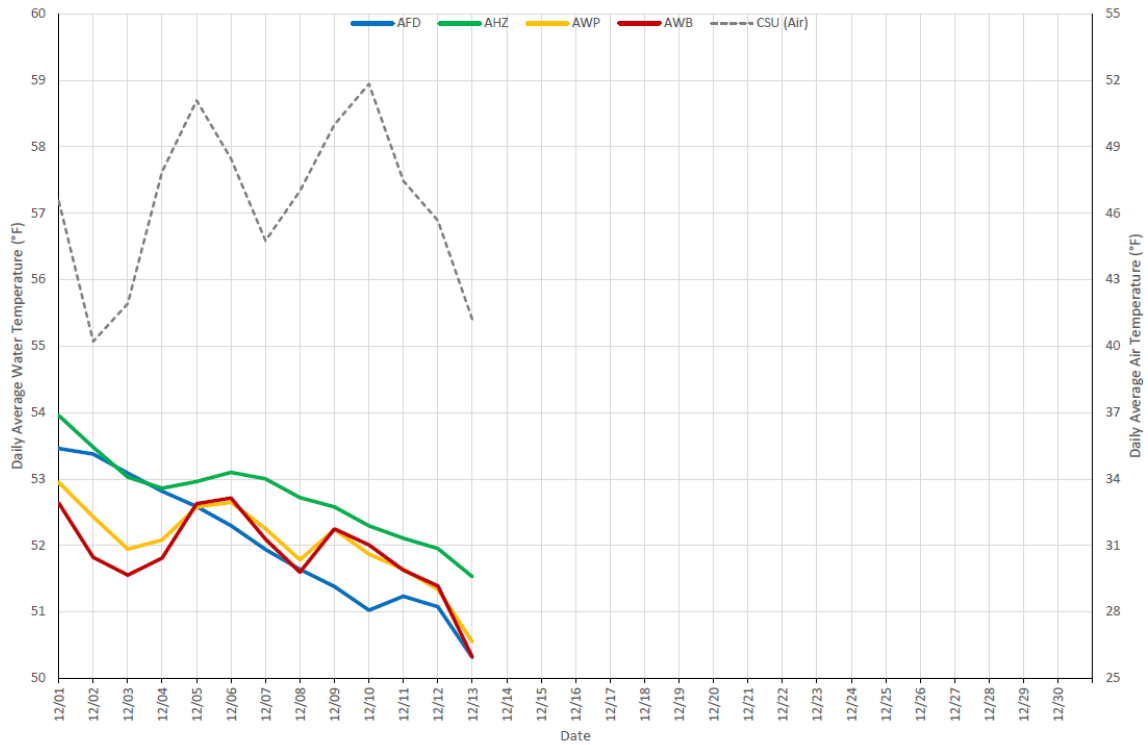
O = Unit Outage

Notes:

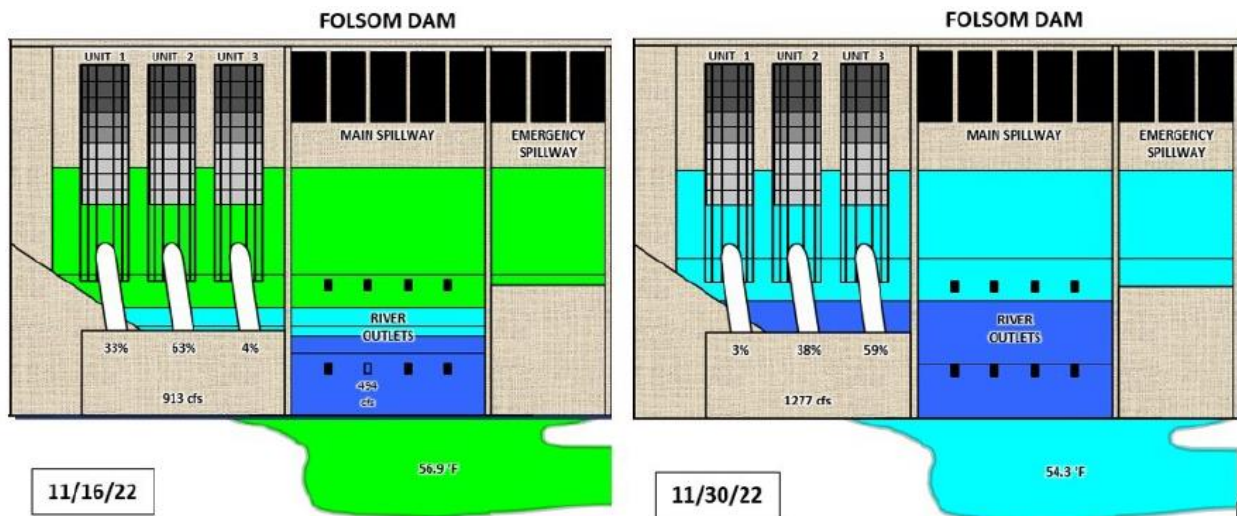
<sup>1</sup> AFD is a weighted average based on hourly flow values, including generation, bypass and spill



Isobath Plot 12/01-12/31. Showing Spillway Crest, All Shutters Lowered (A), Top Shutter Raised (T), Middle Shutter Raised (M), Bottom Shutter Raised (B), and Lower River Outlet



American River Daily Average Water and Air Temperatures (2022)

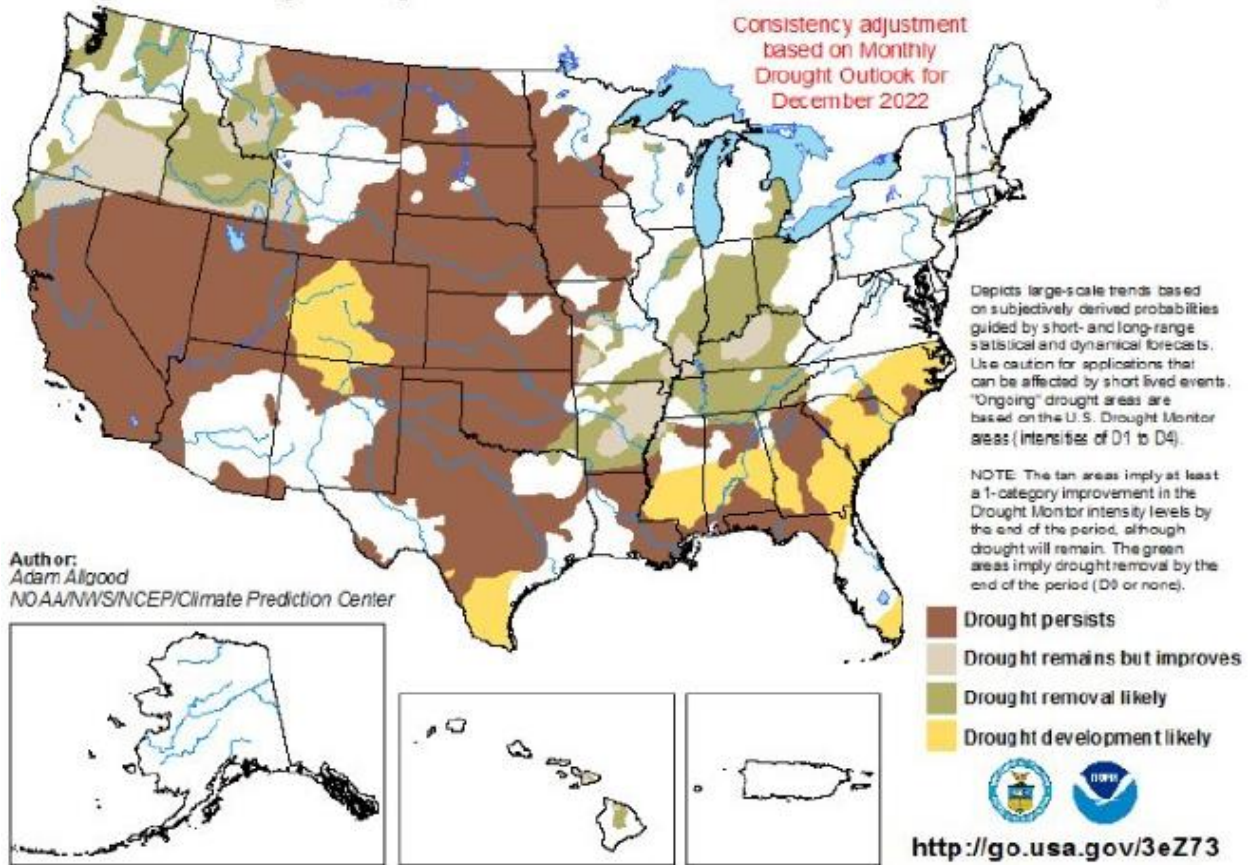


Graphic showing Folsom Dam on 11/16/22 with a temperature of 56.9 °F and 11/30/22 with a temperature of 54.3 °F

# U.S. Seasonal Drought Outlook

## Drought Tendency During the Valid Period

Valid for December 1, 2022 - February 28, 2023  
Released November 30, 2022



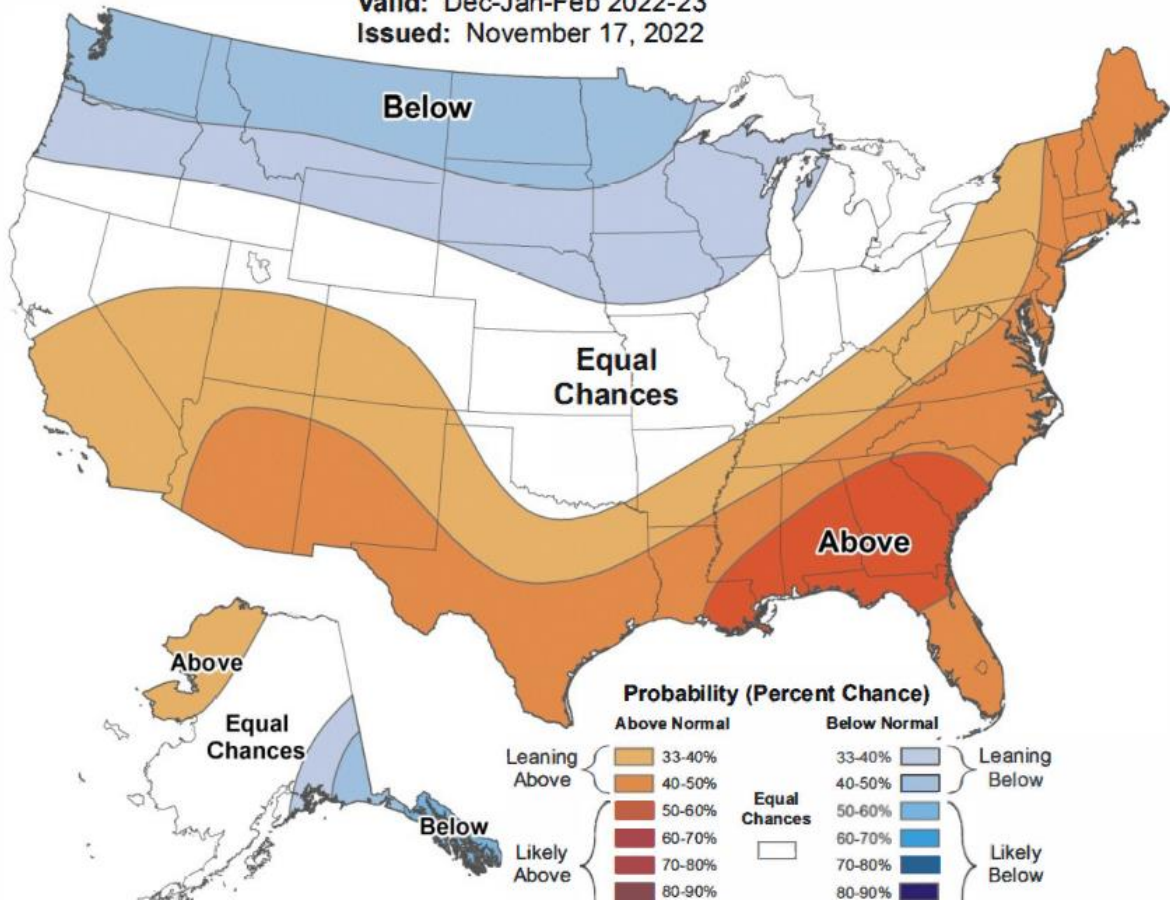
Map – U.S. Seasonal Drought Outlook, Drought Tendency During the Valid Period, Valid for December 1, 2022 – February 28, 2023; Released November 30, 2022



# Seasonal Temperature Outlook



Valid: Dec-Jan-Feb 2022-23  
Issued: November 17, 2022



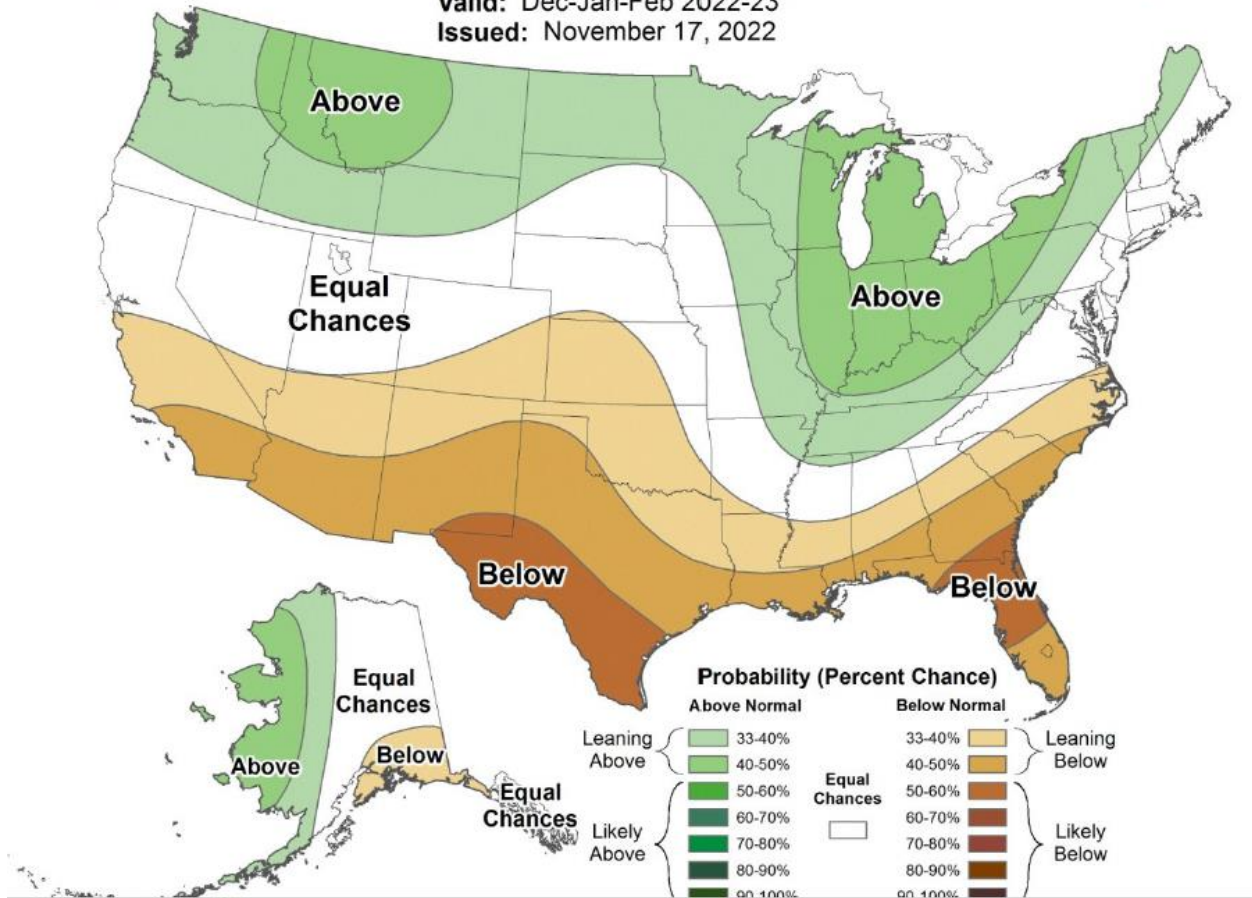
Map – Seasonal Temperature Outlook; Valid Dec-Jan-Feb 2022-23; Issued November 17, 2022



# Seasonal Precipitation Outlook



Valid: Dec-Jan-Feb 2022-23  
Issued: November 17, 2022



Map – Seasonal Precipitation Outlook; Valid Dec-Jan-Feb 2022-23; Issued November 17, 2022

# American River Summary Conditions – December (On-going)

## Storage/Release Management Conditions

- November 9, 2022, from 1,400 cfs to 1,300 cfs
  - November 9, 2022, from 1,400 cfs to 1,300 cfs

## Temperature Management

- Top Shutters: Units 1, 2, and 3 -- raised
- Middle Shutters: Units 1, 2, and 3 -- raised
- Bottom Shutters: Units 1, 2, and 3 -- raised

## Folsom Shutter Configuration and Changes

Drawing water from Units 1, 2, and 3

## American River 90% Outlook

December 90% Exceedance

## Storages

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

Facility	Dec	Jan	Feb	Mar	Apr	May
Folsom Storage	285	304	351	437	493	530
Folsom Elevation	385	388	396	408	416	420

Monthly River Release (TAF/cfs)

Facility	Oct	Nov	Dec	Jan	Feb	Mar
American TAF	80	65	58	65	83	54
American cfs	1300	1050	1050	1050	1394	877



## American River Baseflow Table

Month	Index Used for Index-based MRR	Index Based MRR	RDPB-based MRR for fall-run Chinook salmon (applicable in Jun and Feb)	RDPB-based MRR for steelhead (applicable Feb to May)	Controlling MRR	Actual Average Monthly Nimbus releases <sup>1</sup>
October	May ARI <sup>2</sup> (50% exceedance)	1,326 cfs	Not applicable	Not applicable	1,326 cfs	1,462 cfs
November	May ARI <sup>2</sup> (50% exceedance)	1,326 cfs	Not applicable	Not applicable	1,326 cfs	
December	May ARI <sup>2</sup> (50% exceedance)	1,326 cfs	Not applicable	Not applicable	1,326 cfs	

MRR= Minimum Release Requirements; RDPA= Redd Dewatering Protective Adjustment; ARI= American River Index; SRI= Sacramento River Index

<sup>1</sup> Average of daily release over the month from NAT station on CDEC.

<sup>2</sup> Since new forecasts are usually provided January through May, the May ARI would also be used for June–September of the current water year and October–December of the next water year unless there is an update to the ARI after May.