BUREAU OF RECLAMATION

Sacramento River Group Meeting Packet

July 24, 2025

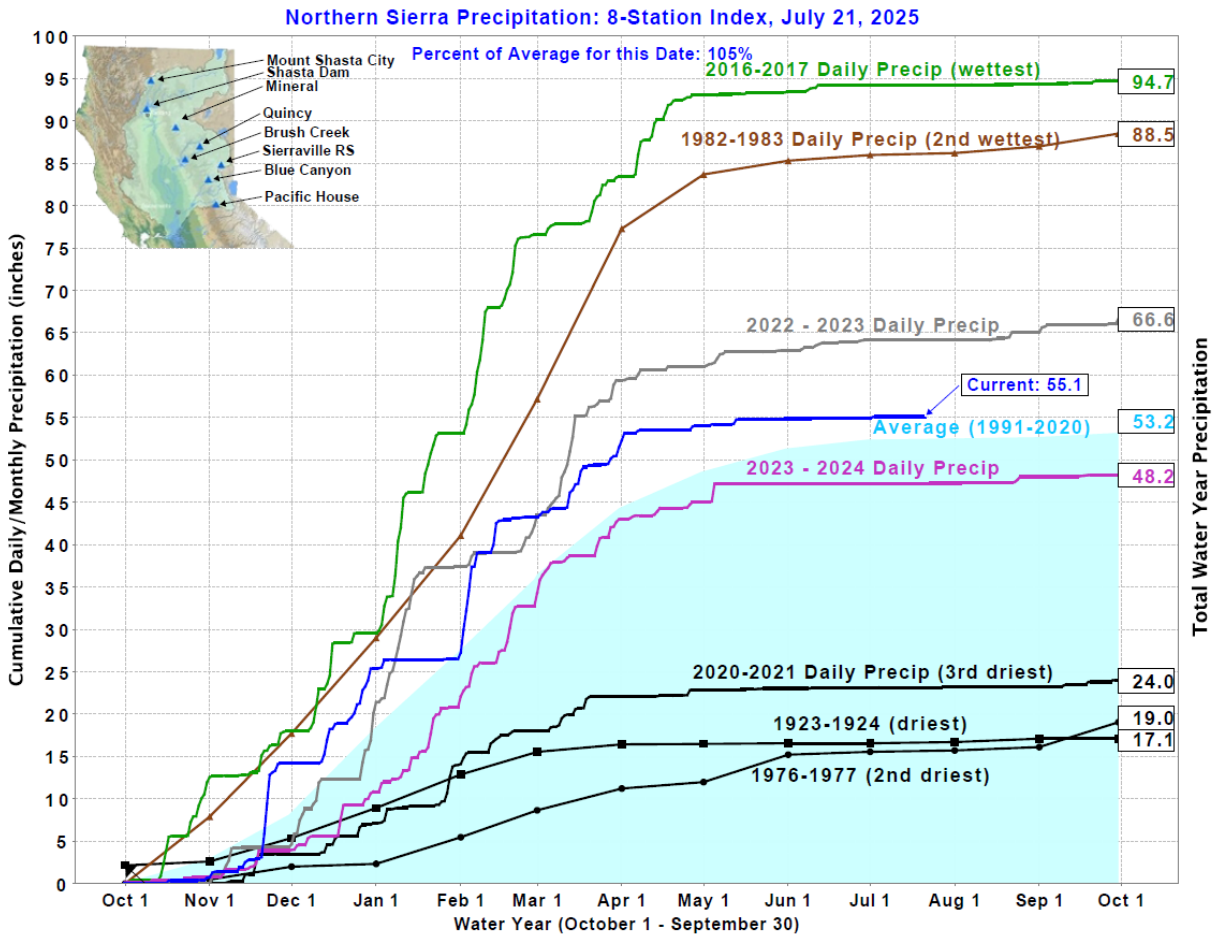


Figure 1. Northern Sierra Precipitation: 8-Station Index, July 21, 2025

This figure shows a line graph precipitation at the Northern Sierra 8-station Index. The graph includes the current cumulative daily and monthly precipitation, 55.1 (105% average for this date), in inches, average for 1991-2020 (53.2), daily precipitation for 2016-2017 (94.7 wettest), 1982-1983 (88.5 2nd wettest), 2022-2023 (66.6), 2023-2024 (48.2), 2020-2021 (24.0 3rd driest), 1976-1977 (19.0 2nd driest), and 1923-1924 (17.1 driest).

Bureau of Reclamation
Historical Archive and Report Database
Daily CVP Water Supply
July 21, 2025 | Run Date: 7/22/2025

Reservoir Releases in Cubic Feet/Second

Reservoir	Dam	WY 2024	WY 2025	15 Yr Median
Trinity	Lewiston	846	699	472
Sacramento	Keswick	12,967	13,995	10,890
Feather	Oroville (SWP)	8,000	7,500	5,000
American	Nimbus	4,962	4,571	4,005
Stanislaus	Goodwin	351	276	311
San Joaquin	Friant	428	237	374

Storage in Major Reservoirs in Thousands of Acre-Feet

Reservoir	Capacity	15 Yr Avg	WY 2024	WY 2025	% of 15 Yr Avg
Trinity	2,448	1,603	1,976	2,125	133
Shasta	4,552	3,084	3,630	3,423	111
Folsom	977	649	702	657	101
New Melones	2,420	1,486	1,957	1,755	118
Fed. San Luis	966	382	552	328	86
Total North CVP	11,363	7,204	8,817	8,288	115
Millerton	521	370	343	348	94
Oroville (SWP)	3,538	2,326	2,922	2,868	123

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

Reservoir	Current WY 2025	WY 1977	WY 1983	15 Yr Avg	% of 15 Yr Avg
Trinity	1,596	194	2,731	1,088	147
Shasta	6,226	2,138	10,109	4,494	139
Folsom	2,095	299	6,123	2,463	85
New Melones	598	N/A	2,568	963	62
Millerton	1,045	246	4,067	1,449	72

Accumulated Precipitation for Water Year to Date in Inches

Reservoir	Current WY 2025	WY 1977	WY 1983	Average (N Years)	% of Average	Last 24 Hours
Trinity at Fish Hatchery	35.39	12.06	55.19	30.10 (65)	118	0.00
Sacramento at Shasta Dam	66.19	17.42	112.58	58.74 (70)	113	0.00
American at Blue Canyon	69.66	15.64	103.88	63.80 (51)	109	0.00
Stanislaus at New Melones	19.54	N/A	45.33	26.57 (48)	74	0.00
San Joaquin at Huntington Lk	29.44	17.20	81.40	39.58 (52)	74	0.00

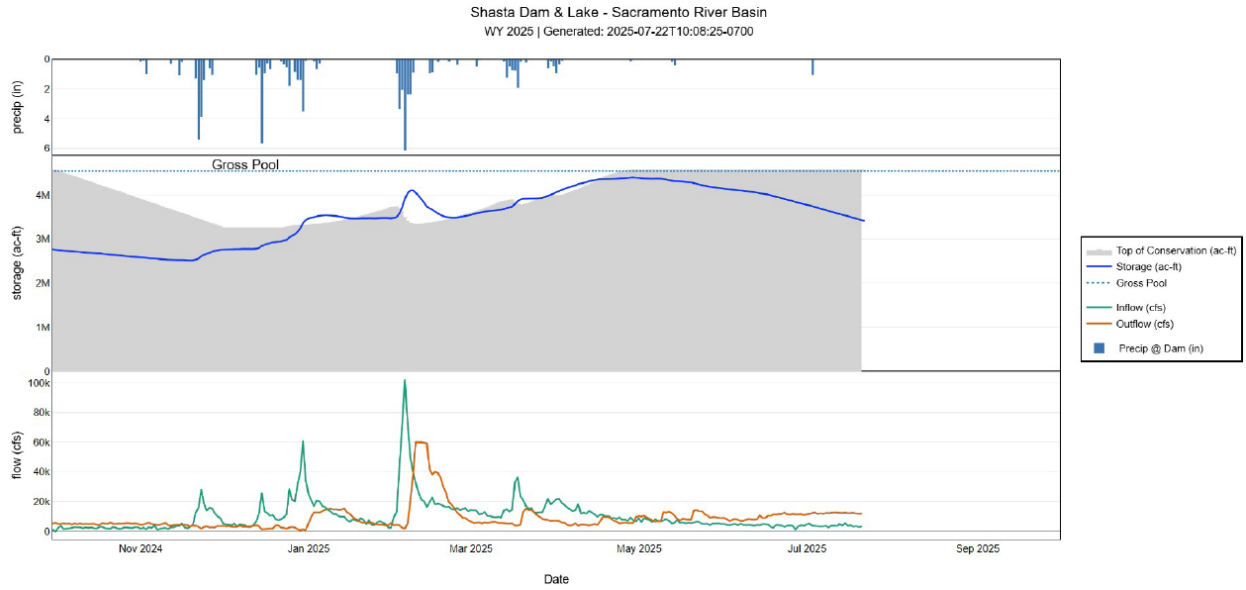


Figure 2. Shasta Dam & Lake – Sacramento Rivier Basin

This figure shows 3 graphs depicting storage, gross pool, inflow, outflow, precipitation at dam, and basin precipitation over months November 2024 to September 2025.

Sacramento River Station Temperature Summary Report

Date	MDWT TCD1	MDWT SHD	MDWT SPP1	MDWT KWK	MDWT SAC	MDWT CCR2	MDWT BSF	MDWT BND	MDWT RBD	MDWT IGO	MDWT LWS	MDWT DGC3	MDWT NFH	MDR Shasta Genera-tion	MDR Spring Creek PP	MDR Keswick Total	MDAT RDD	MDAT BSF	MDAT RDB
Jun	50.6	49.7	54.5	51.2	51.9	52.5	54.8	56.7	58.4	56.2	49.2	55.3	59.1	9879	1065	10950	81.5	76.7	74.9
07/01	50.0?	49.0	56.3	50.6	51.1	51.7	53.5	55.3	57.1	59.0	49.1	57.7	62.4	12104	1377	12981	86.5	79.8	78.7
07/02	50.0	49.0	56.3	50.7	51.3	51.9	53.7	55.5	57.4	59.3	49.0	57.8	62.8	12609	1605	13998	89.5	85.2	85.1
07/03	49.7	48.9	56.3	50.5	51.1	51.6	53.5	55.2	56.9	58.7	49.0	57.3	61.9	12867	1352	14012	83.0	77.4	77.3
07/04	49.8	49.0	56.5	50.3	50.9	51.4	53.0	54.8	56.6	58.0	49.1	56.3	60.6	12122	1535	13875	78.5	74.3	72.3
07/05	49.8	49.0	56.6	50.5	51.0	51.4	53.0	54.5	56.0	58.1	49.2	56.5	61.2	12472	1637	13973	77.5	73.3	72.5
07/06	49.7	48.9	56.7	50.5	51.0	51.5	53.0	54.5	56.1	58.2	49.0	56.8	62.0	12185	1649	13926	83.0	76.5	76.1
07/07	49.9	49.0	56.7	50.4	50.9	51.5	53.1	54.7	56.3	58.7	49.0	57.2	62.6	12603	1650	13943	85.0	78.7	78.8
07/08	50.0	49.1	56.7	50.5	51.0	51.5	53.2	54.8	56.4	58.6	49.1	57.2	62.7	12559	1440	13908	80.5	75.0	74.4
07/09	50.0	49.2	56.9	50.7	51.1	51.6	53.1	54.7	56.3?	58.4	49.3	56.4	61.8	12457	1652	13898	78.5	75.4	75.3
07/10	49.9	49.2	56.8	50.6	51.1	51.7	53.4	54.8	56.4	58.8	49.2	55.8	61.2	13007	1359	13923	85.5	81.5	82.5

Date	MDWT TCD1	MDWT SHD	MDWT SPP1	MDWT KWK	MDWT SAC	MDWT CCR2	MDWT BSF	MDWT BND	MDWT RBD	MDWT IGO	MDWT LWS	MDWT DGC3	MDWT NFH	MDR Shasta Genera-tion	MDR Spring Creek PP	MDR Keswick Total	MDAT RDD	MDAT BSF	MDAT RDB
07/11	50.0	49.2	56.9	50.7	51.1	51.7	53.4	54.8	56.6	58.2	49.2	55.3	60.9	12825	1379	14024	90.0	84.5	84.2
07/12	50.2	49.4	57.0	50.8	51.2	51.8	53.6	55.0	56.8?	58.2	49.2	55.4	61.1	12649	1355	14038	90.0	84.8	83.7
07/13	50.4	49.5	57.1	51.0	51.4	52.0	53.7	55.1	57.0	58.2	49.2	55.5	61.4	12586	1523	14033	89.5	83.4	82.3
07/14	50.5	49.6	57.2	51.1	51.5	52.1	53.8	55.1	57.1	58.2	49.3	55.6	61.6	12756	1524	13948	88.0	82.7	81.1
07/15	50.6	49.6	57.2	51.1	51.5	52.2	54.0	55.3	57.1	57.9	49.3	55.9	62.1	12511	1520	13897	84.0	79.0	77.7
07/16	50.6	49.7	57.3	51.2	51.6	52.2	54.0	55.3	57.2	57.9	49.4	56.1	62.1	12600	1509	13888	81.5	77.6	75.8
07/17	50.7	49.8	57.4	51.2	51.7	52.3	53.9	55.2	56.9	57.9	49.4	56.0	61.8	12674	1516	14035	79.0	75.5	74.7
07/18	50.8	49.9	57.4	51.4	51.8	52.4	54.0	55.2	57.0	58.5	49.3	56.0	61.8	12320	1661	14145	82.5	77.5	76.7
07/19	50.9	49.9	57.4	51.4	51.9	52.5	54.1	55.4	57.1	58.6	49.2	55.9	61.7	12250	1511	14195	83.5	78.0	77.2
07/20	51.0	50.1	57.5	51.5	51.9	52.5	54.1	55.4	57.2	58.5	49.3	56.0	61.6	12270	1423	14061	81.0	77.0	77.3
07/21	51.0	50.2	57.5	51.6	52.0	52.6	54.2	55.5	57.2	58.5	49.4	56.8	62.2	12551	1381	13995	75.5	71.9	70.9
Jul	47.0	46.6	46.8	47.6	48.2	49.0	51.2	N/A	52.3	48.8	45.8	44.1	46.2	1797	794	3287	54.1	53.2	54.2
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Total CFS	19767	8736	36160	N/A	N/A	N/A

Date	MDWT TCD1	MDWT SHD	MDWT SPP1	MDWT KWK	MDWT SAC	MDWT CCR2	MDWT BSF	MDWT BND	MDWT RBD	MDWT IGO	MDWT LWS	MDWT DGC3	MDWT NFH	MDR Shasta Genera-tion	MDR Spring Creek PP	MDR Keswick Total	MDAT RDD	MDAT BSF	MDAT RDB
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Total AF	39207	17327	71722	N/A	N/A	N/A

Legend
A = 1-9 hours of data missing (Average includes estimations)
B = 10 or more hours of data missing (Average not calculated)
C = Station out of service
D = Record high air temperature
E = Record low air temperature
MDWT = Mean Daily Water Temperature (Fahrenheit)
MDR = Mean Daily Release (CFS)
MDAT = Mean Daily Air Temperatures (Fahrenheit)

Notes
1 Temperatures are weighted averages based on individual penstock flow and temperature
X Highlighted cells in the TCD column indicate a TCD change was made on that day
2 Current Sacramento River control point (see page 4 for more details)
3 Data is currently being collected locally and periodically downloaded.
Once downloaded and certified by USGS, missing data will be added.

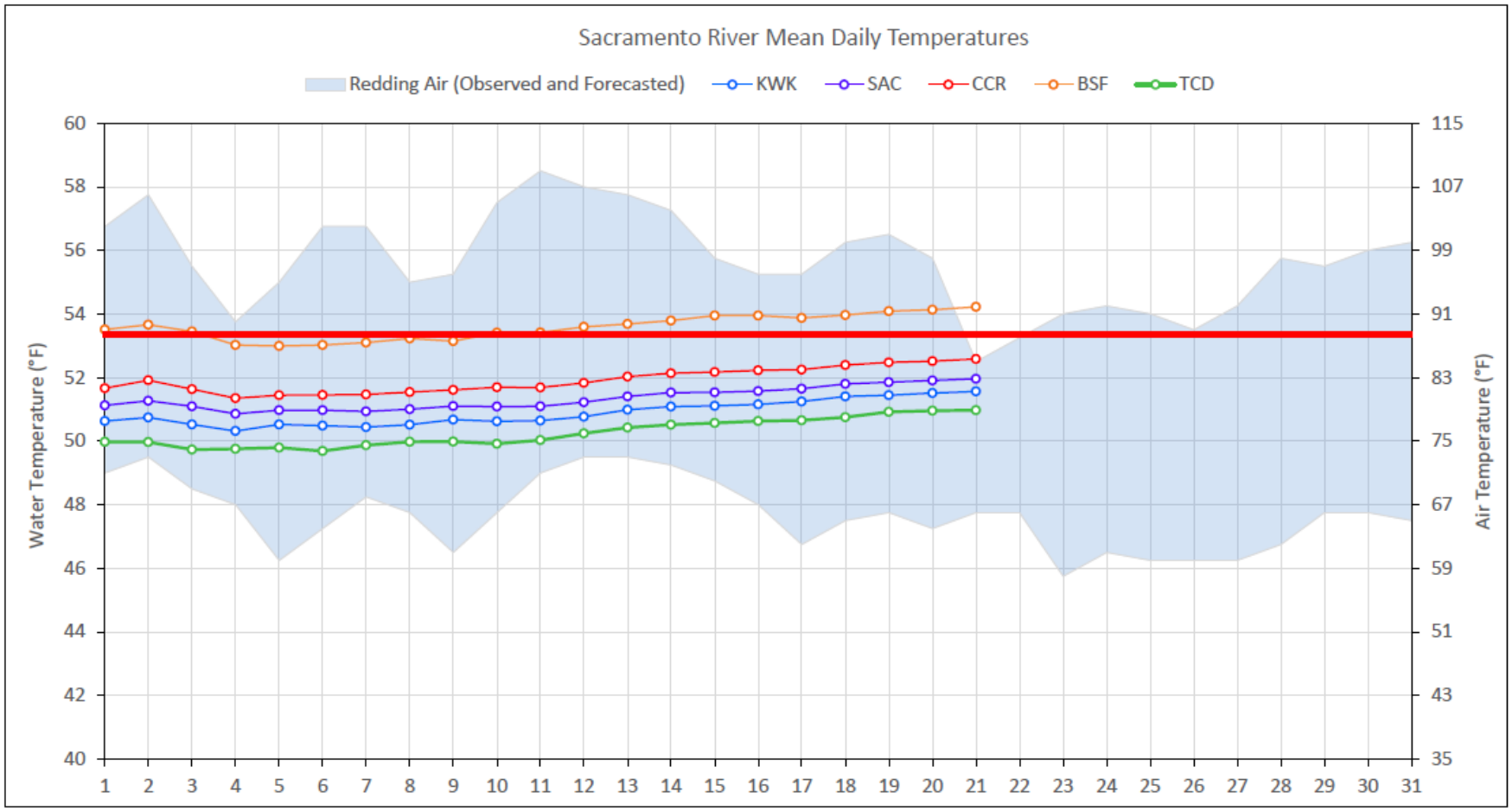


Figure 3. Sacramento River Mean Daily Temperatures

Station Details

Code	Body of Water	Location[1]
TCD	N/A	Shasta Power Plant
SHD	Sacramento River	0.3 miles downstream of Shasta Power Plant
SPP	N/A	Spring Creek Power Plant
KWK	Sacramento River	0.8 miles downstream of Keswick Dam
SAC	Sacramento River	4.8 miles downstream of Keswick Dam
CCR	Sacramento River	9.7 miles downstream of Keswick Dam
BSF	Sacramento River	25 miles downstream of Keswick Dam
JLF	Sacramento River	34 miles downstream of Keswick Dam
BND	Sacramento River	41 miles downstream of Keswick Dam
RDB	Sacramento River	58 miles downstream of Keswick Dam
IGO	Clear Creek	7.3 miles downstream of Whiskeytown Dam

Water Right Temperature Control Points

River	Point	Temp (˚F)	Begin Date	End Date
Sacramento	SAC	55	06/15/2021	05/02/2022
Sacramento	SAC	58	05/02/2022	06/07/2022
Sacramento	SAC	54.5	06/07/2022	TBD

Notes: [1] Distances are approximate

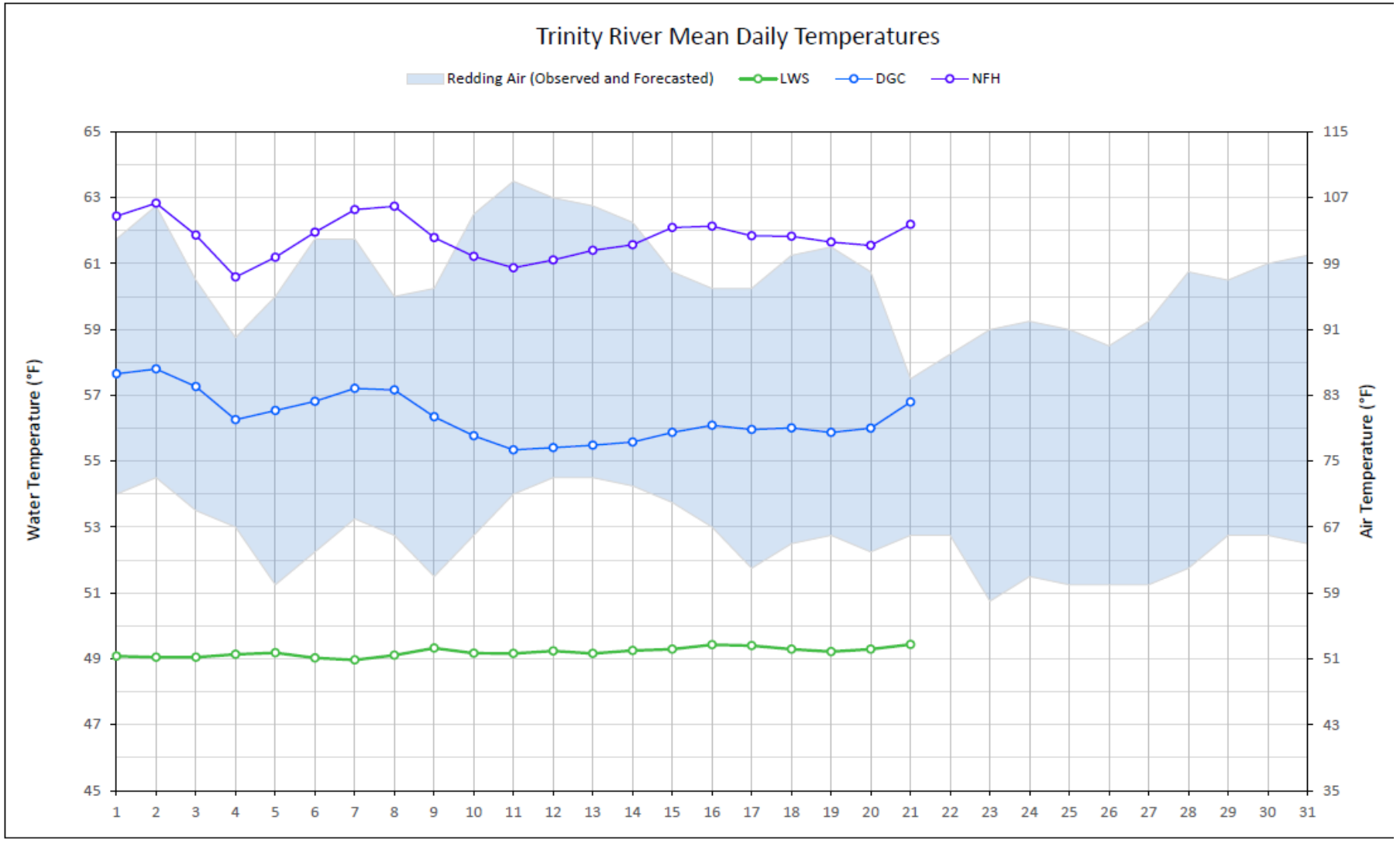


Figure 4. Trinity River Mean Daily Temperatures

Station Details

Code	Body of Water	Location[1]
LWS	Trinity River	1.1 miles downstream of Lewiston Dam
DGC	Trinity River	19 miles downstream of Lewiston Dam
NFH	Trinity River	38 miles downstream of Lewiston Dam

Water Right Temperature Control Points

River	Point	Temp (˚F)	Begin Date	End Date
Trinity	DGC	56.0	09/15/25	10/01/25
Trinity	NFH	56.0	10/01/25	12/31/25

Notes: [1] Distances are approximate

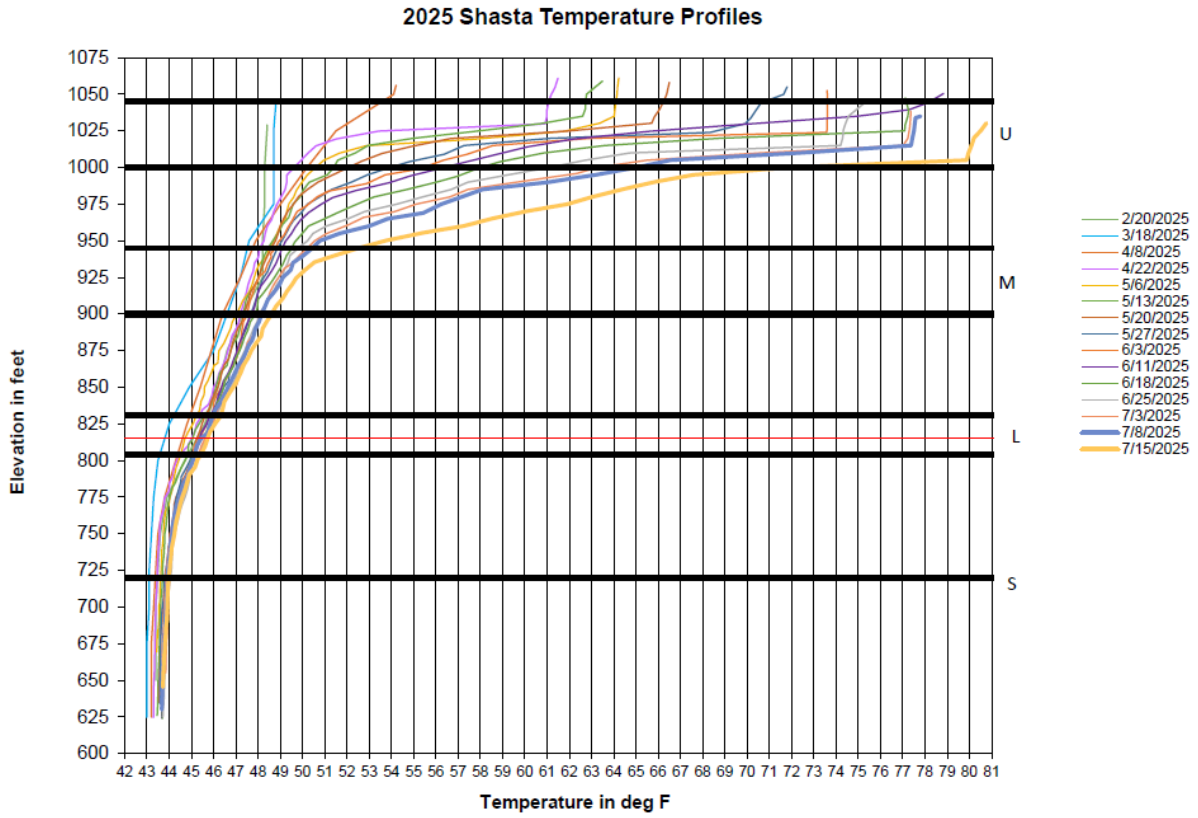


Figure 5. 2025 Shasta Temperature Profiles

This figure is a line graph showing 2025 Shasta Temperature Profiles (x-axis) by elevation in feet (y-axis) on various dates from February 2025 through July 2025.

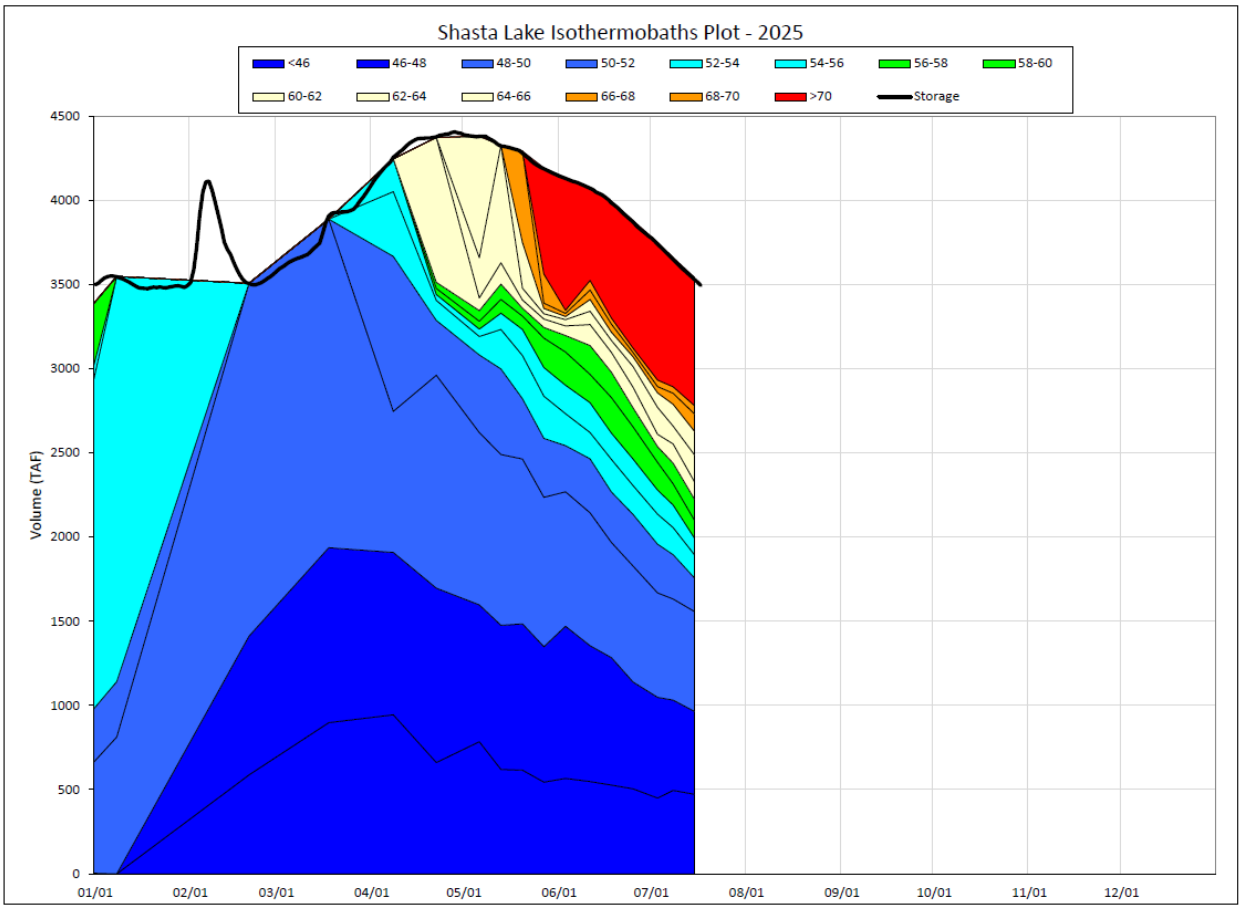


Figure 6. Shasta Lake Isothermobaths Plot 2025

This is a graph showing Trinity Lake Isothermobaths with volume in Thousand Acre-Feet from 0-2500; with dates 01/01 to 12/01.

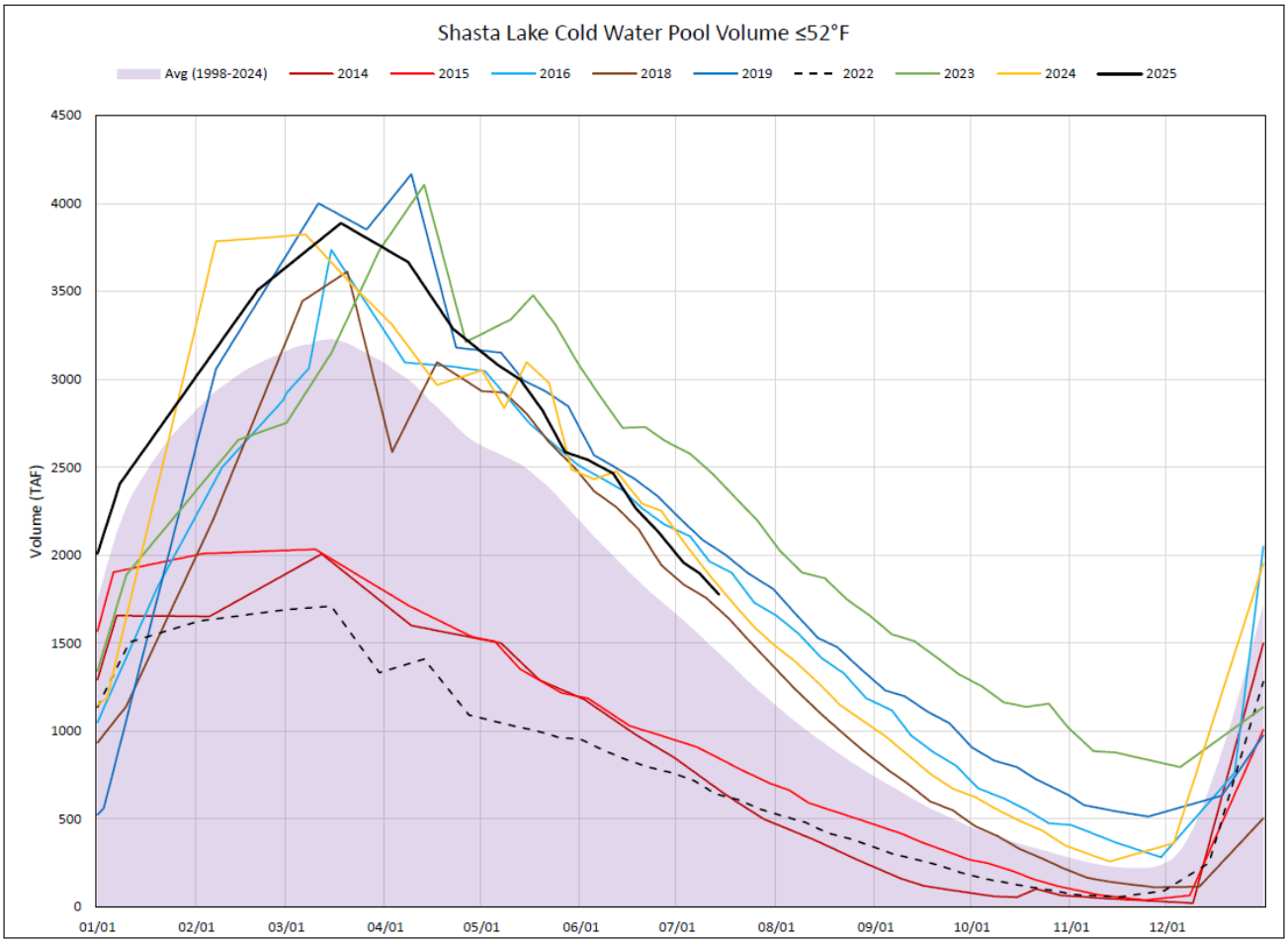


Figure 7. Shasta Lake Cold Water Pool Volume ≤52°F

This figure is a line graph showing Shasta Lake Cold Water Pool Volume equal to or less than 52 degrees Fahrenheit from 01/01 to 12/01.

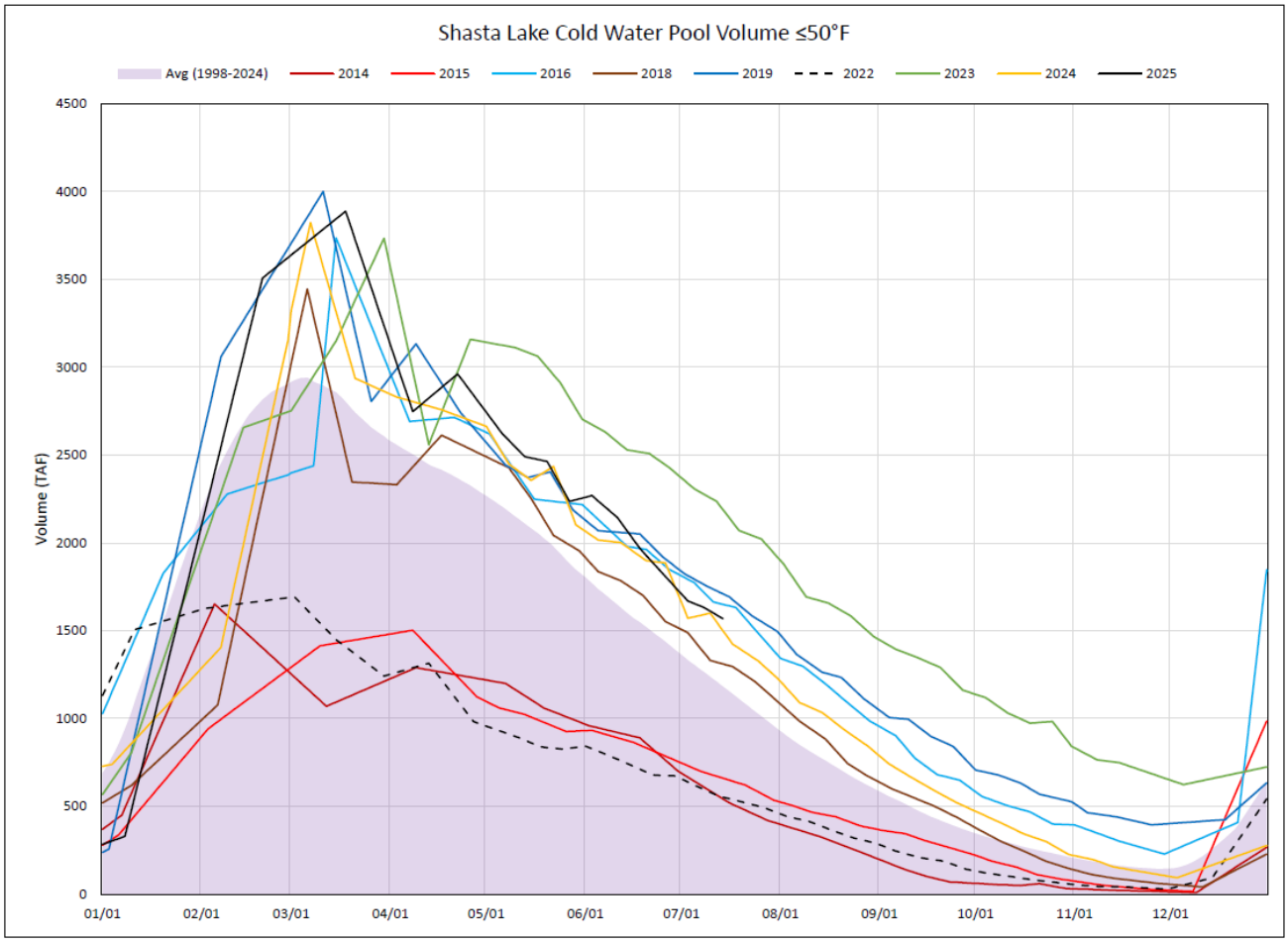


Figure 8. Shasta Lake Cold Water Pool Volume ≤50°F

This figure is a line graph showing Shasta Lake Cold Water Pool Volume equal to or less than 50 degrees Fahrenheit from 01/01 to 12/01.

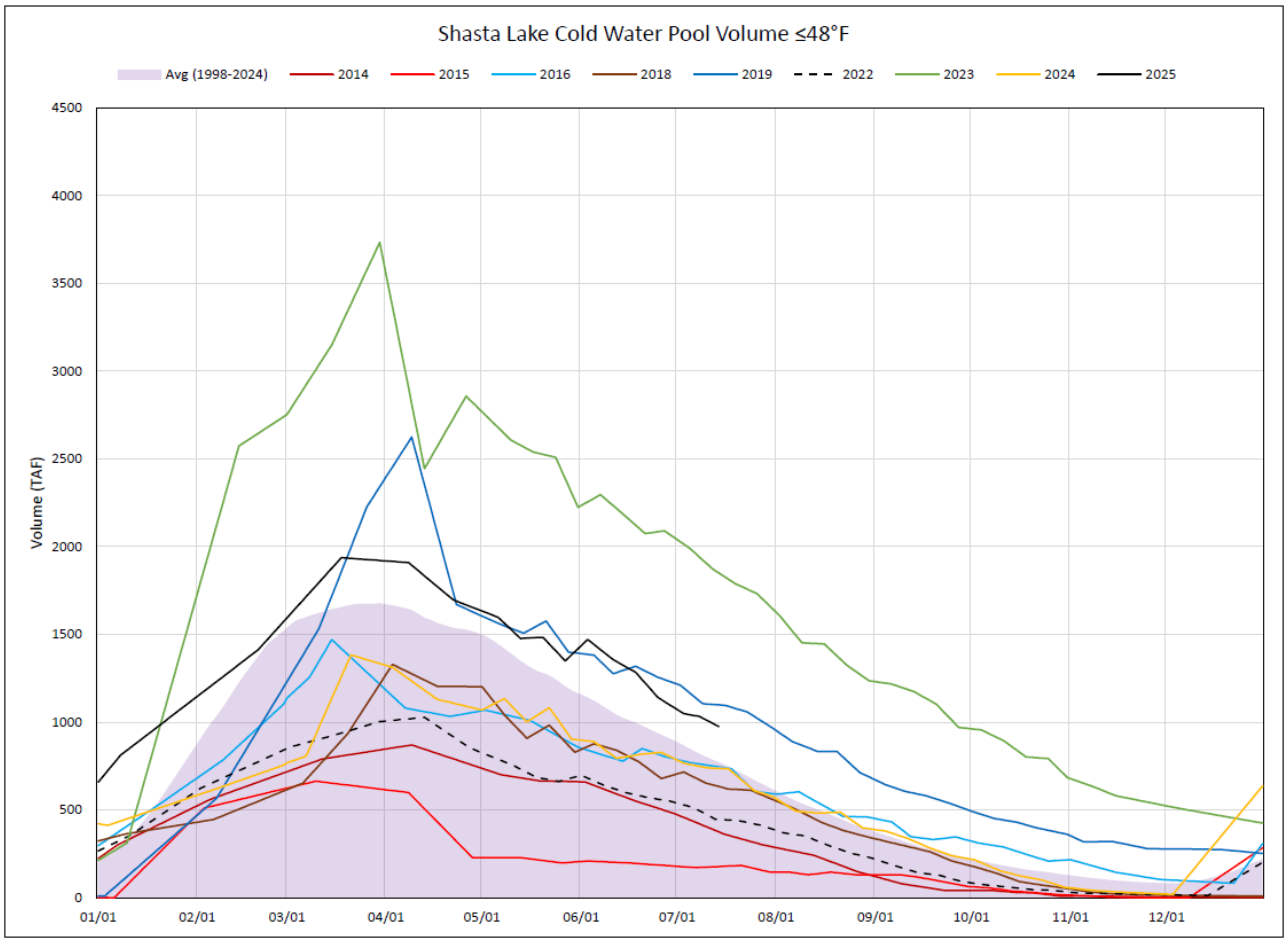


Figure 9. Shasta Lake Cold Water Pool Volume ≤48°F

This figure is a line graph showing Shasta Lake Cold Water Pool Volume equal to or less than 48 degrees Fahrenheit from 01/01 to 12/01.

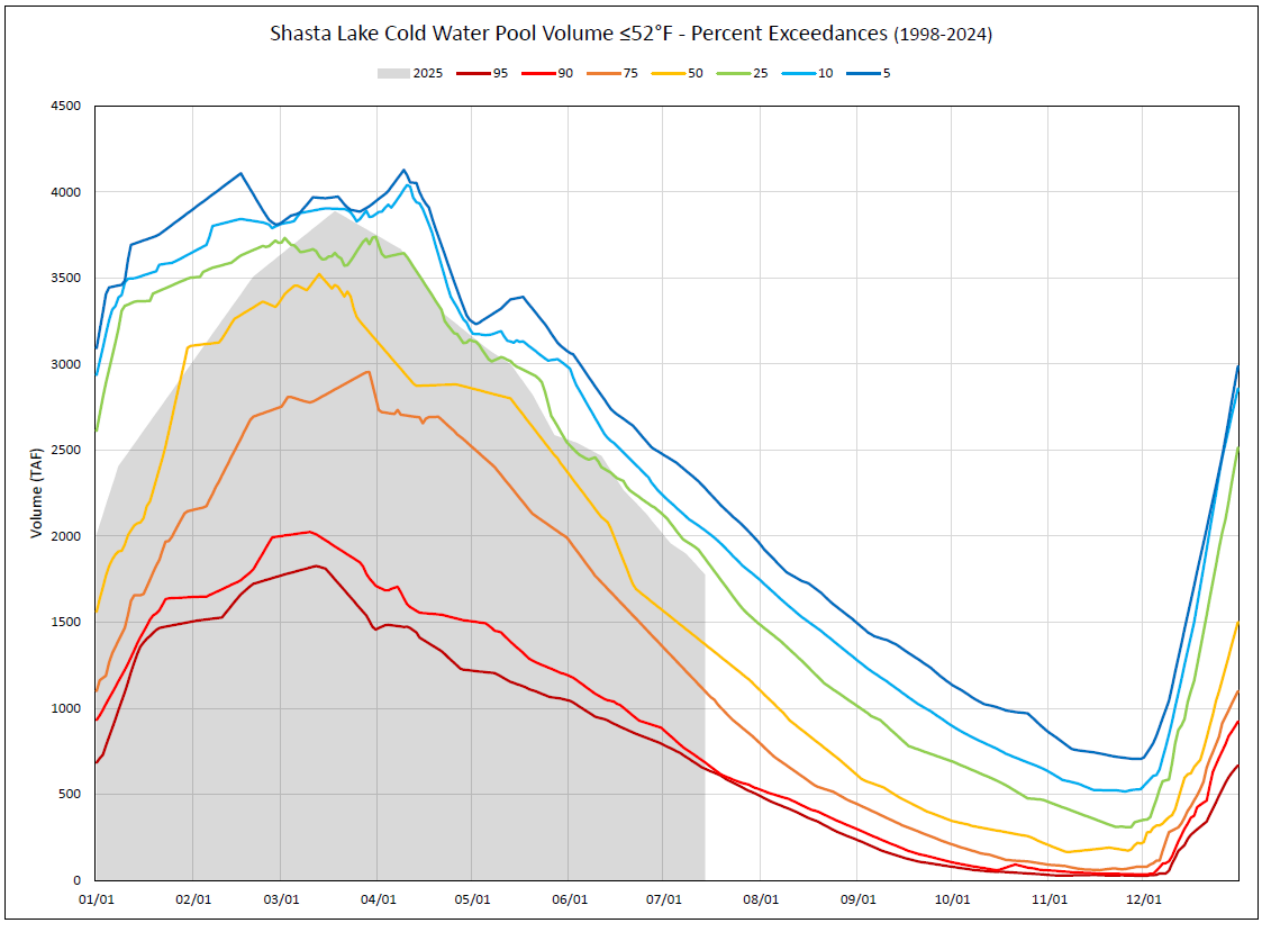


Figure 10. Shasta Lake Cold Water Pool Volume ≤52°F - Percent Exceedances (1998-2024)

This figure is a line graph showing Shasta Lake Cold Water Pool Volume less than or equal to 52 degrees Fahrenheit as percent exceedances from 01/01 to 12/01.

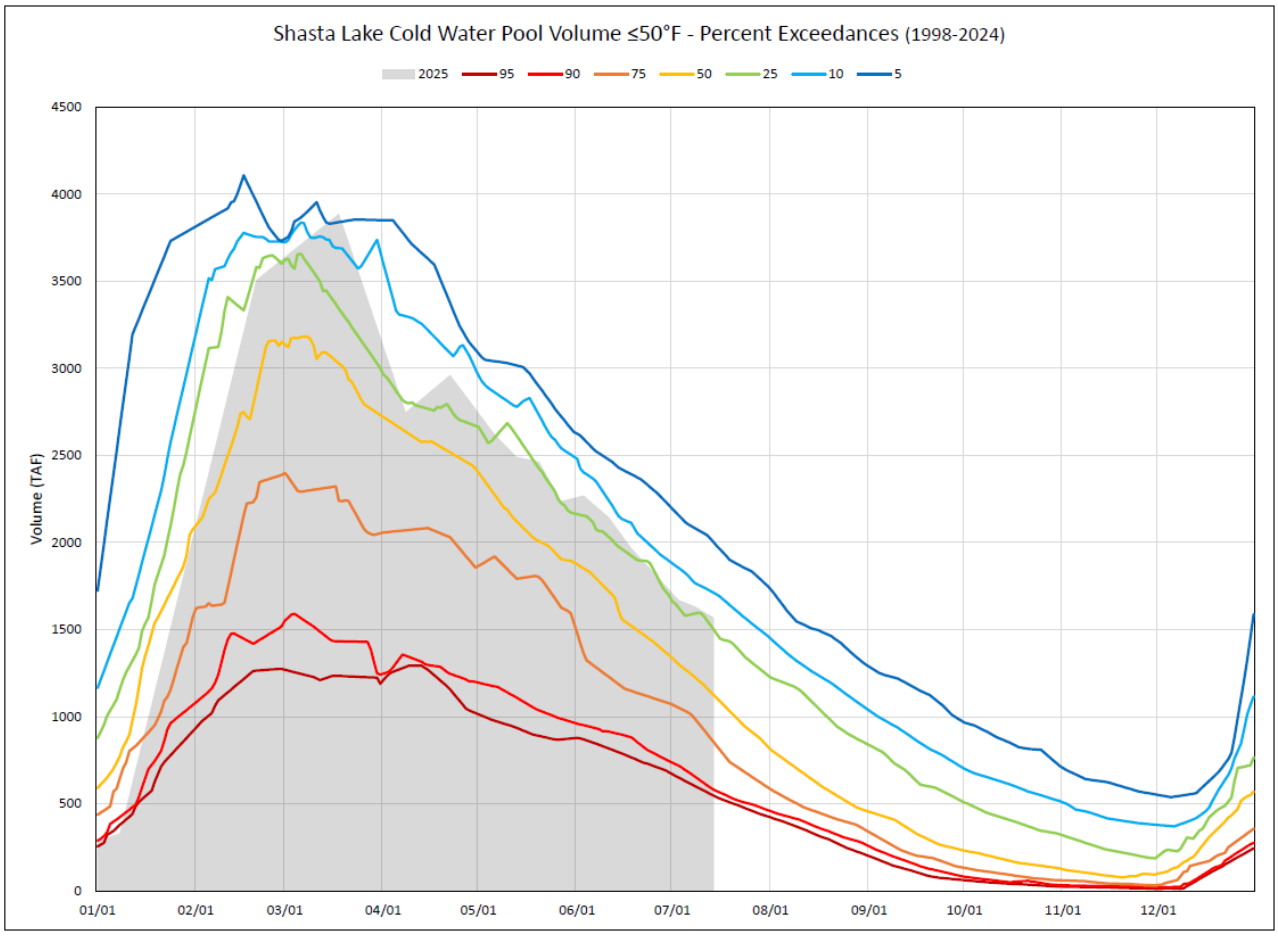


Figure 11. Shasta Lake Cold Water Pool Volume ≤50°F - Percent Exceedances (1998-2024)

This figure is a line graph showing Shasta Lake Cold Water Pool Volume less than or equal to 50 degrees Fahrenheit as percent exceedances from 01/01 to 12/01.

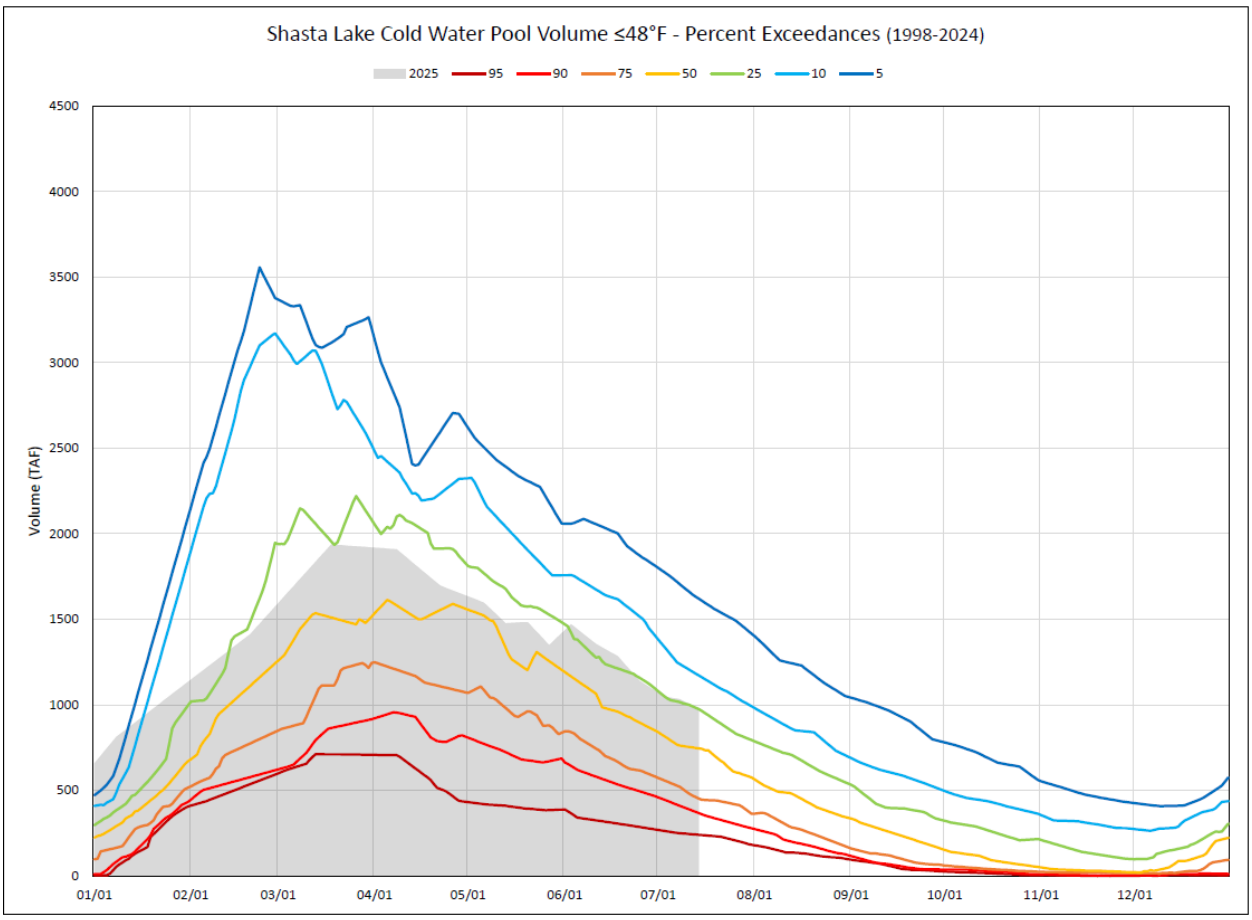


Figure 12. Shasta Lake Cold Water Pool Volume ≤48°F - Percent Exceedances (1998-2024)

This figure is a line graph showing Shasta Lake Cold Water Pool Volume less than or equal to 48 degrees Fahrenheit as percent exceedances from 01/01 to 12/01.

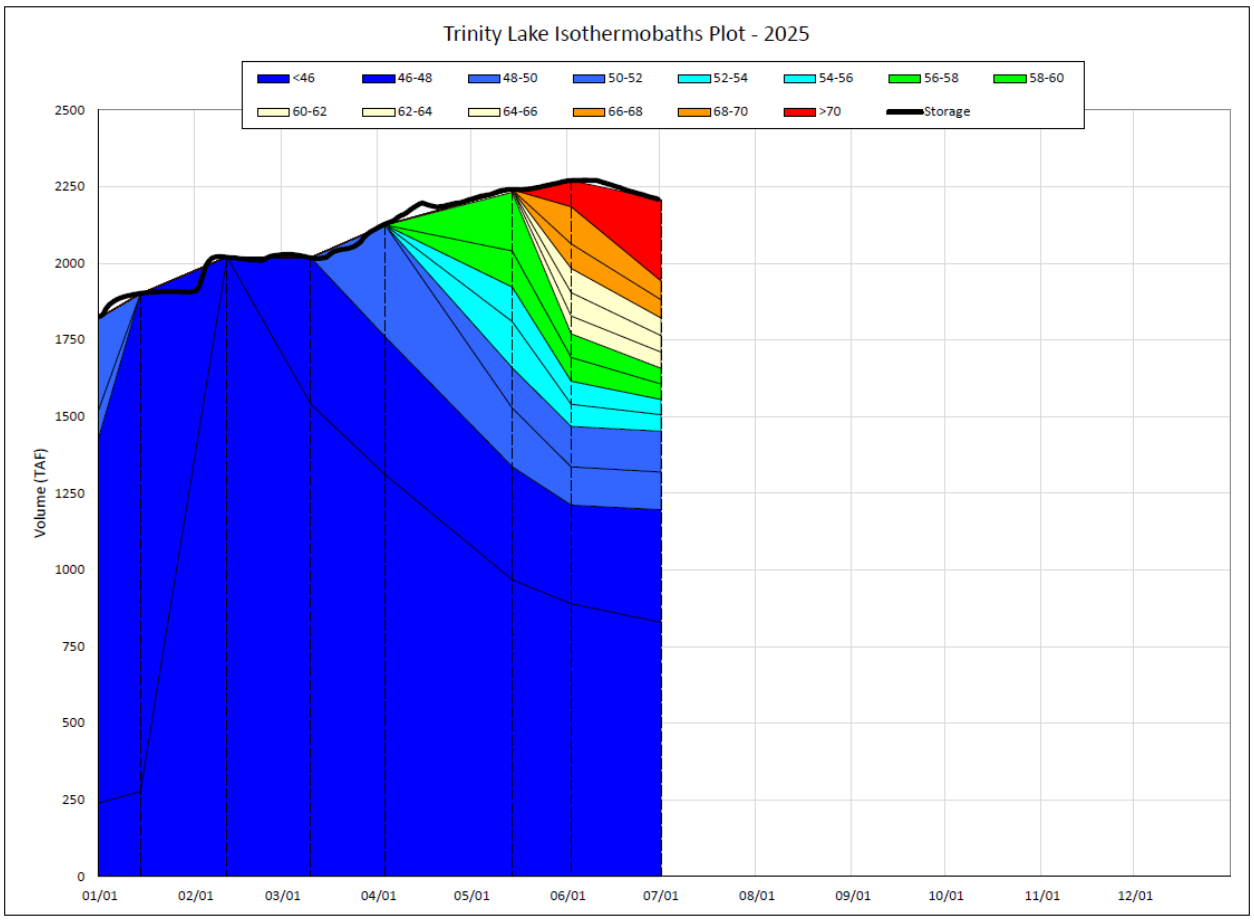


Figure 13. Trinity Lake Isothermobaths Plot – 2025

This is a graph showing Trinity Lake Isothermobaths with volume in Thousand Acre-Feet from 0-2500; with dates 01/01 to 12/01.

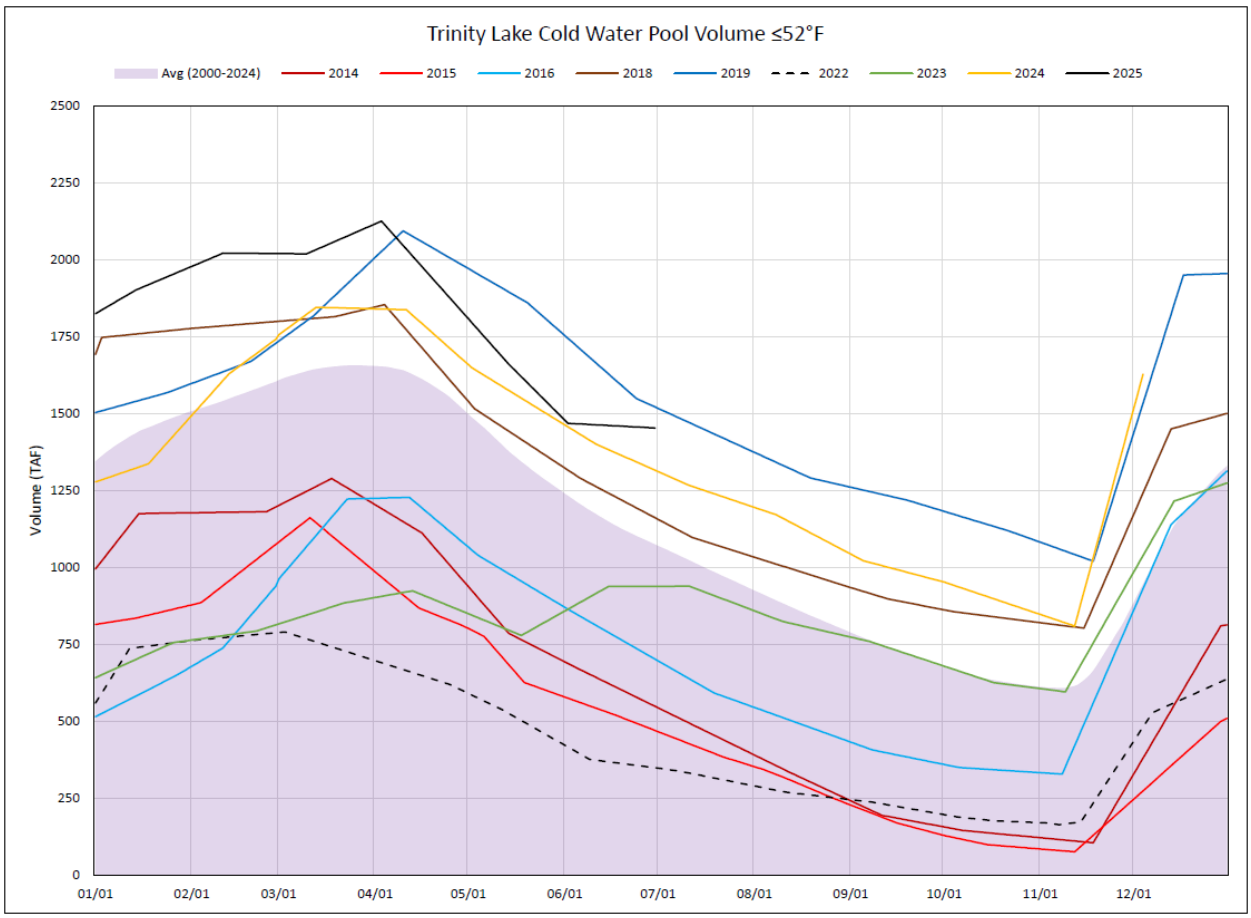


Figure 14. Trinity Lake Cold Water Pool Volume ≤52°F

This figure is a line graph showing Trinity Lake Cold Water Pool Volume equal to or less than 52 degrees Fahrenheit from 01/01 to 12/01.

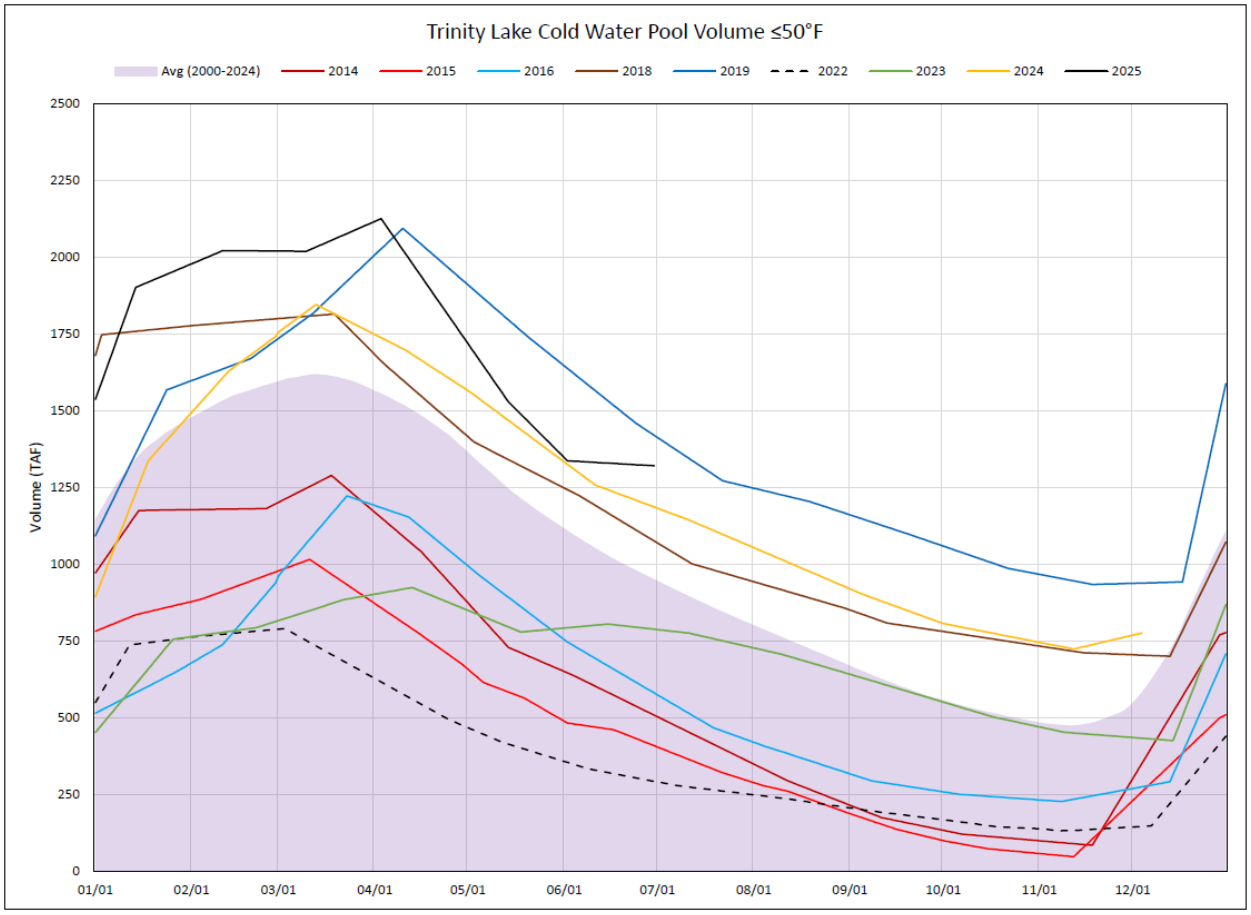


Figure 15. Trinity Lake Cold Water Pool Volume ≤50°F

This figure is a line graph showing Trinity Lake Cold Water Pool Volume equal to or less than 50 degrees Fahrenheit from 01/01 to 12/01.

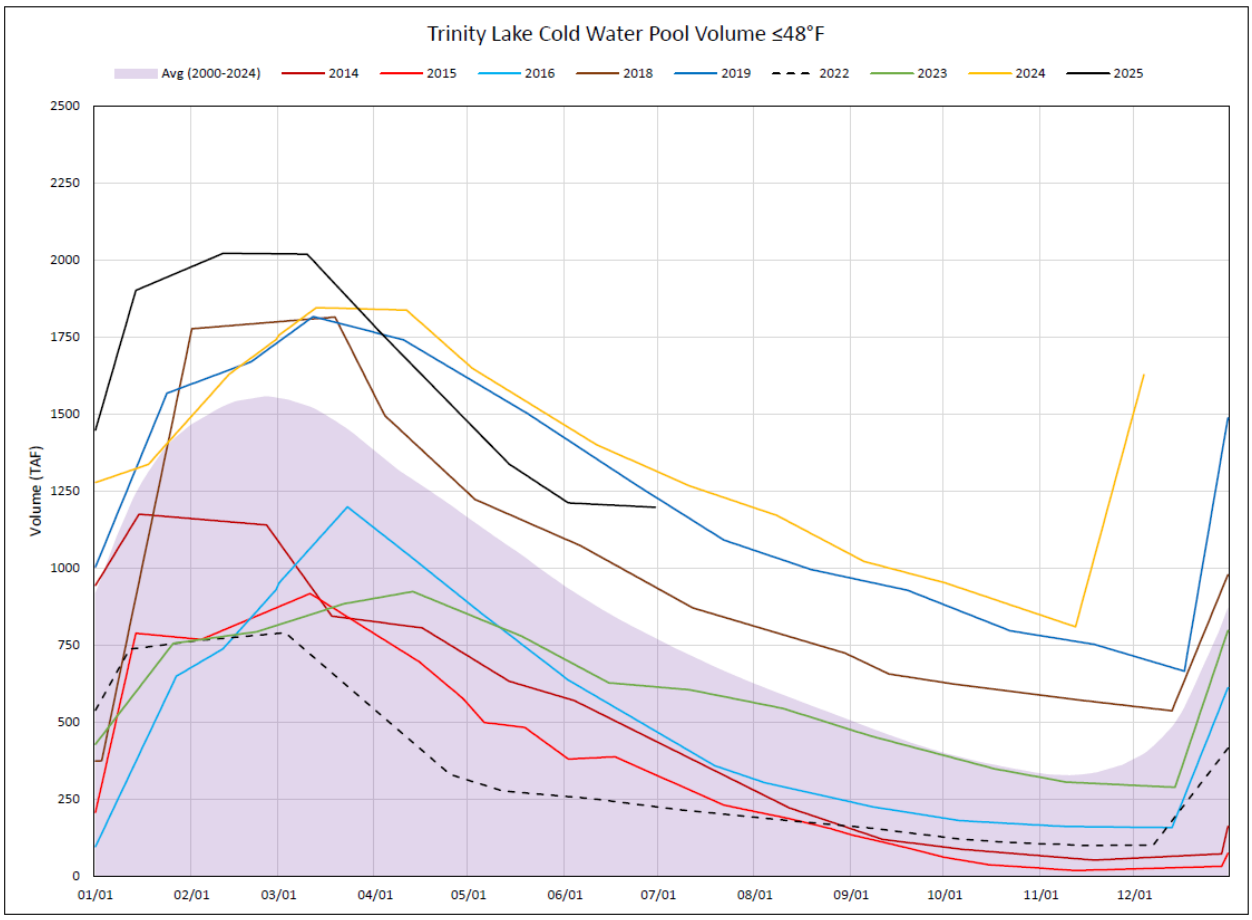


Figure 16. Trinity Lake Cold Water Pool Volume ≤48°F

This figure is a line graph showing Trinity Lake Cold Water Pool Volume equal to or less than 48 degrees Fahrenheit from 01/01 to 12/01.

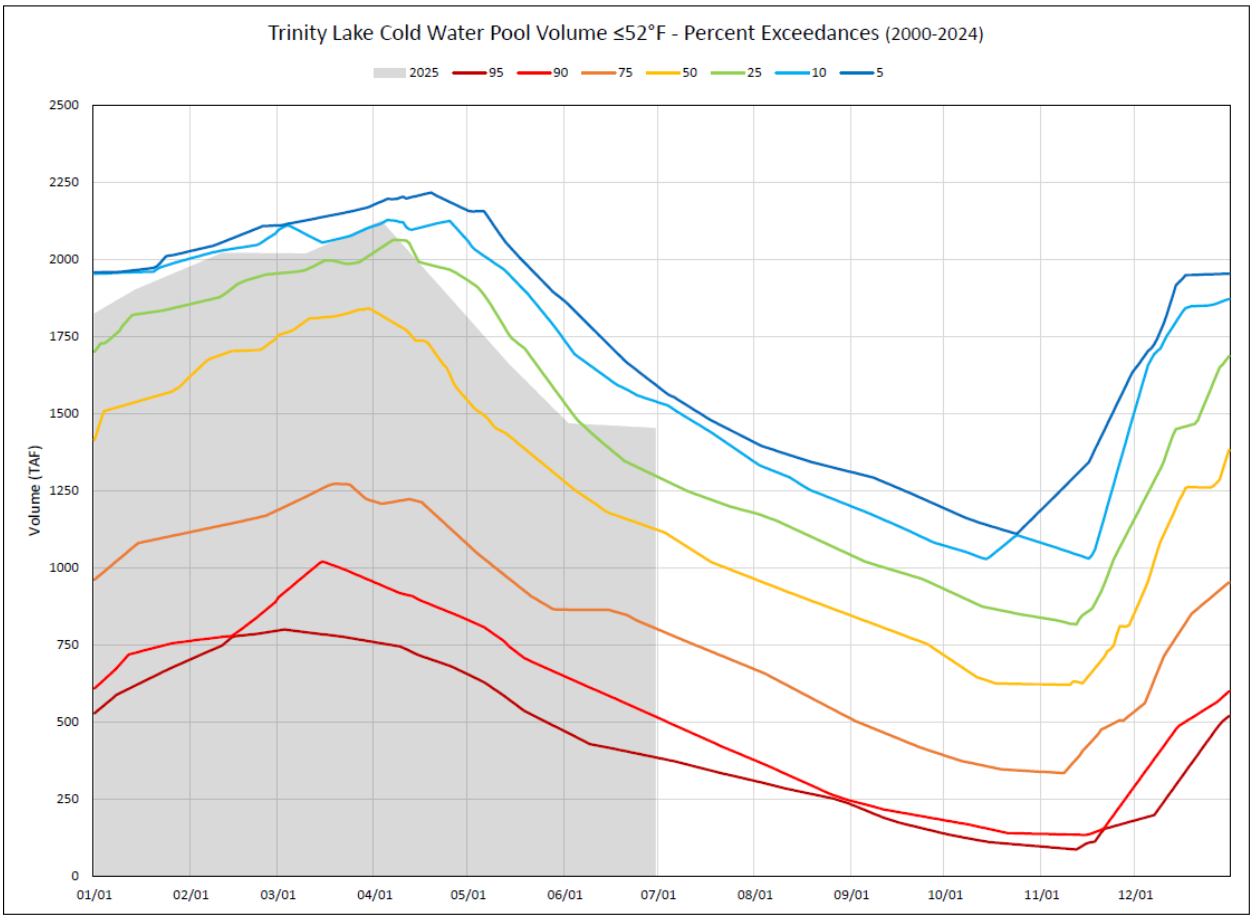


Figure 17. Trinity Lake Cold Water Pool Volume ≤52°F - Percent Exceedances (2000-2024)

This figure is a line graph showing Trinity Lake Cold Water Pool Volume less than or equal to 52 degrees Fahrenheit as percent exceedances from 01/01 to 12/01.

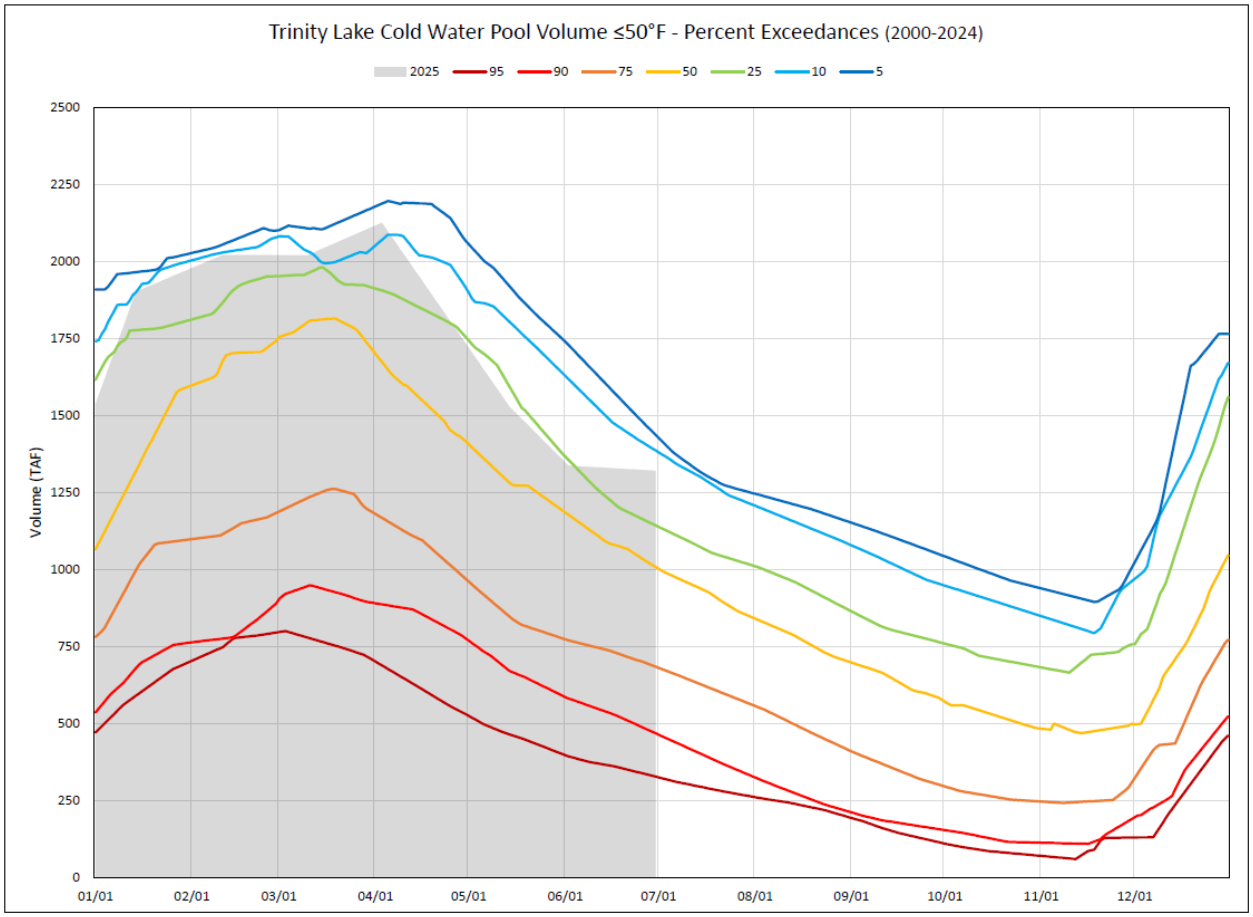


Figure 18. Trinity Lake Cold Water Pool Volume ≤50°F - Percent Exceedances (2000-2024)

This figure is a line graph showing Trinity Lake Cold Water Pool Volume less than or equal to 50 degrees Fahrenheit as percent exceedances from 01/01 to 12/01.

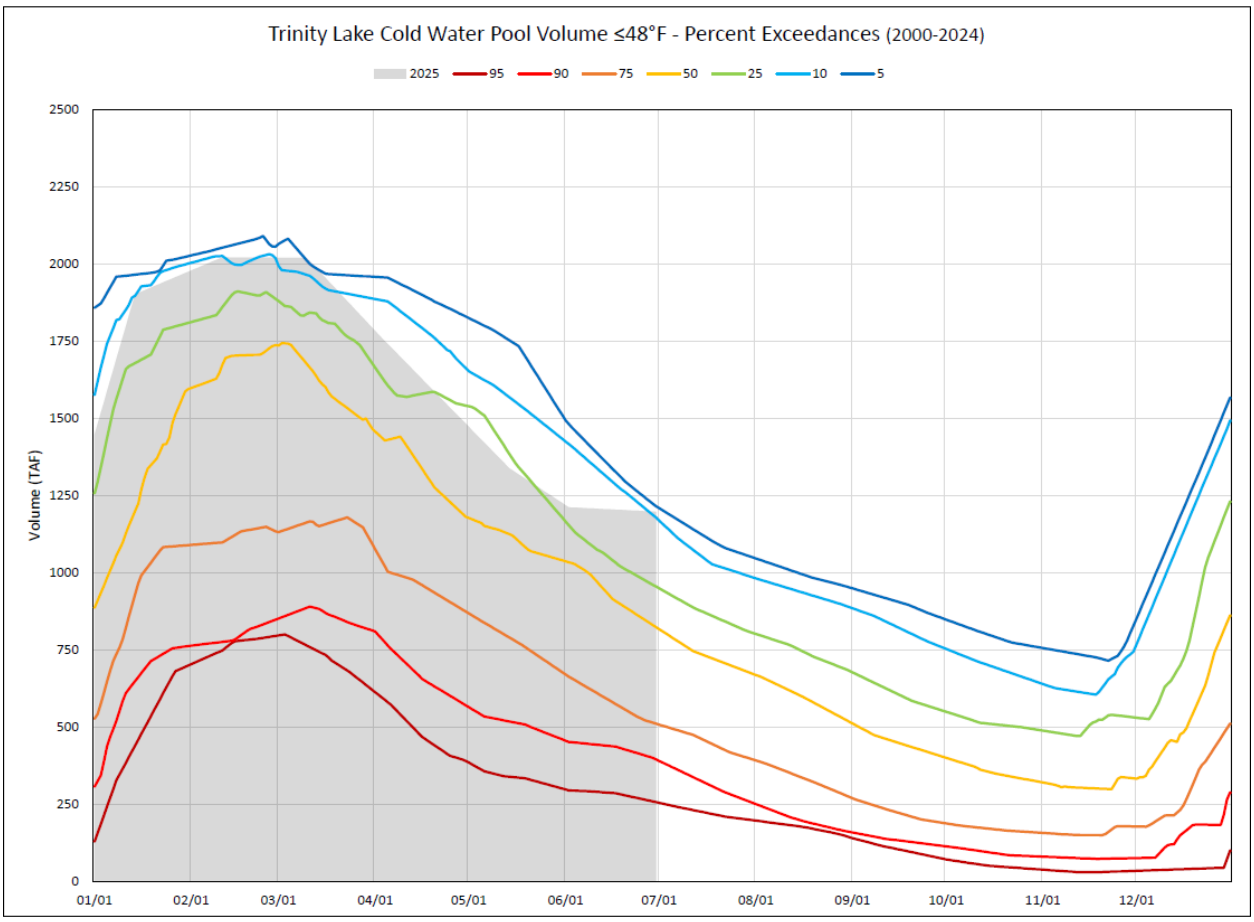


Figure 19. Trinity Lake Cold Water Pool Volume ≤48°F - Percent Exceedances (2000-2024)

This figure is a line graph showing Trinity Lake Cold Water Pool Volume less than or equal to 48 degrees Fahrenheit as percent exceedances from 01/01 to 12/01.

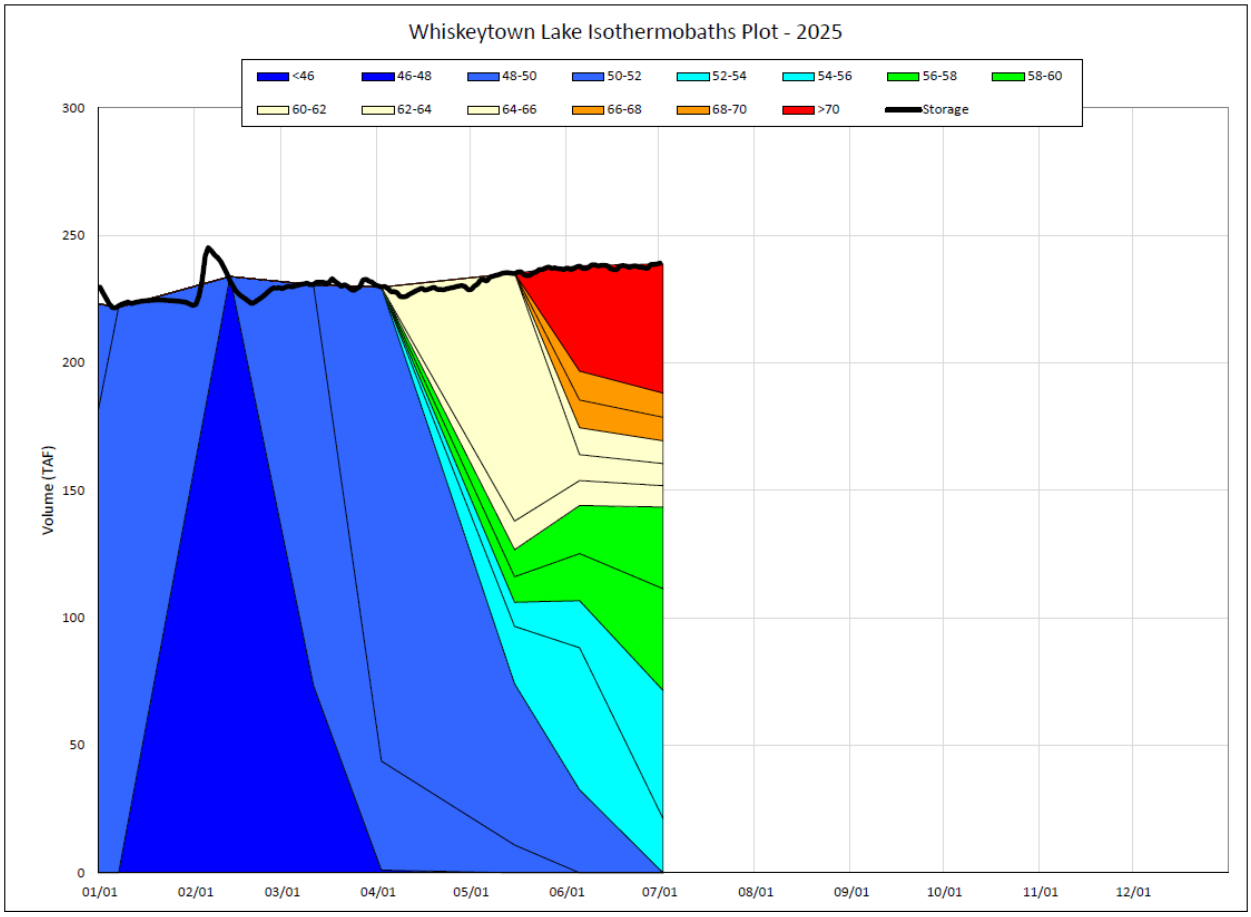


Figure 20. Whiskeytown Lake Isothermobaths Plot – 2025

This is a graph showing Whiskeytown Lake Isothermobaths with volume in Thousand Acre-Feet from 0-300; with dates 01/01 to 12/01.

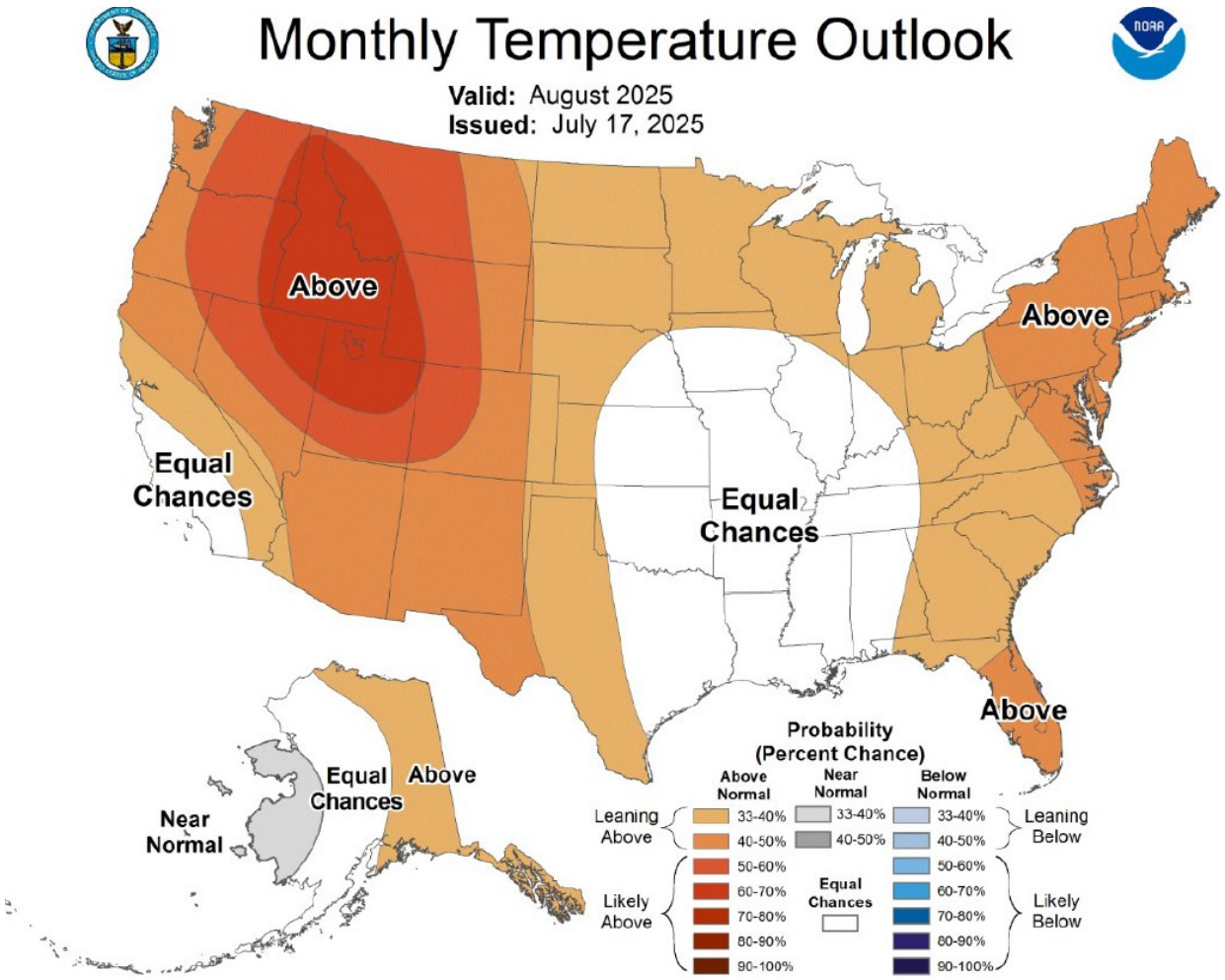


Figure 21. Monthly Temperature Outlook

This figure shows a monthly temperature outlook with the percent probability of near normal, below, or above normal temperatures for all of the United States. The figure is valid for August 2025 and was issued on July 17th, 2025.

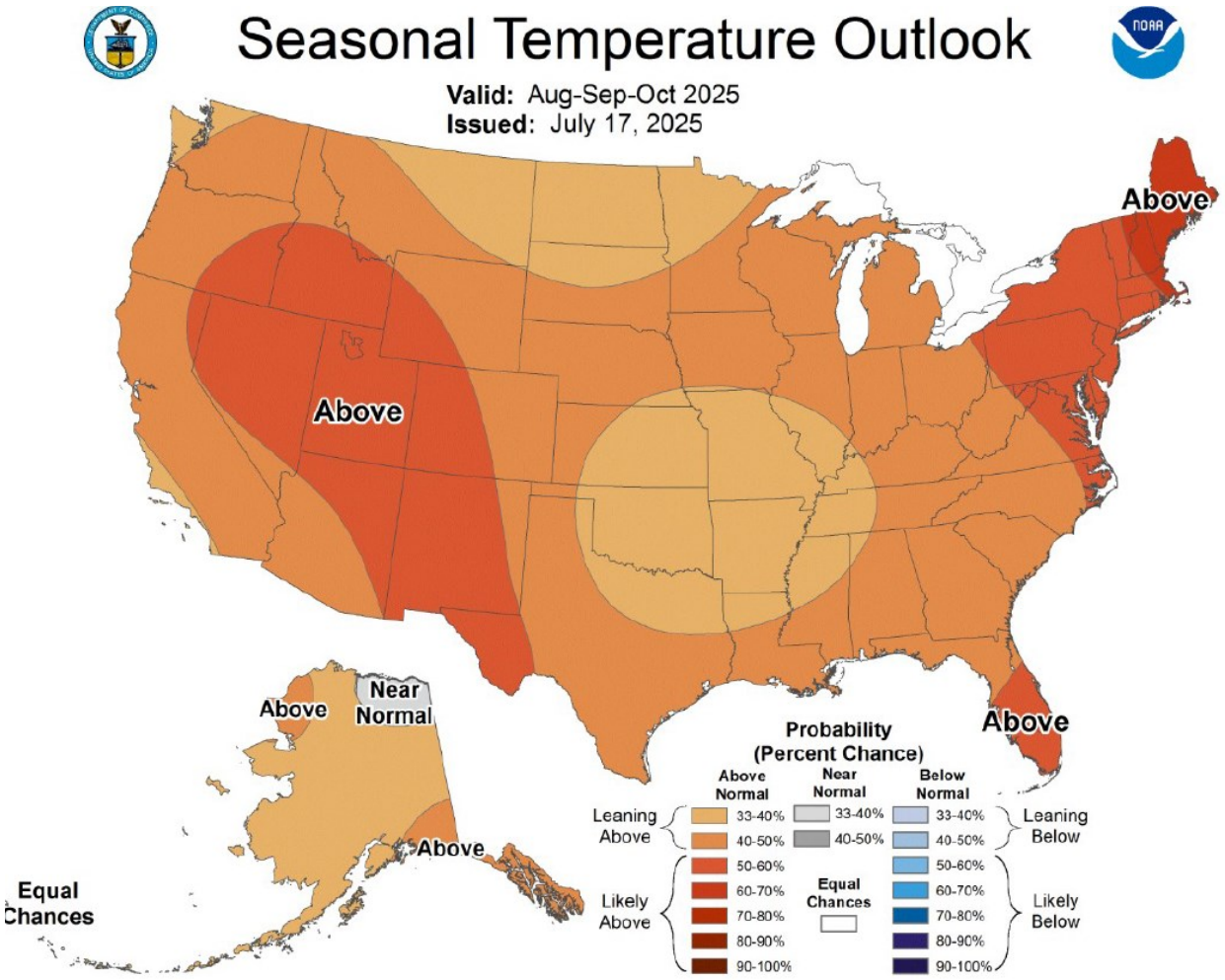


Figure 22. Seasonal Temperature Outlook

This figure shows a seasonal temperature outlook with the percent probability of near normal, below, or above normal temperatures for all of the United States. The figure is valid for August, September, and October 2025 and was issued on July 17th, 2025.

Estimated CVP Operations 90% Exceedance

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

Facility	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Trinity	2209	2105	1975	1843	1783	1769	1727	1729	1760	1827	1926	1863	1766
Trinity Elev.	N/A	2348	2339	2330	2325	2324	2321	2321	2324	2329	2336	2331	2324
Whiskeytown	238	238	238	238	206	206	206	206	206	206	206	238	238
Whiskeytown Elev.	N/A	1209	1209	1209	1199	1199	1199	1199	1199	1199	1199	1209	1209
Shasta	3788	3202	2621	2413	2236	2196	2269	2340	2495	2767	2758	2542	2265
Shasta Elev.	N/A	1016	990	980	971	968	972	976	984	997	997	986	972
Folsom	837	585	402	355	335	318	320	321	369	464	596	709	632
Folsom Elev.	N/A	427	403	396	393	390	391	391	398	412	428	440	432
New Melones	1815	1727	1669	1622	1567	1573	1581	1587	1544	1522	1432	1326	1199
New Melones Elev.	N/A	1026	1021	1016	1010	1011	1012	1012	1008	1005	996	984	968
Federal San Luis	448	301	257	295	263	283	370	538	619	696	612	418	199
Total	9335	8158	7162	6766	6390	6345	6472	6720	6993	7481	7529	7096	6299

State End of the Month Reservoir Storage (TAF)

Facility	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Oroville	3232	2698	2241	1882	1689	1572	1528	1546	1648	1818	1945	1801	1525
Oroville Elev.	N/A	842	805	771	751	739	734	736	747	765	777	763	733
State San Luis	524	445	511	661	763	729	766	920	921	914	670	309	53
Total San Luis (TAF)	972	746	768	956	1026	1012	1136	1457	1540	1609	1282	727	251
Total San Luis Elev.	N/A	426	429	448	455	454	466	496	503	509	480	424	361

Monthly River Releases (TAF/cfs)

Facility	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Trinity (TAF)	44	53	52	23	18	78	18	17	18	36	92	47
Trinity (cfs)	723	857	870	373	300	1,276	300	300	300	600	1,498	783
Clear Creek (TAF)	7	6	7	10	12	16	18	17	18	15	18	13
Clear Creek (cfs)	113	100	120	157	210	260	293	300	286	247	295	215
Sacramento (TAF)	861	830	455	461	297	246	246	222	246	452	615	595
Sacramento (cfs)	14000	13500	7650	7500	5000	4000	4000	4000	4000	7600	10000	10000
American (TAF)	295	255	107	62	59	61	61	56	77	74	61	149
American (cfs)	4807	4153	1800	1003	1000	1000	1000	1000	1250	1250	1000	2512

Facility	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Stanislaus (TAF)	12	12	12	39	12	12	12	58	55	68	78	59
Stanislaus (cfs)	200	200	200	635	200	200	200	1039	900	1140	1268	1000
Feather (TAF)	473	391	407	221	104	108	108	97	108	149	184	250
Feather (cfs)	7700	6360	6841	3600	1750	1750	1750	1750	1750	2500	3000	4200

Trinity Diversions (TAF)

Diversion Facility	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Carr PP	78	81	82	45	17	3	10	5	0	1	114	101	78
Spring Creek PP	75	75	75	70	10	0	0	0	2	1	70	90	75

Delta Summary (TAF)

Facility	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Tracy	215	250	255	166	127	144	230	210	170	54	55	80
USBR Banks	24	24	24	0	0	0	0	0	0	0	0	0
Contra Costa	11.0	12.0	12.0	14.0	14.0	14.0	14.0	14.0	12.0	12.0	12.0	10.0
Total USBR	250	286	291	180	141	158	244	224	182	66	67	90
State Export	282	412	396	410	218	233	155	150	165	36	37	81
Total Export	532	698	687	590	359	391	399	374	347	101	104	171
COA Balance	-94	-16	-16	144	168	168	168	168	168	168	168	165
Vernalis (TAF)	45	40	46	98	74	75	75	128	141	125	149	90
Vernalis (cfs)	737	655	772	1595	1242	1225	1225	2300	2299	2099	2430	1521
Old/Middle River calc.	-6,922	-9,038	-9,135	-7,263	-4,678	-4,936	-5,037	-4,742	-3,902	-956	-802	-2,119
Computed DOI	11599	7499	4337	4002	4505	4506	8101	7997	10444	11330	9956	7094
Excess Outflow	0	0	504	0	0	0	2098	396	3579	2656	3091	0
% Export/Inflow	34%	49%	62%	62%	51%	54%	45%	45%	35%	11%	11%	20%
% Export/inflow std.	65%	65%	65%	65%	65%	65%	65%	45%	35%	35%	35%	35%

Hydrology

Statistic	Trinity	Shasta	Folsom	New Melones
Water Year Inflow (TAF)	1631	6,650	2,303	678
Year to Date + Forecasted % of mean	135%	120%	85%	64%

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

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

CVP releases or export values represent monthly averages.

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

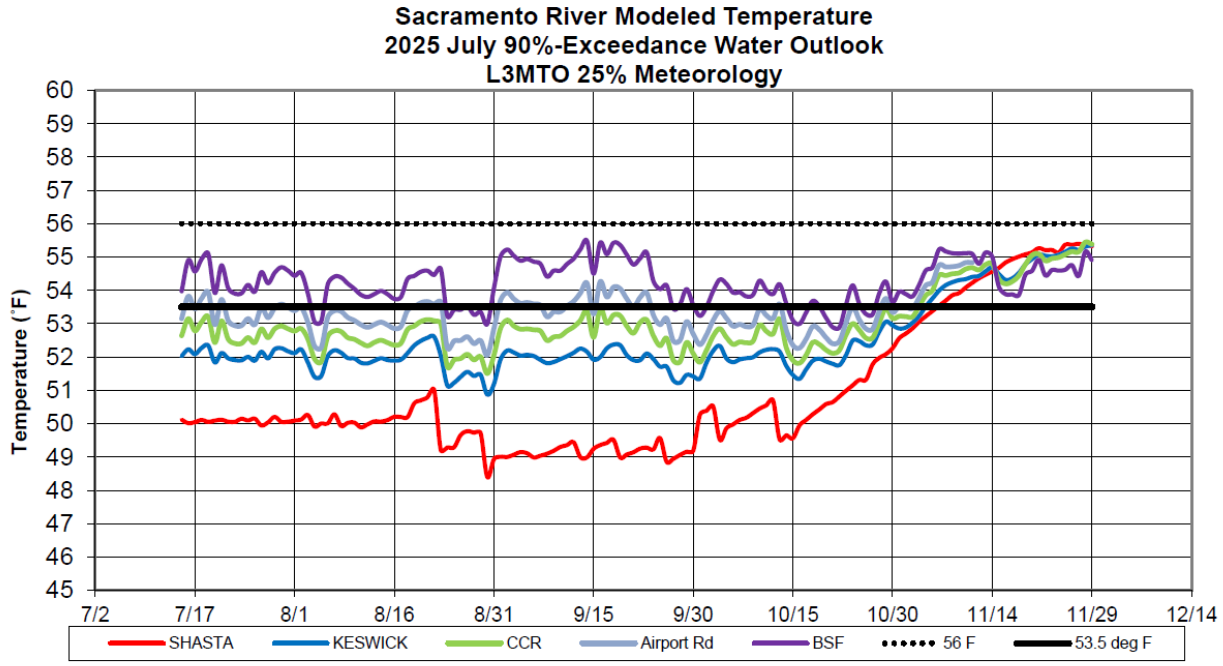


Figure 23. Sacramento River Modeled Temperature – July 2025 90%-Exceedance Water Outlook L3MTO 25% Meteorology.

This figure shows Sacramento River modeled temperature in degrees Fahrenheit at Shasta, Keswick, Clear Creek, Airport Rd, and above Balls Gerry Bridge Dams, from 7/2 to 12/14 in percent exceedances. It also shows the desired degree range between 53.5 and 56 degrees Fahrenheit.

Facility Temperature Outlook in Degrees Fahrenheit

Month	Shasta	Keswick	CCR	Airport Rd	BSF	Igo	Trinity	Lewiston
August	50.0	51.8	52.4	53.0	53.9	56.9	44.8	47.6
September	49.2	51.9	52.8	53.5	54.7	56.3	45.0	47.2
October	50.6	52.1	52.6	53.0	53.7	54.5	45.1	47.3
November	54.5	54.5	54.6	54.6	54.6	52.3	45.2	46.5

Run date: 7/22/25

EOM September Storage: 2.41 MAF

Trinity profile date: 7/1/25

Whiskeytown profile date: 7/2/25

Shasta profile date: 7/15/25

Projected side gates: First August 31 Full October 14

September – November model limitations – see Fall Temperature Index

End of September Cold-Water-Pool less than 56 degrees Fahrenheit: 618 TAF

Managing to 53.5 degrees F at CCR

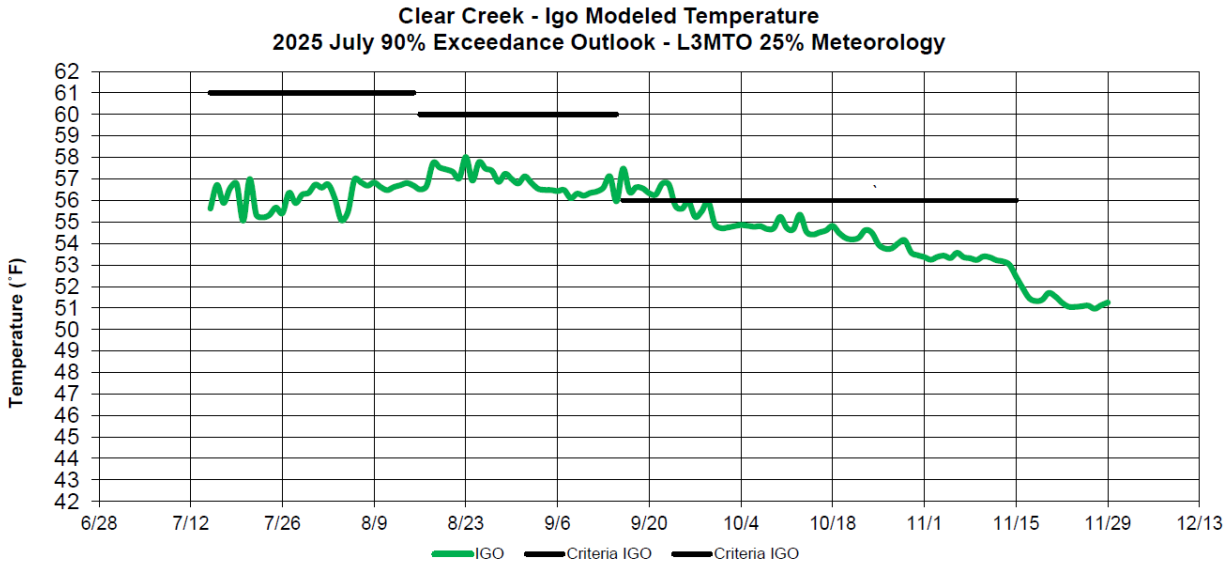


Figure 24. Clear Creek – Igo Modeled Temperature, 2025 July 90% Exceedance Outlook – L3MTO 25% Meteorology

This figure shows modeled temperature in degrees Fahrenheit for Clear Creek and Igo Dams from 6/26 to 12/13 in percent exceedances. The modeled temperature at IGO is shown in a green line, with the temperature criteria at Igo shown in horizontal black lines.

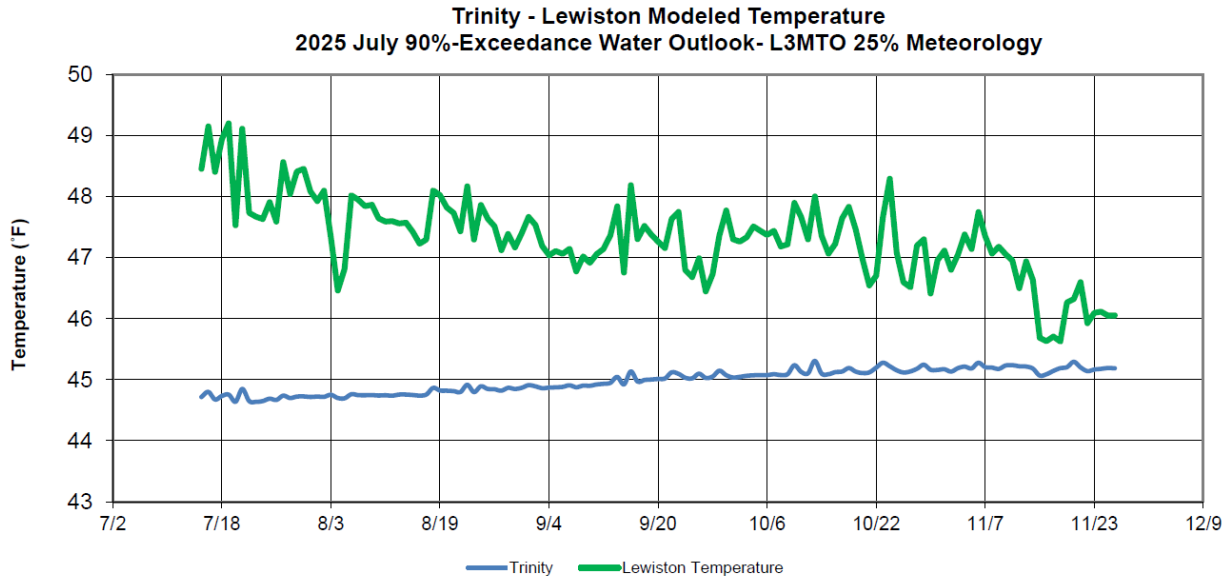


Figure 25. Trinity – Lewiston Modeled Temperature, 2025 July 90% Exceedance Water Outlook – L3MTO 25% Meteorology.

This figure shows modeled temperature in degrees Fahrenheit for Trinity and Lewiston Dams from 7/2 to 12/9 in percent exceedances. The modeled temperature at Lewiston is shown as a green line, while the modeled temperature of Trinity is shown as a blue line.

BUREAU OF RECLAMATION

Facilitated Adoption, Session 6

Central Valley Project Water Temperature Modeling Platform

Sacramento River Group

July 24, 2025

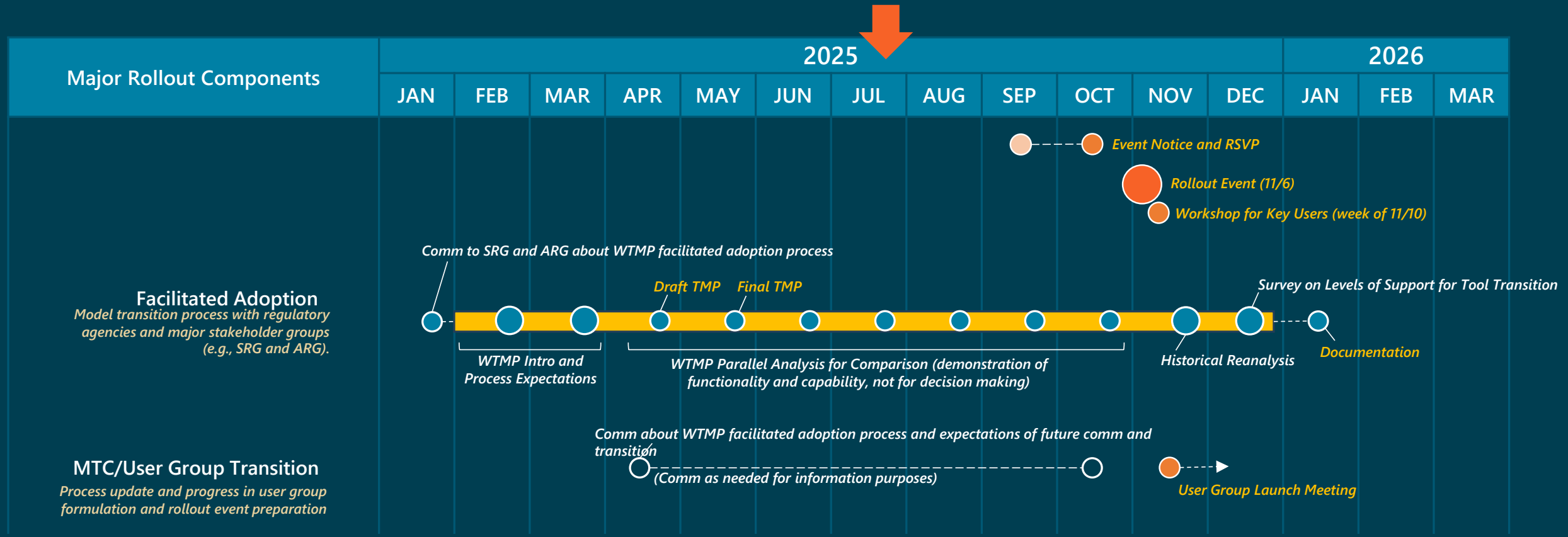
CVP Water Temperature Modeling Platform (WTMP) Team

- Ambassadors:
  - Randi Field, Central Valley Operations Office
  - Ryan Lucas, Bay-Delta Office
- WTMP Modeling Lead: Mechele Pacheco, Central Valley Operations Office
- Process Support: Yung-Hsin Sun, Sunzi Consulting

WTMP Team

- Bureau of Reclamation Team
  - Central Valley Operations Office
  - Bay-Delta Office
  - Technical Service Center
- Watercourse Engineering Team
  - Resource Management Associates, a GEI Company
  - Eyasco, Inc.
  - Kleinschmidt Group
  - Sunzi Consulting

CVP WTMP Timeline (SRG)



7/24/2025

WTMP Facilitated Adoption

- Reclamation plans to adopt the WTMP as the standard set of tools for supporting CVP temperature management based on the merits.
- Facilitated adoption provides operation groups an opportunity to concur with the determination and support the anticipated model transition.
- This onboarding process is not a review process nor a training course, but for building understanding and confidence for use.

Your input for streamlining applications and future improvements is welcome.

Session Outline

- WTMP Parallel Analyses
- Q&A

Project Website with all detailed information Central Valley Project Water Temperature Modeling Platform

Keswick Dam, Sacramento River, Photo credit: John Hannon, Reclamation

Facilitated Adoption, Session 6

WTMP Parallel Analysis

July Analysis for the Sacramento River Group

7/24/2025

Parallel Analysis for the Sacramento-Trinity River System

- Legacy tool: HEC-5Q
- TMP: Finalized on 6/24
- July analysis:
  - WTMP model is to perform the same analyses with the legacy tool using consistent data *
  - Model: WTMP HEC-ResSim **
  - Some model adjustments are ongoing.
- Reminder: WTMP is setup to evaluate options for complying with the existing regulatory framework

*WTMP's model input needs are not the same as those used by legacy tools; however, consistency will be maintained

** WTMP W2-ResSim is scheduled in August.

Analysis Setup

- Model: *
    1. WTMP ResSim (Trinity, Lewiston, Whiskeytown, Shasta, Keswick, and Sacramento River)
- Initial Shasta Reservoir Temperature Profile: July 15
- Water supply forecast (B-120): May B-120 update issued on June 5 **
- Project operation: July 90% Exceedance Forecast
- Temperature targets: CCR as compliance point with Projected Shasta tailbay temperature target selected for HEC-5Q;
    - Additional scenario: CCR as compliance point with project Shasta tailbay temperature target selected for WTMP ResSim
- Meteorological Data: L3MTO Equivalent
- TCD gate positions: Model selection

*WTMP W2-ResSim model is scheduled for later sessions.
** Typically, no additional update after June.

Analysis Setup Summary

Group 1

Assumption	HEC-5Q	WTMP ResSim	WTMP ResSim
Initial Shasta Reservoir Temperature Profile Date	7/15	same	same
Water supply forecast (B-120)	May B-120 update issued on June 5	same	same
Project Operations	Draft July 90% Exceedance Forecast	same	same
Meteorology	L3MTO	L3MTO Equivalent	L3MTO Equivalent
Temperature Compliance Point	CCR	same	same
Shasta Tailbay temperature target	Per HEC-5Q	Per HEC-5Q	Per WTMP ResSim
TCD Gate Positions	Model Selection	same	same

Group 2

*WTMP W2-ResSim model scheduled in August

Result Comparison Setup, Indicated by Set Number

Comparison Topic	HEC-5Q	WTMP ResSim (based on HEC-5Q Shasta Tailbay temperature need projected per CCR Target Temperature)	WTMP ResSim (based on WTMP ResSim Shasta Tailbay temperature need projected per CCR Target Temperature)
Water Temp per location	-N/A	N/A	N/A
(1) Below Shasta Dam	1.1	1.1 1.2	 1.2
(2) Below Keswick Dam	2.1	2.1 2.2	 2.2
(3) Sacramento River at Clear Creek	3.1 3.3	3.1 3.2	 3.2 3.3
(4) Balls Ferry Bridge	4.1	4.1 4.2	 4.2
Reservoir Isothermobath	N/A	N/A	N/A
(1) Shasta Reservoir	5a	5b	5c

- *WTMP W2-ResSim model scheduled in August*

Set 1.1: Water Temp below Shasta Dam

(Based on HEC-5Q Shasta Tailbay temperature need projected per CCR Target Temperature)

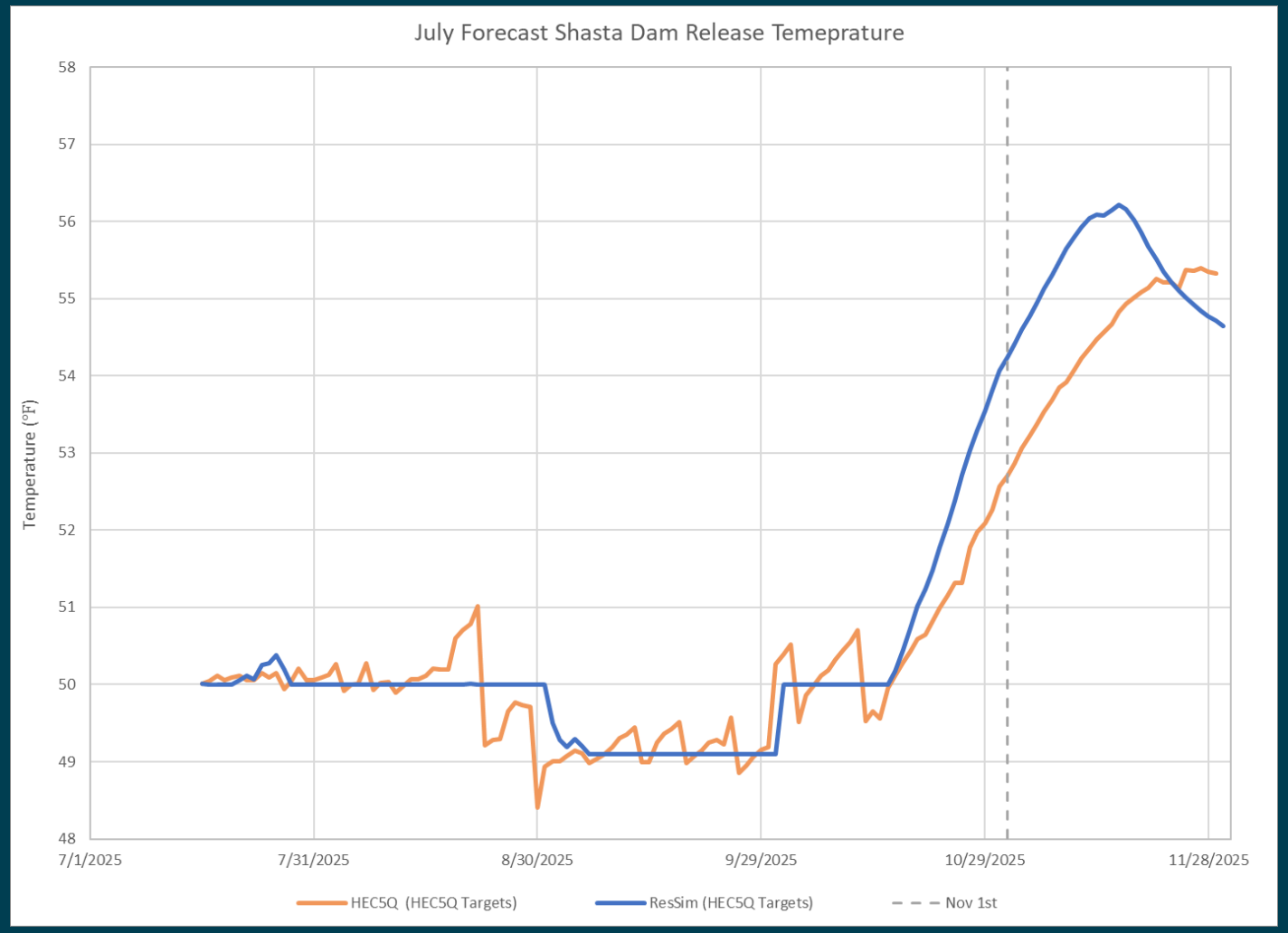


Figure 1. July Forecast of Shasta Dam Releases Temperature

Set 2.1: Water Temp below Keswick Dam

(Based on HEC-5Q Shasta Tailbay temperature need projected per CCR Target Temperature)

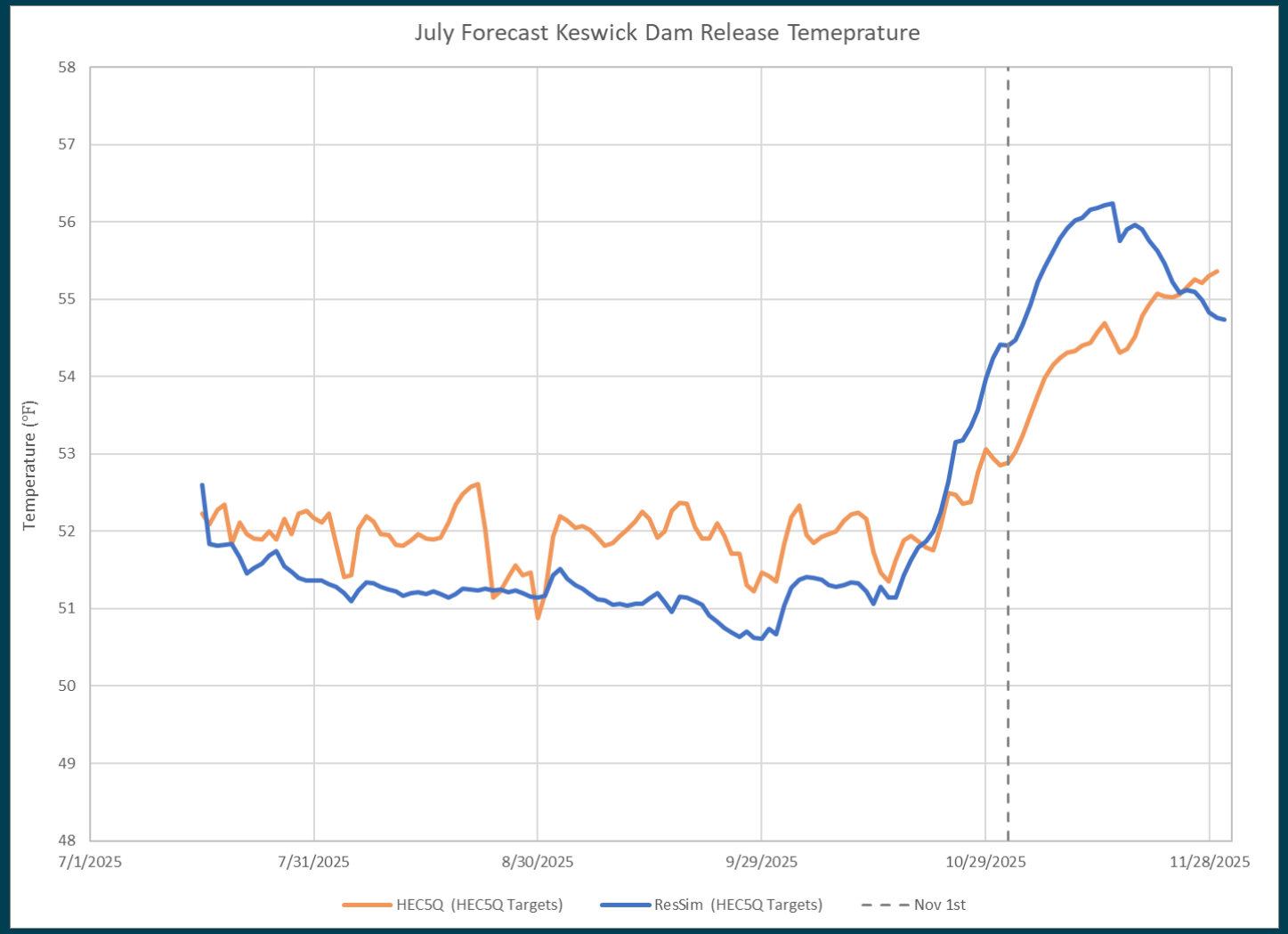


Figure 2. July Forecast of Keswick Dam Releases Temperature

Set 3.1: Water Temp at Clear Creek

(Based on HEC-5Q Shasta Tailbay temperature need projected per CCR Target Temperature)

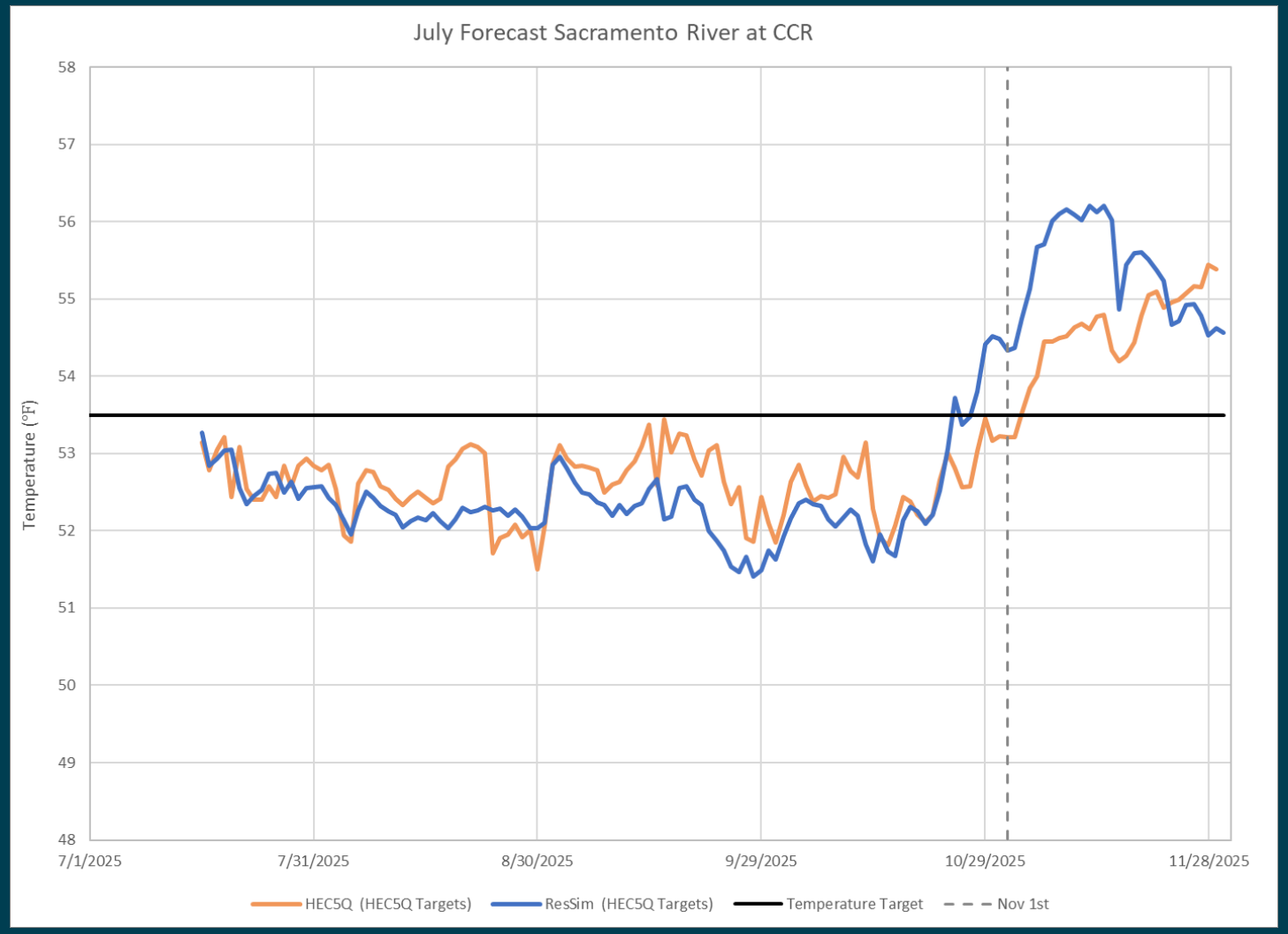


Figure 3. July Forecast of Sacramento River Temperature at Clear Creek

Set 4.1: Water Temp at Balls Ferry Bridge

(Based on HEC-5Q Shasta Tailbay temperature need projected per CCR Target Temperature)

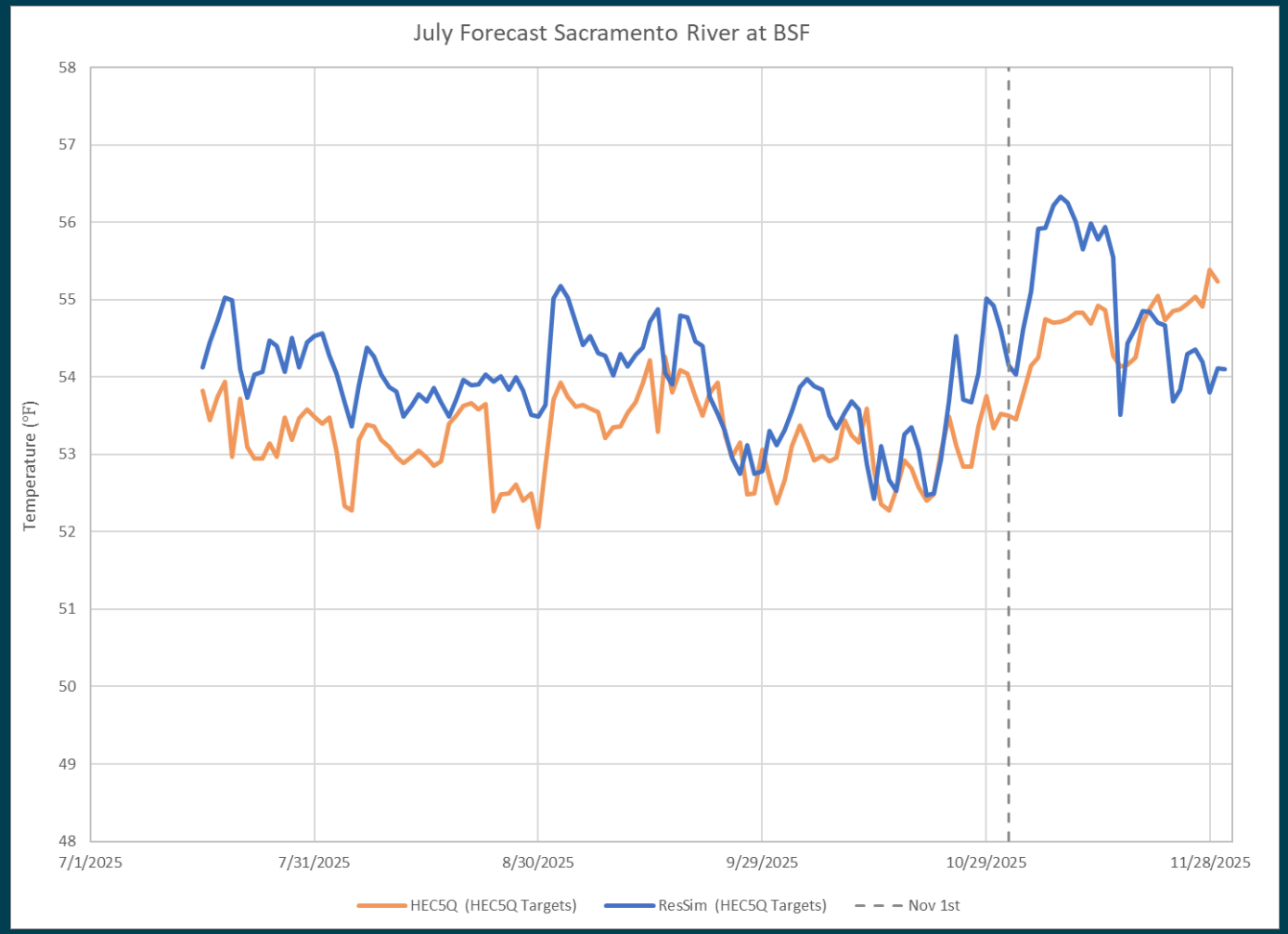


Figure 4. July Forecast of Sacramento River Temperature at Balls Ferry Bridge

Set 1.2: Water Temp below Shasta Dam

(WTMP ResSim Only; Based on HEC-5Q and WTMP ResSim Shasta Tailbay temperature need projected per CCR Target Temperature)

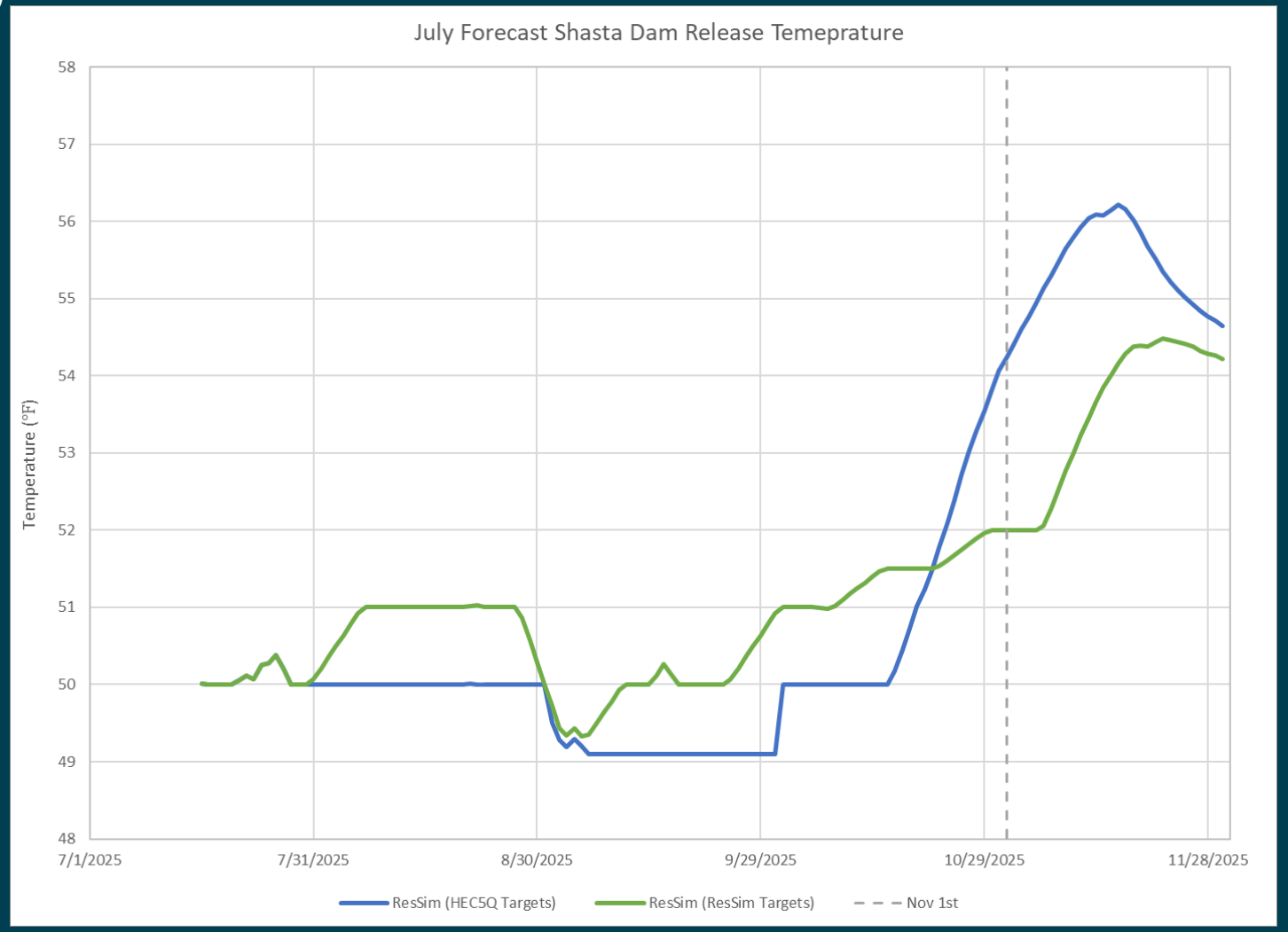


Figure 5. July Forecast of Shasta Dam Release Temperature

Set 2.2: Water Temp below Keswick Dam

(WTMP ResSim Only; Based on HEC-5Q and WTMP ResSim Shasta Tailbay temperature need projected per CCR Target Temperature)

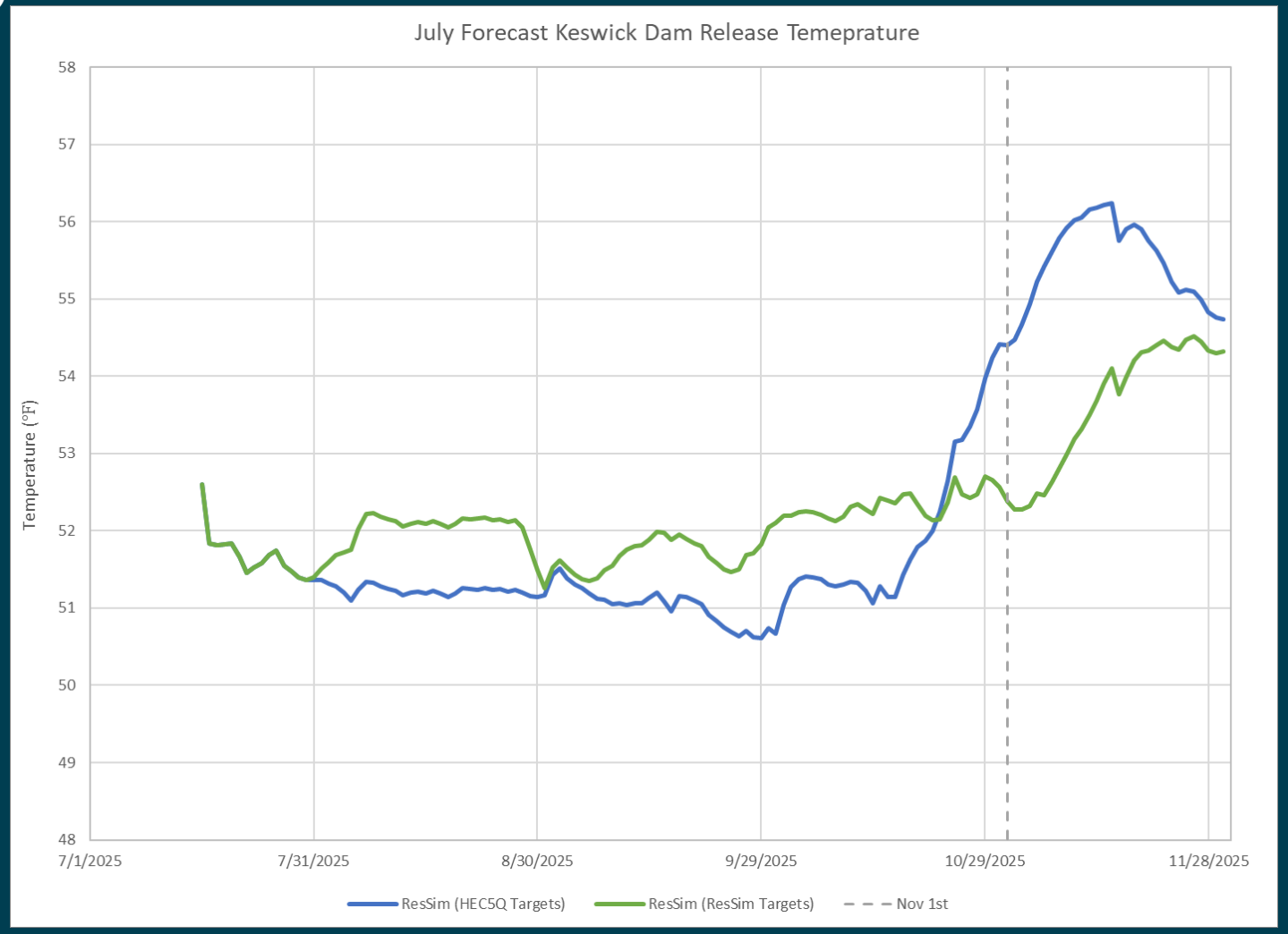


Figure 6. July Forecast of Keswick Dam Release Temperature

Set 3.2: Water Temp at Clear Creek

(WTMP ResSim Only; Based on HEC-5Q and WTMP ResSim Shasta Tailbay temperature need projected per CCR Target Temperature)

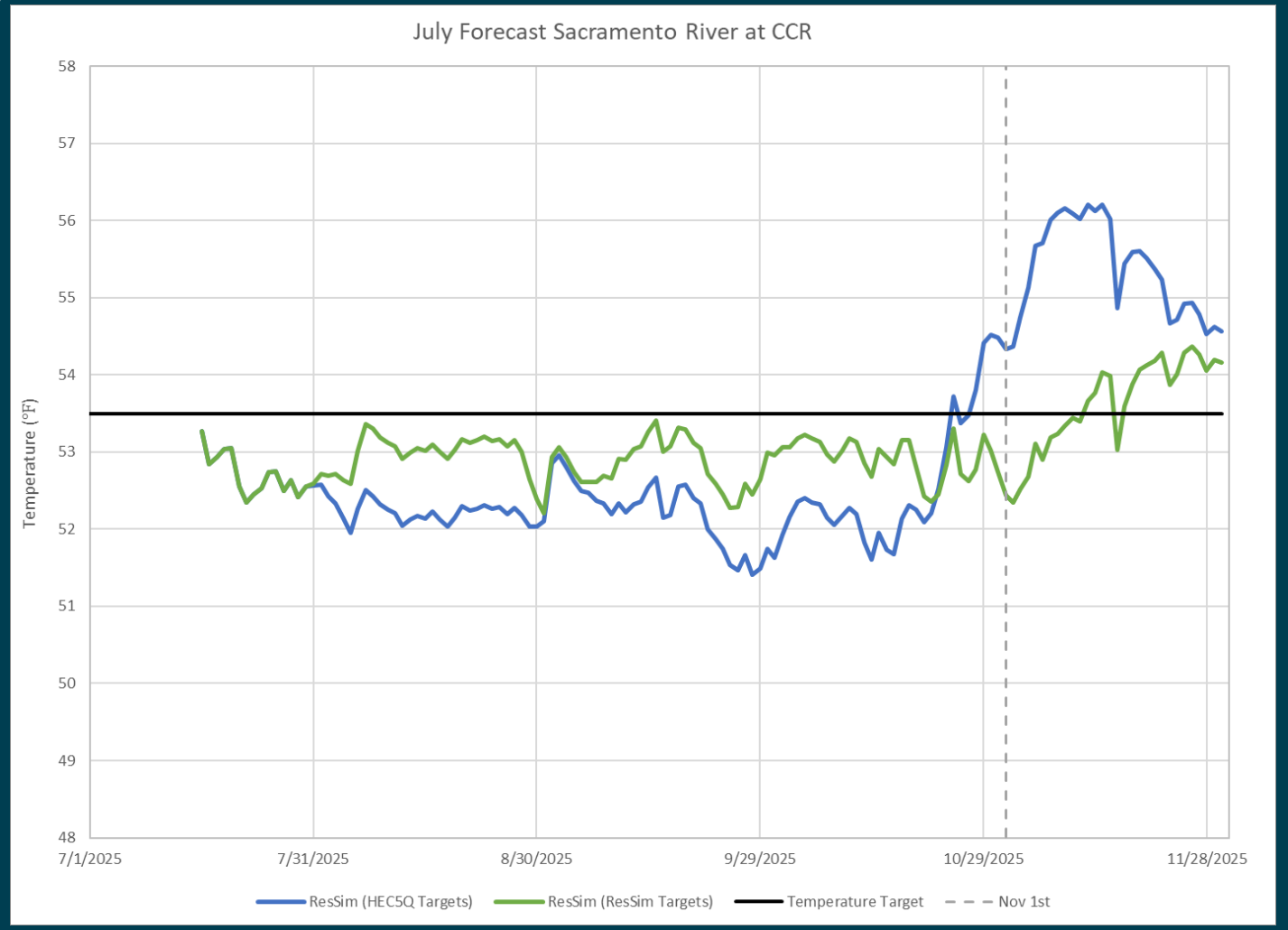


Figure 7. July Forecast of Sacramento River Temperature at Clear Creek

Set 4.2: Water Temp at Balls Ferry Bridge

(WTMP ResSim Only; Based on HEC-5Q and WTMP ResSim Shasta Tailbay temperature need projected per CCR Target Temperature)

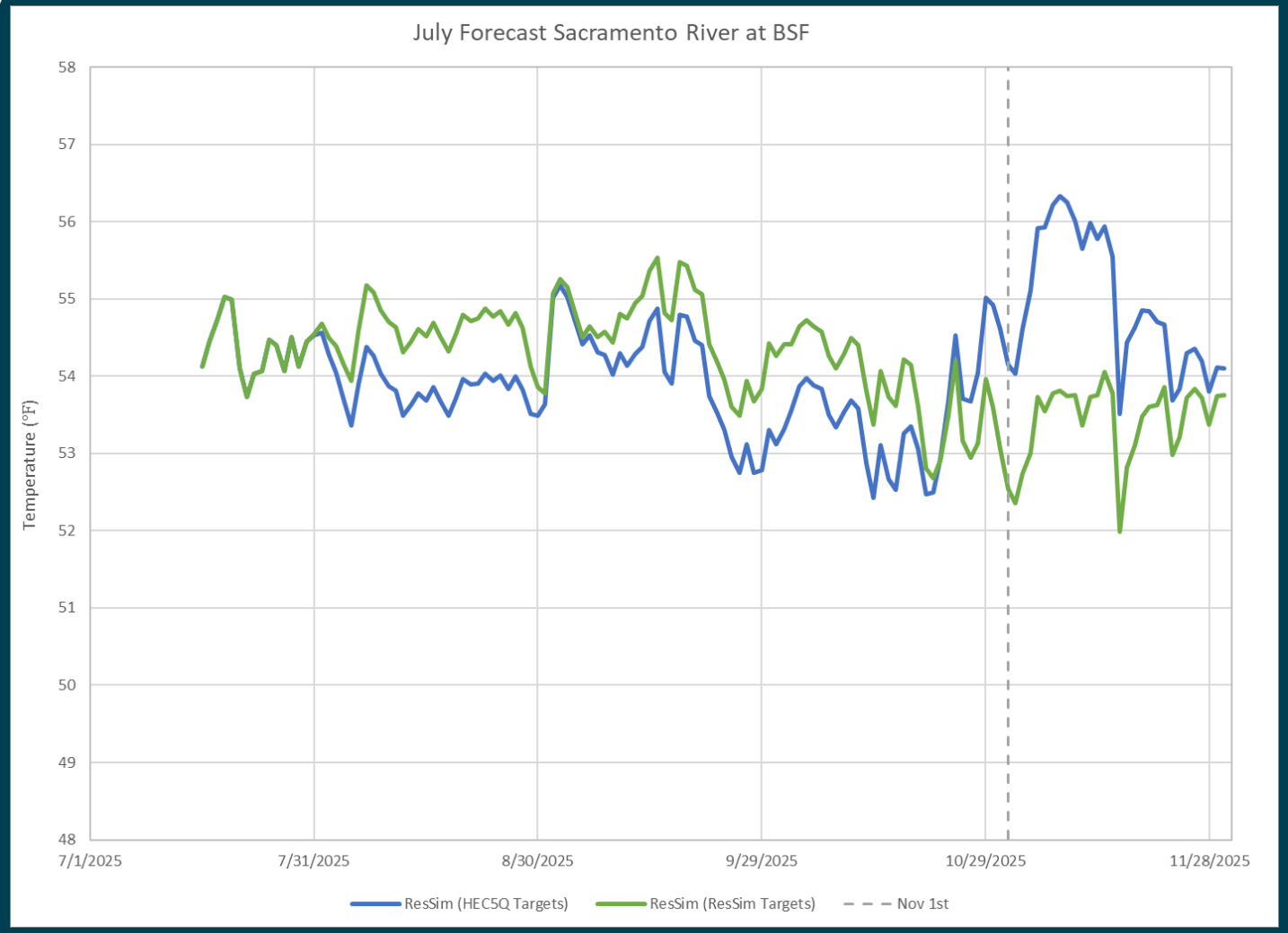


Figure 8. July Forecast of Sacramento River Temperature at Balls Ferry Bridge

Set 3.3: Water Temp at Clear Creek

(HEC-5Q and WTMP ResSim using Corresponding Shasta Tailbay temperature need projected per CCR Target Temperature)

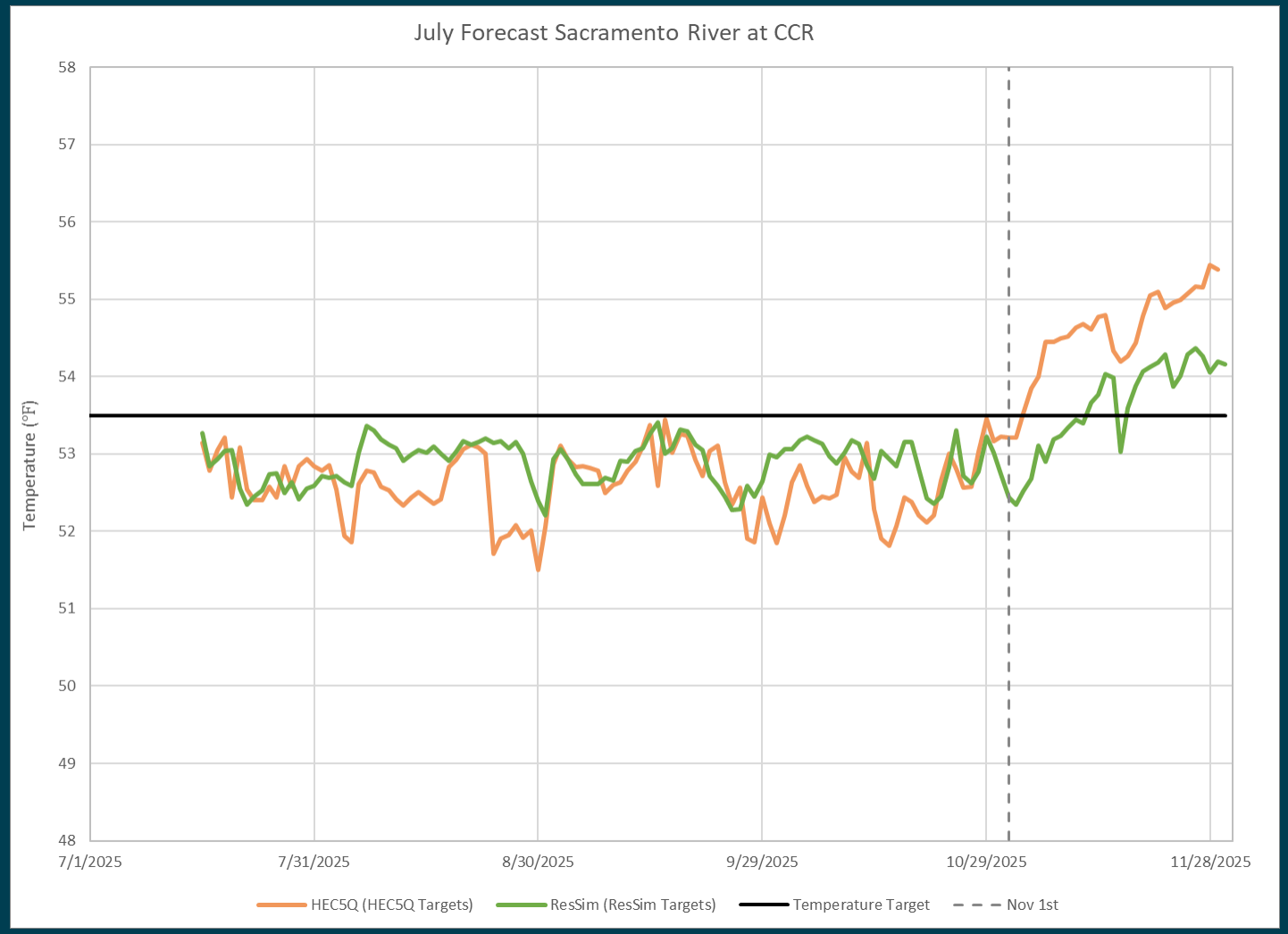


Figure 9. July Forecast of Sacramento River Temperature at Clear Creek

Set 5a: Isothermobath of Shasta Reservoir

- HEC-5Q

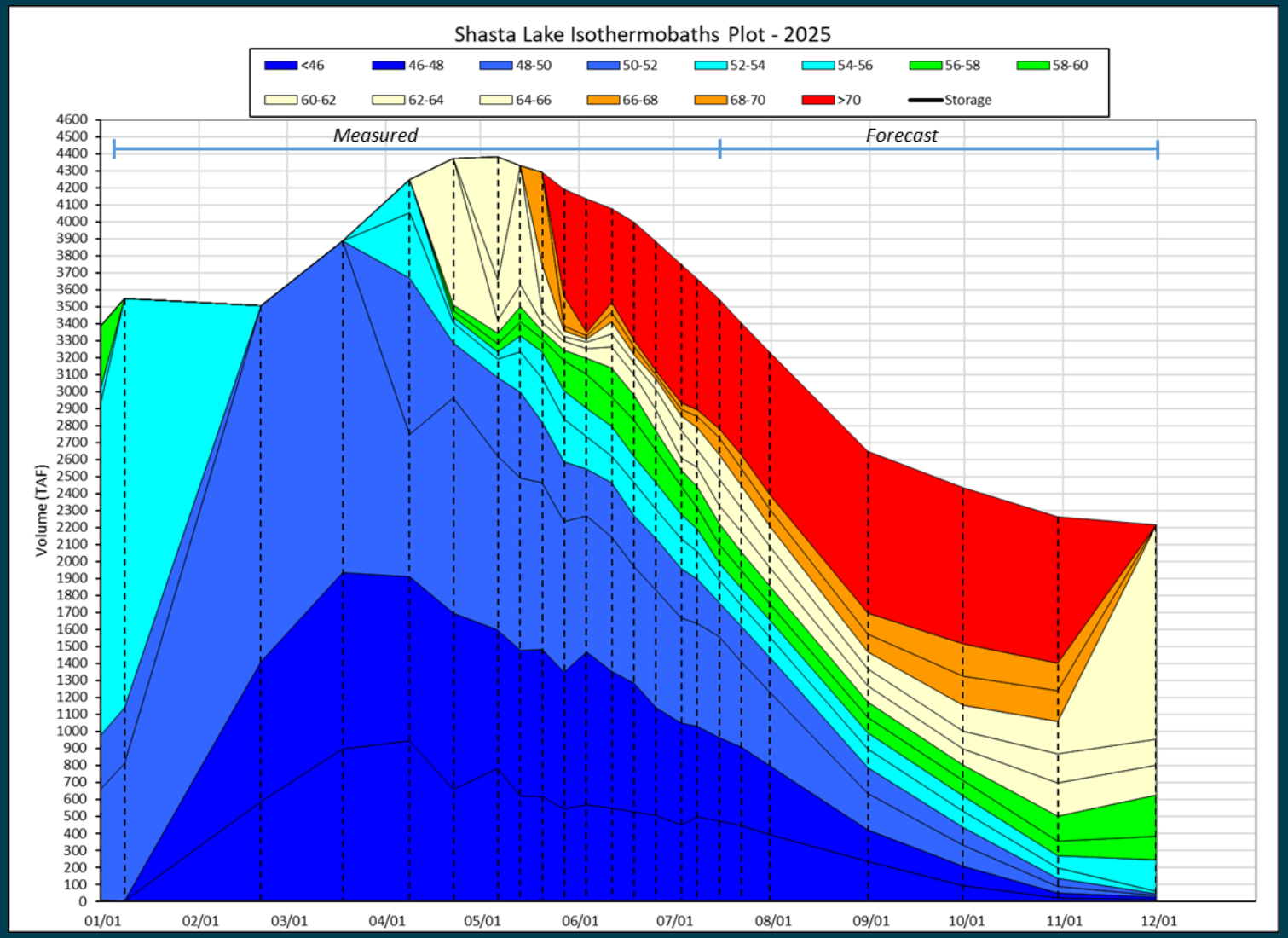


Figure 10. 2025 Shasta Lake Isothermobaths (January to December, 2025)

Set 5b: Isothermobath of Shasta Reservoir

- WTMP ResSim (Based on HEC-5Q Shasta Tailbay temperature need projected per CCR Target Temperature)

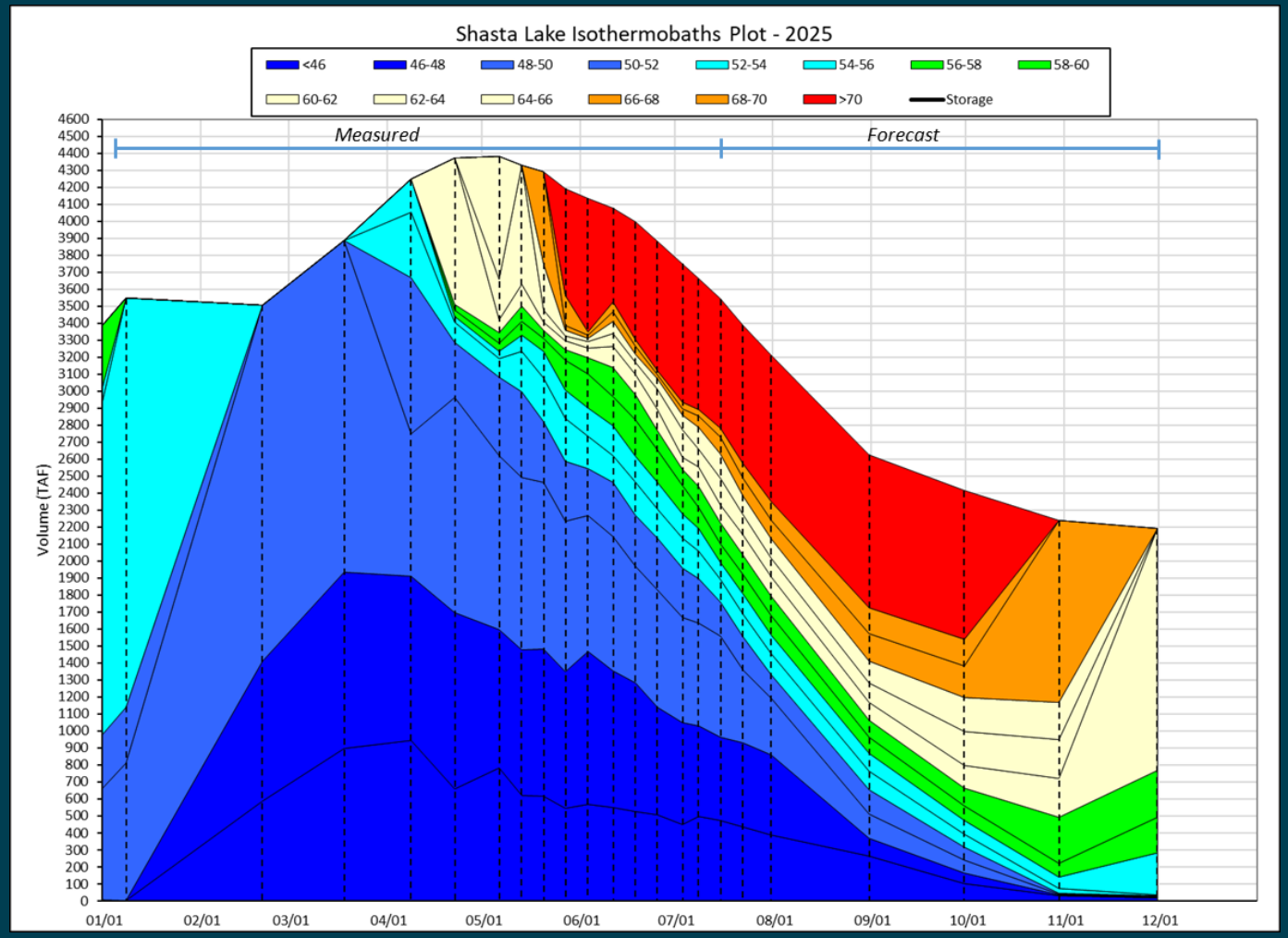


Figure 11. 2025 Shasta Lake Isothermobaths (January to December, 2025)

WTMP models have temperature information on daily/hourly timestep. The current display of forecast information matches the style of the measured. Additional refinements are in progress.

Set 5c: Isothermobath of Shasta Reservoir

- WTMP ResSim (Based on WTMP ResSim Shasta Tailbay temperature need projected per CCR Target Temperature)

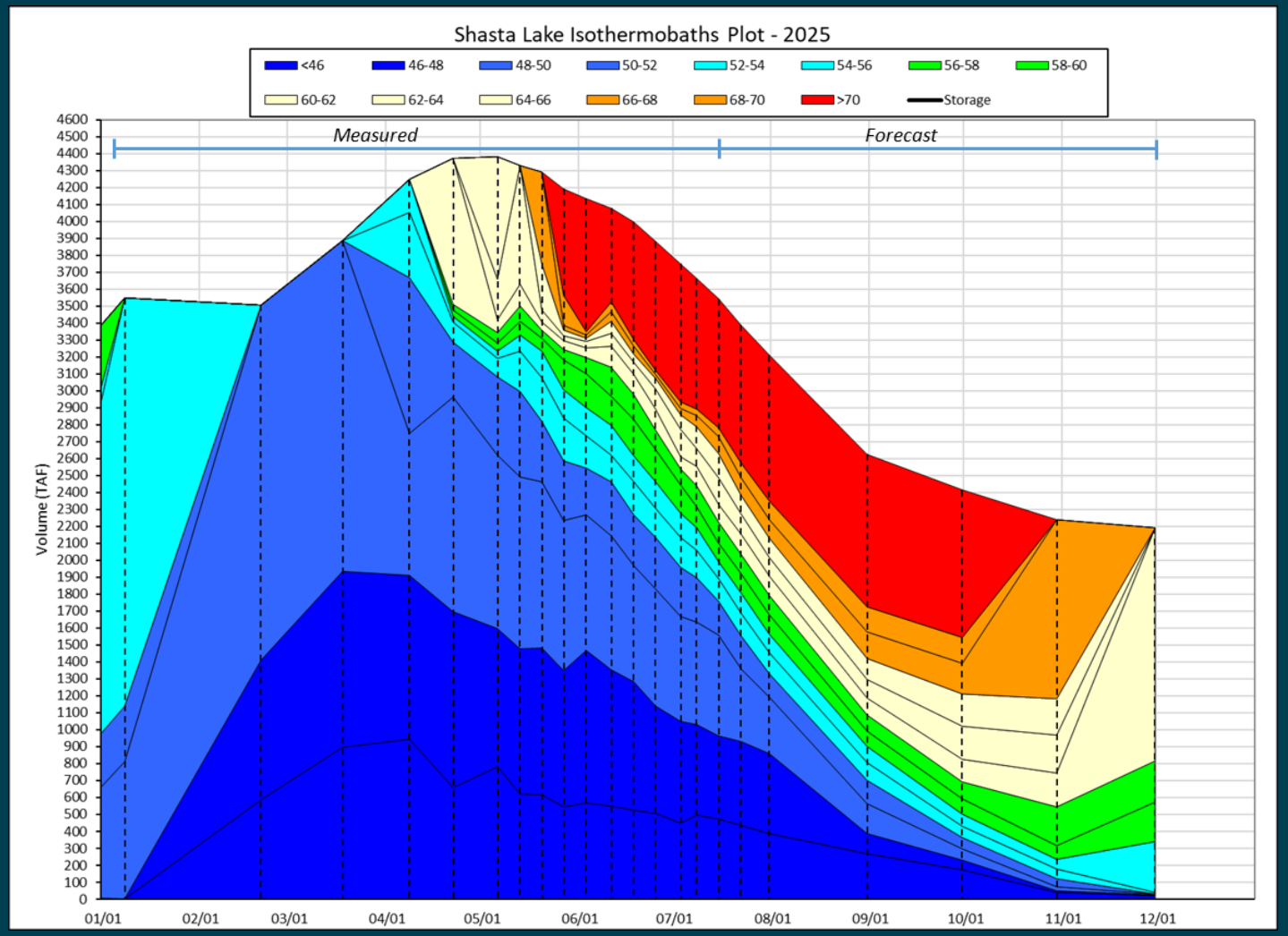


Figure 12. 2025 Shasta Lake Isothermobaths (January to December, 2025)

WTMP models have temperature information on daily/hourly timestep. The current display of forecast information matches the style of the measured. Additional refinements are in progress.

WTMP Parallel Analysis – July Experience

Topic	HEC-5Q	WTMP ResSim (based on HEC-5Q Shasta Tailbay temperature need projected per CCR Target Temperature)	WTMP ResSim (based on WTMP ResSim Shasta Tailbay temperature need projected per CCR Target Temperature)
First Side Gate Use	8/31	9/5	9/17
Full Side Gate Use	10/14	10/14	11/4
EOS CWP (<56°F) (TAF)	618	472	504
EOS Shasta Storage (MAF)	2.41	2.41	2.41

- *WTMP W2-ResSim model scheduled in August*

WTMP Parallel Analysis – July Experience (cont'd)

- Takeaways
  - Consistent observed differences in simulated river temperatures and the end-of-season cold-water pool volume with similar simulated resulting river temperature at CCR around the target temperature for compliance purposes.
    - Overall, many factors make the direct comparison challenging and thus, we focused on if the WTMP model is functioning as it should.
    - WTMP ResSim model functions as expected based on calibrated parameters and model specifications. The model was calibrated using data after 2000.

- Comparison between WTMP ResSim runs using Shasta tailbay release temperature targets for HEC-5Q and for WTMP ResSim
  - Without being constrained by HEC-5Q Shasta tailbay release temperature, WTMP ResSim shows improved conditions to reflect the intent of temperature management at CCR throughout the season and in the later fall.
  - Recall that the goal of the WTMP is to improve the model applications to support temperature management, not reproducing results from the legacy model.

WTMP Parallel Analysis – July Experience (cont'd)

- Anticipated sharing in future sessions
  - WTMP W2-ResSim Results
  - TCD gate setting on the isothermobath plots

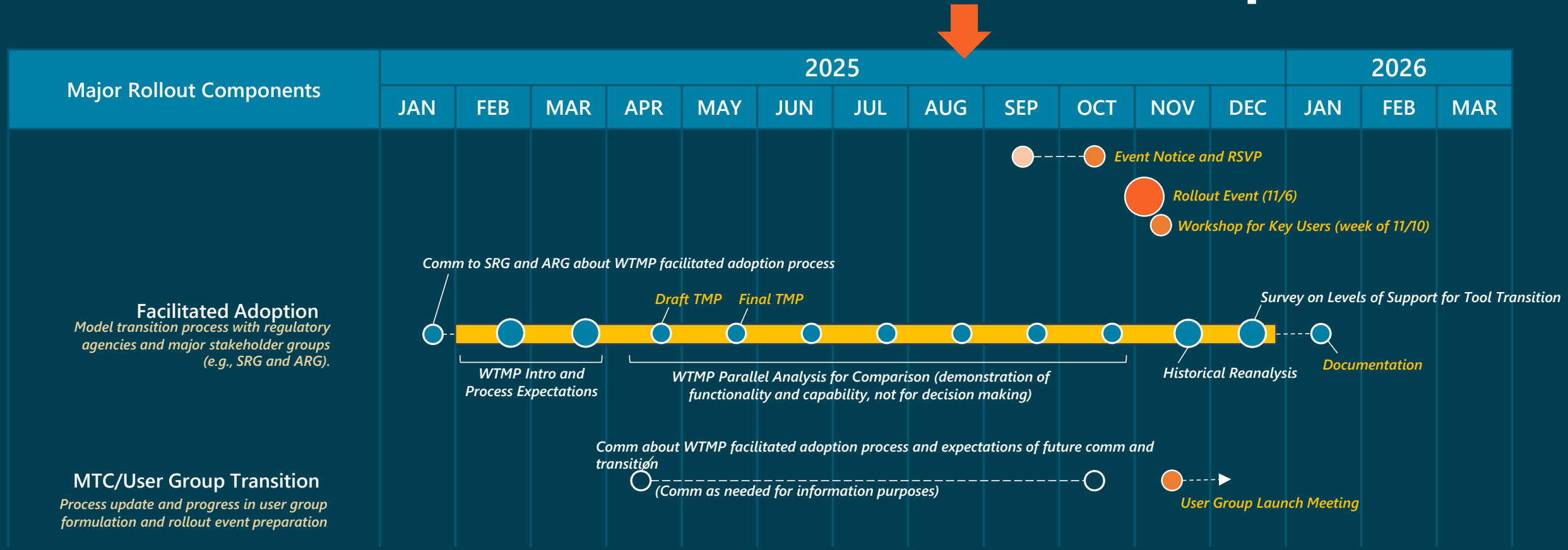
Discussion

Nimbus Dam, American River, Photo credit: John Hannon, Reclamation

Facilitated Adoption, Session 6

Next Steps

CVP WTMP Timeline (SRG), Next Steps



WTMP Web Page

- Fact Sheets
- Presentations
- Documentation
- Peer Review Report links
- Supporting Materials links

Questions for the WTMP Team?

- ARG: Randi Field, RField@usbr.gov
- SRG: Tom Patton, tpatton@usbr.gov

We will be back in August.

BUREAU OF RECLAMATION