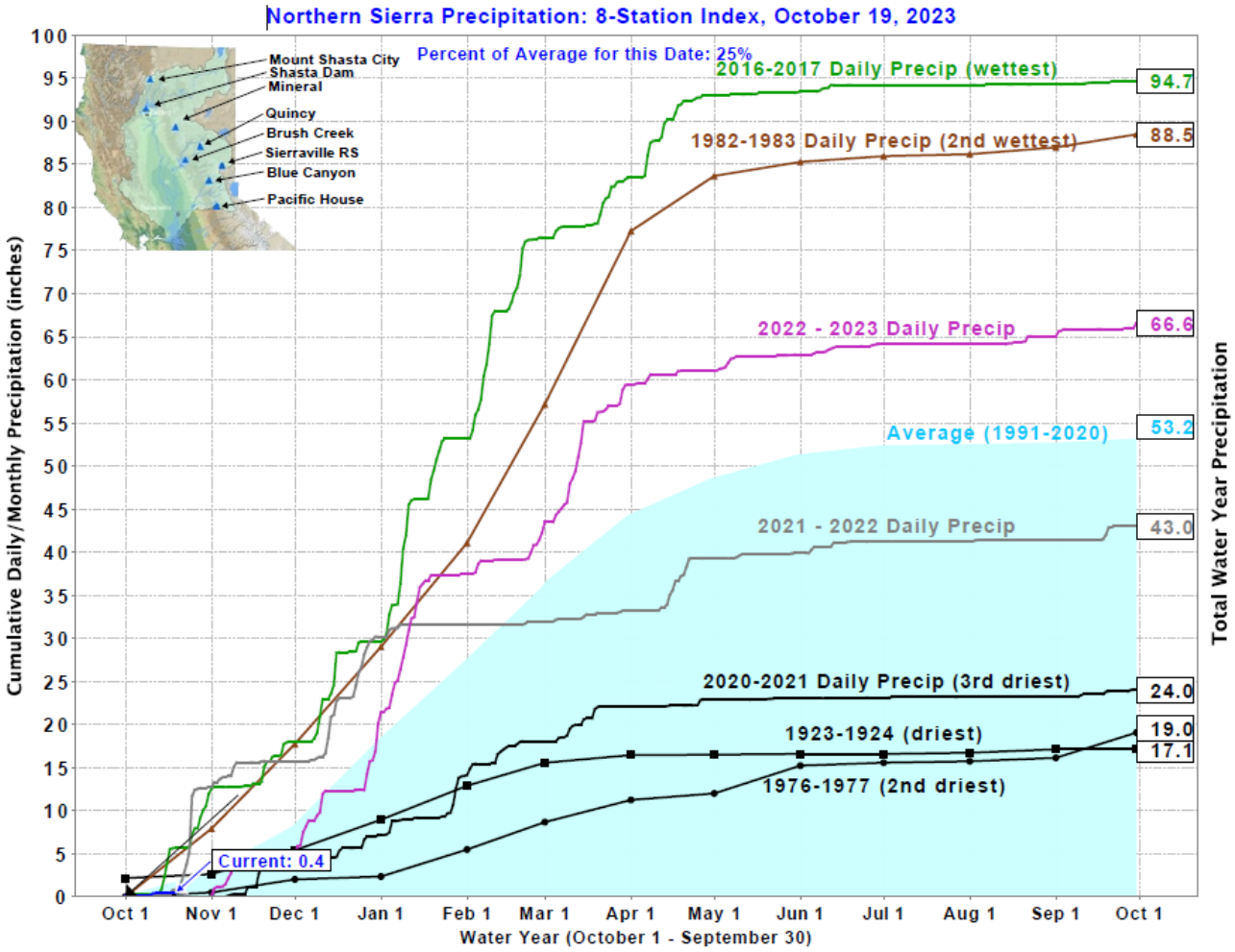
BUREAU OF RECLAMATION

Sacramento River Temperature Task Group Meeting Packet

October 19, 2023



Northern Sierra Precipitation: 8-Station Index, October 19, 2023

This figure shows a line graph precipitation at the Northern Sierra 8-station Index. The graph includes the current cumulative daily and monthly precipitation, 61.0 (127% 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), 2018-2019 (70.7), 2021-2022 (43.0), 2019-2020 (31.7), 2020-2021 (24.0 3rd driest), 1976-1977 (19.0 2nd driest), and 1923-1924 (17.1 driest).

Daily Central Valley Project Water Supply Report

United States Department of the Interior
U.S. Bureau of Reclamation, Central Valley Project-California
Daily CVP Water Supply Report

October 18, 2023
Run Date: October 19, 2023

Reservoir Releases in Cubic Feet Per Second

Reservoir	Dam	WY 2023	WY 2024	15-Year Median
Trinity	Lewiston	296	297	303
Sacramento	Keswick	3,955	6,109	6,112
Feather	Oroville (SWP)	2,400	2,450	2,400
American	Nimbus	1,418	2,446	1,510
Stanislaus	Goodwin	307	422	930
San Joaquin	Friant	449	382	381

Storage in Major Reservoirs in Thousands of Acre-Feet

Reservoir	Capacity	15-Yr Avg	WY 2023	WY 2024	% O 15 Yr Avg
Trinity	2,448	1,236	541	1,243	101
Shasta	4,552	2,303	1,454	3,224	140
Folsom	977	424	316	598	141
New Melones	2,420	1,260	600	1,893	150
Fed. San Luis	966	316	208	0	0
Total North CVP	11,363	5,539	3,119	6,958	126
Millerton	521	263	331	156	59
Oroville (SWP)	3,538	1,575	1,165	2,485	158

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

Reservoir	Current WY 2024	WY 1977	WY 1983	15-Yr Avg	% O 15 Yr Avg
Trinity	8	5	5	5	161
Shasta	101	133	139	107	94
Folsom	36	39	62	35	104

Reservoir	Current WY 2024	WY 1977	WY 1983	15-Yr Avg	% O 15 Yr Avg
New Melones	37	---	30	24	149
Millerton	74	20	94	38	196

Accumulated Precipitation for Water Year to Date in Inches

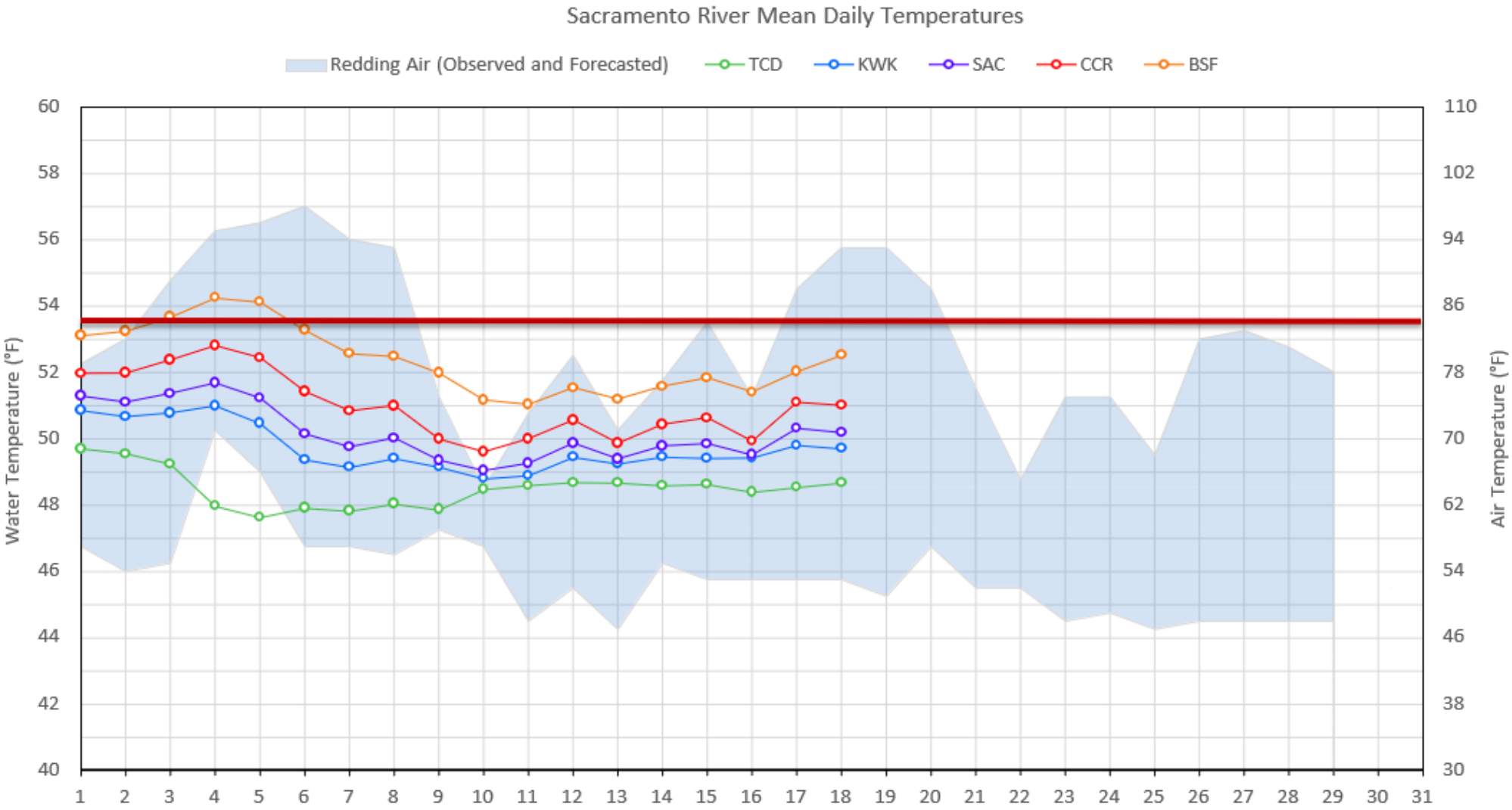
Reservoir	Current WY 2024	WY 1977	WY 1983	Avg (N Yrs)	% of Avg	Last 24 Hours
Trinity at Fish Hatchery	0.24	0.13	0.39	0.65 (63)	37	0.04
Sacramento at Shasta Dam	0.40	0.07	0.24	1.14 (68)	35	0.00
American at Blue Canyon	0.00	0.87	0.73	1.25 (49)	0	0.00
Stanislaus at New Melones	0.29	---	0.30	0.51 (46)	57	0.00
San Joaquin at Huntington LK	0.11	1.20	0.00	0.92 (50)	12	0.00

Sacramento River Station Temperature Summary Report

Date	MDWT TCD[1]	MDWT SHD	MDWT SPP[1]	MDWT KWK	MDWT SAC[2]	MDWT CCR	MDWT BSF	MDWT BND	MDWT RBD	MDWT IGO	MDWT LWS	MDWT DGC[3]	MDWT NFH	MDR Shasta Genera-tion	MDR Spring Creek PP	MDR Keswick Total	MDAT RDD	MDAT BSF	MDAT RDB
Sep	49.6	48.6	58.4	51.0	51.5	52.3	54.0	55.5	57.0	55.8	50.2	55.2	59.5	6434	732	7370	74.3	68.9	70.2
10/01	49.7	48.5	58.2	50.8	51.3	52.0	53.1	53.9	55.1	53.1	49.4	52.8	56.2	6008	509	6403	66.5	62.7	64.8
10/02	49.5	48.4	58.2	50.7	51.1	52.0	53.2	54.2	55.3	53.2	49.2	51.8	55.4	5412	499	6412	68.0	63.5	65.2
10/03	49.2	48.4	58.1	50.8	51.4	52.4	53.7	54.7	55.9[A]	53.9	49.6	53.3	56.8	5774	586	6397	72.0	68.3	70.7
10/04	48.0	47.5	58.2	51.0	51.7	52.8	54.2[A]	55.5[A]	56.7	54.1	49.7	53.5	57.3	5897	505	6420	83.0	76.5	76.0
10/05	47.6	47.1	58.1	50.4	51.2	52.4	54.1	55.5[A]	56.9	54.0	49.8	53.3	57.0	5630	505	6414	81.0	70.4	74.4
10/06	47.9	47.2	58.1	49.4	50.1	51.4	53.3	55.0[A]	56.5	54.0	50.0	53.3	56.9	6026	493	6103	77.5	69.6	73.5
10/07	47.8	47.0	58.1	49.1	49.7	50.8	52.6	54.2	55.7	53.9	50.0	53.4	56.9	5456	503	6092	75.5	68.4	71.6
10/08	48.0	47.1[A]	58.1	49.4	50.0	51.0	52.5	53.9	55.3	53.9	50.1	53.4	56.9	5655	504	6095	74.5	67.5	72.0
10/09	47.8	47.0	58.0	49.1	49.3	50.0	52.0	53.6	54.9	53.4	49.9	52.8	55.8	5818	505	6092	67.0	62.5	65.7
10/10	48.5	47.4	58.0	48.8	49.0	49.6	51.1	52.5	53.7	53.3	49.8	52.3	55.2	5372	496	6095	60.5	60.5	61.9
10/11	48.6	47.5	57.9	48.9	49.2	50.0	51.0	51.9	52.8	53.2	49.6	51.6	54.4	5310	497	6132	60.5	57.5	60.7
10/12	48.7	47.6[A]	57.9	49.4	49.9	50.6	51.5	52.4	53.1	53.4	49.4	51.3	53.8	5695	498	6100	66.0	59.0	62.4
10/13	48.6	47.6	57.9	49.2	49.4	49.9	51.2	52.1[A]	53.0	53.0	49.5	49.8	52.2	5759	504	6139	59.0	55.7	59.0
10/14	48.6	47.5	57.9	49.4	49.8	50.4	51.6	52.4[A]	52.8	53.9	49.5	51.3	52.7	5459	494	6103	66.0	61.5	62.9
10/15	48.6	47.5[A]	57.8	49.4	49.8	50.6	51.8	52.8	53.7	54.2	49.3	52.1	55.1	5738	440	6093	68.5	61.0	64.4
10/16	48.4	47.4	57.7	49.4	49.5	49.9	51.4	52.6[A]	53.6	54.0	49.1	51.3	54.1	5017	708	6099	64.0	59.8	63.2
10/17	48.5	47.6	57.7	49.8	50.3	51.1	52.0	52.7	53.3	55.1	49.4	53.1	55.8	5740	737	6098	70.5	64.3	68.1
10/18	48.7	47.7	57.6	49.7	50.2	51.0	52.5	53.6	54.5	55.4	49.2	54.0	56.5	5709	496	6109	73.0	64.3	67.8
Oct	48.5	47.5	58.0	49.7	50.2	51.0	52.4	53.5	54.6	53.8	49.6	52.5	55.5	5638	527	6189	69.6	64.1	66.9
													Total CFS	101475	9479	111396			
													Total AF	201272	18801	220949			

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
MDAT = Mean Daily Air Temperatures (Fahrenheit)
MDR = Mean Daily Release (CFS)
MDWT = Mean Daily Water Temperature (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 Clear Creek River control point (see page 4 for more details)



Sacramento River Mean Daily Temperatures

This figure shows mean Sacramento River daily temperatures in degrees Fahrenheit at Shasta Power Plant and various stations 0.8, 4.8, 9.7, and 25 miles downstream of Keswick Dam for the past 25 days. It also includes a shaded area depicting observed and forecasted air temperatures in degrees Fahrenheit in Redding California.

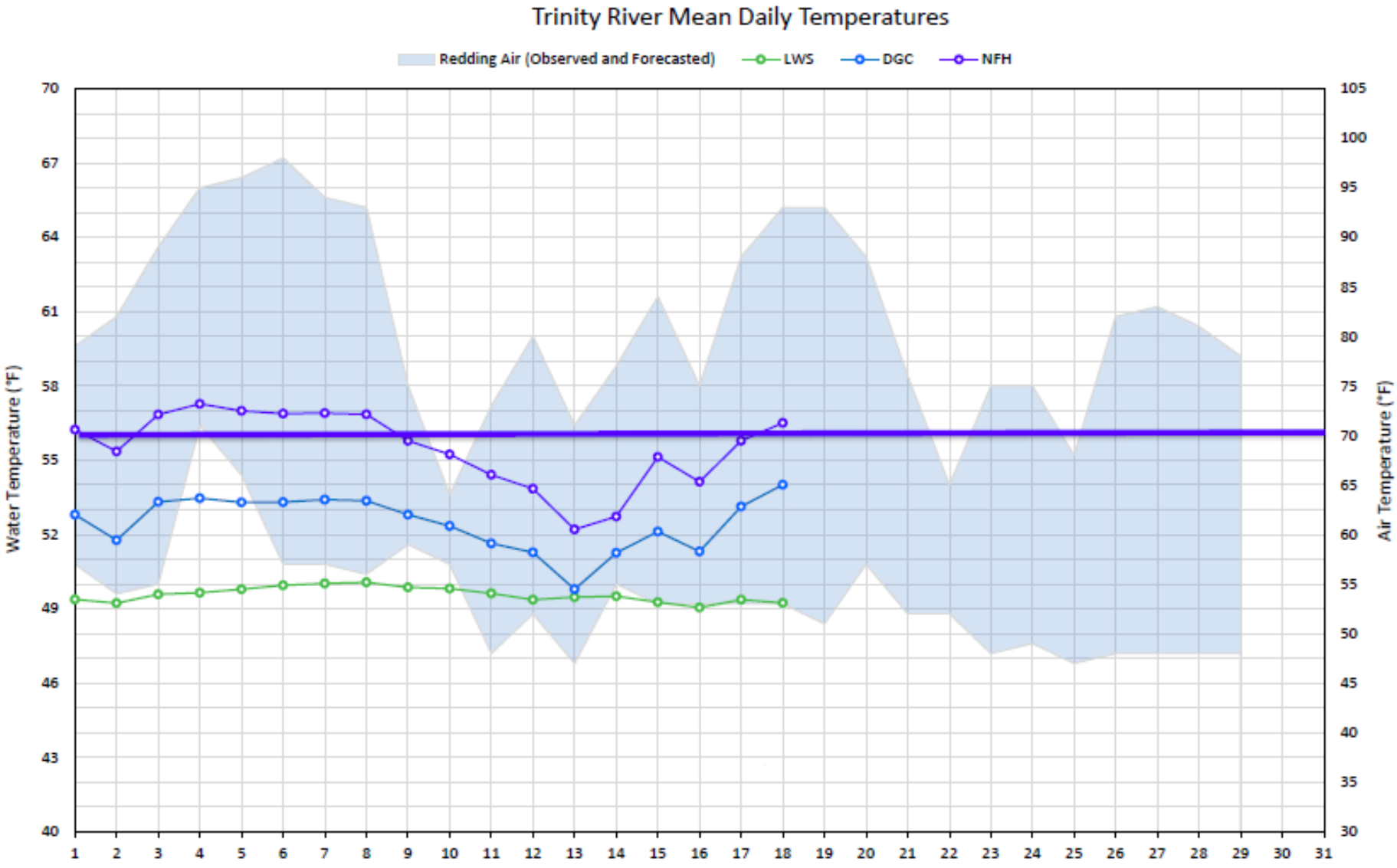
Station Details

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	54.5	06/07/2022	05/14/2023
Sacramento	CCR	53.5	05/14/2023	TBD

Notes: [1] Distances are approximate



Trinity River Mean Daily Temperatures

This figure shows mean Trinity River daily temperatures in degrees Fahrenheit at stations 1.1, 19, and 38 miles downstream of Lewiston Dam for the past 25 days. It also includes a shaded area depicting observed and forecasted air temperatures in degrees Fahrenheit in Redding California.

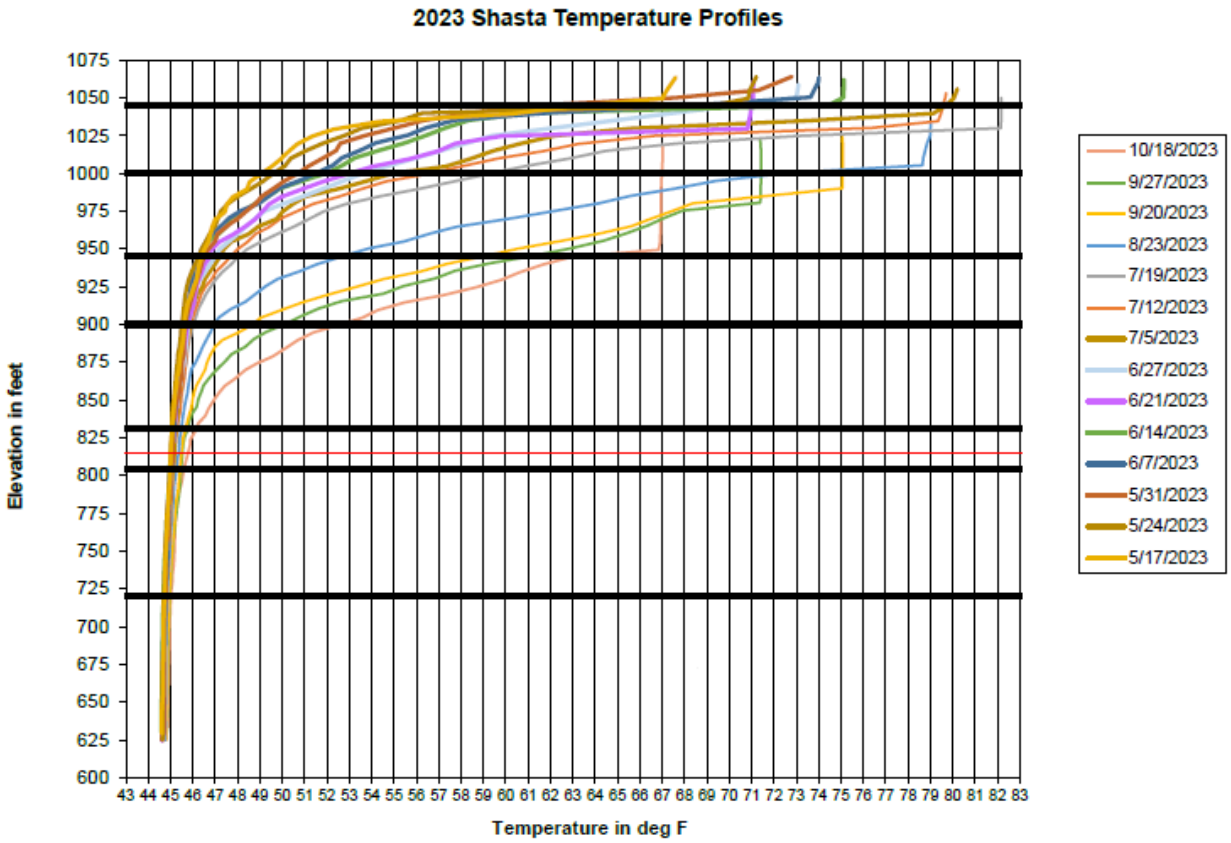
Station Details

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

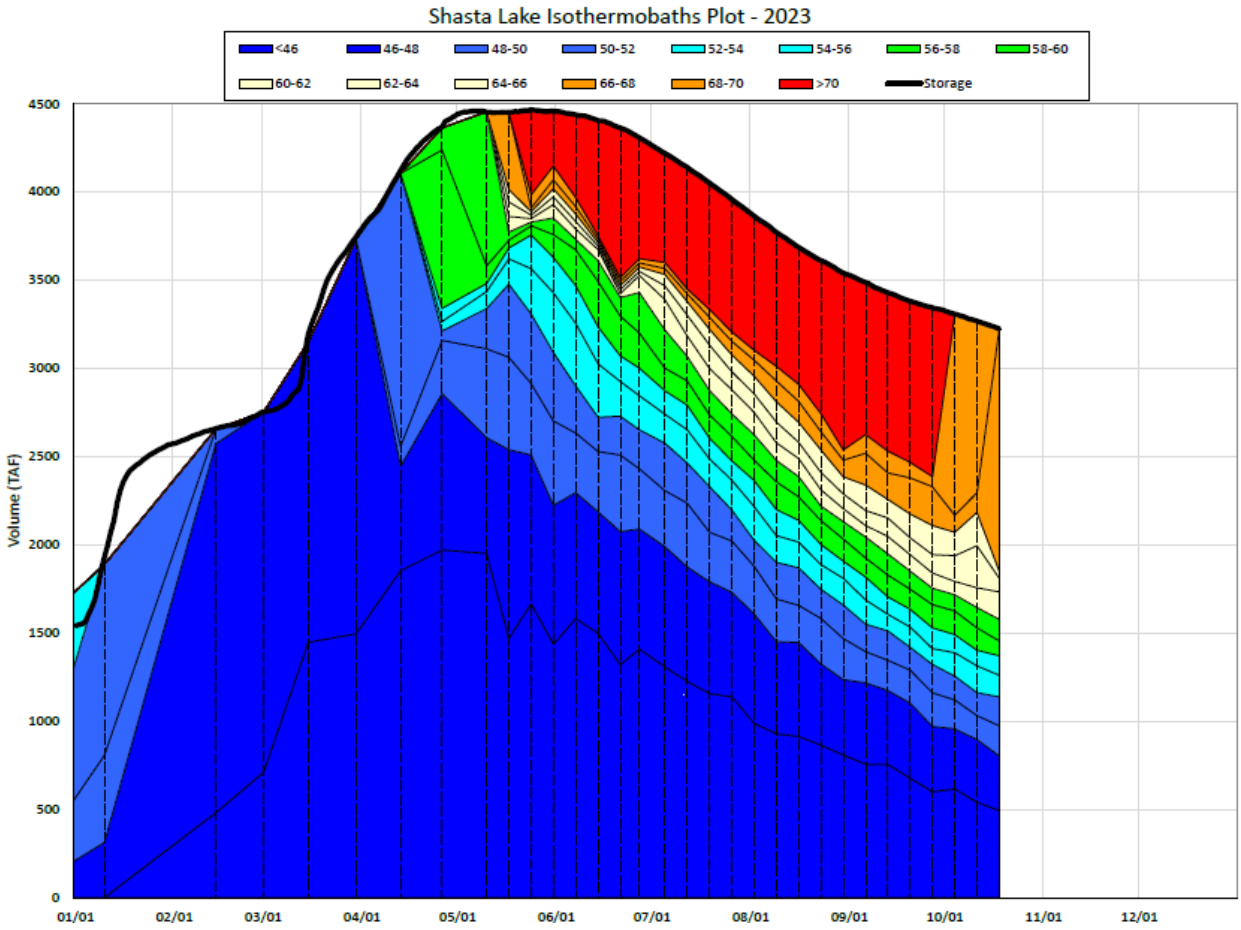
River	Point	Temp (˚F)	Begin Date	End Date
Trinity	DGC	56	Sep-15	Oct-01
Trinity	NFH	56	Oct-01	Dec-31

Notes: [1] Distances are approximate



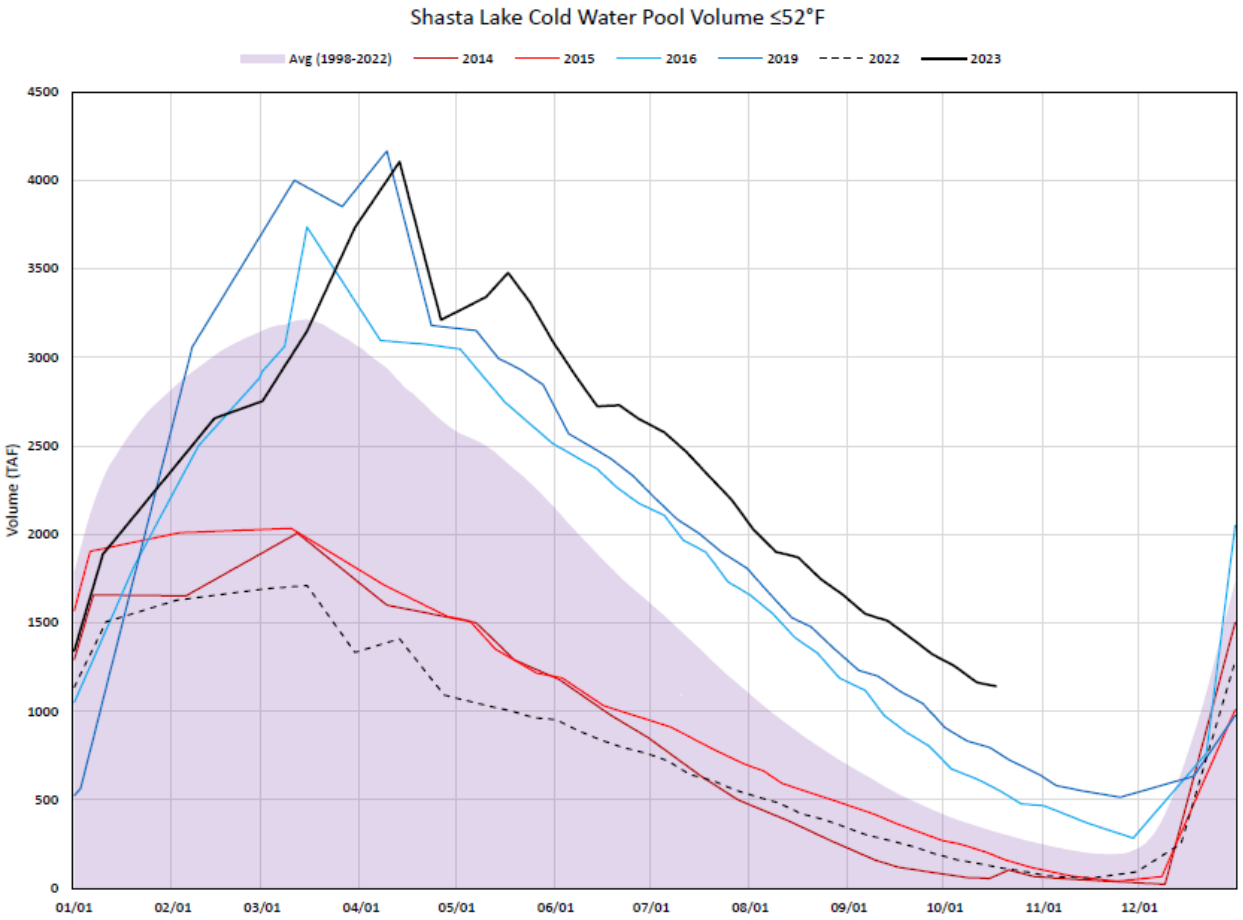
2023 Shasta Temperature Profiles

This figure is a multiple line graph showing Shasta Lake temperature profiles from 05/17-09/27 with lake elevation 600-1075'.



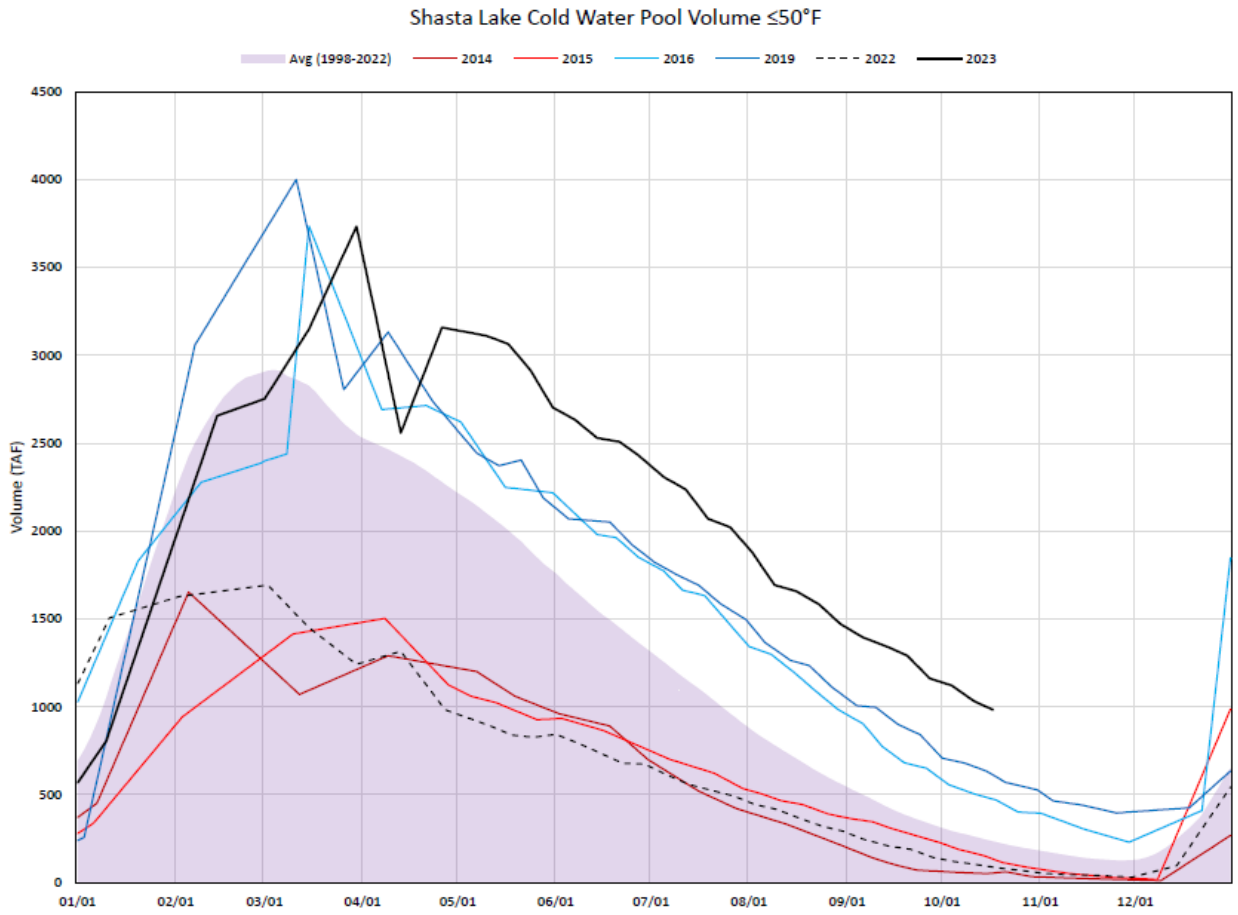
Shasta Lake Isothermobaths Plot - 2023

This figure is a chart showing Shasta Lake Isothermobaths with volume in Thousand Acre-Feet from 0-4500; with dates 01/01-12/01.



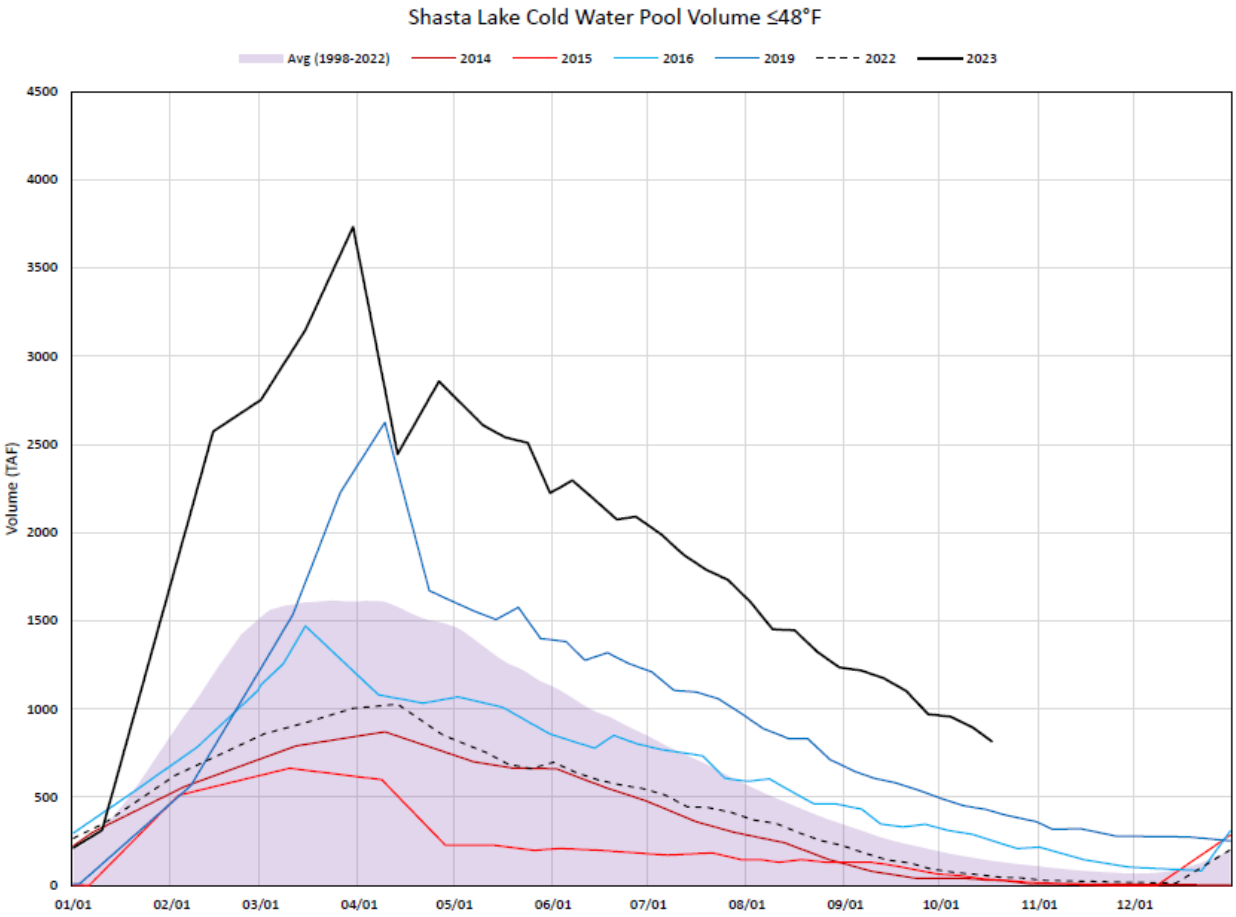
Shasta Lake Cold Water Pool Volume ≤52°F

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.



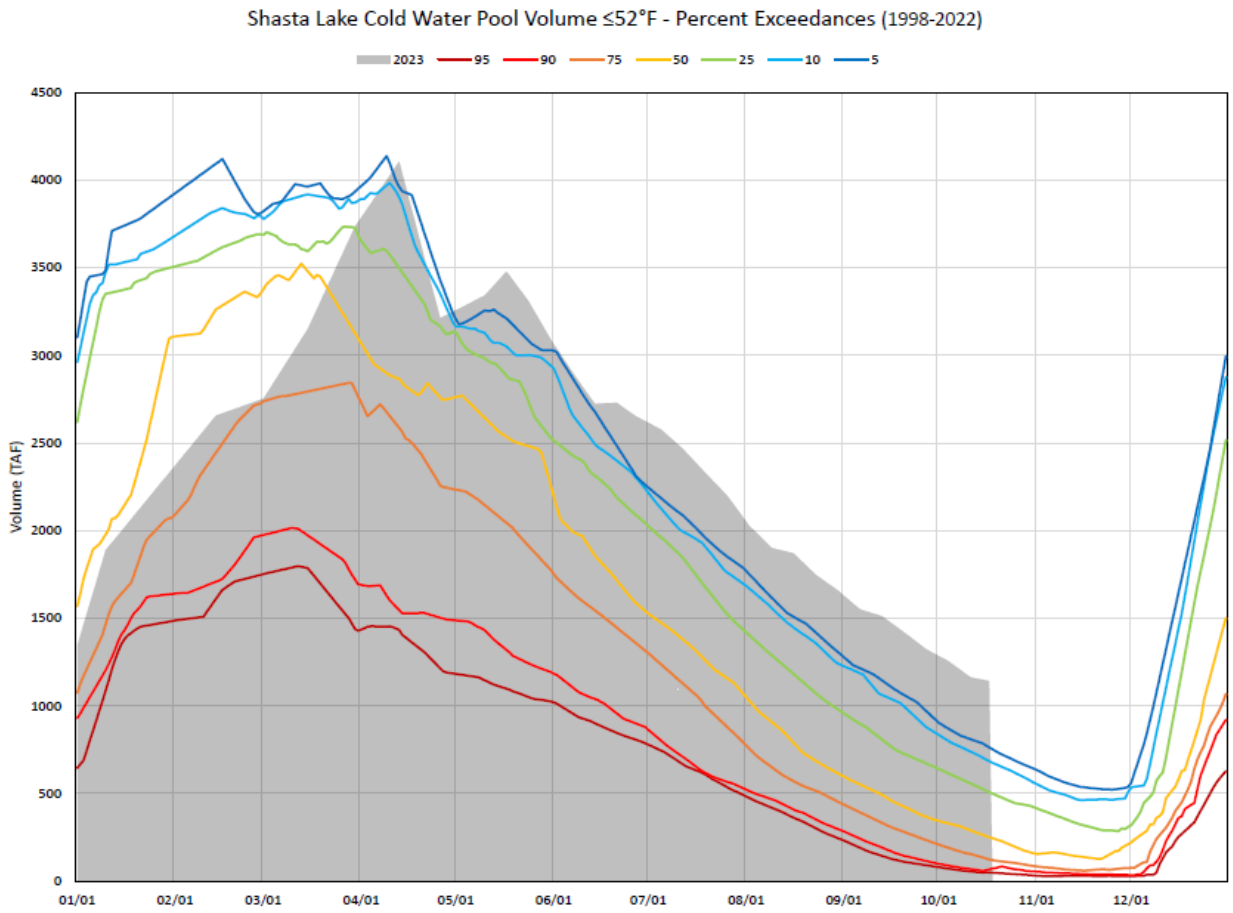
Shasta Lake Cold Water Pool Volume ≤50°F

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.



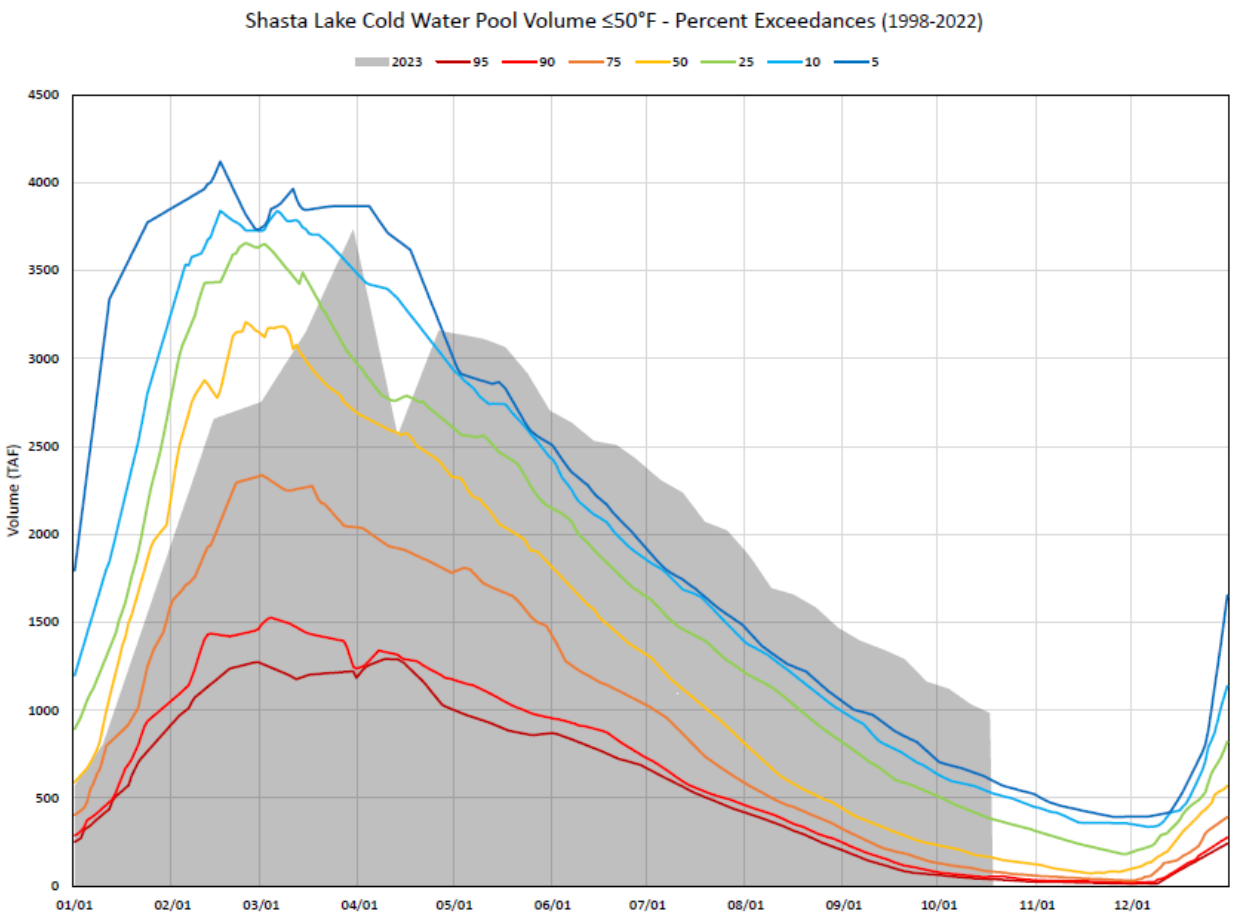
Shasta Lake Cold Water Pool Volume ≤48°F

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.



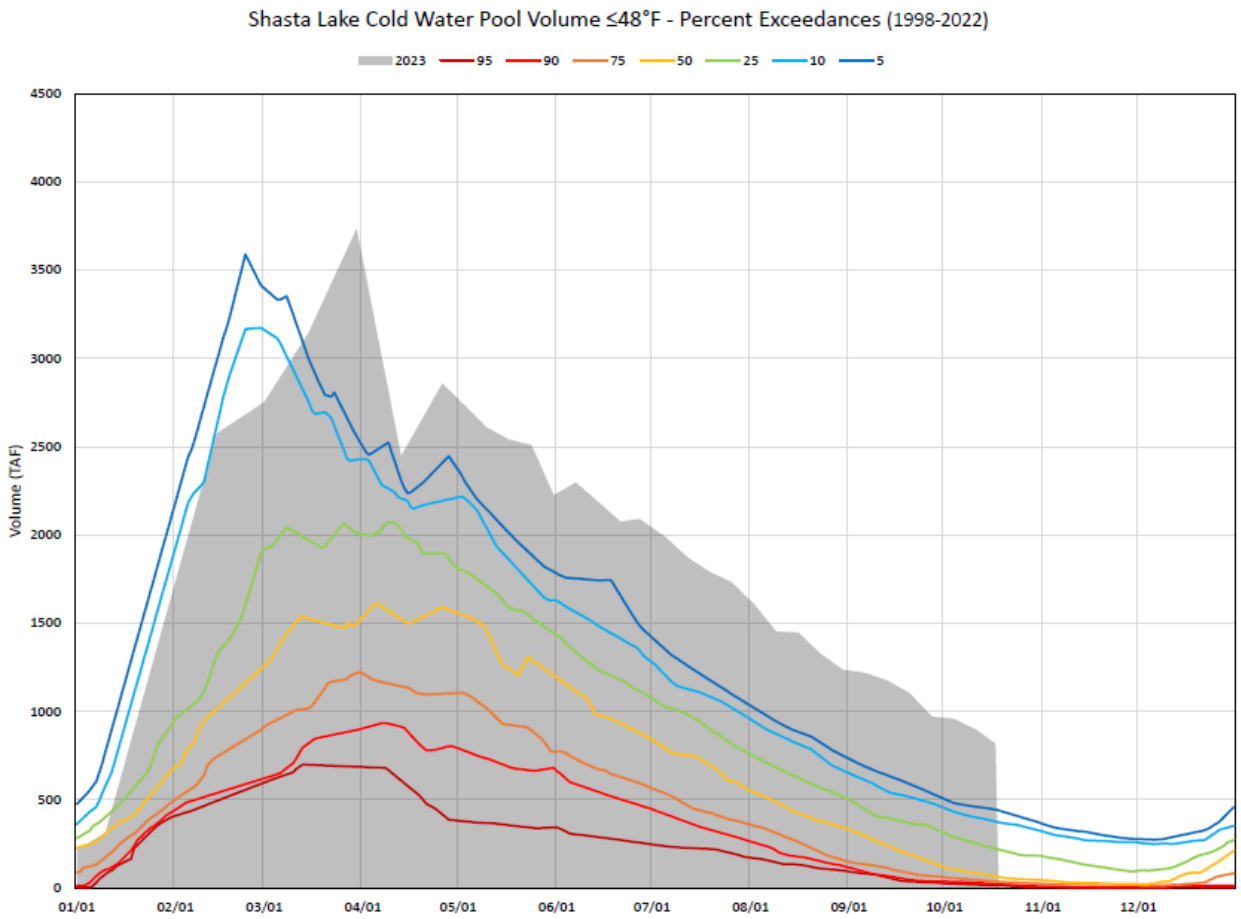
Shasta Lake Cold Water Pool Volume ≤52°F - Percent Exceedances (1998-2022)

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.



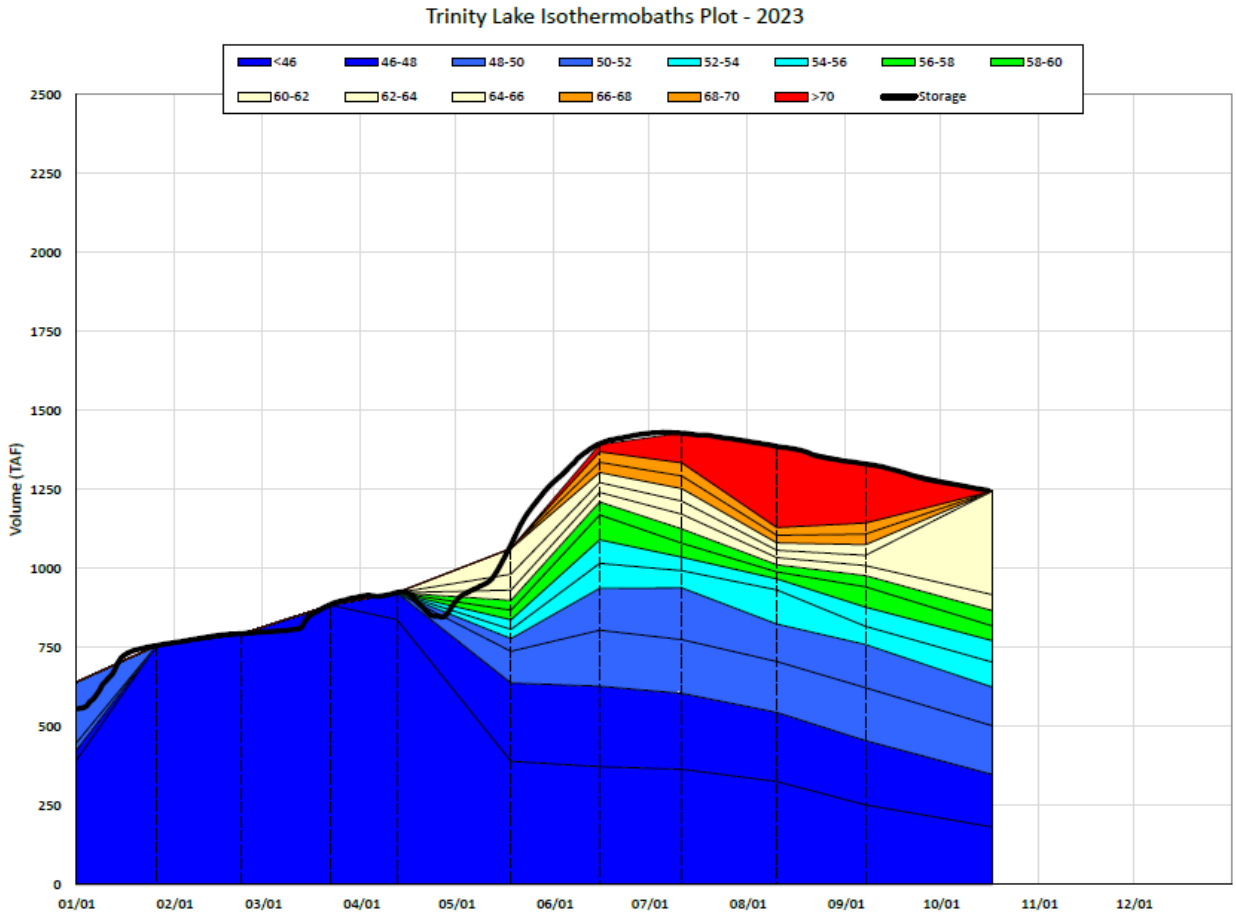
Shasta Lake Cold Water Pool Volume ≤50°F - Percent Exceedances (1998-2022)

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.



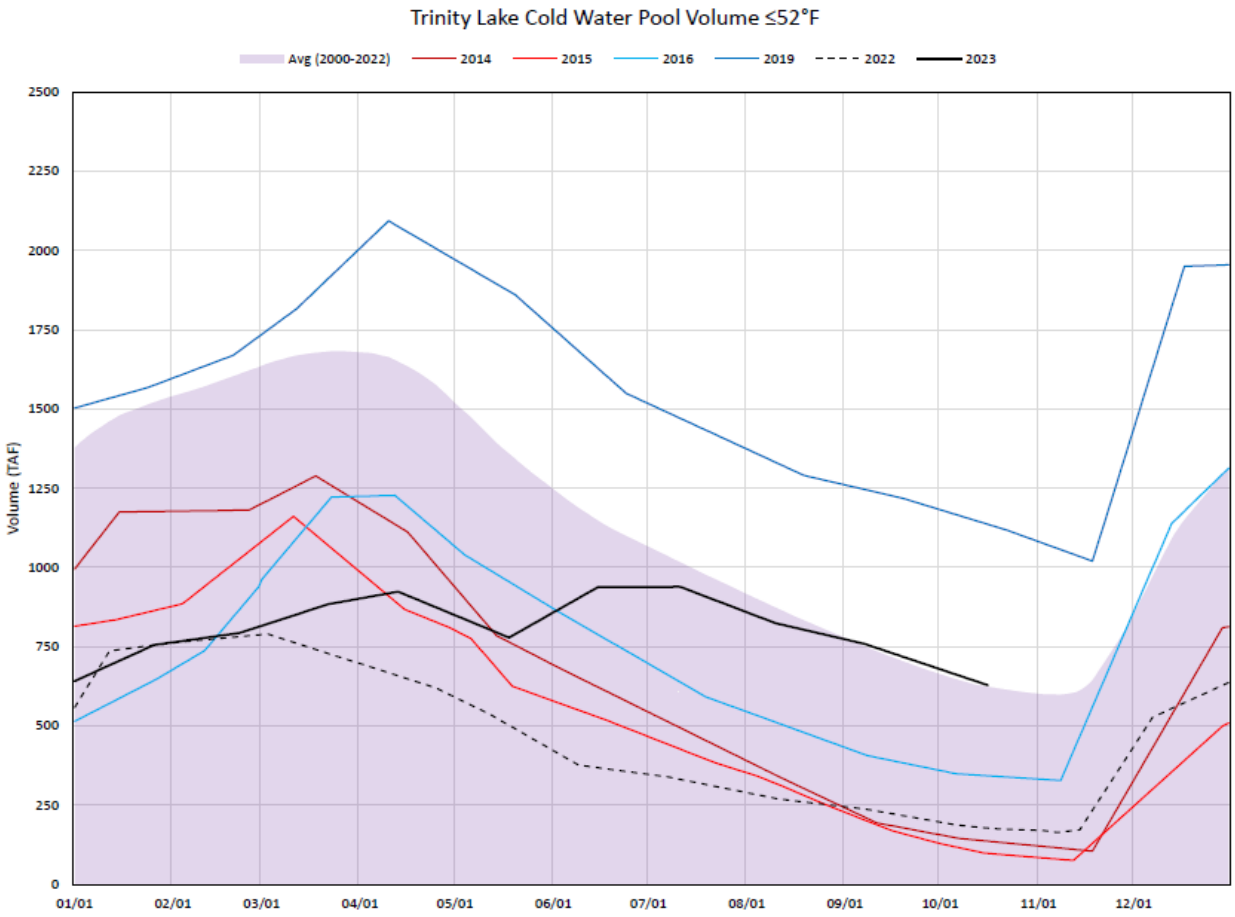
Shasta Lake Cold Water Pool Volume ≤48°F - Percent Exceedances (1998-2022)

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.



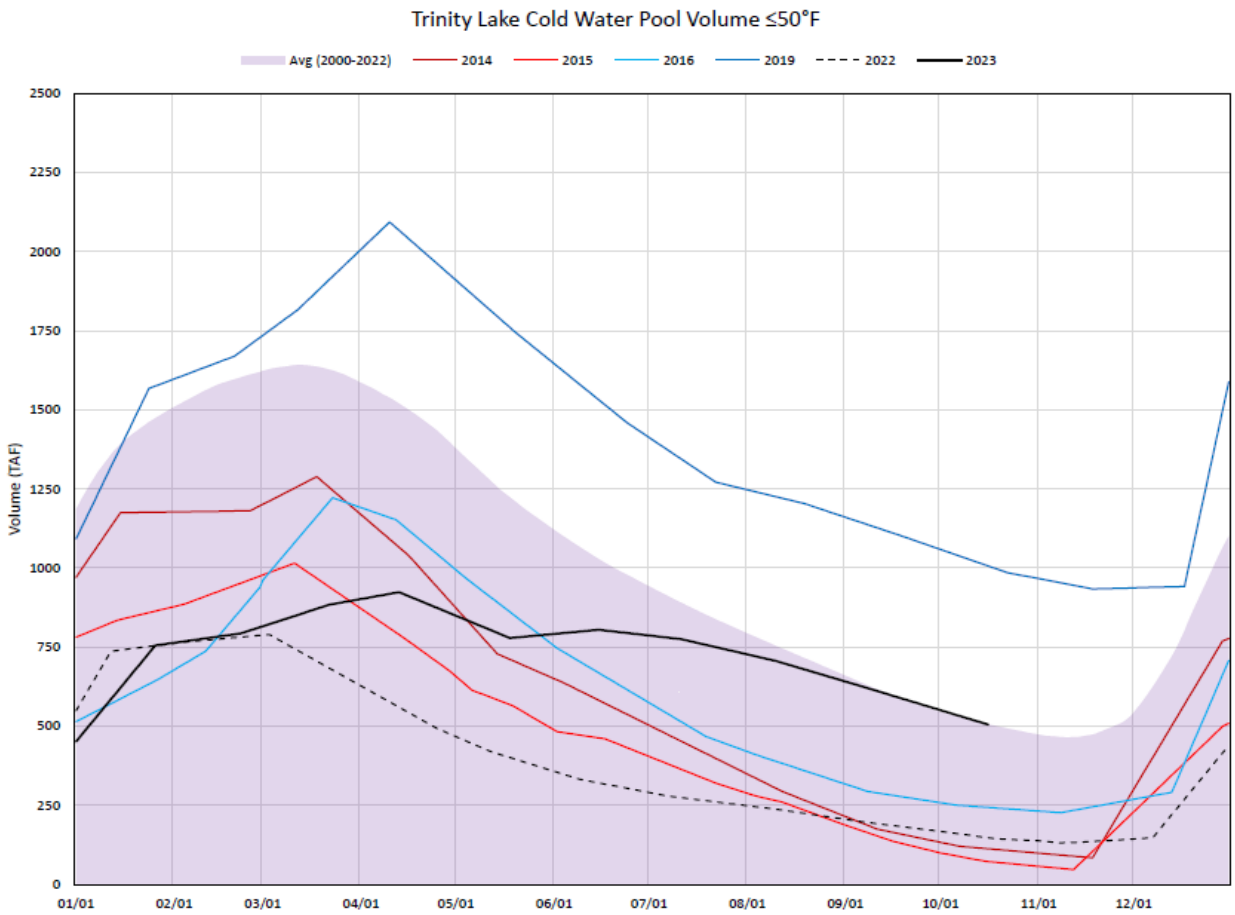
Trinity Lake Isothermobaths Plot - 2023

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



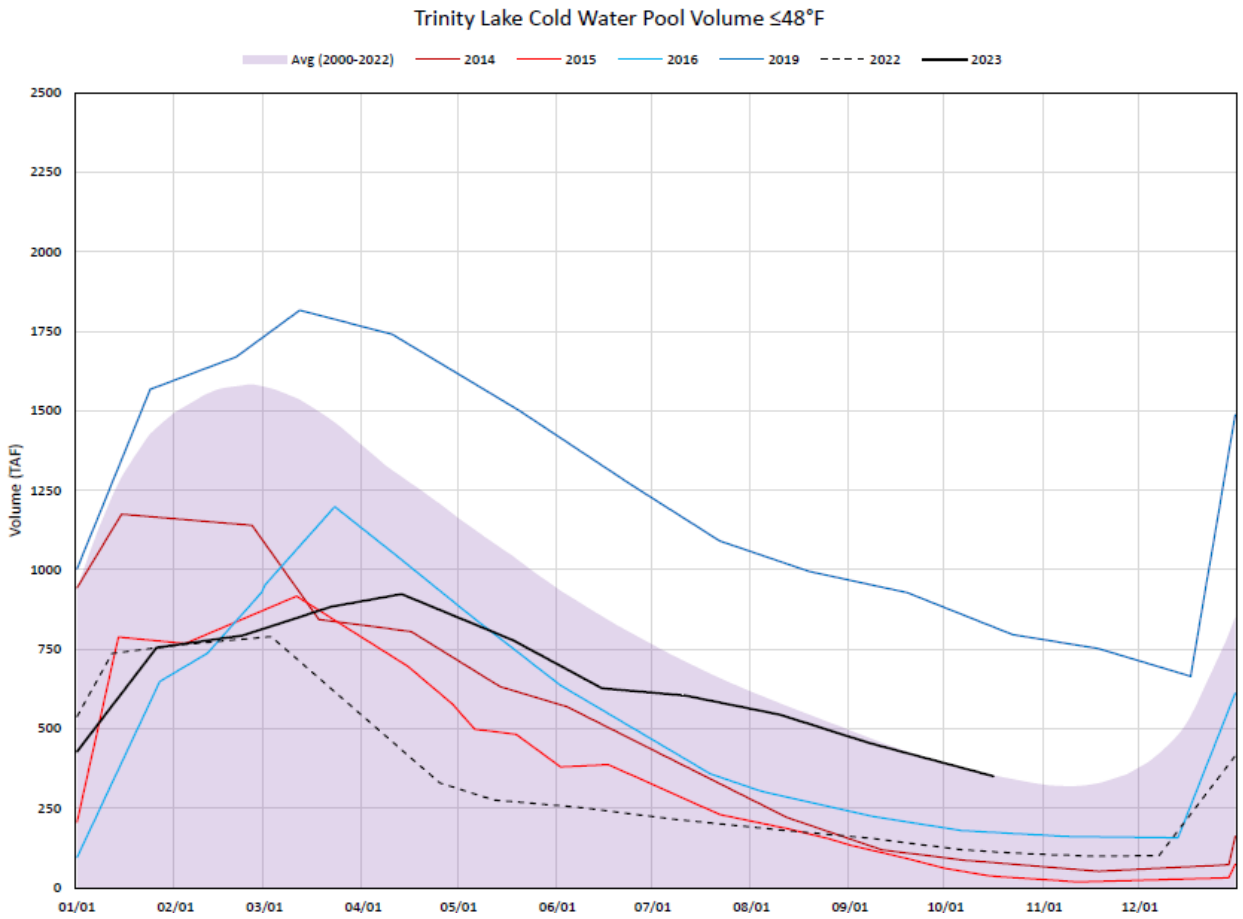
Trinity Lake Cold Water Pool Volume ≤52°F

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.



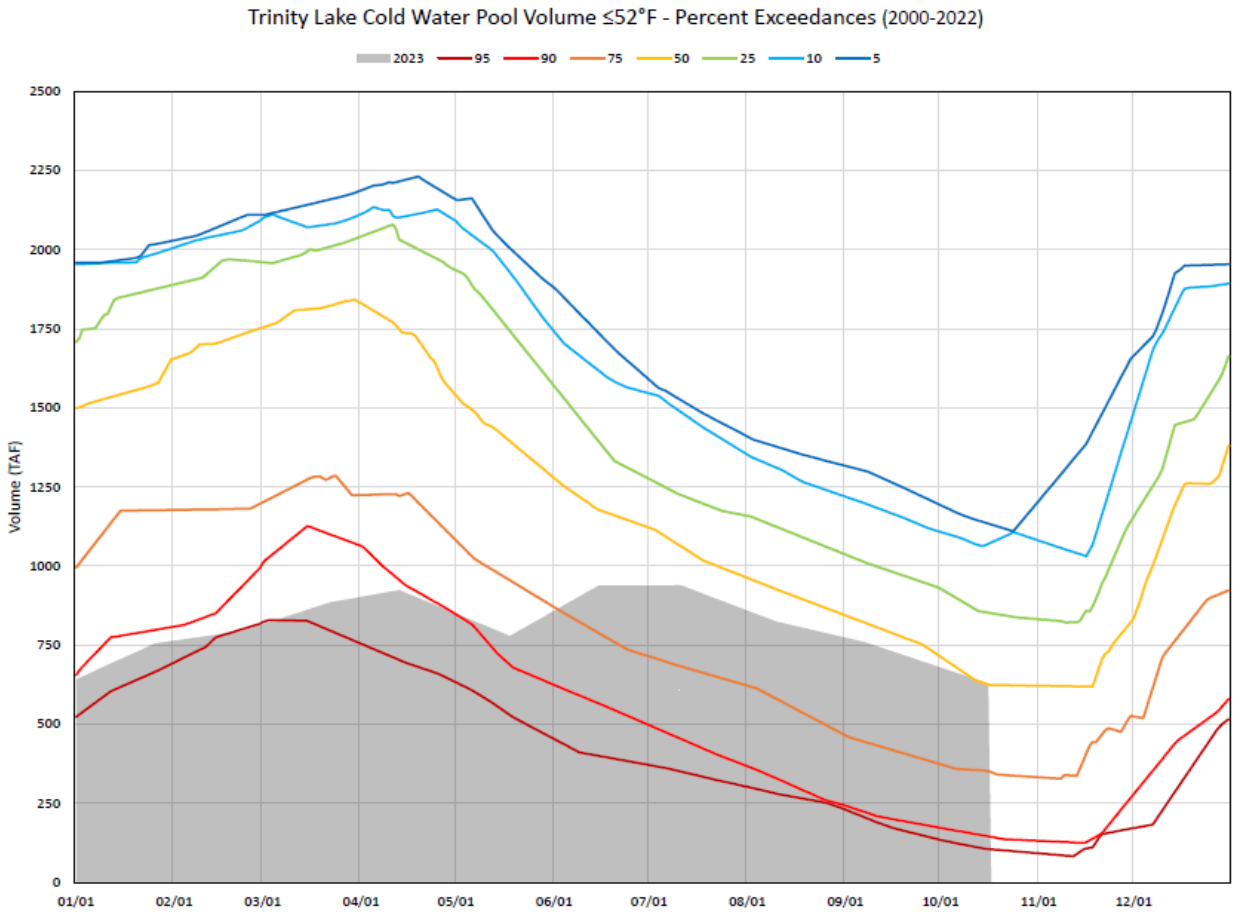
Trinity Lake Cold Water Pool Volume ≤50°F

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.



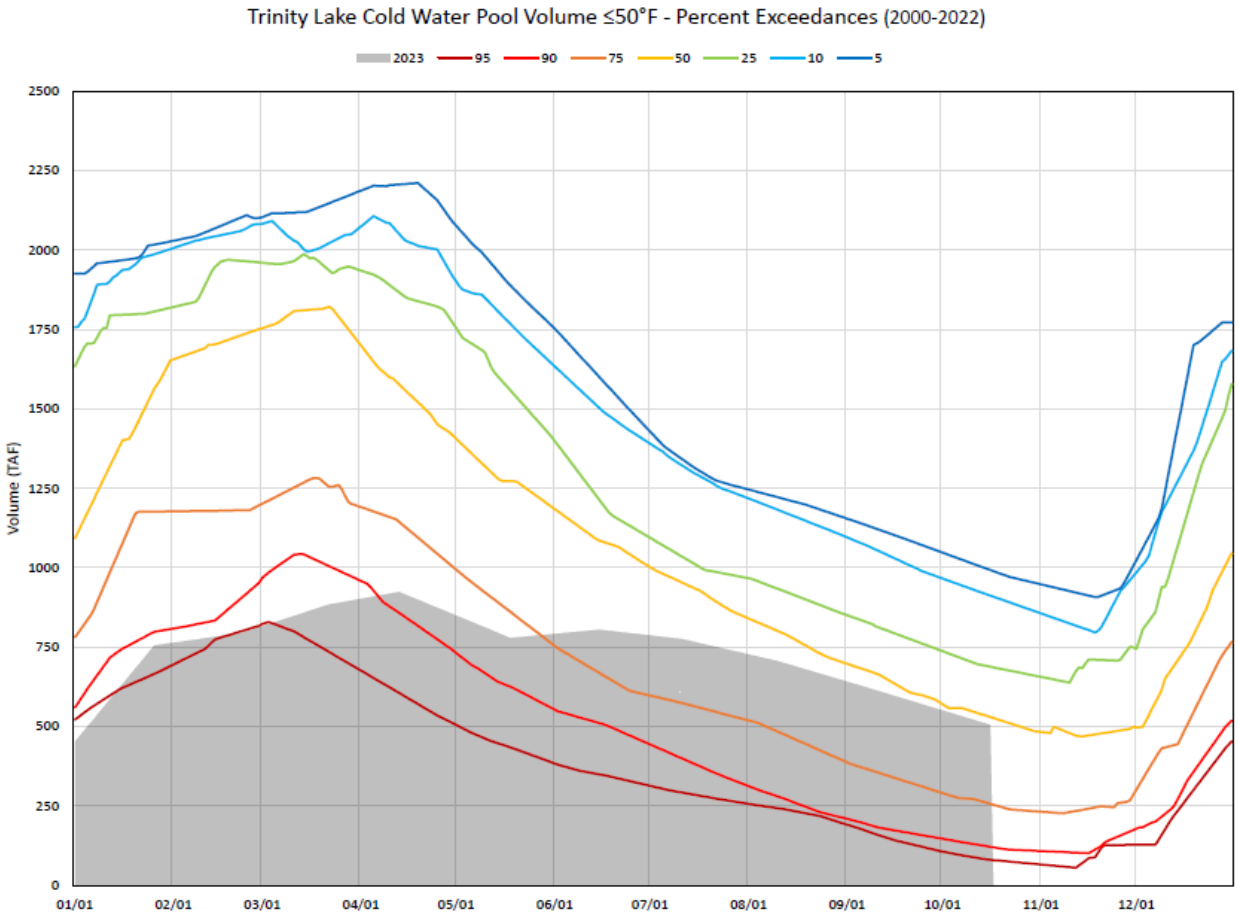
Trinity Lake Cold Water Pool Volume ≤48°F

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.



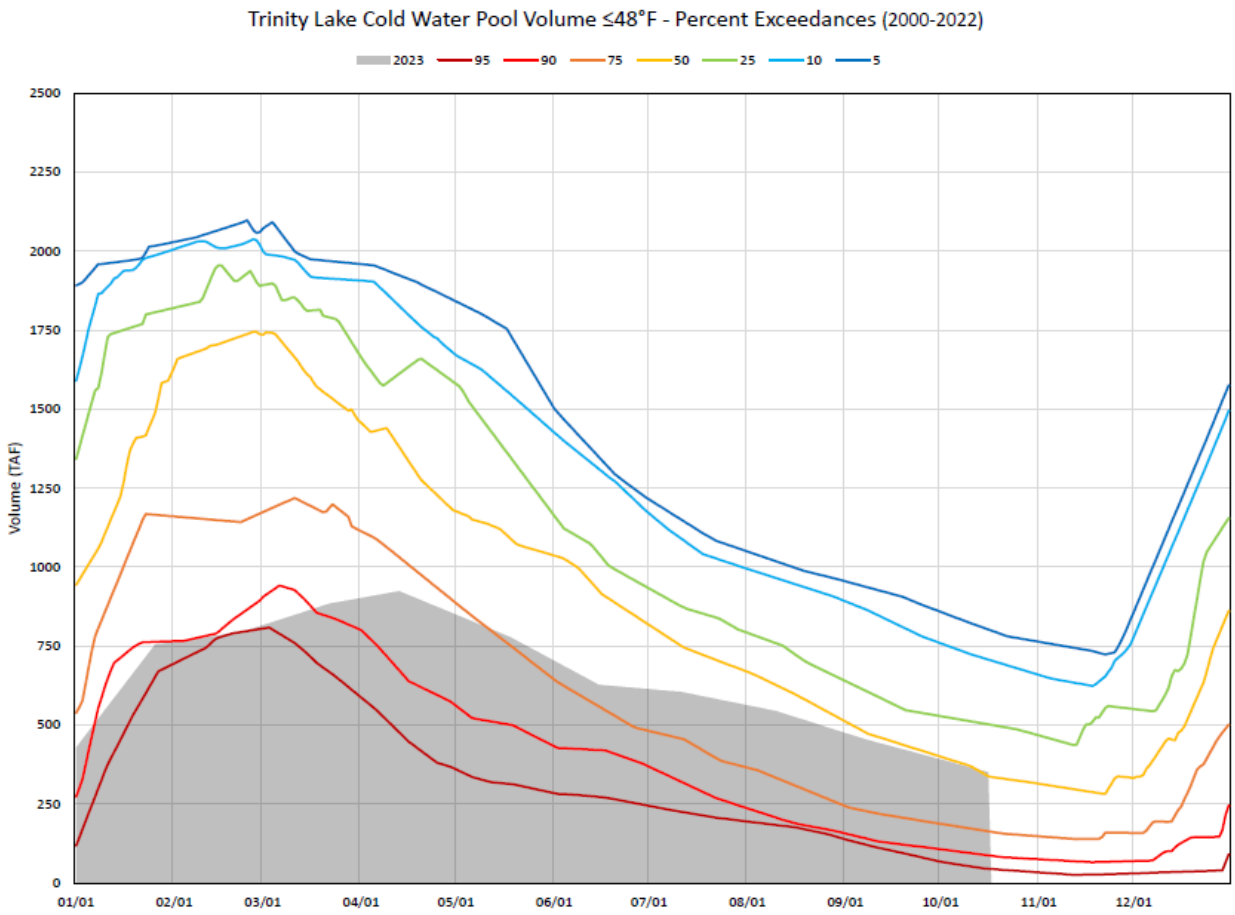
Trinity Lake Cold Water Pool Volume ≤52°F - Percent Exceedances (2000-2022)

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.



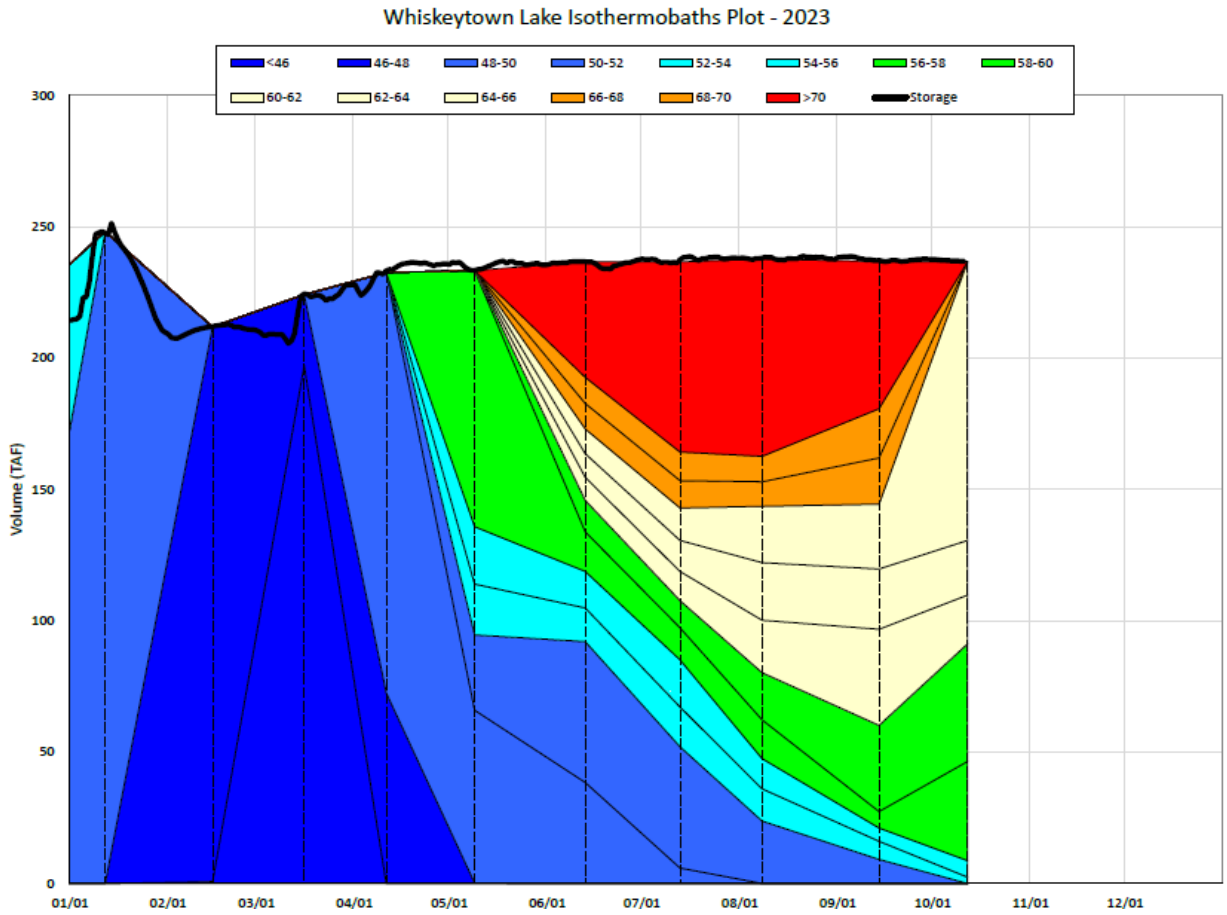
Trinity Lake Cold Water Pool Volume ≤50°F - Percent Exceedances (2000-2022)

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.



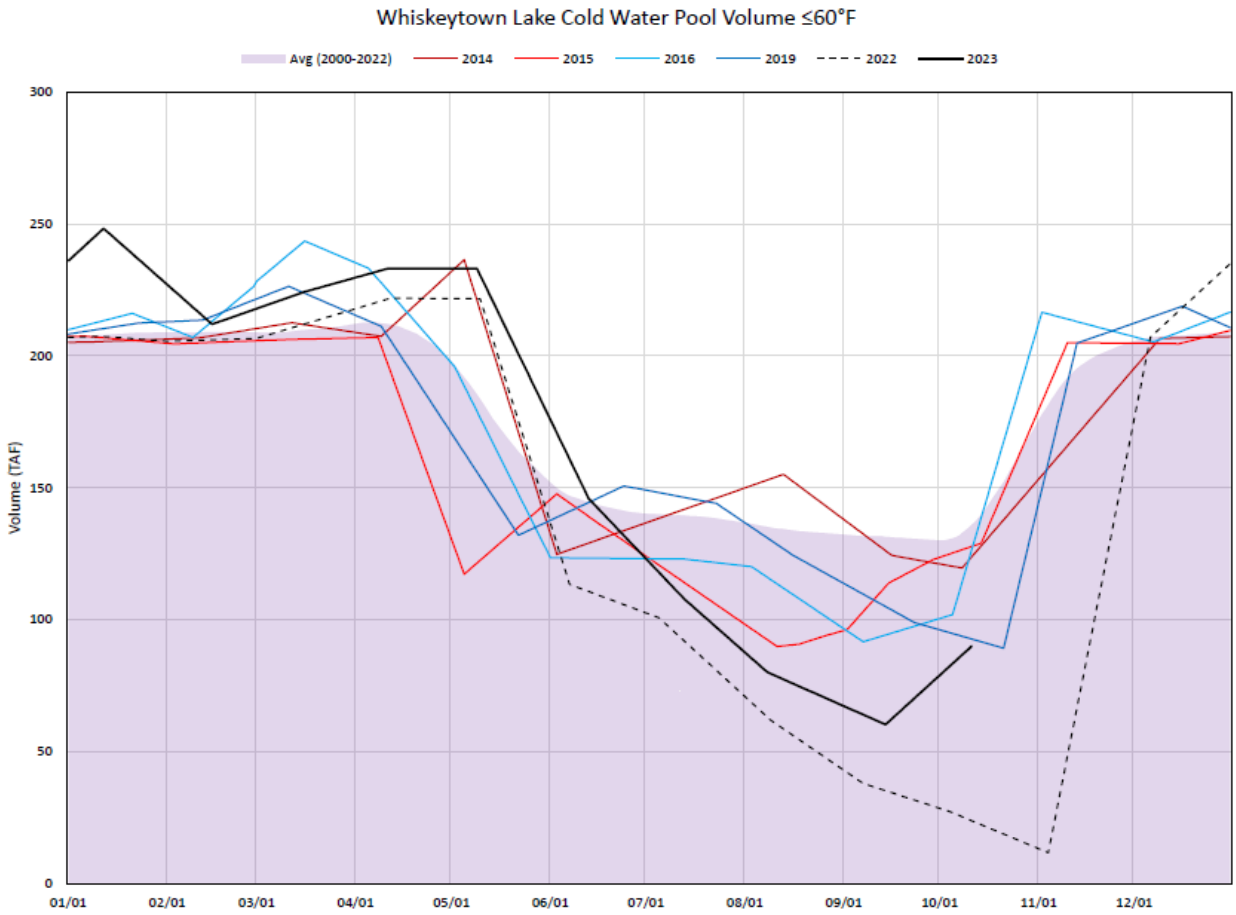
Trinity Lake Cold Water Pool Volume ≤48°F - Percent Exceedances (2000-2022)

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.



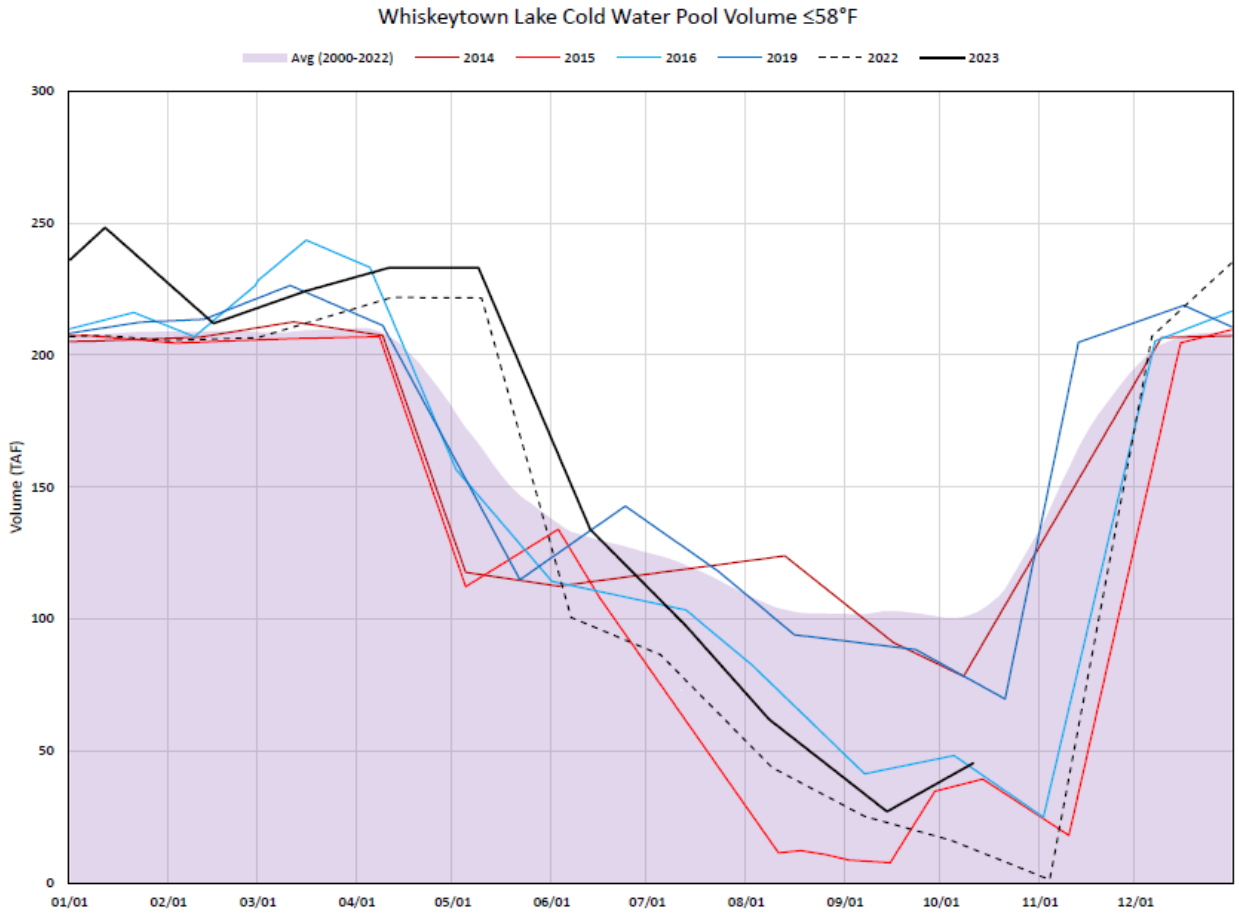
Whiskeytown Lake Isothermobaths Plot - 2023

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



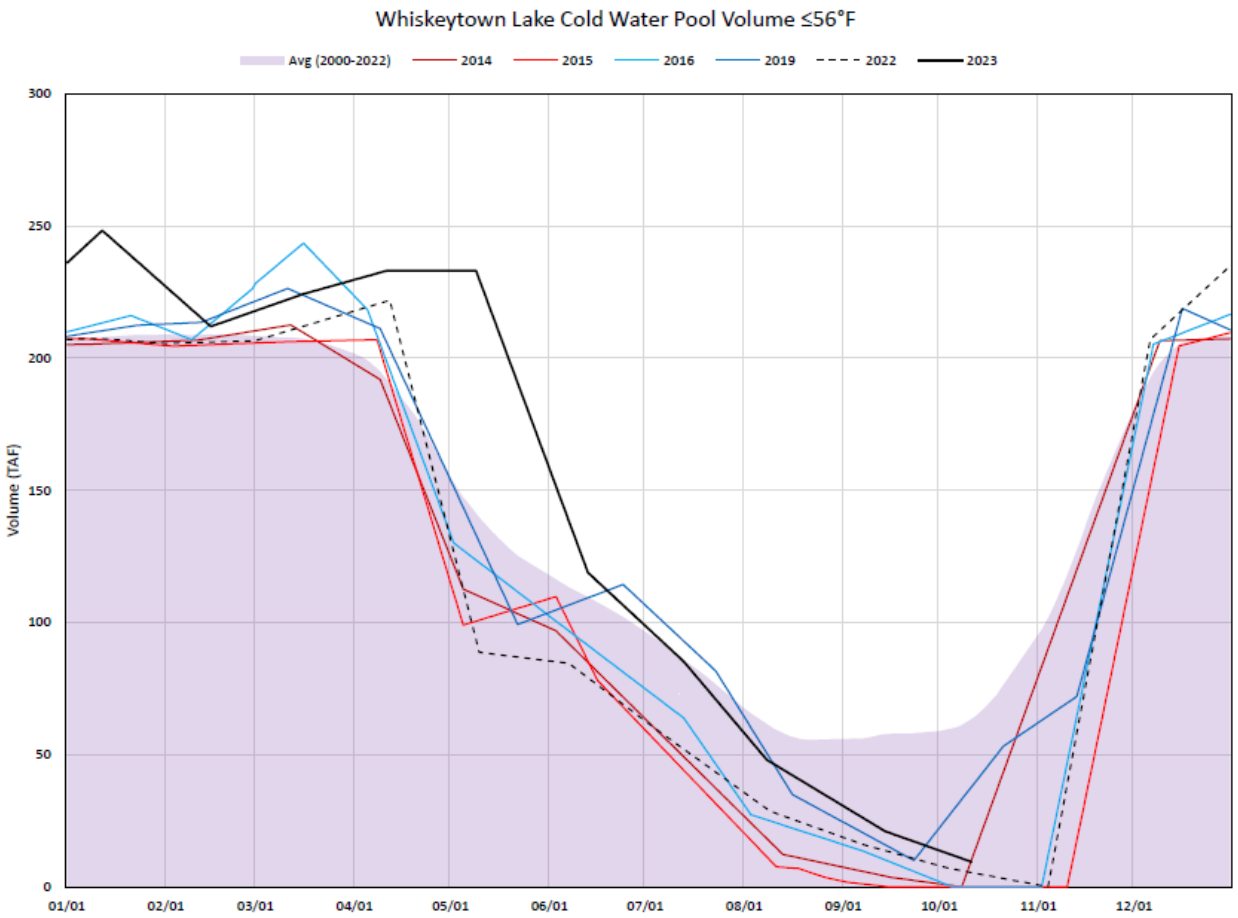
Whiskeytown Lake Cold Water Pool Volume ≤60°F

This figure is a line graph showing Whiskeytown Lake Cold Water Pool Volume equal to or less than 60 degrees Fahrenheit from 01/01 to 12/01.



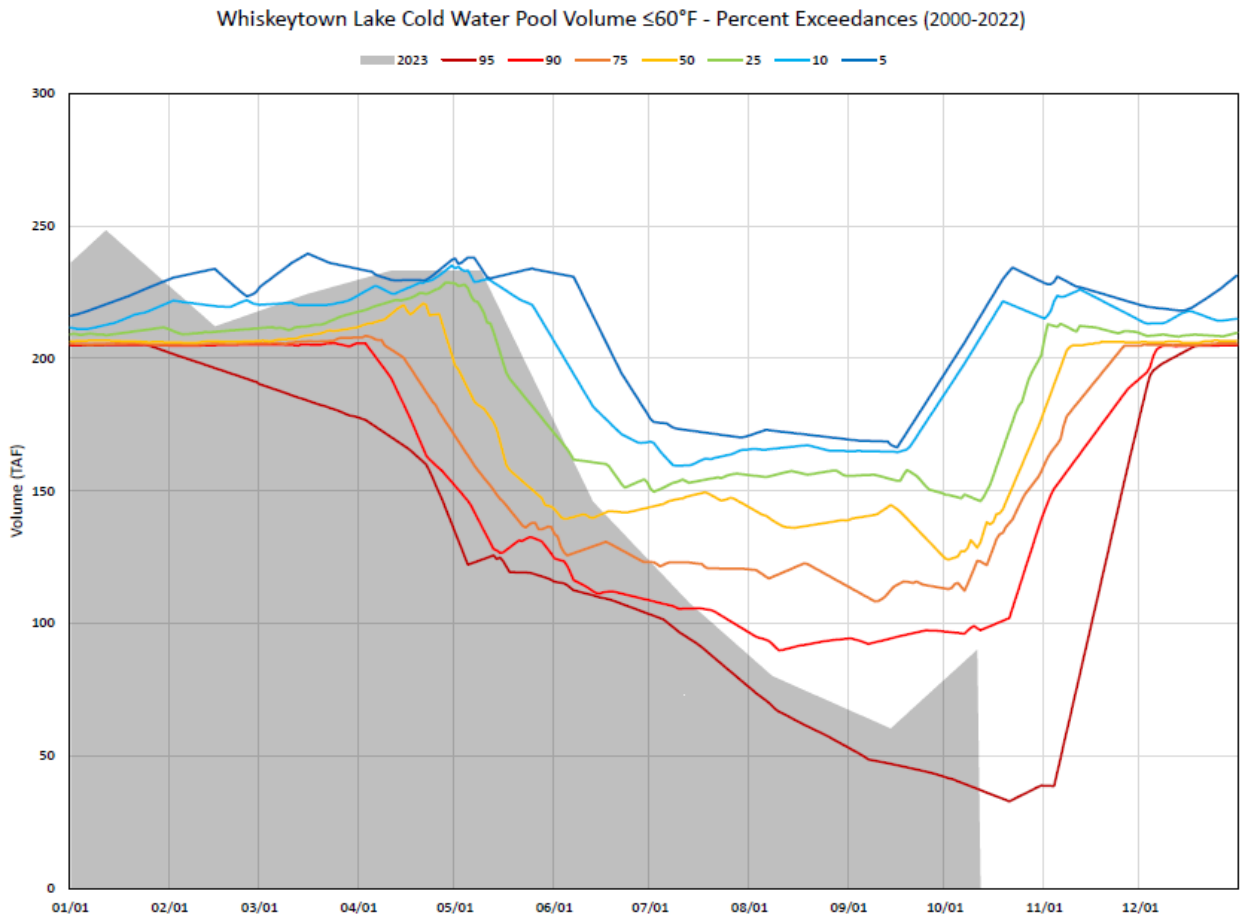
Whiskeytown Lake Cold Water Pool Volume ≤58°F

This figure is a line graph showing Whiskeytown Lake Cold Water Pool Volume equal to or less than 58 degrees Fahrenheit from 01/01 to 12/01.



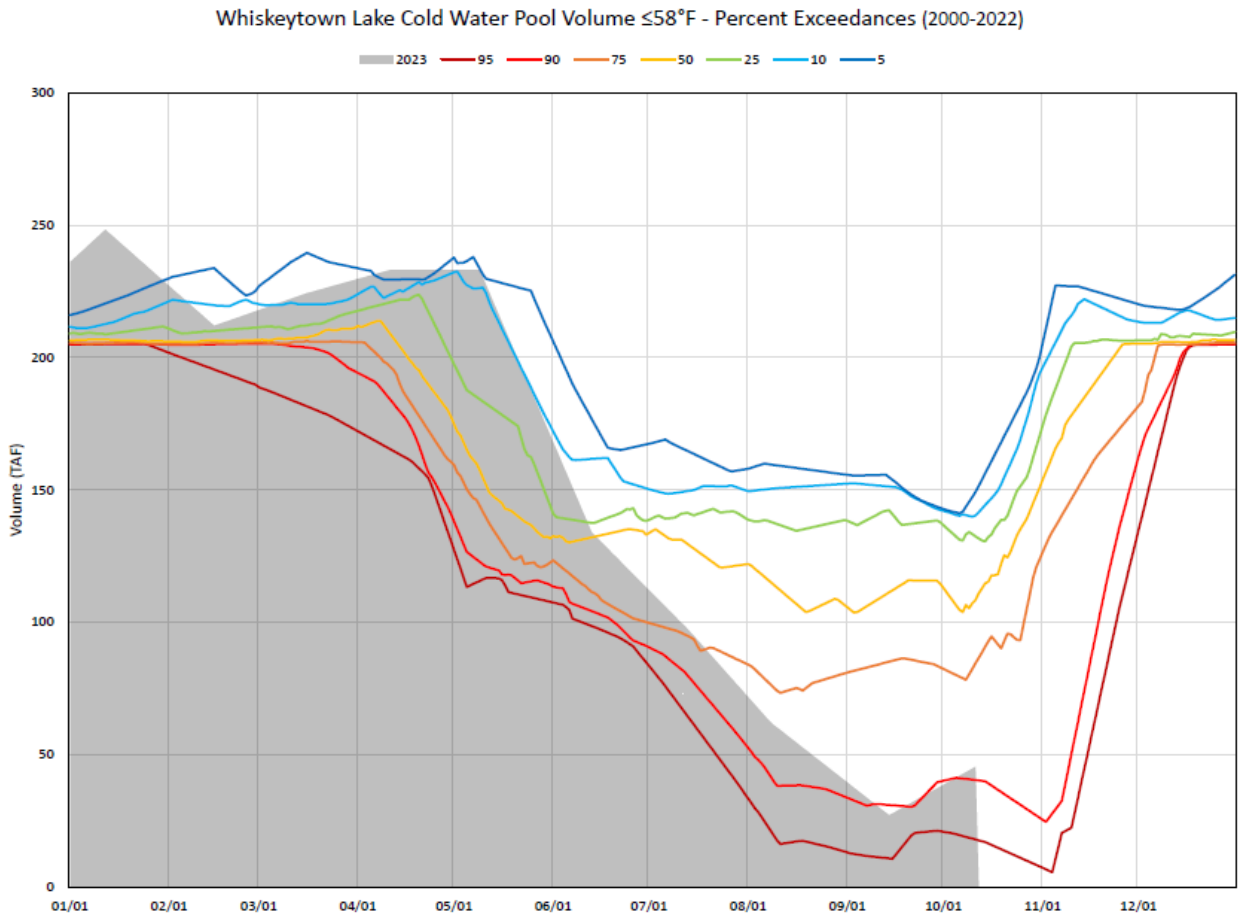
Whiskeytown Lake Cold Water Pool Volume ≤56°F

This figure is a line graph showing Whiskeytown Lake Cold Water Pool Volume equal to or less than 56 degrees Fahrenheit from 01/01 to 12/01.



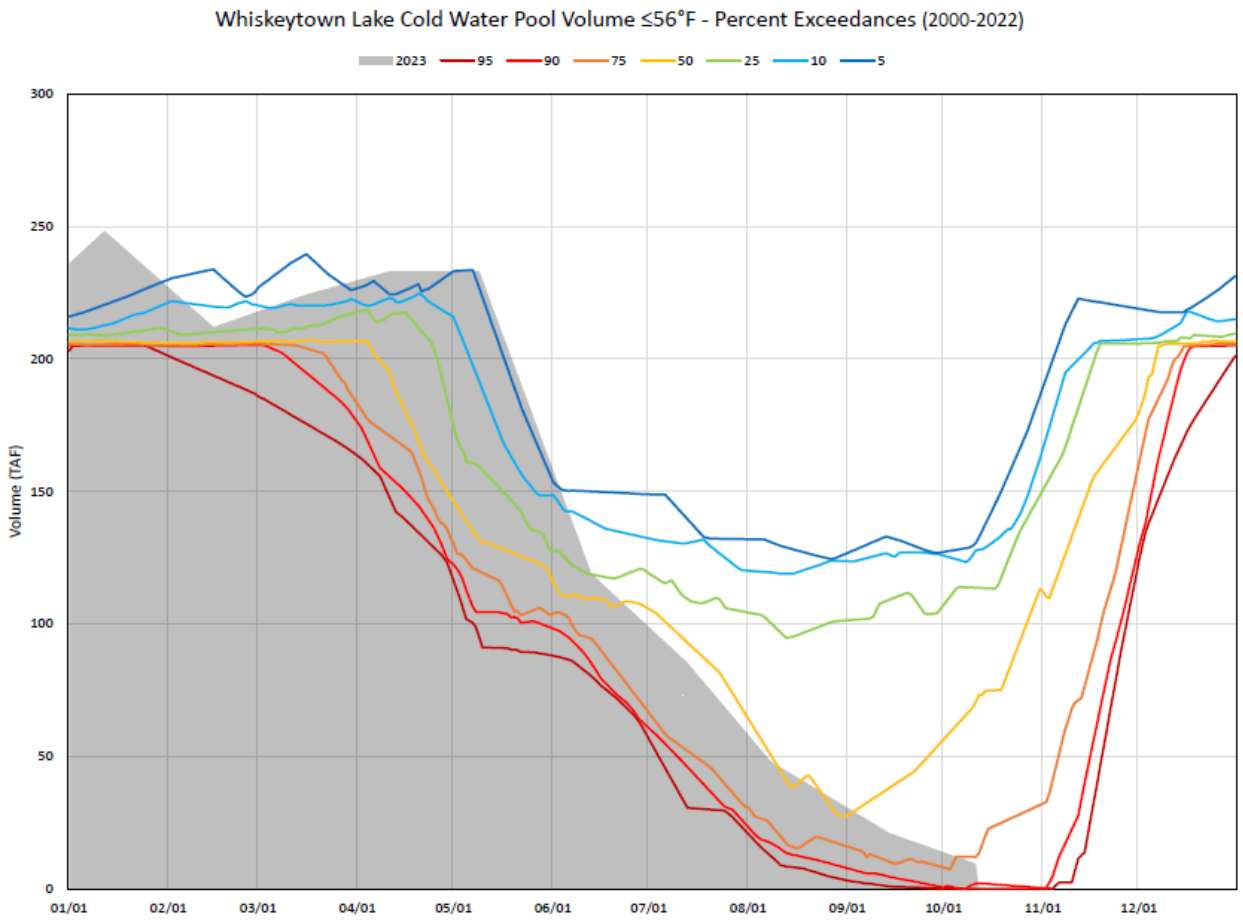
Whiskeytown Lake Cold Water Pool Volume ≤60°F - Percent Exceedances (2000-2022)

This figure is a line graph showing Whiskeytown Lake Cold Water Pool Volume less than or equal to 60 degrees Fahrenheit as percent exceedances from 01/01 to 12/01.



Whiskeytown Lake Cold Water Pool Volume ≤58°F - Percent Exceedances (2000-2022)

This figure is a line graph showing Whiskeytown Lake Cold Water Pool Volume less than or equal to 58 degrees Fahrenheit as percent exceedances from 01/01 to 12/01.



Whiskeytown Lake Cold Water Pool Volume ≤56°F - Percent Exceedances (2000-2022)

This figure is a line graph showing Whiskeytown Lake Cold Water Pool Volume less than or equal to 56 degrees Fahrenheit as percent exceedances from 01/01 to 12/01.

Estimated CVP Operations 90% Exceedance

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

Facility	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Trinity	1340	1255	1241	1237	1258	1272	1309	1376	1451	1404	1397	1339	1257
Trinity Elev.	N/A	2282	2280	2280	2282	2283	2286	2293	2299	2295	2294	2289	2282
Whiskeytown	238	238	206	206	206	206	206	206	238	238	238	238	238
Whiskeytown Elev.	N/A	1209	1199	1199	1199	1199	1199	1199	1209	1209	1209	1209	1209
Shasta	3531	3307	3142	3062	3073	3081	3181	3420	3485	3296	2898	2435	2141
Shasta Elev.	N/A	1021	1014	1010	1011	1011	1016	1025	1028	1020	1003	981	965
Folsom	729	685	571	495	435	390	409	489	604	702	583	431	350
Folsom Elev.	N/A	438	425	416	408	402	404	415	429	440	427	407	395
New Melones	1920	1906	1868	1882	1896	1898	1897	1924	1827	1732	1643	1557	1439
New Melones Elev.	N/A	1044	1040	1041	1043	1043	1043	1045	1036	1027	1018	1009	996
San Luis	791	765	799	915	968	969	950	972	893	712	463	170	83
San Luis Elev.	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	8549	8156	7828	7795	7835	7815	7951	8387	8498	8084	7221	6169	5508

State End of the Month Reservoir Storage (TAF)

Facility	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Oroville	2874	2532	2289	2128	2083	2193	2338	2558	2713	2629	2440	2067	1672
Oroville Elev.	N/A	829	809	794	790	800	813	831	843	837	821	789	750
State San Luis	981	854	786	764	741	927	892	946	880	713	485	363	356
Total San Luis (TAF)	1772	1619	1585	1679	1709	1896	1842	1918	1772	1425	948	533	439
Total San Luis Elev.	N/A	510	507	515	517	533	528	534	522	493	448	401	389

Monthly River Releases (TAF/cfs)

Facility	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Trinity (TAF)	N/A	52	23	18	18	18	17	18	32	180	47	28	53
Trinity (cfs)	N/A	870	373	300	300	300	300	300	540	2,924	783	450	857
Clear Creek (TAF)	N/A	9	12	12	12	12	11	22	12	18	14	9	9
Clear Creek (cfs)	N/A	150	200	200	200	200	200	363	200	291	242	150	150
Sacramento (TAF)	N/A	434	400	327	307	307	278	277	375	516	625	676	510
Sacramento (cfs)	N/A	7300	6500	5500	5000	5000	5000	4500	6300	8400	10500	11000	8300
American (TAF)	N/A	178	154	119	123	108	83	92	92	77	192	195	123

Facility	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
American (cfs)	N/A	3000	2502	2005	2000	1750	1501	1500	1538	1250	3230	3167	2003
Stanislaus (TAF)	N/A	30	48	12	12	14	22	12	91	76	22	15	74
Stanislaus (cfs)	N/A	500	774	200	200	226	400	200	1537	1242	363	250	1200
Feather (TAF)	N/A	387	270	149	108	58	53	58	57	108	131	264	332
Feather (cfs)	N/A	6500	4400	2500	1750	950	950	950	950	1750	2200	4300	5400

Trinity Diversions (TAF)

Diversion Facility	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Carr PP	N/A	39	0	7	0	0	0	0	29	12	12	40	40
Spring Creek PP	N/A	30	22	0	0	0	0	0	0	0	0	30	30

Delta Summary (TAF)

Facility	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Tracy	240	240	230	137	100	125	108	48	49	50	57	190
USBR Banks	0	44	44	44	0	0	0	0	0	0	11	11
Contra Costa	14.0	14.0	16.0	18.0	14.0	14.0	12.7	12.7	12.7	9.8	11.1	12.7
Total USBR	254	298	290	199	114	139	121	60	62	60	79	214
State Export	151	239	266	250	290	68	159	42	43	33	142	357
Total Export	405	537	556	449	404	207	280	102	105	93	221	571
COA Balance	0	0	0	0	0	0	8	4	4	4	-25	-13
Vernalis (TAF)	194	201	83	83	93	121	120	181	175	69	54	224
Vernalis (cfs)	3257	3263	1393	1355	1511	2183	1957	3038	2843	1153	884	3640
Old/Middle River calc.	-4,367	-5,848	-7,159	-5,604	-4,971	-2,478	-3,213	-543	-625	-1,272	-2,961	-6,100
Computed DOI	11968	7109	4505	8264	8931	11400	11403	9497	7564	7094	6507	3497
Excess Outflow	4875	0	0	3758	2928	0	0	0	455	0	0	0
% Export/Inflow	31%	49%	62%	44%	43%	23%	28%	12%	13%	11%	24%	55%
% Export/inflow std.	65%	65%	65%	65%	65%	45%	35%	35%	35%	35%	65%	65%

Hydrology

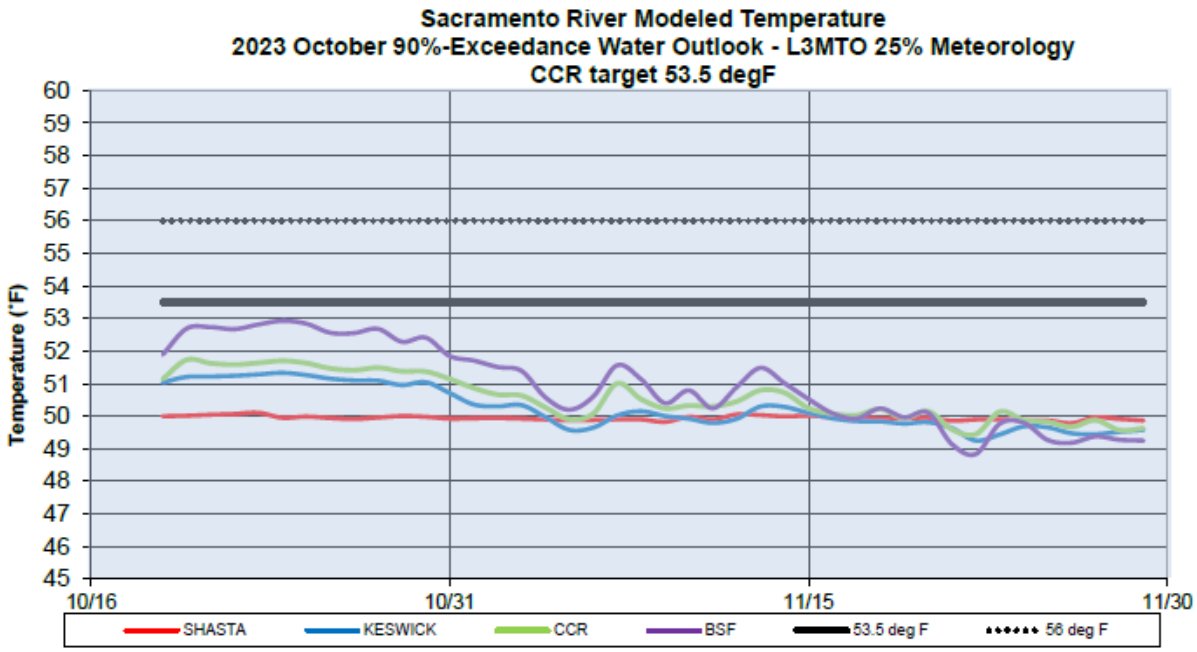
Statistic	Trinity	Shasta	Folsom	New Melones
Water Year Inflow (TAF)	1536	5,621	4,732	2,338
Year to Date + Forecasted % of mean	127%	102%	174%	221%

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.

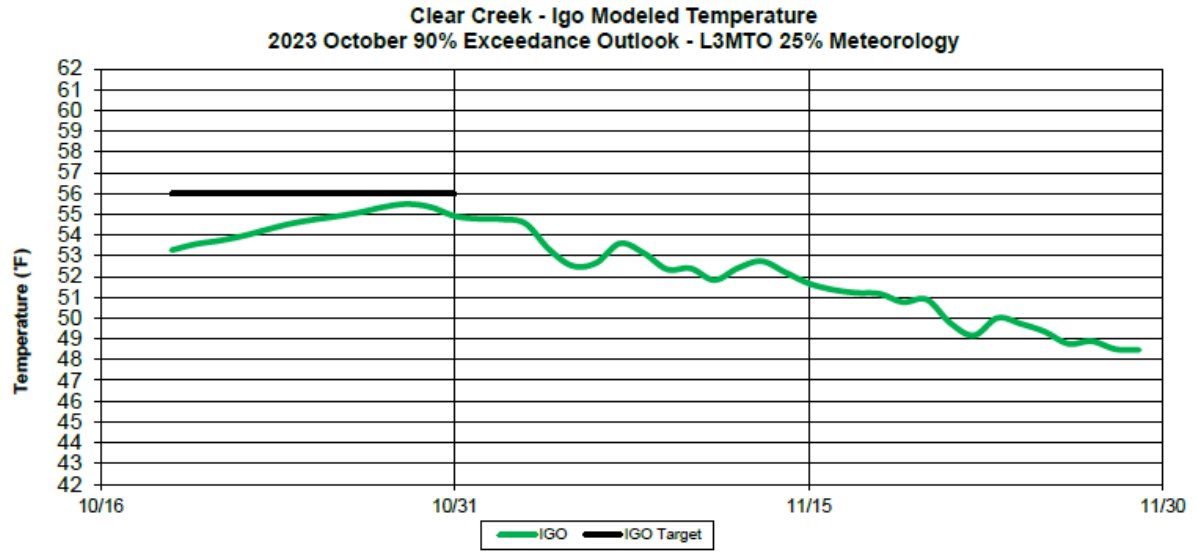
CVP releases or export values represent monthly averages.

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



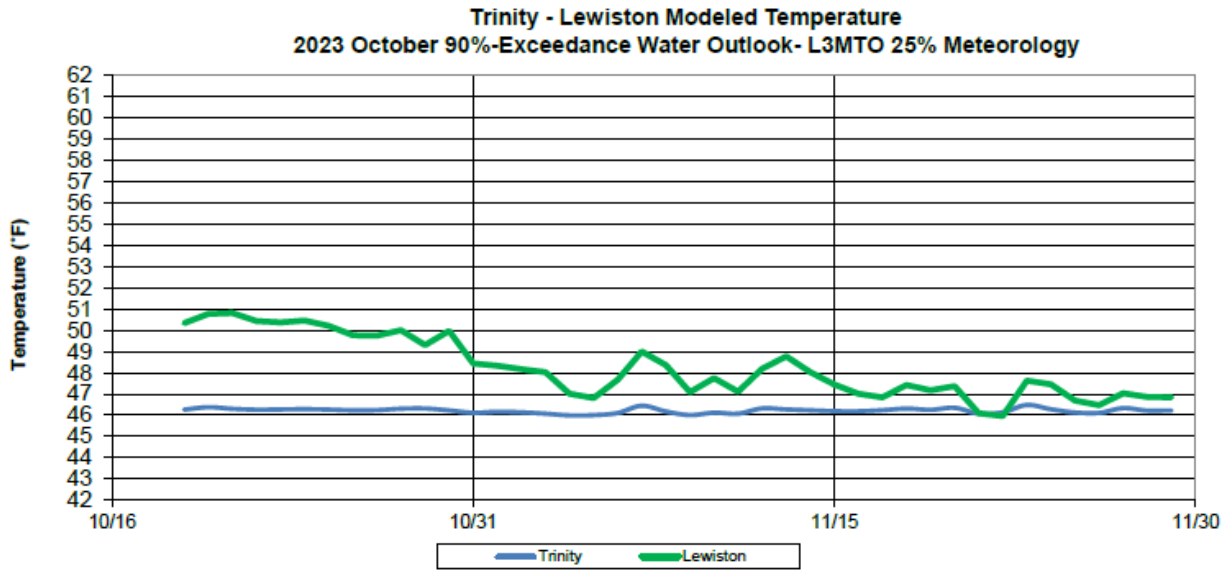
Sacramento River Modeled Temperature – October 2023 90%-Exceedance Water Outlook Historical 25% Meteorology.

This figure shows Sacramento River modeled temperature in degrees Fahrenheit at Shasta and Keswick Dams, and above Clear Creek from 9/16 to 11/30 in percent exceedances. It also shows the desired degree range between 53.5 and 56 degrees Fahrenheit.



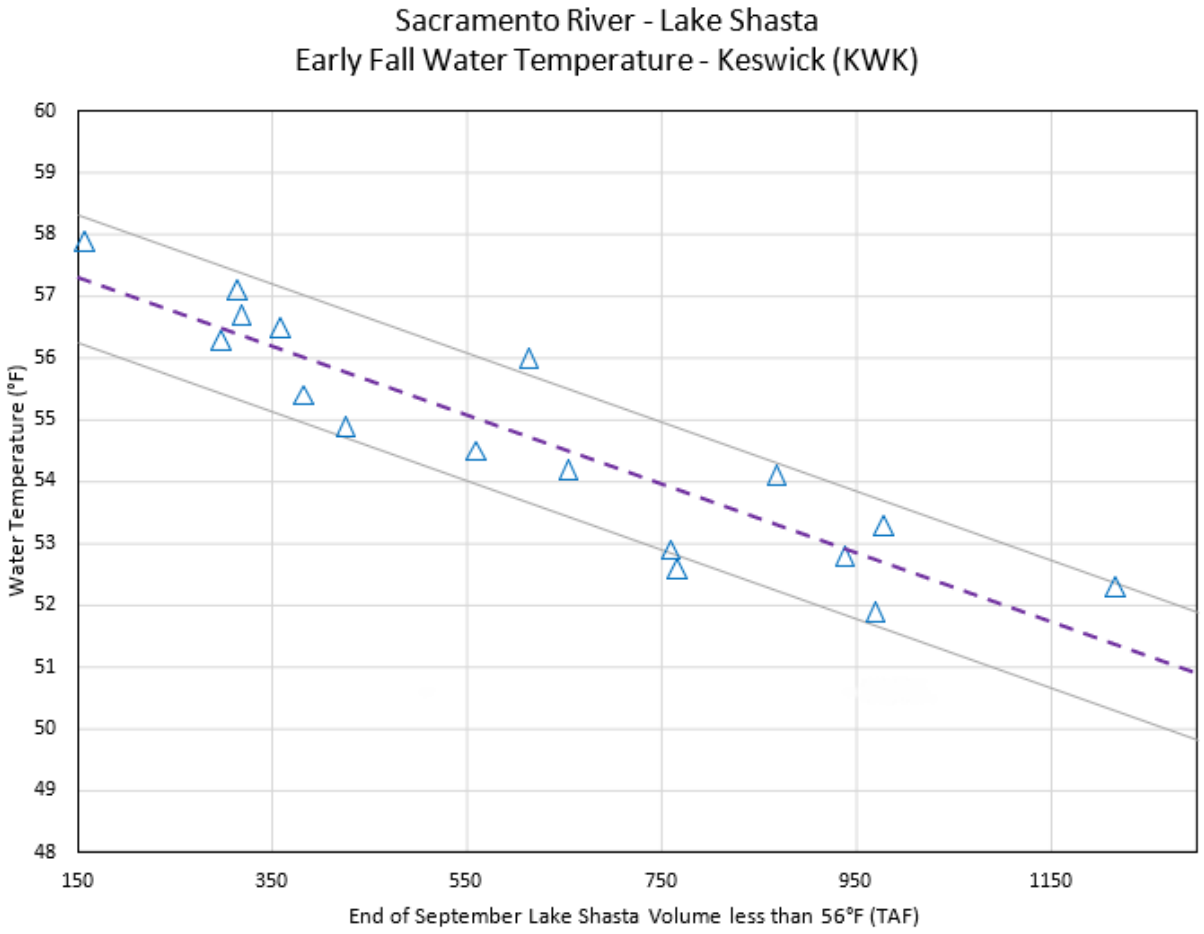
Clear Creek Igo Modeled Temperature – October 2023 90%-Exceedance Water Outlook Historical 25% Meteorology.

This figure is a line graph showing Igo modeled temperature in degrees Fahrenheit at from 09/16 to 11/30.



Trinity – Lewiston Modeled Temperature – October 2023 90%-Exceedance Water Outlook Historical 25% Meteorology.

This figure is a line graph showing Trinity-Lewiston modeled temperature in degrees Fahrenheit from 09/16 to 11/30.

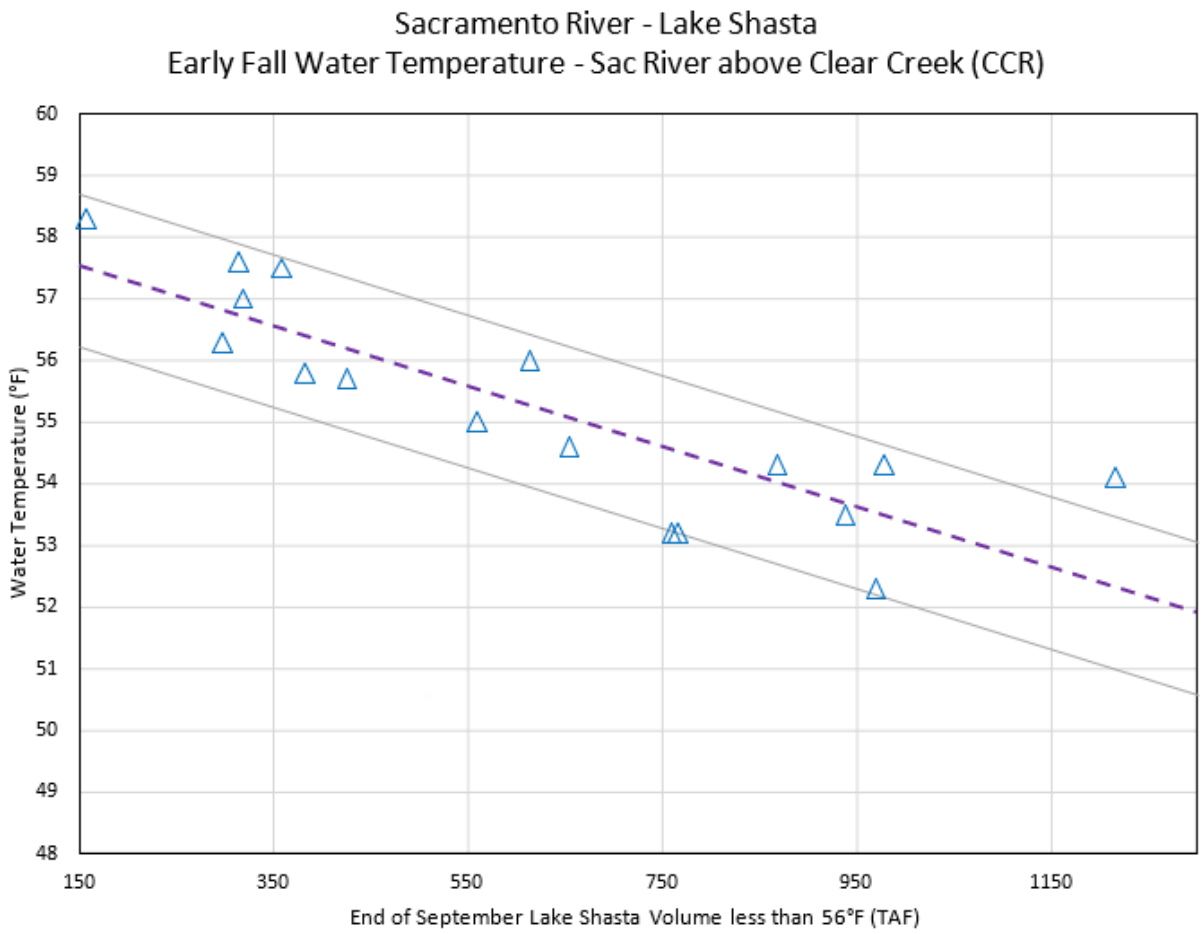


Sacramento River – Lake Shasta Early Fall Water Temperature – Keswick (KWK)

This figure is a line graph showing the historical relationship between Lake Shasta cold-water-pool characteristics and early fall Keswick water temperature.

Notes:

1. Historical maximum mean 3-day water temperature between 9/20 - 10/31.
2. The Shasta TCD was at it's lowest gate configuration of the season (side gates only or combination of side gates and PRG's).
3. 1998-2017, excluding years not using side gates and extreme drought year 2014.
4. Upper and Lower grey lines represent 90% confidence range.

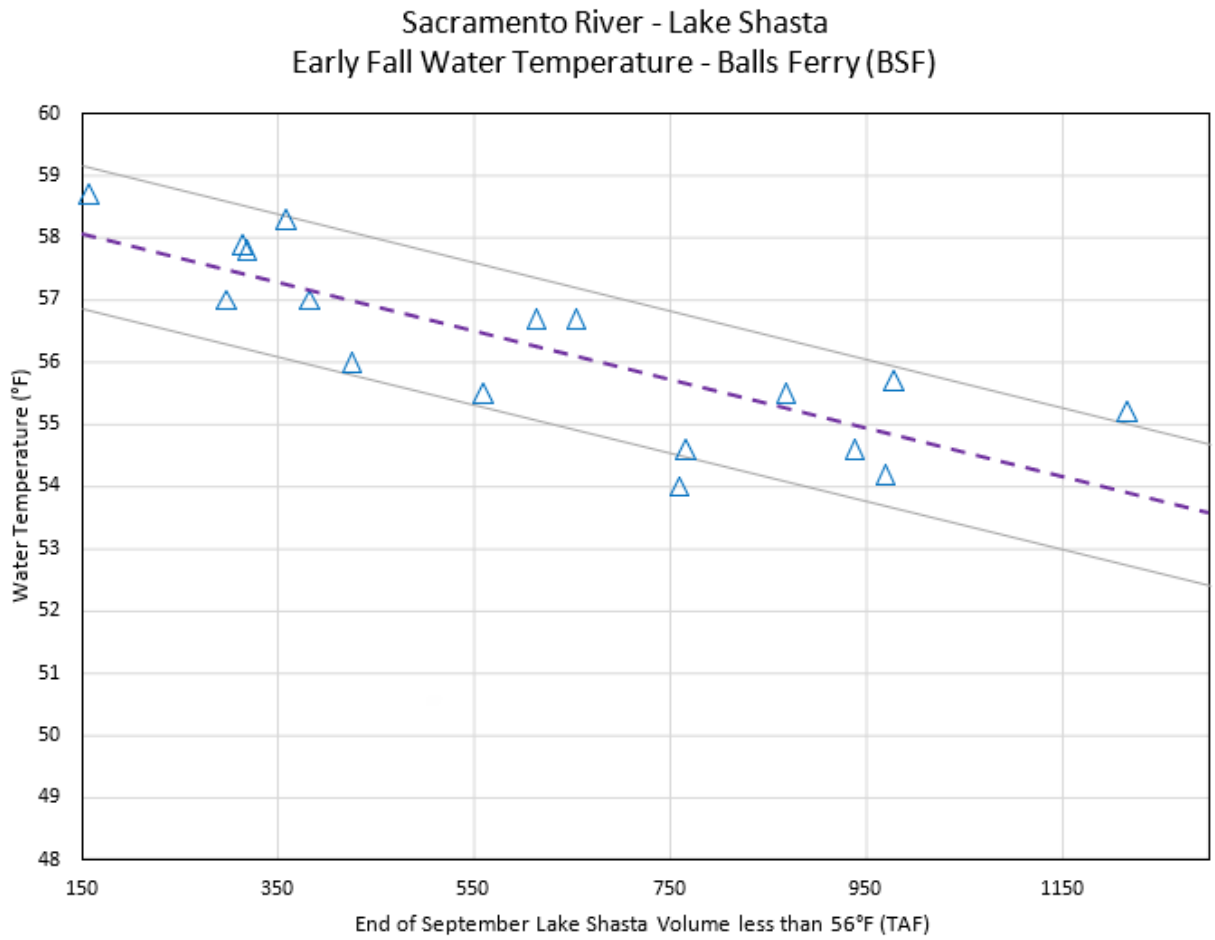


Sacramento River – Lake Shasta Early Fall Water Temperature – Sacramento River above Clear Creek (CCR)

This figure is a line graph showing the historical relationship between Shasta Lake cold-water-pool characteristics and early fall Sacramento River above Clear Creek confluence water temperature.

Notes:

1. Historical maximum mean 3-day water temperature between 9/20 - 10/31.
2. The Shasta TCD was at it's lowest gate configuration of the season (side gates only or combination of side gates and PRG's).
3. 1998-2017, excluding years not using side gates and extreme drought year 2014.
4. Upper and Lower grey lines represent 90% confidence range.

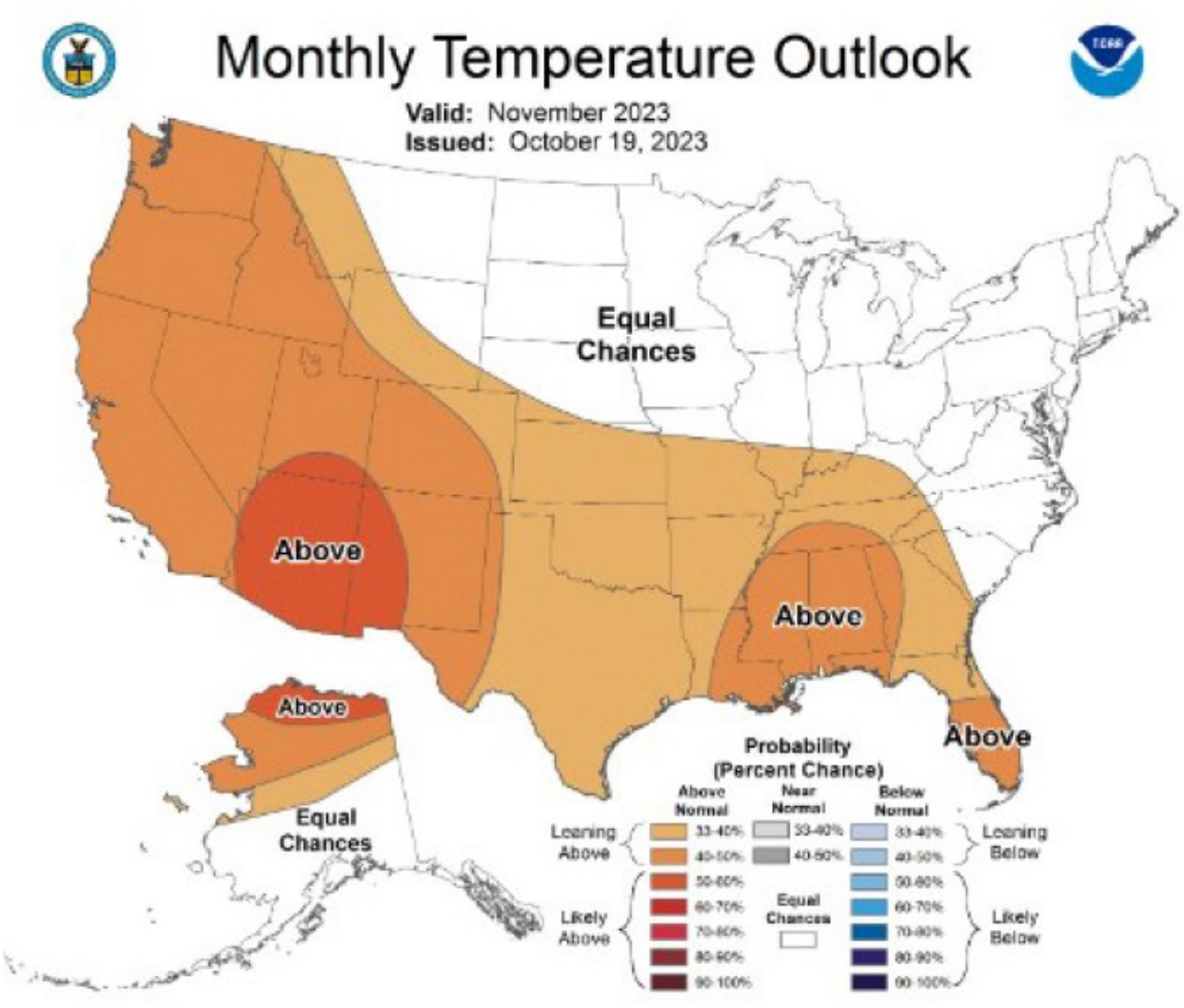


Sacramento River – Lake Shasta Early Fall Water Temperature – Bells Ferry (BSF)

This figure is a line graph showing the histocual relationship between Lake Shasta cold-water-pool characteristics and early fall Bells Ferry water temperature.

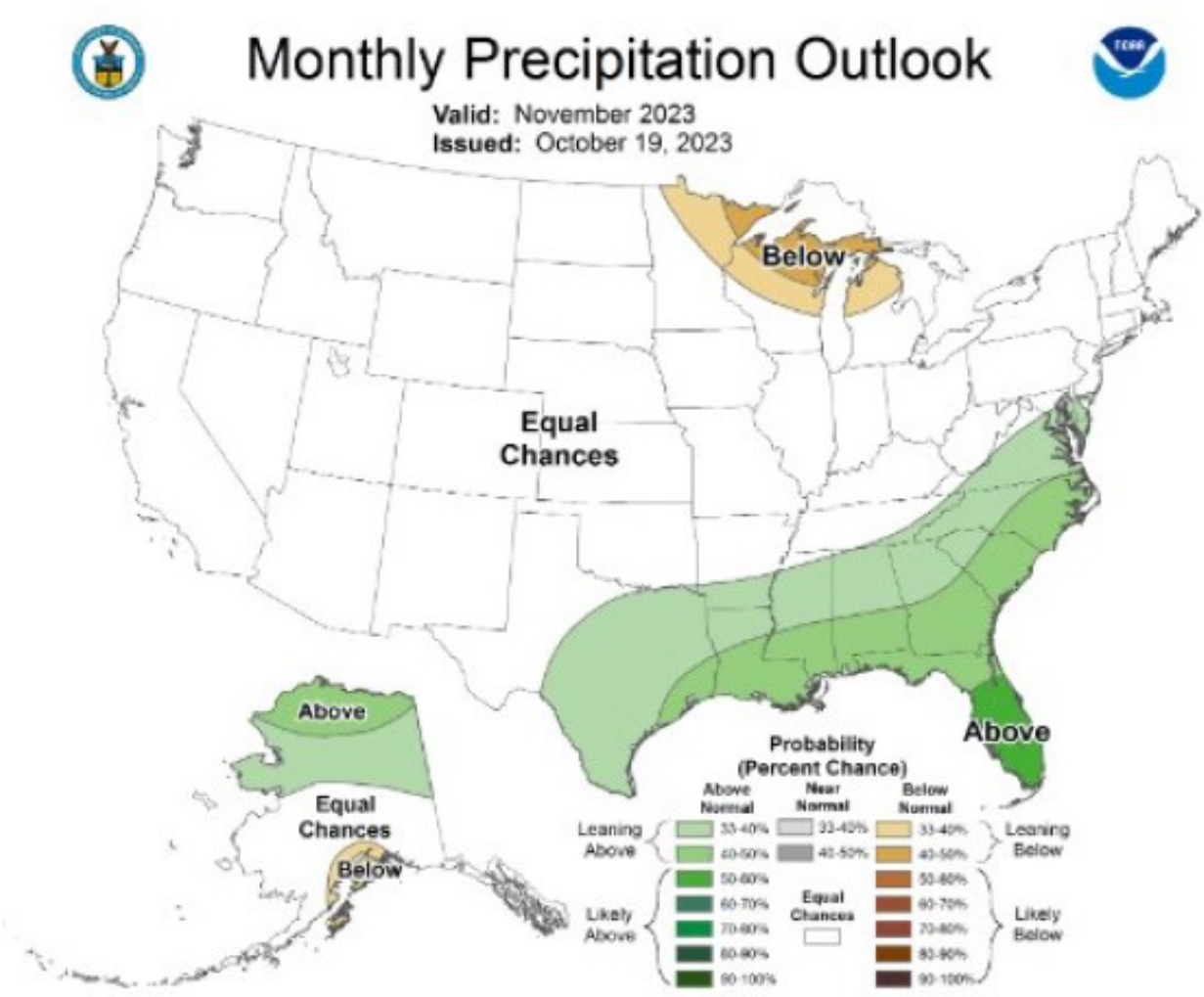
Notes:

1. Historical maximum mean 3-day water temperature between 9/20 - 10/31.
2. The Shasta TCD was at it's lowest gate configuration of the season (side gates only or combination of side gates and PRG's).
3. 1998-2017, excluding years not using side gates and extreme drought year 2014.
4. Upper and Lower grey lines represent 90% confidence range.



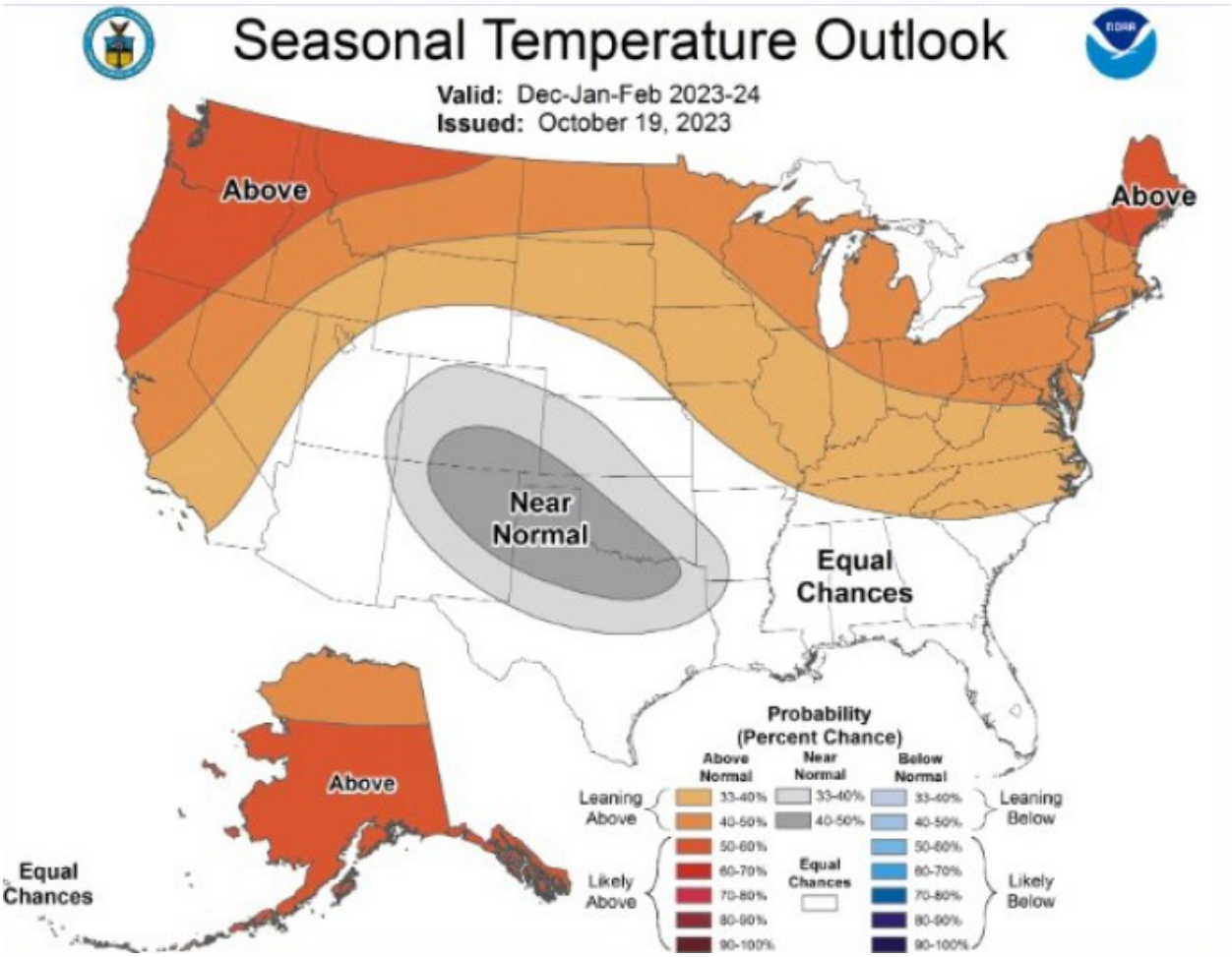
Official Monthly Temperature Outlook

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 November 2023 and was issued on October 19, 2023.



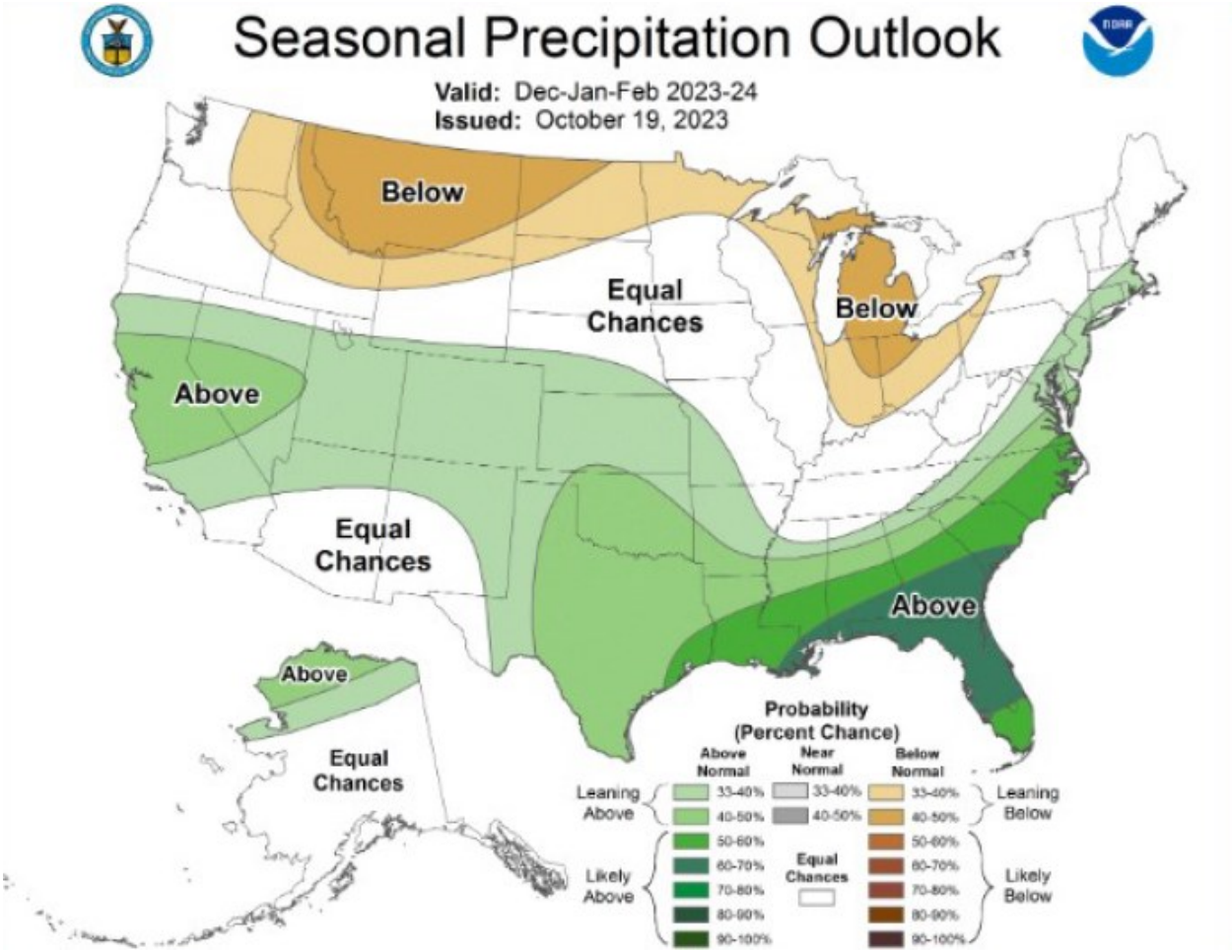
Monthly Precipitation Outlook

This figure shows a seasonal precipitation outlook with the percent probability of near normal, below, or above normal temperatures for all of the United States. The figure is valid for November 2023 and was issued on October 19, 2023.



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 December 2023 to February 2024 and was issued on October 19, 2023.



Seasonal Precipitation Outlook

This figure shows a seasonal precipitation outlook with the percent probability of near normal, below, or above normal temperatures for all of the United States. The figure is valid for October-December 2023 and was issued on September 21, 2023.