

Northern CVP Water Temperature Report

September - 2023

Page	Description
2	- Mean Daily Water Temperature, Release Flow Rates and Air Temperatures with Monthly Averages
3	- Sacramento River Mean Daily Water Temperature Plot
4	- Trinity River Mean Daily Water Temperature Plot
5	- Shasta Lake Isothermobaths & Cold Water Pool Statistics
14	- Trinity Lake Isothermobaths & Cold Water Pool Statistics
23	- Whiskeytown Lake Isothermobaths & Cold Water Pool Statistics
x	- TCD Configuration (External Link)



— BUREAU OF —
RECLAMATION

All Data in this Report is Preliminary and Subject to Change

DATE	Mean Daily Water Temperatures (°F)													Mean Daily Release (CFS)			Mean Daily Air Temperatures (°F)			
	TCD ¹	SHD	SPP ¹	KWK	SAC	CCR ²	BSF	BND	RDB	IGO	LWS	DGC ³	NFH	Shasta Generation	Spring Creek P.P.	Keswick Total	RDD	BSF	RDB	
Aug	49.9	48.7	54.8	50.7	51.2	52.0	54.0	55.9	57.8	57.3	52.2	58.4	64.7	8684	529	9920	84.5	78.6	79.2	
09/01	49.8	49.1	57.6	50.6	51.0	51.8	53.2	54.7	56.2	56.9	50.8	54.5	59.0	7257	499	8390	70.5	65.1	67.2	
09/02	49.9	49.2	57.3	50.2	50.7	51.4	53.3	54.3	55.3	57.5	50.6	55.2	58.3	7074	502	8217	69.0	65.9	66.2	
09/03	49.8	48.9	57.6	50.8	51.2	52.0	53.9	55.3	56.5	57.6	50.3	56.8	60.6	7220	529	7989	74.0	68.9	69.1	
09/04	49.8	49.1	57.6	50.8	51.4	52.3	54.3	56.1	57.6	58.0	50.2	56.7	61.5	7000	496	7993	74.5	70.0	71.2	
09/05	50.1	? 49.3	58.1	50.9	51.4	52.2	54.3	56.1	57.8	58.1	50.4	57.0	61.9	6880	483	7995	77.5	71.8	73.4	
09/06	50.1	? 49.4	58.2	51.0	51.7	52.5	54.5	56.3	57.9	58.1	50.4	56.9	62.1	6988	492	8004	78.0	72.5	73.8	
09/07	50.1	49.5	58.2	51.1	51.7	52.5	54.6	56.5	58.1	58.5	50.6	56.7	61.5	6874	500	8017	77.0	71.2	73.1	
09/08	49.7	? 49.2	58.3	51.3	51.8	52.7	54.6	56.3	58.0	58.0	50.8	57.0	61.6	6762	514	7896	77.0	71.0	73.5	
09/09	49.6	? 48.9	58.4	51.2	51.8	52.7	54.6	56.3	57.9	57.7	51.0	56.8	61.6	7901	532	7789	77.5	70.8	73.7	
09/10	49.7	48.8	58.2	50.8	51.4	52.2	54.3	56.1	57.8	57.5	51.2	56.8	61.4	6343	672	7692	78.0	71.2	74.8	
09/11	49.9	48.9	58.6	50.9	51.5	#	54.3	? 55.8	? 57.4	57.7	51.2	56.7	61.0	6902	494	7685	78.5	71.8	67.9	
09/12	49.5	#	58.5	50.9	51.5	#	54.2	55.9	? 57.5	57.9	51.1	57.1	61.5	6769	496	7701	79.0	72.9	72.8	
09/13	49.4	#	58.6	51.4	52.0	52.8	54.6	56.2	57.7	58.1	50.8	57.1	61.8	6401	1061	7649	82.5	75.0	77.1	
09/14	49.2	? 48.1	58.8	51.3	51.9	52.8	54.8	56.6	? 58.2	57.9	50.9	56.7	61.6	6432	946	7597	81.5	75.3	79.2	
09/15	49.5	? 48.9	58.7	51.1	51.7	52.6	54.6	56.3	58.1	57.1	50.3	56.3	61.0	6230	962	7447	81.0	74.2	75.0	
09/16	49.5	? 48.6	58.8	51.1	51.6	52.4	54.2	56.0	? 57.8	54.6	50.0	55.7	60.4	6555	948	7294	80.0	73.5	73.5	
09/17	49.4	? 48.4	? 58.9	? 51.2	? 51.8	? 52.8	? 54.5	? 56.2	? 57.9	? 54.8	? 50.1	? 55.7	? 60.4	7012	950	7098	78.0	72.0	72.0	
09/18	!	!	!	!	!	!	!	!	!	!	!	!	!	6264	925	7090	!	75.5	76.6	75.2
09/19	49.8	? 48.8	59.0	51.5	52.0	52.8	54.5	56.1	57.9	54.6	50.4	55.7	60.4	6059	1031	7176	76.5	71.0	70.8	
09/20	49.3	48.4	58.9	51.5	52.0	52.8	54.7	56.2	57.8	54.1	50.1	54.9	59.2	6518	970	7250	75.0	71.0	71.8	
09/21	48.9	47.9	58.9	51.8	52.2	52.9	54.2	55.4	56.8	53.5	49.8	53.5	57.9	5553	1156	7345	73.0	69.1	70.2	
09/22	49.1	48.1	59.0	51.0	51.6	52.5	54.0	55.1	56.4	53.2	49.7	53.2	57.0	5637	959	6900	67.5	62.9	66.0	
09/23	49.4	47.9	58.8	50.8	51.3	52.2	53.6	54.8	56.3	53.3	49.6	53.4	56.9	5715	942	6946	68.0	62.3	64.6	
09/24	49.1	? 47.8	58.7	50.9	51.3	52.1	53.6	54.8	? 56.2	53.5	49.5	53.9	57.4	5309	918	6722	70.5	64.0	65.6	
09/25	49.3	? 48.2	58.7	51.0	51.1	51.6	53.3	54.7	56.0	52.6	49.5	52.9	56.5	5486	960	6679	65.5	61.9	63.2	
09/26	49.1	48.0	58.5	50.8	51.2	52.1	53.5	54.7	56.1	53.6	49.4	53.6	56.9	5571	956	6638	68.5	65.2	65.8	
09/27	49.3	48.3	58.5	50.7	51.2	52.1	53.5	? 54.6	56.0	53.4	49.3	53.2	56.8	5924	513	6537	67.0	62.8	66.5	
09/28	49.0	48.2	58.3	50.6	51.1	52.1	53.6	? 54.7	56.1	53.5	49.3	53.2	? 56.8	6191	510	6567	74.0	64.0	67.7	
09/29	49.7	? 48.6	58.5	50.2	50.6	51.4	52.9	54.1	55.5	53.1	49.5	52.2	55.9	6191	500	6404	66.5	61.0	64.7	
09/30	50.1	? 48.4	58.4	50.3	50.7	51.6	52.8	? 54.0	55.1	53.6	49.7	52.5	55.7	6008	551	6395	67.0	61.7	61.5	
-																				
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	
														Total CFS	193026	21967	221102			
														Total AF	382859	43571	438547			

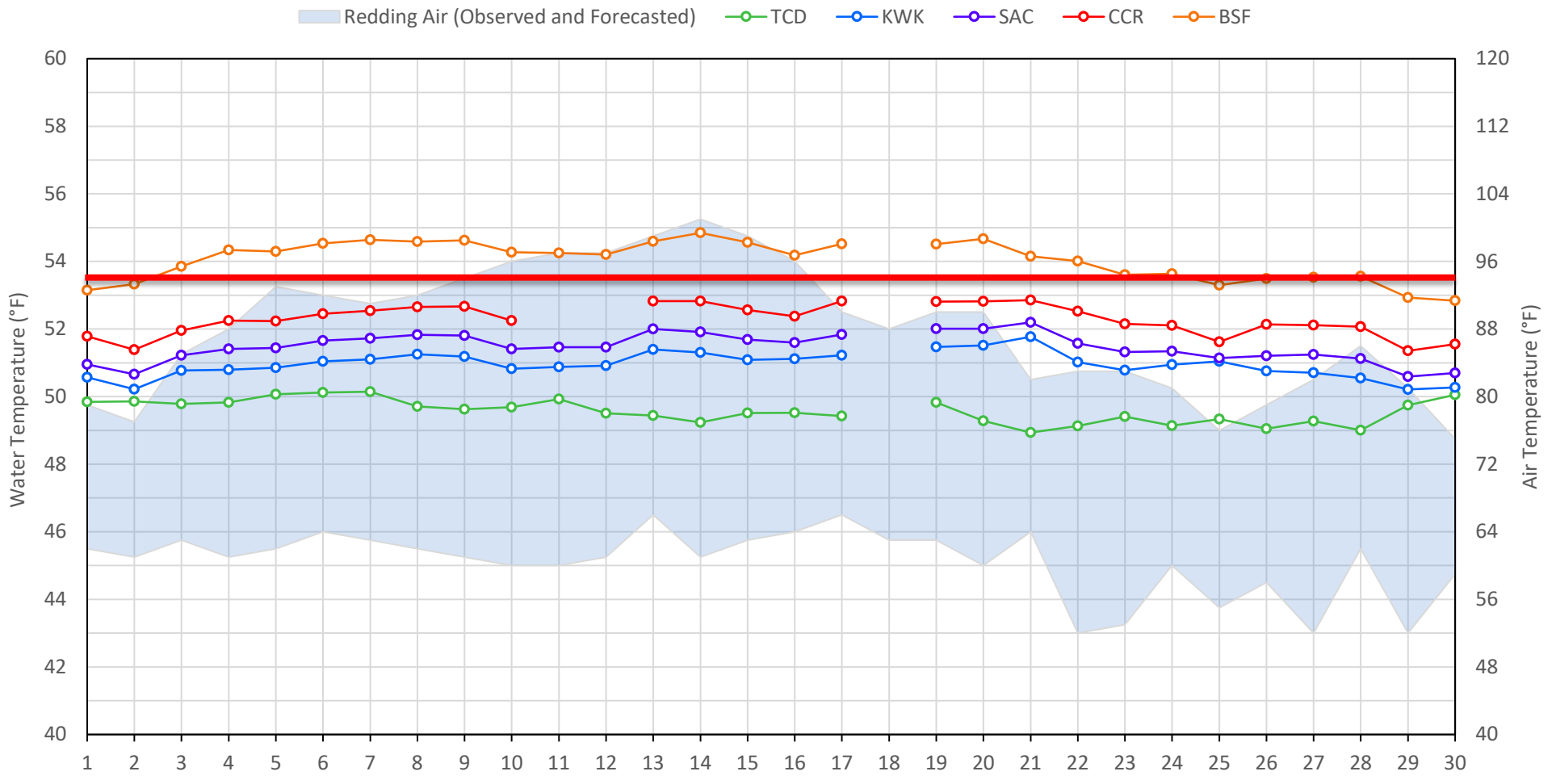
Legend

- ? = 1-9 hours of data missing (Average includes estimations)
- ! = 10 or more hours of data missing (Average not calculated)
- # = Station out of service
- ↑ = Record high air temperature
- ↓ = Record low air temperature
- = Monthly Averages

Notes

- ¹ Temperatures are weighted averages based on individual penstock flow and temperature
- 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



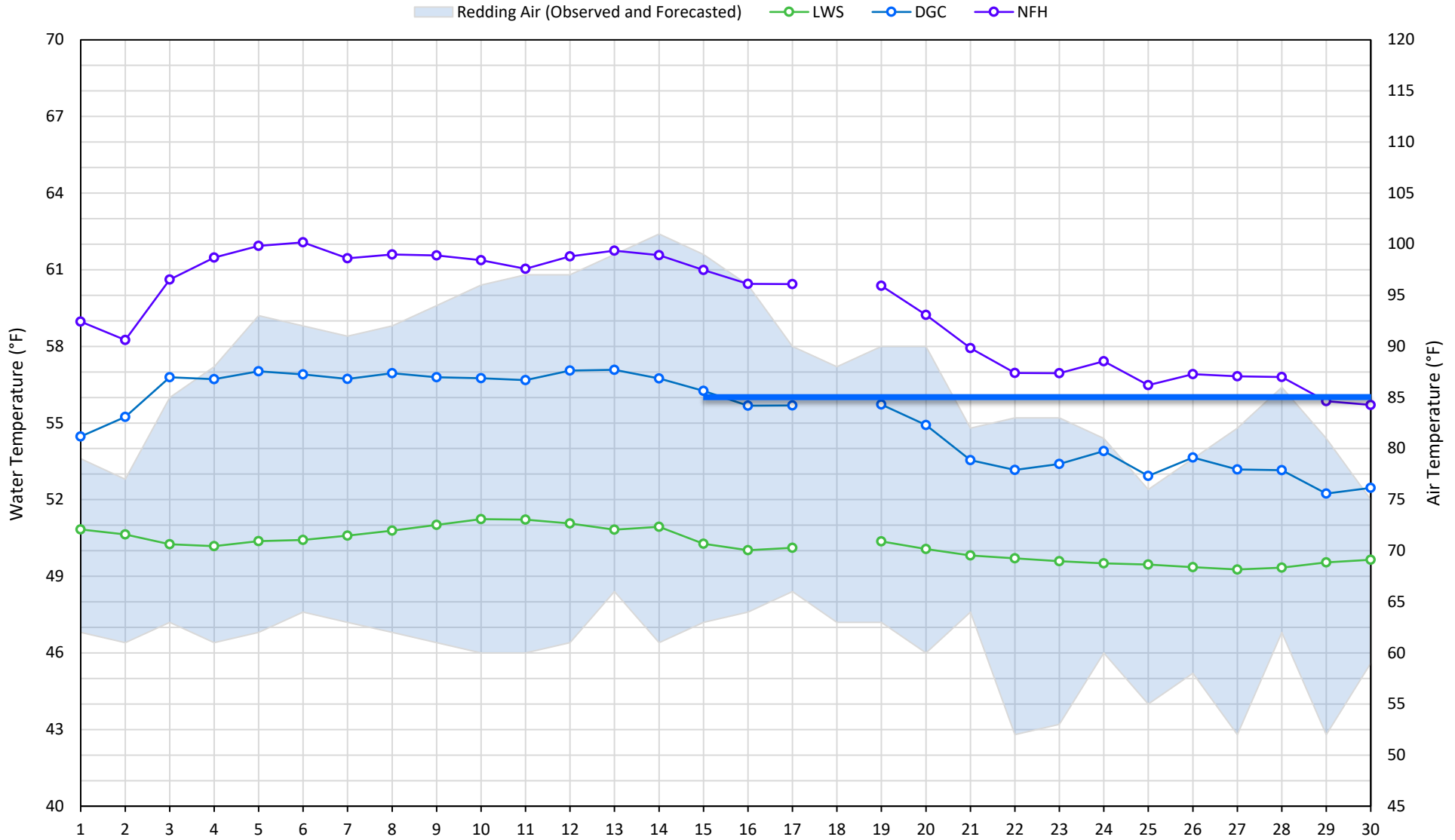
Station Details			
Code	Body of Water	Location ¹	CDEC Link
TCD	N/A	Shasta Power Plant	N/A
SHD	Sacramento River	0.3 miles downstream of Shasta Power Plant	Click Here
SPP	N/A	Spring Creek Power Plant	N/A
KWK	Sacramento River	0.8 miles downstream of Keswick Dam	Click Here
SAC	Sacramento River	4.8 miles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

Water Right Temperature Control Points				
River	Point	Temp. (°F)	Begin Date	End Date
Sacramento	SAC	54.5	06/07/2022	5/14/2023
Sacramento	CCR	53.5	05/14/2023	TBD

Notes

¹ Distances are approximate

Trinity River Mean Daily Temperatures



Station Details			
Code	Body of Water	Location ¹	CDEC Link
LWS	Trinity River	1.1 miles downstream of Lewiston Dam	Click Here
DGC	Trinity River	19 miles downstream of Lewiston Dam	Click Here
NFH	Trinity River	38 miles downstream of Lewiston Dam	Click Here

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

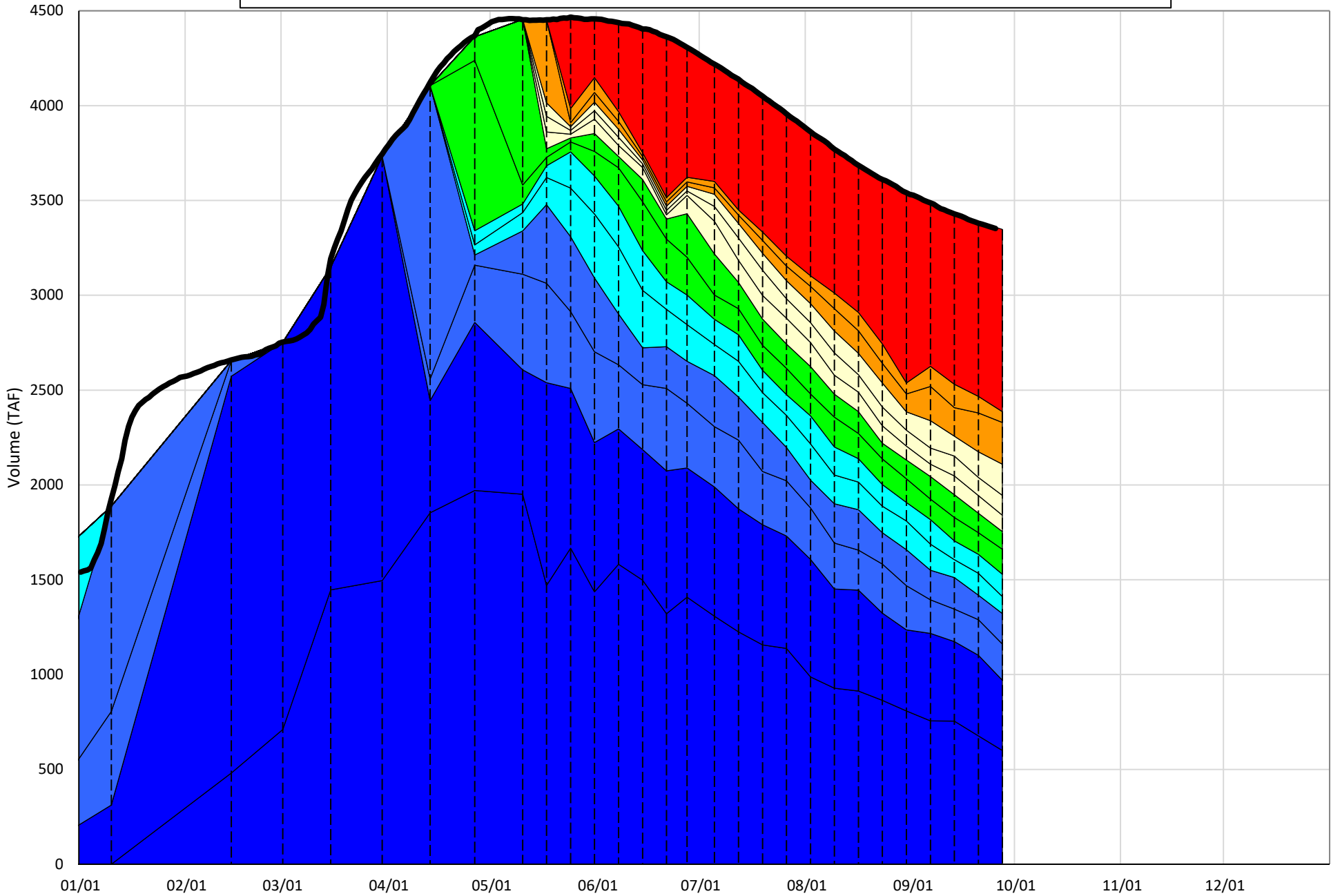
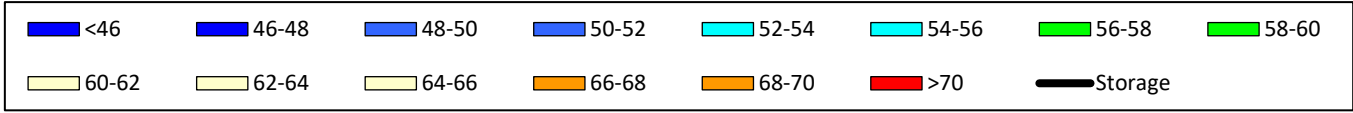
¹ Distances are approximate

Shasta Lake Isothermobaths & Cold Water Pool Statistics

2023

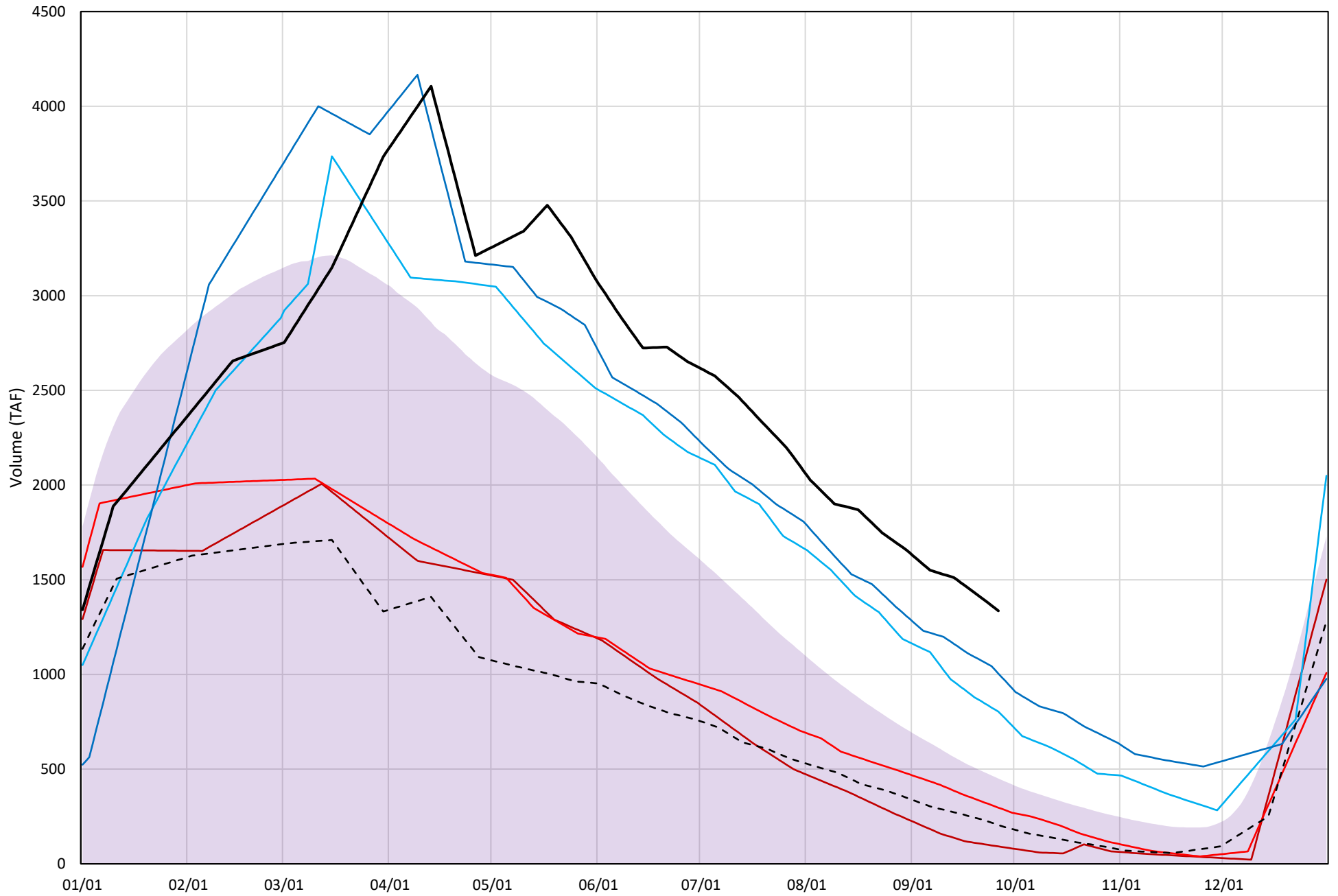
Page	Description
6	- Shasta Lake Isothermobaths Plot
7	- Shasta Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$
8	- Shasta Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$
9	- Shasta Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$
10	- Shasta Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$ - Percent Exceedances
11	- Shasta Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$ - Percent Exceedances
12	- Shasta Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$ - Percent Exceedances
13	- Shasta Lake Cold Water Pool Comparison by Year

Shasta Lake Isothermobaths Plot - 2023



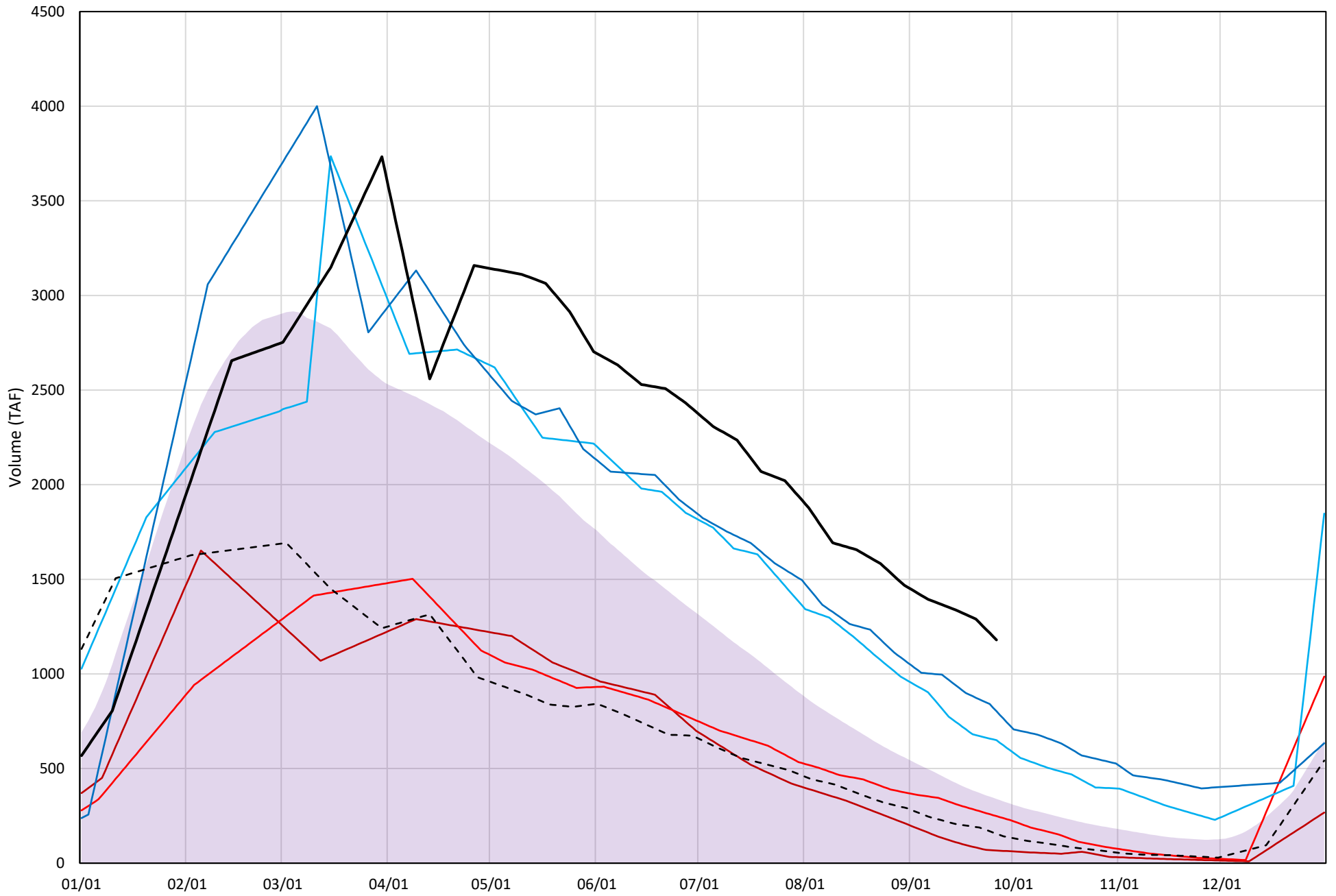
Shasta Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$

Avg (1998-2022) 2014 2015 2016 2019 2022 2023



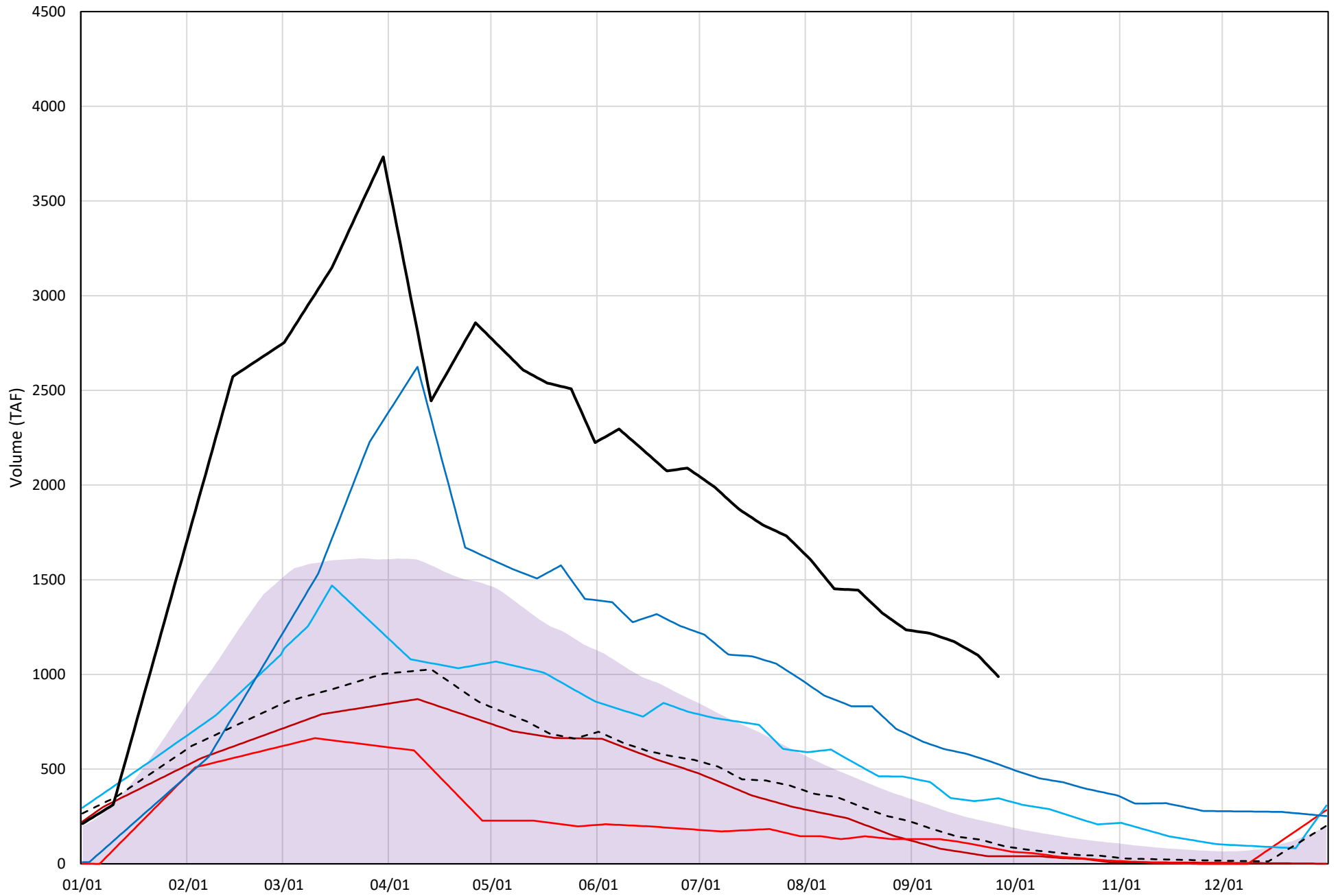
Shasta Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$

Avg (1998-2022) 2014 2015 2016 2019 2022 2023

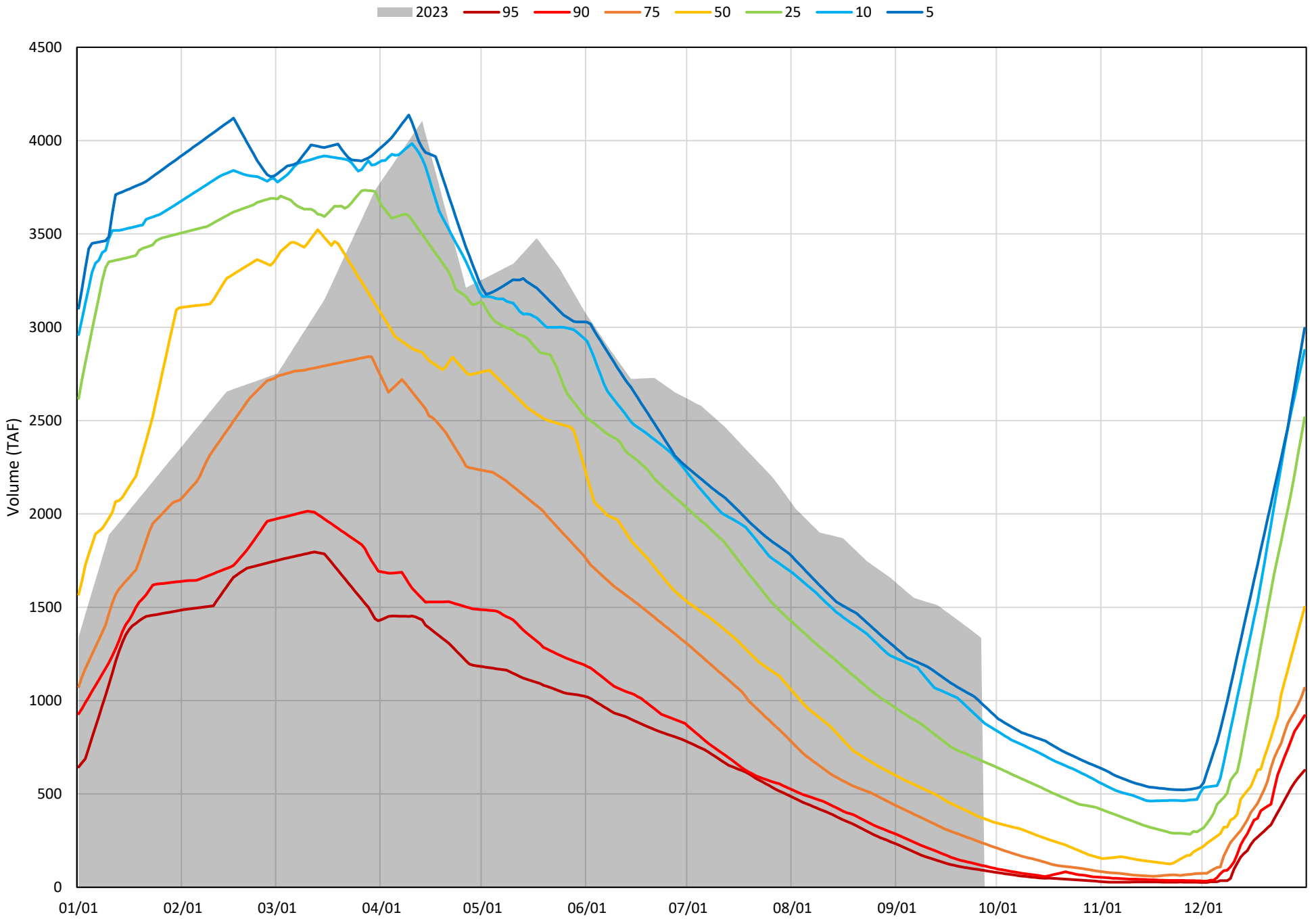


Shasta Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$

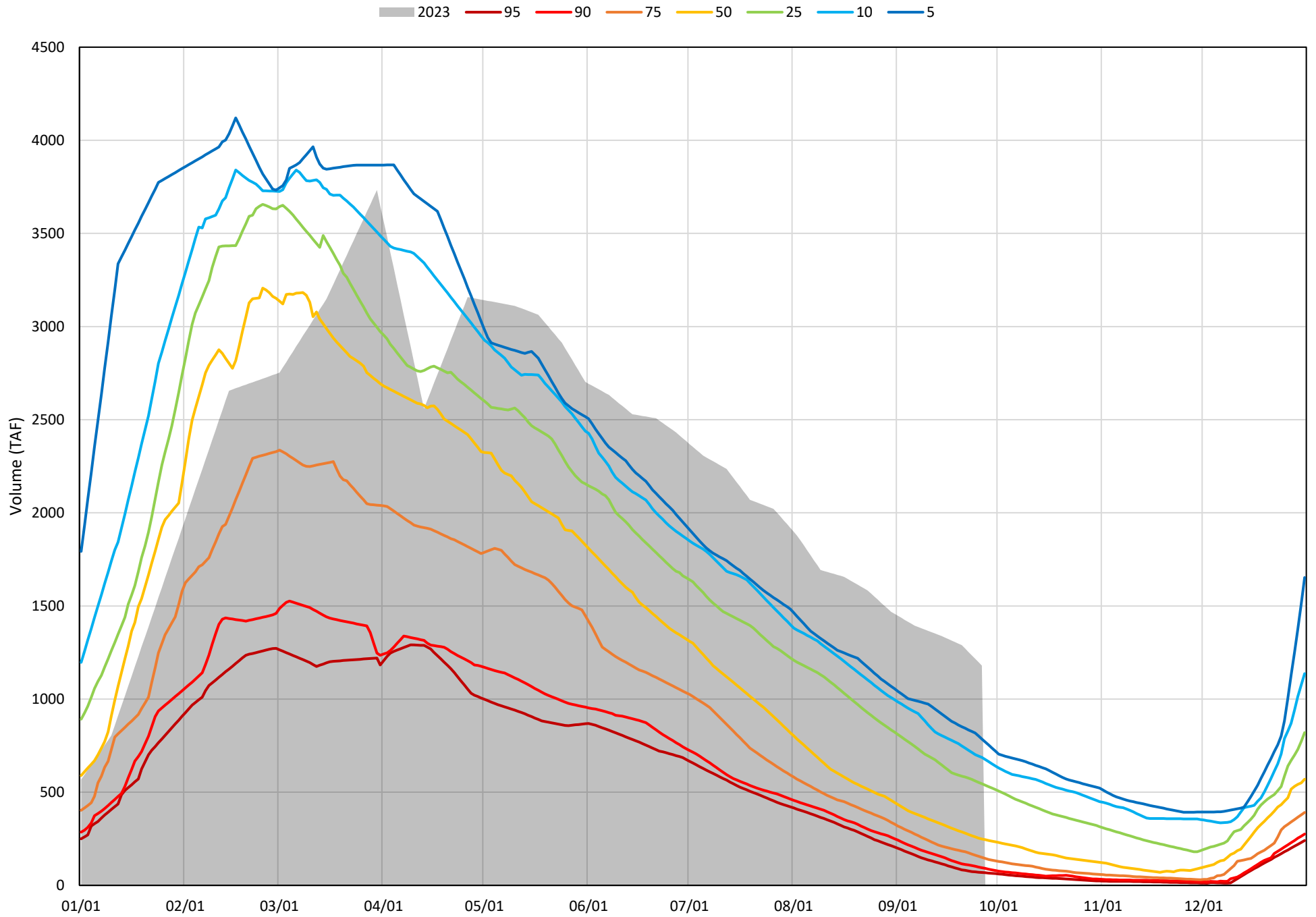
Avg (1998-2022) 2014 2015 2016 2019 2022 2023



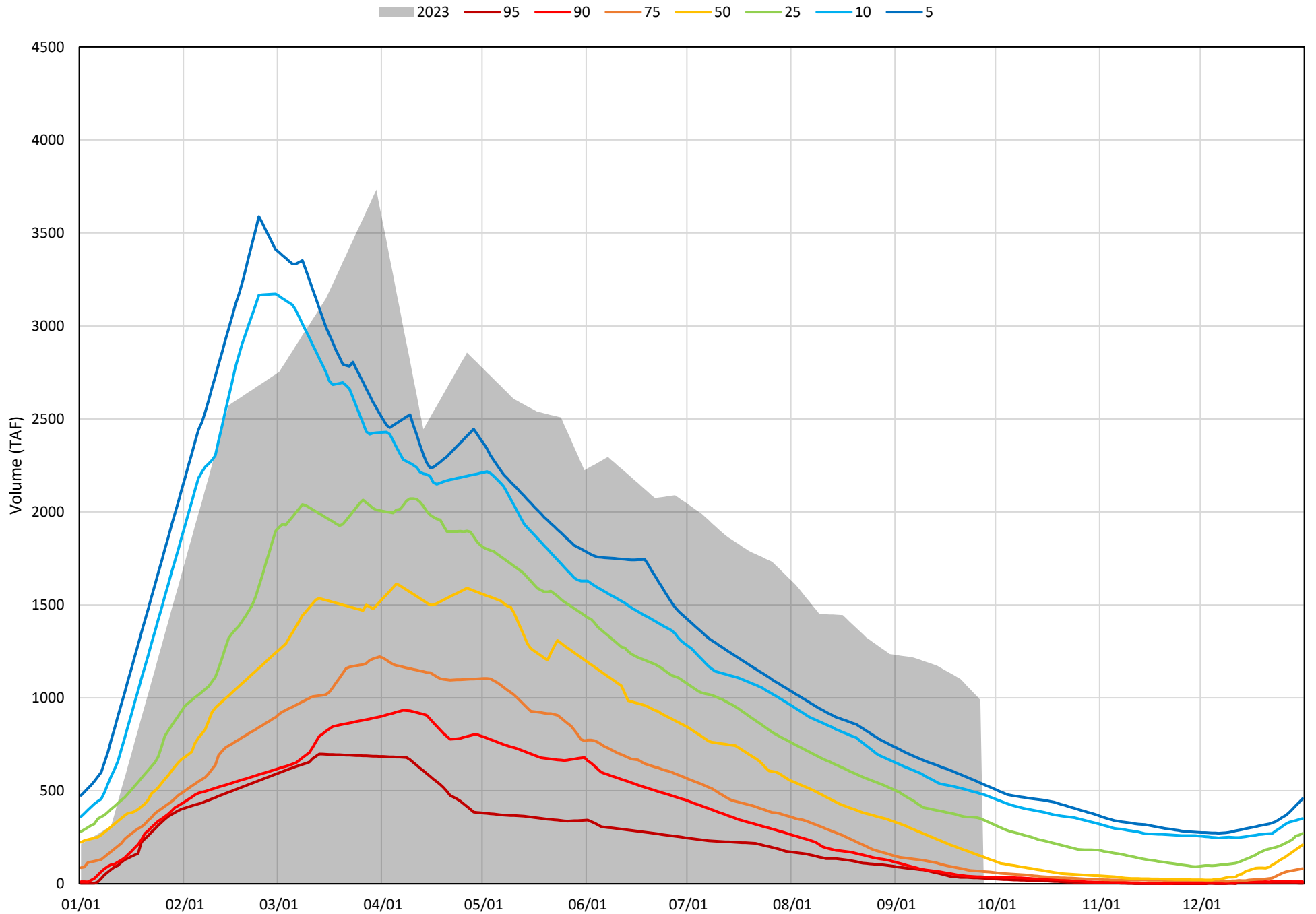
Shasta Lake Cold Water Pool Volume ≤52°F - Percent Exceedances (1998-2022)



Shasta Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$ - Percent Exceedances (1998-2022)



Shasta Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$ - Percent Exceedances (1998-2022)



Shasta Lake Cold Water Pool Comparison by Year (for Specified Date)

Sep-27 2023	Δ TAF				% Δ			
	≤52°	≤50°	≤48°	Abs. Avg.	≤52°	≤50°	≤48°	Abs. Avg.
1998	-1036	-1038	-960	1011	-78	-88	-97	88
1999	-614	-602	-561	592	-46	-51	-57	51
2000	-970	-971	-930	957	-73	-82	-94	83
2001	-1025	-933	-807	922	-77	-79	-82	79
2002	-846	-773	-633	751	-63	-66	-64	64
2003	-843	-931	-933	902	-63	-79	-94	79
2004	-1143	-1054	-921	1039	-86	-89	-93	89
2005	-1097	-1035	-922	1018	-82	-88	-93	88
2006	-826	-779	-739	781	-62	-66	-75	68
2007	-1074	-965	-839	960	-80	-82	-85	82
2008	-1201	-1071	-911	1061	-90	-91	-92	91
2009	-1094	-990	-854	979	-82	-84	-86	84
2010	-549	-626	-680	618	-41	-53	-69	54
2011	-390	-435	-439	422	-29	-37	-44	37
2012	-700	-643	-620	654	-52	-54	-63	57
2013	-963	-846	-724	844	-72	-72	-73	72
2014	-1244	-1112	-949	1102	-93	-94	-96	94
2015	-1039	-931	-911	960	-78	-79	-92	83
2016	-532	-530	-643	568	-40	-45	-65	50
2017	-474	-545	-532	517	-36	-46	-54	45
2018	-799	-751	-785	778	-60	-64	-79	68
2019	-331	-377	-463	390	-25	-32	-47	35
2020	-958	-927	-895	927	-72	-79	-91	80
2021	-1242	-1105	-955	1101	-93	-94	-97	94
2022	-1131	-1024	-887	1014	-85	-87	-90	87
2023	0	0	0	0	0	0	0	0

Historical - Current

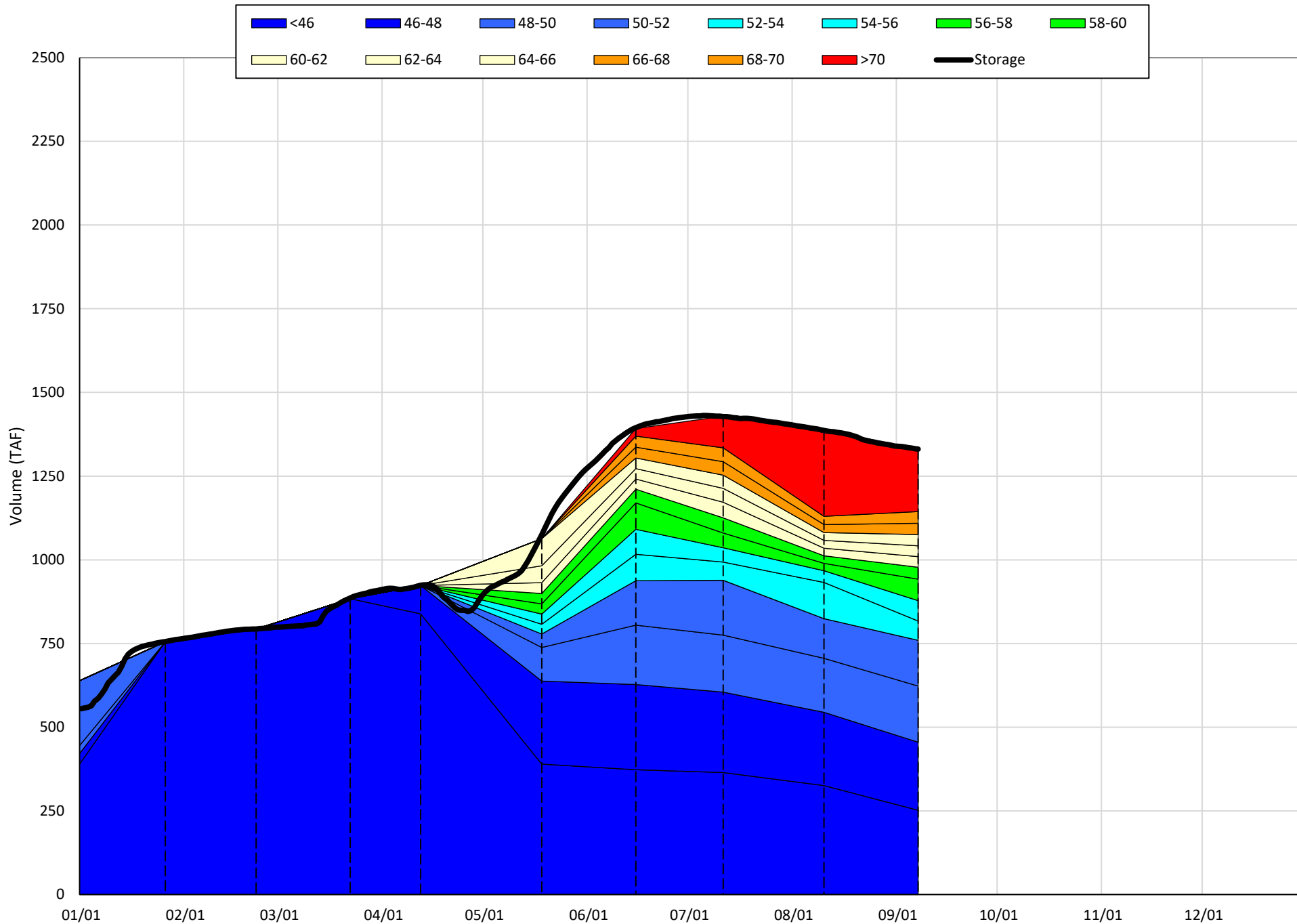
(Historical - Current) / Current

Trinity Lake Isothermobaths & Cold Water Pool Statistics

2023

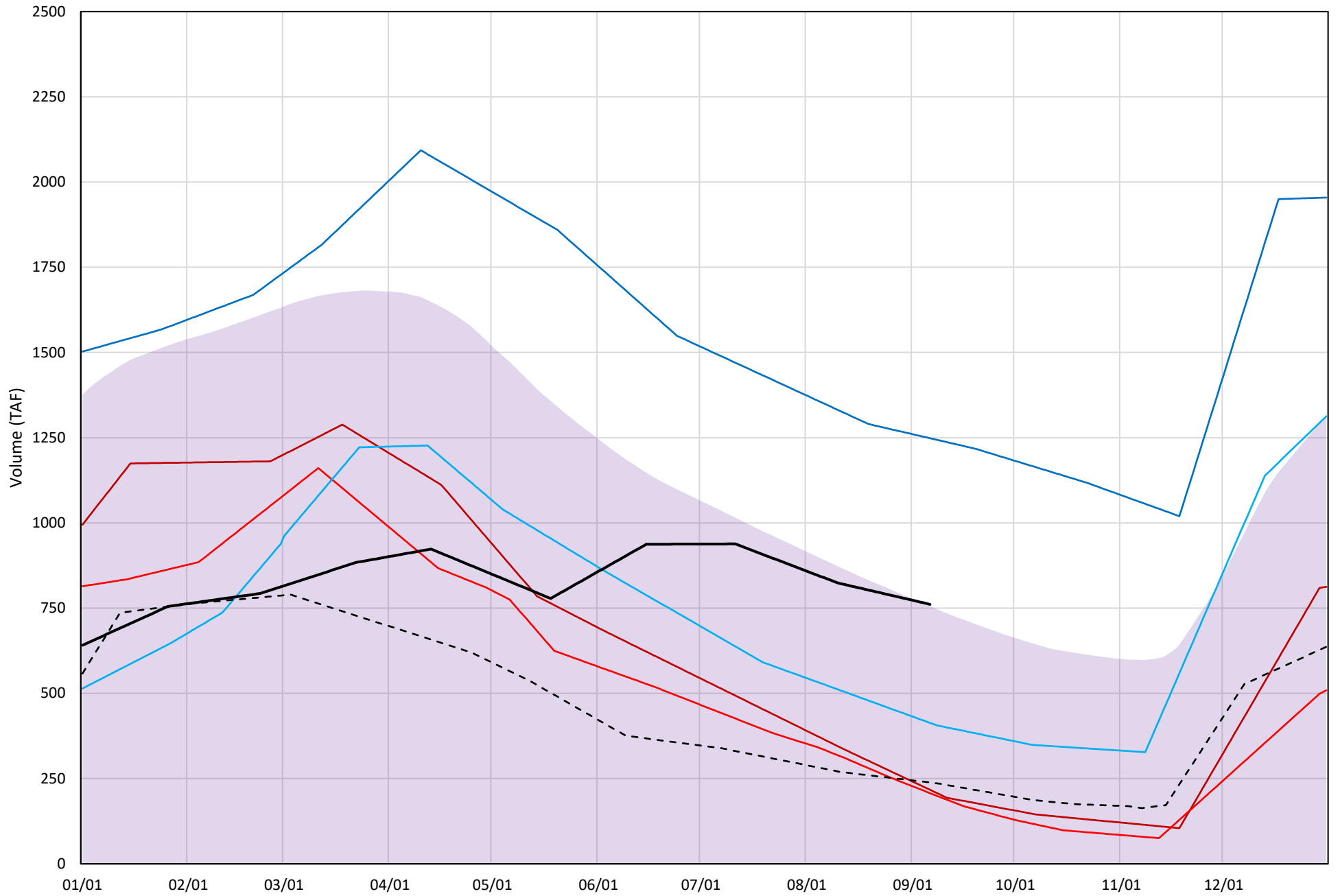
Page	Description
15	- Trinity Lake Isothermobaths Plot
16	- Trinity Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$
17	- Trinity Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$
18	- Trinity Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$
19	- Trinity Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$ - Percent Exceedances
20	- Trinity Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$ - Percent Exceedances
21	- Trinity Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$ - Percent Exceedances
22	- Trinity Lake Cold Water Pool Comparison by Year

Trinity Lake Isothermobaths Plot - 2023



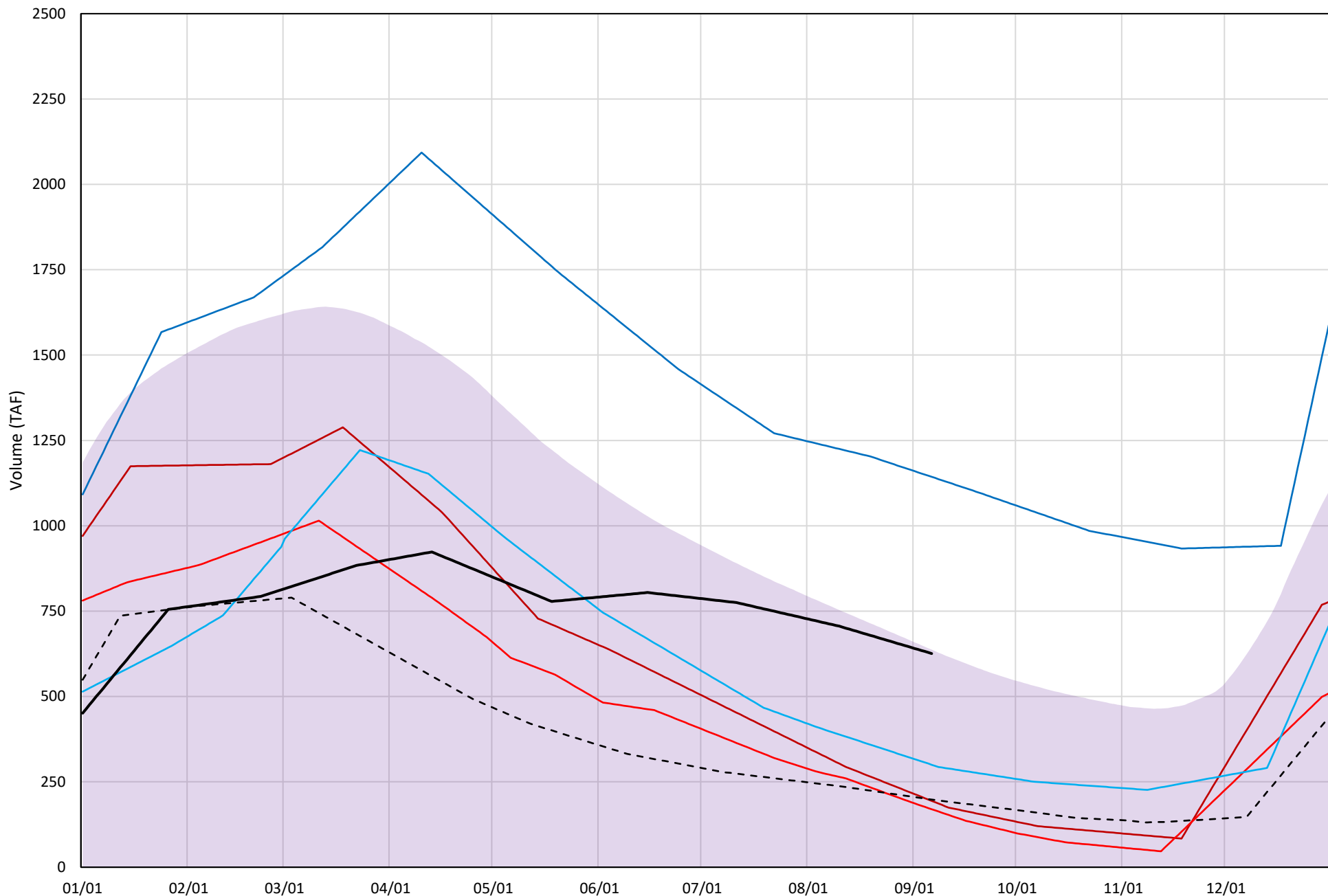
Trinity Lake Cold Water Pool Volume ≤52°F

Avg (2000-2022) 2014 2015 2016 2019 2022 2023



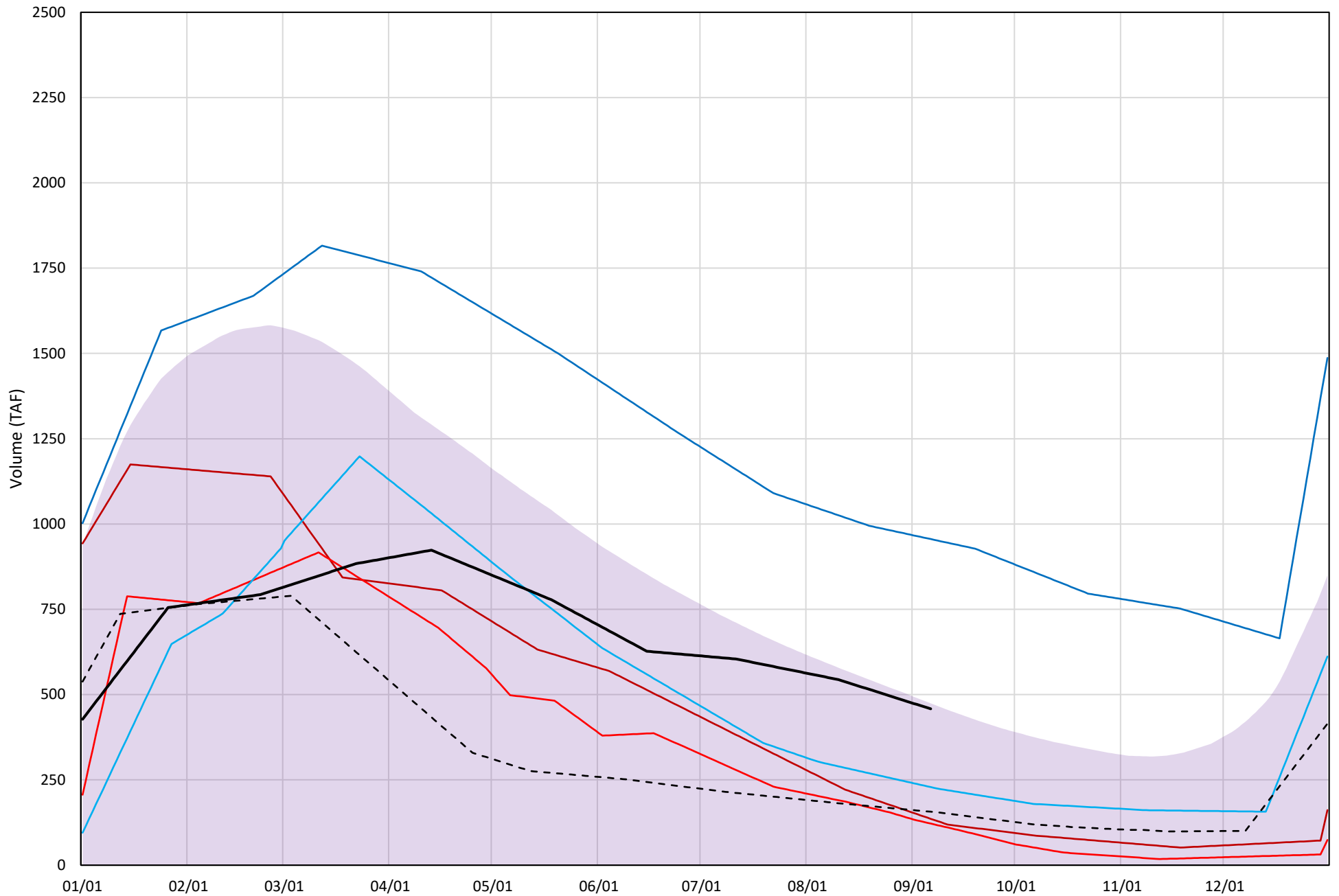
Trinity Lake Cold Water Pool Volume ≤50°F

Avg (2000-2022) 2014 2015 2016 2019 2022 2023

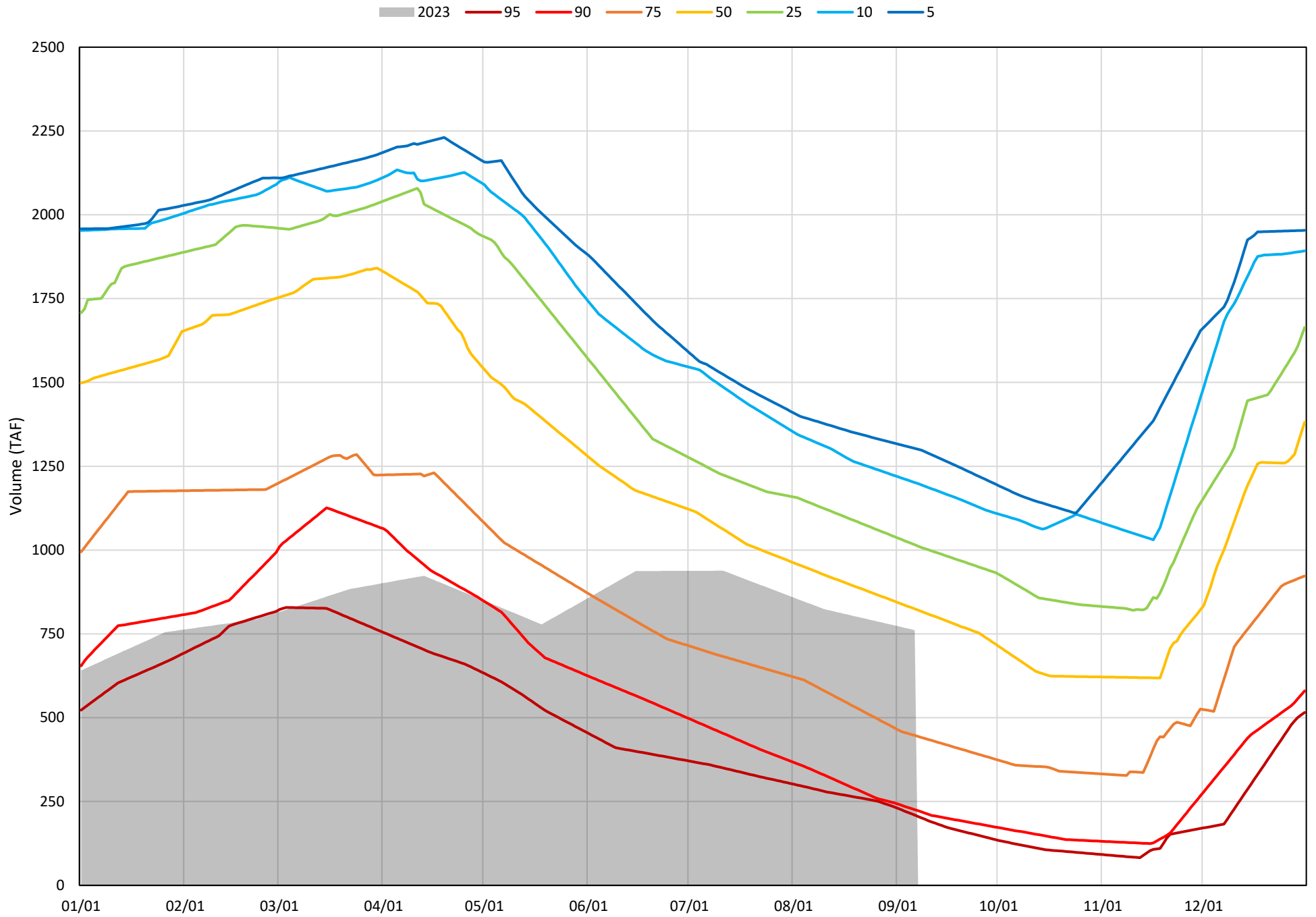


Trinity Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$

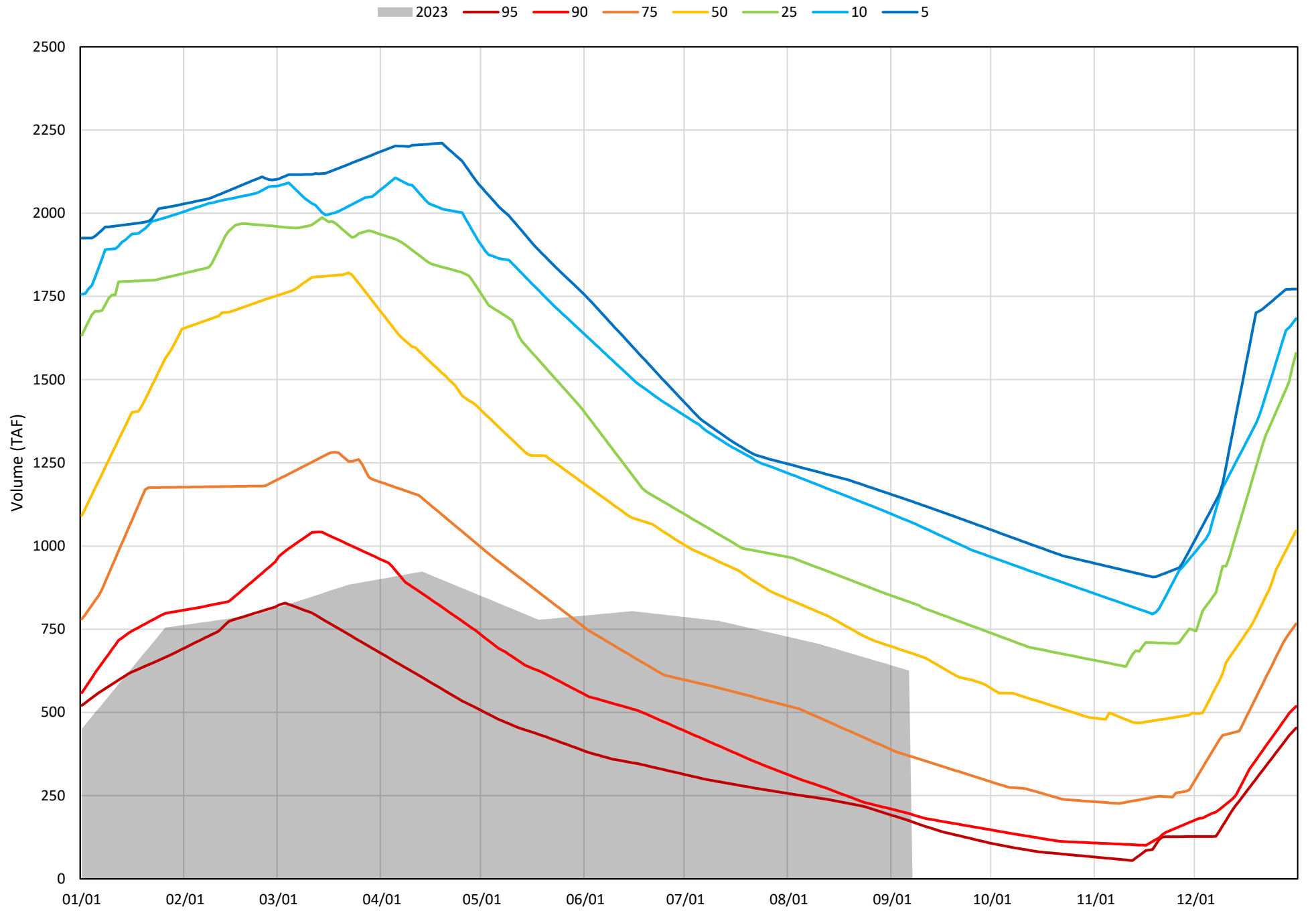
Avg (2000-2022) 2014 2015 2016 2019 2022 2023



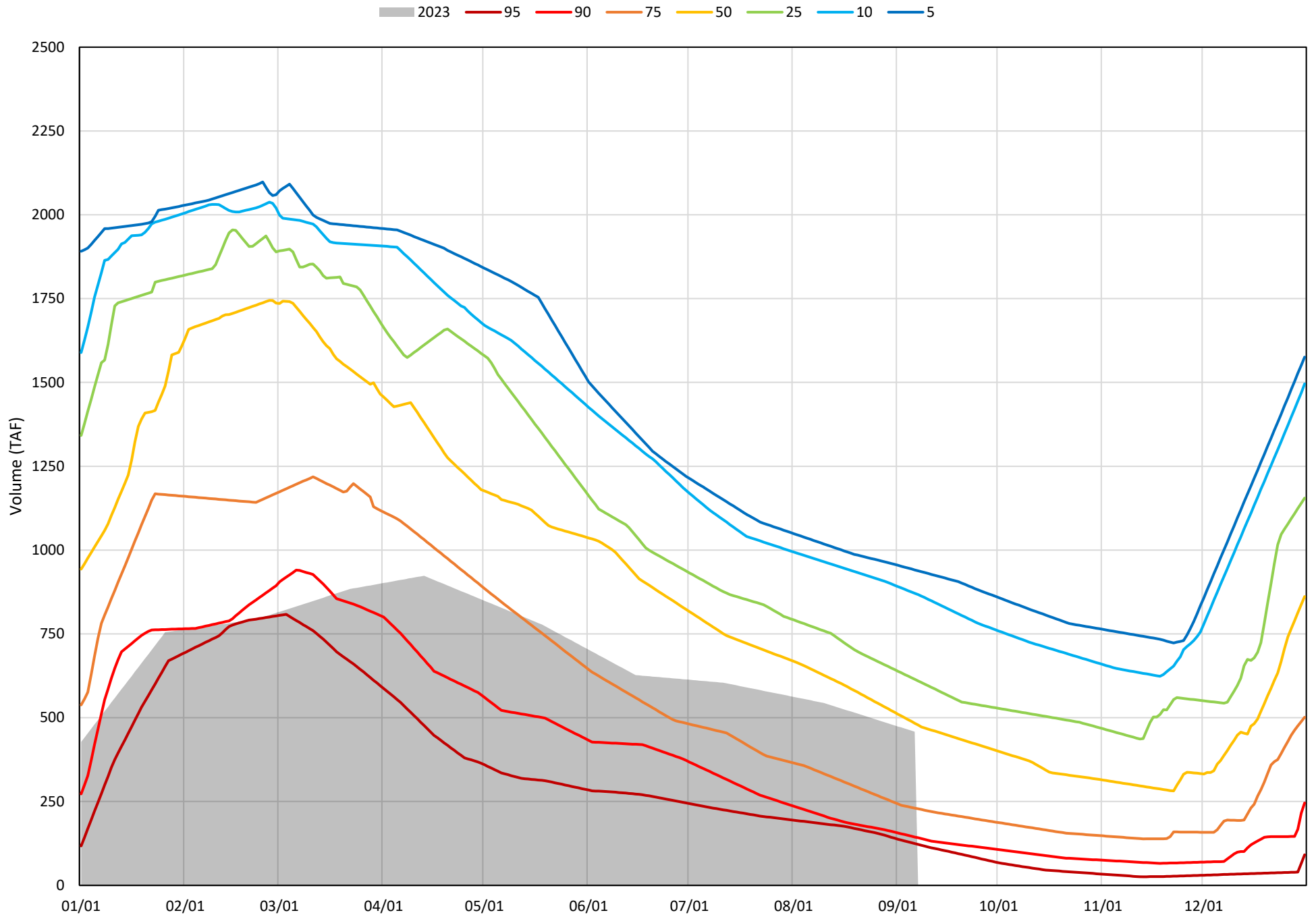
Trinity Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$ - Percent Exceedances (2000-2022)



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



Trinity Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$ - Percent Exceedances (2000-2022)



Trinity Cold Water Pool Comparison by Year (for Specified Date)

Sep-07 2023	Δ TAF				% Δ			
	≤52°	≤50°	≤48°	Abs. Avg.	≤52°	≤50°	≤48°	Abs. Avg.
2000	132	66	25	75	17	11	6	11
2001	9	40	52	34	1	6	11	6
2002	19	65	109	64	2	10	24	12
2003	323	216	119	220	42	35	26	34
2004	73	54	-1	43	10	9	0	6
2005	255	204	22	160	33	33	5	24
2006	370	326	231	309	49	52	50	50
2007	73	111	156	114	10	18	34	21
2008	-235	-220	-185	214	-31	-35	-40	35
2009	-314	-256	-228	266	-41	-41	-50	44
2010	63	8	-99	57	8	1	-22	10
2011	556	486	397	480	73	78	87	79
2012	339	392	423	385	45	63	92	67
2013	-130	-80	-48	86	-17	-13	-10	13
2014	-544	-432	-322	433	-71	-69	-70	70
2015	-554	-456	-336	449	-73	-73	-73	73
2016	-348	-326	-229	301	-46	-52	-50	49
2017	187	111	74	124	25	18	16	19
2018	157	206	231	198	21	33	51	35
2019	487	517	498	501	64	83	109	85
2020	-51	27	63	47	-7	4	14	8
2021	-476	-374	-276	375	-62	-60	-60	61
2022	-523	-428	-301	417	-69	-68	-66	68
2023	0	0	0	0	0	0	0	0

}

Historic - Current

}

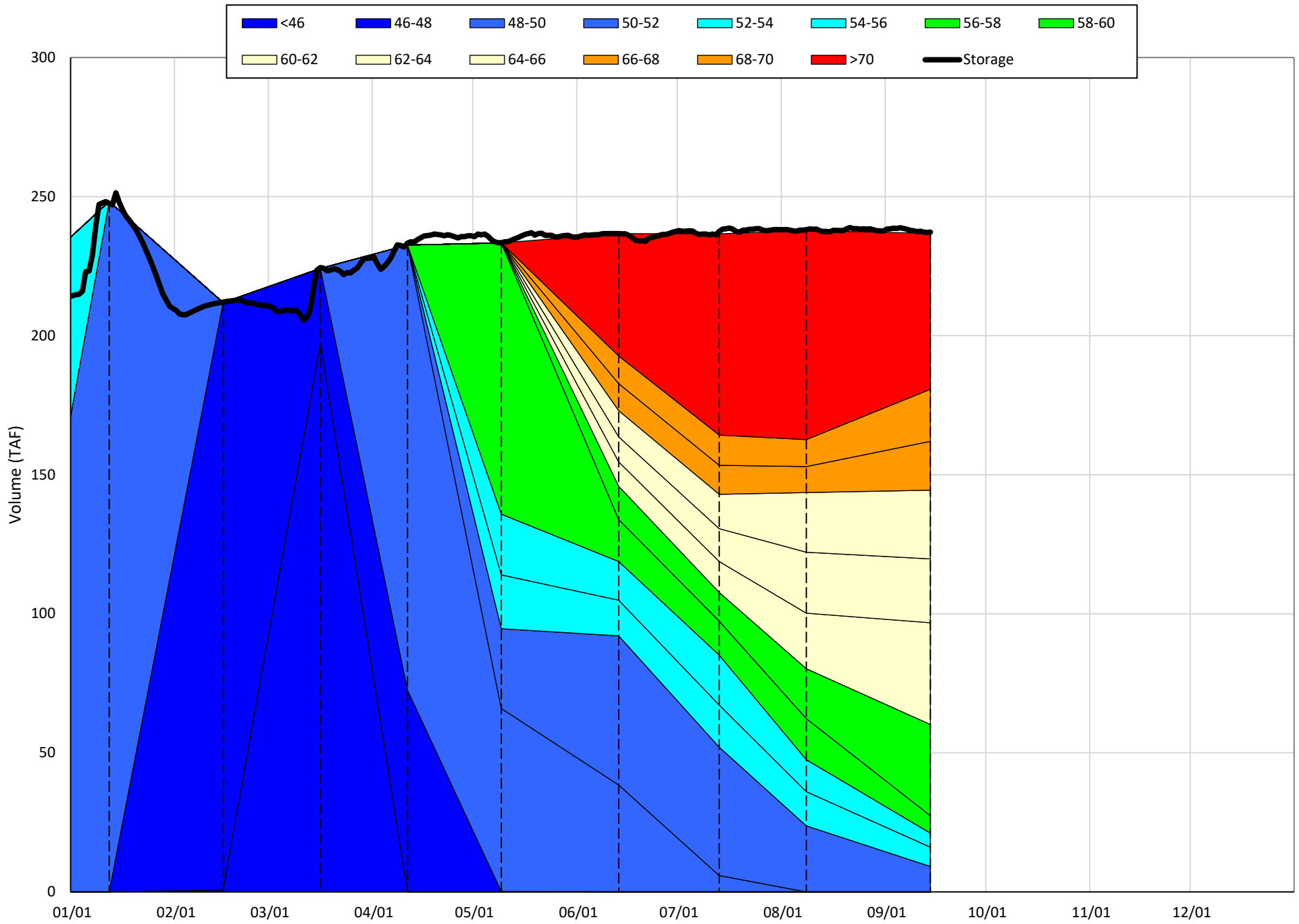
(Historic - Current) / Current

Whiskeytown Lake Isothermobaths & Cold Water Pool Statistics

2023

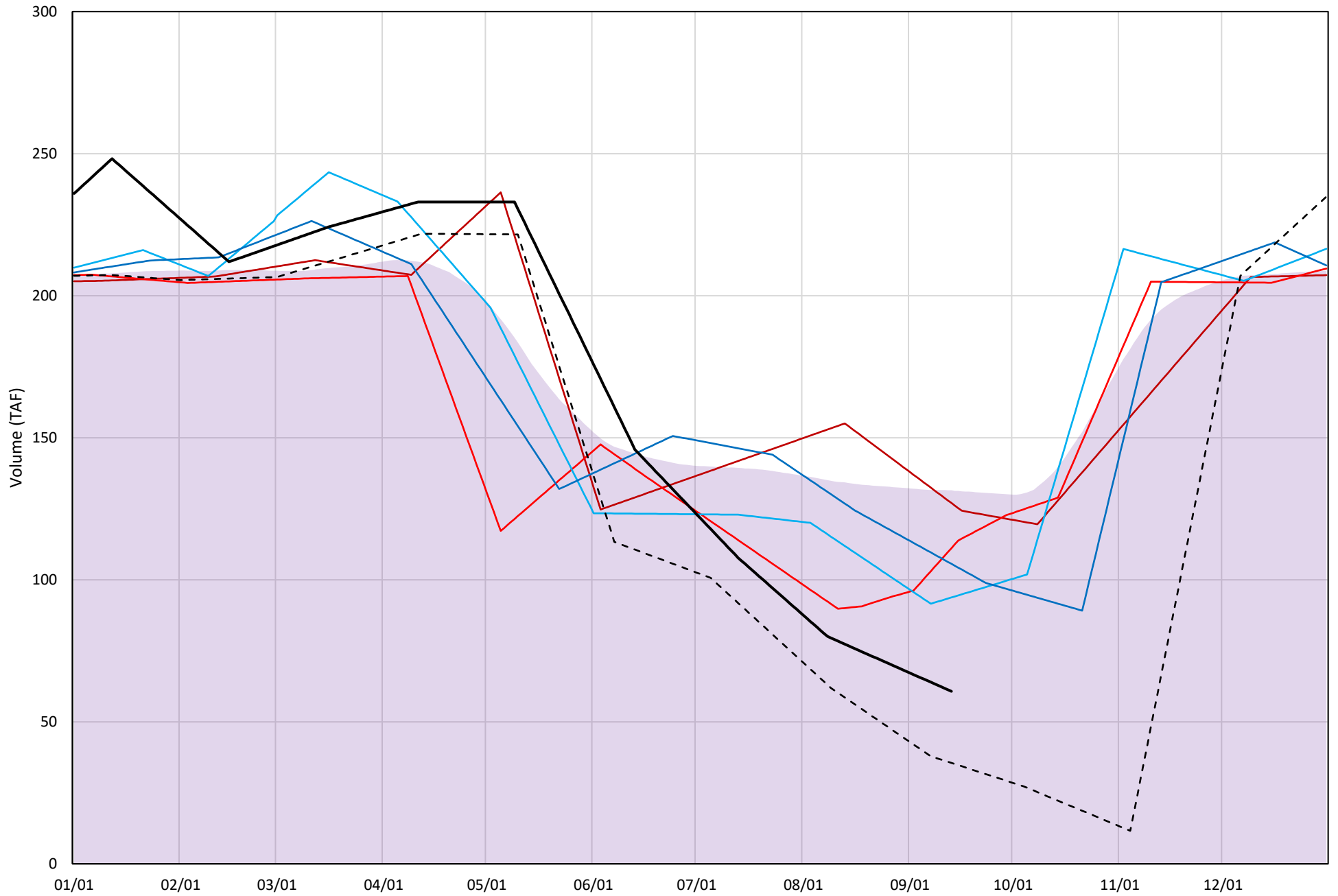
Page	Description
24	- Whiskeytown Lake Isothermobaths Plot
25	- Whiskeytown Lake Cold Water Pool Volume $\leq 60^{\circ}\text{F}$
26	- Whiskeytown Lake Cold Water Pool Volume $\leq 58^{\circ}\text{F}$
27	- Whiskeytown Lake Cold Water Pool Volume $\leq 56^{\circ}\text{F}$
28	- Whiskeytown Lake Cold Water Pool Volume $\leq 60^{\circ}\text{F}$ - Percent Exceedances
29	- Whiskeytown Lake Cold Water Pool Volume $\leq 58^{\circ}\text{F}$ - Percent Exceedances
30	- Whiskeytown Lake Cold Water Pool Volume $\leq 56^{\circ}\text{F}$ - Percent Exceedances
31	- Whiskeytown Lake Cold Water Pool Comparison by Year

Whiskeytown Lake Isothermobaths Plot - 2023



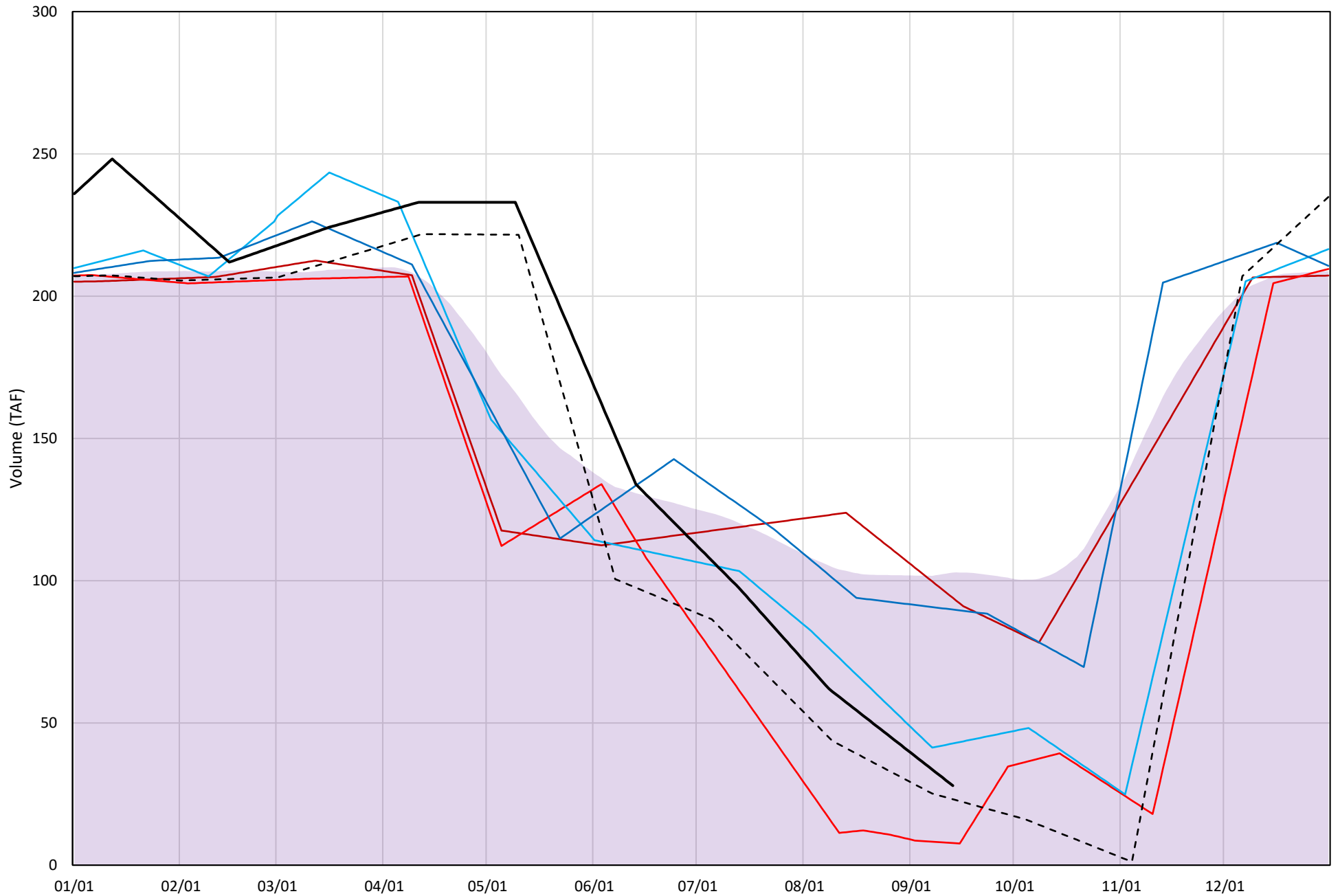
Whiskeytown Lake Cold Water Pool Volume ≤60°F

Avg (2000-2022) 2014 2015 2016 2019 2022 2023



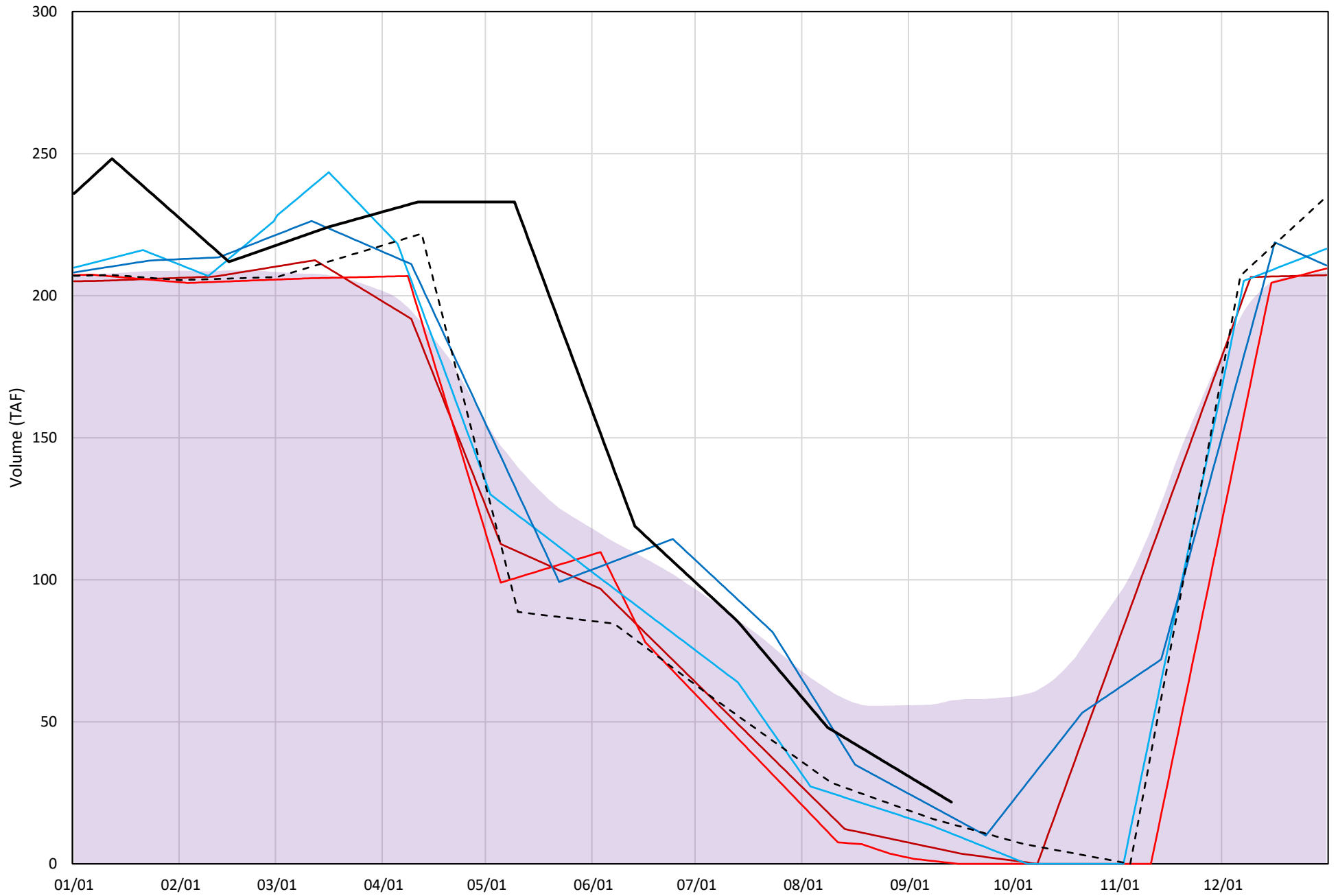
Whiskeytown Lake Cold Water Pool Volume $\leq 58^{\circ}\text{F}$

Avg (2000-2022) 2014 2015 2016 2019 2022 2023

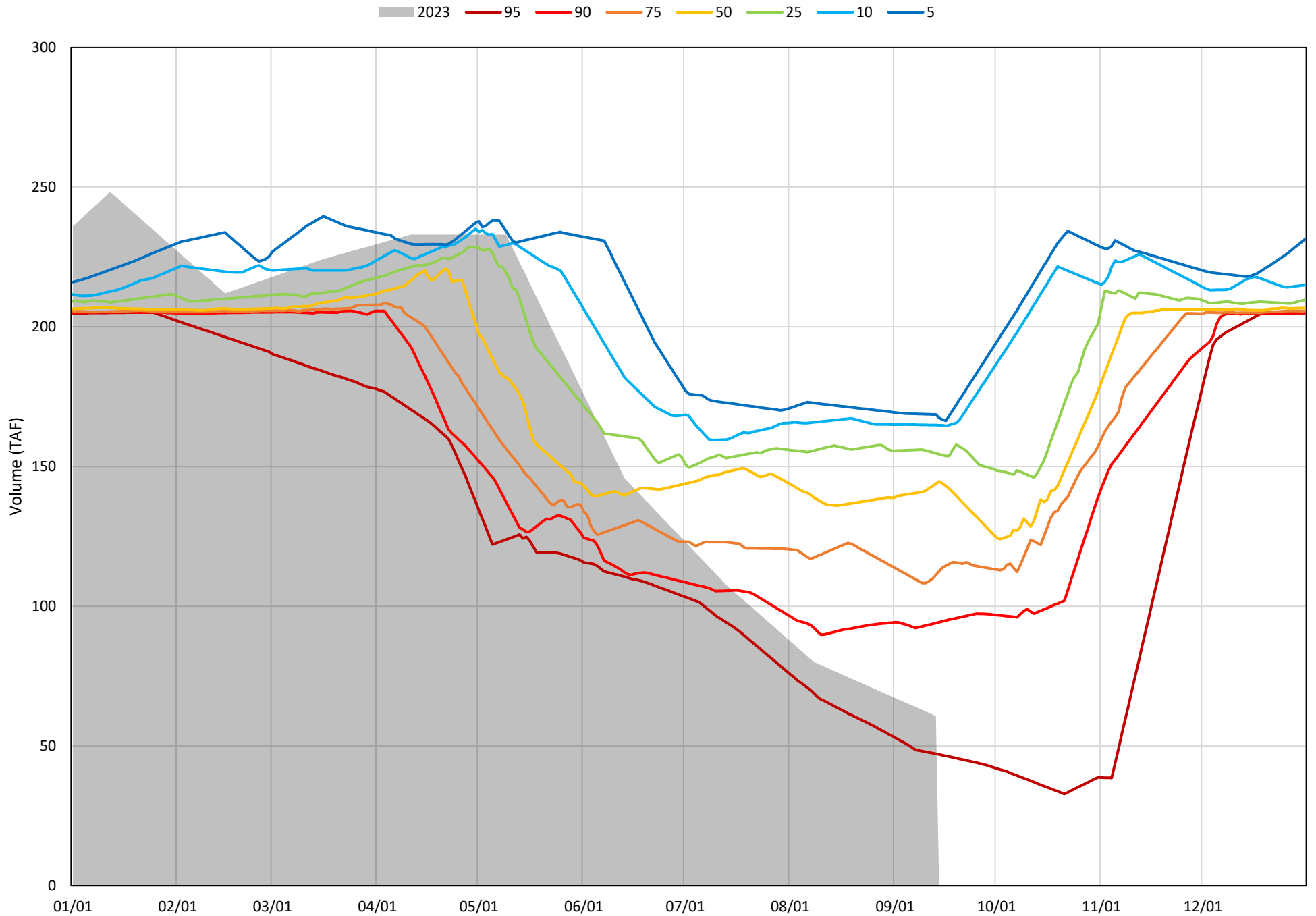


Whiskeytown Lake Cold Water Pool Volume $\leq 56^{\circ}\text{F}$

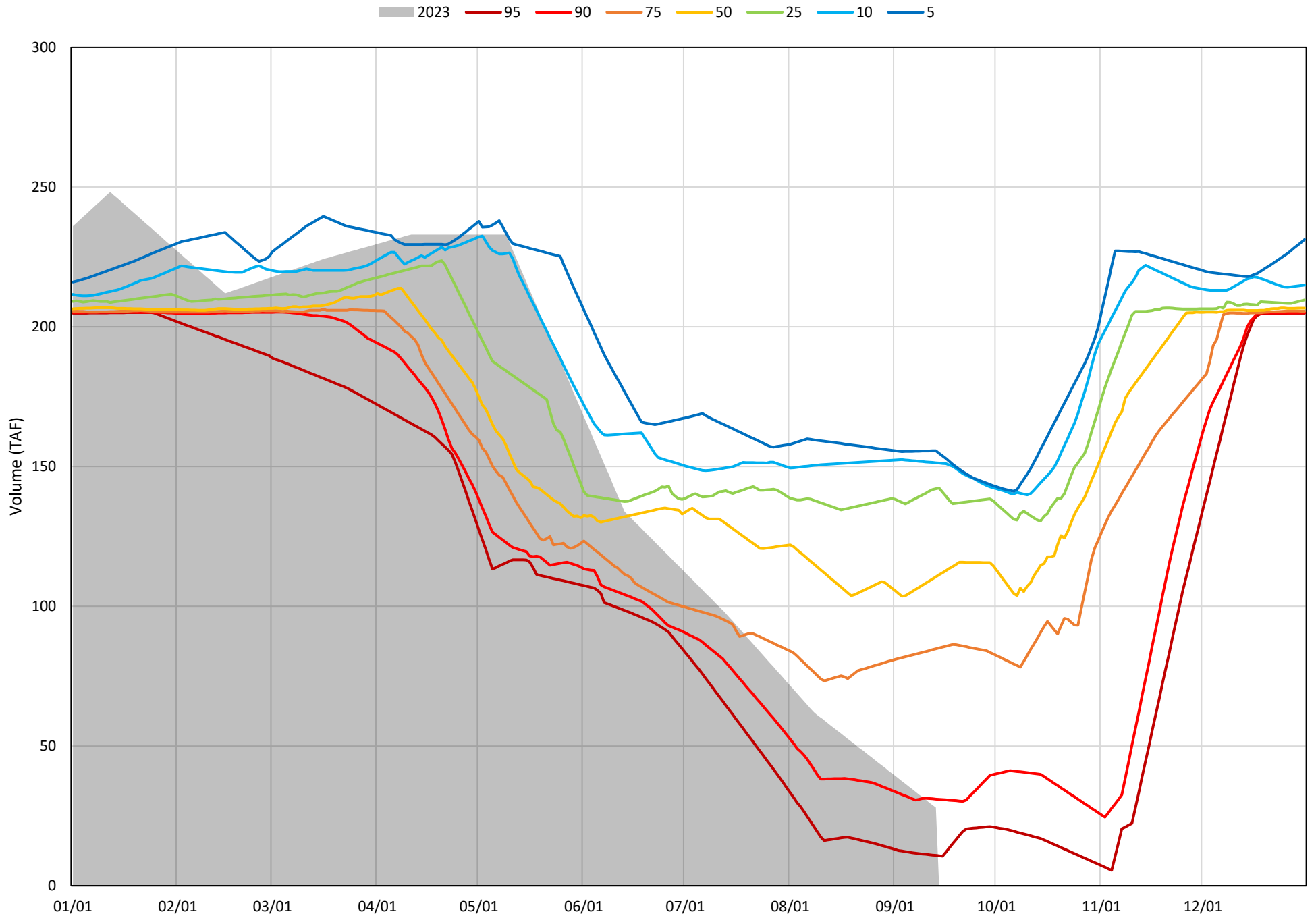
Avg (2000-2022) 2014 2015 2016 2019 2022 2023



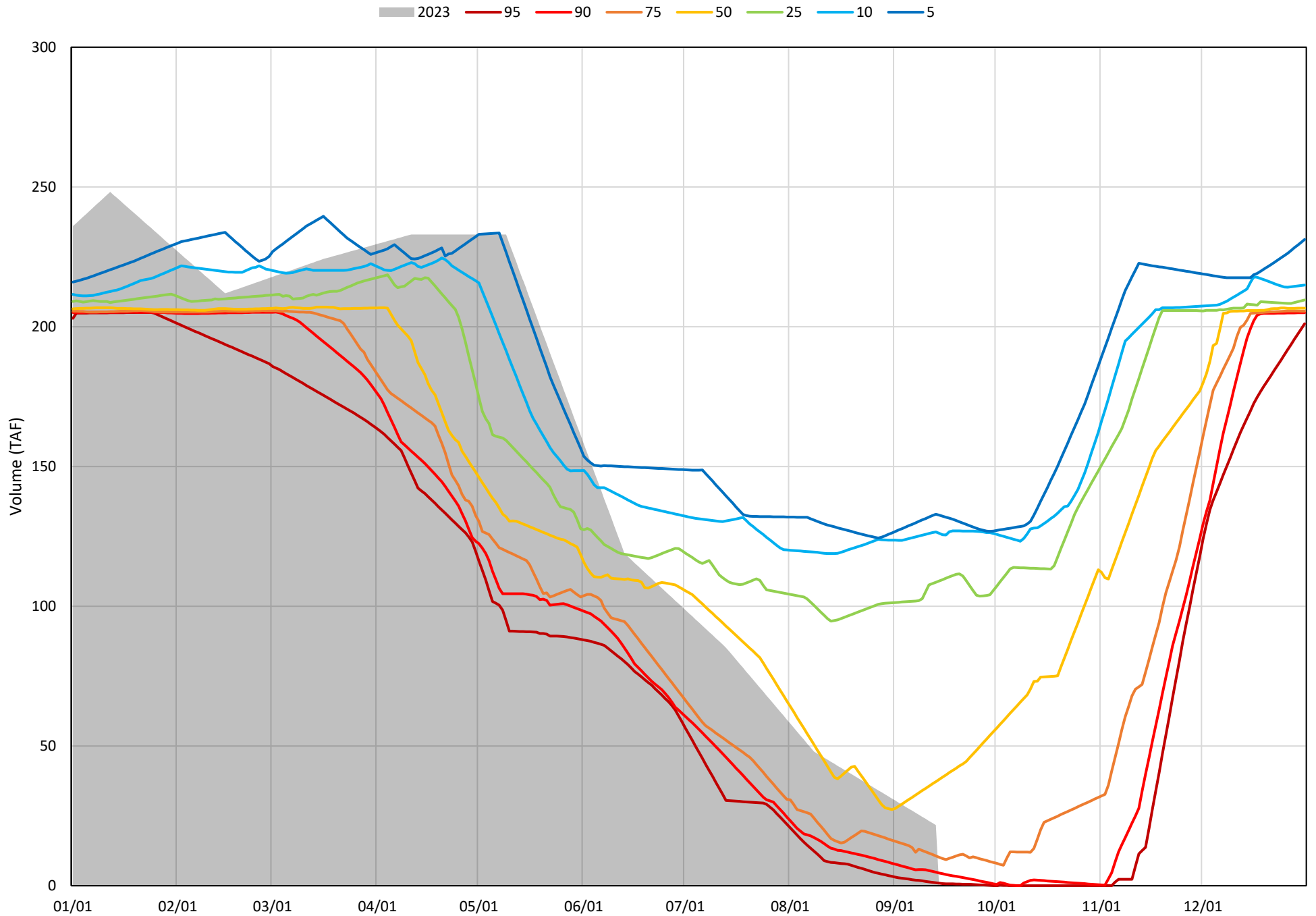
Whiskeytown Lake Cold Water Pool Volume $\leq 60^{\circ}\text{F}$ - Percent Exceedances (2000-2022)



Whiskeytown Lake Cold Water Pool Volume $\leq 58^{\circ}\text{F}$ - Percent Exceedances (2000-2022)



Whiskeytown Lake Cold Water Pool Volume $\leq 56^{\circ}\text{F}$ - Percent Exceedances (2000-2022)



Whiskeytown Cold Water Pool Comparison by Year (for Specified Date)

Sep-14 2023	Δ TAF				% Δ			
	≤60°	≤58°	≤56°	Abs. Avg.	≤60°	≤58°	≤56°	Abs. Avg.
2000	86.7	114.4	102.8	101.3	142.7	409.3	473.0	341.7
2001	98.1	120.8	106.3	108.4	161.6	432.4	489.0	361.0
2002	97.1	118.9	86.9	100.9	159.8	425.4	399.7	328.3
2003	86.7	113.8	91.1	97.2	142.8	407.3	419.2	323.1
2004	94.0	108.0	57.5	86.5	154.8	386.4	264.7	268.6
2005	33.6	18.0	-13.6	21.7	55.3	64.3	-62.8	60.8
2006	108.2	128.3	112.4	116.3	178.1	459.2	517.4	384.9
2007	86.3	96.4	56.6	79.8	142.2	345.1	260.6	249.3
2008	84.7	104.0	80.7	89.8	139.5	372.2	371.4	294.3
2009	60.8	56.8	-16.1	44.6	100.2	203.1	-73.9	125.8
2010	49.5	23.5	-14.8	29.3	81.4	84.2	-68.2	78.0
2011	56.2	60.2	-2.0	39.5	92.6	215.4	-9.1	105.7
2012	80.9	82.5	15.5	59.7	133.3	295.3	71.3	166.7
2013	106.6	125.0	94.6	108.7	175.5	447.4	435.3	352.7
2014	66.3	66.0	-17.4	49.9	109.1	236.1	-80.2	141.8
2015	50.4	-20.2	-21.5	30.7	83.0	-72.2	-98.8	84.7
2016	33.0	14.8	-11.1	19.6	54.4	53.1	-50.9	52.8
2017	100.3	114.1	68.0	94.1	165.2	408.2	312.8	295.4
2018	59.5	59.7	1.2	40.1	97.9	213.8	5.6	105.8
2019	44.9	61.9	-5.2	37.3	73.9	221.5	-24.0	106.4
2020	83.1	71.0	12.3	55.4	136.8	254.0	56.6	149.1
2021	86.3	90.1	46.7	74.4	142.1	322.4	214.8	226.5
2022	-25.2	-4.8	-7.7	12.6	-41.5	-17.2	-35.5	31.4
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Historical - Current

(Historical - Current) / Current