

Northern CVP Water Temperature Report

July - 2023

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— 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
Jun	50.6	49.0	50.8	50.8	51.4	52.2	54.9	57.2	59.1	54.5	53.6	-	59.3	8173	107	9002	77.4	73.4	73.3
07/01	49.8 ?	48.3	51.0	50.5	51.2	52.1	54.7	57.3 ?	59.7	56.5	53.3 #		65.2	9275	535	9914	92.0	86.2	86.1
07/02	49.9 ?	48.5	51.2	50.4	51.1	52.0	54.6	57.3	59.8	56.5	53.1 #		65.7	9282	574	10409	93.0	86.6	86.7
07/03	49.9	48.5	51.2	50.4	51.2	52.0	54.5	57.0	59.5	56.1	53.3 #		65.2	9542	579	10397	88.0	83.9	83.5
07/04	50.1 ?	48.3	51.1	50.4	51.1	52.0	54.5	57.0	59.5	56.2	53.5 #		65.7	9421	502	10380	87.5	82.0	80.5
07/05	50.3	48.7	51.3	50.4	51.1	52.0	54.4	56.9	59.4	56.3	53.2 #		66.1	9934	515	10391	84.0	78.4	77.0
07/06	50.9 ?	49.2	51.3 #		51.4	52.3	54.7	56.9	58.8	56.2	53.2 #		66.0	9585	569	10390	82.0	77.4	76.0
07/07	50.4 ?	48.9	51.4 #		51.9	52.7	55.0	57.2	59.3	56.1	53.5 #		65.8	9357	547	10395	81.0	75.9	74.3
07/08	50.4 ?	48.7	51.4	51.0	51.8	52.7	55.1 #		59.7 ?	56.0	53.7 #		64.9	9394	500	10493	81.5	76.4	74.0
07/09	50.4	49.2	51.4	50.8	51.6	52.5	54.8 #		59.5	56.1	53.9 #		65.1	9541	506	10494	77.0	72.9	70.8
07/10	50.5 ?	49.4	51.5	50.9	51.6	52.4	54.7 #		59.1	55.9	53.8 #		65.0	9794	509	10535	80.5	76.0	74.8
07/11	50.1 ?	48.6	51.5	50.9	51.6	52.4	54.5	56.8	59.1	55.8	53.7 #		65.6	9378	560	10643	83.0	78.5	79.1
07/12	50.5 ?	49.2	51.6	50.7	51.5	52.4	54.6	56.9	59.1	55.9	53.9 #		66.0	9370	491	10575	83.0	79.0	78.9
07/13	49.2 ?	48.0	51.6	50.9	51.5	52.3	54.5	56.6	58.8	55.9	53.8 #		66.5	9498	493	10499	84.5	79.9	78.5
07/14	49.3 #		51.7	50.1	50.8	51.8	54.3	56.6 ?	58.8	56.2	54.2 #		67.4	10053	543	10996	88.5	84.3	83.0
07/15	49.4 #		51.7	49.7	50.3	51.1	53.4	55.9	58.4	56.3	53.3 #		68.2	9998	701	10986	91.5	86.0	85.3
07/16	49.6 #		51.8	49.7	50.4	51.3	53.6	56.0 ?	58.2	56.6	53.0 #		68.5	10005	550	10988	93.5	87.2	87.6
07/17	49.7 #		51.6	50.0	50.7	51.5	53.9	56.4	58.7	57.1	52.9 #		68.0	10374	337	10984	95.0	89.0	90.1
07/18	49.7 #		51.8	49.9	50.5	51.4	53.7	56.1	58.5	56.3	52.9	62.5	68.0	10300	305	10972	88.5	83.0	83.2
07/19	49.7 ?	47.9	51.9	50.0	50.7	51.5	53.5	55.8 ?	58.0	56.0	53.2	62.6	68.1	9682	370	10982	86.0	80.6	79.8
07/20	49.8 ?	48.4	52.0	50.2	50.7	51.5	53.6	55.7	57.8	55.9	53.8	62.7	67.8	10221	309	10722	86.5	81.5	82.0
07/21	? 49.6 ?	48.2 ?	51.9 ?	50.2 ?	50.8 ?	51.6 ?	53.7 ?	55.8 ?	58.0 ?	56.2 ?	54.6 ?	62.6 ?	67.4	9633	563	10719	↑ 91.0	86.6	86.0
07/22	49.7 ?	48.1	51.9	50.2	50.8	51.5	53.7	56.0	58.2	56.1	54.5 ?	62.7	67.1	9915	430	10718	↑ 91.0	87.0	86.9
07/23	49.8 ?	48.2	52.1	50.0	50.5	51.4	53.4	55.5 ?	57.7	55.5	53.7 #		67.3	9684	563	10726	90.0	83.8	85.4
07/24	50.0	48.4	52.1	50.0	50.7	51.5	53.6	55.6	57.7	56.1	53.5 #		66.4	10026	491	10725	83.5	79.5	78.1
07/25	50.0	48.3	52.3	50.4	51.0	51.7	53.7	55.7	57.9	56.2	53.4 #		66.9	9560	501	10739	84.5	79.0	78.8
07/26	49.8	48.2	52.4	50.4	51.0	51.8	53.8	55.9	58.0	56.1	53.6 #		67.9	9896	622	10730	84.5	79.0	80.0
07/27	49.6	48.2	52.6	50.4	51.0	51.9	53.9	56.0 ?	58.2	56.3	53.6 #		? 67.6	9428	516	10741	82.5	78.5	78.6
07/28	49.6	48.3	52.6	50.3	50.9	51.8	53.8	56.0 ?	58.2	56.2	53.9 #		67.0	9846	500	10742	82.0	78.4	77.7
07/29	49.4	48.2	52.7	50.3	50.9	51.8	53.7	55.7	57.8	56.1	54.3 #		67.0	9594	483	10721	81.5	76.4	76.8
07/30	49.7	48.5	52.6	50.2	50.8	51.6	53.6	55.6	57.6	56.0	54.0 #		66.9	10058	355	10733	82.0	76.5	78.0
07/31	49.8	48.5	52.7	50.3	50.9	51.6	53.5	55.4	57.4	56.0	53.6 #		67.1	9909	483	10735	83.0	76.6	77.8
Jul	49.9	48.5	51.8	50.3	51.0	51.9	54.1	56.3	58.6	56.2	53.6	-	66.7	9721	501	10648	86.0	81.0	80.6
				Total CFS			301553	15502	330174										
				Total AF			598118	30748	654887										

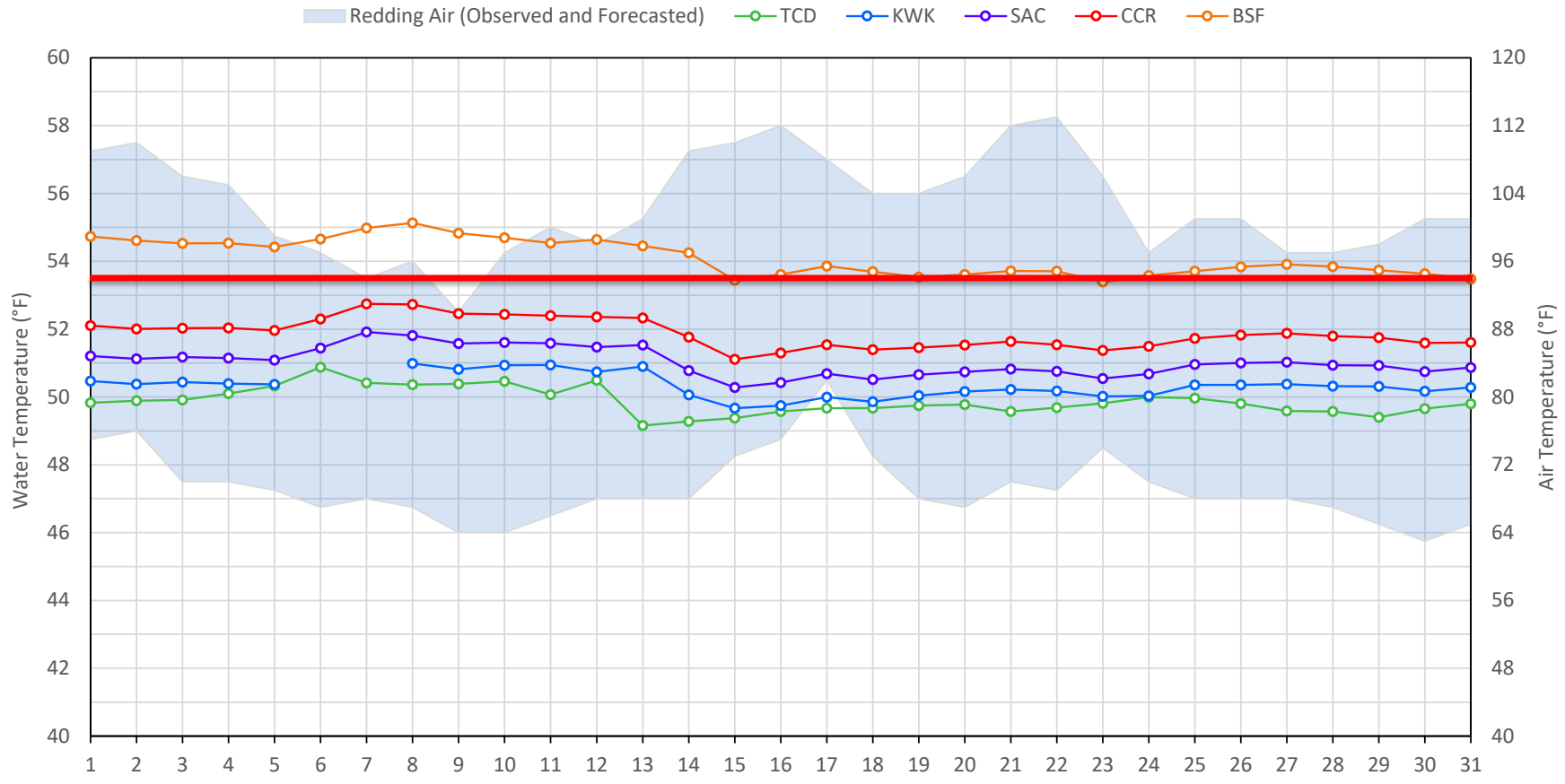
Legend

- ? = 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)
- ³ DGC reporting incorrect water temperatures from 3/14/23 - 7/17/23, and 7/23 -TBD due to probe being buried in fine sediment

Sacramento River Mean Daily Temperatures



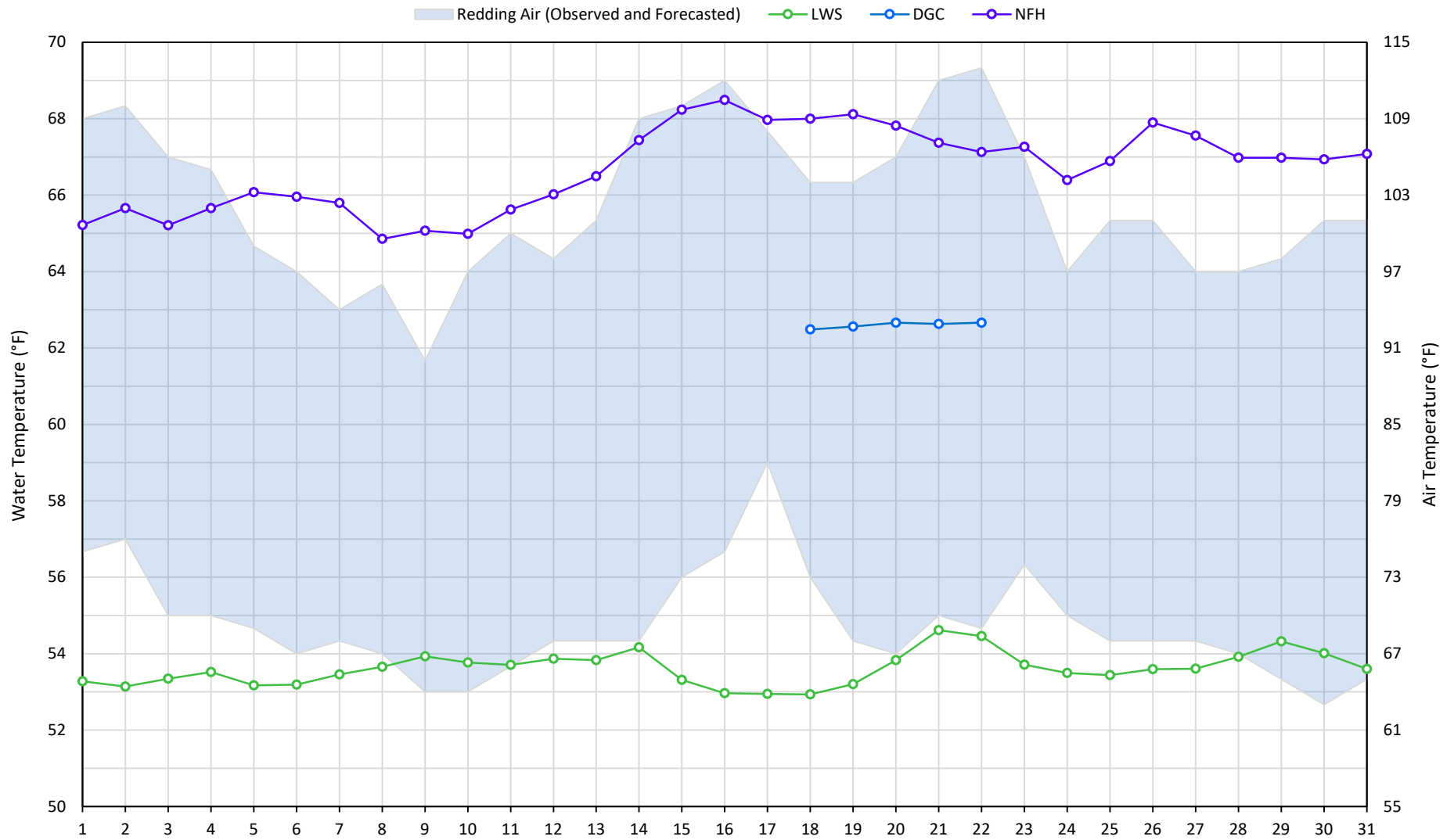
Station Details			
Code	Body of Water	Location ¹	CDEC Link
TCD	N/A	Shasta Power Plant	N/A
SHD	Sacramento River	0.3 miles downstream of Shasta Power Plant	Click Here
SPP	N/A	Spring Creek Power Plant	N/A
KWK	Sacramento River	0.8 miles downstream of Keswick Dam	Click Here
SAC	Sacramento River	4.8 miles 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 ²	56	Sep-15	Oct-01
Trinity	NFH	56	Oct-01	Dec-31

Notes

¹ Distances are approximate

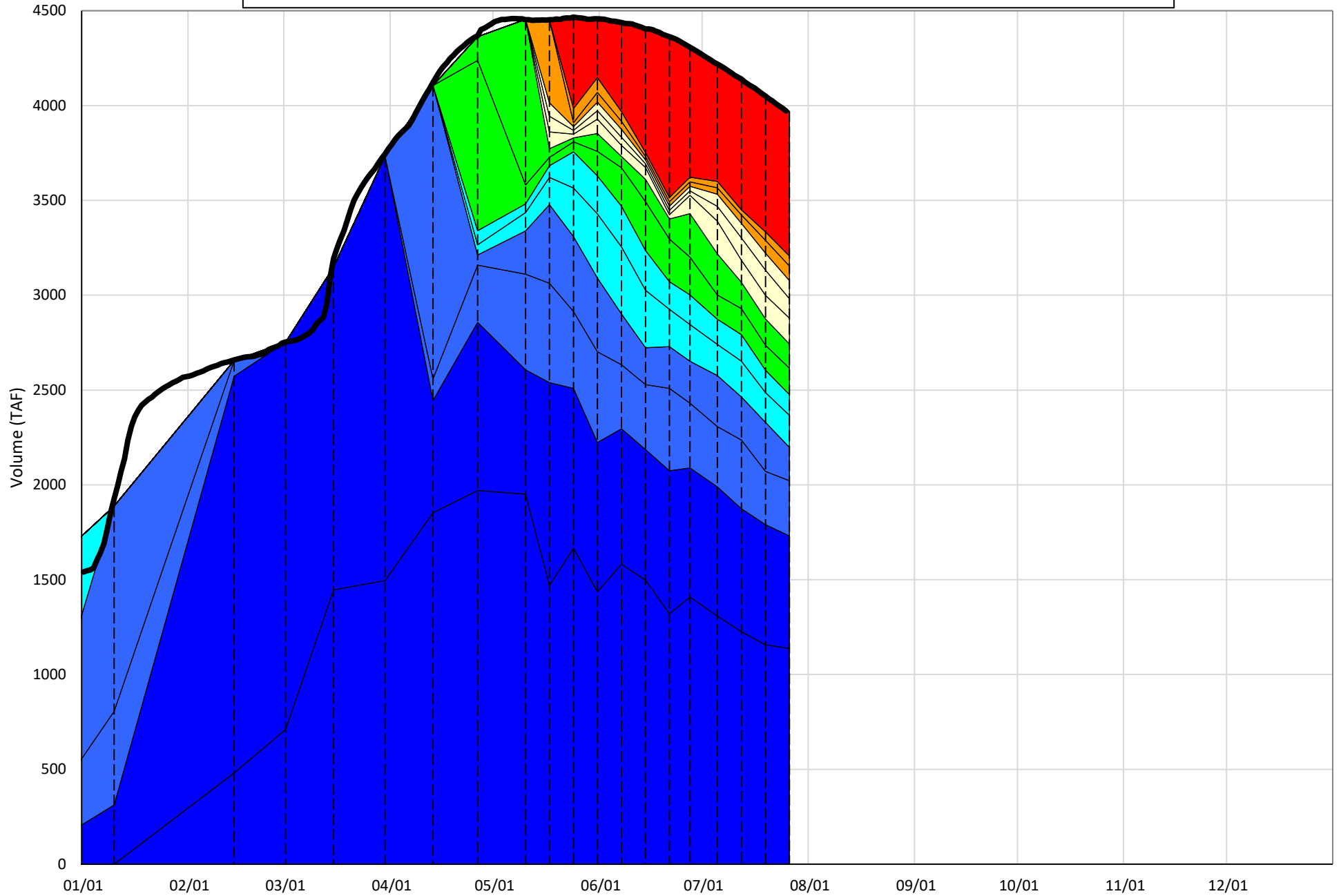
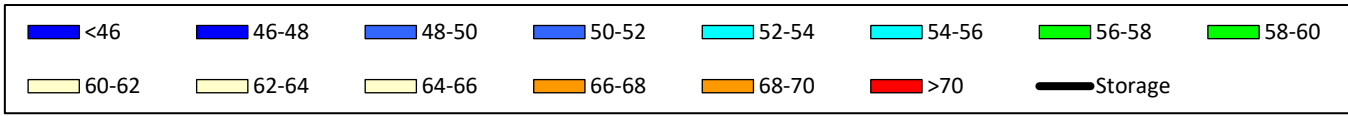
² DGC reporting incorrect water temperatures from 3/14/23 - 7/17/23, and 7/23 - TBD due to probe being buried in fine sediment

Shasta Lake Isothermobaths & Cold Water Pool Statistics

2023

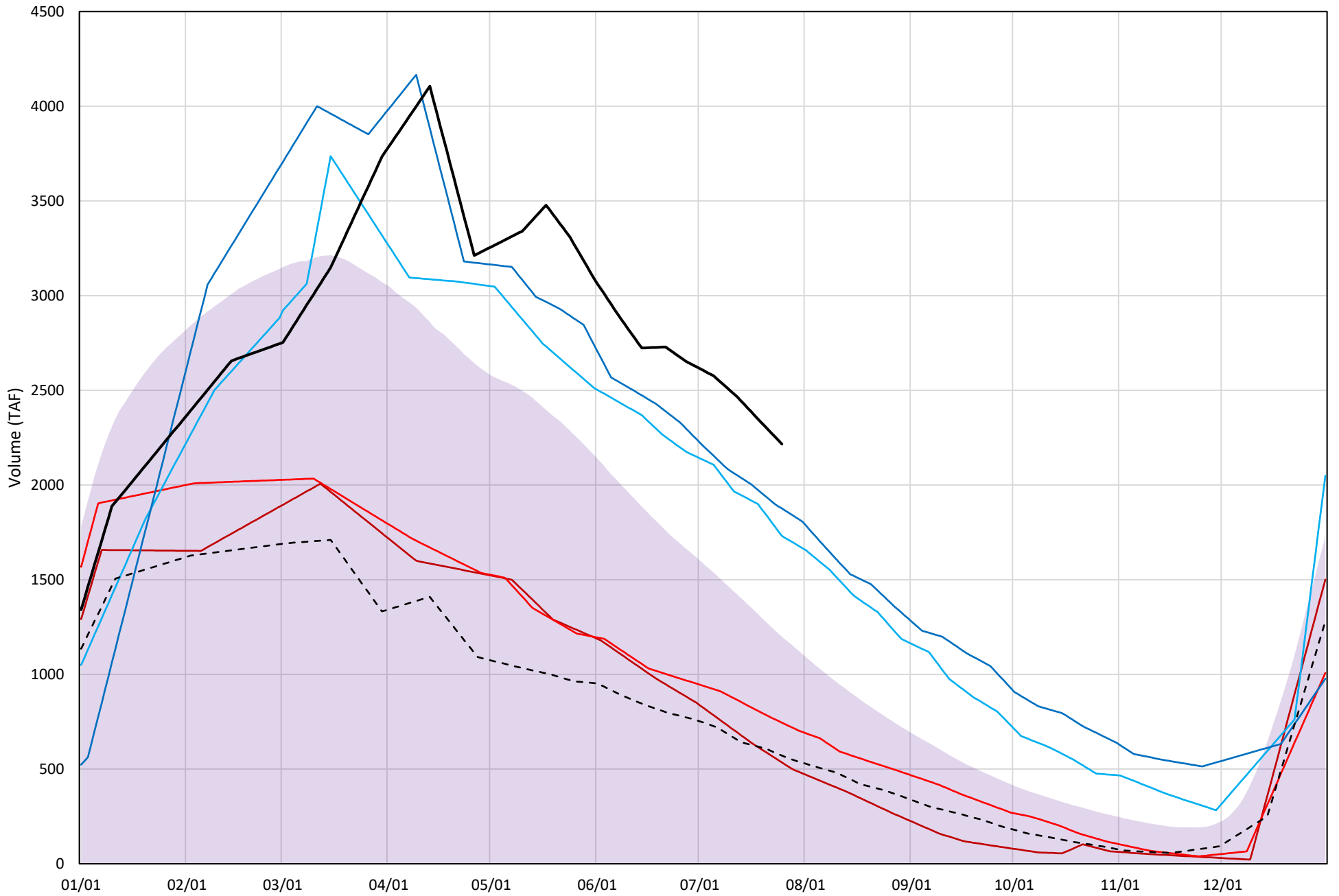
Page	Description
6	- Shasta Lake Isothermobaths Plot
7	- Shasta Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$
8	- Shasta Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$
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10	- Shasta Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$ - 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



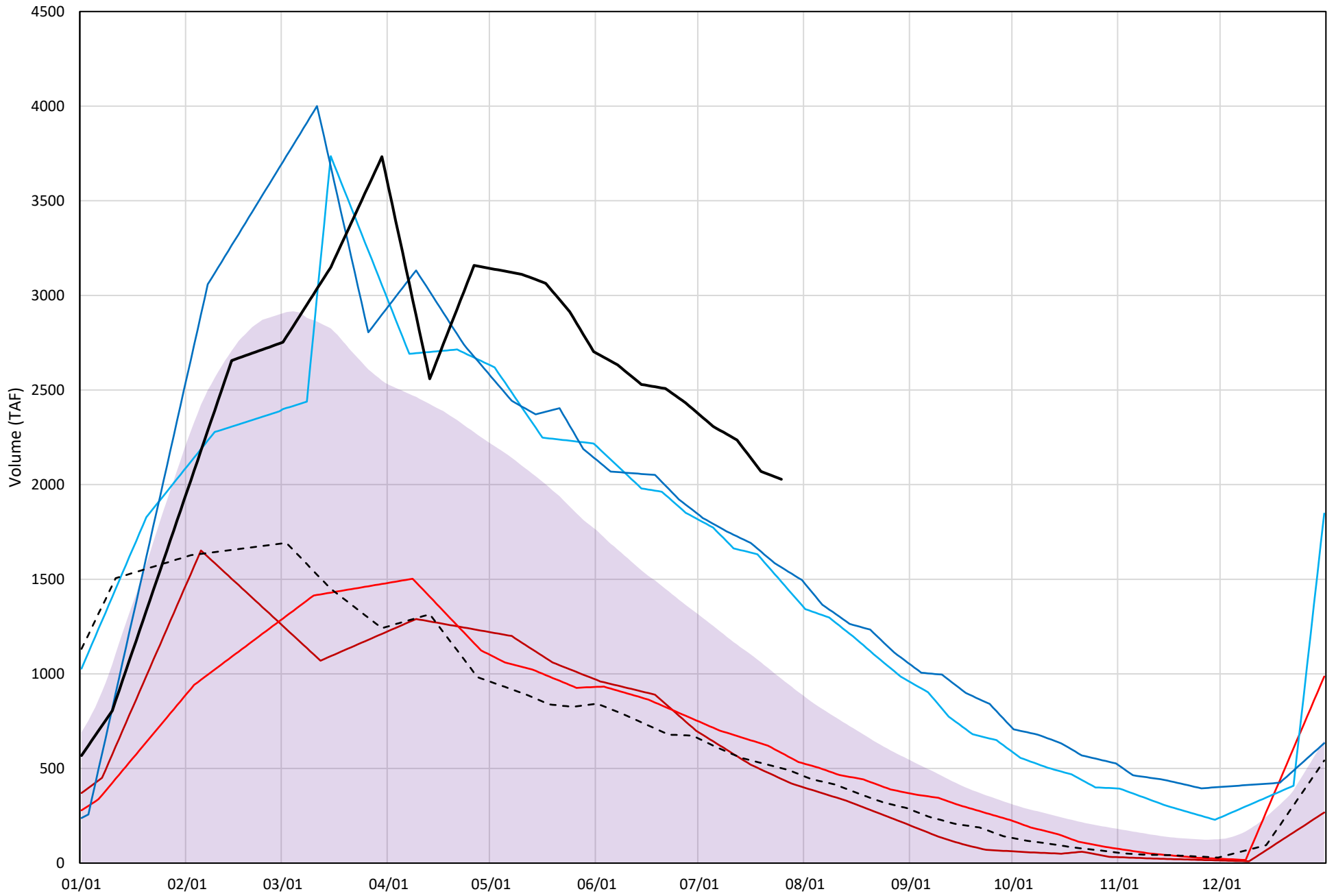
Shasta Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$

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



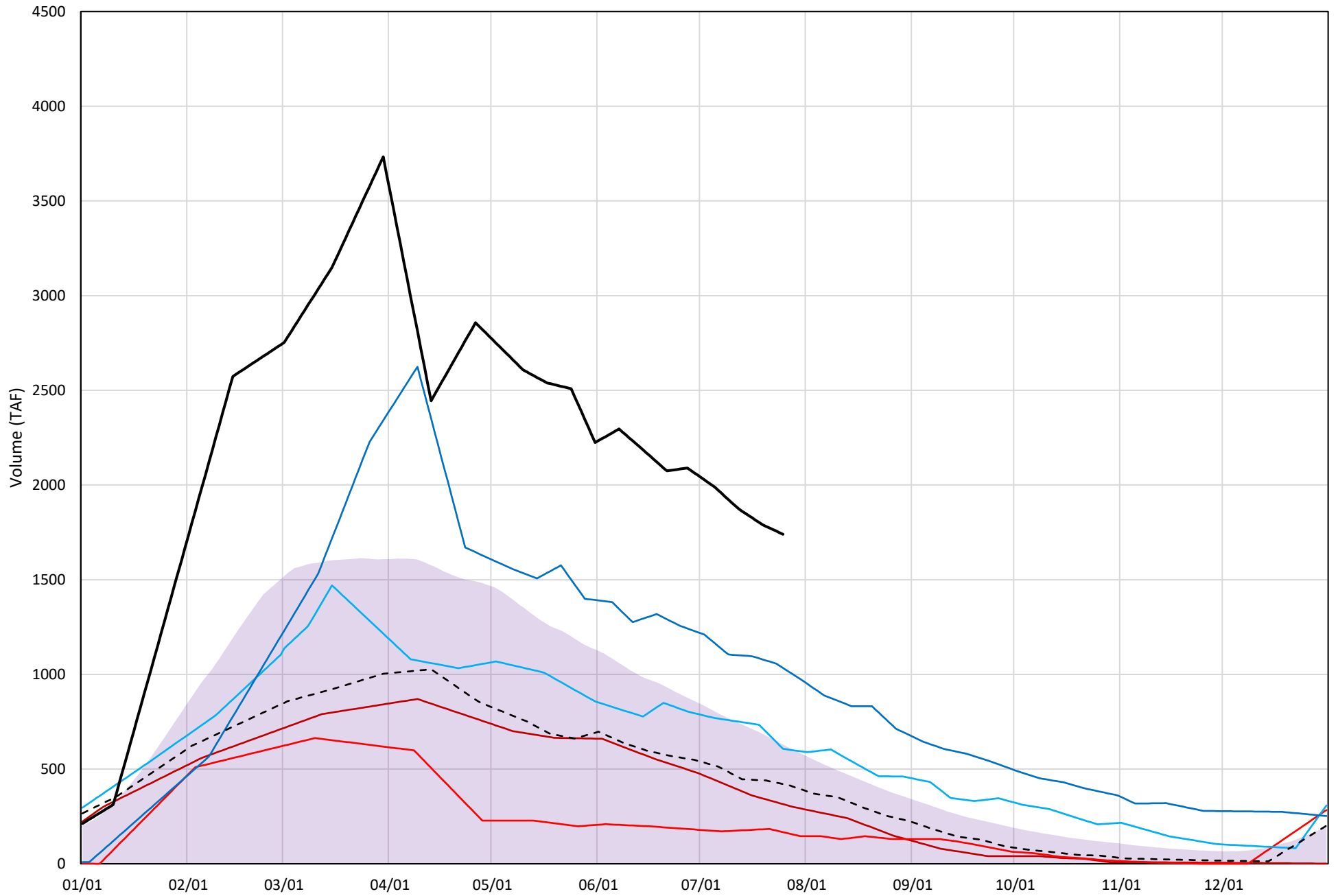
Shasta Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$

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

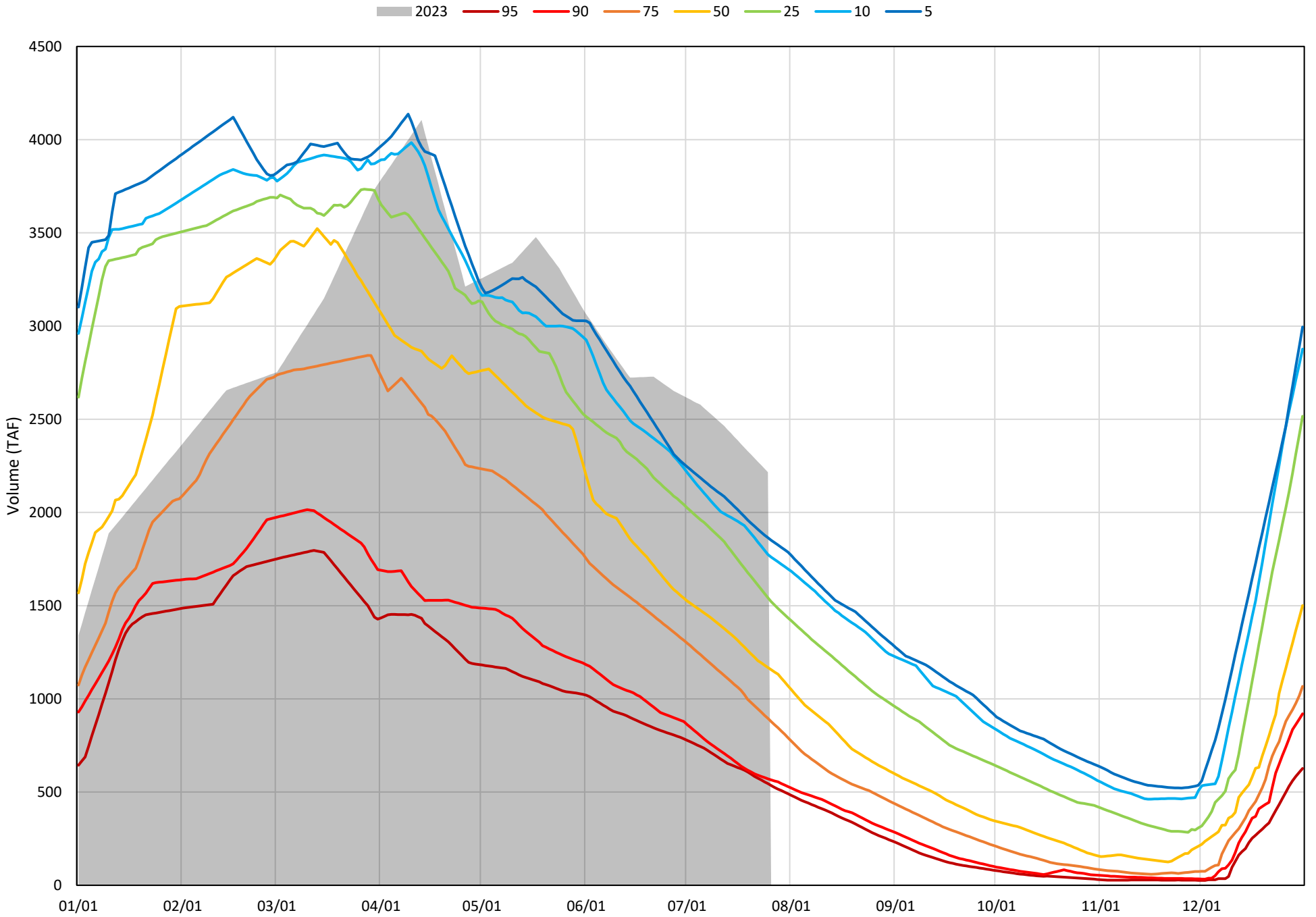


Shasta Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$

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

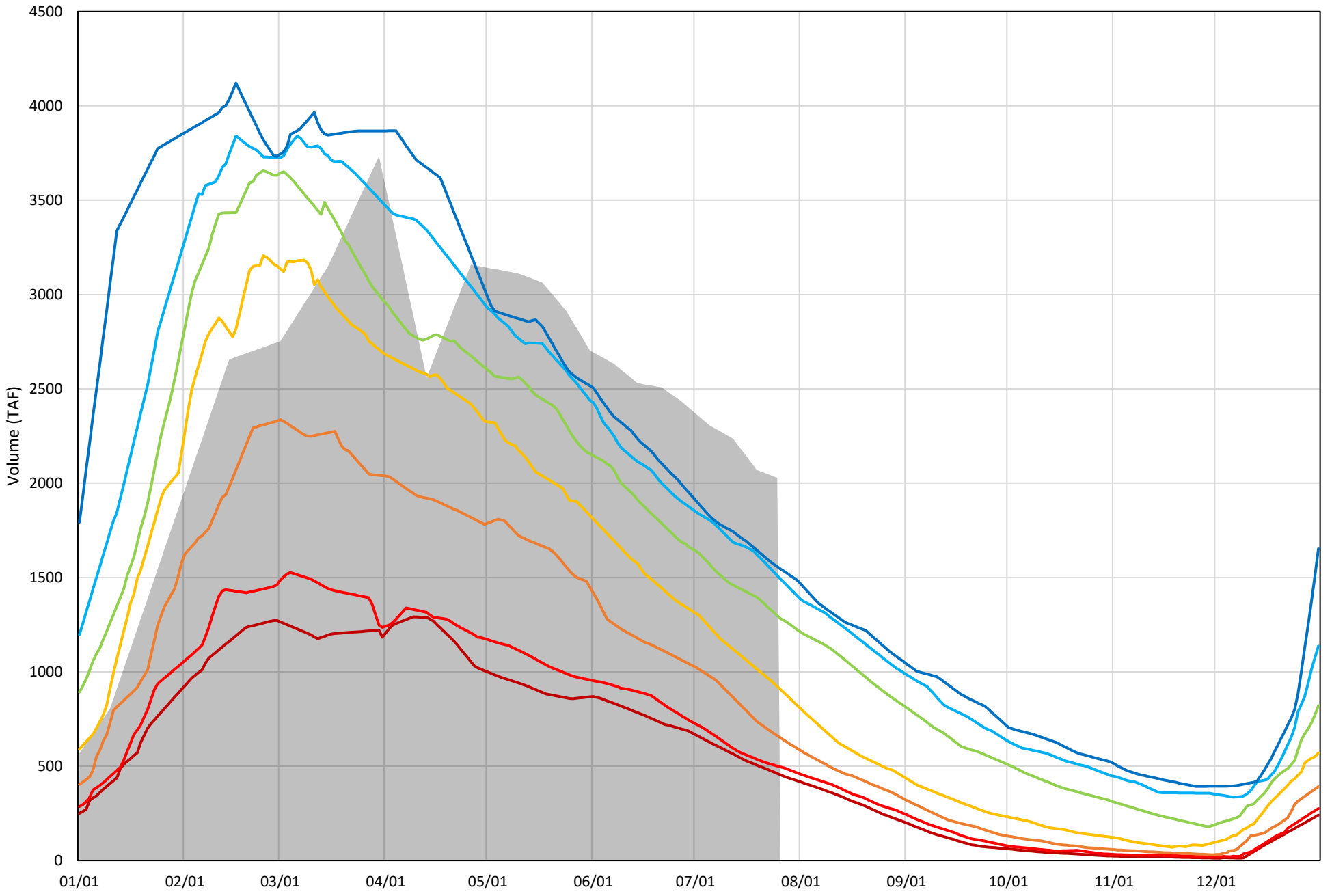


Shasta Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$ - Percent Exceedances (1998-2022)

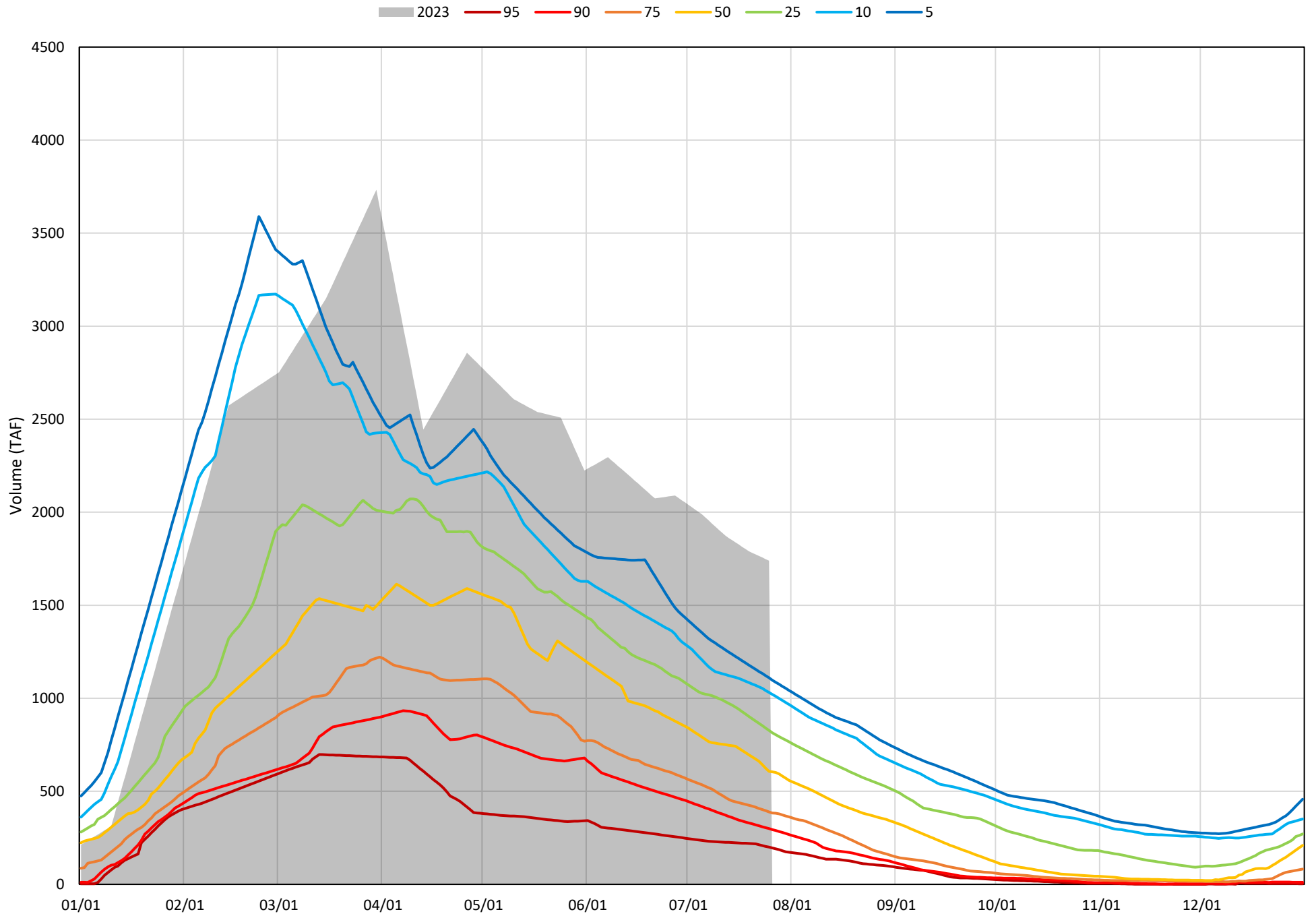


Shasta Lake Cold Water Pool Volume ≤50°F - Percent Exceedances (1998-2022)

2023 95 90 75 50 25 10 5



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)

Jul-26 2023	Δ TAF				% Δ			
	≤52°	≤50°	≤48°	Abs. Avg.	≤52°	≤50°	≤48°	Abs. Avg.
1998	-944	-1174	-1296	1138	-43	-58	-75	58
1999	-749	-752	-709	737	-34	-37	-41	37
2000	-1089	-1215	-1381	1228	-49	-60	-79	63
2001	-1184	-1106	-1004	1098	-53	-55	-58	55
2002	-920	-908	-927	918	-42	-45	-53	47
2003	-1005	-1373	-1464	1280	-45	-68	-84	66
2004	-1326	-1312	-1220	1286	-60	-65	-70	65
2005	-1317	-1362	-1387	1355	-59	-67	-80	69
2006	-732	-829	-944	835	-33	-41	-54	43
2007	-1141	-1083	-999	1074	-51	-53	-57	54
2008	-1473	-1377	-1189	1346	-66	-68	-68	68
2009	-1305	-1243	-1112	1220	-59	-61	-64	61
2010	-536	-709	-897	714	-24	-35	-52	37
2011	-377	-483	-597	486	-17	-24	-34	25
2012	-617	-569	-789	658	-28	-28	-45	34
2013	-1159	-1102	-1022	1094	-52	-54	-59	55
2014	-1682	-1584	-1424	1563	-76	-78	-82	79
2015	-1471	-1446	-1572	1497	-66	-71	-90	76
2016	-485	-542	-1133	720	-22	-27	-65	38
2017	-508	-703	-867	693	-23	-35	-50	36
2018	-733	-834	-1135	901	-33	-41	-65	46
2019	-341	-466	-706	504	-15	-23	-41	26
2020	-1048	-1133	-1269	1150	-47	-56	-73	59
2021	-1645	-1529	-1398	1524	-74	-75	-80	77
2022	-1645	-1527	-1319	1497	-74	-75	-76	75
2023	0	0	0	0	0	0	0	0

Historic - Current

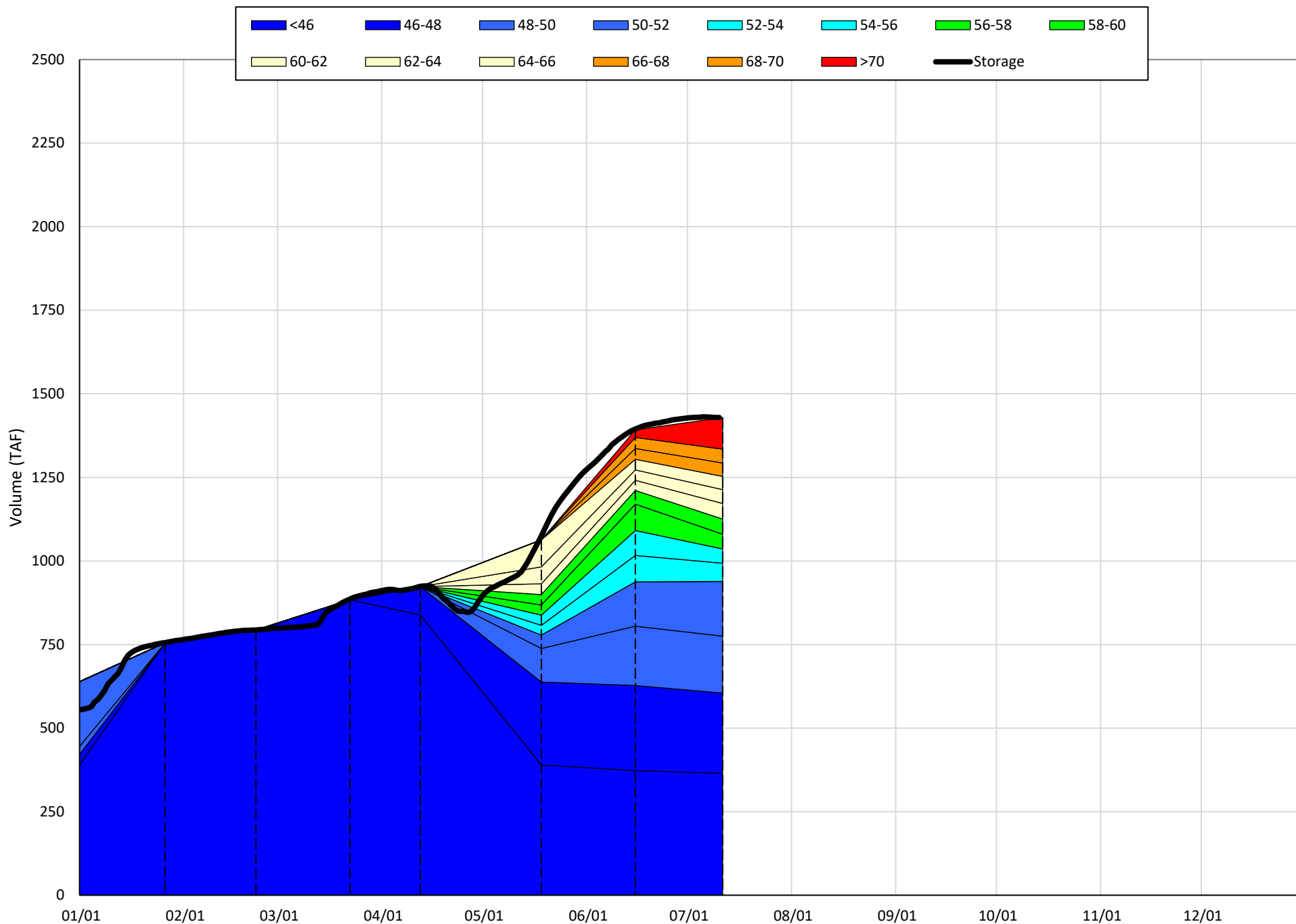
(Historic - Current) / Current

Trinity Lake Isothermobaths & Cold Water Pool Statistics

2023

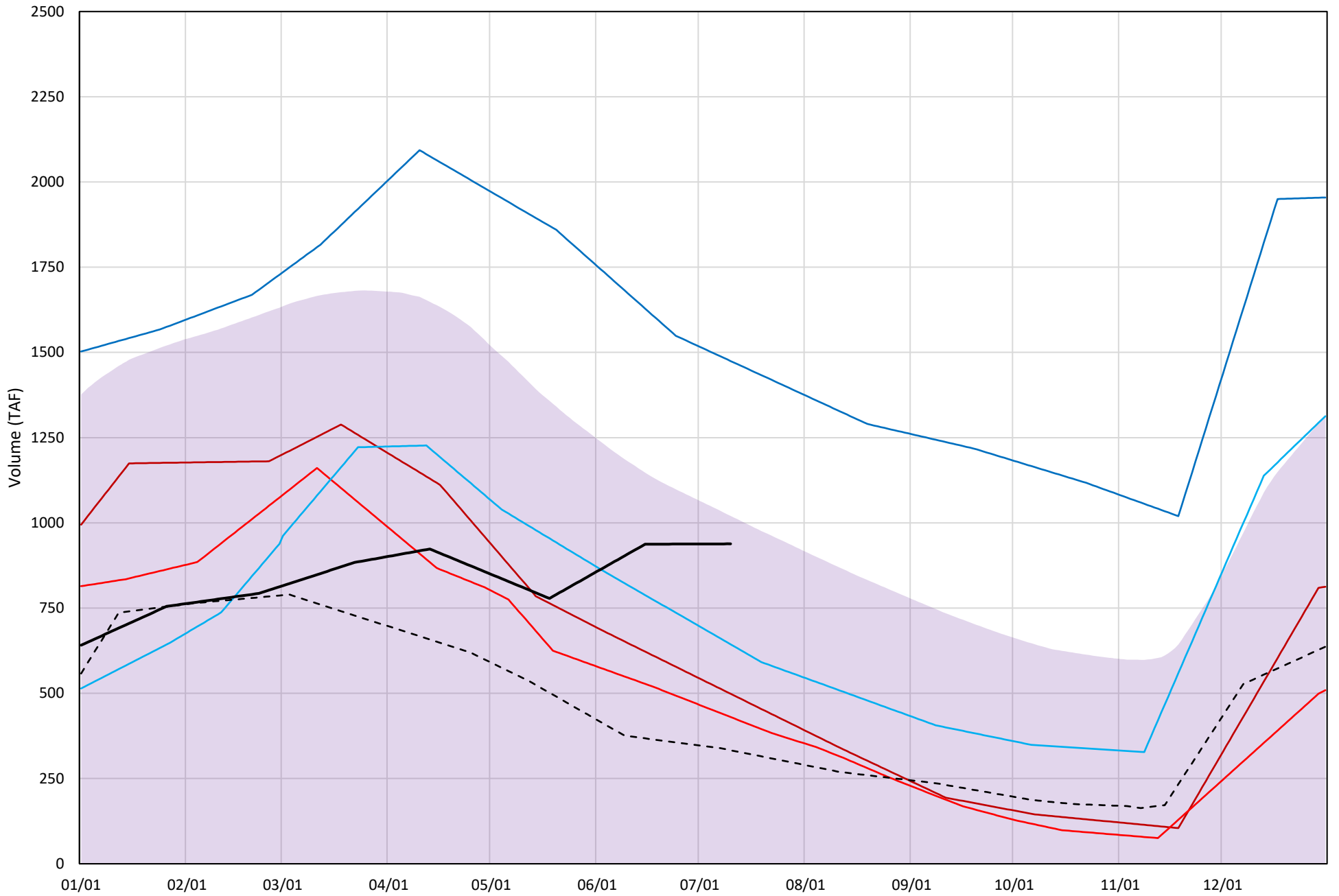
Page	Description
15	- Trinity Lake Isothermobaths Plot
16	- Trinity Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$
17	- Trinity Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$
18	- Trinity Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$
19	- Trinity Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$ - 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



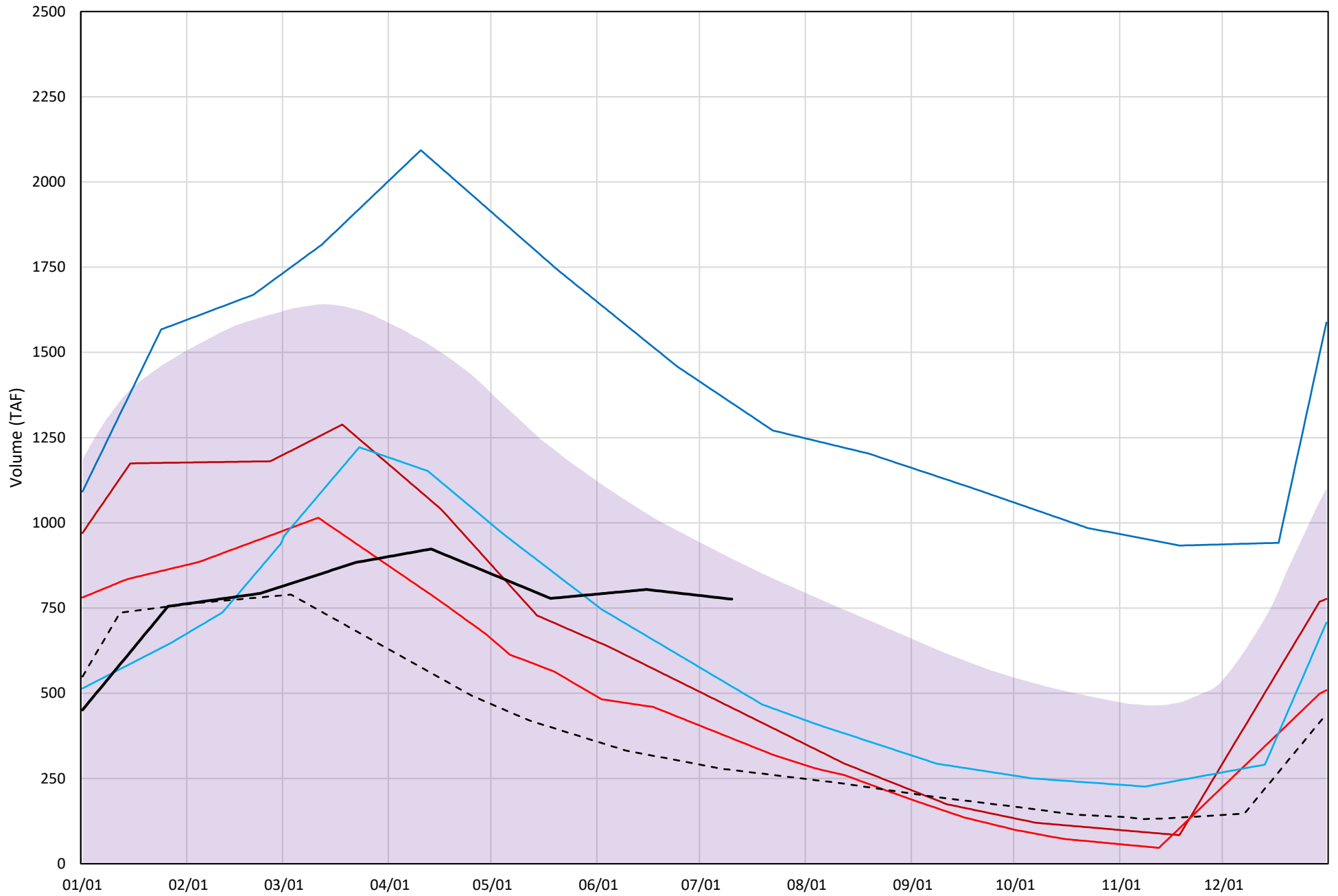
Trinity Lake Cold Water Pool Volume ≤52°F

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



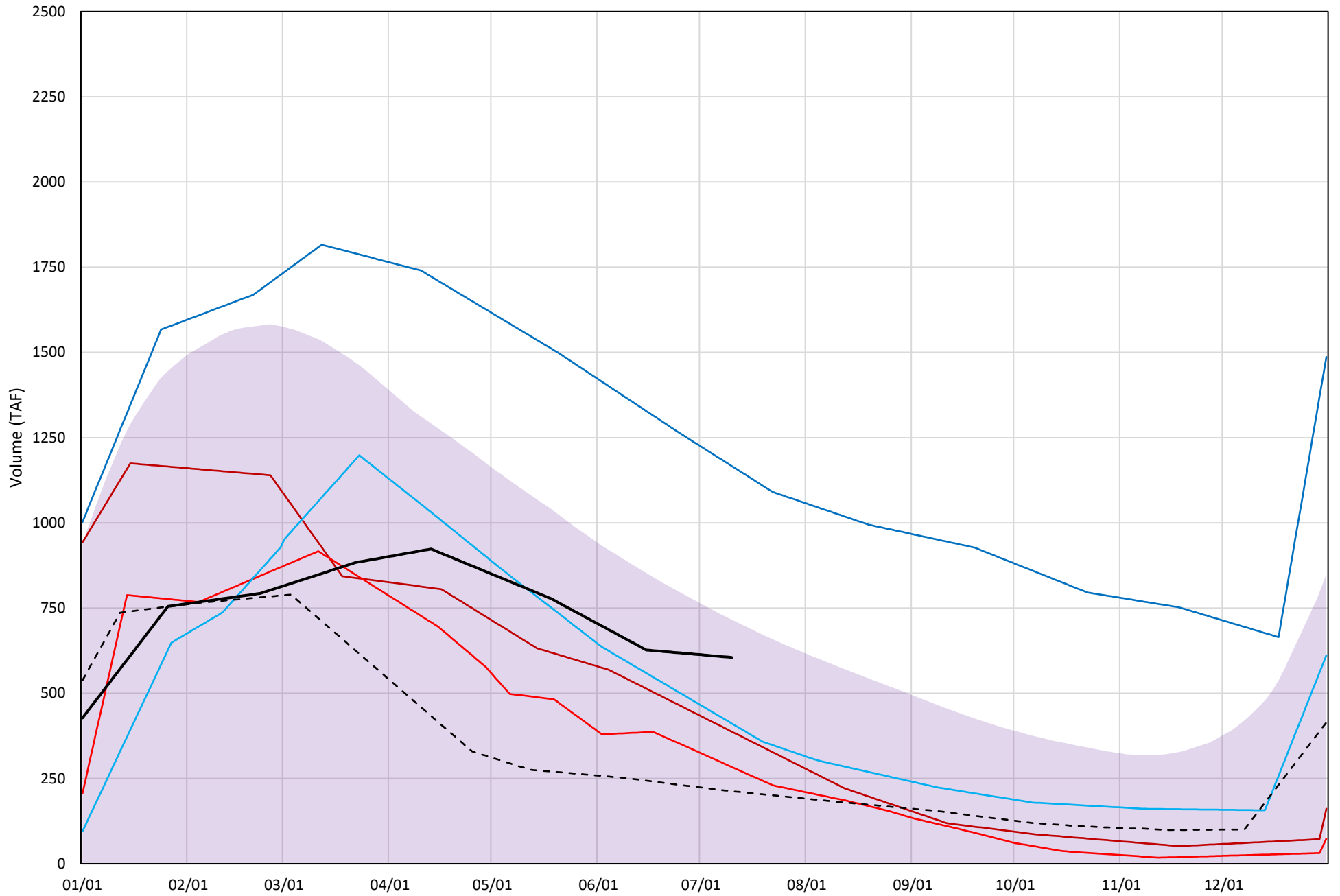
Trinity Lake Cold Water Pool Volume ≤50°F

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

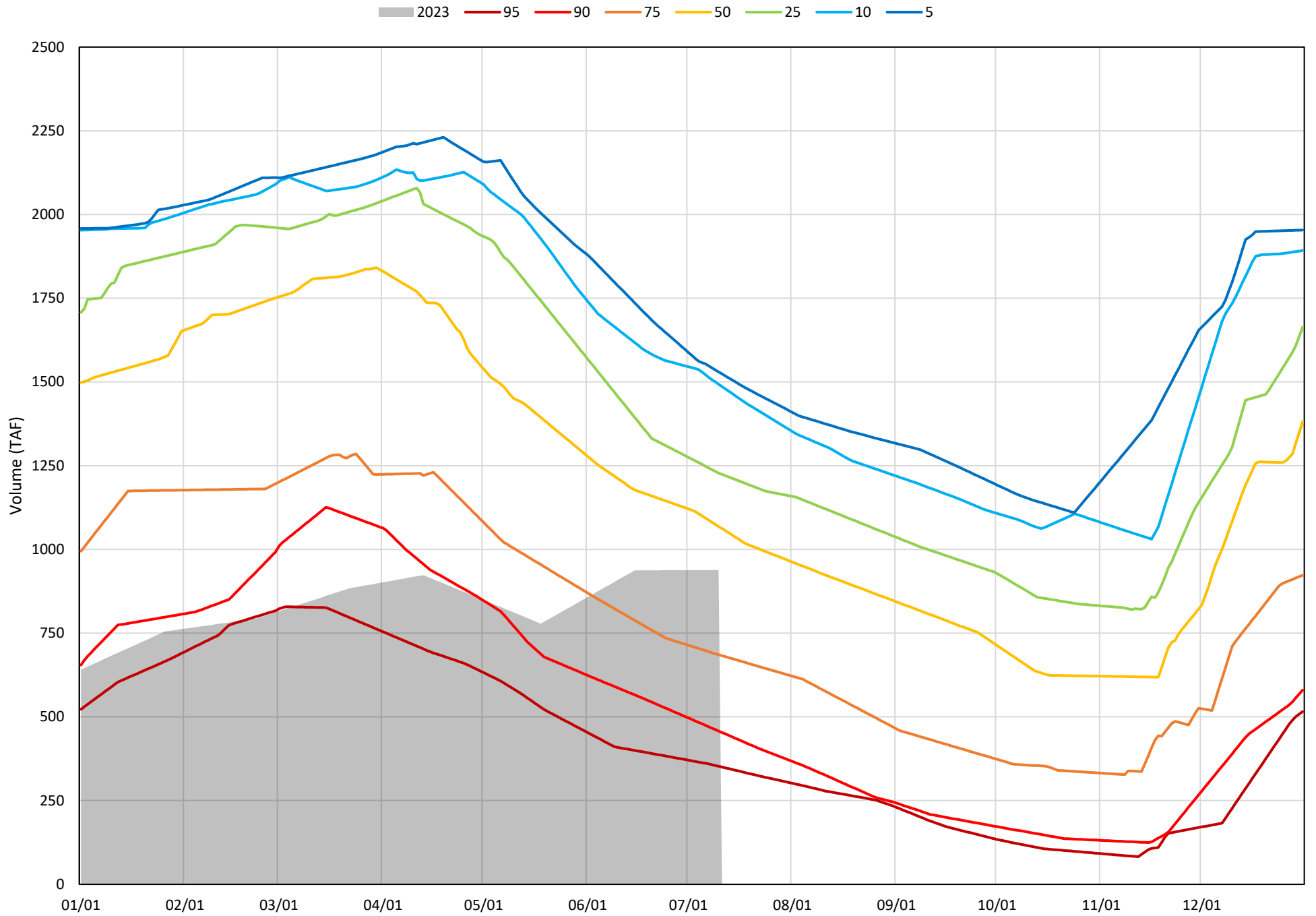


Trinity Lake Cold Water Pool Volume $\leq 48^{\circ}\text{F}$

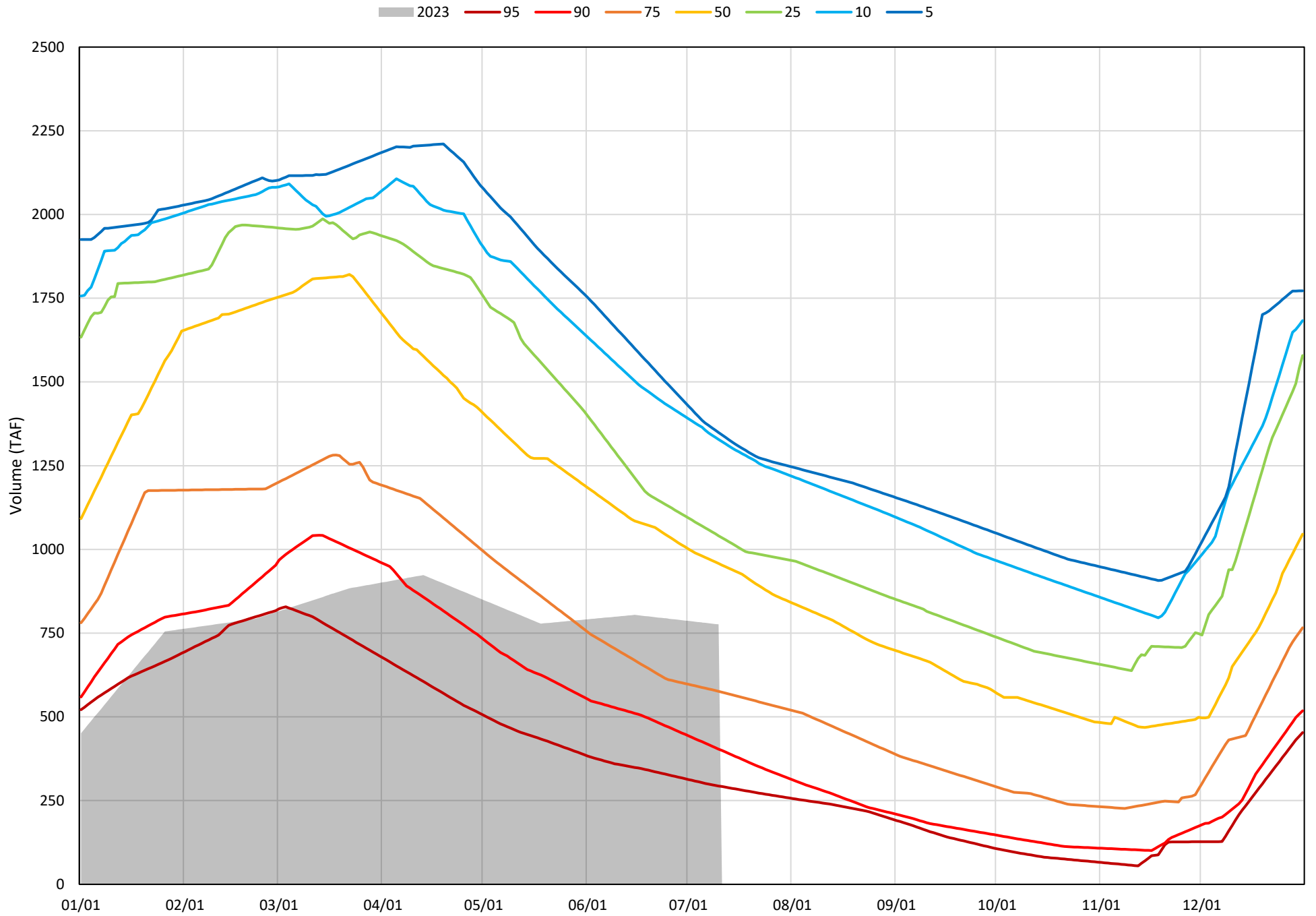
Avg (2000-2022) 2014 2015 2016 2019 2022 2023



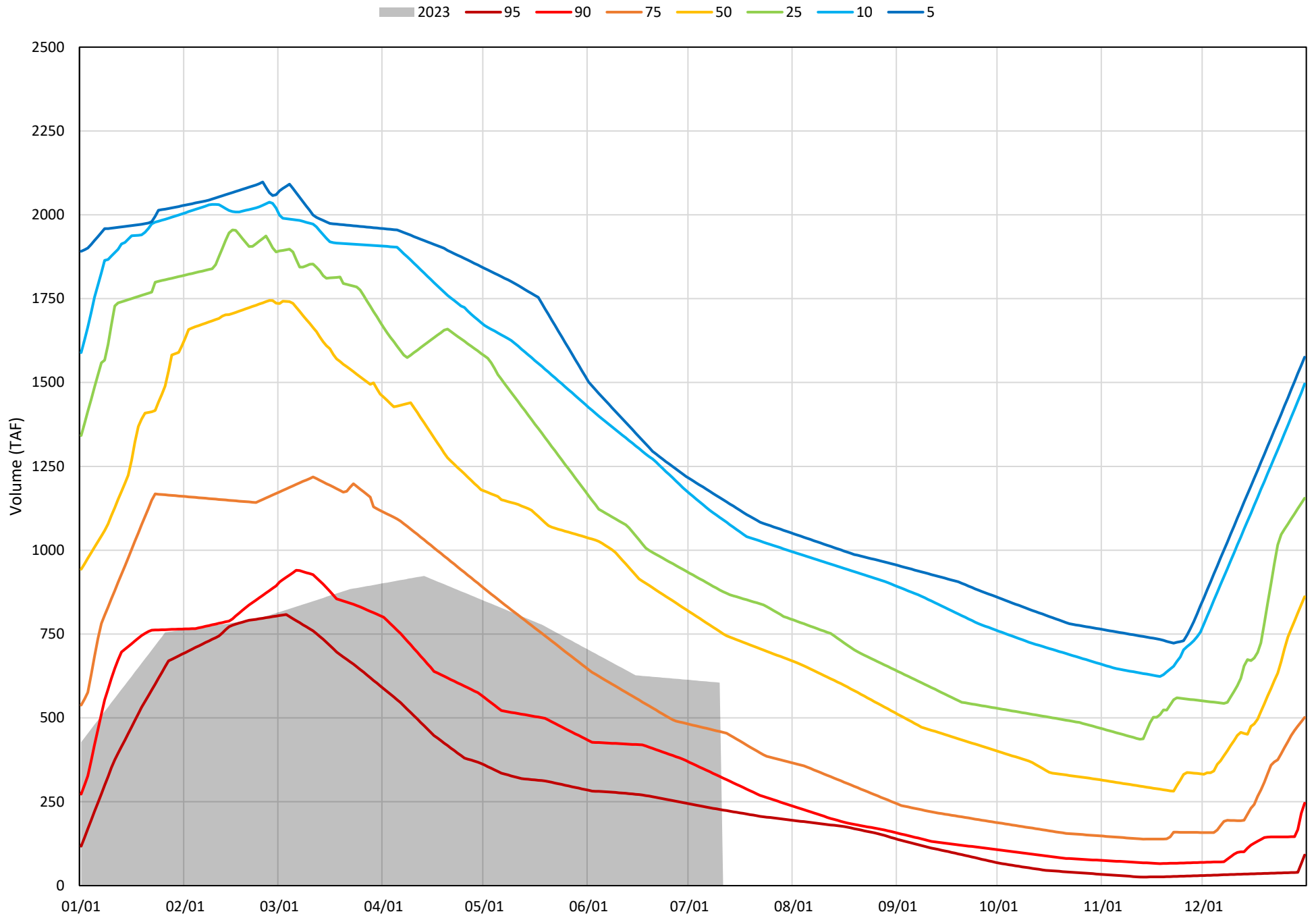
Trinity Lake Cold Water Pool Volume $\leq 52^{\circ}\text{F}$ - Percent Exceedances (2000-2022)



Trinity Lake Cold Water Pool Volume $\leq 50^{\circ}\text{F}$ - 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)

Jul-11 2023	Δ TAF				% Δ			
	≤52°	≤50°	≤48°	Abs. Avg.	≤52°	≤50°	≤48°	Abs. Avg.
2000	289	264	221	258	31	34	36	34
2001	130	171	199	167	14	22	33	23
2002	105	182	217	168	11	23	36	23
2003	505	409	308	407	54	53	51	52
2004	194	199	152	182	21	26	25	24
2005	274	237	65	192	29	31	11	24
2006	567	561	463	530	60	72	76	70
2007	147	224	275	216	16	29	45	30
2008	-103	-63	-106	90	-11	-8	-17	12
2009	-253	-200	-184	213	-27	-26	-30	28
2010	110	102	-36	83	12	13	-6	10
2011	598	539	417	518	64	69	69	67
2012	432	516	512	487	46	66	85	66
2013	20	94	99	71	2	12	16	10
2014	-440	-319	-218	325	-47	-41	-36	41
2015	-508	-408	-321	413	-54	-53	-53	53
2016	-295	-256	-194	248	-31	-33	-32	32
2017	290	257	233	260	31	33	38	34
2018	169	237	276	227	18	31	46	31
2019	536	575	561	558	57	74	93	75
2020	59	158	147	121	6	20	24	17
2021	-338	-243	-146	242	-36	-31	-24	30
2022	-605	-501	-392	500	-65	-65	-65	65
2023	0	0	0	0	0	0	0	0

Historic - Current

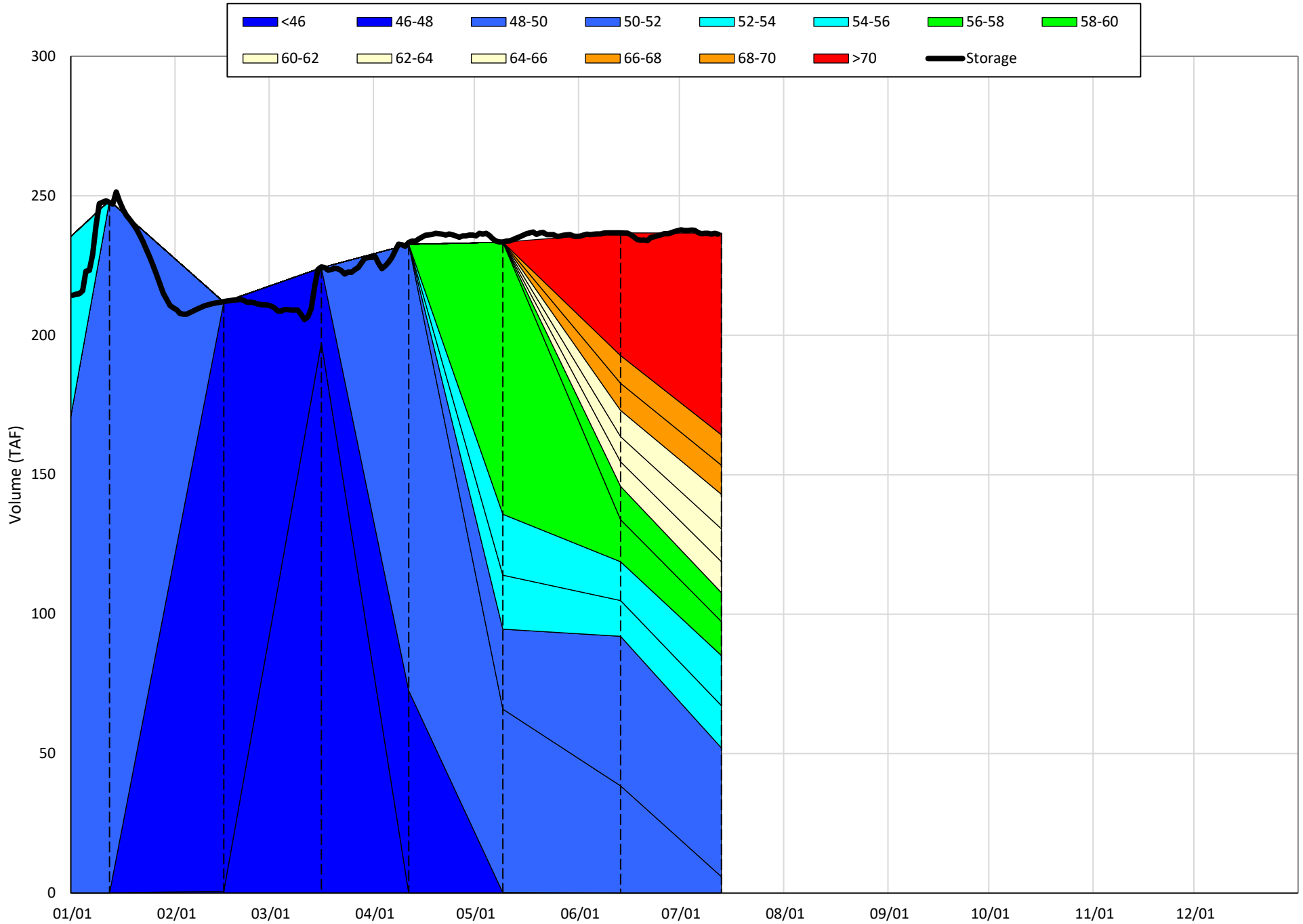
(Historic - Current) / Current

Whiskeytown Lake Isothermobaths & Cold Water Pool Statistics

2023

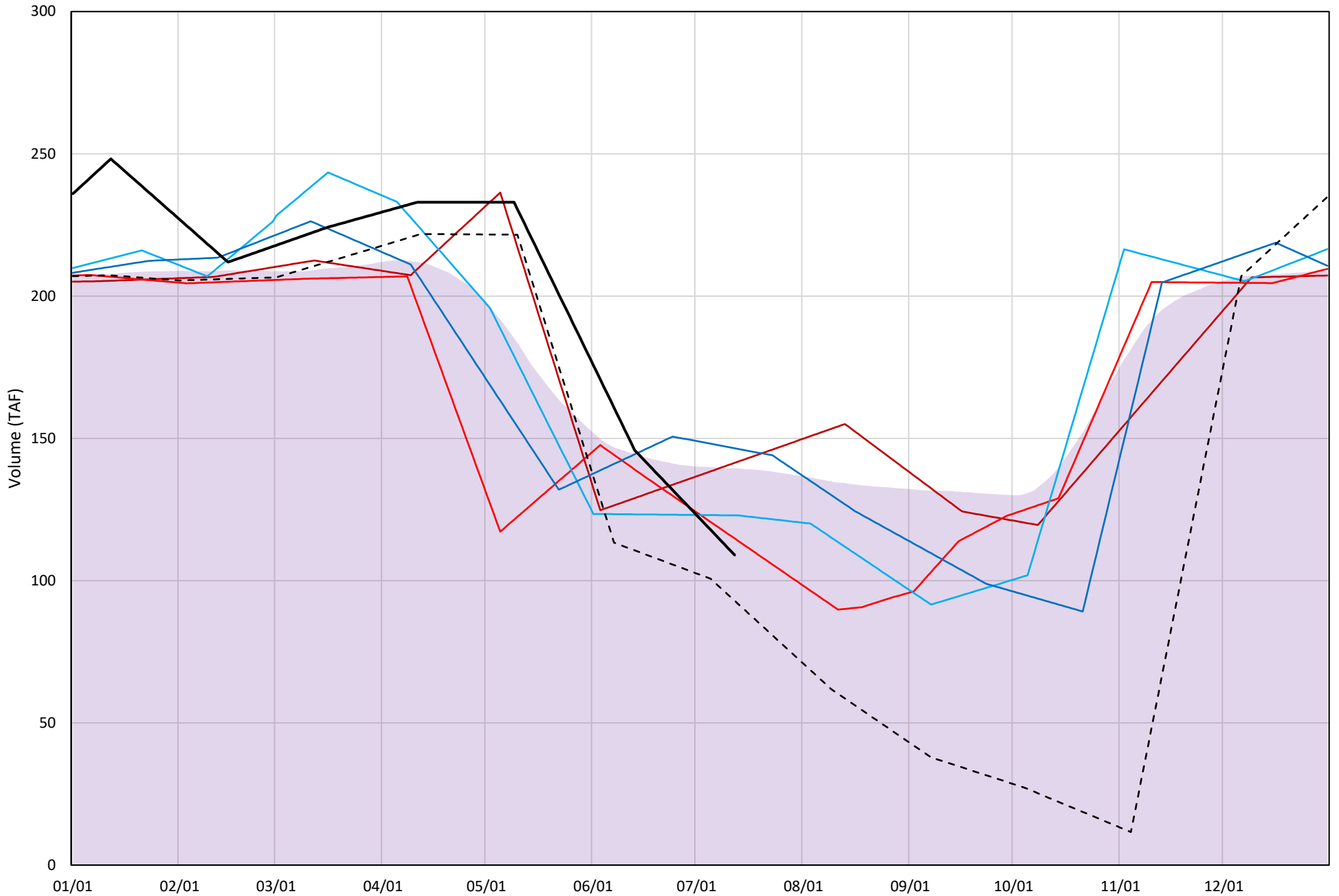
Page	Description
24	- Whiskeytown Lake Isothermobaths Plot
25	- Whiskeytown Lake Cold Water Pool Volume $\leq 60^{\circ}\text{F}$
26	- Whiskeytown Lake Cold Water Pool Volume $\leq 58^{\circ}\text{F}$
27	- Whiskeytown Lake Cold Water Pool Volume $\leq 56^{\circ}\text{F}$
28	- Whiskeytown Lake Cold Water 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



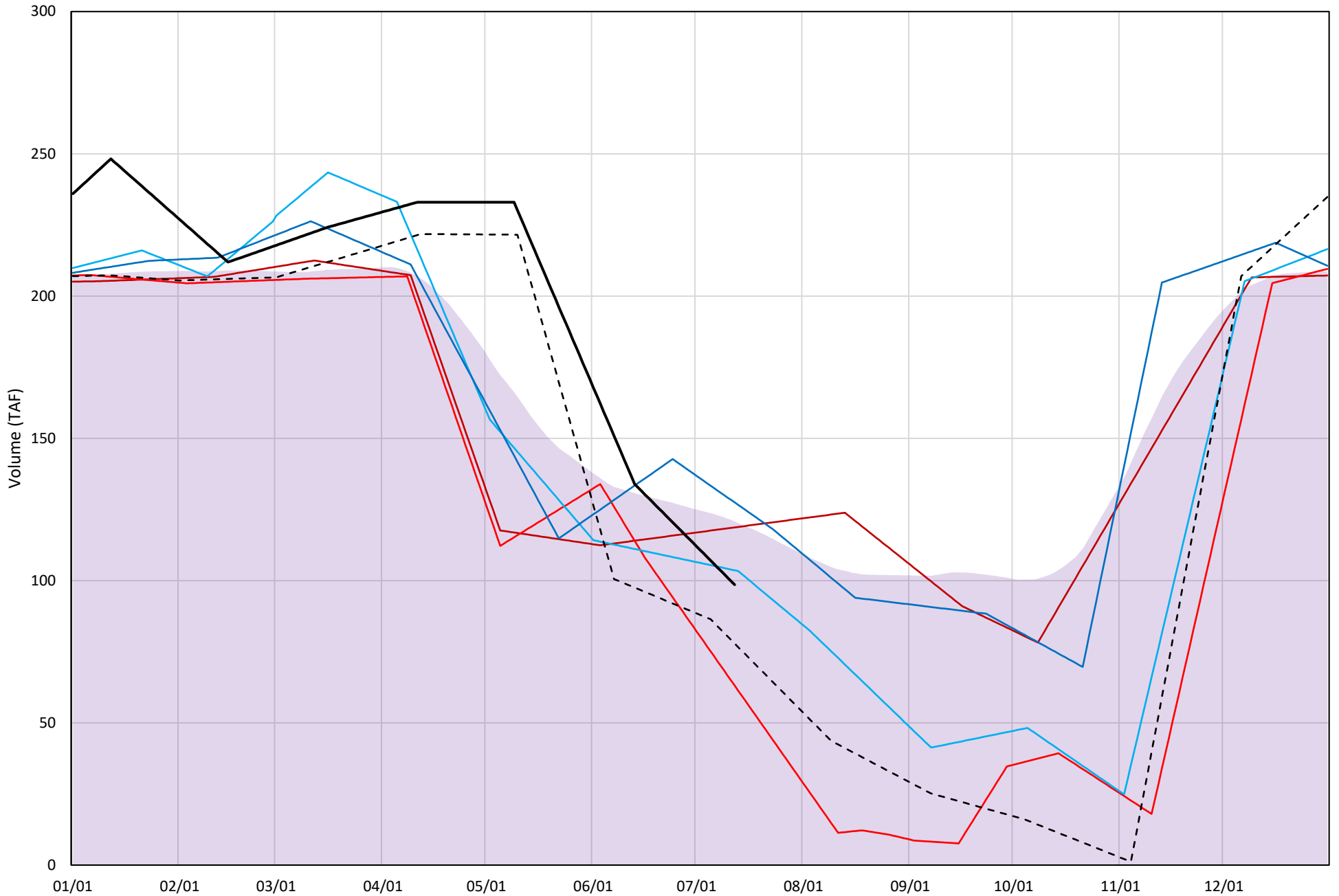
Whiskeytown Lake Cold Water Pool Volume $\leq 60^{\circ}\text{F}$

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



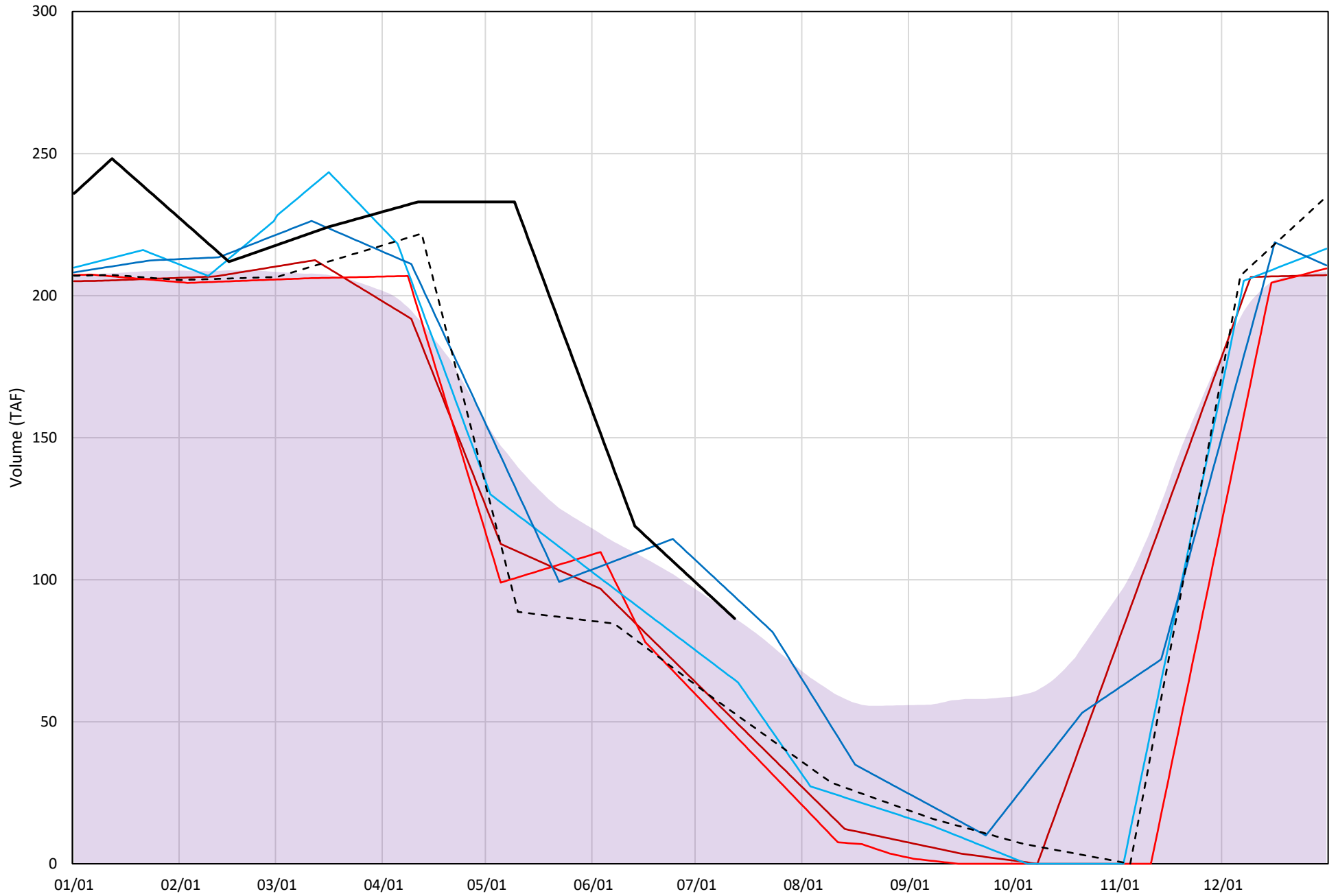
Whiskeytown Lake Cold Water Pool Volume $\leq 58^{\circ}\text{F}$

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



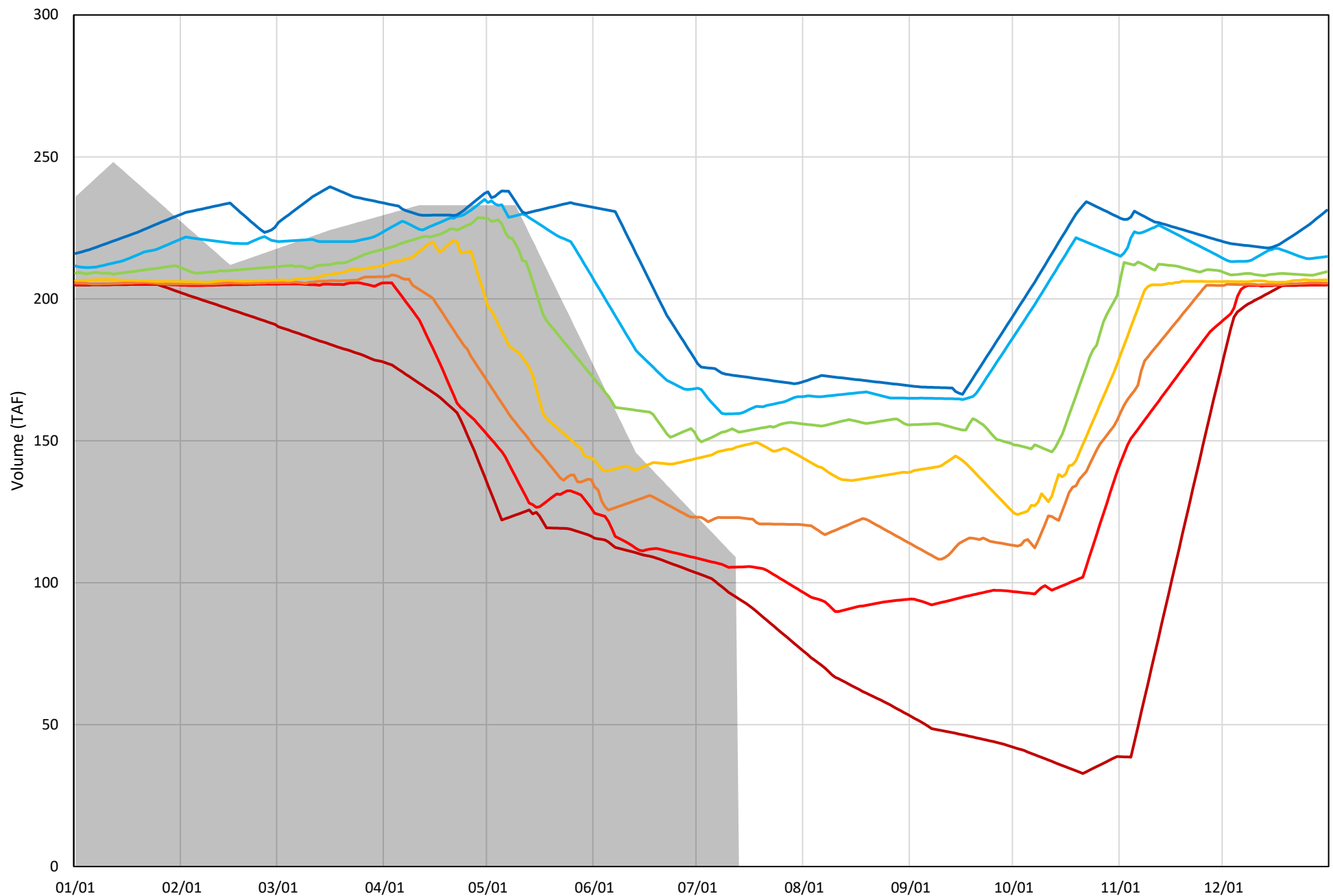
Whiskeytown Lake Cold Water Pool Volume $\leq 56^{\circ}\text{F}$

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



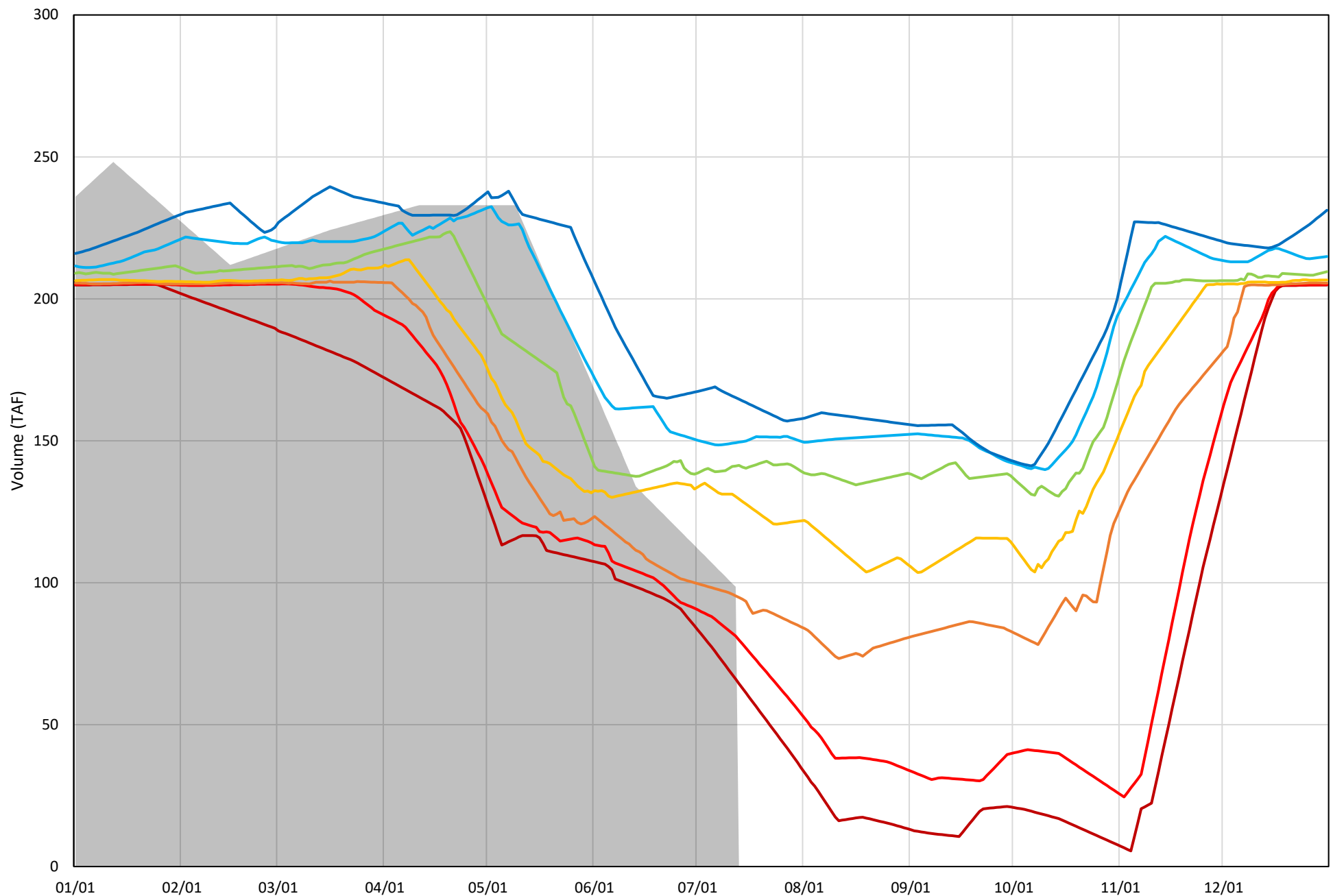
Whiskeytown Lake Cold Water Pool Volume $\leq 60^{\circ}\text{F}$ - Percent Exceedances (2000-2022)

2023 95 90 75 50 25 10 5



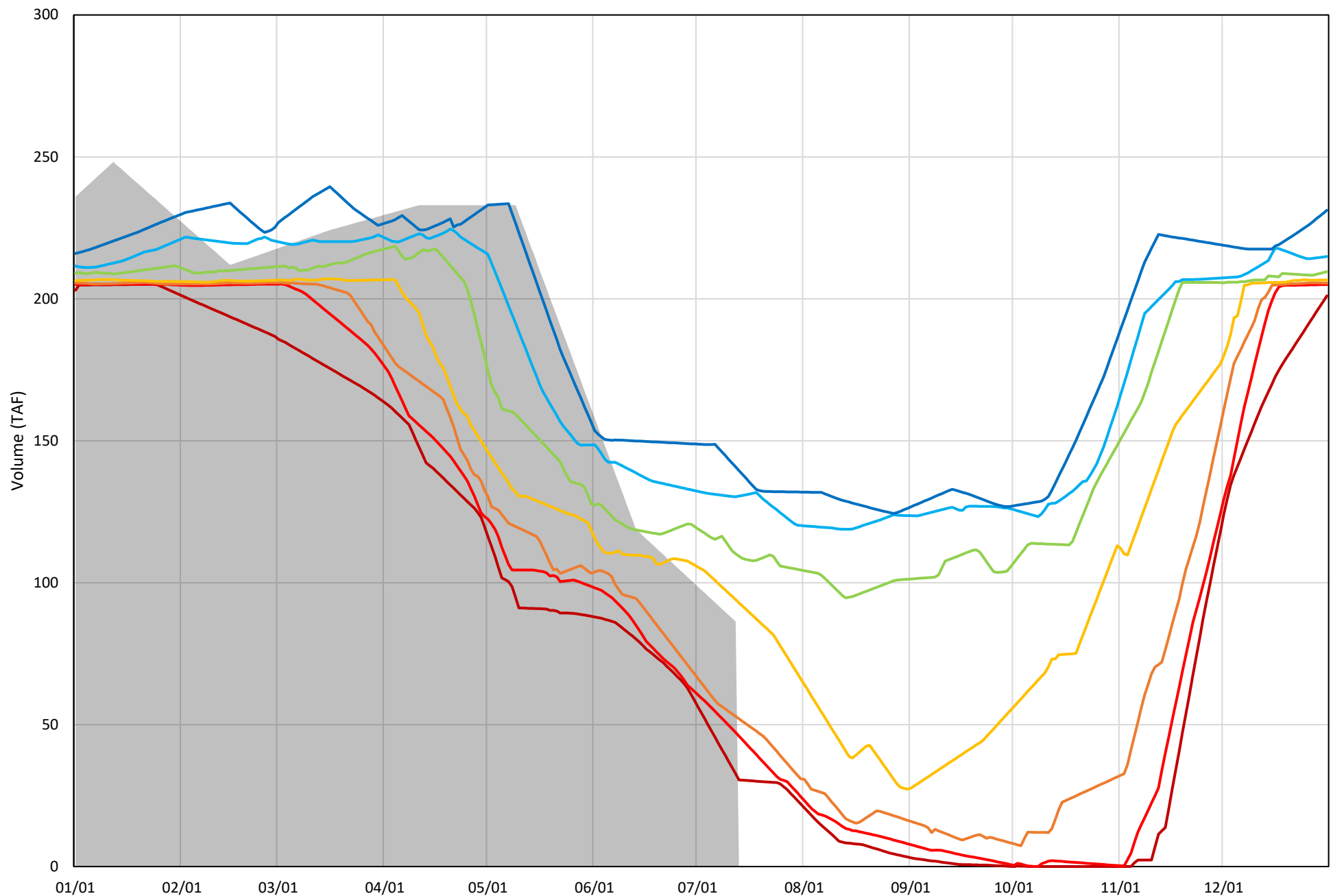
Whiskeytown Lake Cold Water Pool Volume $\leq 58^{\circ}\text{F}$ - Percent Exceedances (2000-2022)

2023 95 90 75 50 25 10 5



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

2023 95 90 75 50 25 10 5



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

Jul-13 2023	Δ TAF				% Δ			
	$\leq 60^\circ$	$\leq 58^\circ$	$\leq 56^\circ$	Abs. Avg.	$\leq 60^\circ$	$\leq 58^\circ$	$\leq 56^\circ$	Abs. Avg.
2000	46.4	46.8	41.1	44.8	42.6	47.5	47.6	45.9
2001	43.8	42.5	18.8	35.0	40.2	43.2	21.7	35.0
2002	38.7	37.4	15.1	30.4	35.5	37.9	17.5	30.3
2003	42.2	36.6	23.9	34.2	38.7	37.1	27.6	34.5
2004	41.4	40.5	31.0	37.7	38.0	41.1	35.9	38.4
2005	-0.5	-12.3	-36.2	16.3	-0.4	-12.4	-42.0	18.3
2006	67.0	70.4	56.7	64.7	61.4	71.4	65.6	66.2
2007	38.7	38.7	12.9	30.1	35.5	39.3	14.9	29.9
2008	42.8	41.3	22.6	35.6	39.3	41.9	26.1	35.8
2009	11.9	-12.4	-36.1	20.1	10.9	-12.5	-41.9	21.8
2010	20.5	1.6	-29.0	17.0	18.8	1.6	-33.6	18.0
2011	48.4	44.2	23.2	38.6	44.4	44.9	26.9	38.7
2012	30.4	18.4	-22.7	23.8	27.9	18.7	-26.3	24.3
2013	52.0	51.7	45.8	49.9	47.7	52.5	53.1	51.1
2014	32.4	20.1	-36.0	29.5	29.7	20.4	-41.7	30.6
2015	5.8	-35.5	-41.0	27.4	5.3	-36.0	-47.5	29.6
2016	13.9	5.1	-21.6	13.5	12.8	5.1	-25.0	14.3
2017	46.9	49.3	41.0	45.7	43.0	50.0	47.5	46.8
2018	44.6	31.8	-20.0	32.1	40.9	32.3	-23.2	32.1
2019	37.5	28.9	7.7	24.7	34.4	29.3	9.0	24.2
2020	-5.5	-3.2	0.7	3.1	-5.1	-3.2	0.8	3.0
2021	17.2	-10.4	-56.8	28.1	15.8	-10.6	-65.8	30.7
2022	-16.1	-20.7	-33.4	23.4	-14.7	-21.0	-38.7	24.8
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

}

Historic - Current

}

(Historic - Current) / Current