

Sacramento River Temperature Task Group Meeting

November 21, 2017

Update

- Hydrology & Operations update (information is available on CVO's web-page)
 - Daily Operation
 - Summary
 - Mean Daily Water Temperatures
 - Redding 10-Day Forecasted Air Temperatures
 - Sac River Gage temp plot and air temp plot
 - Lake Shasta Isothermalbaths Plot
 - Lake Shasta Current TCD Configuration
 - Lake Trinity Isothermalbaths Plot

- Next meeting – Proposal to provide an update the week of December 25th

DAILY CVP WATER SUPPLY REPORT

NOVEMBER 20, 2017

RUN DATE: November 21, 2017

RESERVOIR RELEASES IN CUBIC FEET/SECOND

RESERVOIR	DAM	WY 2017	WY 2018	15 YR MEDIAN
TRINITY	LEWISTON	312	304	308
SACRAMENTO	KESWICK	4,862	4,457	4,862
FEATHER	OROVILLE (SWP)	2,450	2,400	2,050
AMERICAN	NIMBUS	1,294	2,050	1,763
STANISLAUS	GOODWIN	209	606	261
SAN JOAQUIN	FRIANT	232	375	172

STORAGE IN MAJOR RESERVOIRS IN THOUSANDS OF ACRE-FEET

RESERVOIR	CAPACITY	15 YR AVG	WY 2017	WY 2018	% OF 15 YR AVG
TRINITY	2,448	1,353	1,079	1,752	129
SHASTA	4,552	2,330	2,836	3,192	137
FOLSOM	977	384	400	575	150
NEW MELONES	2,420	1,271	517	1,988	156
FED. SAN LUIS	966	417	221	752	180
TOTAL NORTH CVP	11,363	5,756	5,053	8,259	143
MILLERTON	520	234	261	326	139
OROVILLE (SWP)	3,538	1,659	1,503	1,241	75

ACCUMULATED INFLOW FOR WATER YEAR TO DATE IN THOUSANDS OF ACRE-FEET

RESERVOIR	CURRENT WY 2018	DRIEST WY 1977	WETTEST WY 1983	15 YR AVG	% OF 15 YR AVG
TRINITY	33	16	70	40	84
SHASTA	442	392	487	386	114
FOLSOM	173	74	326	109	158
NEW MELONES	81	0	162	62	131
MILLERTON	172	44	203	86	201

ACCUMULATED PRECIPITATION FOR WATER YEAR TO DATE IN INCHES

RESERVOIR	CURRENT WY 2018	DRIEST WY 1977	WETTEST WY 1983	AVG (N YRS)	% OF AVG	LAST 24 HRS
TRINITY AT FISH HATCHERY	5.52	1.22	8.21	4.71 (55)	117	0.71
SACRAMENTO AT SHASTA DAM	8.11	1.63	9.71	8.25 (60)	98	0.41
AMERICAN AT BLUE CANYON	0.00	3.19	16.73	8.00 (42)	0	0.00
STANISLAUS AT NEW MELONES	3.32	0.00	7.52	3.51 (39)	95	0.00
SAN JOAQUIN AT HUNTINGTON LK	2.55	1.80	12.60	4.87 (42)	52	0.00

Upper Sacramento River Summary Conditions – November (On-going):

Storage/Release Management Conditions:

- Release reductions for ACID Dam flash-board removal November 5-8
- November 13-16, coordinated release reductions: protect winter run escapement, reduce risk to fall run spawning dewatering, and protect storage conditions
- Despite mid-November storm events, projections still suggest storage is on track for winter flood control management December 1st
- Meteorological and hydrologic uncertainty: preliminary modeling suggested “warm and dry ridging” but it appears that condition has weakened
- Potential for flood management/increased release exist if storm activity increases/persists

Temperature Management:

- Sacramento River seasonal fall cooling continues
- Expect isothermal lake conditions shortly and conclusion of active temperature management

DRAFT November 2017

90% Runoff Exceedance Outlook:

Inflow based on the DWR May 2017 B120, 70% Historical Inflows Oct and future months

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

		Nov	Dec
Shasta	3177	3192	3182
	Elev.	1016	1016

Monthly River Releases (cfs)

Sacramento	6000	5000
Clear Creek	200	200

Trinity Diversions (TAF)

		Nov	Dec
Carr Power Plant		21	12
Spring Creek PP		15	12

50% Runoff Exceedance Outlook:

Inflow based on the DWR May 2017 B120, 50% Historical Inflows Oct and future months

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

		Nov	Dec
Shasta	3177	3192	3274
	Elev.	1016	1019

Monthly River Releases (cfs)

Sacramento	6000	5000
Clear Creek	200	200

Trinity Diversions (TAF)

		Nov	Dec
Carr Power Plant		32	9
Spring Creek PP		20	12

Please note:

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

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

CVP releases represent monthly averages.

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

Northern CVP Water Temperature Report

November - 2017

Page	Description
1	- Mean Daily Water Temperature, Release Flow Rates and Air Temperatures with Monthly Averages
2	- Redding 10-Day Forecasted Air Temperatures
3	- Sacramento River Mean Daily Water Temperature, Air Temperature and 10-Day Forecasted Air Temperature Plot - Water Temperature Measuring Station Details - Temperature Control Point Details
4	- Lake Shasta Isothermalbaths Plot
5	- Daily Maximum and 7DADM
x	- TCD Configuration (External Link)



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	BSF ²	JLF	BND	RDB	IGO	LWS	NFH ³	Shasta Generation	Spring Creek P.P.	Keswick Total	RDD	BSF	RDB	LWS
Oct	51.8	50.8	55.0	52.0	52.2	52.5	53.3	53.6	53.8	54.4	54.0	48.8	52.0	6711	608	7482	65.5	59.7	62.7	51.9
11/01	52.5	51.6	55.4	52.2	52.4	52.5	53.2	53.5	53.6	54.2	53.8	48.0	49.9	6932	16	7435	56.0	53.0	55.7	47.4
11/02	52.9	52.0	55.1	52.3	52.3	52.5	52.9 ?	53.2 ?	53.4 !	-	54.0	48.8	49.7	7308	19	7404	57.5	55.0	54.9	48.3
11/03	52.9	52.0	55.2	52.3	52.3	52.5	52.9	53.2	53.3 ?	53.7	54.2	49.0	50.6	7393	16	7400	56.0	58.9	57.5	49.3
11/04	53.3	52.3	55.2	52.5	52.5	52.8	53.1	53.2	53.3	53.5	54.0	47.9	50.0	7199	15	7402	50.0	51.4	51.9	41.2
11/05	52.8	51.9	55.1	52.5	52.3	52.3	52.4	52.6	52.7	53.0	53.2	47.3	47.5	6132	14	6087	48.5	47.0	49.0	39.1
11/06	52.9	52.1	55.0	52.5	52.5	52.7	52.7	52.7	52.7	52.8	53.2	47.1	48.2	5505	14	5402	51.0	47.0	50.3	40.1
11/07	53.1	52.2	55.1	52.3	52.2	52.3	52.2	52.3	52.3	52.7	53.1	46.5	46.8	5091	14	5454	51.0	45.5	48.5	40.5
11/08	53.1	52.2	55.0	52.3	52.2	52.2	52.1 ?	52.1	52.2	52.2	53.0	46.8	47.0	5367	14	5202	46.5	47.2	48.8	44.3
11/09	53.2	52.4	54.9	52.5	52.5	52.7	53.1	53.3	53.3	53.3	53.9	47.4	48.1	5144	16	5194	56.5	58.9	59.0	46.9
11/10	53.2	52.6	55.1	52.7	52.7	52.8	53.0	53.3	53.6	54.0	53.6	47.8	49.4	5017	16	5202	54.5	57.0	57.4	47.6
11/11	53.3	52.7	55.2	52.9	53.0	53.3	53.7	53.9	54.0	54.2	53.4	47.8	49.8	4447	600	5195	55.5	54.0	54.3	47.6
11/12	53.2	52.4	55.5	53.1	53.0	53.1	53.2	53.3	53.4	53.8	53.5	47.7	49.7	5173	14	5200	51.5	49.9	51.2	48.0
11/13	53.1	52.4	54.9	52.9	52.9	53.1	53.5	53.7	53.9	53.7	53.7	48.1	50.1	4827	15	4971	54.5	57.5	57.8	48.6
11/14	53.8	52.9	54.9	52.8	52.8	53.0	53.2	53.3	53.4	53.7	53.2	46.9	48.5	4174	28	4795	52.0	50.4	51.5	42.8
11/15	53.5	52.7	55.0	52.7	52.5	52.6	52.7	52.9	53.1	53.2	53.0	46.3	47.1	4181	14	4601	50.5	48.2	50.1	40.8
11/16	53.3	52.6	54.6	53.0	53.0	53.1	52.6	52.5	52.6	52.9	53.2	46.9	47.3	4734	158	4460	53.5	52.4	55.4	43.4
11/17	53.7	52.8	55.2	53.0	52.9	53.0	52.4	52.4	52.5	52.7	52.6	46.0	47.3	4375	24	4517	50.5	46.4	50.8	39.6
11/18	53.6	52.8	55.0	52.7	52.5	52.6	51.7	51.3	51.3	51.6	52.2	45.2	45.6	4176	14	4507	49.0	42.1	47.1	35.5
11/19	53.1	52.6	55.0	52.7	52.4	52.3	51.4	51.1	51.0	50.9	52.2	45.3	44.6	4385	14	4456	45.0	43.0	45.8	37.1
11/20	53.3	52.7	54.8	52.8	52.6	52.6	52.2	52.0	51.9	51.4	52.8	45.6	45.0	4705	14	4457	49.5	48.6	48.9	43.7
11/21																				
11/22																				
11/23																				
11/24																				
11/25																				
11/26																				
11/27																				
11/28																				
11/29																				
11/30																				
-																				
Nov	53.2	52.4	55.1	52.6	52.6	52.7	52.7	52.8	52.9	53.0	53.3	47.1	48.1	5313	52	5467	52.0	50.7	52.3	43.6

Total CFS	106265	1049	109341
Total AF	210772	2081	216873

Legend

Notes

- ? = 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

- 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 control point (see page 3 for more details)
- ³ NFH is only reported in October, November and December

D A T E	Redding (RDD) Daily Air Temperatures (°F)																																					
	Actual			Forecasted																																		
	Previous Day			Current Day			1 Day			2 Days			3 Days			4 Days			5 Days			6 Days			7 Days			8 Days			9 Days			10 Days				
	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg		
11/01	47	81	64.0	45	72	58.5	45	64	54.5	48	56	52.0	43	59	51.0	37	53	45.0	33	61	47.0	34	55	44.5	50	61	55.5	41	62	51.5	44	63	53.5	43	63	53.0		
11/02	42	70	56.0	53	65	59.0	48	57	52.5	41	59	50.0	35	52	43.5	32	60	46.0	31	60	45.5	40	63	51.5	40	65	52.5	44	67	55.5	44	65	54.5	39	68	53.5		
11/03	52	63	57.5	58	57	57.5	39	59	49.0	35	52	43.5	33	60	46.5	32	58	45.0	43	57	50.0	43	59	51.0	43	66	54.5	44	66	55.0	40	62	51.0	41	62	51.5		
11/04	52	60	56.0	42	60	51.0	37	53	45.0	34	60	47.0	32	64	48.0	39	58	48.5	43	59	51.0	44	60	52.0	45	68	56.5	45	61	53.0	44	61	52.5	39	61	50.0		
11/05	41	59	50.0	43	56	49.5	34	60	47.0	33	64	48.5	40	58	49.0	46	59	52.5	42	61	51.5	41	66	53.5	46	65	55.5	48	62	55.0	45	65	55.0	42	64	53.0		
11/06	42	55	48.5	41	59	50.0	33	62	47.5	42	55	48.5	45	59	52.0	45	59	52.0	42	63	52.5	41	60	50.5	46	59	52.5	44	62	53.0	42	63	52.5	42	63	52.5		
11/07	39	63	51.0	35	63	49.0	41	54	47.5	45	61	53.0	44	63	53.5	39	63	51.0	42	58	50.0	45	59	52.0	47	61	54.0	42	60	51.0	44	60	52.0	42	65	53.5		
11/08	35	67	51.0	41	53	47.0	46	56	51.0	47	55	51.0	43	63	53.0	43	59	51.0	47	57	52.0	38	57	47.5	41	63	52.0	42	63	52.5	42	61	51.5	43	60	51.5		
11/09	41	52	46.5	52	60	56.0	46	60	53.0	41	63	52.0	41	58	49.5	46	58	52.0	38	57	47.5	36	56	46.0	45	62	53.5	48	63	55.5	43	65	54.0	42	62	52.0		
11/10	50	63	56.5	52	61	56.5	42	61	51.5	42	59	50.5	45	58	51.5	38	57	47.5	38	55	46.5	39	57	48.0	38	64	51.0	43	61	52.0	43	60	51.5	43	61	52.0		
11/11	48	61	54.5	46	62	54.0	41	59	50.0	45	59	52.0	39	58	48.5	40	54	47.0	37	55	46.0	36	57	46.5	45	61	53.0	48	63	55.5	47	62	54.5	46	62	54.0		
11/12	46	65	55.5	45	62	53.5	47	59	53.0	42	58	50.0	40	53	46.5	39	55	47.0	37	57	47.0	38	58	48.0	46	57	51.5	53	61	57.0	48	62	55.0	43	64	53.5		
11/13	44	59	51.5	53	59	56.0	39	59	49.0	42	53	47.5	42	55	48.5	35	57	46.0	38	58	48.0	43	58	50.5	49	65	57.0	49	64	56.5	51	64	57.5	45	63	54.0		
11/14	50	59	54.5	43	60	51.5	42	52	47.0	43	54	48.5	35	56	45.5	36	58	47.0	42	56	49.0	47	57	52.0	51	67	59.0	50	68	59.0	47	68	57.5	47	65	56.0		
11/15	42	62	52.0	48	54	51.0	45	55	50.0	35	57	46.0	33	59	46.0	36	58	47.0	44	56	50.0	46	60	53.0	49	70	59.5	52	69	60.5	46	64	55.0	41	63	52.0		
11/16	48	53	50.5	49	56	52.5	36	59	47.5	35	60	47.5	37	58	47.5	43	58	50.5	45	60	52.5	48	65	56.5	50	69	59.5	51	67	59.0	46	63	54.5	42	61	51.5		
11/17	47	60	53.5	41	58	49.5	35	61	48.0	36	59	47.5	43	57	50.0	48	61	54.5	50	62	56.0	50	64	57.0	45	69	57.0	42	66	54.0	43	62	52.5	40	63	51.5		
11/18	40	61	50.5	33	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
11/19	33	65	49.0	35	61	48.0	44	55	49.5	47	66	56.5	50	73	61.5	51	68	59.5	49	65	57.0	47	63	55.0	46	65	55.5	47	58	52.5	42	58	50.0	40	60	50.0		
11/20	34	56	45.0	48	55	51.5	47	66	56.5	49	72	60.5	50	66	58.0	48	68	58.0	48	65	56.5	47	64	55.5	44	59	51.5	42	57	49.5	36	57	46.5	37	58	47.5		
11/21	48	51	49.5	51	66	58.5	47	71	59.0	50	68	59.0	49	68	58.5	50	63	56.5	49	63	56.0	43	59	51.0	39	65	52.0	40	62	51.0	43	64	53.5	44	61	52.5		
11/22																																						
11/23																																						
11/24																																						
11/25																																						
11/26																																						
11/27																																						
11/28																																						
11/29																																						
11/30																																						
-																																						

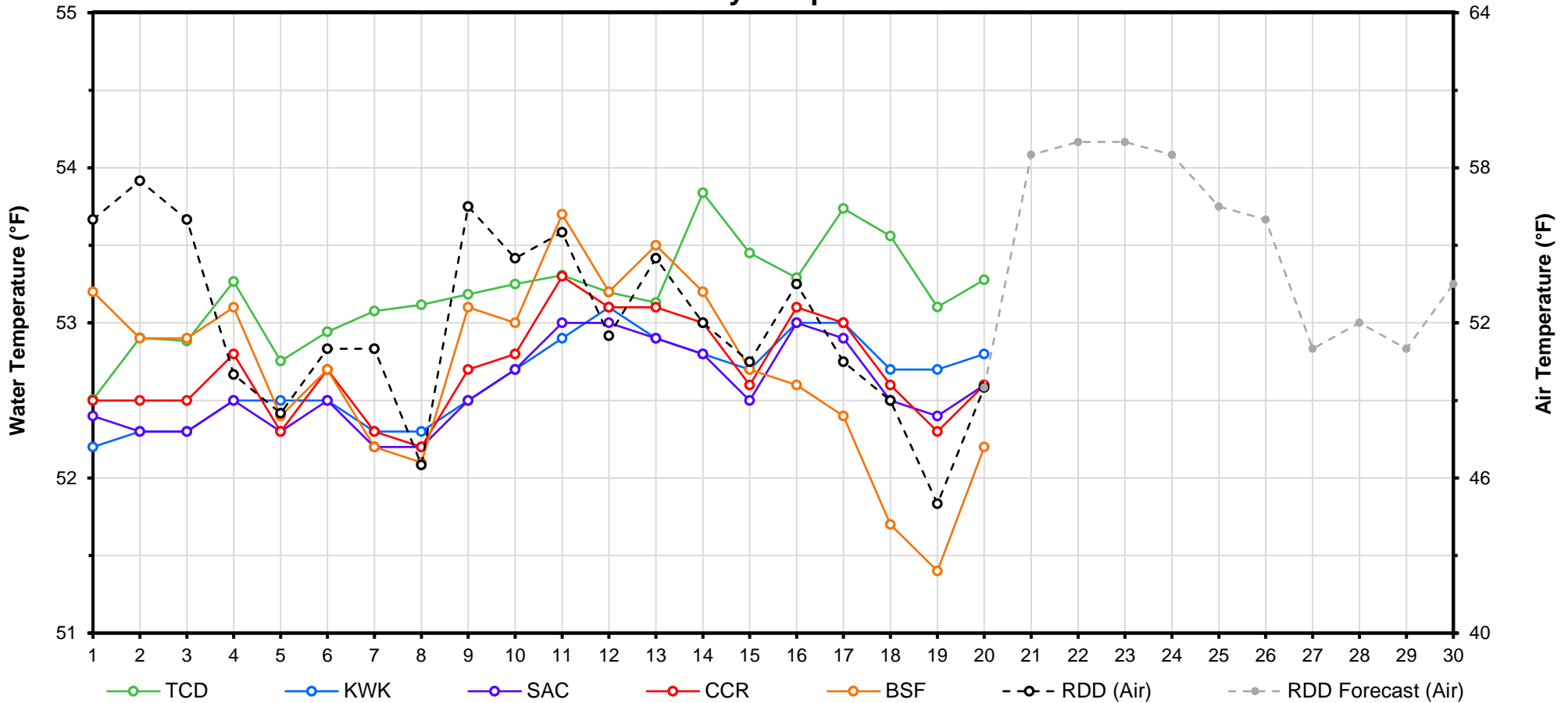
Web Links

- [10-Day Min/Max Forecast](#)
- [Previous Days Min/Max Actuals](#)

Legend

- NR = Forecasted temperatures not recorded
- 100** = Previous day actual temperatures in red and bolded indicate a record temperature for that date

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
LWS	Trinity River	1.1 miles downstream of Lewiston Dam	Click Here
DGC ²	Trinity River	19 miles downstream of Lewiston Dam	Click Here
NFH ³	Trinity River	38 miles downstream of Lewiston Dam	Click Here

Temperature Control Point		
Point	Temp. (°F)	Date Range
BSF	56.0	06/01/17 - Current

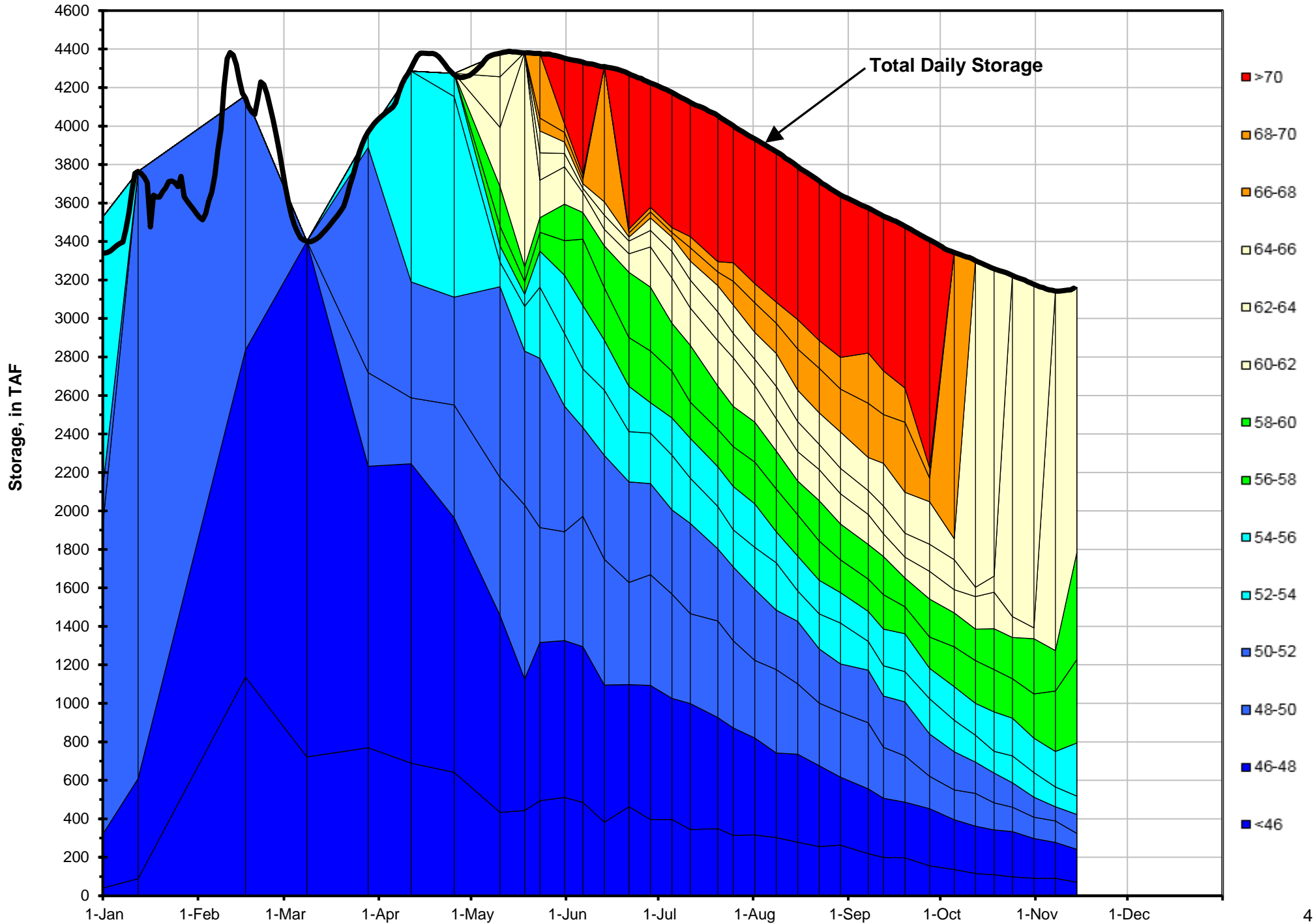
Notes

¹ Distances are approximate

² DGC is only reported in September

³ NFH is only reported in October, November and December

Lake Shasta Isothermalbaths - 2017 (Water Temperature, in °F)



DATE	Daily Max		7DADM ¹		DAT ²
	SAC	CCR	SAC	CCR	BSF
11/01	53.2	53.7	53.6	54.1	53.2
11/02	52.5	52.8	53.4	53.9	52.9
11/03	52.4	52.6	53.2	53.7	52.9
11/04	53.2	53.8	53.2	53.6	53.1
11/05	52.5	52.8	53.0	53.4	52.4
11/06	53.8	54.3	53.0	53.4	52.7
11/07	53.2	53.8	53.0	53.4	52.2
11/08	52.4	52.5	52.9	53.2	52.1
11/09	52.9	53.2	52.9	53.3	53.1
11/10	53.4	53.6	53.1	53.4	53.0
11/11	54.1	54.7	53.2	53.6	53.7
11/12	53.6	54.0	53.3	53.7	53.2
11/13	53.2	53.5	53.3	53.6	53.5
11/14	53.8	54.4	53.3	53.7	53.2
11/15	52.6	52.7	53.4	53.7	52.7
11/16	54.1	54.2	53.5	53.9	52.6
11/17	54.1	54.5	53.6	54.0	52.4
11/18	53.7	54.1	53.6	53.9	51.7
11/19	53.2	53.2	53.5	53.8	51.4
11/20	52.7	52.8	53.5	53.7	52.2
11/21					
11/22					
11/23					
11/24					
11/25					
11/26					
11/27					
11/28					
11/29					
11/30					
-					

Notes

¹ 7DADM = 7-Day Average Daily Maximum

² DAT = Daily Average Temperature

