

Sacramento River Temperature Task Group Meeting

August 29, 2013

Conference Line: 877-718-6527

Pass code: 1954134

Agenda

*** Discussions in blue

1. Introductions-- Please see attendance list.
2. Fishery update
3. Hydrology & Operations update
 - a. Daily CVP Water Supply Report *** They went over the handout, reported current reservoir releases.
 - b. June 90%, and 50% forecasts *** They went over the handout, explaining that this is the same forecast that had been distribute out in the last two meetings.
 - c. August Temperature Table They went over the handout. At Balls Ferry, the temperature has been below 56.75 and that the monthly average at Balls Ferry is 55.6 degrees.
Matt Brown mentioned that he noticed temperatures are warmer because of power peaking, Reclamation corrected that statement by stating that the warmer temperature is due to less water coming across from the Trinity side, this decrease began around the time of the Boat Dance flow change and also for the Augmentation down the Trinity River.
4. Discussion of recent temperature model runs
 - a. Temperature studies packet *** Russ went over the studies and the temperature target will remain at the surrogate target temperature of 56.75 degrees F at Balls Ferry, with the intention of achieving 56.0 degrees F at Airport Road Bridge. There was a question if the target can be moved further downstream since Shasta storage is higher than forecasted. Russ explained that with the latest study the latest storage is input into the model and it still indicate that Airport Road Bridge is still a good target to achieve for the rest of the season. Russ also mentioned that although the storage is higher at Shasta, it does not equate to a more “cold water” pool.
5. Other Item – Garwin request to add these items for discussion/updates:

- Projection of end of September storage based on "current" conditions compared to the June forecast – Thuy explained some of the contributing reasons why storage at Shasta is higher than the June forecast. The actual releases are 200 to 300 cfs lower than projected, the amount of water brought over from the Trinity side was higher than projected, and the Boat Dance Ceremony flows and the augmentation flows were not included in the June forecast. Russ added that the inflows into Shasta have been more than what was projected in the June forecast.
- Trinity fall pulse flow—volume, duration, and magnitude? Thuy updated the group with the operations on the Trinity. The Boat Dance flows started on the 27th with releases out of Lewiston at 2,650 cfs. It has taken several days to ramp down from these flows. On the 29th Reclamation will start transitioning to target flows at KNK for the Supplemental flows in the Lower Klamath River.
- Annual review: Dates, milestones, status of SRTTG outline and draft annual report Garwin informed the group of the annual review schedule and the September 6 deadline for the SRTTG to complete a draft of its annual report. Thuy is currently drafting the report. Matt Brown asked if the group can review this report and Garwin indicated that because the report will likely be late, there won't be enough time for the SRTTG to review and comment Jim Smith declined Thuy's request to help draft or review the fisheries portion of the report because of the late notice in the request and little time left for the effort.
- Timing to finalize the draft notes from July 25 SRTTG meeting. Thuy will finalize notes for NMFS to post on their website.
- Status of GGSA proposal to stabilize Keswick releases in the fall. The Fishery Agencies will meet tomorrow to discuss this and send out a summary of their discussion to the rest of the group.

6. Next meeting – September 26th at 1:00 pm

***handouts

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5. Other Item
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UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA

DAILY CVP WATER SUPPLY REPORT

AUGUST 27, 2013

RUN DATE: August 28, 2013

RESERVOIR RELEASES IN CUBIC FEET/SECOND

RESERVOIR	DAM	WY 2012	WY 2013	15 YR MEDIAN
TRINITY	LEWISTON	1,052	2,027	473
SACRAMENTO	KESWICK	11,008	8,190	9,662
FEATHER	OROVILLE (SWP)	4,000	5,500	4,500
AMERICAN	NIMBUS	2,301	2,749	2,219
STANISLAUS	GOODWIN	251	202	270
SAN JOAQUIN	FRIANT	350	347	290

STORAGE IN MAJOR RESERVOIRS IN THOUSANDS OF ACRE-FEET

RESERVOIR	CAPACITY	15 YR AVG	WY 2012	WY 2013	% OF 15 YR AVG
TRINITY	2,448	1,757	1,955	1,427	81
SHASTA	4,552	2,808	2,837	2,136	76
OROVILLE (SWP)	3,538	2,152	2,275	1,821	85
FOLSOM	977	575	510	438	76
NEW MELONES	2,420	1,541	1,564	1,095	71
FED. SAN LUIS	966	225	183	121	54
MILLERTON	520	278	274	309	111
TOT. N. CVP	11,360	6,906	7,049	5,217	76

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

RESERVOIR	CURRENT WY 2013	DRIEST WY 1977	WETTEST WY 1983	15 YR AVG	% OF 15 YR AVG
TRINITY	788	207	2,847	1,303	60
SHASTA	3,809	2,375	10,469	5,306	72
FOLSOM	1,636	328	6,370	2,389	68
NEW MELONES	519	0	2,685	959	54
MILLERTON	760	325	4,475	1,537	49

ACCUMULATED PRECIPITATION FOR WATER YEAR TO DATE IN INCHES

RESERVOIR	CURRENT WY 2013	DRIEST WY 1977	WETTEST WY 1983	AVG (N YRS)	% OF AVG	LAST 24 HRS
TRINITY AT FISH HATCHERY	24.13	14.16	56.20	32.00 (51)	75	0.01
SACRAMENTO AT SHASTA DAM	48.80	17.55	114.16	61.75 (56)	79	0.00
AMERICAN AT BLUE CANYON	58.59	16.96	103.88	65.18 (38)	90	0.00
STANISLAUS AT NEW MELONES	20.09	0.00	45.73	27.04 (35)	74	0.00
SAN JOAQUIN AT HUNTINGTON LK	20.49	17.50	83.00	42.25 (38)	48	0.00

Storages

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

		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Trinity	2004	1867	1660	1479	1362	1243	1221	1214	1193	1225	1290	1355	1283
	Elev.	2332	2316	2301	2291	2280	2278	2278	2275	2279	2285	2291	2284
Whiskeytown	239	238	238	238	230	230	225	206	206	206	206	238	238
	Elev.	1209	1209	1209	1207	1207	1205	1199	1199	1199	1199	1209	1209
Shasta	3363	2826	2285	1888	1718	1681	1639	1702	1850	1983	2202	2417	2039
	Elev.	1000	973	951	940	938	935	939	948	956	969	980	960
Folsom	734	641	462	346	300	274	253	241	250	303	387	542	651
	Elev.	433	412	395	387	382	378	376	378	388	401	422	434
New Melones	1334	1218	1101	988	904	876	878	882	886	896	901	808	699
	Elev.	971	956	941	929	925	925	925	926	927	928	914	896
San Luis	465	206	86	60	134	235	348	487	624	601	530	423	245
	Elev.	384	355	354	366	375	395	427	451	447	442	420	380
Total		6996	5832	4999	4648	4539	4565	4732	5008	5213	5515	5783	5155

State End of the Month Reservoir Storage (TAF)

Oroville	2812	2513	2048	1583	1380	1286	1187	1138	1192	1322	1521	1666	1498
	Elev.	827	787	740	716	704	691	684	692	709	733	749	730
San Luis	320	197	131	150	144	100	132	268	362	344	361	271	126
Total San Luis (TAF)	785	404	217	211	278	336	480	755	986	945	891	694	371

Monthly River Releases (TAF/cfs)

Trinity	TAF	47	28	28	27	23	18	18	18	17	18	32	180
	cfs	783	450	450	450	373	300	300	300	300	300	540	2,924
Clear Creek	TAF	9	7	5	9	12	13	12	12	11	12	12	12
	cfs	150	120	85	150	200	225	200	200	200	200	200	200
Sacramento	TAF	803	845	667	387	323	280	215	200	250	307	238	738
	cfs	13500	13750	10850	6500	5250	4700	3500	3250	4500	5000	4000	12000
American	TAF	133	213	151	76	62	61	64	52	49	88	48	61
	cfs	2242	3458	2459	1276	1007	1020	1049	850	874	1430	800	1000
Stanislaus	TAF	30	21	19	12	39	12	12	14	12	17	89	72
	cfs	512	347	302	200	635	200	200	220	220	281	1495	1167
Feather	TAF	164	307	338	193	77	74	77	77	69	77	74	184
	cfs	2750	5000	5500	3250	1250	1250	1250	1250	1250	1250	1250	3000

Trinity Diversions (TAF)

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Carr PP	111	188	157	92	101	17	9	35	5	3	39	36
Spring Crk. PP	105	180	150	90	90	10	20	30	5	10	10	30

Delta Summary (TAF)

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Tracy	50	220	258	258	230	170	175	175	47	60	45	50
USBR Banks	0	9	9	9	0	0	0	0	0	0	0	0
Contra Costa	6.4	12.9	13.6	14.4	15	16.4	17.2	9.2	7	7	6.4	6.4
Total USBR	56	242	281	281	245	186	192	184	54	67	51	57
State Export	131	252	334	182	163	184	225	175	65	103	45	54
Total Export	187	494	615	463	408	370	417	359	119	170	96	110
COA Balance	-7	0	0	-7	-8	-8	-8	-8	-8	-8	-8	-8

Old/Middle River Std.												
Old/Middle R. calc.	-2,551	-6,379	-7,948	-6,241	-4,895	-4,825	-5,265	-4,529	-1,574	-1,963	-714	-914

Computed DOI	7346	4994	3497	3009	4002	4505	4506	7304	11400	11403	9581	14706
Excess Outflow	0	0	0	0	0	0	0	2798	0	0	84	7597
% Export/Inflow	21%	46%	61%	61%	60%	57%	64%	45%	15%	17%	11%	9%
% Export/Inflow std.	35%	65%	65%	65%	65%	65%	65%	65%	45%	35%	35%	35%

Hydrology

Water Year Inflow (TAF)	Clair Engle	Shasta	Folsom	New Melones
Year to Date + Forecasted	817	3,855	1,639	552
% of mean	68%	70%	60%	52%

Storages

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

		Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Trinity	2004	1890	1676	1484	1353	1273	1268	1290	1348	1458	1585	1708	1714
	Elev.	2333	2317	2302	2290	2283	2283	2285	2290	2300	2310	2320	2320
Whiskeytown	239	238	238	238	238	206	206	206	206	206	206	238	238
	Elev.	1209	1209	1209	1209	1199	1199	1199	1199	1199	1199	1209	1209
Shasta	3363	2826	2300	1903	1703	1660	1700	1899	2316	2898	3531	3933	3877
	Elev.	1000	974	952	939	936	939	951	975	1003	1030	1045	1043
Folsom	734	647	487	411	361	329	314	319	378	528	655	797	949
	Elev.	434	415	405	397	392	390	390	400	420	434	449	464
New Melones	1334	1239	1133	1023	944	925	943	967	1001	1066	1136	1171	1264
	Elev.	973	960	946	934	932	934	938	943	951	960	965	976
San Luis	465	208	54	19	89	230	429	607	762	883	919	790	578
	Elev.	386	353	355	381	408	442	472	498	520	531	514	482
Total		7047	5888	5078	4688	4622	4860	5287	6010	7039	8031	8638	8621

State End of the Month Reservoir Storage (TAF)

Oroville	2812	2527	2058	1587	1377	1323	1313	1385	1589	1968	2337	2733	2881
	Elev.	829	788	740	716	709	708	717	741	780	813	845	856
San Luis	320	207	148	195	290	358	466	596	728	857	959	881	732
Total San Luis (TAF)	785	415	202	214	379	587	895	1203	1490	1740	1878	1671	1310

Monthly River Releases (TAF/cfs)

Trinity	TAF	47	28	28	27	23	18	18	18	17	18	32	180
	cfs	783	450	450	450	373	300	300	300	300	300	540	2,924
Clear Creek	TAF	12	5	5	9	12	13	12	12	11	12	12	12
	cfs	200	85	85	150	200	225	200	200	200	200	200	200
Sacramento	TAF	803	830	667	416	369	268	200	200	180	200	238	553
	cfs	13500	13500	10850	7000	6000	4500	3250	3250	3250	3250	4000	9000
American	TAF	152	209	132	104	108	104	108	92	111	184	280	307
	cfs	2560	3403	2151	1750	1750	1750	1750	1500	2000	3000	4700	5000
Stanislaus	TAF	28	19	19	12	39	12	12	12	12	12	45	39
	cfs	479	309	314	200	635	200	200	200	220	200	762	631
Feather	TAF	149	312	441	238	77	74	77	77	69	77	74	77
	cfs	2500	5075	7170	4000	1250	1250	1250	1250	1250	1250	1250	1250

Trinity Diversions (TAF)

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Carr PP	110	185	156	99	68	17	17	8	2	2	50	28
Spring Crk. PP	105	180	150	90	90	10	20	30	35	27	30	30

Delta Summary (TAF)

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Tracy	90	230	282	270	275	261	220	200	200	175	45	46
USBR Banks	0	0	0	0	13	13	13	0	0	0	0	0
Contra Costa	9.8	11.1	12.7	14	16.8	18.4	18.3	14	14	12.7	12.7	12.7
Total USBR	100	241	295	284	305	292	251	214	214	188	57	59
State Export	138	252	353	280	274	261	220	200	200	175	45	46
Total Export	238	493	648	564	579	553	471	414	414	363	102	105
COA Balance	0											
Old/Middle R. std.												
Old/Middle R. calc.	-3,097	-6,342	-8,291	-7,475	-6,983	-7,005	-5,759	-4,968	-4,749	-3,535	-402	-903
Computed DOI	7346	6344	4880	3143	4213	4673	9484	14087	19505	20838	15734	13957
Excess Outflow	0	0	0	134	211	168	4978	9581	8105	9435	6236	4457
% Export/Inflow	25%	43%	58%	65%	65%	66%	46%	32%	27%	21%	8%	9%
% Export/Inflow std.	35%	65%	65%	65%	65%	65%	65%	65%	35%	35%	35%	35%

Hydrology

	Clair Engle	Shasta	Folsom	New Melones
Water Year Inflow (TAF)	810	3,855	1,725	588
Year to Date + Forecasted % of mean	67%	70%	63%	56%

Temperature and Release Summary for Shasta and Trinity - August 2013

(Updated twice a week November through April)

Day	Sacramento River Water Temperatures in Degrees F Collected from CDEC (California Data Exchange Center)													Mean Daily Release in CFS			Mean Daily Air Temp Degrees F			
	TCD Wt. Avg.	SHD minus TCD (Diff)	Shd	Spp	Kwk	Control Point 3/1 to	Bsf	Jlf	Bnd	Rdb	Lws	Ccr	Igo	Shasta Generation EI 815	Spring Crk Powerplant Release	Keswick Total Release	RDD	BSF	RDB	LWS
Jul	53.1		51.9	54.0	53.5		56.01	57.1	57.4	59.8	51.1	54.4	57.0	10,765	3,012	13,681	84.6	80.1	80.1	75.5
Aug																				
1	51.9	(1.6)	50.3	54.5	52.7		55.29	56.4	56.6	59.0	50.2	53.9	57.8	9,190	2,866	12,224	76.5	74.4	72.4	66.4
2	51.5	(1.3)	50.2	54.5	52.8		55.33	56.4	56.6	59.2	50.4	53.9	57.6	8,516	3,149	11,849	79.0	75.5	76.3	66.7
3	51.5	(1.4)	50.1	54.4	52.6		55.15	56.0	56.2	58.6	50.4	53.8	57.4	8,667	3,058	12,009	77.0	73.3	73.8	70.3
4	52.1	(1.6)	50.5	54.3	52.4		55.01	56.0	56.2	58.6	50.5	53.5	57.5	8,756	2,751	11,996	78.5	74.2	74.1	71.1
5	51.9	(1.4)	50.5	54.2	52.8		55.15	56.2	56.4	58.9	50.6	54.0	57.7	8,835	3,115	12,011	78.0	74.2	73.5	71.6
6	52.0	(1.8)	50.2	54.2	52.6		55.17	56.2	56.5	59.0	49.7	53.6	56.7	8,763	2,469	12,013	77.0	73.0	72.8	67.0
7	52.0	(1.6)	50.4	54.1	52.7		55.20	56.3	56.5	58.9	50.3	53.9	57.4	8,759	3,003	11,548	74.5	70.5	69.3	70.1
8	51.9	(1.7)	50.2	54.1	52.8		55.31	56.4	56.6	59.1	50.4	53.9	57.4	8,005	3,126	11,385	73.5	70.1	69.8	66.9
9	51.5	(1.3)	50.2	54.1	52.7		55.25	56.2	56.5	58.8	50.5	53.8	57.1	7,878	3,125	11,286	74.5	70.5	69.3	66.1
10	51.9	(1.7)	50.2	54.1	52.6		55.15	56.2	56.4	58.8	50.0	53.8	57.0	7,570	3,231	11,404	73.5	70.9	71.4	62.1
11	52.3	(1.8)	50.5	54.1	52.6		55.22	56.3	56.5	59.1	50.3	53.8	57.8	8,721	2,545	11,434	77.5	73.8	74.9	68.3
12	52.8	(2.0)	50.8	54.0	52.8		55.31	56.4	56.6	59.1	50.5	53.9	58.0	8,877	2,319	11,614	78.5	74.8	74.4	69.2
13	53.0	(1.9)	51.1	54.0	53.1		55.51	56.6	56.8	59.3	49.9	54.3	57.8	9,037	2,087	11,599	80.0	75.5	77.1	71.3
14	53.1	(2.0)	51.1	54.0	53.4		55.83	57.0	57.1	59.5	50.7	54.6	57.9	9,501	1,826	11,615	82.0	77.2	77.8	71.5
15	53.0	(1.7)	51.3	53.9	53.4		55.88	57.0	57.3	59.9	50.8	54.6	58.0	9,454	2,182	11,608	80.0	76.0	76.4	72.0
16	52.6	(1.7)	50.9	54.0	53.5		55.98	57.2	57.5	60.1	51.5	54.7	58.3	8,668	2,119	10,945	82.0	77.7	78.6	73.9
17	52.3	(1.5)	50.8	54.1	53.3		56.23	57.6	57.9	60.5	51.6	54.6	58.6	8,290	2,110	10,322	84.0	80.5	80.7	75.5
18	52.0	(1.2)	50.8	54.1	53.1		56.34	57.7	58.1	60.7	51.7	54.7	59.0	8,199	1,851	10,397	89.5	83.5	82.0	76.5
19	52.8	(1.8)	51.0	54.2	53.0		56.28	57.6	58.0	60.7	51.9	54.5	58.9	7,898	1,882	10,497	86.0	81.1	81.4	78.3
20	52.5	(1.5)	51.0	54.2	53.1		55.63	56.3	56.8	59.9	51.0	53.9	57.4	8,472	2,059	10,513	87.0	79.8	81.2	71.8
21	52.8	(52.8)	!	54.3	53.0		55.65	57.0	57.1	59.1	51.4	54.3	58.2	8,078	1,374	10,512	83.5	78.5	77.9	74.8
22	52.3	(52.3)	#	54.3	53.1		55.80	57.0	57.4	60.0	51.0	54.3	57.9	7,833	2,014	10,091	81.0	75.5	74.6	69.8
23	51.6	(51.6)	#	54.3	52.9		55.68	57.0	57.2	59.5	51.1	54.3	57.7	7,253	2,012	9,640	77.5	72.8	72.8	68.5
24	52.2	(52.2)	#	54.4	52.9		55.63	57.1	57.4	59.8	50.8	54.2	57.8	7,240	1,995	9,638	75.5	71.8	71.9	67.0
25	52.3	(52.3)	#	54.3	52.7		55.68	57.2	57.5	59.9	50.0	54.1	58.4	7,561	1,224	9,058	77.5	73.5	74.2	66.0
26	53.3	(53.3)	!	55.0	52.8		55.78	57.2	57.5	59.9	49.2	54.5	58.1	8,136	84	8,341	75.5	71.5	72.0	68.2
27	51.1	0.1	51.2	54.2	53.4		55.63	56.9	57.2	59.5	49.2	54.5	57.6	7,117	1,078	8,190	76.0	71.7	74.1	67.0
28		0.0																		
29		0.0																		
30		0.0																		
31		0.0																		
Avg	52.2		50.6	54.2	52.9		55.56	56.7	57.0	59.5	50.6	54.1	57.8	8,343	2,246	10,879	79.1	74.9	75.0	69.9
Tot cfs														225,274	60,654	293,739				
Tot af														446,831	120,307	582,631				

= Station out of service ^ - estimated (7 hours or less available) ? = Avg. includes estimated data
 ! = 17 hours or less of readings & = 18 to 23 hours of reading ND = No hourly readings or incorrect

Control Point: Balls Ferry 3/1/2013 to
 Starting May 17, 2013 Balls Ferry temperature target of 56.75 is for compliance of 56.0 at Airport Road.

PRELIMINARY

August 28, 2013

Upper Sacramento River – August 2013 Preliminary Temperature Analysis

Summary of Temperature Compliance Results by Month

Control Point	AUG	SEP	OCT
90%-Exceedance Outlook			
Airport Road (ArptRd)	ArptRd	ArptRd	ArptRd

Temperature Model Inputs, Assumptions, Limitations and Uncertainty:

1. Operation is based on the June 2013 Operation Outlook (monthly flows, and reservoir release) with updated storage conditions.
2. The profiles used for Shasta, Trinity and Whiskeytown were taken on August 20, August 14, and August 6, respectively.
3. Guidance on forecasted flows from the creeks (e.g., Cow, Cottonwood, Battle, etc.) between Keswick Dam and Bend Bridge is not available beyond 5 days. Model input side flows (Cottonwood Cr & Bend Bridge local flow w/o Cottonwood Cr) were selected from the historical record, and are consistent with the forecast exceedance frequency. During spring, the relatively warm creek flows can be a significant percentage of the flows at Bend Bridge.
4. Although mean daily flows and releases are temperature model inputs, they are based on the mean monthly values from the operation outlooks. Mean daily flow patterns are user defined.
5. Cottonwood Creek flows, Keswick to Bend Bridge local flows, and diversions are mean daily synthesized flows based on the available historical record for a 1922-2002 study period.
6. Meteorological inputs were derived from a database of 86 years of meteorological data (1920-2005). The NOAA-NWS Local Three-Month Temperature Outlook (L3MTO), as a means of estimating air temperature expectation, was used to select each month's meteorology from the database.
7. Meteorology, as well as flow volume and pattern, significantly influences reservoir inflow temperatures and downstream tributary temperatures; and consequently, the development of the cold-water pool during winter and early spring.

Temperature Analysis Results:

90%-Exceedance:

Airport Road is a target location that can possibly be maintained through fall (Figure 1). Model results are reasonably consistent with the July analysis. Mean daily water temperature at Airport Road is expected to be approximately 0.75-1.0°F cooler than at Balls Ferry.

The relationship between end-of-September lake volume below 56°F and a Balls Ferry compliance through fall is based on the figure at the end of this document. Typically, mean daily water temperature at Jellys Ferry tends to be approximately 0.5-1.0°F warmer than at Balls Ferry after September and into late fall.

Figure 2 shows temperature results for Clear Creek at Igo for the 90%-exceedance.

Figure 3 includes results for the Trinity River at Lewiston Dam for the 90%-exceedance. The dashed lines are the 2011 mean daily temperatures at selected locations.

Sacramento River Modeled Temperature 2013 June 90%-Exceedance Outlook

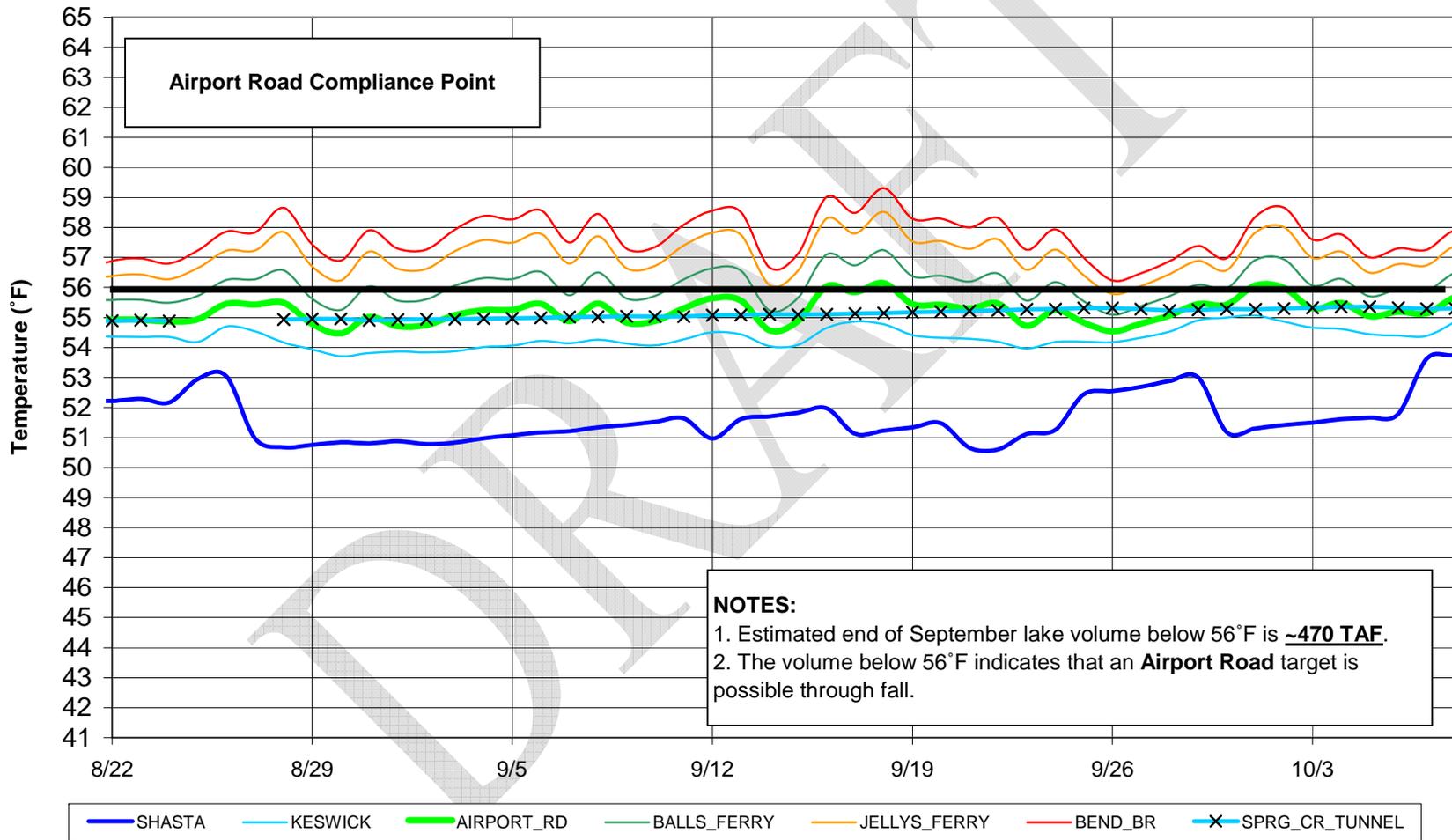


Figure 1

Clear Creek - Igo Modeled Temperature
2013 June 90%-Exceedance Outlook

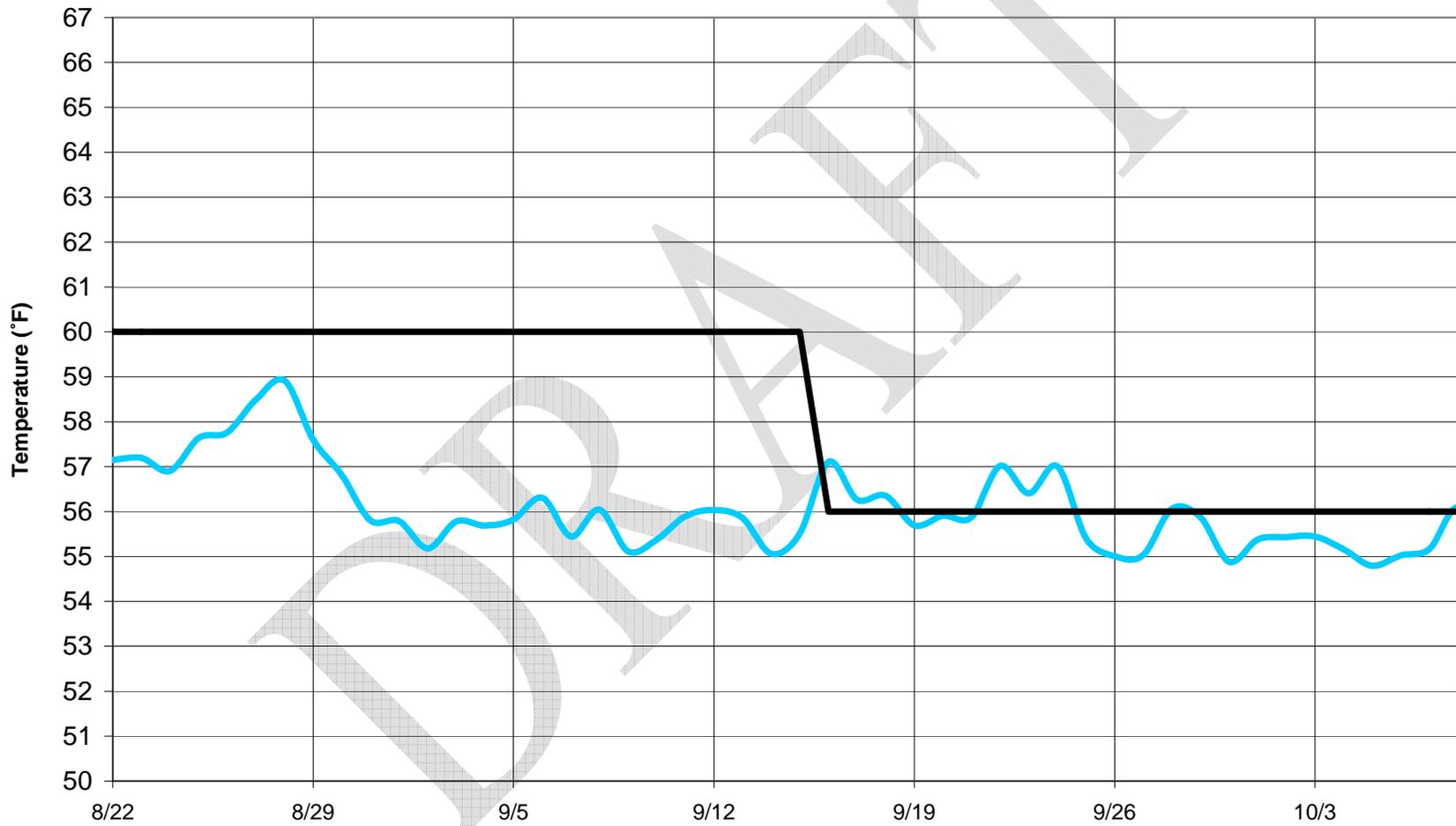


Figure 2

**Trinity River - 2013 June 90%-Exceedance Outlook
"Dry Year" Release Schedule
Mean Daily Water Temperature**

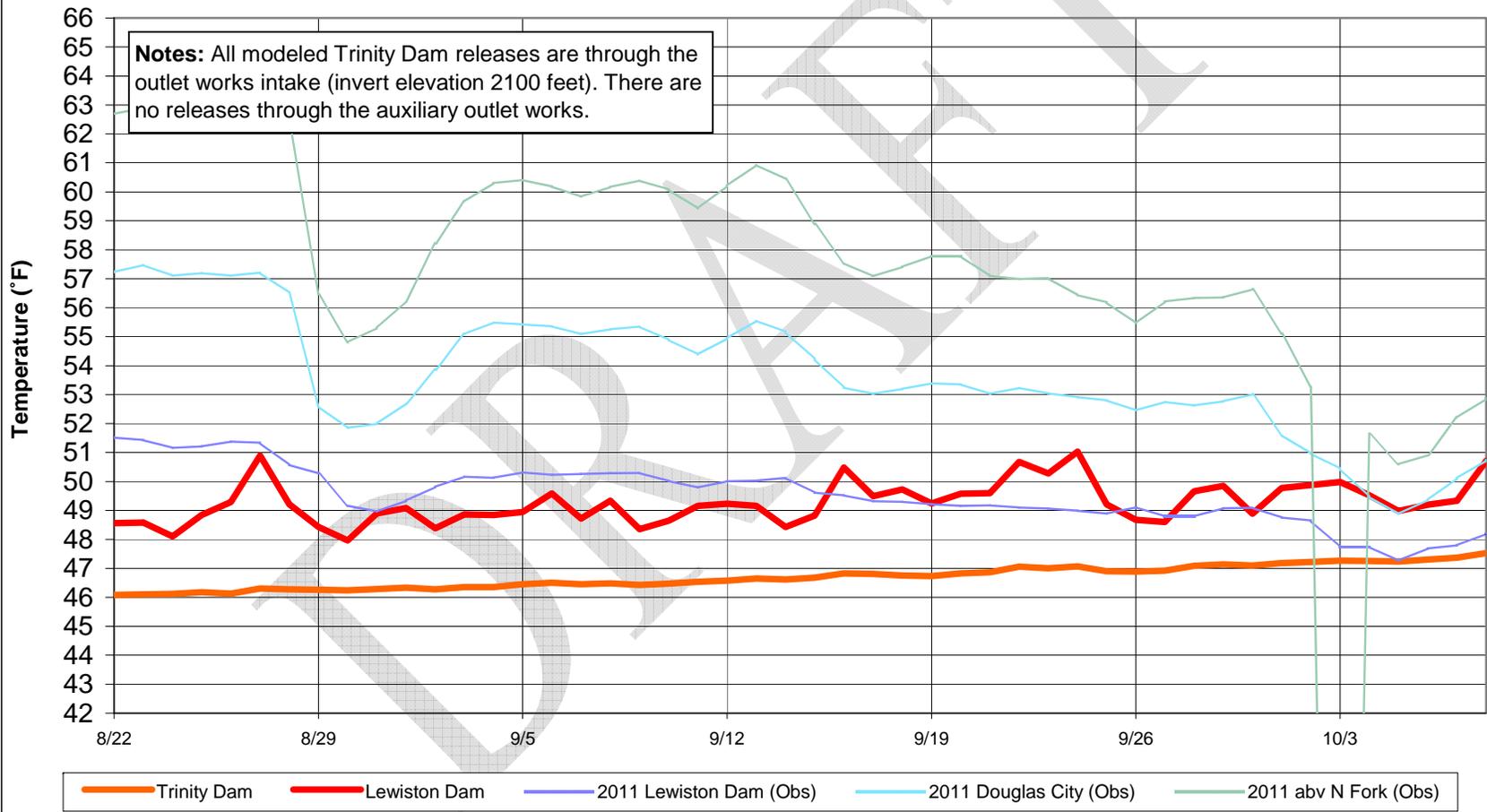
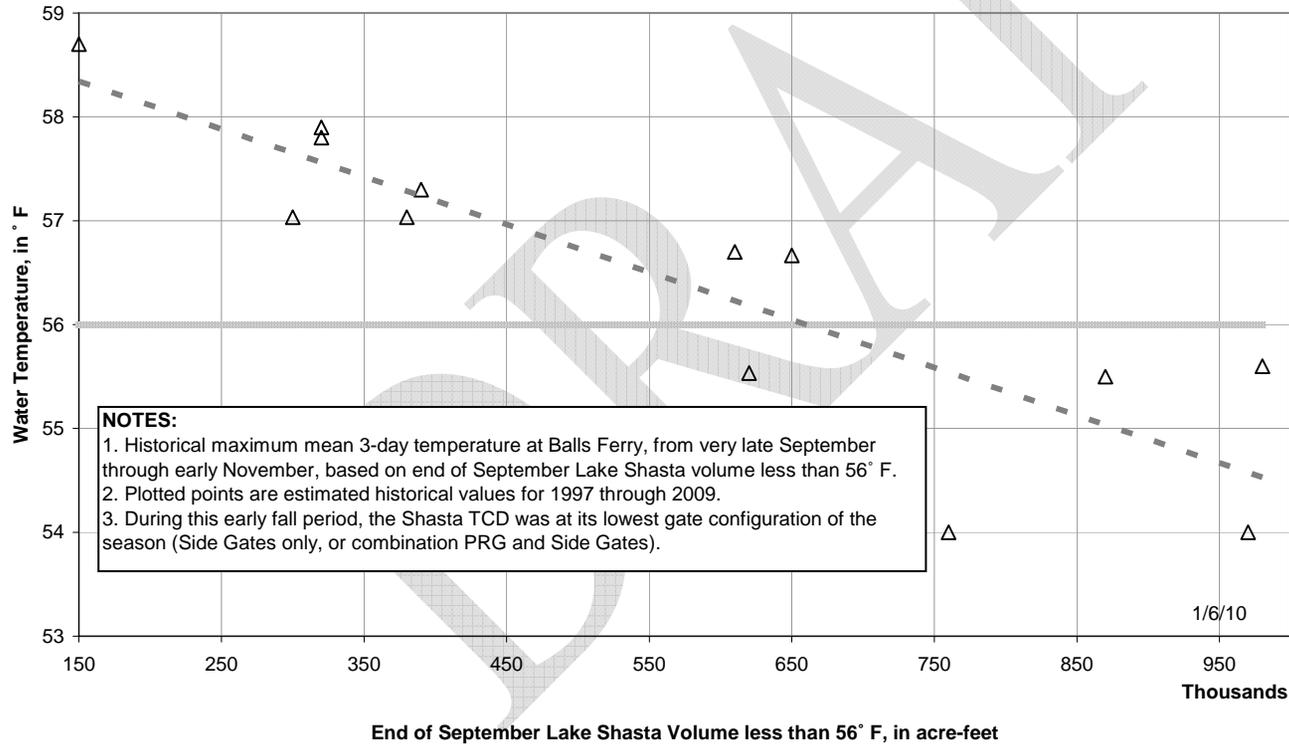


Figure 3

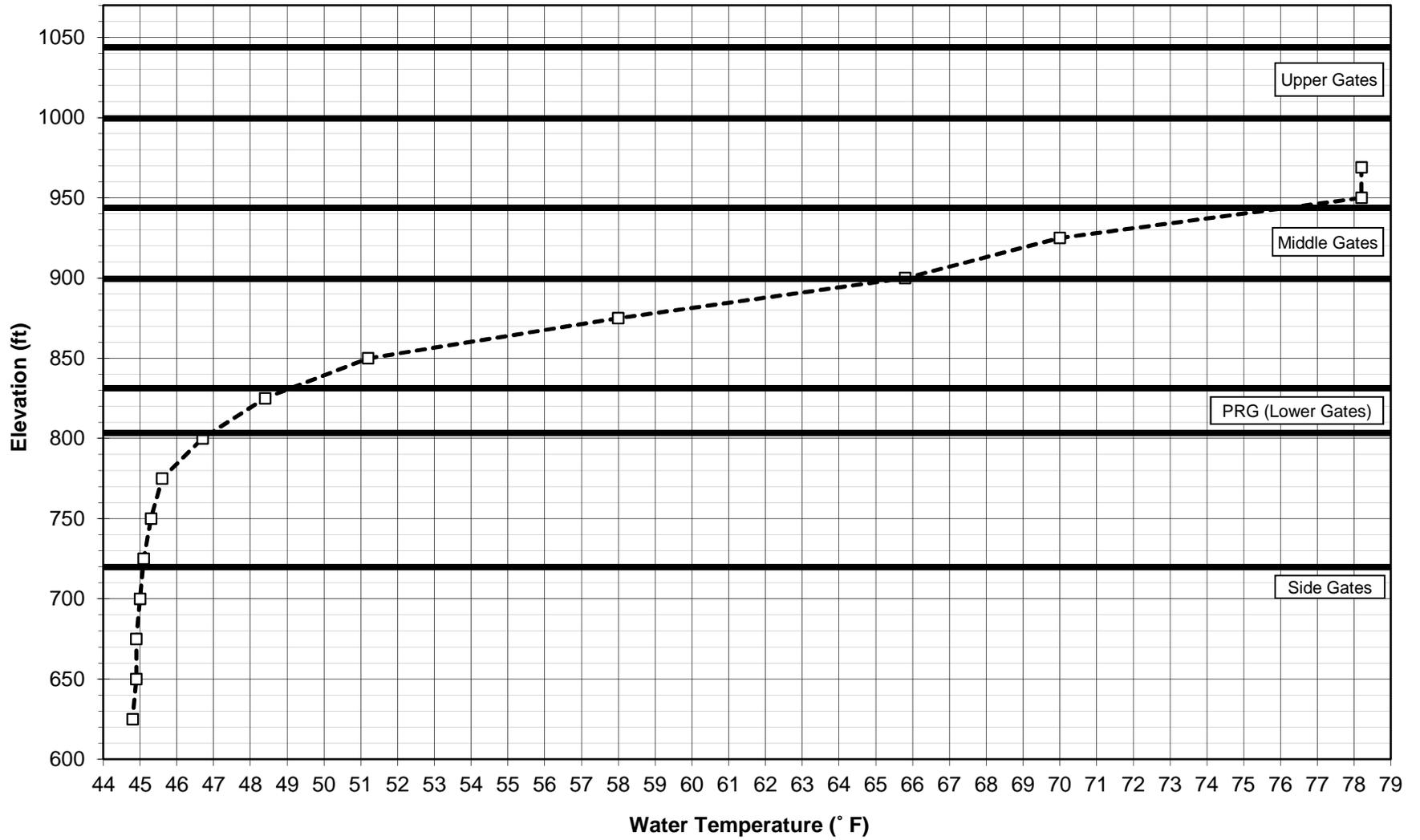
Model Performance and Fall Temperature Index:

1. Based on past analyses, the temperature model does not perform well from late September through fall. One factor is that the modeled release temperatures are cooler than has historically been achieved when all release is through the side gates (lowest gates), especially when there's a large temperature gradient between the pressure relief gates (PRG) and the side gates.
2. Based on historical records, the end-of-September Lake Shasta volume below 56°F is a reasonable indicator of fall water temperature in the river reach to Balls Ferry.
3. For river temperatures not to exceed 56 °F downstream to Balls Ferry, the end-of-September lake volume less than 56°F should be greater than about 650 TAF, see figure below:

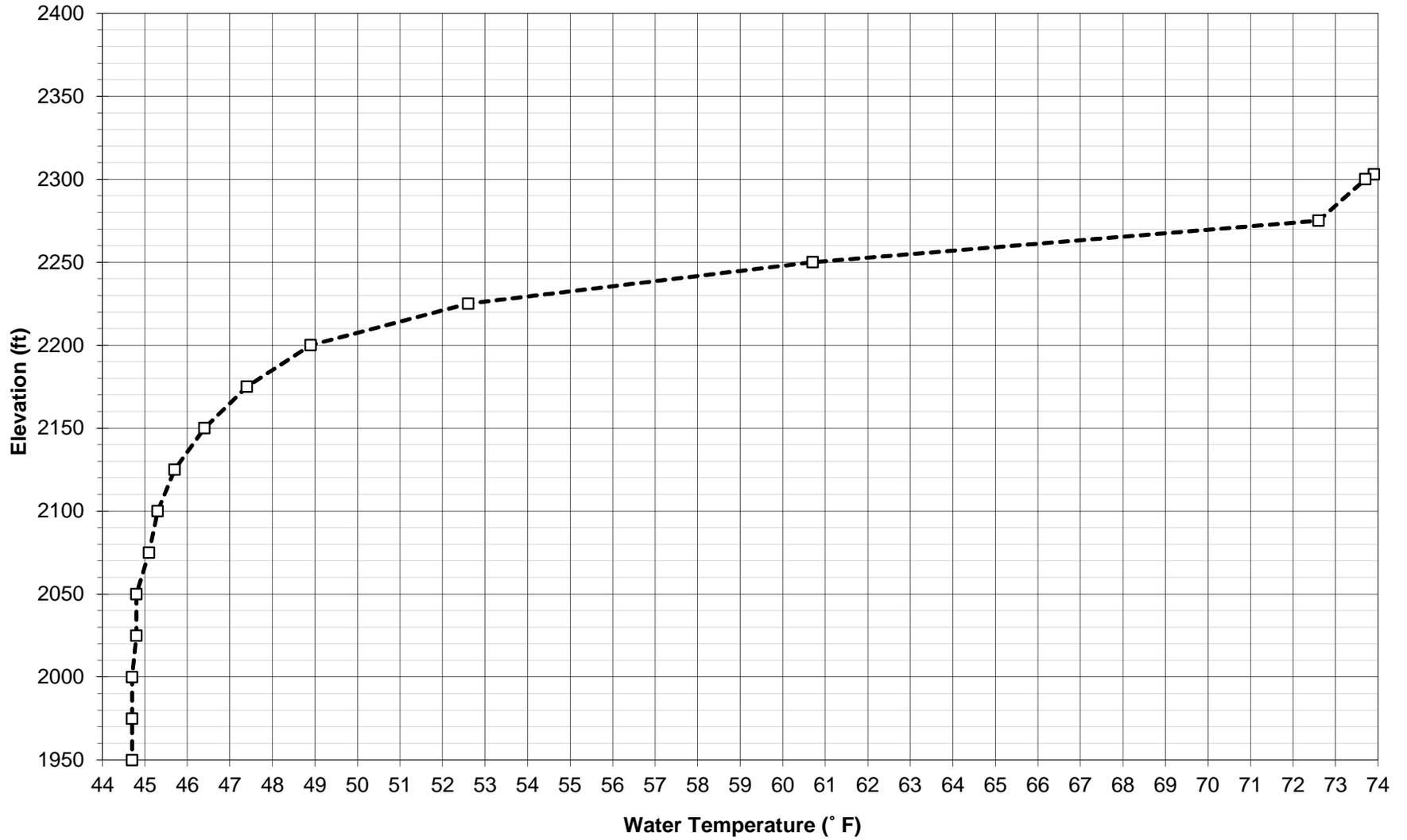
**Sacramento River - Lake Shasta
Early Fall Water Temperature at Balls Ferry**



Lake Shasta Temperature Profile - 8/20/13



Trinity Lake Temperature Profile - 8/14/13



SRTTG Meeting Notes – July 25, 2013

Attendees:

CADFW - Colin Purdy, Krystal Acierto, Mike Berry, Patricia Bratcher, Steve Baumgartner, Donna Cobb, Jason Roberts, and Alice Low

USFWS - Craig Anderson, Matt Brown, and Jim Smith

NMFS - Seth Naman, Bruce Oppenheim, and Li-Ming He

Hoopa Representatives - Robert Franklin and Andrea Hilton

Yurok Representatives - Kyle Dejuilio

Reclamation - Paul Fujitani, Gregory Gotham, Elizabeth Kiteck, Mary Suppiger, Tom Kisanuki, Janet Martin, Don Reck, Rod Wittler, Paul Zedonis, and Russ Yaworsky (lead)

CA SWRCB - Les Grober, Jim Kassel, Tom Kimball, and Kari Kyler

Western Area Power Administration - Tom Patton

Fishery Update: (Jim Smith, USFWS)

- 1) Aerial Redd Survey – As of 7-19-13, 99.7 % of the 386 redds observed have been seen above the control point at Airport Road Bridge. The highest number of redds observed so far this year was 109 on the last flight reported on July 19th.
- 2) The winter run adult carcass survey this year is well underway and the number of observed carcasses to date (June 14th) is significantly greater than the last three years (2010- 2012). Although the ~~in the~~ spawning season is only about ½ completed, it appears that the run size this year will exceed 3,000 fish. This would indicate a positive cohort replacement rate since the 2010 run size estimate was 1,596. This would be the first positive replacement cohort rate since 2006 when over 17,000 fish returned.
- 3) Juvenile winter run monitoring at Red Bluff Diversion Dam has begun and we observed our first winter run sized fish on July 9th and have captured a total of 4 fish thru July 23. It is very early in the outmigration period which usually peaks at Red Bluff in October.
- 4) Trapping for winter Chinook broodstock at the Keswick Dam Fish Trap has finished with the final trapping date occurring on July 24. A total of 118 natural-origin fish were retained as LSFNH broodstock. Spawning is close to being completed, with only 4 female and 3 male broodstock remaining alive. This year's trapping was unusual in respect to the high number of spring Chinook that were also encountered. Approximately 2/3 of the fish trapped during this season's trapping effort were spring Chinook. Adipose fin-clipped winter Chinook comprised a very low percentage of fish trapped, relative to recent/average years.

Hydrology & Operations Update:

Current releases and scheduled release changes were discussed, reducing releases at Keswick, Folsom, and New Melones. It was mentioned that operations shown in the June operation outlooks are still valid for estimating operations in future months. Trinity diversions through Carr PP were discussed. Currently, diverting 200 TAF in July (forecast has 180 TAF). Trinity diversions will decrease by 50% by Sept (92 TAF) during the Klamath pulse.

Discussion of Recent Temperature Model Runs:

Temperature compliance in July being met at Airport Rd proxy for 56.75 at Balls Ferry. Current modeling based on July profiles indicate that an Airport Road target is still possible through fall (October). Temperature exceedances on Clear Creek at Igo are possible in late September/early October when the temperature target transitions from 60°F to 56°F.

Additional Items:

Golden Gate Salmon Association Proposal – Jim Smith & Paul Fujitani discussed the proposal for the major upstream diverters (e.g., GCID) to schedule fall diversion and rice decomposition to allow more stable Keswick releases. GCID would swap water between Oct. and Nov. to stabilize flows, may also use other methods of rice decomposition. NMFS and USBR need to discuss how to do this per the required 3,250 cfs minimum flow RPA requirement in the 2009 OCAP BiOp.

7DADM – NMFS continues to track the 7-day average of daily maximum temperatures (7DADM) at Airport Road and Balls Ferry, as discussed during the previous meeting. A handout is attached. The 7DADM is tracking about 1-3 degrees above 56F. The potential for sublethal effects was discussed. The location of the majority of redds in relation to where the temperature is measured (downstream end of distribution) needs to be determined.

Whiskeytown Dam Release – Matt Brown inquired about recent increases in flow at the Igo gage on July 18 and 19. The group was informed that Reclamation did not issue a release change, and that one cause was possibly a discrepancy at the Igo gage. Matt also inquired about exceptionally cool temperatures on Clear Creek. Russ replied that the releases were being blended between the upper and lower river outlets and that this was either an all open or all closed operation. Due to the temperature blending and cooler water from the Carr PP in July, a request was made to reduce Whiskeytown release by 15 cfs, as soon as possible to conserve potential cold water in Whiskeytown Reservoir for the fall.

Trinity River Supplement Release – The EA for the proposed Trinity River supplemental release (up to 62 TAF) is out for public review. If approved, the release is likely to occur from August 15 to September 21. The objective is to maintain 2,800 cfs in the Lower Klamath River. The potential temperature impact to the Lewiston Dam release is approximately 0.5°F cooler during the supplemental release, due to the additional volume released from the Trinity cold-water pool, and 0.5°F warmer release to the Trinity River after the supplemental release. The group was also informed that additional analysis is ongoing by the CVO. Effects on Sacramento River and Clear are the same as Trinity R, slight cooling (0.5 F) during

release and then slight warming (0.5F) afterwards. USBR will cut Carr diversions by 50% from current (200 TAF to 92 TAF) to minimize effect.

Next SRTTG Meeting:

The next meeting is scheduled for August 29, 2013, at 1:00 pm.

DRAFT