

# **Sacramento River Temperature Task Group Meeting**

**September 3, 2015**

**1:00 pm**

**Conference Line: 877-718-6527**

**Pass code: 1954134**

## **Agenda**

1. Introductions
2. Fishery update
3. Shasta TCD Curtain Update
4. Operation update
  - a. Temperature Summary \*\*\*
  - b. Shasta snap shot 2015 vs 2014\*\*\*
5. Fall flow propose – Update \*\*\*
6. Next meeting

\*\*\*handout

Temperature and Release Summary for Shasta and Trinity - August 2015

(Updated twice a week November through April)

Day	Sacramento River Water Temperatures in Degrees F Collected from CDEC (California Data Exchange Center) except for TCD, SPP and Control Point														Mean Daily Release in CFS			Mean Daily Air Temp Degrees F				
	TCD Wt. Avg.	SHD minus TCD (Diff)	Shd	SPP Wt. Avg	Kwk	Bsf	Jlf	Bnd	Rdb	Lws	Control Point 4/1 Ccr	Igo	Sac	Dgc	Shasta Generation El 815	Spring Crk Powerplant Release	Keswick Total Release	RDD	BSF	RDB	LWS	
Jul																						
Aug																						
1	53.4	(1.8)	51.6	58.6	54.8	58.5	60.4	61.2	63.0	54.5	56.8	58.6	56.1	61.1	5,313	1,330	6,824	88.0	81.8	79.6	78.8	
2	53.8	(1.9)	51.9	58.6	54.8	58.3	59.8	60.8	63.1	53.7	56.0	57.8	55.5	60.1	5,472	1,330	6,828	84.5	79.7	77.8	74.4	
3	52.6	(1.2)	51.4	58.7	54.5	58.0	59.7	60.4	62.0	54.2	56.3	58.6	55.8	59.4	5,693	1,358	6,837	84.0	78.2	77.3	73.1	
4	53.4	(1.2)	52.2	58.7	54.8	58.0	59.3	60.1	61.9	53.4	56.0	57.8	55.8	59.6	5,187	1,565	6,835	78.5	71.5	71.0	70.6	
5	55.0	(1.5)	53.5	58.8	54.5	57.5	58.8	59.5	61.2	53.2	55.7	57.8	55.3	57.6	5,313	1,562	6,836	78.0	73.8	73.5	68.3	
6	54.7	(1.7)	? 53.0	58.8	55.3	57.6	58.9	59.5	61.1	53.5	56.2	58.1	55.9	57.5	5,409	1,543	6,836	82.5	76.3	76.7	69.8	
7	53.9	(1.7)	52.2	58.8	56.0	58.4	60.3	60.8	62.1	53.4	57.4	58.5	#	58.7	5,397	1,516	6,834	84.5	79.2	80.5	72.1	
8	53.9	(2.0)	51.9	58.8	55.8	58.9	60.9	61.1	63.3	53.0	57.4	58.2	#	57.2	5,423	1,545	6,834	81.0	74.8	75.1	68.1	
9	53.2	(1.7)	51.5	58.8	55.6	58.7	60.5	61.3	63.3	52.8	57.2	58.2	#	56.6	5,333	1,279	6,858	81.5	76.2	77.1	66.0	
10	52.4	(1.3)	51.1	58.8	55.3	58.7	60.2	61.0	62.8	52.5	56.8	57.8	#	56.3	5,031	1,350	6,805	80.5	75.2	75.7	66.6	
11	53.4	(1.9)	51.5	58.8	54.4	58.4	59.9	60.7	62.6	52.9	56.2	58.2	55.4	57.0	5,347	1,107	6,781	80.0	75.9	74.6	69.7	
12	53.5	(1.8)	51.7	58.8	54.0	57.7	59.0	59.8	62.0	53.0	55.6	58.2	55.0	57.9	5,104	1,175	6,676	77.5	72.8	73.4	68.7	
13	53.4	(1.4)	52.0	58.8	54.5	57.5	59.1	59.8	61.6	53.2	56.1	58.1	55.6	58.6	5,350	1,004	6,678	78.0	73.6	74.8	68.8	
14	54.1	(1.2)	52.9	58.7	54.6	57.9	59.3	60.1	61.8	53.1	55.9	57.7	55.5	58.5	6,369	1,365	6,598	76.5	74.3	73.9	66.1	
15	54.0	(1.3)	52.7	58.8	55.0	57.7	59.2	59.8	61.5	53.3	56.4	58.4	56.0	57.9	5,953	1,268	6,900	88.0	76.5	79.1	68.1	
16	53.5	(1.4)	52.1	58.8	55.4	58.2	59.9	60.4	61.9	53.1	57.0	58.6	56.5	58.8	5,259	1,226	6,895	84.5	77.1	78.5	72.2	
17	54.2	(1.5)	52.7	58.7	55.6	58.5	60.2	60.8	62.5	52.5	57.1	58.4	56.6	55.6	5,388	1,353	6,923	^ 84.5	78.0	80.5	73.0	
18	53.7	(1.6)	52.1	58.7	55.5	58.5	60.1	60.9	62.7	52.3	57.0	58.3	56.4	54.2	4,632	1,514	6,919	86.0	78.6	78.9	73.2	
19	54.8	(2.1)	52.7	58.7	55.7	58.5	60.0	60.7	62.4	51.9	57.0	58.0	56.4	53.7	5,368	1,247	6,906	81.5	75.4	74.6	69.6	
20	54.4	(1.7)	52.7	58.7	55.6	58.4	59.5	60.2	61.9	52.2	56.9	58.2	56.3	54.5	5,149	1,171	6,922	80.0	74.2	73.2	70.5	
21	54.7	(1.7)	53.0	58.7	55.8	58.6	59.9	60.5	61.8	52.3	57.3	58.5	56.7	56.5	5,635	1,285	6,897	80.0	74.2	74.4	70.6	
22	55.0	(1.8)	53.2	58.7	55.8	58.9	60.4	61.1	62.7	52.2	57.5	58.6	56.9	55.6	5,648	1,237	6,898	81.5	75.9	75.3	73.9	
23	56.6	(3.0)	53.6	58.6	56.3	59.1	60.6	61.2	62.9	52.4	57.8	58.4	57.2	55.5	4,695	1,884	6,898	79.5	74.2	74.2	72.3	
24	54.2	(1.5)	52.7	58.7	57.1	59.4	61.0	61.6	63.1	52.9	58.5	58.6	58.0	55.9	5,993	1,441	6,870	81.0	75.1	75.1	73.0	
25	53.6	(1.4)	52.2	58.7	56.6	59.8	61.3	62.0	63.5	53.1	58.4	58.6	57.7	56.0	5,381	1,375	6,905	80.5	75.1	76.4	71.8	
26	53.8	(1.5)	52.3	58.7	56.0	59.6	60.9	61.5	63.2	53.3	57.8	58.5	57.1	56.0	5,276	1,506	6,901	80.0	74.5	76.0	71.0	
27	53.6	(1.5)	52.1	58.7	55.7	59.9	60.3	61.2	63.0	53.3	57.2	58.6	56.6	56.1	4,655	1,422	6,903	82.5	77.0	78.3	71.5	
28	54.1	(1.7)	52.4	58.7	55.6	58.9	60.1	61.0	62.7	53.2	57.2	58.7	56.5	55.6	5,445	1,426	6,914	85.0	80.0	80.1	73.3	
29	53.8	(1.3)	52.5	58.8	55.4	59.6	60.9	61.8	63.2	53.3	57.3	59.4	56.4	56.5	5,494	1,454	6,906	78.0	79.1	77.0	70.3	
30	53.9	(1.3)	52.6	58.8	55.7	58.7	59.8	60.7	62.6	53.5	57.2	59.0	56.6	55.7	4,918	1,432	6,908	73.5	71.6	71.5	63.5	
31	52.9	(0.9)	52.0	58.9	55.5	58.8	59.8	60.5	62.0	53.7	57.1	59.6	56.5	56.1	5,343	1,318	6,911	80.5	73.0	75.0	66.8	
Avg	53.9		52.3	58.7	55.4	58.6	60.0	60.7	62.4	53.1	56.9	58.4	56.3	57.0	5,354	1,374	6,853	81.3	75.9	76.1	70.5	
Tot cfs															165,973	42,588	212,436					
Tot af															329,207	84,473	421,367					

? = Average includes 1-9 estimated hourly readings  
# = Station out of service

! = No Average (10-17 hours missing)  
ND = No hourly readings or incorrect

& = No Average (18 to 23 hours missing)  
% = Data will be down loaded from site at later date by NCAO staff.

When available:  
^ = Redding Air Temp Record High  
\* = Redding Air Temp Record Low

Control Point: Clear Creek 4/1/2015 to 4/17/2015 at 56.0 degrees; 4/18/2015 to 5/14/2015 at 58.0 degrees; 5/15/2015 to 6/4/2015 56.0; 6/5/2015 to present 58.0 degrees.

PRELIMINARY

Temperature and Release Summary for Shasta and Trinity - September 2015

(Updated twice a week November through April)

Day	Sacramento River Water Temperatures in Degrees F Collected from CDEC (California Data Exchange Center) except for TCD, SPP and Control Point														Mean Daily Release in CFS			Mean Daily Air Temp Degrees F				
	TCD Wt. Avg.	SHD minus TCD (Diff)	Shd	SPP Wt. Avg	Kwk	Bsf	Jlf	Bnd	Rdb	Lws	Control Point 4/1 Ccr	Igo	Sac	Dgc	Shasta Generation El 815	Spring Crk Powerplant Release	Keswick Total Release	RDD	BSF	RDB	LWS	
Aug																						
Sep																						
1	53.5	(1.2)	52.3	58.8	55.2	58.8	59.9	60.6	62.1	53.7	56.9	59.5	56.2	56.5	4,912	1,322	6,904	79.5	73.3	75.0	69.5	
2	53.3	(1.0)	52.3	58.8	54.8	58.3	59.5	60.4	62.0	53.6	56.3	59.1	55.7	56.0	5,409	1,250	6,901	77.5	72.3	72.5	64.4	
3		0.0																				
4		0.0																				
5		0.0																				
6		0.0																				
7		0.0																				
8		0.0																				
9		0.0																				
10		0.0																				
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29		0.0																				
30		0.0																				
		0.0																				
Avg	53.4		52.3	58.8	55.0	58.6	59.7	60.5	62.1	53.7	56.6	59.3	56.0	56.3	5,161	1,286	6,903	78.5	72.8	73.8	67.0	
Tot cfs															10,321	2,572	13,805					
Tot af															20,472	5,102	27,382					

? = Average includes 1-9 estimated hourly readings  
# = Station out of service

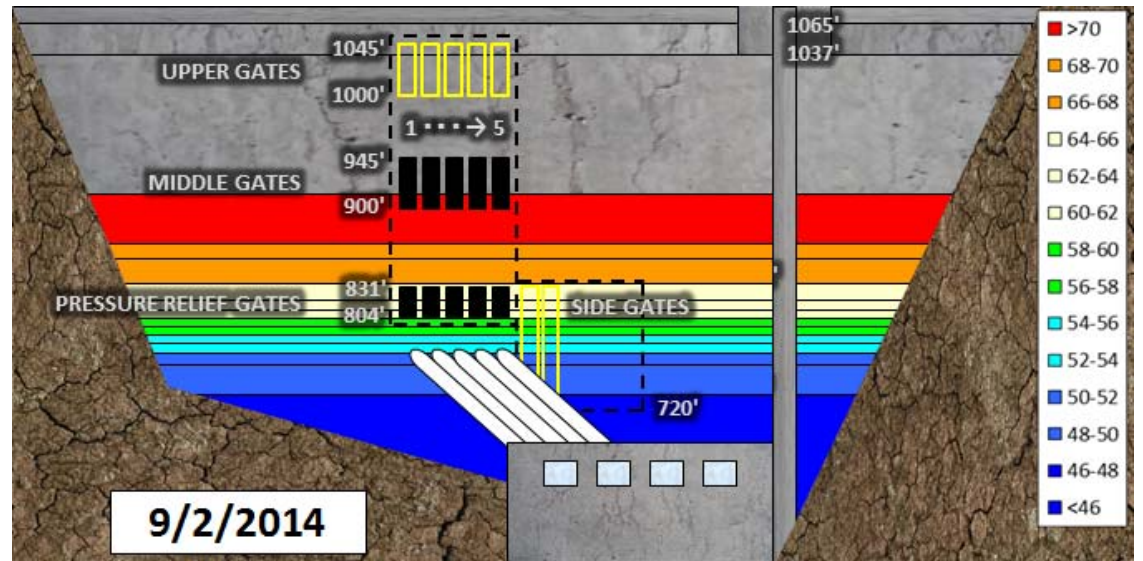
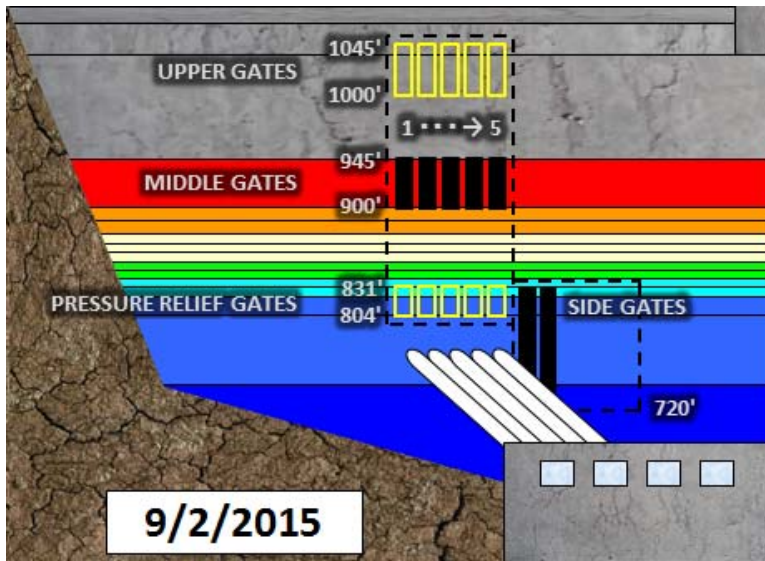
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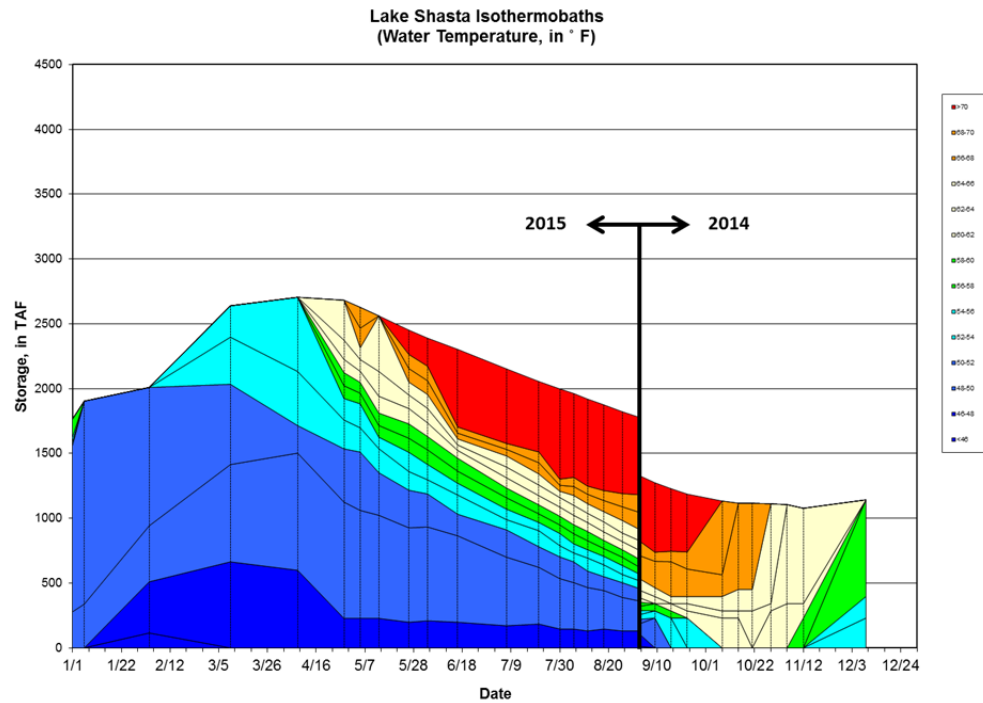
When available:  
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Control Point: Clear Creek 4/1/2015 to 4/17/2015 at 56.0 degrees; 4/18/2015 to 5/14/2015 at 58.0 degrees; 5/15/2015 to 6/4/2015 56.0; 6/5/2015 to present 58.0 degrees.

PRELIMINARY



\*NOTE: Yellow outline indicates open position, Solid Black indicates closed position.



## Summary -- Sacramento River Fall Flows September 2, 2015

	Temp Plan 50% L3MTO 57 degree at CCR	Temp Plan 10% L3MTO 57 degree at CCR		Sep. 50% L3MTO (Base Case)	Sep. 50% L3MTO (Scenario 1)	Sep. 50% L3MTO (Scenario 2)		Sep. 10% L3MTO (Base Case)	Sep. 10% L3MTO (Scenario 1)	Sep. 10% L3MTO (Scenario 2)
Sep. Releases (cfs)	6500	6500		6500	7000	7200		6500	7000	7200
Oct. Releases (cfs)	5000	5000		5000	6000	6150		5000	6000	6150
Nov. Releases (cfs)	4000	4000		4000	5000	4250		4000	5000	4250
Dec. Releases (cfs)	4000	4000		4000	4500	4250		4000	4500	4250
Jan. Releases (cfs)	3250	3250		3250	3250	4250		3250	3250	4250
First Side Gate Used	Aug 31	Aug 31		Sep22	Sep20	Sep20		Sep 23	Sep 20	Sep20
Primary Reliance of Side Gate	Oct 11	Oct 9								Oct 31
End of Sep. Volume < 54 degree	207	207		321	287	291		319	287	291

## Sacramento River Release Options Summary

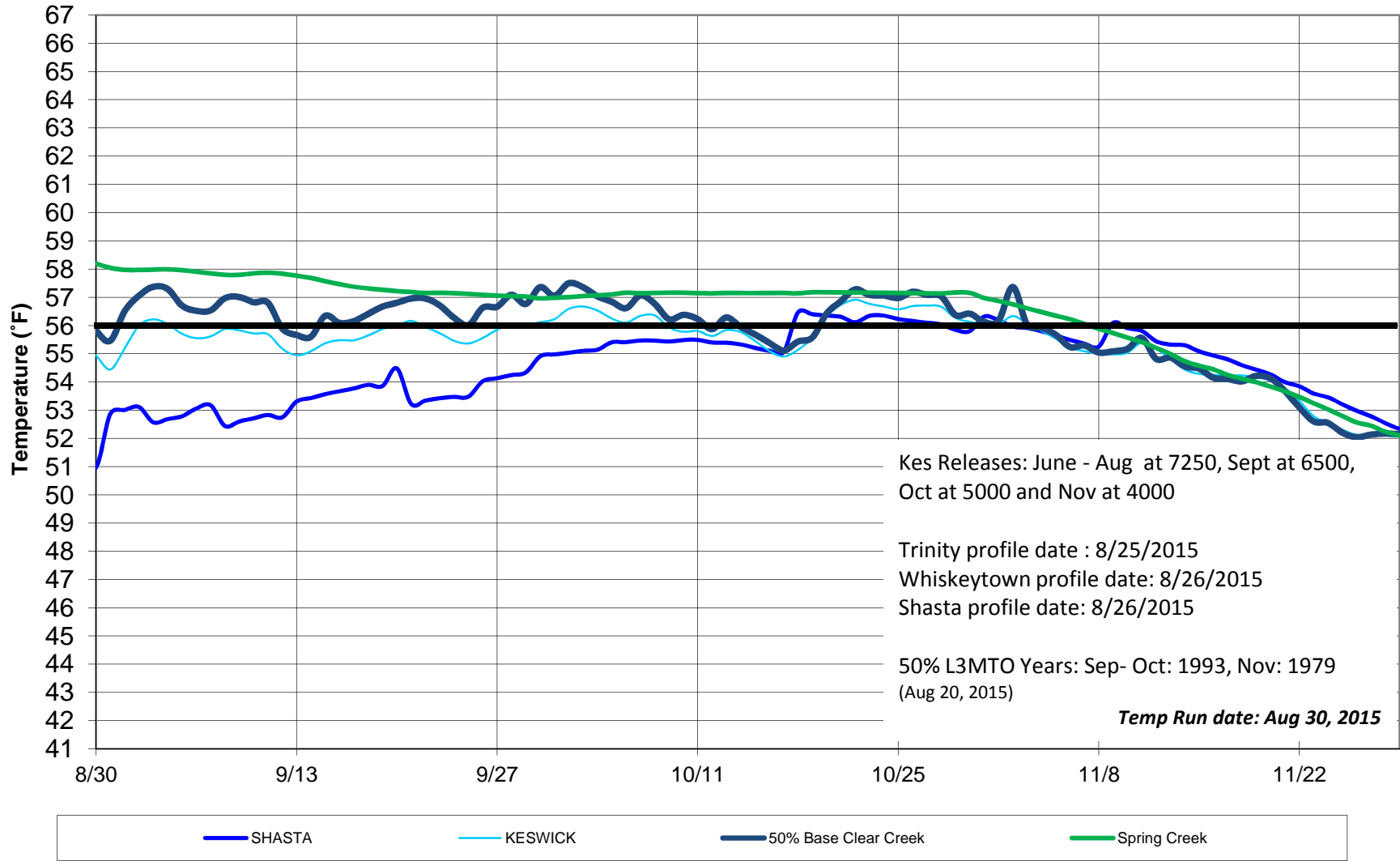
Base Case	Sep	Oct	Nov	Dec	Jan
Trinity Storage	584	553	520	504	512
Shasta Storage	1496	1415	1424	1449	1569
Folsom Storage	164	139	133	155	188
Federal San Luis Storage *	42	67	77	153	249
Trinity River Releases	795	373	300	300	300
Clear Creek Releases	150	175	175	175	175
Sacramento River Releases	6500	5000	4000	4000	3250
Carr Pumping Plant	62	15	28	19	6
Trinity Diversions (Spr Crk PP)	60	30	19	12	3
<b>Delta Summary (TAF)</b>					
	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>
Tracy	130	125	87	120	114
State Export	35	50	48	139	241
Computed DOI	3009	4197	5093	4994	6003
Old/Middle R. calc.	-2732	-2554	-2212	-3653	-4714

Scenario 1	Sep	Oct	Nov	Dec	Jan
Trinity Storage	582	551	519	503	510
Shasta Storage	1464	1317	1267	1261	1382
Folsom Storage	164	139	134	156	188
Federal San Luis Storage *	72	157	227	334	430
Trinity River Releases	795	373	300	300	300
Clear Creek Releases	225	225	175	175	175
Sacramento River Releases	7000	6000	5000	4500	3250
Carr Pumping Plant	63	15	28	19	6
Trinity Diversions (Spr Crk PP)	57	27	19	12	3
<b>Delta Summary (TAF)</b>					
	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>
Tracy	160	186	146	151	114
State Export	35	50	48	139	241
Computed DOI	3076	4262	5093	4994	6003
Old/Middle R. calc.	-3121	-3318	-2975	-4042	-4714

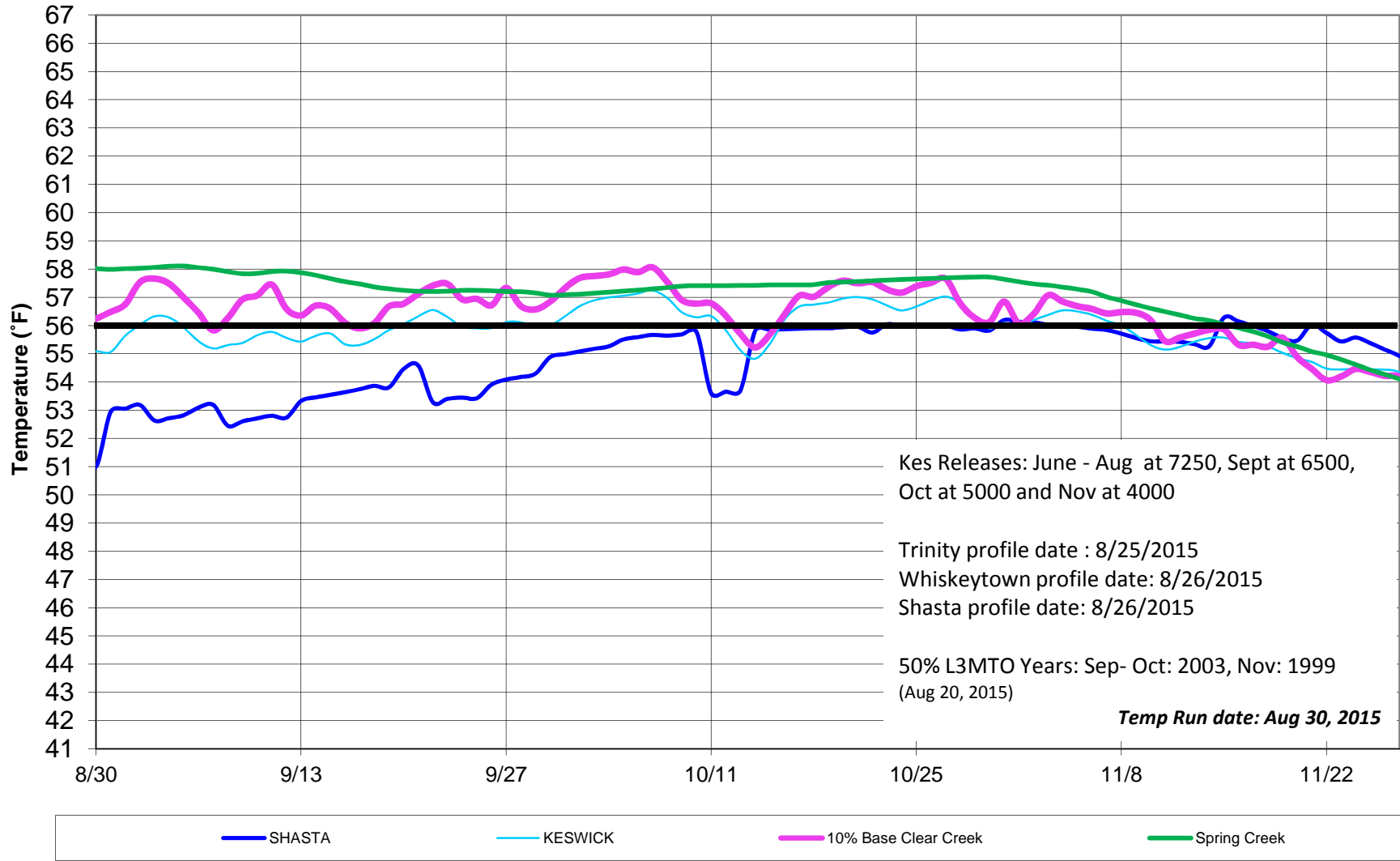
Scenario 2	Sep	Oct	Nov	Dec	Jan
Trinity Storage	582	551	519	503	510
Shasta Storage	1452	1296	1291	1300	1360
Folsom Storage	164	139	133	155	188
Federal San Luis Storage *	88	186	212	303	460
Trinity River Releases	795	373	300	300	300
Clear Creek Releases	225	225	175	175	175
Sacramento River Releases	7200	6150	4250	4250	4250
Carr Pumping Plant	63	15	28	19	6
Trinity Diversions (Spr Crk PP)	57	27	19	12	3
<b>Delta Summary (TAF)</b>					
	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>
Tracy	176	199	102	135	175
State Export	35	50	48	139	241
Computed DOI	3009	4197	5093	4994	6003
Old/Middle R. calc.	-3328	-3481	-2406	-3841	-5478

\* Note - repayment to SWP of 80 TAF has NOT been taken out of FSL storage

**Sacramento River Modeled Temperature  
2015 Aug 90%-Exceedance Outlook - 50% L3MTO  
Base - Approximately 57 degree at CCR**

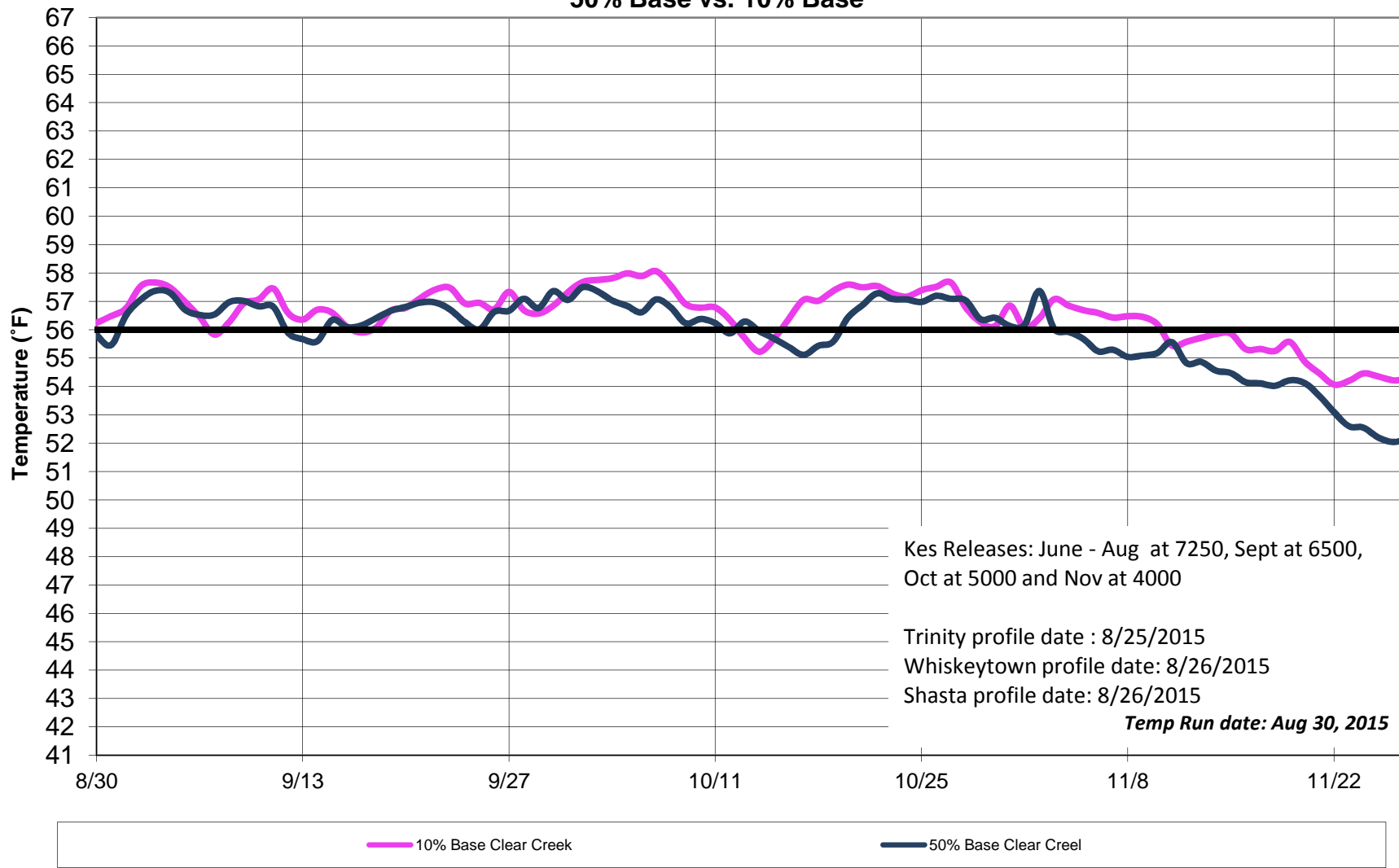


**Sacramento River Modeled Temperature  
2015 Aug 90%-Exceedance Outlook - 10% L3MTO  
Base - Approximately 57 degree at CCR**

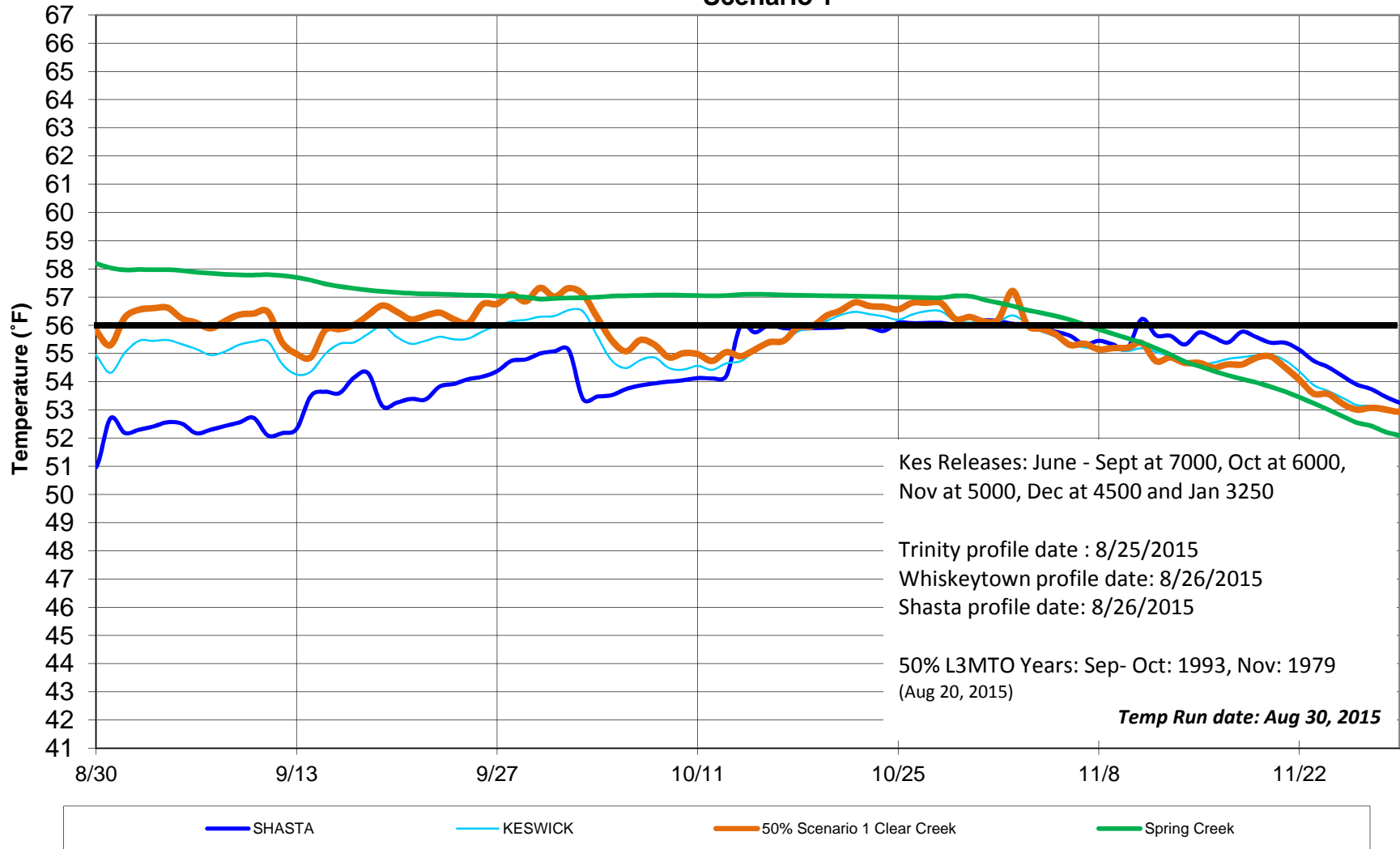




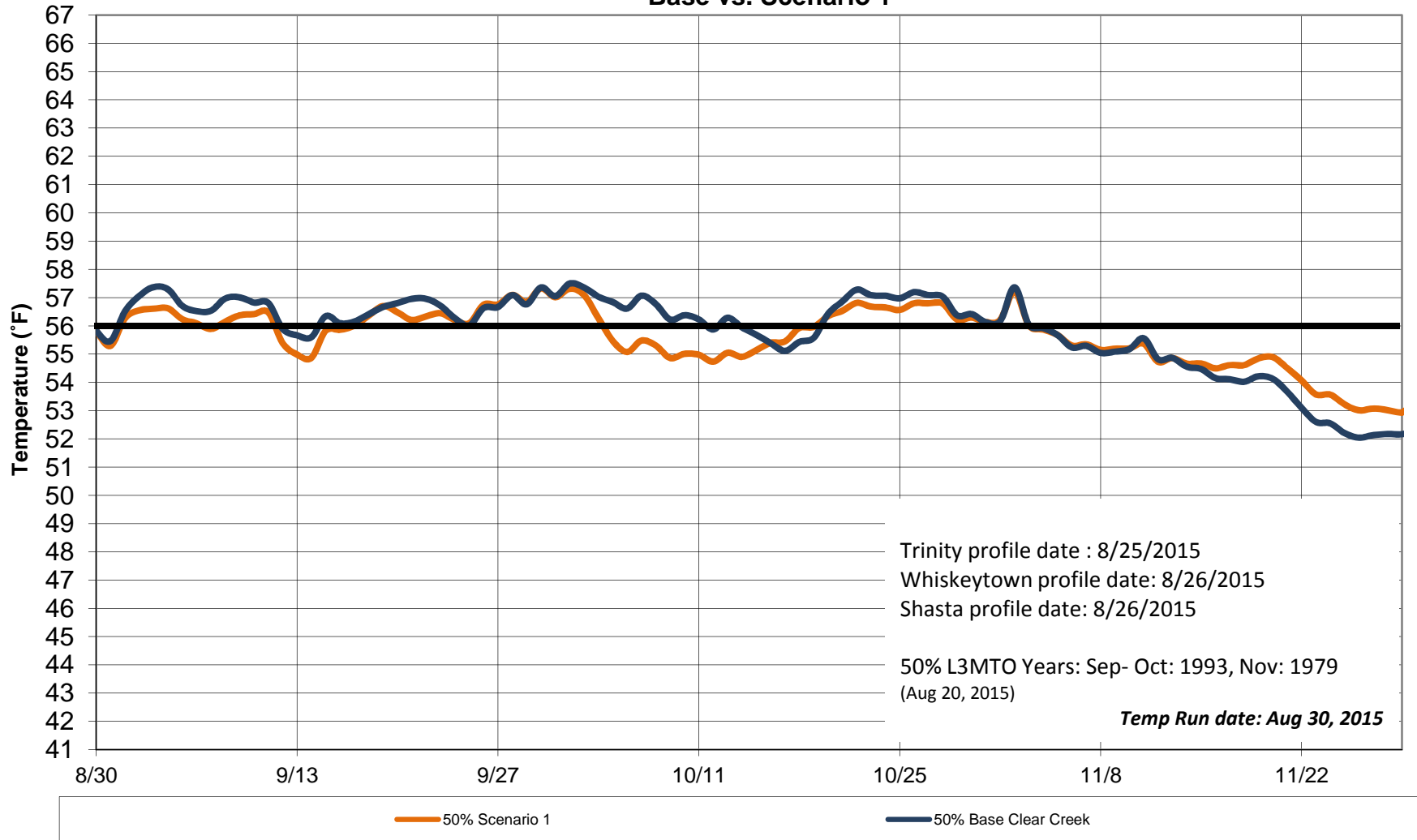
**Sacramento River Modeled Temperature  
 2015 Aug 90%-Exceedance Outlook  
 Approximately 57 degree at CCR  
 50% Base vs. 10% Base**



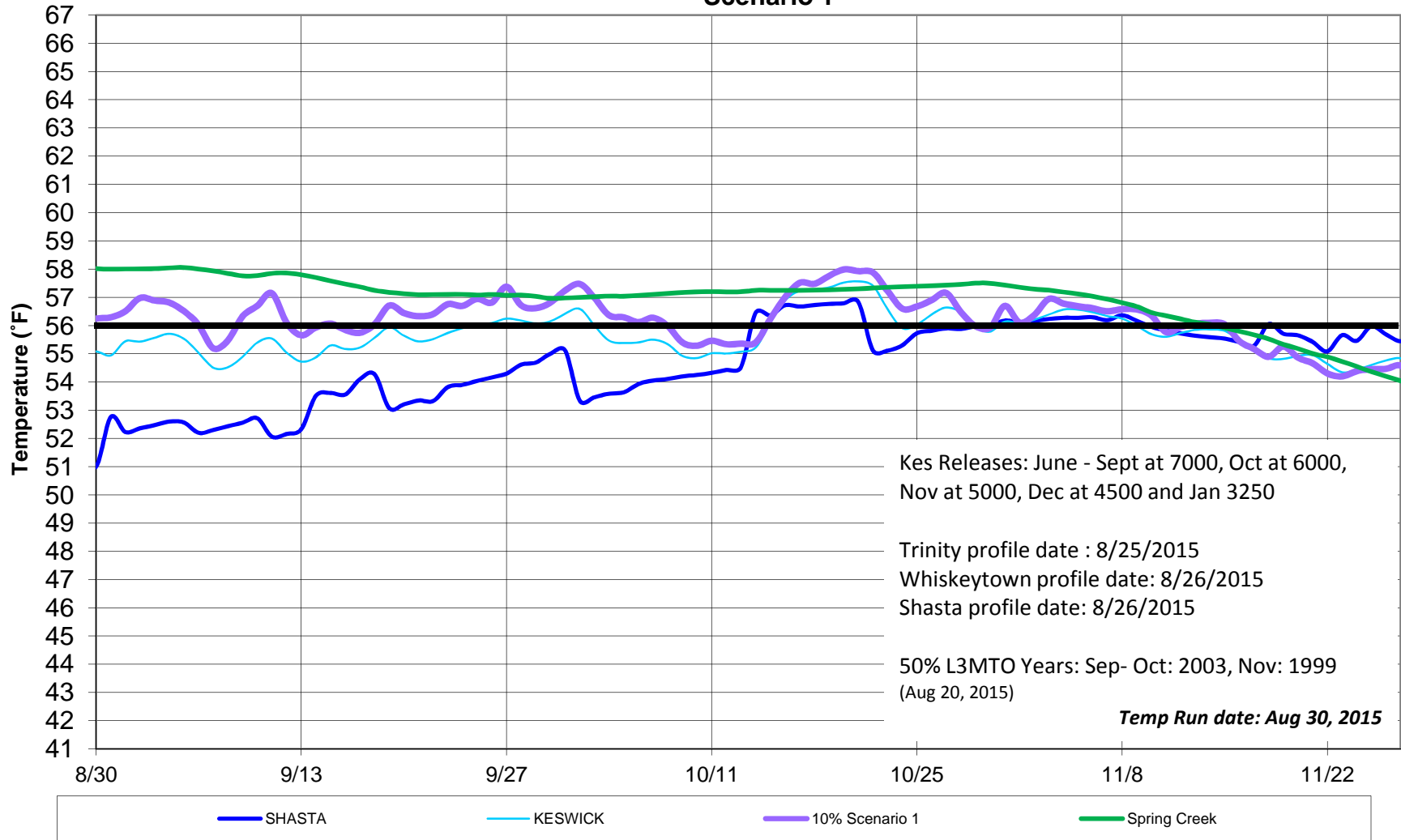
**Sacramento River Modeled Temperature  
2015 Aug 90%-Exceedance Outlook - 50% L3MTO  
Cooler at CCR  
Scenario 1**



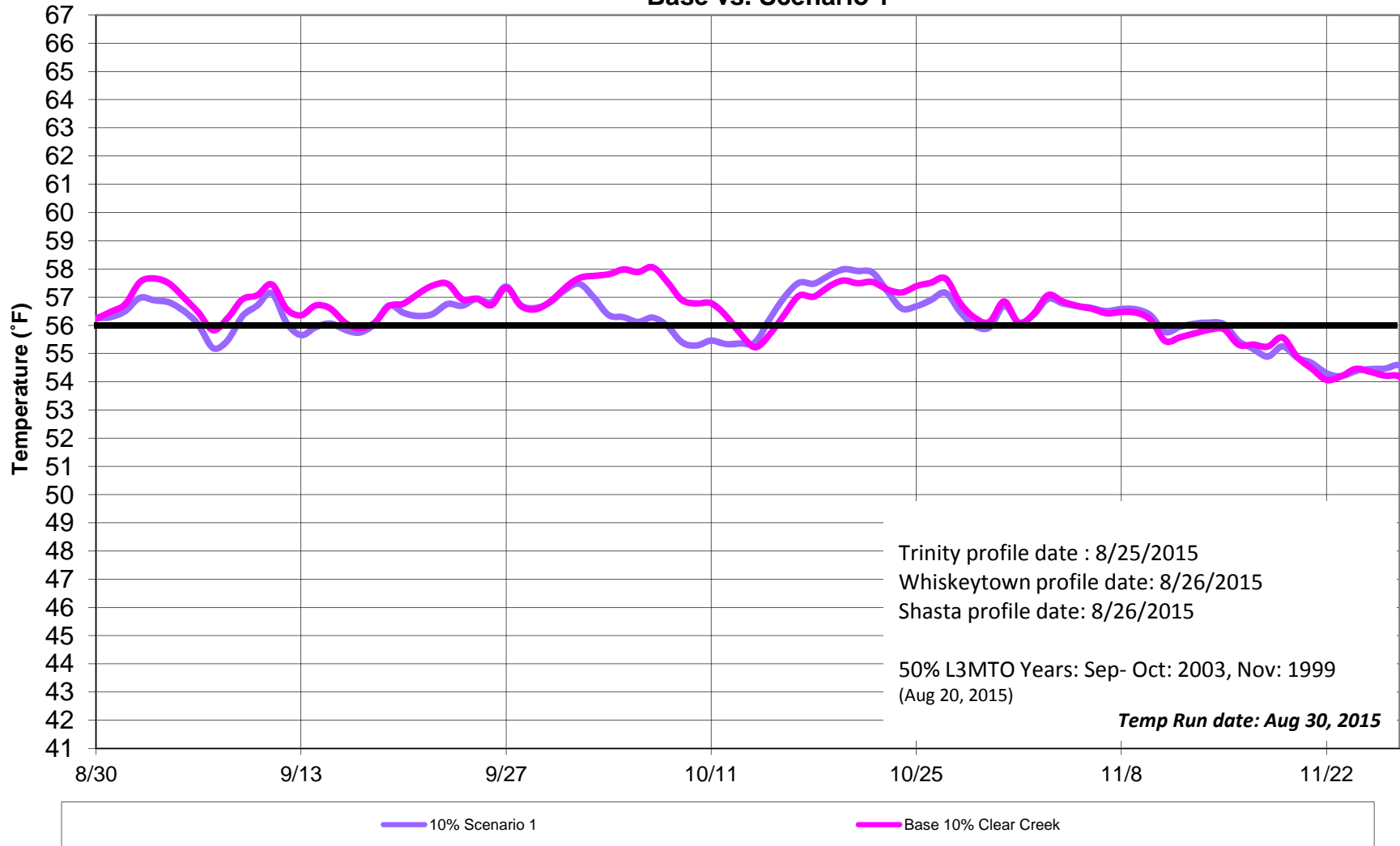
**Sacramento River Modeled Temperature  
 2015 Aug 90%-Exceedance Outlook - 50% L3MTO  
 Base 57 degree - Scenario 1 Cooler at CCR  
 Base vs. Scenario 1**



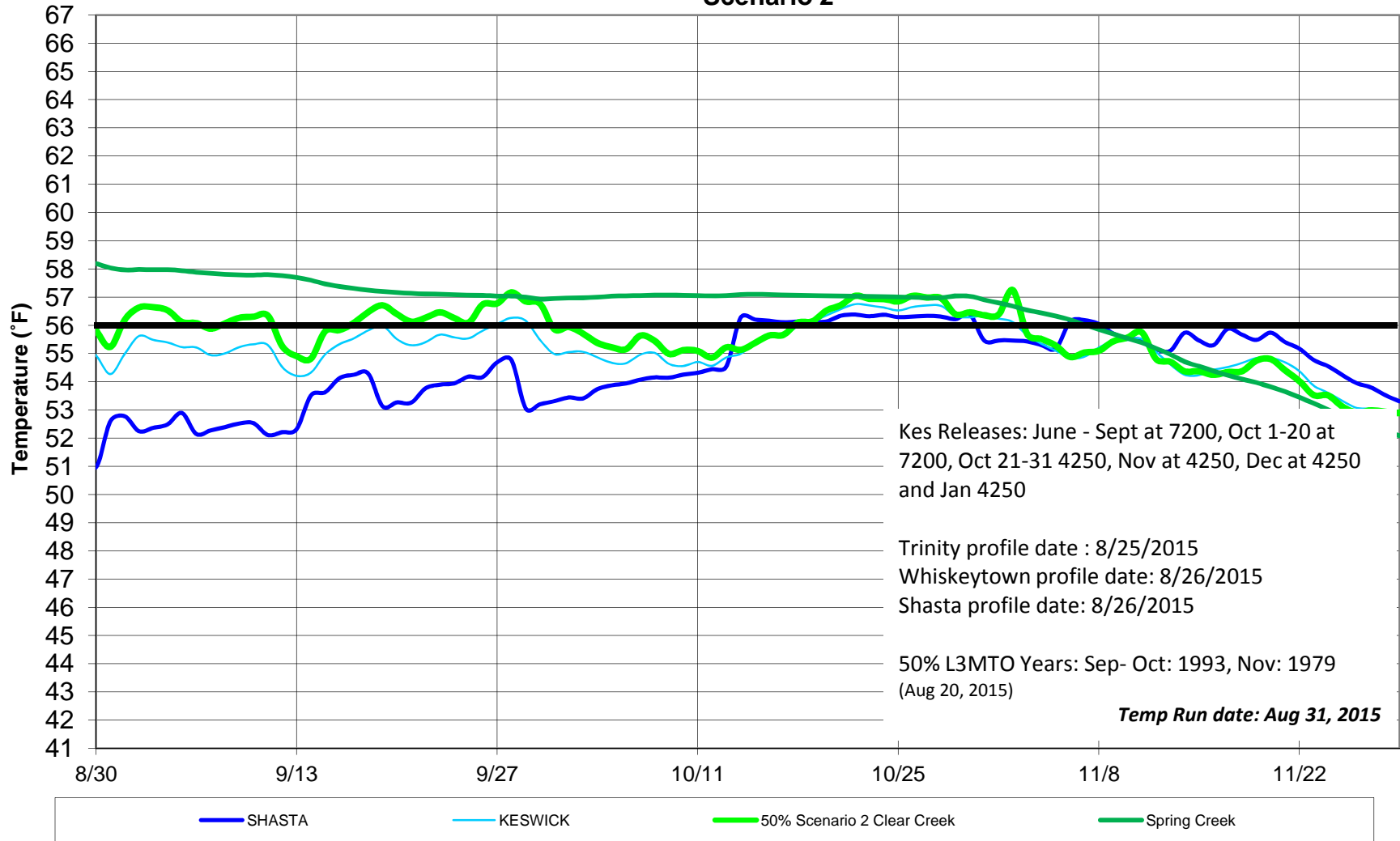
**Sacramento River Modeled Temperature  
2015 Aug 90%-Exceedance Outlook - 10% L3MTO  
Cooler at CCR  
Scenario 1**



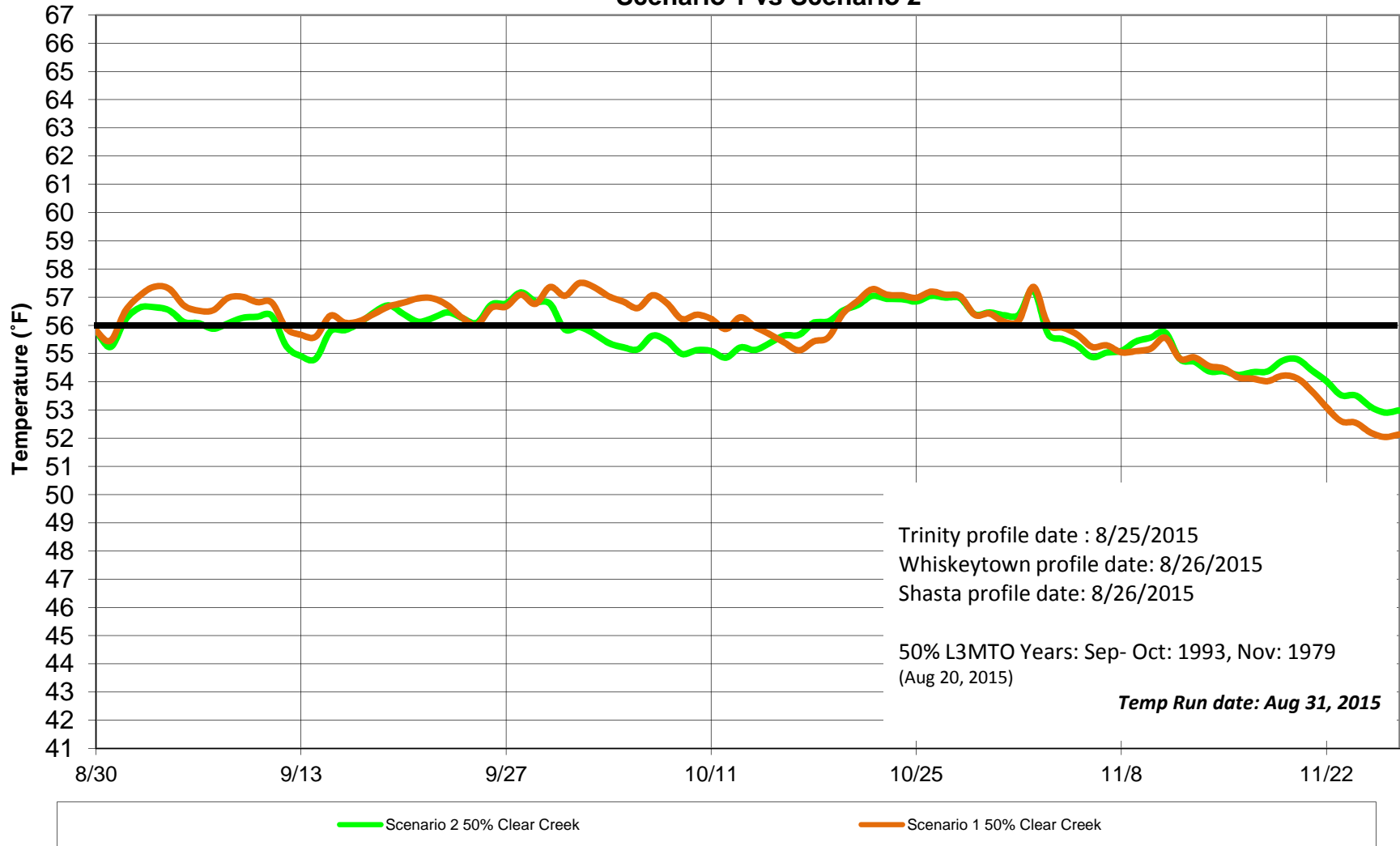
**Sacramento River Modeled Temperature  
 2015 Aug 90%-Exceedance Outlook - 10% L3MTO  
 Base 57 degree - Cooler at CCR  
 Base vs. Scenario 1**



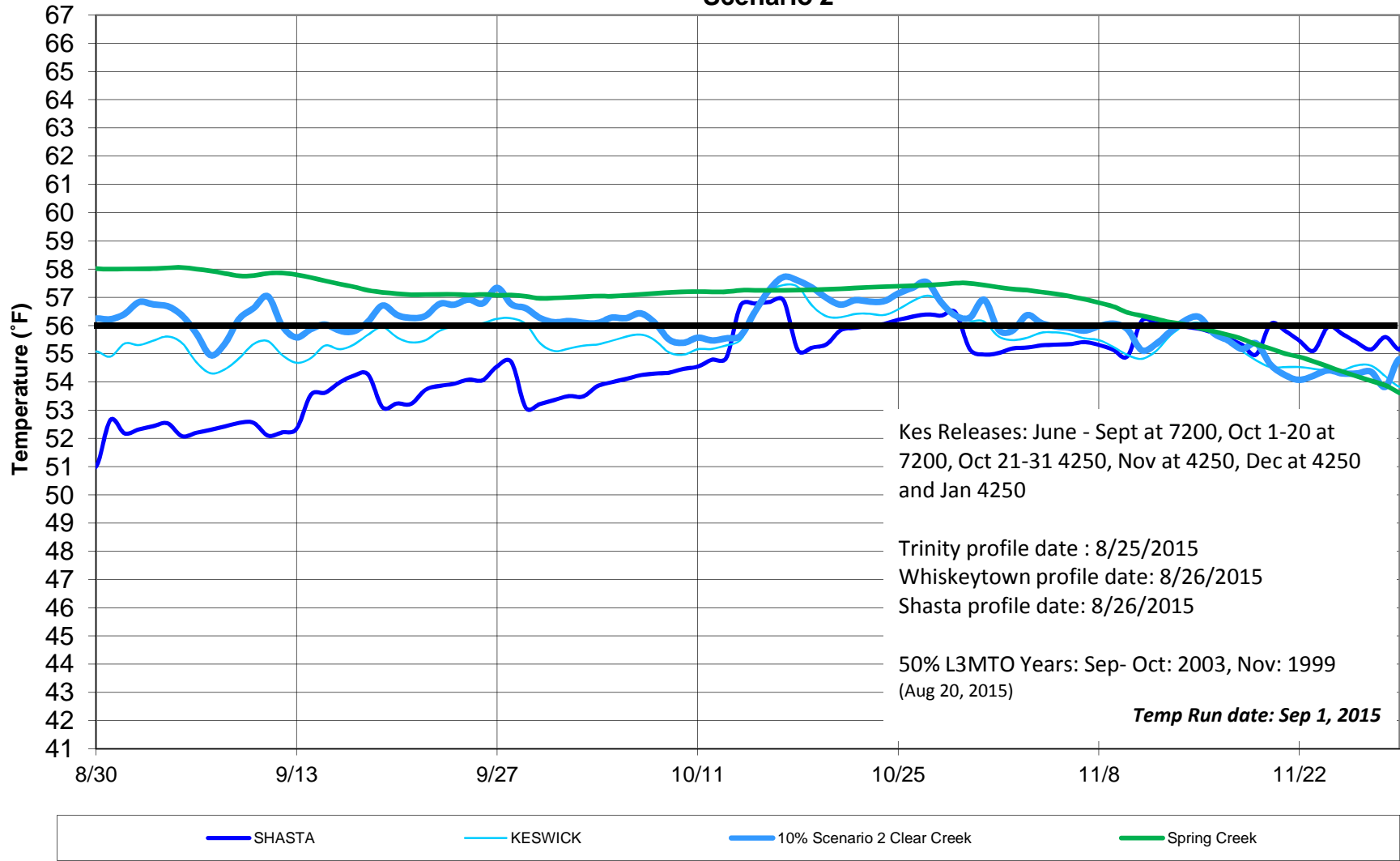
**Sacramento River Modeled Temperature  
2015 Aug 90%-Exceedance Outlook - 50% L3MTO  
Cooler at CCR  
Scenario 2**



**Sacramento River Modeled Temperature  
2015 Aug 90%-Exceedance Outlook - 50% L3MTO  
Scenario 1 and 2 Cooler at CCR  
Scenario 1 vs Scenario 2**



**Sacramento River Modeled Temperature  
2015 Aug 90%-Exceedance Outlook - 10% L3MTO  
Cooler at CCR  
Scenario 2**





**Sacramento River Modeled Temperature  
2015 Aug 90%-Exceedance Outlook - 10% L3MTO  
Cooler at CCR  
Scenario 2 10% vs Scenario 1 10%**

