

Description of SWFSC Temperature-dependent Mortality Modeling Scenarios – May 19, 2021

Total number of scenarios simulated: 720

Model Start Date: May 19, 2021

1. Modeling framework used: “Full” models

Shasta:	CE-QUAL-W2
Keswick:	Linear model
Upper Sacramento River:	RAFT
Temperature-dependent mortality:	Stage independent (Martin et al, 2017)

2. Shasta Bypass Conditions

All scenarios assume no bypass in the forecast time period. Any bypass flow that occurs during the hindcast period are accounted for in the model.

3. Keswick Release Scenario Assumptions

		Keswick Releases (cfs)							
Label	Description	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BL	Baseline, USBR 90% Exceedance operational outlook dated 4/20/2021; with 100% bypass (see note in 2. Shasta Bypass Conditions)	8600	8750	10000	8000	5000	4570	3873	3250
Trans150	Same as baseline, but with 150 TAF cumulative reduction to May-Oct releases, & 37.5 TAF added to Aug & Sep release, & 75 TAF added to Oct releases	8600	8170	9415	8098	5277	5790	3873	3250
Flat7500	Same as baseline but with Jun, Jul, & Aug releases set to 7500 cfs	8600	7500	7500	7500	5000	4570	3873	3250
EOS1300	Same as baseline but with ending EOS set to 1300 TAF	8600	6765	6765	6775	5277	5250	3873	3250
EOS1300Alt	Same as baseline but with ending EOS set to 1300 TAF	8600	6765	6765	6775	5277	5790	3873	3250
Flat6000	Same as baseline but with Jun, Jul, & Aug releases set to 6000 cfs	8600	6000	6000	6000	5000	4570	3873	3250

4. Trinity imports via Spring Cr PP

		Trinity Imports via Spring Cr PP (cfs)							
Label	Description	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BL	Baseline, USBR 90% Exceedance operational outlook dated 4/20/2021	244	1513	1789	1464	1513	732	336	195
		Trinity Imports via Spring Cr PP (TAF)							
Label	Description	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BL	Baseline, USBR 90% Exceedance operational outlook dated 4/20/2021	15	90	110	90	90	45	20	12

5. Hydrology:

All simulations are run with a DWR Bulletin 120 90% exceedance hydrology taken from the May forecast for Shasta Reservoir inflow.

5. Meteorology:

All simulations are run with the meteorological time series taken from the historical record for year 2015 for simulation dates 5/5/2021-11/29/2021.

6. Inflow temperature:

All simulations are run with the inflow tributary temperatures to Shasta Reservoir from the historical record for year 2015 for simulation dates 5/5/2021-11/29/2021.

7. Initial Shasta conditions:

Variable	Value/description
Temperature profile date	5/12/2021
Initial storage (TAF)	2179
Initial storage date	5/12/2021
Initial elevation (ft)	967
Initial elevation date	5/5/2021

8. Temperature Target (Pattern/shaping) Parameters:

Model runs use all combinations of values given in the table below, along with the 4 release scenarios described in Section 3.

Variable	Value(s)	
Target location	CCR	
Target temperature (°C)	12.25, 12.5, 12.75, 13, 13.33	(°F) 54, 54.5, 55, 55.4, 56
Shoulder temperature (°C)	13.33, 15	(°F) 56, 59
Window length (weeks)	10, 16, 22	
Center date	8/6/2021, 8/13/2021, 8/20/2021, 8/27/2021	