



American River Group – Ad Hoc Meeting

Conference Line: +1 (321) 209-6143; Access Code: 985 598 947#

Webinar: [Join Microsoft Teams Meeting](#)

Thursday, September 28, 2023

Notes

1. Action Items
 - a. Vanessa – conduct additional temperature modeling using met data from a cool year
2. Introductions
 - a. USBR: Thuy Washburn, Zarela Guerrero, Carolyn Bragg, Liz Kiteck, Amanda Snow, Brad Hubbard, John Hannon, Spencer Marshall, Mechele Pacheco, Leeyan Mao, Steven Melavic, John Harrison
 - b. NMFS: Barb Byrne
 - c. USFWS: Craig Anderson, Paul Cadrett
 - d. CDFW: Crystal Rigby, Duane Linander, Mike Healey, Emily Fisher, Jason Julienne, Gary Novak, Nick Bauer, Jenny O’Brien, Erica Meyers, Elaine Jeu
 - e. SWRCB: Reza Ghasemizadeh
 - f. Westlands Water District: Tom Boardman
 - g. City of Sacramento: Anne Sanger, Brian Sanders
 - h. City of Roseville:
 - i. City of Folsom: Marcus Yasutake
 - j. DWR: Mike Ford
 - k. WAPA:
 - l. EBMUD: I-Pei Hsiu
 - m. SMUD: Tyler Belarde, Megan Peers

- n. PCWA: Ben Barker, Darin Reintjes
 - o. FishBio:
 - p. Water Forum: Jessica Law, Erica Bishop, Ashlee Casey, Chris Hammersmark
 - q. PSMFC: Logan Day, Hunter Morris
 - r. Stantec: Craig Addley, Vanessa Martinez
 - s. CFS:
 - t. Shingle Springs Band of Miwok Indians:
 - u. Other: De De Birch, Ted Rauh
3. Review Updated Temperature Modeling Results
- a. Stantec provided updated temperature modeling results using the 2014 meteorological data.
 - i. 2014 fall temperatures were quite warm (including a heat wave in the first two weeks of November), which suggests that real world results are unlikely to be worse than the scenarios modeled and have the possibility of being better if the ambient air temperatures remain relatively cool.
 - b. The model results are intended to be a comparison of scenarios rather than an absolute ability to reach any specific temperatures at any specific time.
 - c. All modeled scenarios are based on temperatures at Watt Ave. There is an assumption that temperatures at Hazel Ave will be approximately 2° F cooler during the beginning of the management scenarios before eventually converging.
 - d. Stantec modeled three different temperature target scenarios without a power bypass (in all scenarios; the operating target was 56° F as of November 1):
 - i. Scenario 1 - Operating target dropping from 67° F to 64° F on October 1
 - ii. Scenario 2 - Operating target dropping from 67° F to 64° F on October 16
 - iii. Scenario 3 - Operating target of 67° F until November 1
 - e. Key takeaways:

- i. October temperatures vary dramatically between scenarios.
 - ii. Scenario 1 results in temperatures on November 1 being 1-1.5 degrees warmer than the other two scenarios.
 - iii. Scenario 1 would drain the cold water more quickly.
 - f. Stantec modeled three different temperature target scenarios with a power bypass of 500 cfs bypass (in all scenarios; the operating target was 56° F as of November 1):
 - i. Scenario 1 - Operating target dropping from 67° F to 64° F on October 1
 - 1. Results in benefits in October, but impacts November temperatures
 - ii. Scenario 2 – Operating target dropping from 67° F to 64° F on October 16
 - 1. Results in a 2-degree benefit in second half of October.
 - 2. Minimal impact to November temperatures because the whole system is cooling down.
 - iii. Scenario 3 – Operating target dropping from 67° F to 64° F on October 16 (with a 100cfs/day ramp up)
 - 1. 2-degree benefit in second half of October.
 - 2. Minimal impact to November temperatures because the whole system is cooling down.
 - iv. Scenario 4 – Operating target of 67° F until November 1
 - g. Key takeaways:
 - i. Lowering the temperature target to 64° F in early October may have impacts to November water temperatures, even with a power bypass.
 - ii. Ramping impacts could be minimized by starting release a few days earlier.
 - h. Discussion
 - i. NMFS commented that the models seem to show cooler results than the models presented at the 9/7 ARG meeting. The survival difference between the bypass and no bypass scenarios were smaller based on the current runs.

- ii. Stantec commented that ambient air temperature has been cooler than was anticipated at the last meeting which has affected the model results. Most of the met data that was used had much warmer Septembers.
- iii. USBR and CDFW both expressed interest in seeing a run with cooler ambient air temperatures.

4. Egg Mortality Model

- a. Egg mortality model runs are based on temperatures at Hazel Ave. (more redds will be located near Hazel Ave than Watt Ave)
- b. Cohort-level Egg-to-fry survival (across all spawn dates) from the SacPAS Egg Growth Model tool.

Date	Bypass Status	Water Forum 2020 egg-to-fry survival (%)	SALMOD 2006, USBR 2008, HCI 1996 egg-to-fry survival (%)	Martin 2016 egg-to-fry survival (%)
67toNov1	No Bypass	87.54	72.27	7.11
67toNov1	Bypass (<i>difference from No Bypass scenario</i>)	88.11 (+0.57)	75.51 (+3.24)	6.92 (-0.19)
64onOct16	No Bypass	87.75	72.11	7.08
64onOct16	Bypass (<i>difference from No Bypass scenario</i>)	88.26 (+0.51)	75.52 (+3.41)	6.88(-0.2)
64onOct16	Ramped Bypass (<i>difference from No Bypass scenario</i>)	88.50(+0.75)	76.30(+4.19)	7.00(-0.08)
64onOct1	No Bypass	86.85	67.92	6.74
64onOct1	Bypass (<i>difference from No Bypass scenario</i>)	87.93(+1.08)	72.58 (+4.66)	6.53(-0.21)
JulyExpectation	No Bypass	87.45	69.80	6.65
JulyExpectation	Bypass (<i>difference from No Bypass scenario</i>)	<i>Not modeled</i>	<i>Not modeled</i>	<i>Not modeled</i>

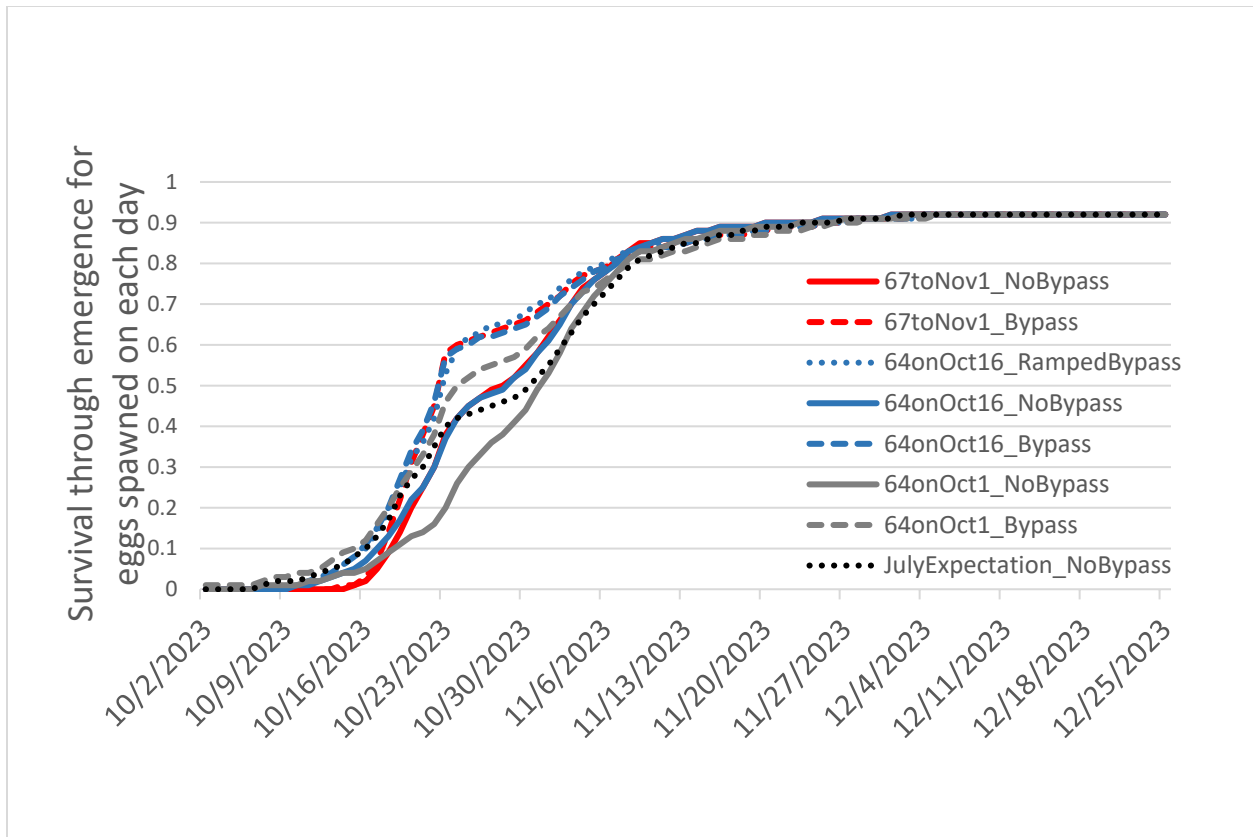


Figure 1. Survival through emergence for eggs spawned on each day.

Figure 1 is a bar graph showing estimated through-season egg-to-fry survival (by spawn date) for eggs spawned from early October to late November from the SacPAS results. The graph includes data from 67toNov1_NoBypass, 67toNov1_Bypass, 64onOct16_RampedBypass, 64onOct16_NoBypass, 64onOct16_Bypass, 64onOct1_NoBypass, 64onOct1_Bypass, and JulyExpectation_NoBypass.

c. Discussion

- i. NMFS commented that they want to protect redds throughout the spawning period to foster diversity. It is also ideal to have some successful early redds to produce early migrating fish when the waters are cool and there are high flows.
- ii. Across all scenarios the temperature does not reach 56 degrees at Hazel Ave. until December 9 – December 12.
- iii. USBR asked what the water temperatures are on October 15 in the egg mortality model.
 1. It depends on the scenario; NMFS referred USBR to Stan-tec’s modeling results at Hazel Ave.

- d. CDFW noted that while the egg mortality figure is informative for eggs in gravel, it does not capture impacts to holding fish in early and mid-October (e.g., pre-spawn mortality, delays in maturation, and delays in spawn timing) that could affect how many eggs are laid in the first place. CDFW advocated for ensuring good holding conditions early in October in order to provide decent temperatures for those fish that are ready to spawn in late October and early November.
- e. CDFW commented that the 64°F on October 1 with a bypass scenario is the best option available.
 - i. NMFS expressed concern that this option may prove to be problematic if USBR doesn't approve a power bypass and it may take USBR 2-3 weeks to make that decision.
 - ii. CDFW expressed frustration with USBR's timeframe for making a decision on a power bypass and encouraged an expedited process.
 - iii. USBR responded that while in other years it has taken 2-3 weeks to make a decision, they are hoping that their efforts to keep upper management informed on a daily basis will lead to a faster turnaround.
- f. NMFS proposed setting a target of 65°F at Watt Ave. on October 7 as an alternative.
 - i. USBR commented that the coolest unit is currently releasing 62°F and the warmest unit is 67°F. They could blend to get as close to 65°F as possible. The upper shutters will have to be lifted when water elevation 428 is reached (this will likely not be necessary for another 30 days).
- g. The ARG agreed to move forward with the power bypass proposal but to conduct additional modeling (using met data from a cooler year than 2014) before finalizing temperature targets during October (based on operations of the TCD only) at another ad hoc meeting on September 29.