



— BUREAU OF —
RECLAMATION

Stanislaus Watershed Team

10:00 AM – 12:00 PM

Conference Line: 1 (321) 209-6143; Meeting ID: 901 988 581#

Webinar: [Join Microsoft Teams Meeting](#)

Wednesday, April 20, 2022

Agenda

1. Introductions
2. Ground Rules¹
3. Announcements
4. Operations Update and Forecasts/Hydrology
5. Temperature Updates
6. Flow Planning
7. Stanislaus River Forum (SRF) Call Review
8. Fish Monitoring and Studies
9. Restoration Project Updates
10. Progress Update on Proposed Action Elements
 - a. Spawning and rearing habitat restoration

¹ The Stanislaus Watershed Team's Ground Rules are as follows:

1. Seek to understand and respect opposing views and suggestions for change (w/in the parameters of the Guidance Document).
2. Seek to leverage collective expertise (including from agencies' & stakeholders' consultants).
3. Hold questions/discussion at the discretion of the presenter.
4. Honor time limits - keep comments and discussion succinct and focused on meeting objectives as needed.
5. Make constructive proposals and suggestions to seek mutually agreeable solutions for all parties.
6. Keep a record of discussion and dialogue.
7. One speaker at a time
8. Take space/make space

- b. Temperature management study
- c. Yellow-bellied cuckoo survey

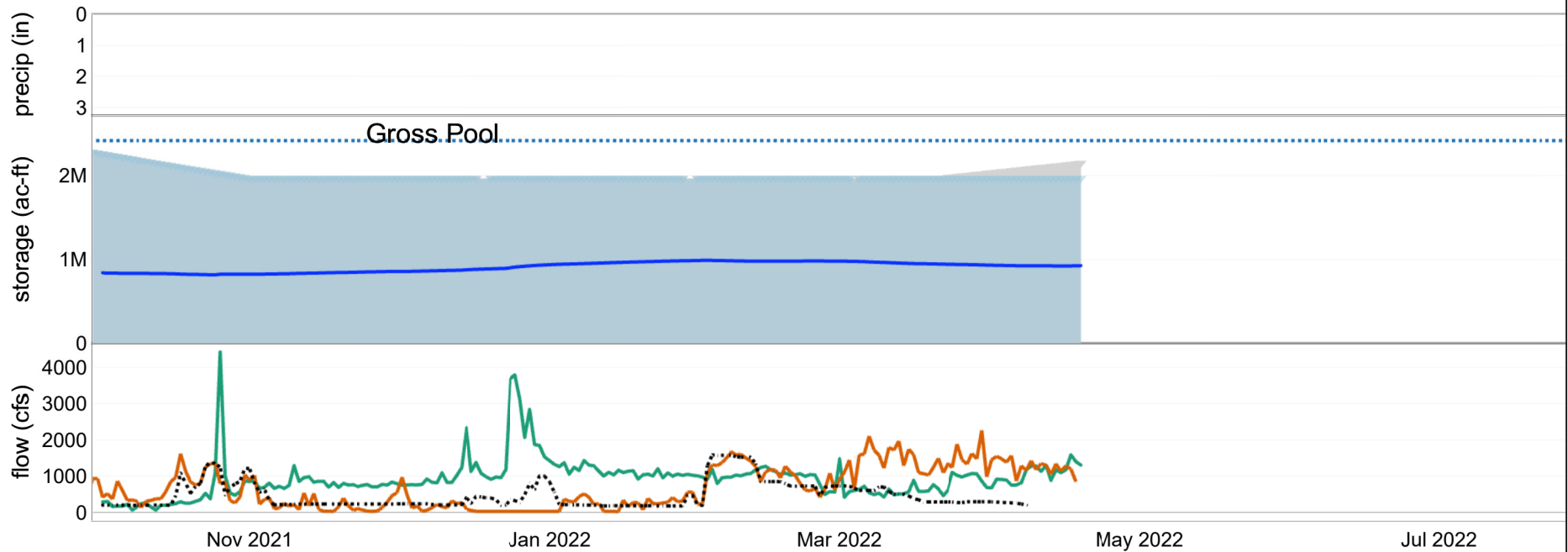
11. Other Discussion Items

- a. Curtailments
- b. Annual reporting check-in
- c. Items to elevate to WOMT

12. Review Action Items

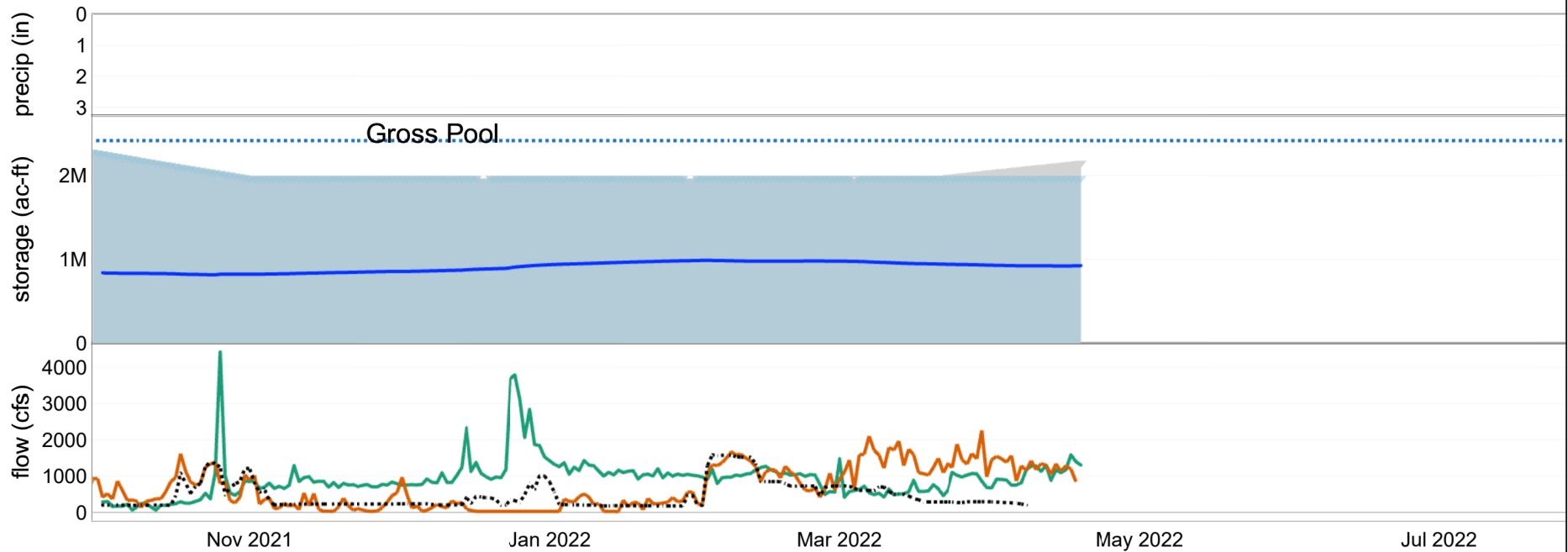
13. Next Meeting: Wednesday, May 18, 2022 (10am-12pm)

New Melones Dam & Lake - Stanislaus River Basin 2022-04-19T07:16:49-0700



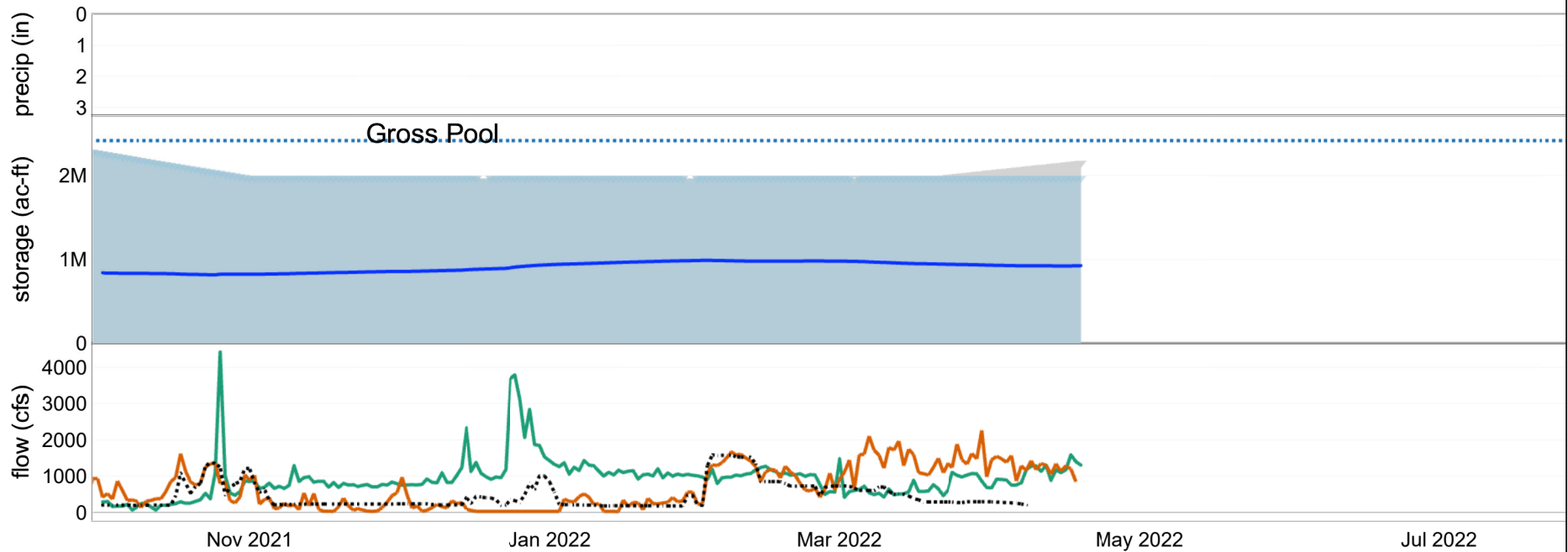
Date

New Melones Dam & Lake - Stanislaus River Basin 2022-04-19T07:16:49-0700



Date

New Melones Dam & Lake - Stanislaus River Basin 2022-04-19T07:16:49-0700



Date

**UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA
DAILY CVP WATER SUPPLY REPORT**

April 19, 2022
RUN DATE: April 20, 2022

Table 4. Reservoir Releases in Cubic Feet/Second

RESERVOIR	DAM	WY 2021	WY 2022	15 YR MEDIAN
TRINITY	LEWISTON	694	1,756	317
SACRAMENTO	KESWICK	6,480	3,274	6,041
FEATHER	OROVILLE (SWP)	1,100	800	1,550
AMERICAN	NIMBUS	2,058	993	1,560
STANISLAUS	GOODWIN	834	455	1,503
SAN JOAQUIN	FRIANT	341	1,004	350

Table 5. Storage in Major Reservoirs in Thousands of Acre-Feet

RESERVOIR	CAPACITY	15 YR AVG	WY 2021	WY 2022	% O 15 YR AVG
TRINITY	2,448	1,687	1,307	799	47
SHASTA	4,552	3,480	2,359	1,763	51
FOLSOM	977	673	358	661	98
NEW MELONES	2,420	1,457	1,499	928	64
FED. SAN LUIS	966	662	415	350	53
TOTAL NORTH CVP	11,363	7,959	5,938	4,501	57
MILLERTON	520	302	209	351	116
OROVILLE (SWP)	3,538	2,406	1,491	1,782	74

Table 5. Accumulated Inflow for Water Year to Date in Thousands of Acre-Feet

RESERVOIR	CURRENT WY 2021	WY 1977	WY 1983	15 YRAVG	% O 15 YR AVG
TRINITY	341	101	1,370	626	54
SHASTA	1,980	1,520	7,721	3,263	61
FOLSOM	1,067	216	3,908	1,499	71
NEW MELONES	373	----	1,235	501	74
MILLERTON	480	116	1,814	538	89

Table 6. Accumulated Precipitation for Water Year to Date in Inches

RESERVOIR	CURRENT WY 2022	WY 1977	WY1983	AVG (N YRS)	% OF AVG	LAST 24 HRS
TRINITY AT FISH HATCHERY	16.72	9.27	50.97	28.09 (60)	60	0.039
SACRAMENTO AT SHASTA DAM	37.55	11.04	103.71	55.12 (65)	68	0.0
AMERICAN AT BLUE CANYON	57.57	15.64	95.30	59.17 (47)	97	1.01
STANISLAUS AT NEW MELONES	18.04	----	41.71	24.77 (44)	73	0.0
SAN JOAQUIN AT HUNTINGTON LK	22.62	11.50	74.70	36.71 (47)	62	0.0

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

APRIL 2022

NEW MELONES LAKE DAILY OPERATIONS

RUN DATE:04/20/2022

DAY	STORAGE ACRE-FEET DONNELLS RES	STORAGE 1000- ACRE-FEET BEARDSLEY RES	RESERVOIR TOTAL	CHANGE A.F.	CHANGE C.F.S	NEW MELONES INFLOW C.F.S	NATURAL RIVER C.F.S	ACCUM* FULL NATURAL 1000 A.F.
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1	14,246	66,168	80,414	+1,486	+749	915	1,664	305.4
2	14,410	67,678	82,088	+1,574	+844	909	1,753	308.8
3	14,920	68,971	83,891	+1,803	+909	893	1,802	312.4
4	15,074	70,564	85,638	+1,747	+881	751	1,632	315.6
5	15,185	72,062	87,247	+1,609	+811	756	1,567	318.8
6	15,361	73,463	88,824	+1,577	+795	817	1,612	321.9
7	15,720	74,376	90,096	+1,272	+641	1,176	1,817	325.6
8	16,320	74,854	91,174	+1,078	+543	1,276	1,819	329.2
9	17,988	74,247	92,235	+1,061	+535	1,282	1,817	332.8
10	19,203	73,912	93,115	+880	+444	1,134	1,578	335.9
11	20,333	73,489	93,822	+707	+356	1,297	1,653	339.2
12	20,803	73,404	94,207	+385	+194	883	1,077	341.3
13	21,349	73,116	94,465	+258	+130	1,170	1,300	343.9
14	21,794	73,040	94,834	+369	+186	1,098	1,284	346.4
15	22,284	72,854	95,138	+304	+153	1,176	1,329	349.1
16	23,065	72,745	95,810	+672	+339	1,586	1,925	352.9
17	24,012	72,317	96,329	+519	+262	1,400	1,662	356.2
18	24,516	72,305	96,821	+492	+248	1,305	1,553	359.3
19	24,987	72,362	97,349	+528	+266	1,346	1,612	362.5
TOTALS	N/A	N/A	N/A	+18421	N/A	N/A	N/A	30,456
ACRE-FEET	N/A	N/A	N/A	N/A	N/A	N/A	N/A	60,409

COMMENTS:

* OCTOBER 1, 2022 TO DATE.

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

MARCH 2022

NEW MELONES LAKE DAILY OPERATIONS

RUN DATE: 04/05/2022

DAY	ELEV	STORAGE 1000-ACRE- FEET IN LAKE	STORAGE 1000-ACRE- FEET CHANGE	COMPUTED INFLOW C.F.S.	RELEASE C.F.S. POWER	RELEASE C.F.S. SPILL	RELEASE C.F.S. OUTLET	EVAP. C.F.S.	EVAP. INCHES	PRECIP INCHES
N/A	N/A	984.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1	940.05	983	-1.4	417	1,109	0	0	28	0.12	0
2	939.8	981.2	-1.8	573	1,445	0	0	25	0.11	0
3	939.78	981	-0.1	603	650	0	0	25	0.11	0
4	939.51	979.1	-1.9	635	1,587	0	0	16	0.07	0
5	939.26	977.3	-1.8	725	1,605	0	0	16	0.07	0.42
6	938.82	974.2	-3.1	542	2,105	0	0	11	0.05	0
7	938.47	971.7	-2.5	491	1,717	0	0	23	0.1	0
8	938.17	969.6	-2.1	530	1,580	0	0	21	0.09	0
9	937.94	968	-1.6	424	1,219	0	0	25	0.11	0
10	937.61	965.7	-2.3	647	1,789	0	0	30	0.13	0
11	937.25	963.1	-2.5	485	1,718	0	0	46	0.2	0
12	936.83	960.2	-3.0	512	1,967	0	0	34	0.15	0
13	936.6	958.6	-1.6	512	1,289	0	0	36	0.16	0
14	936.26	956.2	-2.4	573	1,743	0	0	32	0.14	0
15	936.05	954.7	-1.5	885	1,591	0	0	36	0.16	0
16	935.9	953.7	-1.0	578	1,096	0	0	11	0.05	0.12
17	935.75	952.6	-1.0	576	1,068	0	0	36	0.16	0
18	935.62	951.7	-0.9	594	1,029	0	0	23	0.1	0
19	935.47	950.7	-1.0	765	1,241	0	0	52	0.23	0
20	935.23	949	-1.7	649	1,493	0	0	0	0	0.11
21	935.04	947.7	-1.3	462	1,093	0	0	38	0.17	0
22	934.82	946.1	-1.5	618	1,362	0	0	27	0.12	0
23	934.77	945.8	-0.3	1,104	1,236	0	0	43	0.19	0
24	934.51	944	-1.8	1,023	1,887	0	0	47	0.21	0
25	934.36	942.9	-1.0	978	1,456	0	0	47	0.21	0
26	934.26	942.2	-0.7	1,029	1,330	0	0	49	0.22	0
27	934.09	941.1	-1.2	1,072	1,620	0	0	47	0.21	0
28	933.96	940.2	-0.9	1,063	1,475	0	0	43	0.19	0.25
29	933.55	937.3	-2.8	863	2,265	0	0	27	0.12	0.16
30	933.46	936.7	-0.6	688	982	0	0	20	0.09	0
31	933.23	935.1	-1.6	675	1,452	0	0	25	0.11	0
TOTALS	N/A	N/A	-48.9	21,291	45,199	0	0	939	4.15	1.06
ACRE-FEET	N/A	N/A	-48,900	42,231	90	0	0	1,863	N/A	N/A

COMMENTS:

* COMPUTED INFLOW IS THE SUM OF THE CHANGE IN STORAGE, RELEASES AND EVAPORATION.

SUMMARY PRECIPITATION

TIME	PRECIPITATION
THIS MONTH	1.06
JULY 1, 2021 TO DATE	17.11
OCT 1, 2021 TO DATE	17.07

SUMMARY: RELEASE (ACRE-FEET)

(ACRE-FEET)	N/A
POWER	89,652
SPILL	0
OUTLET	0
TOTAL	89,652

OAKDALE IRRIGATION DISTRICT
SOUTH SAN JOAQUIN IRRIGATION DISTRICT
TRI DAMS PROJECT-CALIFORNIA

APRIL 2022

GOODWIN RESERVOIR DAILY OPERATIONS

RUN DATE: 04/ 20/2022

DAY	ELEV	STORAGE (1000 ACRE- FEET) IN LAKE	STORAGE (1000 ACRE- FEET) CHANGE	TULLOCH RELEASE	RELEASE C.F.S. ----- RIVER OUTLET	RELEASE - C.F.S. SPILL	CANALS- JOINT MAIN	CANALS- SOUTH MAIN
N/A	N/A	525	N/A	N/A	N/A	N/A	N/A	N/A
1	359.83	525	+0	1,324	0	302	816	153
2	359.83	525	+0	1,249	0	302	699	185
3	359.85	527	+2	1,271	0	302	676	217
4	359.85	527	+0	1,289	0	305	678	232
5	359.83	525	-2	1,260	0	304	696	188
6	359.76	520	-5	1,272	0	231	646	314
7	359.77	521	+1	1,231	0	203	649	287
8	359.74	519	-2	1,267	0	203	689	291
9	359.76	520	+1	1,172	0	202	661	225
10	359.77	521	+1	1,199	0	203	666	245
11	359.76	520	-1	1,178	0	204	647	243
12	359.74	519	-1	1,095	0	202	594	216
13	359.76	520	+1	1,236	0	202	635	319
14	359.74	519	-1	1,227	0	202	576	362
15	359.74	519	+0	1,139	0	203	560	288
16	359.74	519	+0	1,058	0	203	536	230
17	359.74	519	+0	967	0	205	512	172
18	359.86	527	+8	1,028	0	307	498	153
19	359.98	536	9	1,232	0	455	479	232
TOTALS	N/A	N/A	+11	22,694	0	4,740	11,913	4,552
ACRE-FEET	N/A	N/A	+11	45,014	0	9,402	23,629	9,029

JOINT MAIN OPERATED BY SSJID AND OID.

SUMMARY: RELEASE (ACRE FEET)

RELEASE (ACRE- FEET)	N/A
JOINT MAIN CANAL	23,629
SOUTH MAIN CANAL	9,029
OUTLET	0
SPILL	9,402
TOTAL	42,060

OAKDALE IRRIGATION DISTRICT
SOUTH SAN JOAQUIN IRRIGATION DISTRICT
TRI-DAMS PROJECT-CALIFORNIA

MARCH 2022

GOODWIN RESERVOIR DAILY OPERATIONS

RUN DATE: 03/16/2022

DAY	ELEV	STORAGE (1000 ACRE- FEET) IN LAKE	STORAGE (1000 ACRE- FEET) CHANGE	TULLOCH RELEASE	RELEASE C.F.S. ----- RIVER OUTLET	RELEASE - C.F.S. SPILL	CANALS- JOINT MAIN	CANALS- SOUTH MAIN
N/A	N/A	549	N/A	N/A	N/A	N/A	N/A	N/A
1	360.17	549	+0	1,104	0	811	228	72
2	360.17	549	+0	1,277	0	802	392	73
3	360.13	546	-3	1,298	0	733	459	105
4	360.11	545	-1	1,425	0	708	570	153
5	360.11	545	+0	1,551	0	704	672	176
6	360.11	545	+0	1,607	0	704	753	153
7	360.11	545	+0	1,651	0	703	775	176
8	360.13	546	+1	1,767	0	707	835	225
9	360.05	541	-5	1,792	0	631	871	280
10	359.98	536	-5	1,674	0	533	854	241
11	360.01	538	+2	1,667	0	502	849	249
12	359.98	536	-2	1,604	0	502	821	218
13	359.99	536	+0	1,482	0	501	772	145
14	359.92	531	-5	1,430	0	436	763	175
15	359.32	489	-42	1,432	0	402	755	209
16	359.86	527	+38	1,302	0	336	722	186
17	359.86	527	+0	1,228	0	301	718	137
18	359.86	527	+0	1,245	0	305	722	147
19	359.86	527	+0	1,243	0	303	731	138
20	359.86	527	+0	1,202	0	303	724	102
21	359.86	527	+0	1,245	0	303	741	140
22	359.83	525	-2	1,318	0	304	746	203
23	359.85	527	+2	1,362	0	303	761	224
24	359.83	525	-2	1,430	0	274	825	254
25	359.83	525	+0	1,577	0	292	921	283
26	359.83	525	+0	1,570	0	304	932	256
27	359.83	525	+0	1,450	0	305	882	192
28	359.85	527	+2	1,444	0	302	893	190
29	359.83	525	-2	1,454	0	303	929	160
30	359.83	525	+0	1,472	0	302	954	161
31	359.83	525	+0	1,464	0	302	954	152
TOTALS	N/A	N/A	-24	44,767	0	14,221	23,524	5,575
ACRE-FEET	N/A	N/A	-24	88,795	0	28,207	46,660	11,058

JOINT MAIN OPERATED BY SSJID AND OID.

SUMMARY: RELEASE (ACRE FEET)

RELEASE (ACRE- FEET)	N/A
JOINT MAIN CANAL	46,660
SOUTH MAIN CANAL	11,058
OUTLET	0
SPILL	28,207
TOTAL	85,925

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

APRIL 2022

TULLOCH RESERVOIR DAILY OPERATIONS

RUN DATE: 04/20/22

DAY	ELEV	STORAGE (ACRE- FEET) RES.	STORAGE (ACRE- FEET) CHANGE	COMPUTED INFLOW C.F.S.	NEW MELONES RELEASE	RELEASE C.F.S. POWER	RELEASE C.F.S. SPILL	RELEASE C.F.S. OUTLET	EVAP. CFS (1)
N/A	N/A	56,972	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1	501.98	57,468	+496	1,579	1,546	1,324	0	0	5
2	502.39	57,927	+459	1,484	1,478	1,249	0	0	4
3	502.55	58,106	+179	1,377	1,383	1,271	0	0	16
4	503.04	58,656	+550	1,574	1,568	1,289	0	0	8
5	502.32	57,848	-808	858	866	1,260	0	0	5
6	502.34	57,871	+23	1,293	1,284	1,272	0	0	9
7	502.24	57,759	-112	1,184	1,158	1,231	0	0	9
8	502.47	58,016	+257	1,407	1,422	1,267	0	0	10
9	502.47	58,016	+0	1,184	1,176	1,172	0	0	12
10	502.73	58,308	+292	1,357	1,345	1,199	0	0	11
11	502.96	58,565	+257	1,313	1,303	1,126	0	0	5
12	502.85	58,442	-123	1,034	1,049	1,095	0	0	1
13	503.02	58,633	+191	1,338	1,340	1,236	0	0	6
14	502.88	58,476	-157	1,153	1,136	1,227	0	0	5
15	503.11	58,735	+259	1,275	1,283	1,139	0	0	5
16	503.42	59,089	+354	1,243	1,196	1,058	0	0	7
17	503.21	58,849	-240	851	848	967	0	0	5
18	503.36	59,020	+171	1,122	1,119	1,028	0	0	8
19	504.05	59,808	+788	1,635	1,622	1,232	0	0	6
TOTALS	N/A	N/A	+2,836	24,621	24,122	22,642	0	0	137
ACRE-FEET	N/A	N/A	+2,836	48,122	47,846	44,910	0	0	272

*COMPUTED INFLOW IS SUM OF CHANGE IN STORAGE, RELEASES, AND EVAPORATION.

(1) EVAPORATION RECORDS TAKEN FROM NEW MELONES PAN.

SUMMARY: RELEASE (ACRE FEET)

RELEASE (ACRE-FEET)	N/A
POWER	44,910
SPILL	0
OUTLET	0
TOTAL	45,013

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

MARCH 2022

TULLOCH RESERVOIR DAILY OPERATIONS

RUN DATE: 04/01/2022

DAY	ELEV	STORAGE (ACRE- FEET) RES.	STORAGE (ACRE- FEET) CHANGE	COMPUTED INFLOW C.F.S.	NEW MELONES RELEASE	RELEASE C.F.S. POWER	RELEASE C.F.S. SPILL	RELEASE C.F.S. OUTLET	EVAP. CFS (1)
N/A	N/A	55,834	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1	500.52	55,867	+33	1,125	1,109	1,104	0	0	4
2	500.84	56,214	+347	1,456	1,445	1,277	0	0	4
3	499.64	54,919	-1,295	649	650	1,298	0	0	4
4	499.94	55,239	+320	1,588	1,587	1,425	0	0	2
5	500.12	55,433	+194	1,651	1,605	1,551	0	0	2
6	501.02	56,409	+976	2,101	2,105	1,607	0	0	2
7	501.16	56,563	+154	1,733	1,717	1,651	0	0	4
8	500.84	56,214	-349	1,594	1,580	1,767	0	0	3
9	499.77	55,058	-1,156	1,213	1,219	1,792	0	0	4
10	500	55,303	+245	1,802	1,789	1,674	0	0	4
11	500.09	55,401	+98	1,723	1,718	1,667	0	0	7
12	500.79	56,159	+758	1,991	1,967	1,604	0	0	5
13	500.47	55,812	-347	1,313	1,289	1,482	0	0	6
14	501.04	56,431	+619	1,747	1,743	1,430	0	0	5
15	501.32	56,740	+309	1,594	1,591	1,432	0	0	6
16	500.96	56,344	-396	1,104	1,096	1,302	0	0	2
17	500.69	56,051	-293	1,086	1,068	1,228	0	0	6
18	500.3	55,628	-423	1,035	1,029	1,245	0	0	3
19	500.29	55,617	-11	1,245	1,241	1,243	0	0	8
20	500.84	56,214	+597	1,503	1,493	1,202	0	0	0
21	500.56	55,910	-304	1,092	1,093	1,245	0	0	0
22	500.64	55,997	+87	1,362	1,362	1,318	0	0	0
23	500.39	55,726	-271	1,229	1,236	1,362	0	0	4
24	501.21	56,619	+893	1,887	1,887	1,430	0	0	7
25	501.05	56,442	-177	1,495	1,456	1,577	0	0	7
26	500.63	55,986	-456	1,348	1,330	1,570	0	0	8
27	500.84	56,214	+228	1,572	1,620	1,450	0	0	7
28	500.99	56,376	+162	1,533	1,475	1,444	0	0	7
29	502.43	57,972	+1,596	2,263	2,265	1,454	0	0	4
30	501.56	57,005	-967	988	982	1,472	0	0	4
31	501.53	56,972	-33	1,451	1,452	1,464	0	0	4
TOTALS	N/A	N/A	+1,138	45,473	45,199	44,767	0	0	133
ACRE-FEET	N/A	N/A	+1,138	90,196	89,652	88,795	0	0	264

COMMENTS:

* COMPUTED INFLOW IS THE SUM OF CHANGE IN STORAGE, RELEASES AND EVAPORATION.(1)
EVAPORATION RECORDS TAKEN FROM NEW MELONES PAN.

SUMMARY: RELEASE (ACRE FEET)

RELEASE (ACRE-FEET)	N/A
POWER	88,795
SPILL	0
OUTLET	0
TOTAL	88,795

April 2022 Water Temperature and Fish Monitoring Update

Year-to-Date Flows

Goodwin releases since October 1, 2021 are shown in Figure 1. The releases greater than 200 cfs that occurred in December and early January were for storage management at Tulloch Reservoir due to side flows from storm events. After the late January winter instability flow, Goodwin releases increased again for the Vernalis flow requirement through early April.

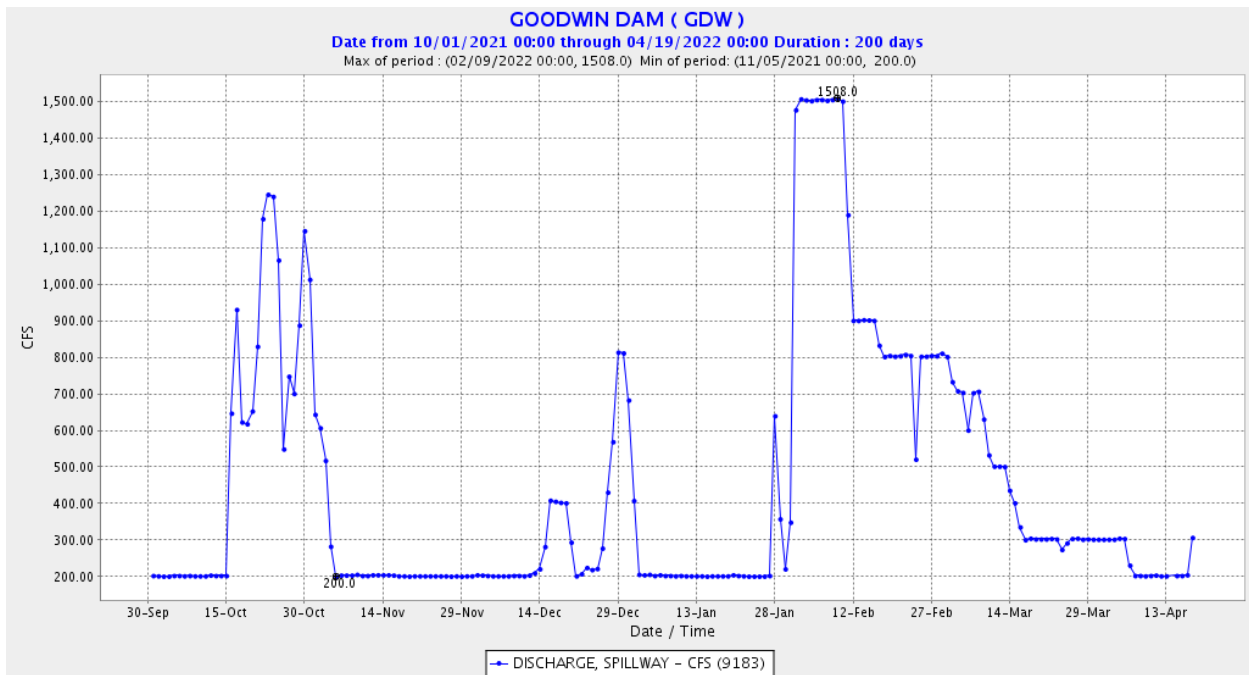


Figure 1. Goodwin (daily) releases to the Stanislaus River since October 1, 2021. Data from GDW station on CDEC.

Water Temperature

The temperature thresholds included in Figures 2-9, below, are the thresholds used in the 2019 NMFS LTO BiOp¹ (see Incidental Take Statement on p. 807) to define the extent of take anticipated from water temperature effects in the Stanislaus River. *It is important to note that many of the temperature figures provide subdaily information or information at locations other than Orange Blossom Bridge and thus don't reflect the specific metrics for take in the 2019 NMFS LTO BiOp.* Temperature thresholds have been added to these figures at the request of Stanislaus Watershed Team members to provide a general reference of water temperature suitability.

Water temperatures in the Stanislaus River since January 1, 2022 are shown below at Goodwin Canyon (Figure 2), Orange Blossom Bridge (Figure 3), and at Ripon (Figure 4). Water temperatures in the San Joaquin River since January 1, 2022 are shown below at Vernalis (Figure 5). Current-year water temperatures are plotted along with historical temperatures for Orange Blossom Bridge

¹ The 2019 NMFS LTO BiOp is available online at: <https://www.fisheries.noaa.gov/resource/document/biological-opinion-reinitiation-consultation-long-term-operation-central-valley>

(Figure 6), Ripon (Figure 7), and Vernalis (Figure 8). A compilation of Stanislaus River water temperatures and Goodwin releases for calendar year 2022 is provided in Figure 9.

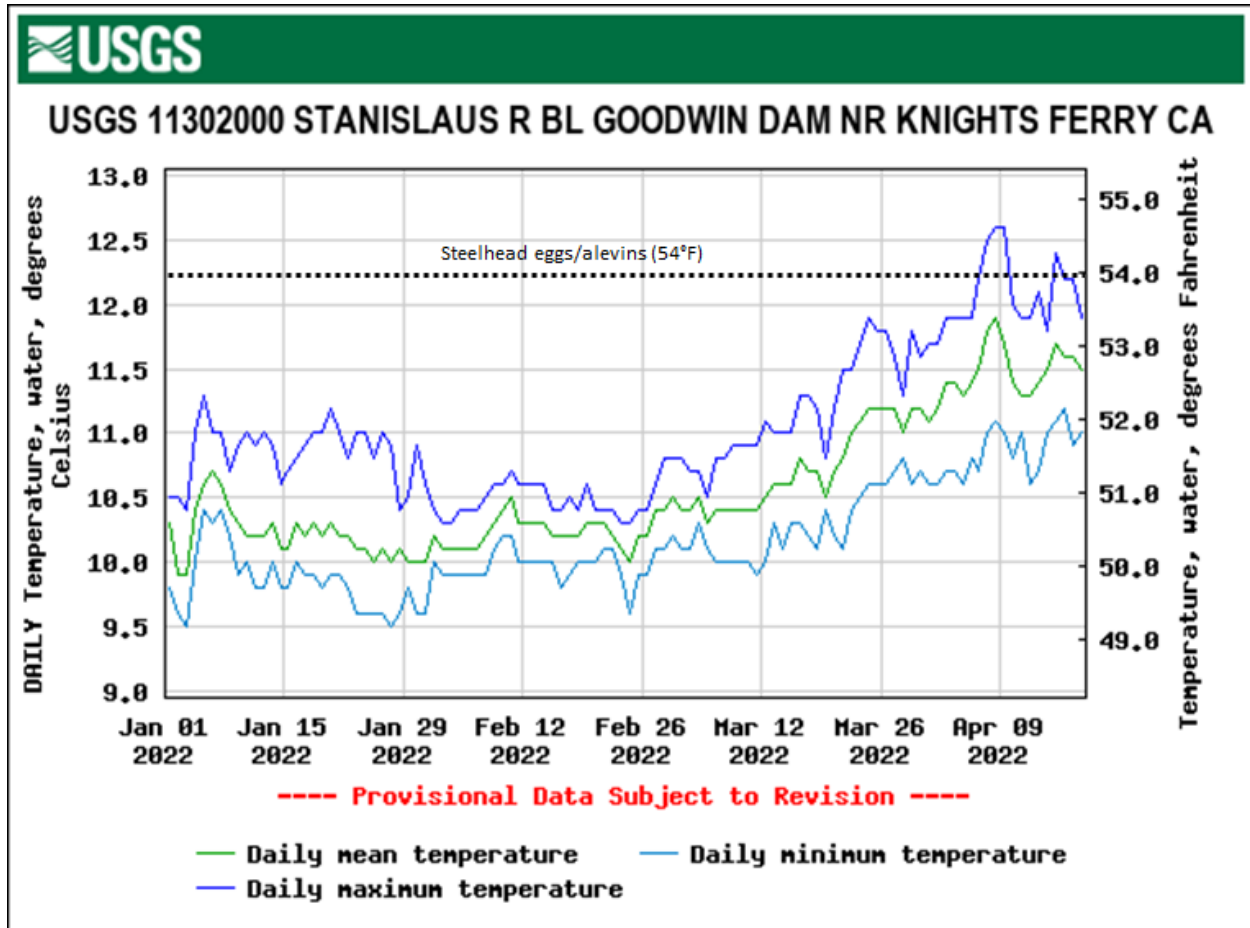


Figure 2. Daily water temperatures on the Stanislaus River upstream of Knights Ferry since January 1, 2022. Data from USGS gage 11302000 on NWIS; temperature threshold reference added by SWT.

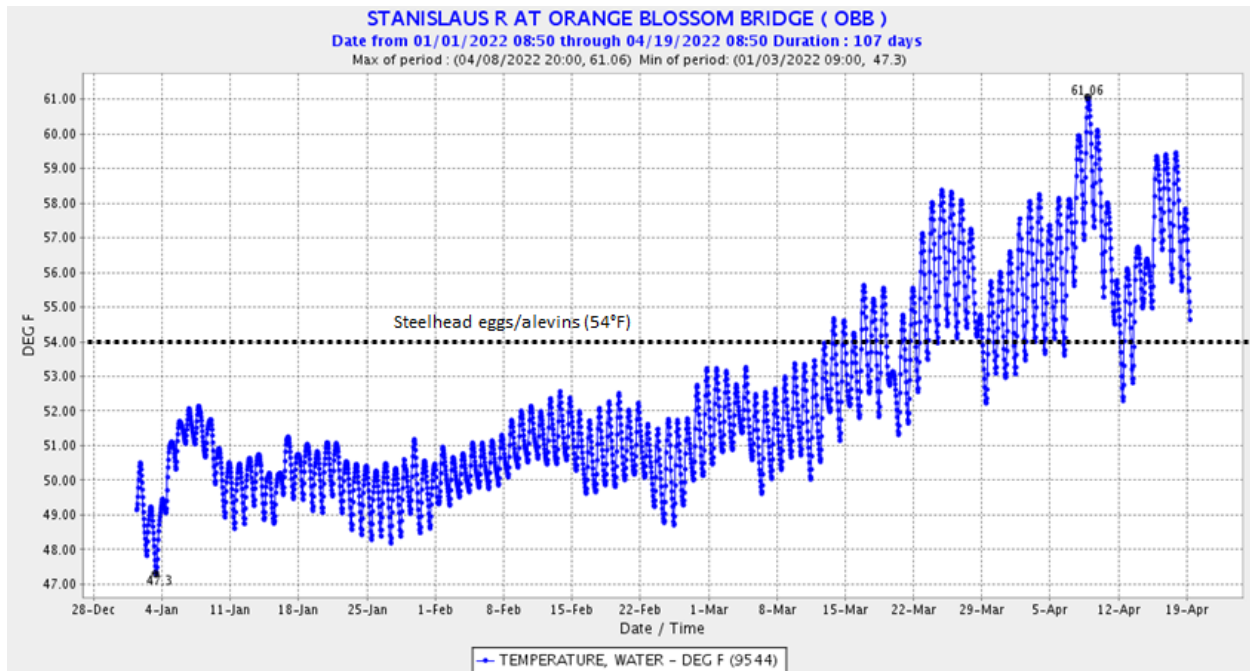


Figure 3. Stanislaus (hourly) water temperatures at Orange Blossom Bridge since January 1, 2022. Data from OBB station on CDEC; temperature threshold reference added by SWT.

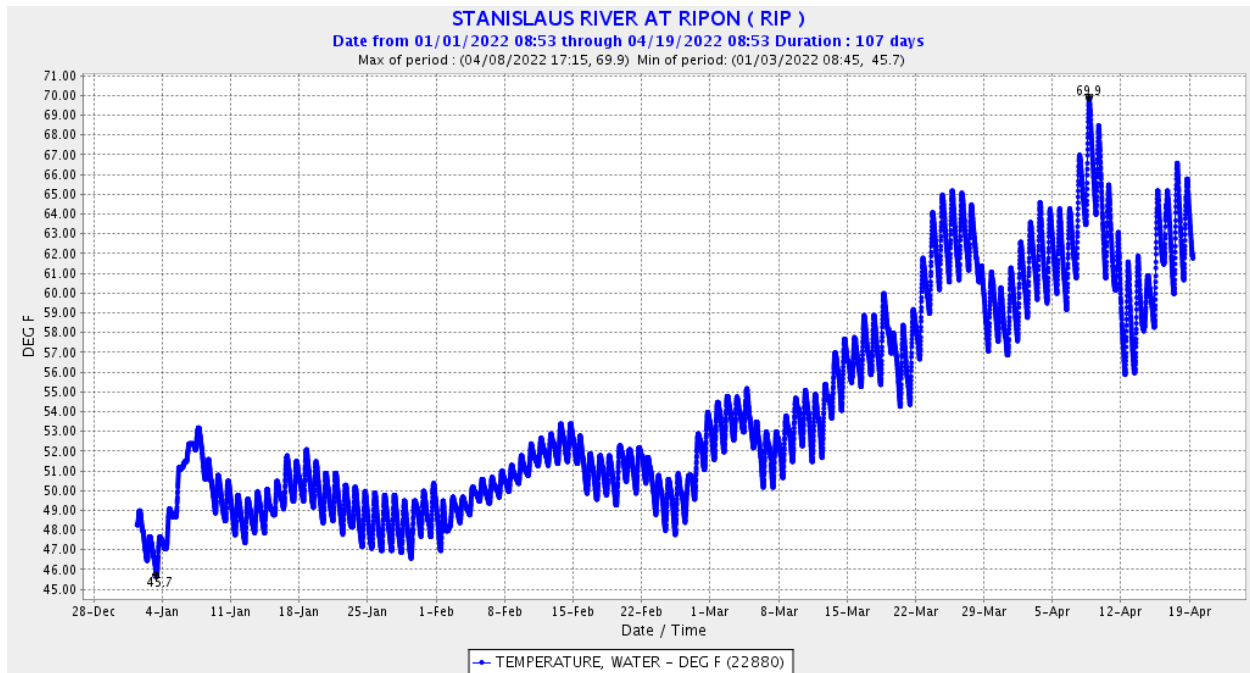


Figure 4. Stanislaus (15-minute) water temperatures at Ripon since January 1, 2021. Data from RIP station on CDEC.

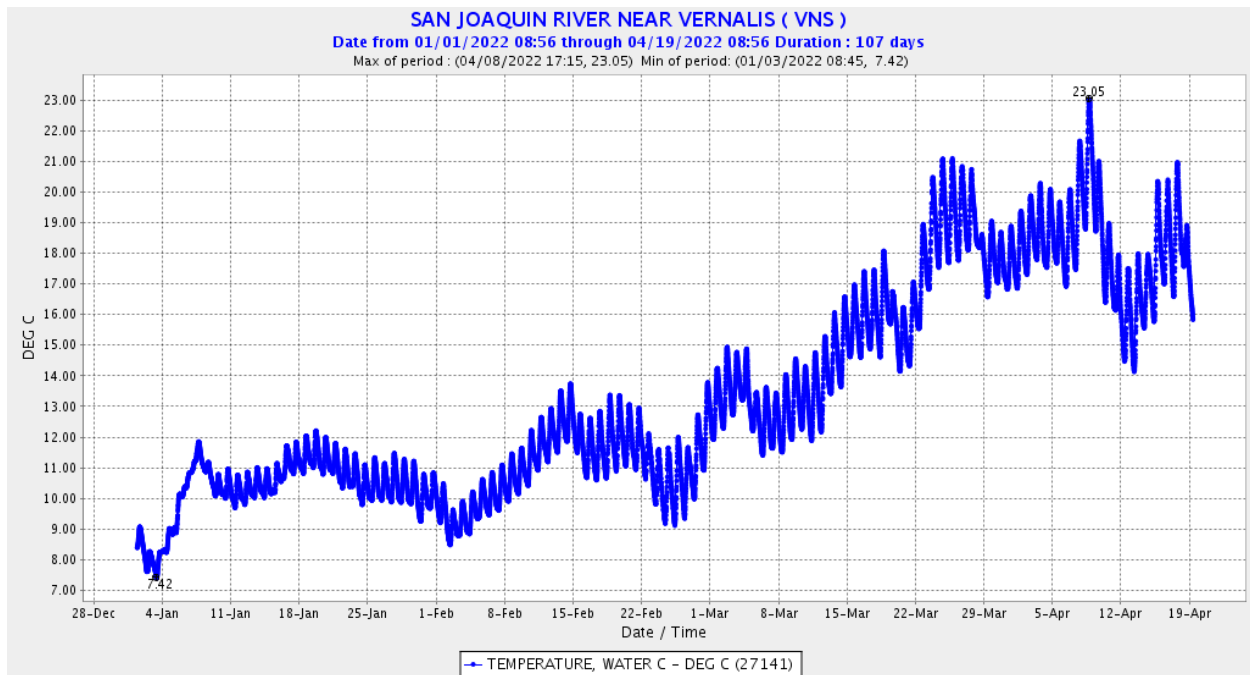


Figure 5. San Joaquin River (15-minute) water temperatures at Vernalis since January 1, 2021. Data from VNS station on CDEC; temperature threshold reference line added by SWT. Note that, unlike in the previous figures, temperature is reported in degrees Celsius. 8°C=46.4°F; 10°C=50°F; 12°C=53.6°F; 14°C=57.2°F; 16°C=60.8°F; 18°C=64.4°F; 20°C=68.0°F; 22°C=71.6°F; 24°C=75.2°F; 26°C=78.8°F; 28°C=82.4°F.

WY 2001-2022 OBB Stanislaus R at Orange Blossom Bridge
Daily Average Water Temperature (F)
Observed Range 46.00-64.12

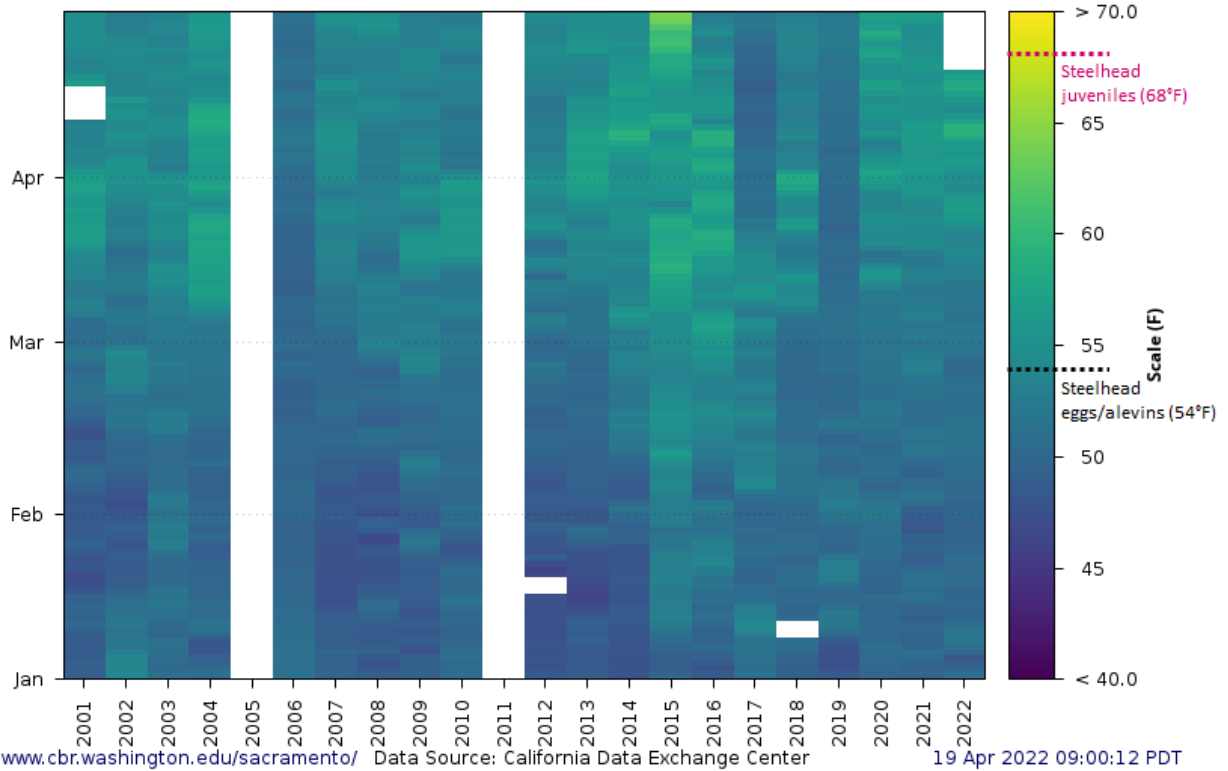


Figure 6. Stanislaus River water temperatures at Orange Blossom Bridge for January through April from WY 2001 to present. Data from SacPAS; temperature threshold reference lines added by SWT. http://www.cbr.washington.edu/sacramento/data/query_river_allyears.html

WY 2012-2022 RIP Stanislaus R at Ripon (USGS)
Daily Average Water Temperature (F)
Observed Range 43.04-71.88

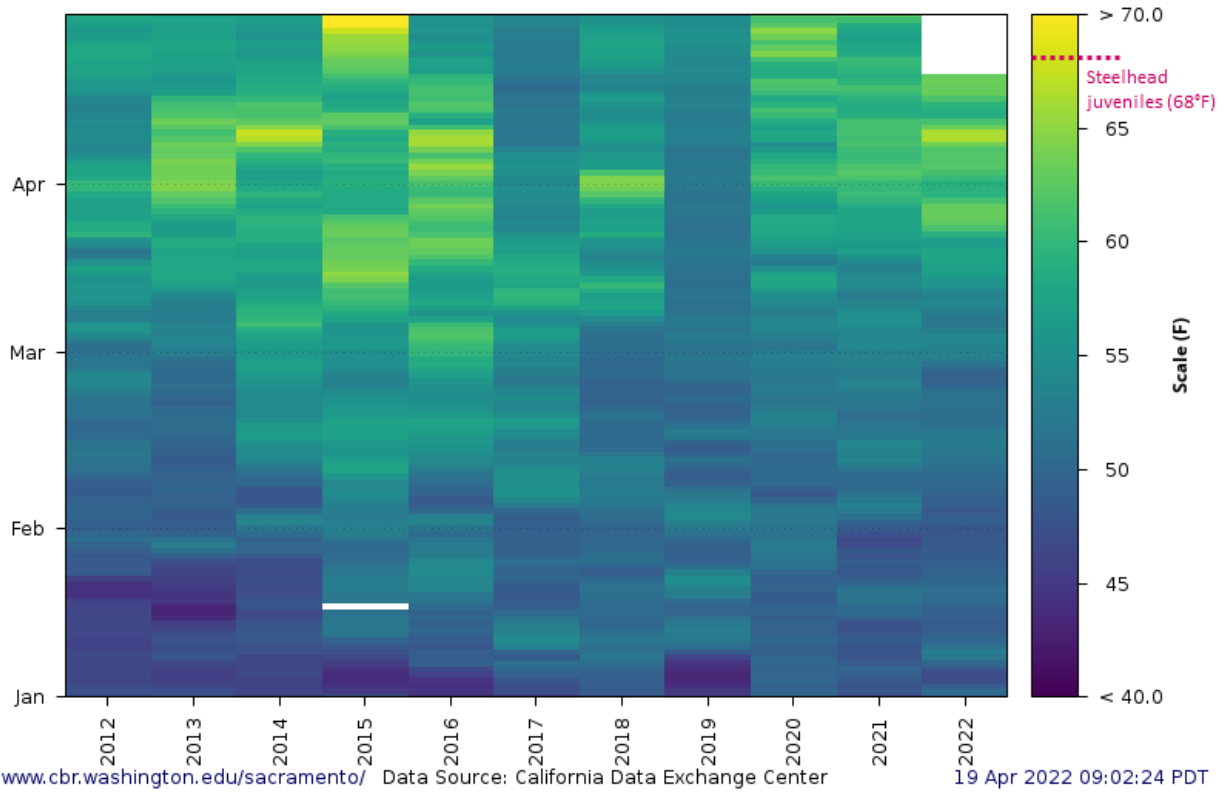


Figure 7. Stanislaus River water temperatures at Ripon for January through April from Water Year 2012 to present. Figure from SacPAS using RIP station data from CDEC; temperature threshold reference line added by SWT.

http://www.cbr.washington.edu/sacramento/data/query_river_allyears.html

WY 2015-2022 VNS San Joaquin R near Vernalis
Daily Average Water Temperature (F)
Observed Range 44.20-71.51

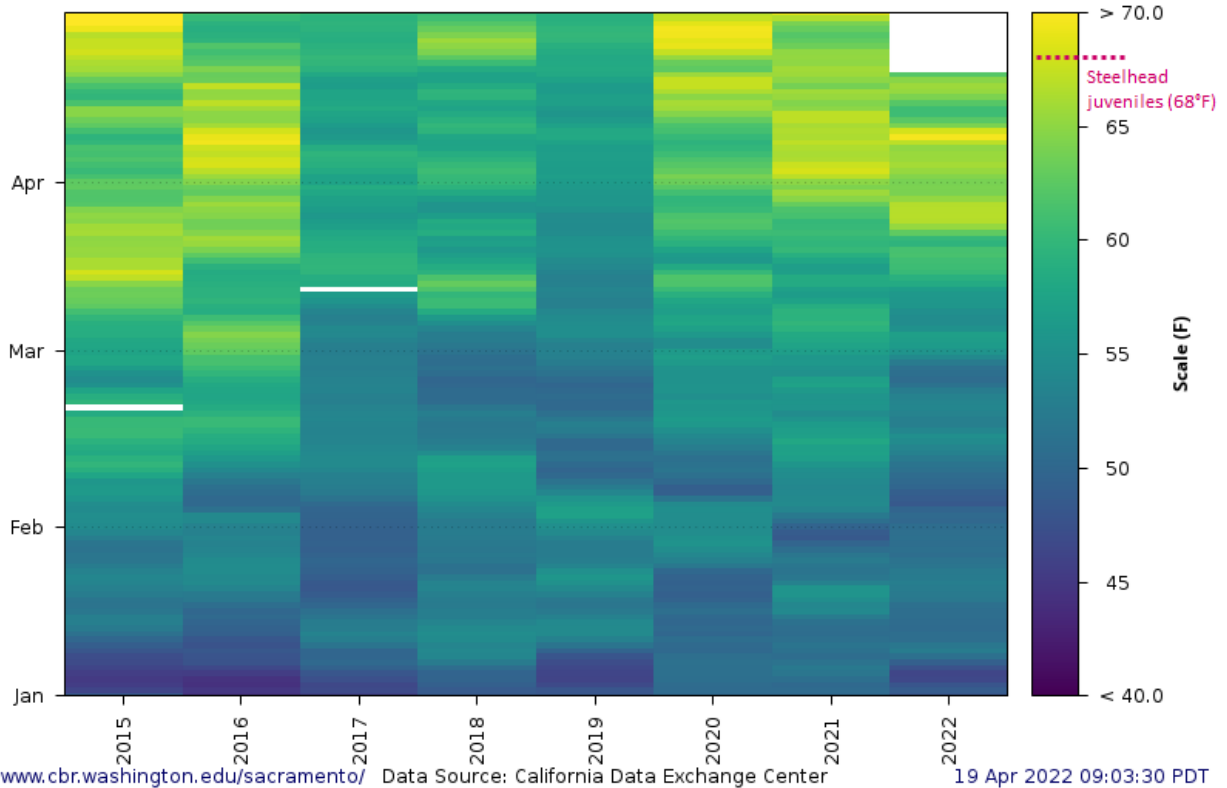
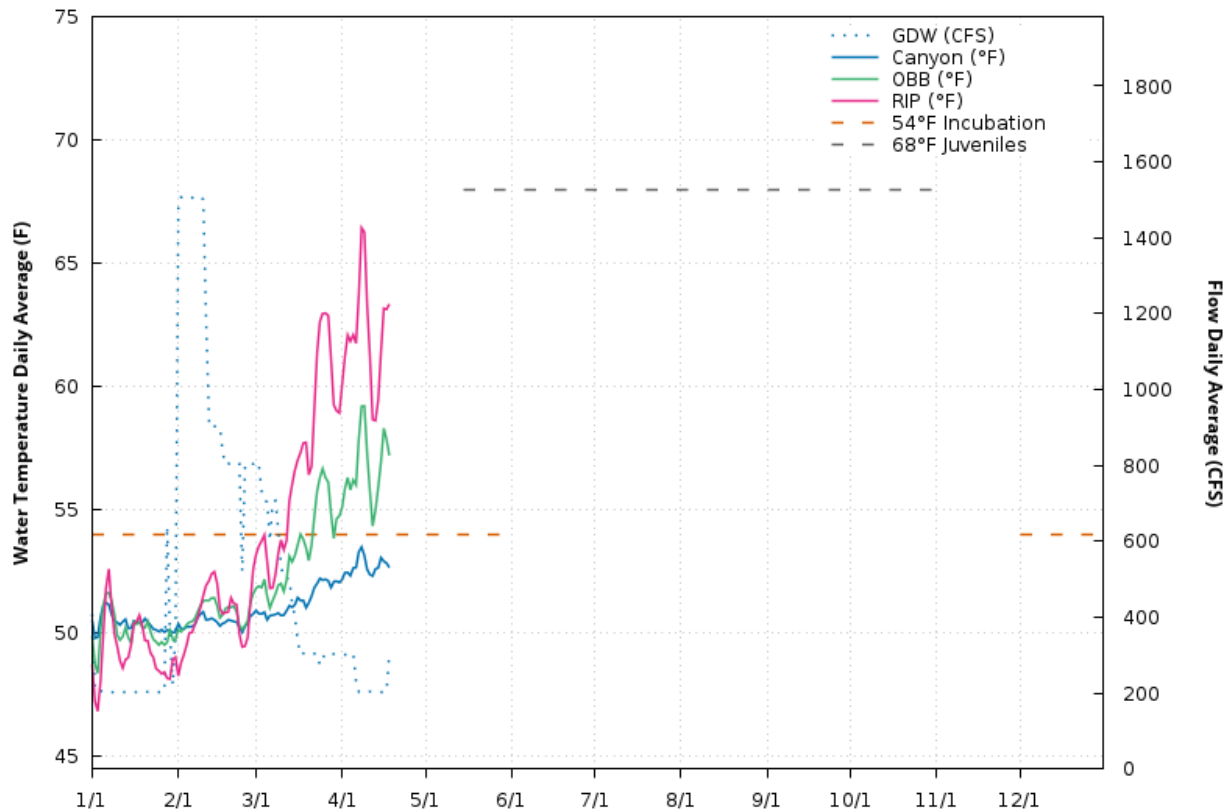


Figure 8. San Joaquin River water temperatures at Vernalis for January through April from Water Year 2015 to present. Figure from SacPAS using VNS station data from CDEC; temperature threshold reference line added by SWT.
http://www.cbr.washington.edu/sacramento/data/query_river_allyears.html

2022 Stanislaus River Flow and Temperature



www.cbr.washington.edu/sacramento/

19 Apr 2022 06:45:05 PDT

Figure 9. Stanislaus River flow and water temperatures from January 1, 2022 to present. Data (including temperature threshold reference lines) from SacPAS: http://www.cbr.washington.edu/sacramento/data/tc_stanislaus.html

Update on Fish Monitoring (Adults)

Weir

Fishbio installed the weir near Riverbank and began monitoring for upstream passage of adult salmonids on September 8, 2021. The weir monitoring season was extended past December to monitor *Oncorhynchus mykiss* passage. The cumulative net upstream passage of *O. mykiss* through April 14, 2022 is 42 *Oncorhynchus mykiss*. Of the 42 *O. mykiss* observed, 25 were greater than 16" (indicating possible anadromy) and 19 of the 42 were ad-clipped (indicating a hatchery origin). Of the 13 *O. mykiss* passing upstream since March 1, 2022, just one was greater than 16" and four were ad-clipped. Passage timing of the 25 *O. mykiss* greater than 16" is shown in Figure 10, based on data provided by Fishbio on April 15, 2022 in their "Stanislaus River Weir Update through 4/14/22".

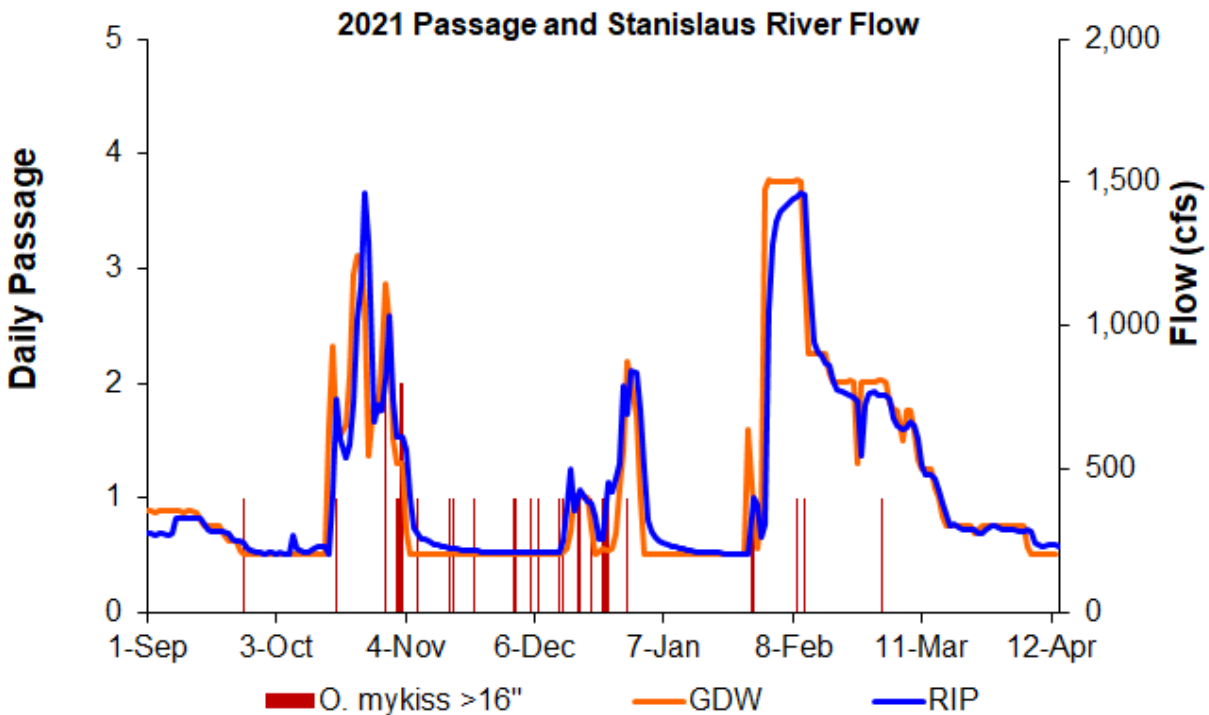


Figure 10. Daily passage of *O. mykiss* greater than 16" through April 14, 2022, at the Stanislaus River weir near Riverbank. Data courtesy of Fishbio.

Steelhead Redd Survey

CDFW to report out.

Update on Fish Monitoring (Juveniles)

Mossdale Trawl

Regular sampling at the Mossdale trawl resumed in January 2022. From January 1, 2022 through April 2, 2022, based on data reported at <https://www.baydeltalive.com/fish/djfmh-highlights>, salmonids caught in the trawl include:

- One *O. mykiss* smolt in mid-January (which, interestingly, was ad-clipped).
- Two fall-run-sized Chinook salmon yolk-sac-fry, both in early February.
- One ad-clipped Chinook salmon silvery parr in late February, and three ad-clipped Chinook smolts in late March – all were likely spring-run Chinook from releases associated with the San Joaquin River Restoration Program.
- One Chinook parr (fall-run-sized) and two Chinook silvery parr (spring-run-sized) in early April.

Rotary Screw Traps

Rotary screw trapping is conducted at Oakdale (by FISHBIO) and Caswell [by the Pacific States Marine Fisheries Commission (PSMFC)] for monitoring of outmigrating juvenile salmonids). For the 2021/2022 outmigration season, sampling began at Caswell on January 5, 2022 and at Oakdale on January 24, 2022.

Chinook catch at each location is summarized in Figure 11 (Oakdale) and Figure 12 (Caswell); fish lengths and life stages are provided in Figure 13 for the Chinook catch at Caswell. Through April 12, 2022, the trap at Caswell has captured a total of 716 unmarked Chinook salmon, zero *O. mykiss*, and 192 lamprey. More detailed information can be found at the Caswell RST CalFish webpage, which includes catch spreadsheets, annual reports, and other project information: <https://www.calfish.org/ProgramsData/ConservationandManagement/CentralValleyMonitoring/SacramentoValleyTributaryMonitoring/StanislausRiver-RSTMonitoring.aspx>

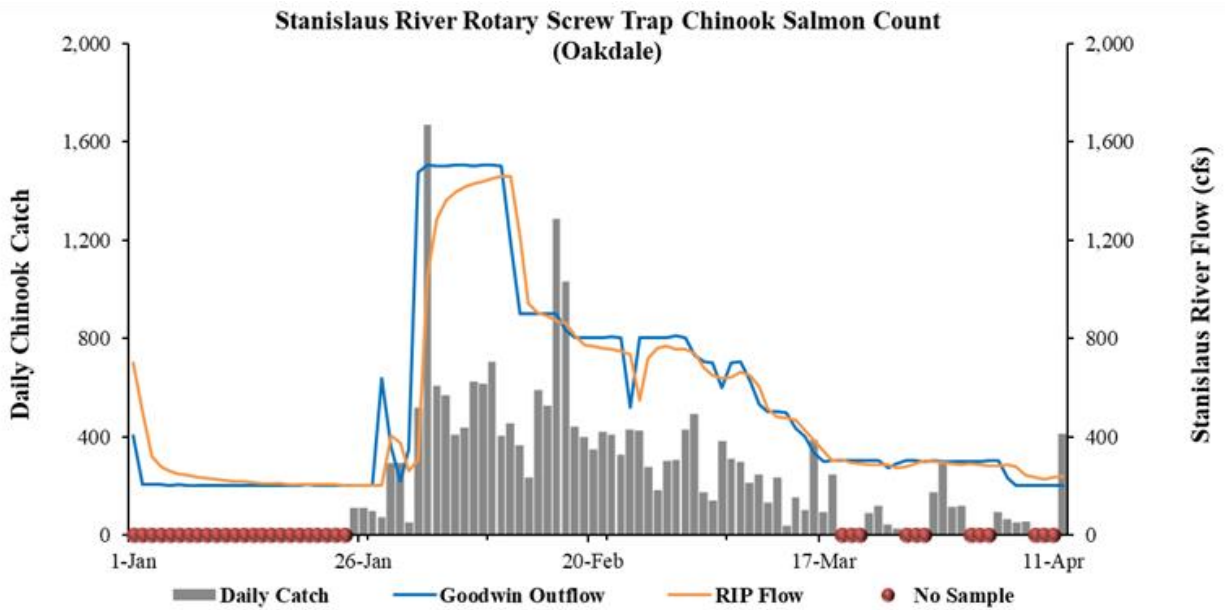


Figure 11. Daily juvenile Chinook catch through April 12, 2022, at the rotary screw trap near Oakdale. Figure courtesy of Fishbio.

Stanislaus River at Caswell Memorial State Park (RSTs):

Daily catch of unmarked Chinook Salmon and daily average discharge at Ripon during the 2022 Stanislaus River rotary screw trap survey season.

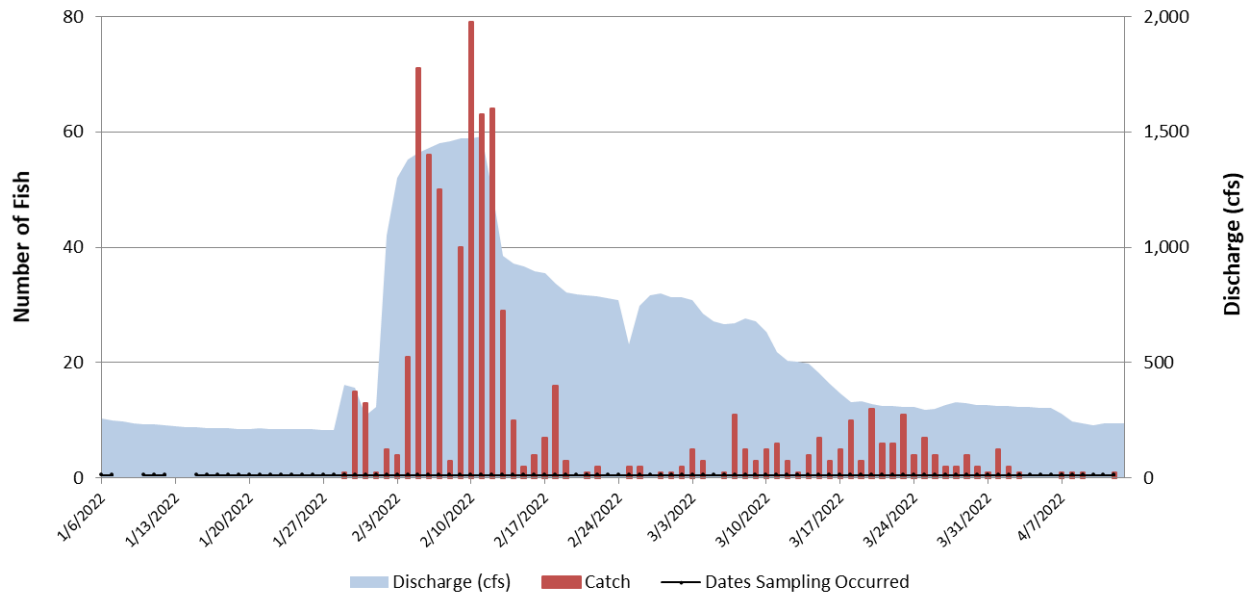


Figure 12. Daily juvenile Chinook catch through April 12, 2022, at the rotary screw trap near Caswell State Park. Discharge data is at Ripon. Figure courtesy of Pacific States Marine Fisheries Commission.

Stanislaus River at Caswell Memorial State Park (RSTs):

Daily fork length distribution by life stage of unmarked Chinook Salmon measured during the 2022 Stanislaus River rotary screw trap survey season.

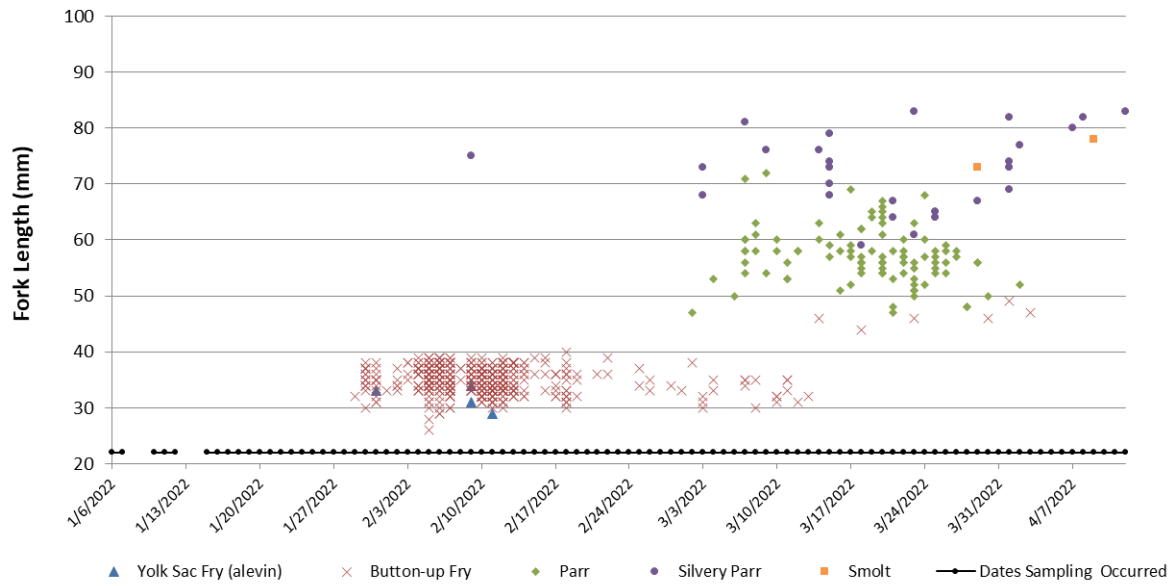


Figure 13. Daily juvenile Chinook catch (plotted by fork length and life stage) through April 12, 2022, at the rotary screw trap near Caswell State Park. Figure courtesy of Pacific States Marine Fisheries Commission.

Considerations for Alternatives to the Timing and Shaping of the Default Daily Hydrograph in the SRP

The SWT may review any considerations deemed relevant when discussing input on the timing and shaping of flows in the default daily hydrograph of the SRP. As a starting point for discussion, and an example of how the SWT might document the considerations reviewed, provided below are tables of considerations reviewed by the Stanislaus Operations Group (SOG) regarding reshaping of required minimum flows in Appendix 2-E under the 2009 Biological Opinion. The considerations in Table 2-1 are relevant for the fall pulse flow period while the considerations in Table 2-2 and Table 2-3 are relevant for the spring pulse flow period.

Table 2-1. Examples of considerations for flow shaping alternatives for the fall pulse flow period. Excerpted from the 9/26/18 SOG Advice (full advice in Appendix A of the WY 2019 SOG Annual Report), with an update on Tri-dam operations added in April 2022.

Driver	Location	Lifestage	Notes
Agriculture	lower tributary	N/A	The NMFS Appendix 2-E flow schedule does, in some months in some yeartypes, require flows above 1500 cfs. Because of seepage concerns, NMFS limited the duration of those flows to no more than 10 consecutive days. When the default Appendix 2-E flow schedule for a pulse event does not exceed 1500 cfs, NMFS will not require that a reshaped flow exceed 1500 cfs.
D.O.	Vernalis	Adult	The combined pulse should, ideally, provide sufficient flow to achieve a D.O. of at least 7ppm in the deepwater ship channel.
Migration Window	Vernalis	Adult	Provide temperature/D.O. suitable for upmigration for at least several weeks.
Monitoring	Riverbank	N/A	Weir operation is impacted when flows exceed 1500 cfs, or last for more than a few days at 1500 cfs.

Tips for SRP Implementation – January 2021

Driver	Location	Lifestage	Notes
Redd Scour/Stranding	Tributary/ spawning area	redd/eggs/fry	The main pulse should occur before a significant number of the season's redds are created. Historically, peak spawning occurs mid-November.
Redd Stranding	Tributary/spawning area	redd/eggs/fry	The pulse should avoid sustained flows that would encourage redd construction in areas that will be dewatered during post-attraction-pulse flows.
Temperature	Vernalis	Adult	Pulse should be late enough to provide cool enough temperatures for upmigrants through the San Joaquin to avoid egg mortality within migrating adults.
Temperature	Tributary/spawning area	Adult	Pulse should be shaped and timed to provide and maintain instream temperatures sufficient to avoid egg mortality for returning adults.
Preferred rafting flows	Goodwin Canyon to Knights Ferry	N/A	Preferred flows for rafting are 800-1300 cfs and 1700-2,500 cfs between 10am and 4pm on weekend days. Ideally would have similar flows on Friday so the rafting guides can do a test run (but Friday flows less important than weekend flows). Mid-September through mid-October ideal; late October okay.
Coordination with other San Joaquin River tributaries	San Joaquin basin	Adult	USFWS facilitates coordination of basin-wide fall pulse flow scheduling in the Merced River, Tuolumne River, Stanislaus River, and Mokelumne River and shares information with SOG.

Tips for SRP Implementation – January 2021

Driver	Location	Lifestage	Notes
1987 CDFW- USBR Agreement	Goodwin releases	Adult/redd/ eggs/fry	Check-in with CDFW and Reclamation regarding any flow request per the 1987 CDFW-USBR Agreement.
CDFW carcass survey schedule	Goodwin Canyon	N/A	A preference for flows not to exceed 450 cfs on Mondays when carcass survey crews will be working in Goodwin Canyon.
Restoration Projects	Stanislaus River	N/A	Check-in on any flow considerations for in-water work associated with any restoration projects.
SalmonCam at the Stan Salmon Festival	Knights Ferry	N/A	If possible, keep flows <300 cfs on the day of the festival (second Saturday in November) to allow installation of the SalmonCam.
Tri-dam operations	Tulloch Dam	N/A	From Tri-Dam: “We can handle flows through our generating units from a minimum of 200 cfs to a maximum of 2,500 cfs, and those changes can be made 24/7 from our operations center. If it is more than 2,500 cfs, we can make changes of an additional 700 cfs through the Howell bumper valve, and that can also be done 24/7 from our operations center. Anything above that has to go through our spill gates, and those have to be operated locally by a field operator, and they work Monday through Friday, from 7 a.m. to 4:30 p.m.”

Table 2-2. Examples of considerations for flow shaping alternatives for the spring pulse flow period. SOG did not include an explicit table of considerations in SOG advice documents for the spring pulse flow; the table below was generated based on input from SOG participants with an update on Tri-dam operations added in April 2022.

Driver	Location	Lifestage	Notes
Agriculture	lower tributary	N/A	The NMFS Appendix 2-E flow schedule does, in some months in some yeartypes, require flows above 1500 cfs. Because of seepage concerns, NMFS limited the duration of those flows to no more than 10 consecutive days. When the default Appendix 2-E flow schedule for a pulse event does not exceed 1500 cfs, NMFS will not require that a reshaped flow exceed 1500 cfs.
D.O.	Vernalis	Juveniles	The combined pulse should, ideally, provide sufficient flow to achieve a D.O. of at least 7ppm in the deepwater ship channel.
Migration Window	Vernalis	Juveniles	Provide temperature/D.O. suitable for outmigration
Temperature	Vernalis	Juveniles	Pulse should consider support for suitable water temperatures in the mainstem San Joaquin River for outmigrating fish.
Temperature	Tributary	Juveniles	Pulse should consider support for suitable water temperatures in the Stanislaus River for outmigrating fish.
Coordination with other San Joaquin River tributaries	San Joaquin basin	Juveniles	USFWS facilitates coordination of basin-wide spring pulse flow scheduling in the Merced River, Tuolumne River, Stanislaus River,

Tips for SRP Implementation – January 2021

Driver	Location	Lifestage	Notes
			and Mokelumne River and shares information with SOG.
D-1641 flow requirements at Vernalis	Vernalis	N/A	Consider volume and timing needed for compliance with D-1641 flow requirements at Vernalis
1987 CDFW-USBR Agreement	Goodwin releases	Juveniles	Check-in with CDFW and Reclamation regarding any flow request per the 1987 CDFW-USBR Agreement.
Restoration Projects	Stanislaus River	N/A	Check-in on any flow considerations for in-water work associated with construction or monitoring at any restoration project sites.
Tri-dam operations	Tulloch Dam	N/A	From Tri-Dam: “We can handle flows through our generating units from a minimum of 200 cfs to a maximum of 2,500 cfs, and those changes can be made 24/7 from our operations center. If it is more than 2,500 cfs, we can make changes of an additional 700 cfs through the Howell bumper valve, and that can also be done 24/7 from our operations center. Anything above that has to go through our spill gates, and those have to be operated locally by a field operator, and they work Monday through Friday, from 7 a.m. to 4:30 p.m.”

Table 2-3. Examples of considerations for flow shaping of flood management releases (if feasible without risk to human health and safety) for the spring pulse flow period; likely most relevant in years with wetter hydrology. Excerpted verbatim from the 4/28/17 SOG Advice (full advice in Appendix C of the WY 2017 SOG Annual Report).

As of 4/28/17, flows at Vernalis remain above the flood monitor stage of 24.5 feet and releases from New Melones have increased for storage management. **SOG defers to Reclamation to manage Stanislaus flows within all flood management constraints** even if that (as expected) precludes implementation of the reshaped spring pulse flow described in Section III.

If feasible without risk to human health and safety, SOG recommends the following elements to achieve fish-related objectives within flood management constraints

Element	Benefits	Example
Introduce variability into the flow schedule	Cue for fish outmigration	A 500cfs-1000cfs variation scheduled over a day's time will introduce flow variability in the Stanislaus River but the increased flow will likely be attenuated by the time it reaches Vernalis.
Introduce variability into the flow schedule multiple times April-June	Support life history diversity in outmigration timing	Implement some flow variability every one or two weeks.
Introduce high flows	Inundation of additional shallow water habitat which can provide rearing habitat and increase allochthonous input to river Move sediment Provide 'conveyance flow' for outmigrating salmonids that might increase migration speed and reduce predation risk Buffer maximum water temperatures	Increase Goodwin releases, if possible, to the peak daily flow in the default 2-E Above Normal (3,000 cfs) or Wet (5,000 cfs) schedules.

Tips for SRP Implementation – January 2021

Element	Benefits	Example
Manage storage to allow at least 30 days of <500 cfs flow during summer	Would allow planned restoration work to proceed	Release higher flows in the spring to allow lower flows in the summer.