

TUOLUMNE RIVER TECHNICAL ADVISORY COMMITTEE
DON PEDRO PROJECT - FERC LICENSE 2299

MODESTO IRRIGATION DISTRICT
TURLOCK IRRIGATION DISTRICT
CITY & COUNTY OF SAN FRANCISCO
CALIFORNIA DEPARTMENT OF FISH & GAME
U. S. FISH & WILDLIFE SERVICE



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TECHNICAL ADVISORY COMMITTEE MEETING

23 March 2017 at 9:30 AM

Turlock Irrigation District, Room 152

Summary

1. INTRODUCTION AND ANNOUNCEMENTS

- Participants made self introductions.

2. ADMINISTRATIVE ITEMS:

- Review/Revise agenda – No changes.
- Approve notes from December meeting – No changes were identified. However, it should be noted that thermographs are not retrievable under current flow conditions.
- Items since last meeting – A handout list posted at <http://tuolumnerivertac.com/> was reviewed.
- The weir, rotary screw trap and seine reports have been submitted to Wayne Swaney for addition into the 2016 Annual Report to FERC. However, several of the reports require additional internal review prior to submission. No delay past the submittal date is expected.

3. MONITORING/REPORTS: (*Handouts were reviewed*)

- Fall run information – As of today's date, 3531 Chinook have migrated upstream past the counting weir, as compared to 422 at this same time last year. No *O. mykiss* passages were recorded this season. The weir was removed on January 3, 2017 due to high flows.
- Ongoing monitoring – seine crews continue to operate every other Tuesday, fry have been captured at all seine locations including those on the San Joaquin this season. The rotary screw trap (RST) at Waterford was installed January 13th, and the RST at Grayson was installed January 22. However, both traps were removed mid-February for two weeks due to high flows. Since then, 500 to 2000 hatchery fry have been marked and released weekly for RST efficiency studies. Redd surveys were conducted in the fall but ceased January 1, 2017 due to high flows.
- Summer Monitoring – Thermographs will be downloaded as soon as flows allow. RST and seine surveys will be conducted through early summer as allowed. Snorkel surveys will be conducted as regularly scheduled unless flows are prohibitive.
- A discussion was led by Noah regarding potential for spring monitoring. Flood plain temperature, flow and stranding were all discussed. Noah and Andrea offer common staffing. Ramping rates related to ramping down from flood flows and potential stranding were discussed. A review of the Stranding Reports is planned by Noah and Patrick.

4. **FLOW OPERATIONS:**

- Flood releases began January 2, 2017. Flood flows will likely continue through summer due to excessive precipitation and snow pack in the drainage and the fact that Don Pedro remains above flood control level. Zach Jackson of USFWS has vacated his position as the lead agency person involved in negotiating the Tuolumne River Flow Schedule. Subsequently, TID has scheduled a meeting with the new lead agency person, Gretchen Murphy (CDFW) and the Flow Group (Laura Heironimus-USFWS, Monica Gutierrez-NOAA, J.D. Wilkert-USFWS, Craig Anderson-USFWS, and Tim Heyne-CDFW) in order to get all the involved parties on the same page with regard to calculation of the flow schedule. The meeting will be hosted by Patrick Maloney-TID, Wes Monier-TID, Jason Carkeet-TID and Noah Hume-SWS, and will be held Wednesday April 5, 2017 at 2PM in room 152 of TID's Main Office.

5. **AGENCY/NGO UPDATES**

- Gretchen Murphy (CDFW) has assumed the position of lead agency negotiator with regard to Lower Tuolumne River Flow Schedules.

6. **ADDITIONAL ITEMS**

- None

7. **NEXT MEETING DATES – JUNE 8, SEPTEMBER 7, DECEMBER 14, 2017.**

TRTAC Meeting Attendees

<u>Name</u>	<u>Organization</u>
1. Patrick Maloney	TID
2. Noah Hume	Stillwater Sciences
3. Wayne Swaney	Stillwater Sciences (by phone)
4. Jason Guignard	Fishbio (by phone)

2017 Tuolumne River Seine Data

Date	LGN	MOD	VNS	Combined Exports	Seine Day	Min (mm)	Avg (mm)	Max (mm)	Catch #
16-Jan	8610	7880	16888	12975	5	30	34	40	12
1-Feb	8710	8610	19392	14249	5	35	37	44	9
15-Feb	10400	10100	34221	14130	5	33	41	50	9
7-Mar	10700	10600	31754	5228	5	36	41	47	5
23-Mar	10800	9950	28467	3748	5	37	48	60	12
3-Apr	10400	10200	25250	3747	5	38	64	80	10
17-Apr	10400	10400	24192	6697	5	38	56	80	6

2017 Tuolumne River Weir Did Not Fish This Quarter

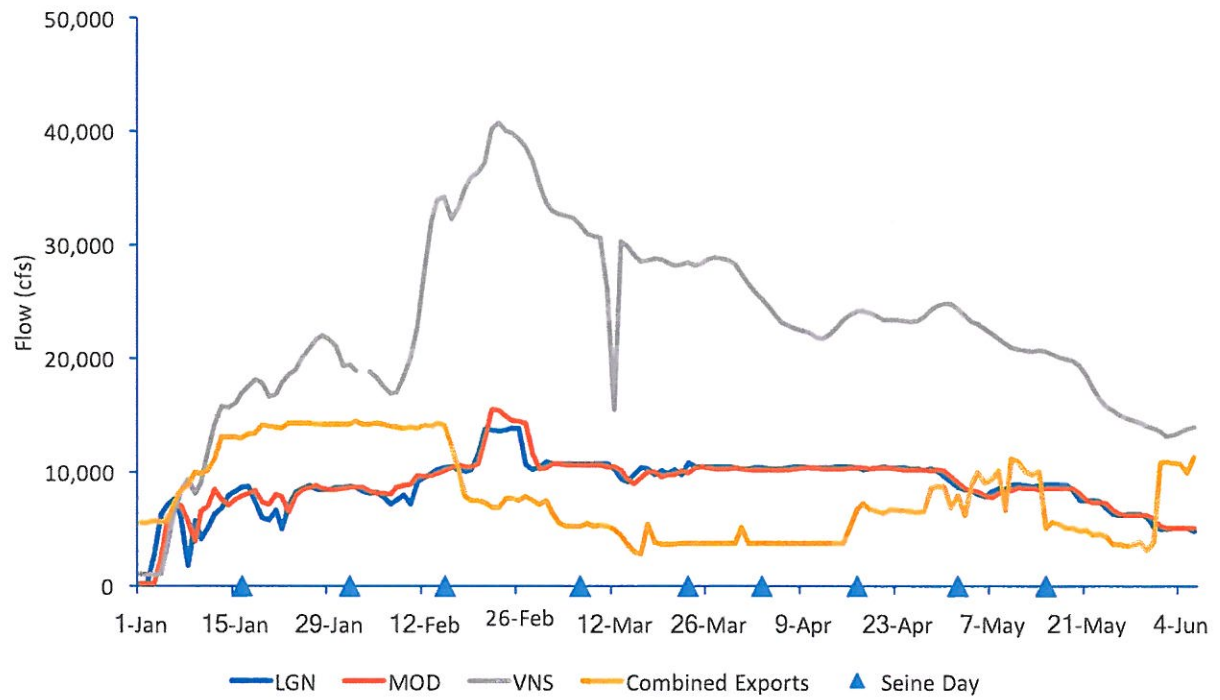


Figure 3. River flows and Delta exports during 2017 Tuolumne River seine surveys.

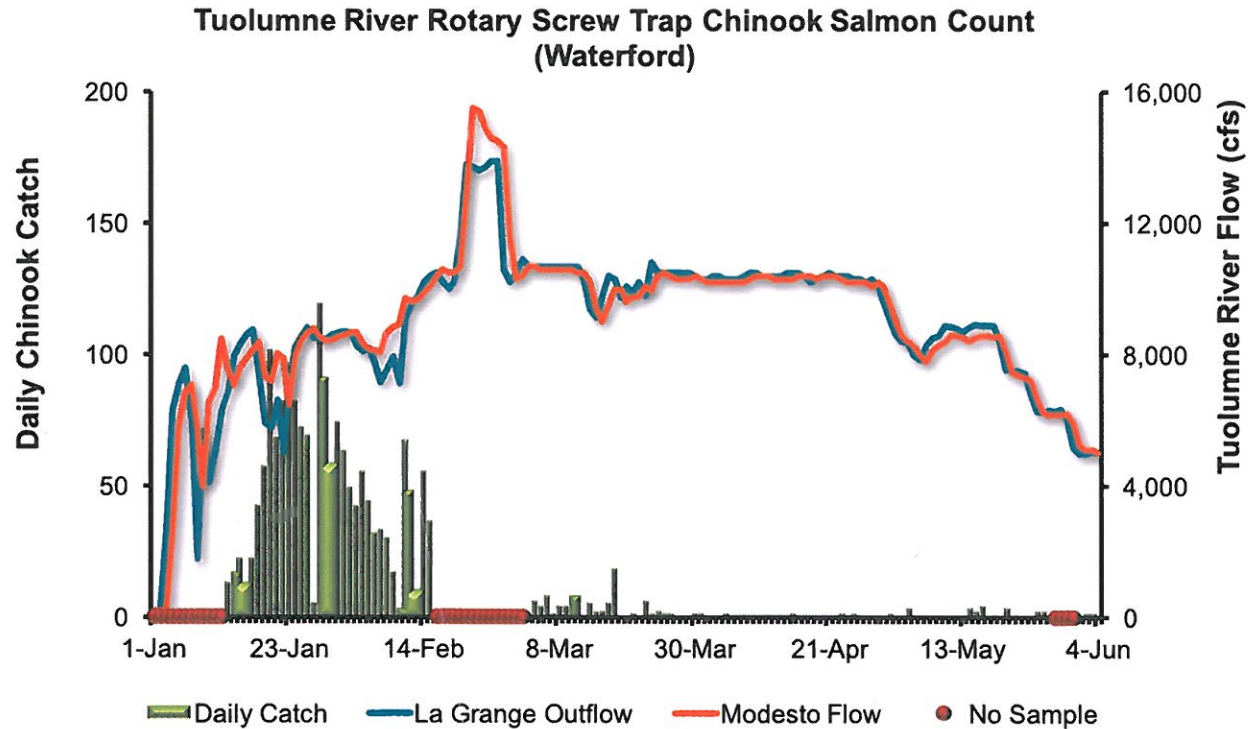


Figure 1. 2017 daily Chinook salmon catch at Waterford and Tuolumne River flow at La Grange. Total catch through June 6, 2017 = 1,892.

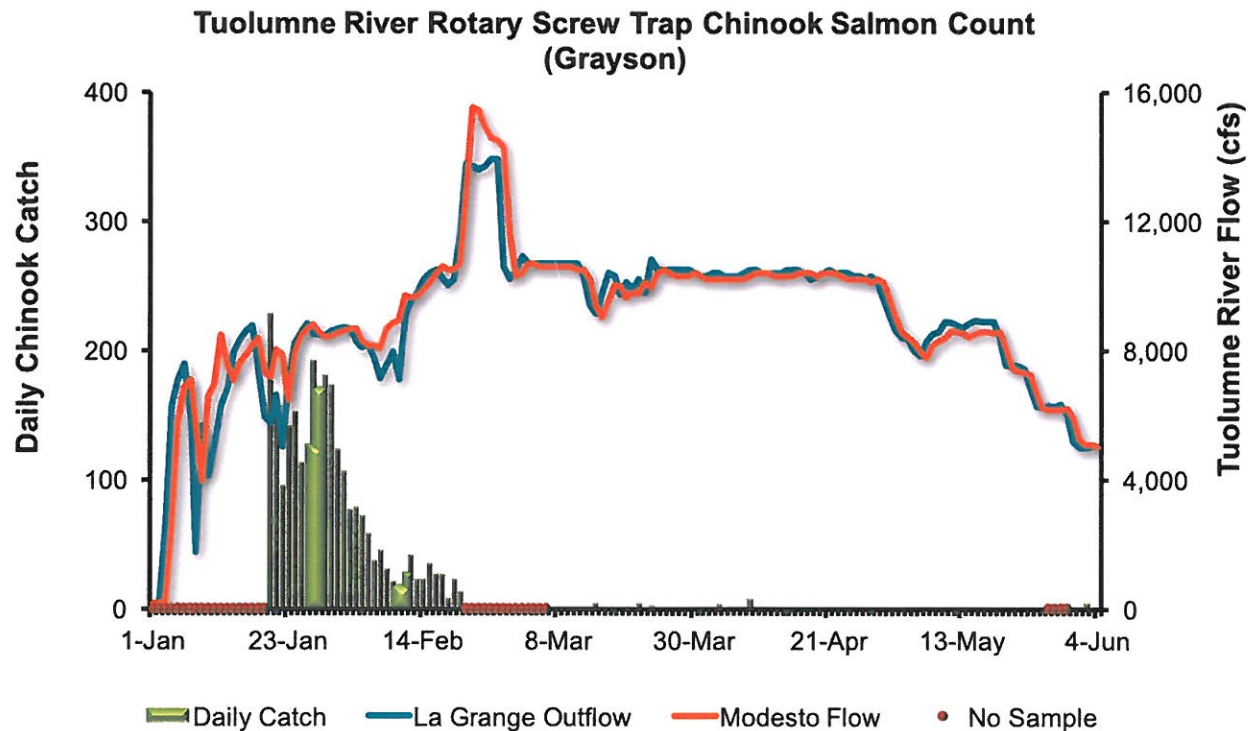


Figure 2 . 2017 daily Chinook salmon catch at Waterford and Tuolumne River flow at Modesto. Total catch through June 6, 2017 = 2,779.

Tuolumne River Flow Schedule
Based on DWR Preliminary Values, 60-20-20 Index for 2017, Hydrologic Conditions
Schedule For 2017-2018 Fish Flow Year

DATE		Number of DAYS	BASE FLOW 1			PULSE FLOW 2			INTERPOLATION FLOW			Other Adjusted Flow			TOTAL FERC FLOW		Agreed Upon
From:	To:		CFS	AF	ACCUM. A.F.	CFS	AF	ACCUM. A.F.	CFS	AF	ACCUM. A.F.	CFS	AF	ACCUM. A.F.	CFS	ACCUM. A.F.	
15-Apr-2017	27-Apr-2017	13	300	7,736	7,736	0	0	0	0	0	0	0	0	0	300	7,736	1
28-Apr-2017	28-Apr-2017	1	300	595	8,331	310	615	615	0	0	0	0	0	0	610	8,946	1
29-Apr-2017	29-Apr-2017	1	300	595	8,926	810	1,606	2,221	0	0	0	0	0	0	1,110	11,146	1
30-Apr-2017	30-Apr-2017	1	300	595	9,521	2,392	4,745	6,966	0	0	0	0	0	0	2,692	16,487	1
01-May-2017	01-May-2017	1	300	595	10,116	1,590	3,154	10,120	0	0	0	0	0	0	1,890	20,236	1
02-May-2017	02-May-2017	1	300	595	10,711	1,055	2,092	12,212	0	0	0	0	0	0	1,355	22,923	1
03-May-2017	03-May-2017	1	300	595	11,306	591	1,172	13,384	0	0	0	0	0	0	891	24,690	1
04-May-2017	04-May-2017	1	300	595	11,901	345	684	14,068	0	0	0	0	0	0	645	25,969	1
05-May-2017	05-May-2017	1	300	595	12,496	339	672	14,740	0	0	0	0	0	0	639	27,236	1
06-May-2017	06-May-2017	1	300	595	13,091	342	678	15,418	0	0	0	0	0	0	642	28,509	1
07-May-2017	07-May-2017	1	300	595	13,686	1,384	2,744	18,162	0	0	0	0	0	0	1,684	31,848	1
08-May-2017	08-May-2017	1	300	595	14,281	1,051	2,084	20,247	0	0	0	0	0	0	1,351	34,528	1
09-May-2017	09-May-2017	1	300	595	14,876	570	1,130	21,376	0	0	0	0	0	0	870	36,252	1
10-May-2017	10-May-2017	1	300	595	15,471	539	1,069	22,445	0	0	0	0	0	0	839	37,916	1
11-May-2017	11-May-2017	1	300	595	16,066	357	709	23,154	0	0	0	0	0	0	657	39,220	1
12-May-2017	12-May-2017	1	300	595	16,661	1,220	2,420	25,574	0	0	0	0	0	0	1,520	42,235	1
13-May-2017	13-May-2017	1	300	595	17,256	2,993	5,937	31,511	0	0	0	0	0	0	3,293	48,767	1
14-May-2017	14-May-2017	1	300	595	17,851	1,782	3,536	35,047	0	0	0	0	0	0	2,082	52,898	1
15-May-2017	15-May-2017	1	300	595	18,446	1,070	2,121	37,168	0	0	0	0	0	0	1,370	55,614	1
16-May-2017	16-May-2017	1	300	595	19,041	849	1,684	38,852	0	0	0	0	0	0	1,149	57,894	1
17-May-2017	17-May-2017	1	300	595	19,636	557	1,106	39,958	0	0	0	0	0	0	857	59,595	1
18-May-2017	18-May-2017	1	300	595	20,231	539	1,069	41,027	0	0	0	0	0	0	839	61,258	1
19-May-2017	19-May-2017	1	300	595	20,826	544	1,079	42,106	0	0	0	0	0	0	844	62,932	1
20-May-2017	20-May-2017	1	300	595	21,421	1,039	2,061	44,167	0	0	0	0	0	0	1,339	65,588	1
21-May-2017	21-May-2017	1	300	595	22,017	1,999	3,964	48,131	0	0	0	0	0	0	2,299	70,147	1
22-May-2017	22-May-2017	1	300	595	22,612	1,306	2,590	50,721	0	0	0	0	0	0	1,606	73,332	1
23-May-2017	23-May-2017	1	300	595	23,207	856	1,698	52,418	0	0	0	0	0	0	1,156	75,625	1
24-May-2017	24-May-2017	1	300	595	23,802	411	816	53,234	0	0	0	0	0	0	711	77,036	1
25-May-2017	25-May-2017	1	300	595	24,397	293	581	53,815	0	0	0	0	0	0	593	78,212	1
26-May-2017	26-May-2017	1	300	595	24,992	385	763	54,578	0	0	0	0	0	0	685	79,570	1
27-May-2017	27-May-2017	1	300	595	25,587	389	771	55,349	0	0	0	0	0	0	689	80,936	1
28-May-2017	28-May-2017	1	300	595	26,182	532	1,056	56,405	0	0	0	0	0	0	832	82,587	1
29-May-2017	29-May-2017	1	300	595	26,777	1,013	2,009	58,414	0	0	0	0	0	0	1,313	85,191	1
30-May-2017	30-May-2017	1	300	595	27,372	1,528	3,031	61,446	0	0	0	0	0	0	1,828	88,818	1
31-May-2017	31-May-2017	1	300	595	27,967	1,395	2,767	64,213	0	0	0	0	0	0	1,695	92,180	1
01-Jun-2017	01-Jun-2017	1	250	496	28,463	1,259	2,498	66,711	0	0	0	0	0	0	1,509	95,173	1
02-Jun-2017	02-Jun-2017	1	250	496	28,959	1,137	2,256	68,966	0	0	0	0	0	0	1,387	97,925	1
03-Jun-2017	03-Jun-2017	1	250	496	29,455	1,027	2,038	71,004	0	0	0	0	0	0	1,277	100,459	1
04-Jun-2017	04-Jun-2017	1	250	496	29,950	929	1,842	72,846	0	0	0	0	0	0	1,179	102,797	1
05-Jun-2017	05-Jun-2017	1	250	496	30,446	840	1,665	74,511	0	0	0	0	0	0	1,090	104,958	1
06-Jun-2017	06-Jun-2017	1	250	496	30,942	760	1,506	76,018	0	0	0	0	0	0	1,010	106,960	1
07-Jun-2017	07-Jun-2017	1	250	496	31,438	687	1,364	77,381	0	0	0	0	0	0	937	108,819	1
08-Jun-2017	08-Jun-2017	1	250	496	31,934	623	1,235	78,616	0	0	0	0	0	0	873	110,550	1
09-Jun-2017	09-Jun-2017	1	250	496	32,430	564	1,119	79,735	0	0	0	0	0	0	814	112,165	1
10-Jun-2017	10-Jun-2017	1	250	496	32,926	512	1,015	80,750	0	0	0	0	0	0	762	113,676	1
11-Jun-2017	11-Jun-2017	1	250	496	33,421	464	921	81,671	0	0	0	0	0	0	714	115,093	1
12-Jun-2017	12-Jun-2017	1	250	496	33,917	422	837	82,508	0	0	0	0	0	0	672	116,425	1
13-Jun-2017	13-Jun-2017	1	250	496	34,413	383	761	83,268	0	0	0	0	0	0	633	117,682	1
14-Jun-2017	14-Jun-2017	1	250	496	34,909	349	692	83,961	0	0	0	0	0	0	599	118,870	1
15-Jun-2017	15-Jun-2017	1	250	496	35,405	318	631	84,591	0	0	0	0	0	0	568	119,996	1
16-Jun-2017	16-Jun-2017	1	250	496	35,901	290	575	85,167	0	0	0	0	0	0	540	121,068	1
17-Jun-2017	17-Jun-2017	1	250	496	36,397	265	525	85,692	0	0	0	0	0	0	515	122,089	1
18-Jun-2017	18-Jun-2017	1	250	496	36,893	242	481	86,173	0	0	0	0	0	0	492	123,065	1
19-Jun-2017	19-Jun-2017	1	250	496	37,388	222	440	86,613	0	0	0	0	0	0	472	124,001	1
20-Jun-2017	20-Jun-2017	1	250	496	37,884	204	404	87,017	0	0	0	0	0	0	454	124,901	1
21-Jun-2017	21-Jun-2017	1	250	496	38,380	187	371	87,388	0	0	0	0	0	0	437	125,768	1
22-Jun-2017	22-Jun-2017	1	250	496	38,876	172	342	87,730	0	0	0	0	0	0	422	126,606	1
23-Jun-2017	23-Jun-2017	1	250	496	39,372	159	315	88,045	0	0	0	0	0	0	409	127,417	1
24-Jun-2017	24-Jun-2017	1	250	496	39,868	147	291	88,337	0	0	0	0	0	0	397	128,204	1
25-Jun-2017	25-Jun-2017	1	250	496	40,364	136	270	88,607	0	0	0	0	0	0	386	128,970	1
26-Jun-2017	26-Jun-2017	1	250	496	40,860	126	251	88,857	0	0	0	0	0	0	376	129,717	1
27-Jun-2017	27-Jun-2017	1	250	496	41,355	118	233	89,090	0	0	0	0	0	0	368	130,446	1
28-Jun-2017	28-Jun-2017	1	250	496	41,851	110	218	89,308	0	0	0	0	0	0	360	131,159	1
29-Jun-2017	29-Jun-2017	1	250	496	42,347	103	204	89,512	0	0	0	0	0	0	353	131,859	1
30-Jun-2017	30-Jun-2017	1	250	496	42,843	96	191	89,703	0	0	0	0	0	0	346	132,545	1
01-Jul-2017	01-Jul-2017	1	250	496	43,339	90	179	89,882	0	0	0	0	0	0	340	133,221	1
02-Jul-2017	02-Jul-2017	30	250	14,876	58,215	0	0	89,882	0	0	0	0	0	0	250	148,097	1
01-Aug-2017	01-Aug-2017	31	250	15,372	73,587	0	0	89,882	0	0	0	0	0	0	250	163,469	1
01-Sep-2017	01-Sep-2017	30	250	14,876	88,463	0	0	89,882	0	0	0	0	0	0	250	178,345	1
01-Oct-2017	01-Oct-2017	1	300	595	89,058	600	1,190	91,072	0	0	0	0	0	0	900	180,130	0
02-Oct-2017	02-Oct-2017	1	300	595	89,653	600	1,190	92,262	0	0	0	0	0	0	900	181,915	0
03-Oct-2017	03-Oct-2017	1	300	595	90,248	600	1,190	93,452	0	0	0	0	0	0	900	183,700	0
04-Oct-2017	04-Oct-2017	1	300	595	90,843	600	1,190	94,642	0	0	0	0	0	0	900	185,485	0
05-Oct-2017	05-Oct-2017	1	300	595	91,438	600	1,190	95,832	0	0	0	0	0	0	900	187,270	0
06-Oct-2017	06-Oct-2017	1	300	595	92,033	0	0	95,832	0	0	0	0	0	0	300	187,865	0
07-Oct-2017	07-Oct-2017	1	300	595	92,628	0	0	95,832	0	0	0	0	0	0	300	188,460	0
08-Oct-2017	08-Oct-2017	1	300	595	93,223	0	0	95,832	0	0	0	0	0	0	300	189,055	

Table 2

SAN JOAQUIN VALLEY WATER YEAR HYDROLOGIC CLASSIFICATION

602020 INDEX

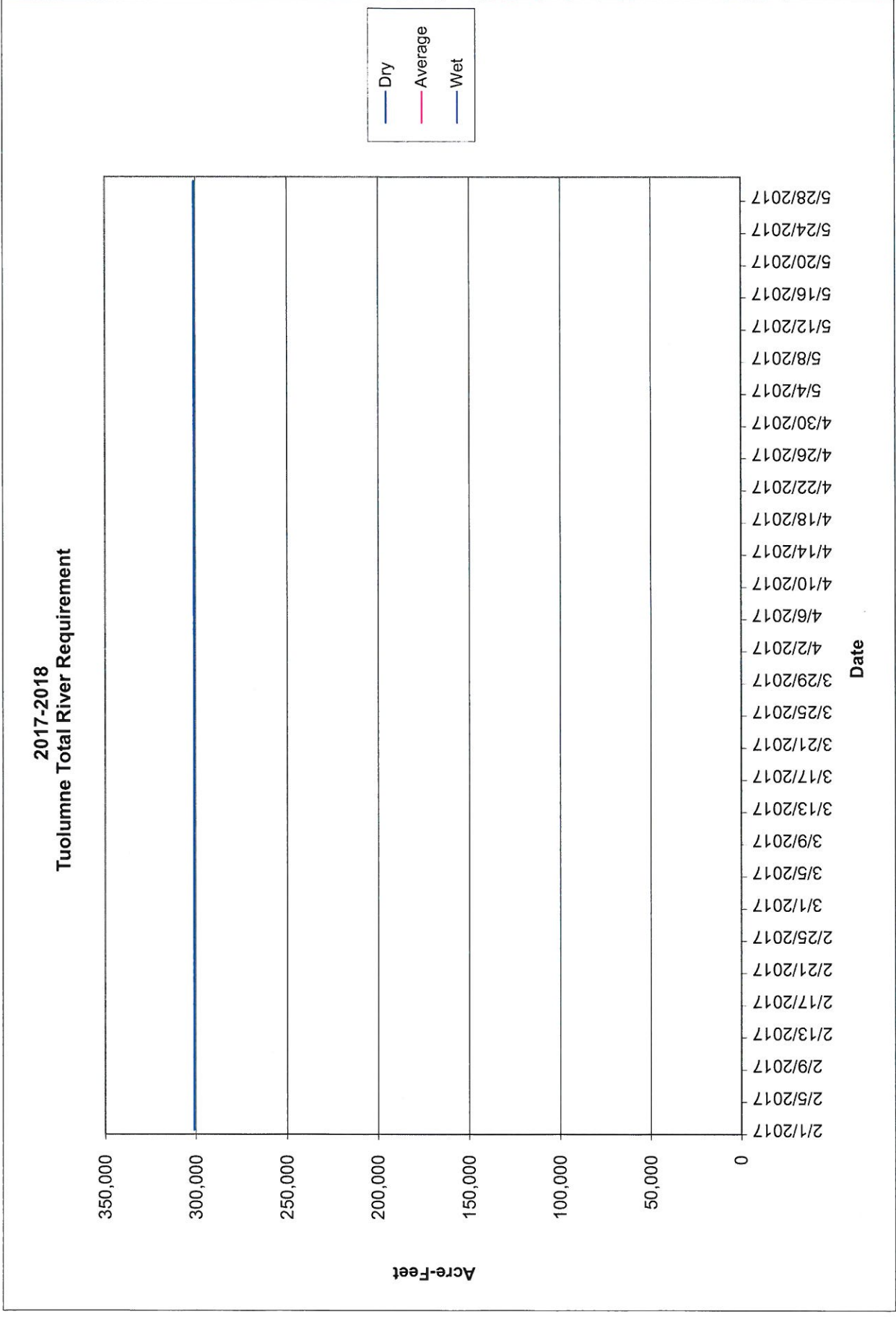
YEAR	STATISLAUS	APRIL-JULY RUNOFF (AF)				OCTOBER-MARCH RUNOFF (AF)				TOTAL	602020 INDEX	TULUWINE RIVER		San Joaquin Index (not the 1600 Index)
		TULUWINE	MERCED	FRONT	TOTAL	TULUWINE	MERCED	FRONT	TOTAL			MINIMUM FLOW	NEQUIBENT	
16	568,262	1,020,077	494,607	892,555	2,975,501	783,833	351,782	391,110	2,025,486	2,352,037	142,502	Dry	142,502	Dry
17	1,492,100	2,418,219	1,289,881	2,541,399	7,741,599	2,276,847	1,222,014	1,585,049	6,654,428	6,446,252	300,923	Wet	300,923	Wet
Feb 1 Forecast														
Dry	810,000	1,430,000	790,000	1,690,000	4,720,000					4,214,000	4,145,207	300,923	Wet	300,923
Average	1,040,000	1,820,000	970,000	2,050,000	5,880,000					4,779,000	4,954,207	300,923	Wet	300,923
Wet	1,500,000	2,610,000	1,480,000	2,870,000	8,450,000					5,754,000	6,697,207	300,923	Wet	300,923
Feb 08 Update														
Dry	950,000	1,680,000	910,000	1,890,000	5,430,000					4,214,000	4,571,207	300,923	Wet	300,923
Average	1,160,000	2,040,000	1,080,000	2,230,000	6,510,000					4,779,000	5,332,207	300,923	Wet	300,923
Wet	1,600,000	2,790,000	1,550,000	2,990,000	8,930,000					5,754,000	6,979,207	300,923	Wet	300,923
Feb 14 Update														
Dry	1,020,000	1,780,000	990,000	1,970,000	5,760,000					4,214,000	4,769,207	300,923	Wet	300,923
Average	1,220,000	2,110,000	1,150,000	2,230,000	6,770,000					4,779,000	5,488,207	300,923	Wet	300,923
Wet	1,650,000	2,820,000	1,590,000	3,000,000	9,060,000					5,754,000	7,057,207	300,923	Wet	300,923
Feb 21 Update														
Dry	1,110,000	1,960,000	1,080,000	2,130,000	6,280,000					4,214,000	5,081,207	300,923	Wet	300,923
Average	1,300,000	2,260,000	1,230,000	2,430,000	7,220,000					4,779,000	5,758,207	300,923	Wet	300,923
Wet	1,710,000	2,930,000	1,630,000	3,090,000	9,360,000					5,754,000	7,237,207	300,923	Wet	300,923
Mar 1 Forecast														
Dry	1,170,000	2,020,000	1,090,000	2,180,000	6,450,000					5,842,000	5,514,807	300,923	Wet	300,923
Average	1,340,000	2,280,000	1,230,000	2,450,000	7,310,000					5,986,000	6,053,607	300,923	Wet	300,923
Wet	1,790,000	2,900,000	1,580,000	3,050,000	9,320,000					7,842,000	7,630,807	300,923	Wet	300,923
Mar 14 Update														
Dry	1,200,000	2,050,000	1,080,000	2,190,000	6,520,000					5,842,000	5,550,807	300,923	Wet	300,923
Average	1,350,000	2,270,000	1,200,000	2,430,000	7,250,000					5,986,000	6,017,607	300,923	Wet	300,923
Wet	1,740,000	2,790,000	1,500,000	2,920,000	8,950,000					7,842,000	7,408,807	300,923	Wet	300,923
Mar 21 Update														
Dry	1,160,000	2,010,000	1,050,000	2,120,000	6,340,000					5,842,000	5,442,807	300,923	Wet	300,923
Average	1,300,000	2,210,000	1,160,000	2,340,000	7,010,000					5,986,000	5,873,607	300,923	Wet	300,923
Wet	1,630,000	2,680,000	1,440,000	2,770,000	8,520,000					7,842,000	7,150,807	300,923	Wet	300,923
Mar 28 Update														
Dry	1,210,000	2,080,000	1,070,000	2,180,000	6,540,000					5,842,000	5,562,807	300,923	Wet	300,923
Average	1,340,000	2,260,000	1,180,000	2,380,000	7,160,000					5,986,000	5,963,607	300,923	Wet	300,923
Wet	1,630,000	2,680,000	1,430,000	2,750,000	8,490,000					7,842,000	7,132,807	300,923	Wet	300,923
Apr 1 Forecast														
Dry	1,210,000	2,040,000	1,060,000	2,110,000	6,420,000					6,655,000	5,653,407	300,923	Wet	300,923
Average	1,340,000	2,210,000	1,160,000	2,300,000	7,010,000					6,655,000	6,007,407	300,923	Wet	300,923
Wet	1,620,000	2,600,000	1,400,000	2,640,000	8,260,000					6,655,000	6,757,407	300,923	Wet	300,923
Apr 11 Update														
Dry	1,280,000	2,160,000	1,120,000	2,230,000	6,790,000					6,655,000	5,875,407	300,923	Wet	300,923
Average	1,400,000	2,310,000	1,210,000	2,410,000	7,330,000					6,655,000	6,199,407	300,923	Wet	300,923
Wet	1,630,000	2,630,000	1,410,000	2,690,000	8,360,000					6,655,000	6,817,407	300,923	Wet	300,923
Apr 18 Update														
Dry	1,400,000	2,330,000	1,200,000	2,320,000	7,250,000					6,655,000	6,151,407	300,923	Wet	300,923
Average	1,520,000	2,460,000	1,280,000	2,490,000	7,750,000					6,655,000	6,451,407	300,923	Wet	300,923
Wet	1,710,000	2,730,000	1,450,000	2,730,000	8,620,000					6,655,000	6,973,407	300,923	Wet	300,923
Apr 25 Update														
Dry	1,390,000	2,330,000	1,190,000	2,330,000	7,240,000					6,655,000	6,145,407	300,923	Wet	300,923
Average	1,500,000	2,440,000	1,260,000	2,490,000	7,690,000					6,655,000	6,415,407	300,923	Wet	300,923

Table 2

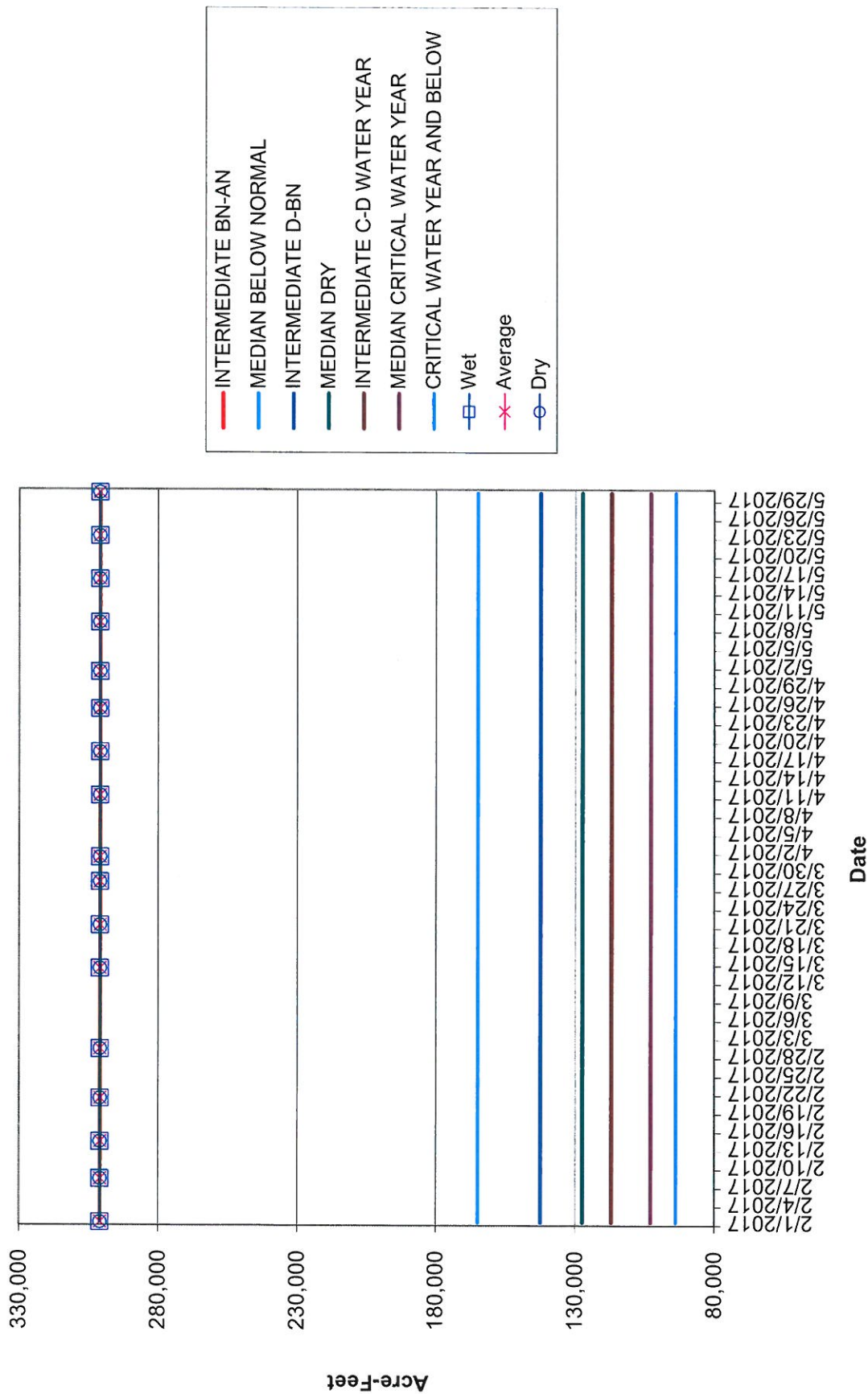
SAN JOAQUIN VALLEY WATER YEAR HYDROLOGIC CLASSIFICATION

602020 INDEX

YEAR	APRIL-JULY RUNOFF (AF)				OCTOBER-MARCH RUNOFF (AF)				602020 INDEX	TUOLUMNE RIVER		San Joaquin Index (feet the Feet Index)
	STANISLAUS	TUOLUMNE	MERGED	FRONT	STANISLAUS	TUOLUMNE	MERGED	FRONT		MINIMUM FLOW REQUIREMENT	TOTAL	
Wet	1,650,000	2,650,000	1,400,000	2,690,000	1,571,000	2,277,000	1,222,000	1,585,000	6,835,407	300,923	6,655,000	Wet
May 1 Forecast												
Dry	1,370,000	2,230,000	1,140,000	2,250,000	1,571,000	2,277,000	1,222,000	1,585,000	5,995,407	300,923	6,655,000	Wet
Average	1,490,000	2,400,000	1,240,000	2,440,000	1,571,000	2,277,000	1,222,000	1,585,000	6,343,407	300,923	6,655,000	Wet
Wet	1,660,000	2,660,000	1,380,000	2,710,000	1,571,000	2,277,000	1,222,000	1,585,000	6,847,407	300,923	6,655,000	Wet
May 09 Update												
Dry	1,380,000	2,240,000	1,150,000	2,260,000	1,571,000	2,277,000	1,222,000	1,585,000	6,019,407	300,923	6,655,000	Wet
Average	1,490,000	2,400,000	1,240,000	2,430,000	1,571,000	2,277,000	1,222,000	1,585,000	6,337,407	300,923	6,655,000	Wet
Wet	1,650,000	2,640,000	1,360,000	2,670,000	1,571,000	2,277,000	1,222,000	1,585,000	6,793,407	300,923	6,655,000	Wet
May 16 Update												
Dry	1,390,000	2,230,000	1,150,000	2,270,000	1,571,000	2,277,000	1,222,000	1,585,000	6,025,407	300,923	6,655,000	Wet
Average	1,490,000	2,390,000	1,240,000	2,420,000	1,571,000	2,277,000	1,222,000	1,585,000	6,325,407	300,923	6,655,000	Wet
Wet	1,630,000	2,620,000	1,350,000	2,640,000	1,571,000	2,277,000	1,222,000	1,585,000	6,745,407	300,923	6,655,000	Wet
May 23 Update												
Dry	1,370,000	2,230,000	1,130,000	2,290,000	1,571,000	2,277,000	1,222,000	1,585,000	6,013,407	300,923	6,655,000	Wet
Average	1,450,000	2,380,000	1,210,000	2,420,000	1,571,000	2,277,000	1,222,000	1,585,000	6,277,407	300,923	6,655,000	Wet
Wet	1,580,000	2,590,000	1,300,000	2,610,000	1,571,000	2,277,000	1,222,000	1,585,000	6,649,407	300,923	6,655,000	Wet
May 30 Update												
Dry	1,370,000	2,220,000	1,160,000	2,240,000	1,571,000	2,277,000	1,222,000	1,585,000	5,995,407	300,923	6,655,000	Wet
Average	1,440,000	2,360,000	1,230,000	2,360,000	1,571,000	2,277,000	1,222,000	1,585,000	6,235,407	300,923	6,655,000	Wet
Wet	1,560,000	2,550,000	1,310,000	2,530,000	1,571,000	2,277,000	1,222,000	1,585,000	6,571,407	300,923	6,655,000	Wet

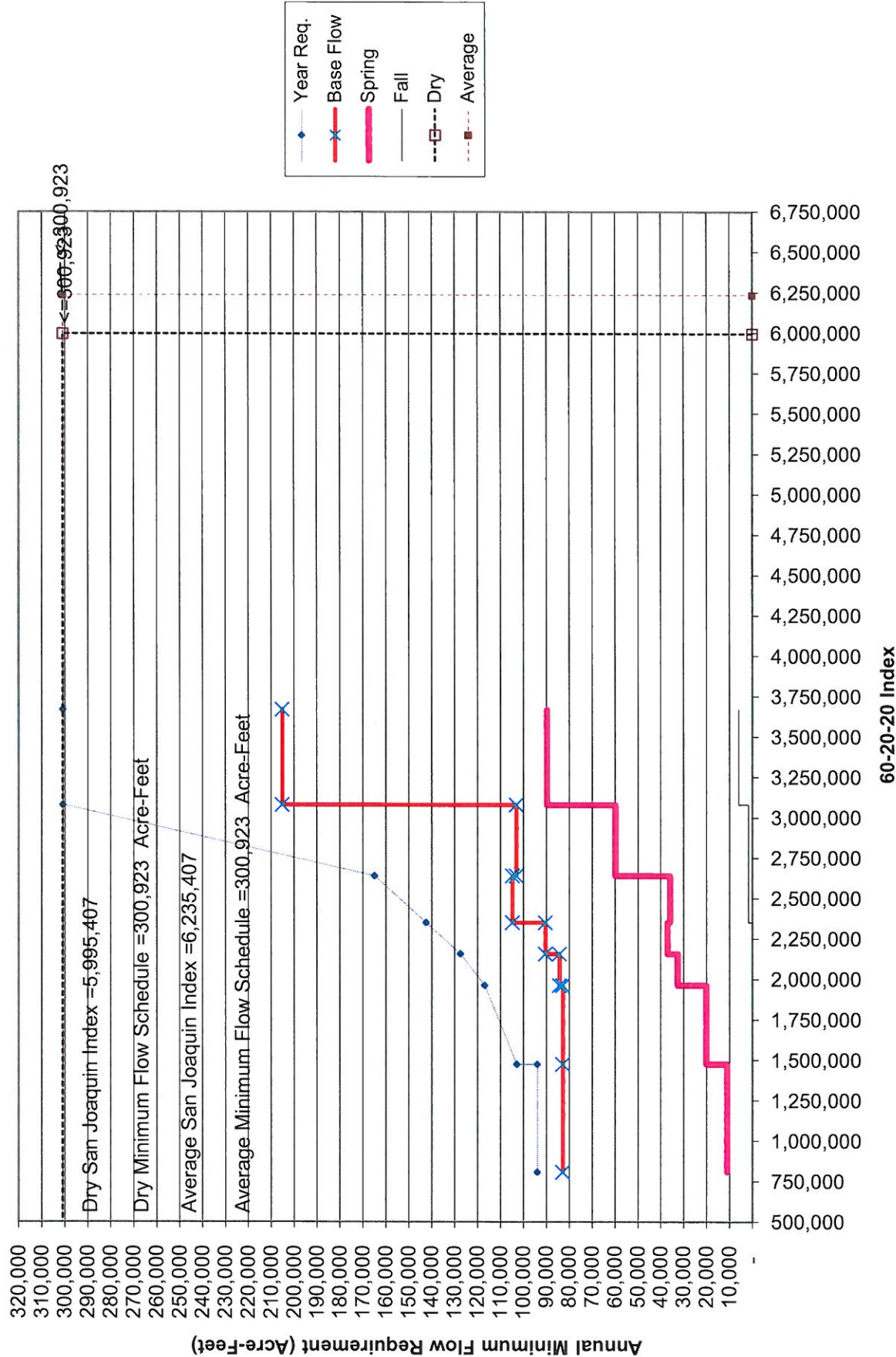


2017-2018 Tuolumne Total River Requirement

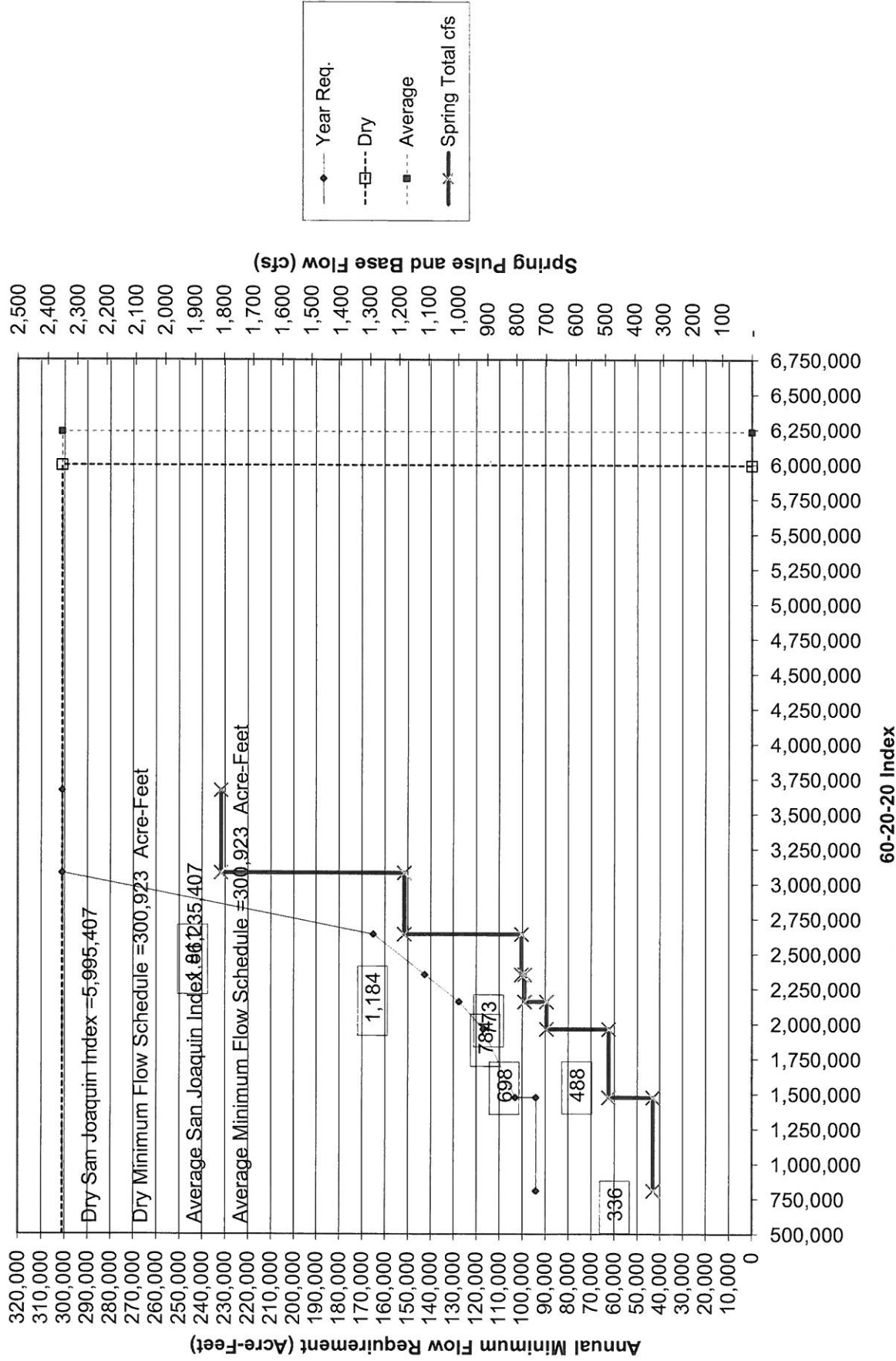


TUOLUMNE RIVER MINIMUM FLOW REQUIREMENT (Figure 1)

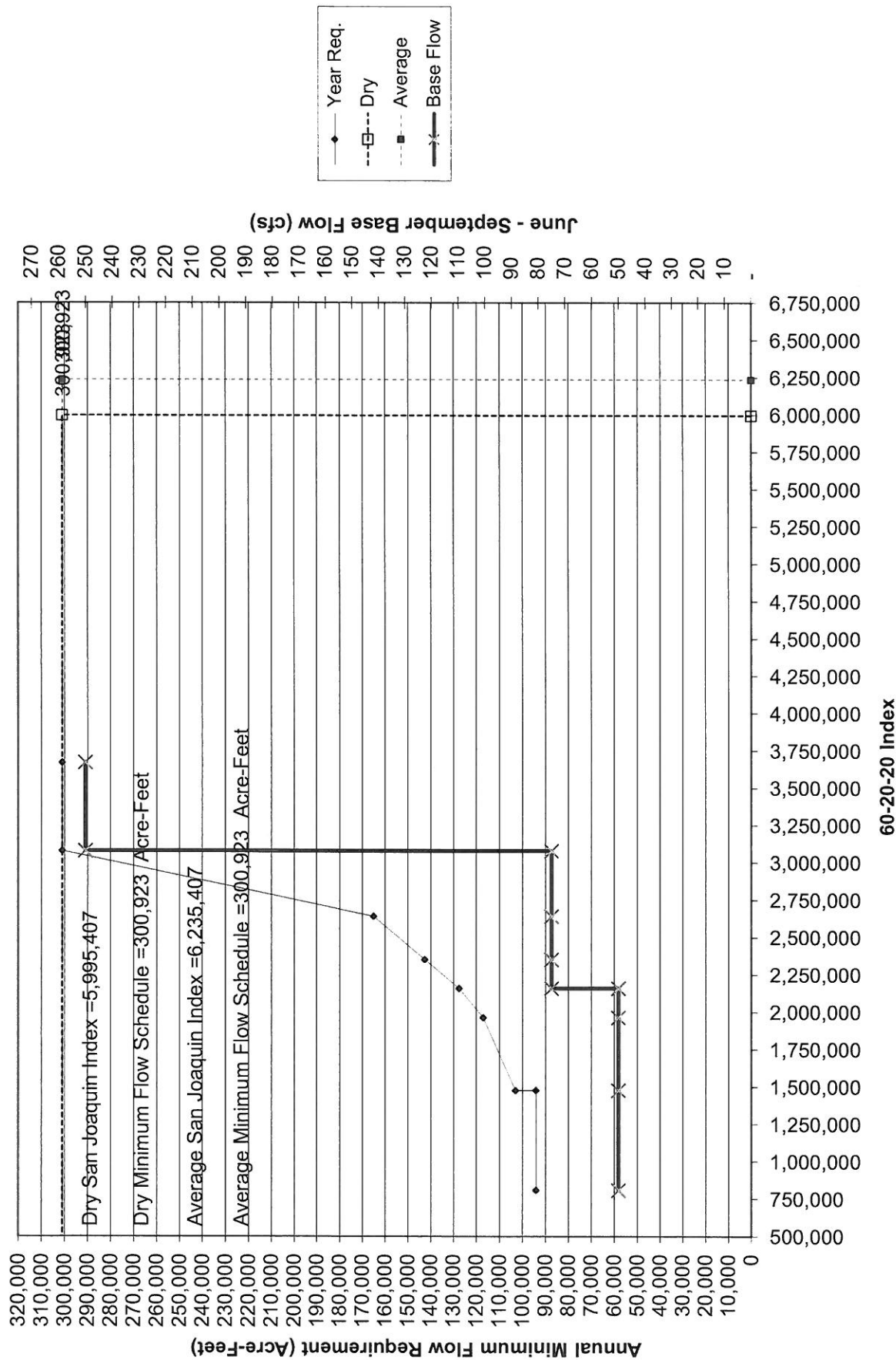
Annual Flow Requirement



TUOLUMNE RIVER MINIMUM FLOW REQUIREMENT (Figure 2) (Spring Pulse Flow Plus Base Flow)



TUOLUMNE RIVER MINIMUM FLOW REQUIREMENT (Figure 3)
(Summer Base Flow)



TUOLUMNE RIVER MINIMUM FLOW REQUIREMENT (Figure 4)
Interpolation Volume

