

APPENDIX E – UNIMPAIRED FLOW

Table 1. San Joaquin Valley unimpaired flow by water year. (TAF)

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Type
1921	96	153	213	582	488	735	824	1,399	1,413	340	64	31	6,338	AN
1922	24	26	248	282	780	657	835	2,491	2,535	652	129	44	8,703	W
1923	36	98	448	412	305	370	953	1,796	970	495	102	69	6,054	AN
1924	83	49	50	66	112	121	376	550	76	38	11	7	1,539	C
1925	36	126	139	128	644	492	1,064	1,602	993	359	102	29	5,714	BN
1926	51	51	85	65	324	373	1,229	1,012	325	79	22	13	3,629	D
1927	18	221	221	214	841	594	1,149	1,665	1,506	460	97	38	7,024	AN
1928	55	267	143	164	265	976	852	1,276	464	100	28	12	4,602	BN
1929	13	30	55	64	122	273	443	1,085	633	153	30	8	2,909	C
1930	11	13	55	115	198	434	720	797	777	155	35	16	3,326	C
1931	31	51	33	71	113	174	422	567	154	36	15	9	1,676	C
1932	12	23	411	305	912	571	846	1,715	1,644	566	114	36	7,155	AN
1933	30	19	40	95	107	264	538	788	1,227	247	54	27	3,436	D
1934	12	29	132	174	255	437	550	421	240	56	22	18	2,346	C
1935	33	112	141	388	339	493	1,569	1,781	1,568	351	91	29	6,895	AN
1936	37	53	55	261	1,341	700	1,326	1,730	1,110	376	82	22	7,093	AN
1937	26	33	103	134	1,237	849	1,075	2,308	1,336	338	70	21	7,530	W
1938	28	47	938	374	1,364	2,157	1,632	2,768	2,717	1,031	246	88	13,390	W
1939	124	125	106	128	180	430	879	645	262	83	35	41	3,038	D
1940	115	48	54	763	868	1,108	1,113	1,900	1,031	207	46	13	7,266	AN
1941	31	41	444	464	955	1,066	1,077	2,395	1,890	773	156	43	9,335	W
1942	47	101	503	597	550	554	1,144	1,674	2,044	766	134	35	8,149	W
1943	29	218	249	855	609	1,486	1,393	1,687	1,068	442	106	29	8,171	W
1944	35	50	67	122	258	468	509	1,404	820	314	61	20	4,128	BN
1945	30	249	225	173	1,134	675	997	1,635	1,486	541	120	37	7,302	AN
1946	162	274	631	376	223	520	1,139	1,556	804	243	61	27	6,016	AN
1947	74	222	272	149	252	409	616	1,061	371	89	22	17	3,554	D
1948	87	66	49	99	90	236	687	1,394	1,278	287	46	20	4,339	BN
1949	25	33	59	66	120	398	909	1,373	740	131	40	21	3,915	BN
1950	20	43	46	222	404	384	1,062	1,432	905	216	40	19	4,793	BN
1951	56	1,535	1,675	554	484	549	783	1,100	756	236	55	17	7,800	AN
1952	35	78	379	848	493	968	1,509	2,856	2,076	926	219	68	10,455	W
1953	38	53	176	429	196	310	814	798	1,132	483	68	25	4,522	BN
1954	26	51	66	126	285	631	1,093	1,388	571	161	29	14	4,441	BN
1955	17	49	130	200	181	262	452	1,150	930	177	38	13	3,599	D
1956	16	40	2,213	1,396	621	623	957	1,881	1,777	766	171	65	10,526	W
1957	66	77	73	99	310	452	553	1,216	1,218	251	57	25	4,397	BN
1958	45	62	138	188	570	973	1,659	2,670	1,928	729	220	75	9,257	W
1959	40	40	35	183	370	388	702	674	412	82	22	120	3,068	D
1960	35	27	33	71	326	416	719	859	447	77	24	14	3,048	C
1961	15	60	97	61	124	204	488	610	352	57	45	19	2,132	C
1962	19	33	69	190	811	449	1,256	1,227	1,369	429	83	28	5,963	BN
1963	54	32	67	320	994	380	844	1,733	1,399	580	130	56	6,589	AN
1964	62	272	141	157	142	220	510	915	616	137	46	24	3,242	D
1965	28	142	1,419	1,008	455	471	1,092	1,475	1,448	692	303	79	8,612	W
1966	39	379	274	261	232	458	952	1,075	323	95	42	25	4,155	BN
1967	28	137	741	436	392	1,029	1,291	2,465	2,671	1,616	314	116	11,236	W
1968	54	52	102	135	372	364	583	809	394	86	43	23	3,017	D
1969	38	183	242	2,059	1,465	1,322	1,978	3,563	2,663	1,180	255	72	15,020	W
1970	113	115	278	1,182	434	669	540	1,271	918	265	79	32	5,896	AN
1971	28	189	361	353	291	444	650	1,079	1,180	358	86	37	5,056	BN
1972	25	95	238	175	220	565	492	1,019	606	106	30	70	3,641	D
1973	49	105	215	449	746	698	909	2,184	1,239	246	83	30	6,953	AN
1974	56	425	406	629	259	873	1,079	1,897	1,391	392	124	42	7,573	W
1975	46	51	114	153	488	748	609	1,880	1,847	455	101	59	6,551	W
1976	176	140	96	58	124	219	313	577	137	62	59	62	2,023	C
1977	39	27	17	33	45	65	204	266	299	40	16	10	1,061	C
1978	9	27	264	718	905	1,384	1,607	2,345	2,267	1,045	276	303	11,150	W
1979	78	89	101	497	573	854	901	1,991	963	252	85	38	6,422	AN
1980	74	108	142	1,697	1,450	1,126	1,130	1,731	1,762	1,070	229	84	10,603	W
1981	55	42	82	168	201	381	754	977	486	96	46	33	3,321	D
1982	64	401	551	806	1,254	1,220	2,578	2,536	1,745	953	292	346	12,746	W
1983	426	678	1,153	1,317	1,673	2,602	1,465	2,719	3,792	2,151	731	261	18,968	W
1984	263	781	1,256	773	483	635	714	1,600	864	345	108	54	7,876	AN
1985	79	222	150	134	228	382	926	997	420	98	43	45	3,724	D
1986	68	150	251	380	2,315	1,968	1,384	1,941	1,643	478	139	82	10,799	W
1987	63	30	45	52	137	277	569	624	242	60	34	17	2,150	C
1988	35	76	105	194	169	310	499	627	337	105	42	19	2,518	C
1989	21	46	76	93	159	720	947	858	523	108	34	37	3,622	C
1990	109	76	62	109	138	363	645	524	322	220	25	11	2,604	C
1991	14	17	24	23	25	539	503	983	906	229	63	29	3,355	C
1992	52	69	65	82	342	342	707	633	173	176	50	21	2,712	C
Average	56	141	282	371	512	642	921	1,439	1,096	389	99	48	5,997	

Table 2. San Joaquin Valley unimpaired flow (TAF)

Year Type	Flow (TAF)													Total	#	%
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep				
W	59	155	553	755	939	1,162	1,342	2,278	2,032	866	222	101	10,462	19	27	
AN	77	259	399	483	678	637	974	1,670	1,178	367	88	35	6,845	14	20	
BN	40	114	127	188	326	475	867	1,272	916	265	57	23	4,669	12	17	
D	56	108	126	144	234	367	698	913	550	116	36	39	3,388	11	16	
C	47	49	63	84	159	326	540	665	375	105	34	20	2,468	14	20	
Average	373	515	647	925	1,447	1,105	393	100	48	56	140	284	6,035	70		

Table 3. San Joaquin Valley unimpaired flow (cfs)

Year Type	Flow (cfs)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
W	12,297	16,932	18,930	22,589	37,113	34,202	14,110	3,614	1,694	959	2,612	9,002
AN	7,873	12,223	10,374	16,394	27,214	19,833	5,977	1,430	594	1,251	4,364	6,507
BN	3,067	5,871	7,736	14,592	20,723	15,422	4,323	926	386	644	1,918	2,066
D	2,353	4,226	5,981	11,755	14,880	9,258	1,896	594	652	905	1,820	2,045
C	1,375	2,873	5,316	9,097	10,841	6,305	1,707	548	333	770	831	1,026
Ave ¹	6,083	9,285	10,542	15,578	23,575	18,610	6,406	1,629	814	917	2,363	4,626

Table 4. Unimpaired flow minus South Delta diversion requirement.²

Year Type	Flow (cfs)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
W	11,724	16,449	18,382	21,844	36,264	33,078	12,710	2,280	637	57	1,853	8,283
AN	7,300	11,740	9,826	15,649	26,365	18,709	4,577	96	-463	349	3,605	5,788
BN	2,494	5,388	7,188	13,847	19,874	14,298	2,923	-408	-671	-258	1,159	1,347
D	1,780	3,743	5,433	11,010	14,031	8,134	496	-740	-405	3	1,061	1,326
C	802	2,390	4,768	8,352	9,992	5,181	307	-786	-724	-132	72	307
Ave	5,510	8,802	9,994	14,833	22,726	17,486	5,006	295	-243	15	1,604	3,907

¹ The average flow for each month over all year types is weighted based on the proportion of each year type.

² Negative values (i.e., deficits) are depicted in red. The diversion amounts and flows were calculated from the DWR data. Differences are due to rounding differences in calculations.

Figure 1. Unimpaired flow from 2003 through 2005.

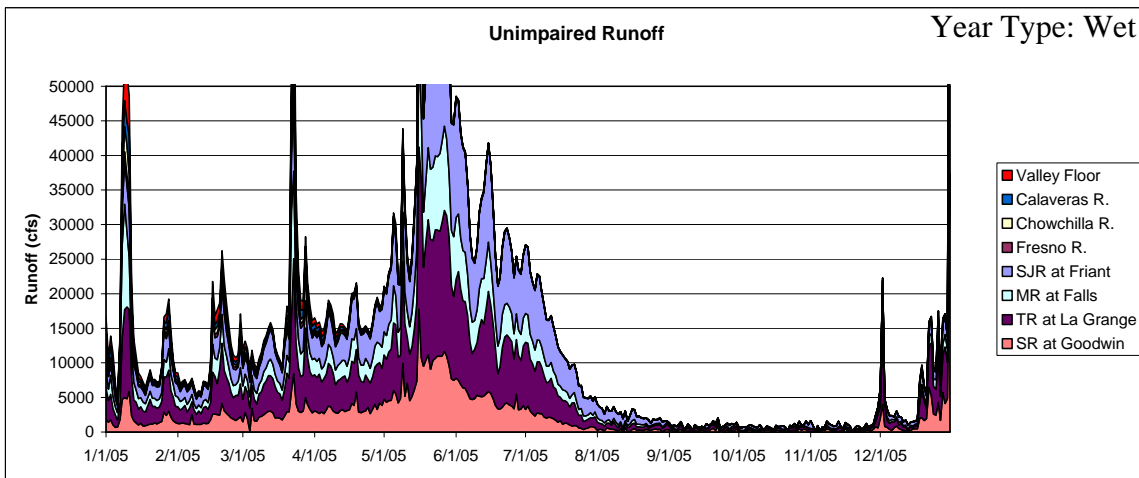
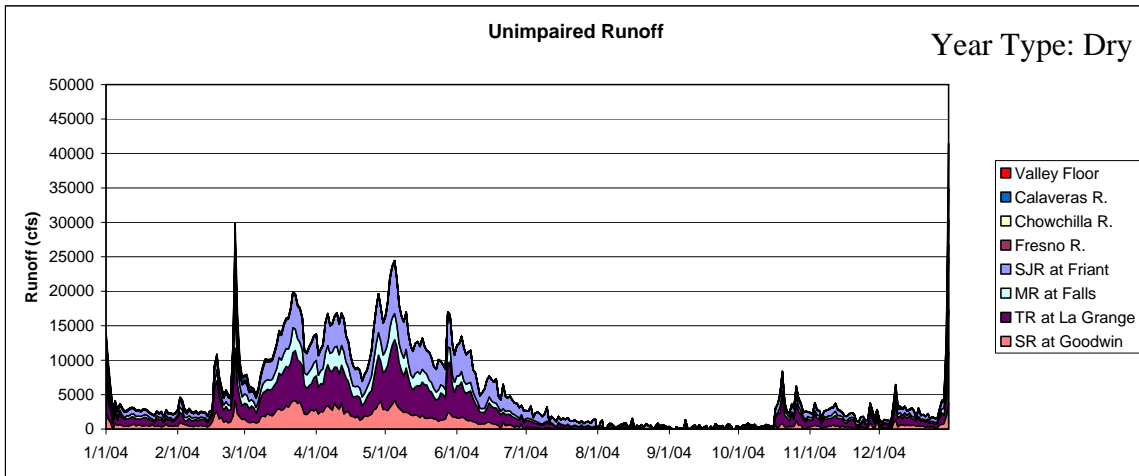
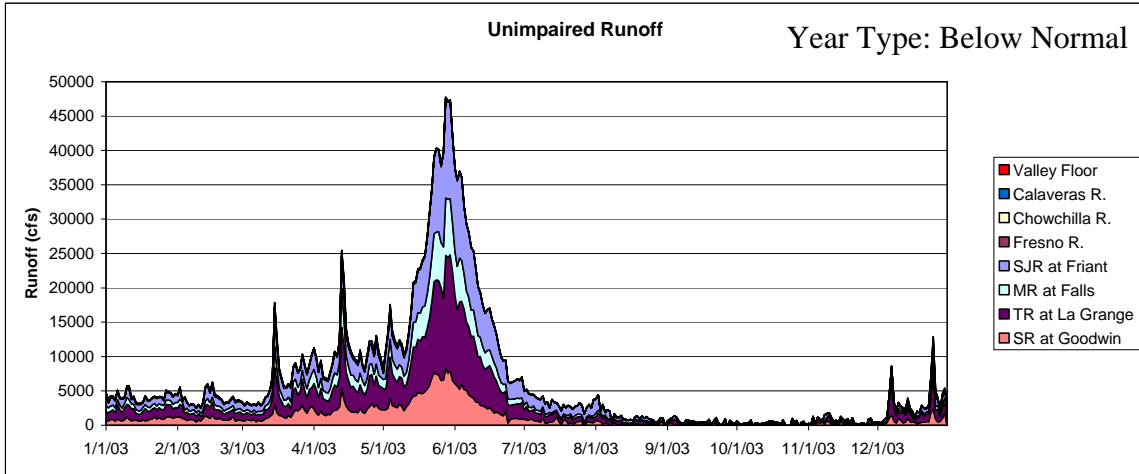


Figure 2. Unimpaired flow for 2006 and 2007.

