



**Models and Databases
Administrative Record of References**

Memo to File

Client: Sites Project Authority
Project Title: Sites Reservoir Project
Project/Task Number: D3205403
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Chapter, Section, or Subject: Appendix 11P1 – Daily Divertible Flow Tool
Citation: CDEC 2019
Reference: California Environmental Data Exchange Center. 2019. Department of Water Resources, California Cooperative Snow Surveys. Chronological Reconstructed Sacramento and San Joaquin Valley, Water Year Hydrologic Classification Indices. Available: <https://cdec.water.ca.gov/reportapp/javareports?name=WSIHIST>. Accessed: 2019.
Access Date: 2019
Database or Model and version: <https://cdec.water.ca.gov/reportapp/>
URL: <https://cdec.water.ca.gov/reportapp/javareports?name=WSIHIST>
Assumptions: Not applicable
Search Fields and Search Terms: Result Category: Water Supply
Parameters: WSIHIST
Description: Chronological Reconstructed Sacramento and San Joaquin Valley Water Year Hydrologic Classification Indices

Memo to File

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CALIFORNIA DATA EXCHANGE CENTER CALIFORNIA DEPARTMENT OF WATER RESOURCES												
Home Query Tools Precipitation River Forecast River Stages Reservoirs Snow Stations Weather												
Department of Water Resources California Cooperative Snow Surveys Chronological Reconstructed Sacramento and San Joaquin Valley Water Year Hydrologic Classification Indices Based on measured unimpaired runoff (in million acre-feet), subject to revision. *** See explanatory notes at bottom *** [.....Sacramento Valley.....] [.....San Joaquin Valley.....] [.....Runoff (maf).....] [..WY Index..] [.....Runoff (maf).....] [..WY Index..]												
WY	Oct-Mar	Apr-Jul	WYsum	Index	Yr-type	Oct-Mar	Apr-Jul	WYsum	Index	Yr-type		
1901						3.49	5.58	9.39	4.60	W		
1902						1.12	3.81	5.08	3.41	AN		
1903						1.45	4.13	5.71	3.45	AN		
1904						1.96	5.37	7.64	4.31	W		
1905						1.82	3.36	5.30	3.24	AN		
1906	12.57	12.92	26.71	11.76	W	2.53	9.24	12.43	6.70	W		
1907	18.96	13.45	33.70	14.07	W	3.67	7.61	11.82	6.20	W		
1908	8.29	5.60	14.77	7.73	BN	0.98	2.17	3.32	2.40	D		
1909	20.61	8.98	30.68	12.10	W	2.85	5.91	8.97	4.59	W		
1910	13.12	6.11	20.12	9.38	W	2.87	3.62	6.64	3.65	AN		
1911	12.27	13.12	26.38	11.74	W	3.63	7.52	11.48	5.97	W		
1912	4.84	5.65	11.41	6.71	BN	0.54	2.57	3.21	2.55	BN		
1913	5.72	6.29	12.85	6.24	D	0.44	2.34	3.00	2.00	C		
1914	16.72	10.08	27.81	10.92	W	2.72	5.67	8.69	4.35	W		
1915	11.41	11.42	23.86	10.99	W	1.29	4.95	6.40	4.10	W		
1916	14.25	8.89	24.14	10.83	W	2.67	5.50	8.38	4.65	W		
1917	7.25	9.14	17.26	8.83	AN	1.66	4.84	6.66	4.13	W		
1918	5.27	4.89	10.99	6.19	D	1.07	3.40	4.59	3.08	BN		
1919	8.12	6.77	15.66	7.00	BN	1.06	2.99	4.09	2.62	BN		
1920	3.63	4.91	9.20	5.15	C	0.72	3.29	4.09	2.64	BN		
1921	15.47	7.52	23.80	9.20	AN	1.97	3.84	5.90	3.23	AN		
1922	6.63	10.57	17.98	8.97	AN	1.51	5.99	7.68	4.54	W		
1923	6.21	6.27	13.21	7.06	BN	1.39	3.95	5.51	3.55	AN		
1924	3.27	1.94	5.74	3.87	C	0.45	1.03	1.50	1.42	C		
1925	8.76	6.51	15.99	6.39	D	1.45	3.93	5.51	2.93	BN		
1926	6.37	4.79	11.76	5.75	D	0.89	2.56	3.49	2.30	D		
1927	14.34	8.75	23.83	9.52	W	1.80	4.56	6.50	3.56	AN		
1928	10.24	5.86	16.76	8.27	AN	1.69	2.64	4.37	2.63	BN		
1929	4.00	3.84	8.40	5.22	C	0.52	2.29	2.84	2.00	C		
1930	8.24	4.65	13.52	5.90	D	0.76	2.44	3.25	2.02	C		
1931	3.52	2.09	6.10	3.66	C	0.46	1.18	1.66	1.20	C		
1932	6.28	6.24	13.12	5.48	D	1.79	4.69	6.63	3.41	AN		
1933	3.73	4.66	8.94	4.63	C	0.49	2.77	3.34	2.44	D		
1934	5.68	2.45	8.63	4.07	C	0.98	1.26	2.28	1.44	C		
1935	6.27	9.69	16.50	6.98	BN	1.26	5.03	6.41	3.56	AN		
1936	10.32	6.41	17.35	7.75	BN	2.00	4.38	6.49	3.74	AN		
1937	5.50	7.24	13.33	6.87	BN	1.78	4.66	6.53	3.90	W		
1938	17.96	12.93	31.83	12.62	W	3.58	7.33	11.24	5.89	W		
1939	4.56	3.04	8.18	5.58	D	1.00	1.83	2.90	2.20	D		
1940	14.78	6.93	22.43	8.88	AN	2.49	4.04	6.59	3.36	AN		
1941	16.32	9.77	27.08	11.47	W	2.22	5.51	7.93	4.43	W		
1942	14.33	9.93	25.24	11.27	W	1.93	5.28	7.38	4.44	W		
1943	13.37	6.90	21.13	9.77	W	2.86	4.28	7.28	4.03	W		
1944	4.81	4.93	10.43	6.35	D	0.87	2.97	3.92	2.76	BN		
1945	8.42	5.92	15.06	6.80	BN	2.07	4.37	6.60	3.59	AN		

Filepath to saved results

Posted to SharePoint:

https://icfonline.sharepoint.com/:f:/r/sites/EP/SitesProgram/FEIREIS/Vol%20%20FEIR.EIS%20Appendices/App11P_Riverine_Flow_Surv/AdminRecord?cf=1&web=1&e=HXwo0J

How results were used

The historical Sacramento Valley Water Supply Index was used to determine water year types used in CalSim II and the Daily Divertible Flow Tool. Appendix 11P1 includes a table comparing the proportion of water year types in CalSim II and the Daily Divertible Flow Tool.

[\(/index.html\)](#)

Department of Water Resources
 California Cooperative Snow Surveys

Chronological Reconstructed Sacramento and San Joaquin Valley
 Water Year Hydrologic Classification Indices

Based on measured unimpaired runoff (in million acre-feet), subject to revision.
 *** See explanatory notes at bottom ***

[.....Sacramento Valley.....]						[.....San Joaquin Valley.....]				
[.....Runoff (maf).....]						[..WY Index..]	[.....Runoff (maf).....]			[..WY Index..]
WY	Oct-Mar	Apr-Jul	WYsum	Index	Yr-type	Oct-Mar	Apr-Jul	WYsum	Index	Yr-type
1901						3.49	5.58	9.39	4.60	W
1902						1.12	3.81	5.08	3.41	AN
1903						1.45	4.13	5.71	3.45	AN
1904						1.96	5.37	7.64	4.31	W
1905						1.82	3.36	5.30	3.24	AN
1906	12.57	12.92	26.71	11.76	W	2.53	9.24	12.43	6.70	W
1907	18.96	13.45	33.70	14.07	W	3.67	7.61	11.82	6.20	W
1908	8.29	5.60	14.77	7.73	BN	0.98	2.17	3.32	2.40	D
1909	20.61	8.98	30.68	12.10	W	2.85	5.91	8.97	4.59	W
1910	13.12	6.11	20.12	9.38	W	2.87	3.62	6.64	3.65	AN
1911	12.27	13.12	26.38	11.74	W	3.63	7.52	11.48	5.97	W
1912	4.84	5.65	11.41	6.71	BN	0.54	2.57	3.21	2.55	BN
1913	5.72	6.29	12.85	6.24	D	0.44	2.34	3.00	2.00	C
1914	16.72	10.08	27.81	10.92	W	2.72	5.67	8.69	4.35	W
1915	11.41	11.42	23.86	10.99	W	1.29	4.95	6.40	4.10	W
1916	14.25	8.89	24.14	10.83	W	2.67	5.50	8.38	4.65	W
1917	7.25	9.14	17.26	8.83	AN	1.66	4.84	6.66	4.13	W
1918	5.27	4.89	10.99	6.19	D	1.07	3.40	4.59	3.08	BN
1919	8.12	6.77	15.66	7.00	BN	1.06	2.99	4.09	2.62	BN
1920	3.63	4.91	9.20	5.15	C	0.72	3.29	4.09	2.64	BN
1921	15.47	7.52	23.80	9.20	AN	1.97	3.84	5.90	3.23	AN
1922	6.63	10.57	17.98	8.97	AN	1.51	5.99	7.68	4.54	W
1923	6.21	6.27	13.21	7.06	BN	1.39	3.95	5.51	3.55	AN
1924	3.27	1.94	5.74	3.87	C	0.45	1.03	1.50	1.42	C
1925	8.76	6.51	15.99	6.39	D	1.45	3.93	5.51	2.93	BN
1926	6.37	4.79	11.76	5.75	D	0.89	2.56	3.49	2.30	D
1927	14.34	8.75	23.83	9.52	W	1.80	4.56	6.50	3.56	AN
1928	10.24	5.86	16.76	8.27	AN	1.69	2.64	4.37	2.63	BN
1929	4.00	3.84	8.40	5.22	C	0.52	2.29	2.84	2.00	C
1930	8.24	4.65	13.52	5.90	D	0.76	2.44	3.25	2.02	C
1931	3.52	2.09	6.10	3.66	C	0.46	1.18	1.66	1.20	C
1932	6.28	6.24	13.12	5.48	D	1.79	4.69	6.63	3.41	AN
1933	3.73	4.66	8.94	4.63	C	0.49	2.77	3.34	2.44	D
1934	5.68	2.45	8.63	4.07	C	0.98	1.26	2.28	1.44	C
1935	6.27	9.69	16.59	6.98	BN	1.26	5.03	6.41	3.56	AN
1936	10.32	6.41	17.35	7.75	BN	2.00	4.38	6.49	3.74	AN
1937	5.50	7.24	13.33	6.87	BN	1.78	4.66	6.53	3.90	W
1938	17.96	12.93	31.83	12.62	W	3.58	7.33	11.24	5.89	W
1939	4.56	3.04	8.18	5.58	D	1.00	1.83	2.90	2.20	D
1940	14.78	6.93	22.43	8.88	AN	2.49	4.04	6.59	3.36	AN

1941	16.32	9.77	27.08	11.47	W	2.22	5.51	7.93	4.43	W
1942	14.33	9.93	25.24	11.27	W	1.93	5.28	7.38	4.44	W
1943	13.37	6.90	21.13	9.77	W	2.86	4.28	7.28	4.03	W
1944	4.81	4.93	10.43	6.35	D	0.87	2.97	3.92	2.76	BN
1945	8.42	5.92	15.06	6.80	BN	2.07	4.37	6.60	3.59	AN
1946	10.89	5.97	17.62	7.70	BN	1.99	3.65	5.73	3.30	AN
1947	5.90	3.83	10.39	5.61	D	1.26	2.12	3.42	2.18	D
1948	5.39	9.55	15.75	7.12	BN	0.56	3.58	4.21	2.70	BN
1949	5.73	5.59	11.97	6.09	D	0.62	3.12	3.79	2.53	BN
1950	7.01	6.72	14.44	6.62	BN	1.02	3.57	4.65	2.85	BN
1951	16.77	5.42	22.95	9.18	AN	4.35	2.83	7.25	3.14	AN
1952	13.86	13.68	28.60	12.38	W	2.18	6.84	9.30	5.17	W
1953	10.84	8.26	20.09	9.55	W	1.07	3.18	4.35	3.03	BN
1954	9.74	6.81	17.43	8.51	AN	1.10	3.16	4.30	2.72	BN
1955	5.19	5.07	10.98	6.14	D	0.78	2.67	3.50	2.30	D
1956	20.32	8.60	29.89	11.38	W	4.14	5.29	9.67	4.46	W
1957	7.72	6.29	14.89	7.83	AN	1.02	3.19	4.29	3.01	BN
1958	16.37	12.24	29.71	12.16	W	1.67	6.40	8.36	4.77	W
1959	7.40	3.84	12.05	6.75	BN	0.98	1.85	2.98	2.21	D
1960	7.72	4.65	13.06	6.20	D	0.85	2.07	2.96	1.85	C
1961	6.87	4.39	11.97	5.68	D	0.54	1.50	2.10	1.38	C
1962	8.17	6.23	15.11	6.65	BN	1.26	4.24	5.61	3.07	BN
1963	12.01	10.09	22.99	9.63	W	1.68	4.37	6.24	3.57	AN
1964	5.90	4.37	10.92	6.41	D	0.93	2.14	3.14	2.19	D
1965	16.59	8.13	25.64	10.15	W	3.20	4.55	8.13	3.81	W
1966	7.42	4.84	12.95	7.16	BN	1.49	2.42	3.98	2.51	BN
1967	12.14	11.01	24.06	10.20	W	2.46	7.09	9.98	5.25	W
1968	8.66	4.12	13.64	7.24	BN	1.02	1.85	2.94	2.21	D
1969	15.33	10.68	26.98	11.05	W	3.84	8.14	12.29	6.09	W
1970	18.87	4.35	24.06	10.40	W	2.55	2.96	5.61	3.18	AN
1971	12.71	8.90	22.57	10.37	W	1.56	3.23	4.91	2.89	BN
1972	7.61	5.02	13.43	7.29	BN	1.25	2.22	3.57	2.16	D
1973	12.80	6.38	20.05	8.58	AN	1.87	4.48	6.47	3.50	AN
1974	21.69	9.78	32.50	12.99	W	2.43	4.53	7.12	3.90	W
1975	9.24	8.95	19.23	9.35	W	1.37	4.65	6.18	3.85	W
1976	4.63	2.75	8.20	5.29	C	0.78	1.07	1.97	1.57	C
1977	2.49	1.93	5.12	3.11	C	0.22	0.80	1.05	0.84	C
1978	14.90	8.12	23.92	8.65	AN	2.57	6.50	9.65	4.58	W
1979	6.06	5.64	12.41	6.67	BN	1.87	3.99	5.98	3.67	AN
1980	15.49	6.00	22.33	9.04	AN	3.74	5.41	9.47	4.73	W
1981	6.81	3.63	11.10	6.21	D	0.85	2.29	3.22	2.44	D
1982	20.56	11.82	33.41	12.76	W	3.78	7.00	11.41	5.45	W
1983	22.75	13.66	37.68	15.29	W	5.42	8.73	15.01	7.22	W
1984	15.98	5.52	22.35	10.00	W	3.51	3.48	7.13	3.69	AN
1985	6.24	4.00	11.04	6.47	D	1.11	2.41	3.60	2.40	D
1986	19.45	5.45	25.83	9.96	W	4.36	4.92	9.50	4.31	W
1987	5.85	2.80	9.27	5.86	D	0.55	1.48	2.08	1.86	C
1988	5.78	2.90	9.23	4.65	C	0.86	1.55	2.48	1.48	C
1989	9.03	5.07	14.82	6.13	D	1.07	2.42	3.56	1.96	C
1990	4.94	3.72	9.26	4.81	C	0.83	1.59	2.46	1.51	C
1991	3.90	4.01	8.44	4.21	C	0.56	2.57	3.20	1.96	C
1992	5.41	2.93	8.87	4.06	C	0.86	1.66	2.58	1.56	C
1993	12.44	8.98	22.21	8.54	AN	2.49	5.65	8.38	4.20	W
1994	4.55	2.73	7.81	5.02	C	0.66	1.80	2.54	2.05	C

1995	19.83	13.60	34.55	12.89	W	3.67	8.01	12.32	5.95	W
1996	13.05	8.37	22.29	10.26	W	2.57	4.51	7.22	4.12	W
1997	20.22	4.39	25.42	10.82	W	5.75	3.59	9.51	4.13	W
1998	17.65	12.54	31.40	13.31	W	2.82	7.11	10.43	5.65	W
1999	12.97	7.26	21.19	9.80	W	1.90	3.85	5.91	3.59	AN
2000	12.06	5.96	18.90	8.94	AN	1.98	3.78	5.90	3.38	AN
2001	5.64	3.46	9.81	5.76	D	0.92	2.23	3.18	2.20	D
2002	9.32	4.57	14.60	6.35	D	1.27	2.75	4.06	2.34	D
2003	10.71	7.74	19.31	8.21	AN	1.25	3.49	4.87	2.81	BN
2004	10.95	4.40	16.04	7.51	BN	1.51	2.25	3.81	2.21	D
2005	8.40	9.28	18.55	8.49	AN	2.73	6.28	9.21	4.75	W
2006	18.06	13.09	32.09	13.20	W	2.86	7.37	10.44	5.90	W
2007	6.59	3.04	10.28	6.19	D	0.99	1.46	2.51	1.97	C
2008	5.90	3.82	10.28	5.16	C	0.99	2.45	3.49	2.06	C
2009	7.05	5.30	13.02	5.78	D	1.51	3.35	4.94	2.72	BN
2010	7.45	7.78	16.01	7.08	BN	1.43	4.53	6.08	3.55	AN
2011	12.68	11.53	25.21	10.54	W	3.68	6.90	10.99	5.58	W
2012	5.69	5.46	11.84	6.89	BN	0.83	1.86	2.76	2.18	D
2013	8.52	3.01	12.19	5.83	D	1.33	1.67	3.05	1.71	C
2014	4.29	2.59	7.46	4.07	C	0.46	1.21	1.72	1.16	C
2015	6.91	1.77	9.23	4.00	C	0.67	0.74	1.44	0.81	C
2016	12.24	4.60	17.48	6.71	BN	2.03	2.98	5.06	2.35	D
2017	26.17	10.69	37.82	14.14	W	6.65	7.77	14.84	6.46	W
2018	7.09	5.05	12.86	7.14	BN	1.64	3.01	4.76	3.03	BN
2019	13.11	10.66	24.77	10.34	W	2.64	6.34	9.28	4.94	W
2020	4.91	4.13	9.71	6.12	D	0.80	2.15	3.02	2.35	D
2021	3.52	2.26	6.37	3.80	C	0.51	1.24	1.80	1.32	C
min	2.49	1.77	5.12	3.11		0.22	0.74	1.05	0.81	
mean	10.46	6.42	17.65	7.91		1.98	3.78	5.92	3.26	
max	26.17	13.68	37.82	15.29		6.65	9.24	15.01	7.22	

1991-2020 mean

Eight River Runoff [maf]						
WY	Dec	Jan	Feb	Mar	Apr	May
1901						
1902						
1903						
1904						
1905						
1906	0.55	3.69	2.93	7.00	5.34	6.43
1907	2.14	2.83	6.01	10.40	7.32	5.86
1908	1.43	2.27	2.12	2.19	2.53	2.59
1909	0.66	11.14	6.85	3.71	4.22	4.78
1910	3.09	2.90	2.55	4.84	4.21	3.30
1911	1.15	4.11	3.61	5.88	6.36	5.71
1912	0.55	1.20	0.94	1.61	1.58	3.33
1913	0.77	1.60	1.01	1.32	2.81	3.31
1914	1.72	8.50	3.99	4.18	5.05	5.28

1915	0.76	1.86	5.43	3.54	4.43	6.38
1916	1.52	3.75	4.89	5.71	5.03	4.44
1917	1.28	1.01	3.13	2.15	4.29	4.37
1918	0.70	0.57	1.22	2.99	3.09	2.53
1919	0.68	1.20	3.13	2.74	3.89	4.06
1920	0.68	0.57	0.58	1.71	2.58	3.20
1921	2.90	4.34	3.15	4.22	3.30	4.01
1922	1.16	1.07	2.63	2.41	3.66	6.68
1923	2.03	1.75	1.20	1.51	3.38	3.66
1924	0.49	0.56	1.16	0.64	1.07	1.10
1925	0.92	0.94	4.99	2.18	3.82	3.70
1926	0.67	0.76	3.18	1.73	3.79	2.18
1927	2.01	2.22	6.05	3.53	4.82	4.28
1928	1.10	1.37	1.94	5.69	3.73	3.02
1929	0.64	0.61	1.12	1.29	1.63	2.49
1930	2.37	1.41	1.84	2.78	2.64	2.29
1931	0.39	0.80	0.78	1.20	1.23	1.18
1932	1.68	1.33	1.84	2.50	2.73	4.16
1933	0.42	0.70	0.58	1.89	1.97	2.36
1934	1.04	1.47	1.59	1.90	1.61	1.09
1935	0.79	1.87	1.56	2.13	6.18	4.74
1936	0.51	3.22	5.04	2.77	3.83	3.71
1937	0.45	0.54	2.36	3.28	3.77	4.92
1938	4.81	1.86	5.27	7.50	5.98	7.34
1939	0.80	0.79	0.81	1.91	2.26	1.47
1940	0.68	3.88	5.68	6.22	4.61	3.77
1941	3.41	4.28	5.07	4.72	4.62	5.75
1942	3.58	4.18	5.10	2.23	4.64	4.76
1943	1.83	4.67	2.84	5.33	4.23	3.59
1944	0.55	0.78	1.44	1.94	1.88	3.34
1945	1.50	1.07	4.13	2.17	2.82	3.82
1946	4.60	2.64	1.31	2.29	3.45	3.68
1947	1.06	0.64	1.57	2.51	2.20	2.05
1948	0.50	1.91	0.70	1.56	4.34	4.51
1949	0.66	0.53	0.92	3.32	3.27	3.39
1950	0.43	1.82	2.54	2.46	3.74	3.73
1951	5.95	3.40	3.52	2.66	2.81	3.15
1952	3.36	3.48	4.03	3.68	6.35	7.51
1953	1.92	5.40	1.52	2.06	3.25	3.38
1954	0.80	2.20	2.84	3.66	4.56	3.27
1955	1.35	1.16	0.96	1.27	1.97	3.22
1956	9.14	7.52	3.71	3.07	3.51	5.24
1957	0.61	0.79	2.65	3.41	2.36	3.85
1958	1.62	2.39	7.61	4.71	6.04	6.74
1959	0.58	2.25	2.50	1.98	2.27	1.82
1960	0.47	0.90	3.15	3.22	2.50	2.39
1961	1.36	0.86	2.14	1.93	2.02	2.16
1962	1.19	0.78	4.08	2.39	3.89	3.14
1963	1.90	1.70	4.66	2.10	5.60	4.99
1964	0.85	1.55	1.01	1.15	1.92	2.44
1965	8.66	5.61	2.26	1.97	4.74	3.81
1966	1.04	1.85	1.56	2.52	3.33	2.52
1967	2.98	3.34	2.52	4.09	3.82	6.26
1968	0.85	1.49	3.71	2.55	2.17	2.15

1969	1.77	7.91	4.73	3.36	5.44	7.34
1970	3.30	10.68	3.02	3.12	1.82	2.77
1971	3.26	3.05	1.83	3.73	3.40	4.18
1972	1.19	1.40	1.73	3.30	2.52	2.61
1973	1.83	4.08	3.66	3.27	3.08	4.76
1974	3.68	6.93	2.10	6.18	5.07	4.69
1975	0.86	1.01	2.92	4.65	2.89	5.40
1976	0.76	0.65	0.88	1.34	1.35	1.44
1977	0.38	0.47	0.48	0.54	0.69	0.91
1978	1.90	5.91	3.48	5.36	4.40	4.70
1979	0.53	1.44	2.10	2.90	2.67	4.50
1980	1.24	6.89	5.93	3.62	3.11	3.67
1981	0.92	1.57	1.76	2.48	2.32	2.11
1982	5.58	3.50	5.57	4.74	8.05	5.68
1983	3.69	4.25	6.46	10.57	4.87	6.96
1984	6.72	2.85	2.29	3.08	2.50	3.60
1985	1.20	0.84	1.21	1.59	2.79	2.14
1986	1.25	2.62	11.55	7.09	3.19	3.56
1987	0.53	0.78	1.48	2.60	1.73	1.48
1988	1.70	1.84	1.01	1.26	1.48	1.59
1989	0.72	0.85	0.99	6.17	3.59	2.22
1990	0.45	1.27	0.88	1.84	1.80	1.77
1991	0.34	0.37	0.45	2.64	1.95	2.40
1992	0.47	0.58	2.41	1.99	2.17	1.33
1993	1.25	4.06	3.13	5.70	4.33	5.23
1994	0.78	0.78	1.23	1.49	1.57	1.79
1995	1.06	8.11	3.12	10.19	5.61	7.18
1996	1.72	2.47	6.25	4.25	3.97	5.50
1997	6.84	12.15	2.74	2.45	2.70	2.96
1998	1.18	5.19	7.44	5.11	4.53	5.53
1999	1.88	2.60	4.59	3.67	3.26	4.27
2000	0.65	2.55	5.49	4.08	3.55	3.62
2001	0.67	0.87	1.50	2.39	2.03	2.49
2002	2.50	2.70	1.74	2.31	2.82	2.60
2003	3.24	3.40	1.66	2.52	3.27	4.82
2004	2.14	1.90	3.98	3.47	2.64	2.29
2005	1.56	2.49	2.01	3.75	3.18	7.23
2006	5.83	5.16	3.42	5.38	8.56	6.84
2007	1.32	0.87	2.14	2.07	1.74	1.67
2008	0.70	1.70	1.81	1.79	1.89	2.68
2009	0.57	0.96	2.32	3.64	2.40	4.21
2010	0.71	2.48	2.31	2.31	3.25	3.70
2011	4.31	2.10	1.96	6.20	5.23	4.94
2012	0.49	0.96	0.74	3.03	3.70	2.27
2013	4.09	1.34	1.08	1.71	2.02	1.43
2014	0.38	0.36	1.22	2.05	1.71	1.18
2015	2.89	0.79	2.23	0.84	0.76	0.82
2016	1.26	3.67	2.10	6.50	2.92	2.53
2017	3.71	8.53	12.65	5.52	6.61	5.84
2018	0.73	1.47	0.81	3.85	4.23	2.13
2019	0.86	2.83	5.20	5.89	6.16	4.97
2020	1.44	1.22	0.90	1.16	2.50	2.36
2021	0.47	0.72	0.97	1.08	1.41	1.21

min	0.34	0.36	0.45	0.54	0.69	0.82
mean	1.85	2.82	2.95	3.60	3.37	3.56
max	9.14	12.15	12.65	10.57	8.56	7.51

1991-2020 mean

Official Year Classifications based on May 1 Runoff Forecasts

Sacramento Valley Index			San Joaquin Valley Index		
WY	Index	Yr-type	Index	Yr-type	
1995	12.4	W	5.5	W	
1996	9.7	W	3.9	W	
1997	11.0	W	4.2	W	
1998	12.4	W	4.9	W	
1999	10.0	W	3.4	AN	
2000	9.2	W	3.3	AN	
2001	5.9	D	2.3	D	
2002	6.5	D	2.3	D	
2003	8.0	AN	2.7	BN	
2004	7.7	BN	2.2	D	
2005	7.4	BN	4.2	W	
2006	13.0	W	5.5	W	
2007	6.2	D	1.9	C	
2008	5.4	C	2.1	C	
2009	5.5	D	2.4	D	
2010	6.9	BN	3.5	AN	
2011	10.0	W	5.1	W	
2012	6.9	BN	2.2	D	
2013	5.8	D	1.6	C	
2014	4.0	C	1.1	C	
2015	4.0	C	0.7	C	
2016	7.1	BN	2.4	D	
2017	14.9	W	6.2	W	
2018	7.2	BN	3.0	BN	
2019	10.2	W	4.2	W	
2020	6.0	D	2.2	D	
2021	4.0	C	1.3	C	

Abbreviations:

- WY Water year (Oct 1 - Sep 30)
- W Wet year type
- AN Above normal year type
- BN Below normal year type
- D Dry year type
- C Critical year type
- % exc. Probability in % that a given value will be exceeded
- [maf] Million acre-feet

Notes:

Unimpaired runoff represents the natural water production of a river basin, unaltered by upstream diversions, storage, export of water to or import of water from other basins.

Sacramento River Runoff is the sum (in maf) of Sacramento River at Bend Bridge, Feather River inflow to Lake Oroville, Yuba River at Smartville, and American River inflow to Folsom Lake. The WY sum is also known as the Sacramento River Index, and was previously referred to as the "4 River Index" or "4 Basin Index". It was previously used to determine year type classifications under State Water Resources Control Board (SWRCB) Decision 1485.

Sacramento Valley Water Year Index = $0.4 * \text{Current Apr-Jul Runoff Forecast (in maf)} + 0.3 * \text{Current Oct-Mar Runoff in (maf)} + 0.3 * \text{Previous Water Year's Index}$ (if the Previous Water Year's Index exceeds 10.0, then 10.0 is used).

This index, originally specified in the 1995 SWRCB Water Quality Control Plan, is used to determine the Sacramento Valley water year type as implemented in SWRCB D-1641. Year types are set by first of month forecasts beginning in February. Final determination is based on the May 1 50% exceedence forecast.

Sacramento Valley Water Year Hydrologic Classification:

Year Type:	Water Year Index:
Wet	Equal to or greater than 9.2
Above Normal	Greater than 7.8, and less than 9.2
Below Normal	Greater than 6.5, and equal to or less than 7.8
Dry	Greater than 5.4, and equal to or less than 6.5
Critical	Equal to or less than 5.4

San Joaquin River Runoff is the sum of Stanislaus River inflow to New Melones Lake, Tuolumne River inflow to New Don Pedro Reservoir, Merced River inflow to Lake McClure, and San Joaquin River inflow to Millerton Lake (in maf).

San Joaquin Valley Water Year Index = $0.6 * \text{Current Apr-Jul Runoff Forecast (in maf)} + 0.2 * \text{Current Oct-Mar Runoff in (maf)} + 0.2 * \text{Previous Water Year's Index}$ (if the Previous Water Year's Index exceeds 4.5, then 4.5 is used).

This index, originally specified in the 1995 SWRCB Water Quality Control Plan, is used to determine the San Joaquin Valley water year type as implemented in SWRCB D-1641. Year types are set by first of month forecasts beginning in February. Final determination for San Joaquin River flow objectives is based on the May 1 75% exceedence forecast.

San Joaquin Valley Water Year Hydrologic Classification:

Year Type:	Water Year Index:
Wet	Equal to or greater than 3.8
Above Normal	Greater than 3.1, and less than 3.8
Below Normal	Greater than 2.5, and equal to or less than 3.1
Dry	Greater than 2.1, and equal to or less than 2.5
Critical	Equal to or less than 2.1

Eight River Index = Sacramento River Runoff + San Joaquin River Runoff

This Index is used from December through May to set flow objectives as implemented in SWRCB Decision 1641.

The 'reconstructed' table is based on observed runoff, and does NOT show the official year-types, which are based on May 1 forecasts of future runoff.

The current water year indices based on forecast runoff are posted at http://cdec.water.ca.gov/water_supply.html and published in DWR Bulletin 120 (also available at <http://cdec.water.ca.gov/snow/bulletin120>)

These indices have been used operationally since 1995, and are defined in SWRCB Decision 1641

(https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/decision_1641/)

This report is updated each fall once the data is available.

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