

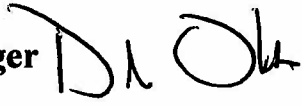
SOLANO COUNTY WATER AGENCY



5-17

MEMORANDUM

TO: City/District Urban Agencies

FROM: David B. Okita, General Manager 

DATE: August 10, 2010

SUBJECT: UWMP Reliability Data (Revised for SWP-prior memo is dated 6/10/10 – Solano Project data unchanged)

Attached are new tables that SCWA will be using in our 2011 UWMP for SWP and Solano Project supplies. Note that the SWP Reliability Report is in draft form and could be revised – so my SWP table may change.

DWR guidelines are not out yet, but last time, UWMP's require data for Normal Year, Single Dry Year and Multiple Dry Years. These terms are not defined in the law and are subject to local interpretation. In 2005 we discussed using common assumptions, but not every agency wanted to conform – and there was no requirement to do so. Note that for single dry year, DWR has recommended using the driest of years – like 1977. We disagree with that interpretation and thus use the average of single dry years and the first year or multiple dry years. We also define multiple dry years as three or more consecutive dry years. I think we all understand that the requirements in State law for UWMP are not necessarily the data we would use to analyze our local water supply reliability. The requirements probably originated by a legislative staffer who has little understanding about local water supply planning. Nevertheless, these are the requirements we must live with. The method SCWA plans to use for our UWMP is the same we used in 2005.

Note that the averages may not be what you intuitively would expect. In the big scheme of things, there is really a short history of data to rely upon. This can skew the averages.

State Water Project

For SWP we identify the year type (Normal and Dry) based on the Sacramento Valley Index (SVI). SVI uses terms Above Normal and Below Normal. I combine them to be Normal. I also combine Dry and Critically Dry to be Dry. Wet is Wet. The Draft 2009 SWP Reliability Report is the basis for water supply numbers. This year they did an analysis customized for each contractor –

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accessible on their web page – not in the printed report. The individual contractor data, this year, are based on a model that makes some assumption of carryover supplies. Carryover from prior years is added to the current year supply for annual allocations of Table A. Also DWR has provided data on Article 21 water for NBA contractors. Carryover and Article 21 supplies need to be explained help understand how these supplies may be incorporated in a water supply analysis in Solano County.

There are also other significant changes from the data provided for the 2005 UWMP's. The 2009 model includes South Delta pumping restrictions based on the Biological Opinions for Delta smelt and salmon. Some of these restrictions have been reduced since the publishing of the draft Reliability Report, but the future is uncertain as to how the restriction may change in the future. The 2009 data also includes different climate change impacts for the 2029 scenario that reduce supplies.

The addition of carryover supplies from prior years has a major impact on NBA supplies. Attached is the data for SCWA provided by DWR. In many years carryover makes a large amount of the overall supply. Note that the 2029 scenario assumes no carryover because they assume that demand will increase such that all Table A is used each year – that may or may not be the case for us. To determine carryover amounts, DWR first calculated carryover demand then calculated carryover supply. If there is carryover demand and there is carryover supply then carryover is allocated. Carryover demand is based on our annual schedules that we submit to DWR – they used 2004-2007 data. Our schedules show requests based on 100%, 50% and 30% allocation. For a 100% allocation DWR assumes our carryover demand is 23,700 AF/YR. For a 50% and 30% allocation DWR assumes our carryover demand is 8,400 AF/YR. For carryover supply they assumed that for different levels of final Table A allocation, a percentage of carryover demand is the carryover supply. For allocation less than 45% carryover supply is 30% carryover demand. For allocation between 45%-65% carryover supply is 50% carryover demand. For allocation greater than 65% carryover supply is 100% carryover demand. This is hard to figure out, but I think the logic behind this goes something like this: If the allocation for the year is low, that means that the prior year allocation was also probably low, so that the carryover supply is lower too. The weakness of this approach is that the carryover demand is based on our 2004-2007 schedules. We are currently in a mode where we carryover a relatively large amount of Table A, thus the DWR model assumes a relatively large carryover demand that results in a relatively large carryover supply. A potential problem is that if there is a large carryover supply assumed, this requires Table A deliveries to be depressed because carryover is generated from prior year reduced Table A. The bottom line is that over the 1922-2003 analysis period, the average total SWP deliveries may be OK, but when you analyze a single year or short groups of years, the supply may be skewed due to the carryover assumptions that, for example, may mask a short supply year.

Article 21 water for the NBA is not included in these figures. This is a major omission as this is a big part of our SWP supply. Currently we can get Article 21 whenever the Delta is in excess conditions, but our use of Article 21 water is highly variable and dependent on a number of factors that would be virtually impossible to model. New for the 2009 study, DWR has modeled NBA Article 21 separately from other contractors. They have modeled the availability of Article 21 when the Delta is in excess conditions and assumed that the maximum SCWA Article 21 delivery is 1,000 AF/month. I have the monthly data they used, but it does not reflect reality, so I do not think it is of much use. Our UWMPs will need to qualitatively describe Article 21 water, as well as other supplies we get through the NBA.

Solano Project

For Solano Project we have used allocation numbers from the 2009 update of the reliability study we sent to Solano Project users in 2009 – memo from me dated November 23, 2009. In the 2005 data we used the SVI as our year type designation. For the 2009 study we used Lake Berryessa inflow data to develop our own index. The development of Dry and Normal year designations are somewhat arbitrary. We used the 66th and 35th percentile to make the designations to conform to the SVI designations. There is not much of a change for the Solano Project reliability from the 2005 to the 2009 data.

If you have any questions please contact me at 455-1103 or by e-mail at dokita@scwa2.com.

A-2 UWMP.mem

File A-2; S-17; N-16C

Appendix B State Water Project Reliability

DWR Study 2009 data - SCWA Specific

Sacramento Valley Index

Value	Year Type
W	Wet
N	Below Normal
N	Above Normal
D	Dry
D	Critically Dry

Year	Sacramen to Valley Index	% Full Table A	% Full Table A for Normal Year (N)	% Full Table A for Single Dry Year (D) *	% Full Table A for Multiple Dry Year (3 or more Dry years)
1922	N	0.37	0.37		
1923	N	0.84	0.84		
1924	D	0.26		0.26	0.26
1925	D	0.39			0.39
1926	D	0.49			0.49
1927	W	0.46			
1928	N	0.86	0.86		
1929	D	0.31		0.31	0.31
1930	D	0.36			0.36
1931	D	0.22			0.22
1932	D	0.35			0.35
1933	D	0.35			0.35
1934	D	0.24			0.24
1935	N	0.43	0.43		
1936	N	0.71	0.71		
1937	N	0.66	0.66		
1938	W	0.77			
1939	D	0.96		0.96	
1940	N	0.60	0.60		
1941	W	0.59			
1942	W	0.83			
1943	W	0.77			
1944	D	0.75		0.75	
1945	N	0.44	0.44		
1946	N	0.74	0.74		
1947	D	0.74		0.74	
1948	N	0.65	0.65		
1949	D	0.58		0.58	
1950	N	0.50	0.50		
1951	N	0.43	0.43		
1952	W	0.86			
1953	W	0.89			
1954	N	0.69	0.69		
1955	D	0.51		0.51	
1956	W	0.48			

1957	N	0.82	0.82		
1958	W	0.58			
1959	N	0.83	0.83		
1960	D	0.52		0.52	
1961	D	0.49			
1962	N	0.70	0.70		
1963	W	0.46			
1964	D	0.81		0.81	
1965	W	0.54			
1966	N	0.83	0.83		
1967	W	0.55			
1968	N	0.83	0.83		
1969	W	0.66			
1970	W	0.58			
1971	W	0.83			
1972	N	0.58	0.58		
1973	N	0.45	0.45		
1974	W	0.78			
1975	W	0.79			
1976	D	0.81		0.81	
1977	D	0.14			
1978	N	0.45	0.45		
1979	N	0.65	0.65		
1980	N	0.60	0.60		
1981	D	0.84		0.84	
1982	W	0.57			
1983	W	0.64			
1984	W	0.53			
1985	D	0.77		0.77	
1986	W	0.67			
1987	D	0.55		0.55	0.55
1988	D	0.24			0.24
1989	D	0.38			0.38
1990	D	0.42			0.42
1991	D	0.20			0.20
1992	D	0.20			0.20
1993	N	0.43	0.43		
1994	D	0.67		0.67	
1995	W	0.54			
1996	W	0.85			
1997	W	0.75			
1998	W	0.91			
1999	W	0.60			
2000	W	0.86			
2001	D	0.37		0.37	
2002	D	0.42			
2003	N	0.79	0.79		
Average		0.59	0.64	0.63	0.33

*Includes first year of consecutive dry years

Appendix B State Water Project Reliability

DWR Study 2029 data - SCWA Specific

Sacramento Valley Index

Value	Year Type
W	Wet
N	Below Normal
N	Above Normal
D	Dry
D	Critically Dry

Year	Sacramen to Valley Index	% Full Table A	% Full Table A for Normal Year (N)	% Full Table A for Single Dry Year (D) *	% Full Table A for Multiple Dry Year (3 or more Dry years)
1922	N	0.64	0.64		
1923	N	0.61	0.61		
1924	D	0.20		0.20	0.20
1925	D	0.42			0.42
1926	D	0.52			0.52
1927	W	0.72			
1928	N	0.64	0.64		
1929	D	0.28		0.28	0.28
1930	D	0.41			0.41
1931	D	0.15			0.15
1932	D	0.39			0.39
1933	D	0.39			0.39
1934	D	0.27			0.27
1935	N	0.57	0.57		
1936	N	0.66	0.66		
1937	N	0.81	0.81		
1938	W	1.00			
1939	D	0.43		0.43	
1940	N	0.63	0.63		
1941	W	0.75			
1942	W	0.64			
1943	W	0.74			
1944	D	0.47		0.47	
1945	N	0.75	0.75		
1946	N	0.59	0.59		
1947	D	0.48		0.48	
1948	N	0.58	0.58		
1949	D	0.56		0.56	
1950	N	0.59	0.59		
1951	N	0.74	0.74		
1952	W	0.82			
1953	W	0.57			
1954	N	0.58	0.58		

1955	D	0.43		0.43	
1956	W	0.82			
1957	N	0.54	0.54		
1958	W	0.92			
1959	N	0.44	0.44		
1960	D	0.47		0.47	
1961	D	0.46			
1962	N	0.66	0.66		
1963	W	0.58			
1964	D	0.64		0.64	
1965	W	0.67			
1966	N	0.62	0.62		
1967	W	0.81			
1968	N	0.55	0.55		
1969	W	1.00			
1970	W	0.69			
1971	W	0.59			
1972	N	0.57	0.57		
1973	N	0.66	0.66		
1974	W	0.74			
1975	W	0.69			
1976	D	0.62		0.62	
1977	D	0.09			
1978	N	0.78	0.78		
1979	N	0.68	0.68		
1980	N	0.83	0.83		
1981	D	0.57		0.57	
1982	W	0.95			
1983	W	1.00			
1984	W	0.77			
1985	D	0.68		0.68	
1986	W	0.79			
1987	D	0.23		0.23	0.23
1988	D	0.30			0.30
1989	D	0.49			0.49
1990	D	0.19			0.19
1991	D	0.22			0.22
1992	D	0.18			0.18
1993	N	0.66	0.66		
1994	D	0.57		0.57	
1995	W	0.85			
1996	W	0.66			
1997	W	0.81			
1998	W	0.83			
1999	W	0.71			
2000	W	0.65			
2001	D	0.30		0.30	
2002	D	0.67			
2003	N	0.58	0.58		
Average		0.60	0.64	0.46	0.31

*Includes first year of consecutive dry years

