Attachment 15

USGS Information on 7Q10 for Years 1943 through 2006

Year	7Q10	10 yr Min	Roll Yr Min
1943	1170.49		
1944	1250.53		
1945	1240.52		
1946	1700.63		
1947	1620.62		
1948	797.16		
1949	925.28		
1950	871.23		
1951	817.17		
1952	2180.64	797.16	
1953	913.26		797.16
1954	720.11		720.11
1955	1280.54	Ongoing rolling 10-yr averages	720.11
1956	962.31		720.11
1957	1020.34		720.11
1958	594.4		594.4
1959	918.27		594.4
1960	1010.33		594.4
1961	1070.45		594.4
1962	876.24	594.4	
1963	949.3		594.4
1964	695.1		594.4
1965	394.1		394.1
1966	665.8		394.1
1967	827.19		394.1
1968	1060.44		394.1
1969	1040.4		394.1
1970	1170.5		394.1
1971	850.21		394.1
1972	743.12	394.1	
1973	1160.48		394.1
1974	1290.56		394.1
1975	862.22		665.8
1976	1030.35		743.12
1977	1340.57		743.12
1978	969.32		743.12
1979	743.13		743.12
1980	1100.47		743.12
1981	655.6	4th 10 yr	743.12
1982	1470.6	655.6	
1983	1030.39		655.6
1984	820.18		655.6
1985	836.2		655.6
1986	777.15		655.6
1987	1550.61		655.6
1988	1050.41		655.6
1989	911.25		655.6
1990	1030.36		655.6
1991	1050.42	5th 10 yr	655.6
1992	436.2	436.2	
1993	1360.58		436.2
1994	658.7		436.2
1995	1030.37		436.2
1996	559.3		436.2
1997	931.29		436.2
1998	1090.46		436.2
1999	1030.38		436.2
2000	748.14		436.2
2001	1290.55	6th 10 yr	436.2
2002	694.9	559.3	
2003	605.5		559.3
2004	1050.43		559.3
2005	1390.59		559.3
2006	1230.51		605.5

All Rolling 10 yr Mins
797.16
720.11
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436.2
436.2
436.2
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436.2
743.12
743.12
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743.12
655.6
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436.2
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436.2
436.2
436.2
436.2
436.2
436.2
559.3
559.3
559.3
559.3
559.3
559.3
655.6

Median of all 7Q10s

Page 8 of 33 states the 7Q10 value is 652.14 cfs from the old permit (1936 through 1992) and that the new 7Q10 is 638.65 cfs. Attachment D indicates the period of record used is 1941 - 2006. The USGS data set uses a Non-exceedance probability analysis that takes into account various statistical evaluations (e.g. variance, standard deviation, coefficient of variation etc.) to arrive at the 638.655 CFS for the 7Q10. Note: Attached Data was from 1943 onward

Page 8 of 33 states, "Available dilution of the receiving water is determined using the facility's design flow and the annual 7-day mean low flow at the 10-year recurrence interval (7Q10) of the receiving water just above the facility's outfall." The 7-day mean low for each year from 1943 through 2006 are listed above. The rolling averages for all years was used in the column to the right. The mean 7Q10 on a rolling average basis is 655.6 cfs.

$$\text{Dilution Factor} = \frac{(7Q10) + (\text{Plant design mgd} \times 1.547)}{(\text{Plant design mgd} \times 1.547) \times 0.90}$$

Proposed Permit Dilution

$$\left\{\frac{638.65 + (34 \times 1.547)}{(34 \times 1.547)}\right\} \times 0.9 = \mathbf{11.827887}$$

Median 7Q10 Dilution

$$\left\{\frac{655.6 + (34 \times 1.547)}{(34 \times 1.547)}\right\} \times 0.9 = \mathbf{12.11792}$$

Manchester requests that the 7Q10 dilution factor be changed to **12.117** based on the above information that reflects the language contained the the draft permit.