

John Whipple

m: Phil Mutz
Sent: Friday, May 27, 2005 3:32 PM
To: John Whipple

John: The average annual Colo. River Natural Flow @ Lee Ferry for the critical period 1953-77 used in Reclamation's latest material sent to us is 13,032,000 AF. The total active storage is 26,232,000 AF, which is an average of 1,049,000 AF/year over 25 years. The average annual supply for the critical period is therefore 14,081,000 AF and that is all that is available. Thus take off the portion for release to the Lower Basin and the remainder is Upper Basin yield; ie 8.0 MAF to Lower Basin leaves 6.081,000 AF for Upper Basin. I tried a couple of runs using an UB demand varying around 6.0 MAF during the critical period and found no major change in the yield. Phil

Hydro. Determination -

Discuss constant $6.0 \pm$ MAF demand at Powell - would get less risk of shortage during critical drawdown period if model demand vs. flow availability in Upper Basin for direct flow ^{uses} (i.e. - 6.5 to 7.0 in wet years gives less equalization & spill, 5.0-5.5 in dry years gives slower or less drawdown in Powell).

Power pool - storage/use of water for hydropower generation subsequent to use for BCU, power pool available to meet Lee Ferry obligations under III(c), III(d) of PCH Compact.

Water salvage included in development of UROC - include in demand analysis to be consistent with use of UROC in Powell modeling with inflows reduced for upstream demands on inflows.

Following assumptions
Gianta settlement provision

Compare 2000 to 1988 Upper Division
State depletion projections
Demand schedule in 1988 HQ
Net. (constant or growing?)

Upper Colorado Basin Hydrologic Determination - draft 5/23/05 Whipple

Calendar Year	Upper Basin			Upper Basin			Depletion Level (minus)	Shortage (plus)	Net Available to Store	UC Basin Year-end Storage	Spill to LC	10-yr Moving Average to LC
	CR Natural Flow (plus)	Carryover Storage (plus)	Release 8.25MAF (minus)	CR Natural Flow (plus)	Carryover Storage (plus)	Release 8.25MAF (minus)						
1906	18,550,021	0	8,250,000	18,550,021	0	8,250,000	0	4,300,021	4,300,021	0	0	0
1907	21,201,694	4,300,021	8,250,000	11,251,715	11,251,715	8,250,000	0	11,251,715	11,251,715	0	0	0
1908	12,218,817	11,251,715	8,250,000	8,250,000	8,250,000	8,250,000	0	9,220,532	9,220,532	0	0	0
1909	22,356,301	9,220,532	8,250,000	8,250,000	8,250,000	8,250,000	0	17,326,833	17,326,833	0	0	0
1910	14,650,616	17,326,833	8,250,000	8,250,000	8,250,000	8,250,000	0	17,727,449	17,727,449	0	0	0
1911	15,499,729	17,727,449	8,250,000	8,250,000	8,250,000	8,250,000	0	18,977,178	18,977,178	0	0	0
1912	18,623,410	18,977,178	8,250,000	8,250,000	8,250,000	8,250,000	0	23,350,588	23,350,588	0	0	0
1913	14,536,373	23,350,588	8,250,000	8,250,000	8,250,000	8,250,000	0	23,636,961	23,636,961	0	0	0
1914	21,354,614	23,636,961	8,250,000	8,250,000	8,250,000	8,250,000	0	30,741,775	30,071,161	6,849,752	94,902,167	94,902,167
1915	13,623,277	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	29,444,438	29,444,438	5,552,415	106,347,474	106,347,474
1916	20,142,892	29,444,438	8,250,000	8,250,000	8,250,000	8,250,000	0	35,337,330	30,071,161	11,445,307	121,219,416	121,219,416
1917	22,942,804	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	38,763,965	30,071,161	7,795,077	129,014,493	129,014,493
1918	15,865,939	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	31,687,100	30,071,161	4,580,507	133,595,000	133,595,000
1919	12,651,369	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	28,472,530	28,472,530	12,618,139	146,213,139	146,213,139
1920	22,287,632	28,472,530	8,250,000	8,250,000	8,250,000	8,250,000	0	36,510,162	30,071,161	14,455,919	160,669,058	160,669,058
1921	22,526,781	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	38,347,942	30,071,161	10,376,336	171,045,394	171,045,394
1922	18,447,198	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	34,288,359	30,071,161	10,953,184	181,998,578	181,998,578
1923	19,024,046	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	34,845,207	30,071,161	5,806,936	180,955,762	180,955,762
1924	13,877,798	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	29,698,959	29,698,959	5,987,637	181,390,984	181,390,984
1925	14,430,701	29,698,959	8,250,000	8,250,000	8,250,000	8,250,000	0	29,879,660	29,879,660	6,951,368	176,897,045	176,897,045
1926	15,213,731	29,879,660	8,250,000	8,250,000	8,250,000	8,250,000	0	30,843,391	30,071,161	11,468,350	173,493,453	173,493,453
1927	19,539,212	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	35,360,373	30,071,161	13,758,723	183,760,064	183,760,064
1928	16,954,334	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	32,775,495	30,071,161	6,550,179	177,692,104	177,692,104
1929	21,829,585	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	37,650,746	30,071,161	403,272	163,639,457	163,639,457
1930	14,621,041	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	30,442,202	30,071,161	3,575,459	156,838,580	156,838,580
1931	8,474,134	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	24,295,295	24,295,295	1,508,959	147,394,355	147,394,355
1932	17,422,187	24,295,295	8,250,000	8,250,000	8,250,000	8,250,000	0	27,467,482	27,467,482	0	141,587,419	141,587,419
1933	12,183,500	27,467,482	8,250,000	8,250,000	8,250,000	8,250,000	0	25,400,982	25,400,982	0	135,599,782	135,599,782
1934	6,178,192	25,400,982	8,250,000	8,250,000	8,250,000	8,250,000	0	17,329,174	17,329,174	0	128,648,414	128,648,414
1935	12,630,349	17,329,174	8,250,000	8,250,000	8,250,000	8,250,000	0	15,709,523	15,709,523	0	117,180,064	117,180,064
1936	14,648,873	15,709,523	8,250,000	8,250,000	8,250,000	8,250,000	0	16,108,396	16,108,396	0	108,296,592	108,296,592
1937	14,306,056	16,108,396	8,250,000	8,250,000	8,250,000	8,250,000	0	16,164,452	16,164,452	0	94,537,869	94,537,869
1938	11,148,319	16,164,452	8,250,000	8,250,000	8,250,000	8,250,000	0	20,062,771	20,062,771	0	87,987,690	87,987,690
1939	11,164,059	20,062,771	8,250,000	8,250,000	8,250,000	8,250,000	0	12,658,487	12,658,487	0	87,584,418	87,584,418
1940	9,931,657	16,976,830	8,250,000	8,250,000	8,250,000	8,250,000	0	18,525,165	18,525,165	0	84,008,959	84,008,959
1941	20,116,678	12,658,487	8,250,000	8,250,000	8,250,000	8,250,000	0	21,500,301	21,500,301	0	82,500,000	82,500,000
1942	17,225,136	18,525,165	8,250,000	8,250,000	8,250,000	8,250,000	0	20,981,702	20,981,702	0	82,500,000	82,500,000
1943	13,731,401	21,500,301	8,250,000	8,250,000	8,250,000	8,250,000	0	22,101,124	22,101,124	0	82,500,000	82,500,000
1944	15,369,422	20,981,702	8,250,000	8,250,000	8,250,000	8,250,000	0	21,991,652	21,991,652	0	82,500,000	82,500,000
1945	14,140,528	22,101,124	8,250,000	8,250,000	8,250,000	8,250,000	0	18,837,105	18,837,105	0	82,500,000	82,500,000
1946	11,095,453	21,991,652	8,250,000	8,250,000	8,250,000	8,250,000	0	0	0	0	0	0

1947	16,439,486	18,837,105	8,250,000	5,000,000	0	21,026,591	21,026,591	0	82,500,000
1948	15,139,294	21,026,591	8,250,000	5,000,000	0	21,915,885	21,915,885	0	82,500,000
1949	16,933,584	21,915,885	8,250,000	6,000,000	0	24,599,469	24,599,469	707,446	83,207,446
1950	13,140,416	24,599,469	8,250,000	6,000,000	0	23,489,885	23,489,885	0	83,207,446
1951	12,505,894	23,489,885	8,250,000	6,000,000	0	21,745,779	21,745,779	0	83,207,446
1952	20,805,422	21,745,779	8,250,000	6,000,000	0	28,301,201	28,301,201	4,409,178	87,616,624
1953	11,165,419	28,301,201	8,250,000	6,000,000	0	25,216,620	25,216,620	1,324,597	88,941,221
1954	8,496,102	25,216,620	8,250,000	6,000,000	0	19,462,722	19,462,722	0	88,941,221
1955	9,413,908	19,462,722	8,250,000	6,000,000	0	14,626,630	14,626,630	0	88,941,221
1956	11,426,874	14,626,630	8,250,000	6,000,000	0	11,803,504	11,803,504	0	88,941,221
1957	21,500,963	11,803,504	8,250,000	6,000,000	0	19,054,467	19,054,467	0	88,941,221
1958	15,862,511	19,054,467	8,250,000	6,000,000	0	20,666,978	20,666,978	0	88,941,221
1959	9,598,169	20,666,978	8,250,000	6,000,000	0	16,015,147	16,015,147	0	88,233,775
1960	11,524,160	16,015,147	8,250,000	6,000,000	0	13,289,307	13,289,307	0	88,233,775
1961	10,010,259	13,289,307	8,250,000	6,000,000	0	9,049,566	9,049,566	0	88,233,775
1962	17,377,609	9,049,566	8,250,000	6,000,000	0	12,177,175	12,177,175	0	83,824,597
1963	8,840,900	12,177,175	8,250,000	6,000,000	0	6,768,075	6,768,075	0	82,500,000
1964	10,863,586	6,768,075	8,250,000	6,000,000	0	3,381,661	3,381,661	0	82,500,000
1965	19,875,027	3,381,661	8,250,000	6,000,000	0	9,006,688	9,006,688	0	82,500,000
1966	10,679,844	9,006,688	8,250,000	6,000,000	0	5,436,532	5,436,532	0	82,500,000
1967	11,670,830	5,436,532	8,250,000	6,000,000	0	2,857,362	2,857,362	0	82,500,000
1968	13,739,932	2,857,362	8,250,000	6,000,000	0	2,347,294	2,347,294	0	82,500,000
1969	15,272,159	2,347,294	8,250,000	6,000,000	0	3,369,453	3,369,453	0	82,500,000
1970	15,344,136	3,369,453	8,250,000	6,000,000	0	4,463,589	4,463,589	0	82,500,000
1971	15,290,433	4,463,589	8,250,000	6,000,000	0	5,504,022	5,504,022	0	82,500,000
1972	12,959,652	5,504,022	8,250,000	6,000,000	0	4,213,673	4,213,673	0	82,500,000
1973	18,397,816	4,213,673	8,250,000	6,000,000	0	8,361,489	8,361,489	0	82,500,000
1974	13,089,042	8,361,489	8,250,000	6,000,000	0	7,200,532	7,200,532	0	82,500,000
1975	16,825,996	7,200,532	8,250,000	6,000,000	0	9,776,528	9,776,528	0	82,500,000
1976	11,140,311	9,776,528	8,250,000	6,000,000	0	6,666,839	6,666,839	0	82,500,000
1977	5,438,897	6,666,839	8,250,000	6,000,000	2,144,265	0	0	0	82,500,000
1978	15,183,722	0	8,250,000	6,000,000	0	933,722	933,722	0	82,500,000
1979	17,671,870	933,722	8,250,000	6,000,000	0	4,355,592	4,355,592	0	82,500,000
1980	17,765,183	4,355,592	8,250,000	6,000,000	0	7,870,775	7,870,775	0	82,500,000
1981	9,015,200	7,870,775	8,250,000	6,000,000	0	2,635,975	2,635,975	0	82,500,000
1982	17,489,400	2,635,975	8,250,000	6,000,000	0	5,875,374	5,875,374	0	82,500,000
1983	24,361,989	5,875,374	8,250,000	6,000,000	0	15,987,363	15,987,363	0	82,500,000
1984	25,359,376	15,987,363	8,250,000	6,000,000	0	27,096,740	27,096,740	3,204,717	85,704,717
1985	21,246,109	27,096,740	8,250,000	6,000,000	0	34,092,848	30,071,161	10,200,825	95,905,542
1986	23,013,446	30,071,161	8,250,000	6,000,000	0	38,834,607	30,071,161	14,942,584	110,848,126
1987	15,640,478	30,071,161	8,250,000	6,000,000	0	31,461,639	30,071,161	7,569,616	118,417,742
1988	11,456,357	30,071,161	8,250,000	6,000,000	0	27,277,518	27,277,518	3,385,495	121,803,237
1989	9,921,847	27,277,518	8,250,000	6,000,000	0	22,949,364	22,949,364	0	121,803,237
1990	9,639,803	22,949,364	8,250,000	6,000,000	0	18,339,167	18,339,167	0	121,803,237
1991	12,170,021	18,339,167	8,250,000	6,000,000	0	16,259,188	16,259,188	0	121,803,237
1992	10,895,580	16,259,188	8,250,000	6,000,000	0	12,904,768	12,904,768	0	121,803,237
1993	18,160,118	12,904,768	8,250,000	6,000,000	0	16,814,886	16,814,886	0	121,803,237

36% Heritage

1994	11,125,503	16,814,886	8,250,000	8,250,000	0	13,690,388	13,690,388	0	118,598,520
1995	20,047,166	13,690,388	8,250,000	8,250,000	0	19,487,554	19,487,554	0	108,397,695
1996	14,502,293	19,487,554	8,250,000	8,250,000	0	19,739,847	19,739,847	0	93,455,111
1997	21,622,438	19,739,847	8,250,000	8,250,000	0	27,112,285	27,112,285	3,220,262	89,105,757
1998	16,798,978	27,112,285	8,250,000	8,250,000	0	29,660,663	29,660,663	5,768,640	91,488,902
1999	15,934,210	29,660,663	8,250,000	8,250,000	0	31,344,873	30,071,161	7,452,850	98,941,753
2000	10,646,526	30,071,161	8,250,000	8,250,000	0	26,467,687	26,467,687	2,575,664	101,517,417

Average 6,000,000

Upper Colorado Basin Hydrologic Determination - draft 5/23/05 Whipple

Calendar Year	Upper Basin		Upper Basin		Release 8.25MAF (minus)	Depletion Level (minus)	Shortage (plus) 0.0%	Net Available to Store	UC Basin Year-end Storage	Spill to LC	10-yr Moving Average to LC	Pinch Point
	CR Natural Flow (plus)	Carryover Storage (plus)	8.25MAF (minus)	Level (minus)								
1906	18,550,021	0	8,250,000	5,100,000	8,250,000	0	4,200,021	4,200,021	0	0	0	0
1907	21,201,694	4,200,021	8,250,000	6,100,000	8,250,000	0	11,051,715	11,051,715	0	0	0	0
1908	12,218,817	11,051,715	8,250,000	5,900,000	8,250,000	0	9,120,532	9,120,532	0	0	0	0
1909	22,356,301	9,120,532	8,250,000	6,100,000	8,250,000	0	17,126,833	17,126,833	0	0	0	0
1910	14,650,616	17,126,833	8,250,000	6,900,000	8,250,000	0	17,527,449	17,527,449	0	0	0	0
1911	15,499,729	17,527,449	8,250,000	6,900,000	8,250,000	0	18,777,178	18,777,178	0	0	0	0
1912	18,623,410	18,777,178	8,250,000	6,100,000	8,250,000	0	23,050,588	23,050,588	0	0	0	0
1913	14,536,373	23,050,588	8,250,000	6,000,000	8,250,000	0	23,336,961	23,336,961	0	6,449,752	94,502,167	0
1914	21,354,814	23,336,961	8,250,000	6,100,000	8,250,000	0	30,341,775	30,071,161	0	5,552,415	105,847,474	0
1915	13,623,277	30,071,161	8,250,000	6,000,000	8,250,000	0	29,444,438	29,444,438	0	11,345,307	120,619,416	0
1916	20,142,892	29,444,438	8,250,000	6,100,000	8,250,000	0	35,237,330	30,071,161	0	14,771,942	128,414,493	0
1917	22,942,804	30,071,161	8,250,000	6,000,000	8,250,000	0	38,663,965	30,071,161	0	7,795,077	133,095,000	0
1918	15,865,939	30,071,161	8,250,000	5,900,000	8,250,000	0	31,687,100	30,071,161	0	4,680,507	145,713,139	0
1919	12,651,369	30,071,161	8,250,000	5,900,000	8,250,000	0	28,572,530	28,572,530	0	12,618,139	160,069,058	0
1920	22,287,632	28,572,530	8,250,000	6,100,000	8,250,000	0	36,510,162	30,071,161	0	14,355,919	170,345,394	0
1921	22,526,781	30,071,161	8,250,000	6,100,000	8,250,000	0	38,247,942	30,071,161	0	10,853,184	181,198,578	0
1922	18,447,198	30,071,161	8,250,000	6,100,000	8,250,000	0	34,168,359	30,071,161	0	5,806,936	180,555,762	0
1923	19,024,046	30,071,161	8,250,000	6,000,000	8,250,000	0	34,745,207	30,071,161	0	5,987,637	176,597,045	0
1924	13,877,798	30,071,161	8,250,000	6,000,000	8,250,000	0	29,879,660	29,879,660	0	6,951,368	173,193,453	0
1925	14,430,701	29,879,660	8,250,000	6,000,000	8,250,000	0	30,843,391	30,071,161	0	11,368,350	174,281,848	0
1926	15,213,731	29,879,660	8,250,000	6,100,000	8,250,000	0	35,260,373	30,071,161	0	13,658,723	183,260,064	0
1927	19,539,212	30,071,161	8,250,000	6,100,000	8,250,000	0	32,775,495	30,071,161	0	6,550,179	177,192,104	0
1928	16,954,334	30,071,161	8,250,000	6,000,000	8,250,000	0	37,550,746	30,071,161	0	503,272	163,339,457	0
1929	21,829,585	30,071,161	8,250,000	5,900,000	8,250,000	0	30,442,202	27,467,482	0	3,575,459	156,638,580	0
1930	14,621,041	30,071,161	8,250,000	6,000,000	8,250,000	0	27,467,482	27,467,482	0	1,608,959	147,394,355	0
1931	8,474,134	30,071,161	8,250,000	6,000,000	8,250,000	0	17,529,174	17,529,174	0	0	141,587,419	0
1932	17,422,187	24,395,295	8,250,000	5,900,000	8,250,000	0	16,009,523	16,009,523	0	0	135,599,782	0
1933	12,183,500	27,467,482	8,250,000	6,000,000	8,250,000	0	16,408,396	16,408,396	0	0	128,648,414	0
1934	6,178,192	17,529,174	8,250,000	6,000,000	8,250,000	0	16,464,452	16,464,452	0	0	117,280,064	0
1935	12,630,349	16,009,523	8,250,000	6,000,000	8,250,000	0	20,262,771	20,262,771	0	0	108,396,592	0
1936	14,648,873	16,408,396	8,250,000	6,000,000	8,250,000	0	17,276,830	17,276,830	0	0	94,737,869	0
1937	14,306,056	16,464,452	8,250,000	6,100,000	8,250,000	0	13,058,487	13,058,487	0	0	88,187,690	0
1938	11,164,059	20,262,771	8,250,000	5,900,000	8,250,000	0	18,825,165	18,825,165	0	0	87,684,418	0
1939	18,148,319	17,276,830	8,250,000	6,100,000	8,250,000	0	21,700,301	21,700,301	0	0	84,108,959	0
1940	9,931,657	13,058,487	8,250,000	6,100,000	8,250,000	0	21,181,702	21,181,702	0	0	82,500,000	0
1941	20,116,678	18,825,165	8,250,000	6,100,000	8,250,000	0	22,301,124	22,301,124	0	0	82,500,000	0
1942	17,225,136	18,825,165	8,250,000	6,000,000	8,250,000	0	22,191,652	22,191,652	0	0	82,500,000	0
1943	13,731,401	21,700,301	8,250,000	6,000,000	8,250,000	0	19,137,105	19,137,105	0	0	82,500,000	0
1944	15,369,422	21,181,702	8,250,000	6,000,000	8,250,000	0	0	0	0	0	82,500,000	0
1945	14,140,528	22,301,124	8,250,000	5,900,000	8,250,000	0	0	0	0	0	82,500,000	0
1946	11,095,453	22,191,652	8,250,000	5,900,000	8,250,000	0	0	0	0	0	82,500,000	0

1947	16,439,486	19,137,105	8,250,000	8,250,000	8,250,000	8,250,000	0	21,326,591	21,326,591	0	82,500,000
1948	15,139,294	21,326,591	8,250,000	8,250,000	8,250,000	8,250,000	0	22,215,885	22,215,885	0	82,500,000
1949	16,933,584	22,215,885	8,250,000	8,250,000	8,250,000	8,250,000	0	24,899,469	24,899,469	1,007,446	83,507,446
1950	13,140,416	24,899,469	8,250,000	8,250,000	8,250,000	8,250,000	0	23,789,885	23,789,885	0	83,507,446
1951	12,505,894	23,789,885	8,250,000	8,250,000	8,250,000	8,250,000	0	22,145,779	22,145,779	0	83,507,446
1952	20,805,422	22,145,779	8,250,000	8,250,000	8,250,000	8,250,000	0	28,601,201	28,601,201	4,709,178	88,216,624
1953	11,165,419	28,601,201	8,250,000	8,250,000	8,250,000	8,250,000	0	25,616,620	25,616,620	1,724,597	89,941,221
1954	8,496,102	25,616,620	8,250,000	8,250,000	8,250,000	8,250,000	0	19,962,722	19,962,722	0	89,941,221
1955	9,413,908	19,962,722	8,250,000	8,250,000	8,250,000	8,250,000	0	15,226,630	15,226,630	0	89,941,221
1956	11,426,874	15,226,630	8,250,000	8,250,000	8,250,000	8,250,000	0	12,503,504	12,503,504	0	89,941,221
1957	21,500,963	12,503,504	8,250,000	8,250,000	8,250,000	8,250,000	0	19,654,467	19,654,467	0	89,941,221
1958	15,862,511	19,654,467	8,250,000	8,250,000	8,250,000	8,250,000	0	21,266,978	21,266,978	0	89,941,221
1959	9,598,169	21,266,978	8,250,000	8,250,000	8,250,000	8,250,000	0	16,715,147	16,715,147	0	88,933,775
1960	11,524,160	16,715,147	8,250,000	8,250,000	8,250,000	8,250,000	0	14,089,307	14,089,307	0	88,933,775
1961	10,010,259	14,089,307	8,250,000	8,250,000	8,250,000	8,250,000	0	9,949,566	9,949,566	0	88,933,775
1962	17,377,609	9,949,566	8,250,000	8,250,000	8,250,000	8,250,000	0	12,977,175	12,977,175	0	84,224,597
1963	8,840,900	12,977,175	8,250,000	8,250,000	8,250,000	8,250,000	0	7,668,075	7,668,075	0	82,500,000
1964	10,863,586	7,668,075	8,250,000	8,250,000	8,250,000	8,250,000	0	4,381,661	4,381,661	0	82,500,000
1965	19,875,027	4,381,661	8,250,000	8,250,000	8,250,000	8,250,000	0	9,906,688	9,906,688	0	82,500,000
1966	10,679,844	9,906,688	8,250,000	8,250,000	8,250,000	8,250,000	0	6,436,532	6,436,532	0	82,500,000
1967	11,670,830	6,436,532	8,250,000	8,250,000	8,250,000	8,250,000	0	3,957,362	3,957,362	0	82,500,000
1968	13,739,932	3,957,362	8,250,000	8,250,000	8,250,000	8,250,000	0	3,447,294	3,447,294	0	82,500,000
1969	15,272,159	3,447,294	8,250,000	8,250,000	8,250,000	8,250,000	0	4,469,453	4,469,453	0	82,500,000
1970	15,344,136	4,469,453	8,250,000	8,250,000	8,250,000	8,250,000	0	5,563,589	5,563,589	0	82,500,000
1971	15,290,433	5,563,589	8,250,000	8,250,000	8,250,000	8,250,000	0	6,604,022	6,604,022	0	82,500,000
1972	12,959,652	6,604,022	8,250,000	8,250,000	8,250,000	8,250,000	0	5,413,673	5,413,673	0	82,500,000
1973	18,397,816	5,413,673	8,250,000	8,250,000	8,250,000	8,250,000	0	9,461,489	9,461,489	0	82,500,000
1974	13,089,042	9,461,489	8,250,000	8,250,000	8,250,000	8,250,000	0	8,300,532	8,300,532	0	82,500,000
1975	16,825,996	8,300,532	8,250,000	8,250,000	8,250,000	8,250,000	0	10,876,528	10,876,528	0	82,500,000
1976	11,140,311	10,876,528	8,250,000	8,250,000	8,250,000	8,250,000	0	7,866,839	7,866,839	0	82,500,000
1977	5,438,897	7,866,839	8,250,000	8,250,000	8,250,000	8,250,000	844,265	0	0	0	82,500,000
1978	15,183,722	7,866,839	8,250,000	8,250,000	8,250,000	8,250,000	0	933,722	933,722	0	82,500,000
1979	17,671,870	933,722	8,250,000	8,250,000	8,250,000	8,250,000	0	4,255,592	4,255,592	0	82,500,000
1980	17,765,183	4,255,592	8,250,000	8,250,000	8,250,000	8,250,000	0	7,670,775	7,670,775	0	82,500,000
1981	9,015,200	7,670,775	8,250,000	8,250,000	8,250,000	8,250,000	0	2,535,975	2,535,975	0	82,500,000
1982	17,489,400	2,535,975	8,250,000	8,250,000	8,250,000	8,250,000	0	5,675,374	5,675,374	0	82,500,000
1983	24,361,989	5,675,374	8,250,000	8,250,000	8,250,000	8,250,000	0	15,687,363	15,687,363	0	82,500,000
1984	25,359,376	15,687,363	8,250,000	8,250,000	8,250,000	8,250,000	0	26,696,740	26,696,740	2,804,717	85,304,717
1985	21,246,109	26,696,740	8,250,000	8,250,000	8,250,000	8,250,000	0	33,592,848	30,071,161	9,700,825	95,005,542
1986	23,013,446	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	38,734,607	30,071,161	14,842,584	109,848,126
1987	15,640,478	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	31,461,639	30,071,161	7,569,616	117,417,742
1988	11,456,357	30,071,161	8,250,000	8,250,000	8,250,000	8,250,000	0	27,377,518	27,377,518	3,485,495	120,903,237
1989	9,921,847	27,377,518	8,250,000	8,250,000	8,250,000	8,250,000	0	23,149,364	23,149,364	0	120,903,237
1990	9,639,803	23,149,364	8,250,000	8,250,000	8,250,000	8,250,000	0	18,639,167	18,639,167	0	120,903,237
1991	12,170,021	18,639,167	8,250,000	8,250,000	8,250,000	8,250,000	0	16,659,188	16,659,188	0	120,903,237
1992	10,895,580	16,659,188	8,250,000	8,250,000	8,250,000	8,250,000	0	13,404,768	13,404,768	0	120,903,237
1993	18,160,118	13,404,768	8,250,000	8,250,000	8,250,000	8,250,000	0	17,214,886	17,214,886	0	120,903,237

100% Shortage

1994	11,125,503	17,214,886	8,250,000	5,900,000	0	14,190,388	14,190,388	0	118,098,520
1995	20,047,166	14,190,388	8,250,000	5,100,000	0	19,887,554	19,887,554	0	108,397,695
1996	14,502,293	19,887,554	8,250,000	6,000,000	0	20,139,847	20,139,847	0	93,555,111
1997	21,622,438	20,139,847	8,250,000	6,100,000	0	27,412,285	27,412,285	3,520,262	89,505,757
1998	16,798,378	27,412,285	8,250,000	6,000,000	0	29,960,663	29,960,663	6,068,640	92,088,902
1999	15,934,210	29,960,663	8,250,000	6,000,000	0	31,644,873	30,071,161	7,752,850	99,841,753
2000	10,646,526	30,071,161	8,250,000	5,900,000	0	26,567,687	26,567,687	2,675,664	102,517,417

Average

6,000,000

Upper Colorado Basin Hydrologic Determination - draft 5/23/05 Whipple

Calendar Year	Upper Basin			Upper Basin			Depletion Level (minus)	Shortage (plus)	Net Available to Store	UC Basin Year-end Storage	Spill to LC	10-yr Moving Average to LC	Pinch Point
	CR Natural Flow (plus)	Carryover Storage (plus)	Release 8.25MAF (minus)	CR Natural Flow (plus)	Carryover Storage (plus)	Release 8.25MAF (minus)							
1906	18,550,021	0	8,250,000	0	0	8,250,000	0	4,300,021	4,300,021	0	0	0	
1907	21,201,694	4,300,021	8,250,000	4,300,000	0	8,250,000	0	11,251,715	11,251,715	0	0	0	
1908	12,218,817	11,251,715	8,250,000	6,000,000	0	8,250,000	0	9,220,532	9,220,532	0	0	0	
1909	22,356,301	9,220,532	8,250,000	6,000,000	0	8,250,000	0	17,326,833	17,326,833	0	0	0	
1910	14,650,616	17,326,833	8,250,000	6,000,000	0	8,250,000	0	17,727,449	17,727,449	0	0	0	
1911	15,499,729	17,727,449	8,250,000	6,000,000	0	8,250,000	0	18,977,178	18,977,178	0	0	0	
1912	18,623,410	18,977,178	8,250,000	6,000,000	0	8,250,000	0	23,350,588	23,350,588	0	0	0	
1913	14,536,373	23,350,588	8,250,000	6,000,000	0	8,250,000	0	23,636,961	23,636,961	0	0	0	
1914	21,354,814	23,636,961	8,250,000	6,000,000	0	8,250,000	0	30,741,775	25,665,339	6,849,752	90,496,345		
1915	13,623,277	25,665,339	8,250,000	6,000,000	0	8,250,000	0	25,038,616	25,038,616	1,146,593	97,535,830		
1916	20,142,892	25,038,616	8,250,000	6,000,000	0	8,250,000	0	30,931,508	25,665,339	7,039,485	108,001,950		
1917	22,942,804	25,665,339	8,250,000	6,000,000	0	8,250,000	0	34,358,143	25,665,339	10,466,120	111,391,205		
1918	15,865,939	25,665,339	8,250,000	6,000,000	0	8,250,000	0	27,281,278	25,665,339	3,389,255	111,565,890		
1919	12,651,369	25,665,339	8,250,000	6,000,000	0	8,250,000	0	24,066,708	24,066,708	174,685	119,778,207		
1920	22,287,632	24,066,708	8,250,000	6,000,000	0	8,250,000	0	32,104,340	25,665,339	8,212,317	129,828,304		
1921	22,526,791	25,665,339	8,250,000	6,000,000	0	8,250,000	0	33,942,120	25,665,339	10,050,097	135,798,818		
1922	18,447,198	25,665,339	8,250,000	6,000,000	0	8,250,000	0	29,862,537	25,665,339	5,970,514	142,346,180		
1923	19,024,046	25,665,339	8,250,000	6,000,000	0	8,250,000	0	30,439,385	25,665,339	6,547,362	136,897,542		
1924	13,877,798	25,665,339	8,250,000	6,000,000	0	8,250,000	0	25,293,137	25,293,137	1,401,114	137,332,764		
1925	14,430,701	25,293,137	8,250,000	6,000,000	0	8,250,000	0	25,473,838	25,473,838	1,581,815	132,838,825		
1926	15,213,731	25,473,838	8,250,000	6,000,000	0	8,250,000	0	26,437,569	25,665,339	2,545,546	129,435,233		
1927	19,539,212	25,665,339	8,250,000	6,000,000	0	8,250,000	0	30,954,551	25,665,339	7,062,528	130,523,628		
1928	16,954,334	25,665,339	8,250,000	6,000,000	0	8,250,000	0	28,369,673	25,665,339	4,477,650	139,701,844		
1929	21,829,585	25,665,339	8,250,000	6,000,000	0	8,250,000	0	33,244,924	25,665,339	9,352,901	133,633,884		
1930	14,621,041	25,665,339	8,250,000	6,000,000	0	8,250,000	0	26,036,380	25,665,339	2,144,357	123,583,787		
1931	8,474,134	25,665,339	8,250,000	6,000,000	0	8,250,000	0	19,889,473	19,889,473	0	117,613,273		
1932	17,422,187	19,889,473	8,250,000	6,000,000	0	8,250,000	0	23,061,660	23,061,660	0	111,065,911		
1933	12,183,500	23,061,660	8,250,000	6,000,000	0	8,250,000	0	20,995,160	20,995,160	0	109,664,797		
1934	6,178,192	20,995,160	8,250,000	6,000,000	0	8,250,000	0	12,923,352	12,923,352	0	108,082,982		
1935	12,630,349	12,923,352	8,250,000	6,000,000	0	8,250,000	0	11,303,701	11,303,701	0	105,537,436		
1936	14,648,873	11,303,701	8,250,000	6,000,000	0	8,250,000	0	11,702,574	11,702,574	0	98,474,908		
1937	14,306,056	11,702,574	8,250,000	6,000,000	0	8,250,000	0	11,758,630	11,758,630	0	93,997,258		
1938	18,148,319	11,758,630	8,250,000	6,000,000	0	8,250,000	0	15,656,949	15,656,949	0	84,644,357		
1939	11,164,059	15,656,949	8,250,000	6,000,000	0	8,250,000	0	12,571,008	12,571,008	0	82,500,000		
1940	9,931,657	12,571,008	8,250,000	6,000,000	0	8,250,000	0	8,252,665	8,252,665	0	82,500,000		
1941	20,116,678	8,252,665	8,250,000	6,000,000	0	8,250,000	0	14,119,343	14,119,343	0	82,500,000		
1942	17,225,136	14,119,343	8,250,000	6,000,000	0	8,250,000	0	17,094,479	17,094,479	0	82,500,000		
1943	13,731,401	17,094,479	8,250,000	6,000,000	0	8,250,000	0	16,575,880	16,575,880	0	82,500,000		
1944	15,369,422	16,575,880	8,250,000	6,000,000	0	8,250,000	0	17,695,302	17,695,302	0	82,500,000		
1945	14,140,528	17,695,302	8,250,000	6,000,000	0	8,250,000	0	17,585,830	17,585,830	0	82,500,000		
1946	11,095,453	17,585,830	8,250,000	6,000,000	0	8,250,000	0	14,431,283	14,431,283	0	82,500,000		

1947	16,439,486	14,431,283	8,250,000	5,000,000	0	16,620,769	16,620,769	0	82,500,000
1948	15,139,294	16,620,769	8,250,000	5,000,000	0	17,510,063	17,510,063	0	82,500,000
1949	16,933,584	17,510,063	8,250,000	5,000,000	0	20,193,647	20,193,647	0	82,500,000
1950	13,140,416	20,193,647	8,250,000	5,000,000	0	19,084,063	19,084,063	0	82,500,000
1951	12,505,894	19,084,063	8,250,000	5,000,000	0	17,339,957	17,339,957	0	82,500,000
1952	20,805,422	17,339,957	8,250,000	5,000,000	0	23,895,379	23,895,379	3,356	82,503,356
1953	11,165,419	23,895,379	8,250,000	5,000,000	0	20,810,798	20,810,798	0	82,503,356
1954	8,496,102	20,810,798	8,250,000	5,000,000	0	15,056,900	15,056,900	0	82,503,356
1955	9,413,908	15,056,900	8,250,000	5,000,000	0	10,220,808	10,220,808	0	82,503,356
1956	11,426,874	10,220,808	8,250,000	5,000,000	0	7,397,682	7,397,682	0	82,503,356
1957	21,500,963	7,397,682	8,250,000	5,000,000	0	14,648,645	14,648,645	0	82,503,356
1958	15,862,511	14,648,645	8,250,000	5,000,000	0	16,261,156	16,261,156	0	82,503,356
1959	9,598,169	16,261,156	8,250,000	5,000,000	0	11,609,325	11,609,325	0	82,503,356
1960	11,524,160	11,609,325	8,250,000	5,000,000	0	8,883,485	8,883,485	0	82,503,356
1961	10,010,259	8,883,485	8,250,000	5,000,000	0	4,643,744	4,643,744	0	82,503,356
1962	17,377,609	4,643,744	8,250,000	5,000,000	0	7,771,353	7,771,353	0	82,500,000
1963	8,840,900	7,771,353	8,250,000	5,000,000	0	2,362,253	2,362,253	0	82,500,000
1964	10,863,586	2,362,253	8,250,000	5,000,000	1,024,161	0	0	0	82,500,000
1965	19,875,027	0	8,250,000	5,000,000	0	5,625,027	5,625,027	0	82,500,000
1966	10,679,844	5,625,027	8,250,000	5,000,000	0	2,054,871	2,054,871	0	82,500,000
1967	11,670,830	2,054,871	8,250,000	5,000,000	524,299	0	0	0	82,500,000
1968	13,739,932	0	8,250,000	5,000,000	510,068	0	0	0	82,500,000
1969	15,272,159	0	8,250,000	5,000,000	0	1,022,159	1,022,159	0	82,500,000
1970	15,344,136	1,022,159	8,250,000	5,000,000	0	2,116,295	2,116,295	0	82,500,000
1971	15,290,433	2,116,295	8,250,000	5,000,000	0	3,156,728	3,156,728	0	82,500,000
1972	12,959,652	3,156,728	8,250,000	5,000,000	0	1,866,379	1,866,379	0	82,500,000
1973	18,397,816	1,866,379	8,250,000	5,000,000	0	6,014,195	6,014,195	0	82,500,000
1974	13,089,042	6,014,195	8,250,000	5,000,000	0	4,853,238	4,853,238	0	82,500,000
1975	16,825,996	4,853,238	8,250,000	5,000,000	0	7,429,234	7,429,234	0	82,500,000
1976	11,140,311	7,429,234	8,250,000	5,000,000	0	4,319,545	4,319,545	0	82,500,000
1977	5,438,897	4,319,545	8,250,000	5,000,000	4,491,559	0	0	0	82,500,000
1978	15,183,722	0	8,250,000	5,000,000	0	933,722	933,722	0	82,500,000
1979	17,671,870	933,722	8,250,000	5,000,000	0	4,355,592	4,355,592	0	82,500,000
1980	17,765,183	4,355,592	8,250,000	5,000,000	0	7,870,775	7,870,775	0	82,500,000
1981	9,015,200	7,870,775	8,250,000	5,000,000	0	2,635,975	2,635,975	0	82,500,000
1982	17,489,400	2,635,975	8,250,000	5,000,000	0	5,875,374	5,875,374	0	82,500,000
1983	24,361,999	5,875,374	8,250,000	5,000,000	0	15,987,363	15,987,363	0	82,500,000
1984	25,359,376	15,987,363	8,250,000	5,000,000	0	27,096,740	25,665,339	3,204,717	85,704,717
1985	21,246,109	15,665,339	8,250,000	5,000,000	0	32,661,448	25,665,339	8,769,425	94,474,141
1986	23,013,446	25,665,339	8,250,000	5,000,000	0	34,428,785	25,665,339	10,536,762	105,010,903
1987	15,640,478	25,665,339	8,250,000	5,000,000	0	27,055,817	25,665,339	3,163,794	108,174,698
1988	11,456,357	25,665,339	8,250,000	5,000,000	0	22,871,696	22,871,696	0	108,174,698
1989	9,921,847	22,871,696	8,250,000	5,000,000	0	18,543,542	18,543,542	0	108,174,698
1990	9,639,803	18,543,542	8,250,000	5,000,000	0	13,933,345	13,933,345	0	108,174,698
1991	12,170,021	13,933,345	8,250,000	5,000,000	0	11,853,366	11,853,366	0	108,174,698
1992	10,895,580	11,853,366	8,250,000	5,000,000	0	8,498,946	8,498,946	0	108,174,698
1993	18,160,118	8,498,946	8,250,000	5,000,000	0	12,409,064	12,409,064	0	108,174,698

17% Shortage

9% Shortage
9% Shortage

73% Shortage

1994	11,125,503	12,409,064	8,250,000	8,250,000	0	9,284,566	9,284,566	0	104,969,981
1995	20,047,166	9,284,566	8,250,000	8,250,000	0	15,081,732	15,081,732	0	96,200,557
1996	14,562,293	15,081,732	8,250,000	8,250,000	0	15,334,025	15,334,025	0	85,663,794
1997	21,622,438	15,334,025	8,250,000	8,250,000	0	22,706,463	22,706,463	0	82,500,000
1998	16,793,378	22,706,463	8,250,000	8,250,000	0	25,254,841	25,254,841	1,362,818	83,862,818
1999	15,934,210	25,254,841	8,250,000	8,250,000	0	26,939,051	25,665,339	3,047,028	86,909,846
2000	10,646,526	25,665,339	8,250,000	8,250,000	0	22,061,865	22,061,865	0	86,909,846

Average

6,000,000

Upper Colorado Basin Hydrologic Determination - draft 5/23/05 Whipple

Calendar Year	CR Natural		Upper Basin Carryover		Release		Upper Basin Depletion		Shortage		Net Available		UC Basin		10-yr Moving		
	Flow (plus)	Flow (plus)	Storage (plus)	Storage (plus)	8.25MAF (minus)	8.25MAF (minus)	Level (minus)	Level (minus)	(plus)	(plus)	to Store	Year-end Storage	Year-end Storage	Spill to LC	Average to LC	Average to LC	
1906	18,550,021	0	0	0	7,500,000	7,500,000	6,000,000	6,000,000	0	0	5,050,021	5,050,021	5,050,021	0	0	0	0
1907	21,201,694	5,050,021	5,050,021	5,050,021	7,500,000	7,500,000	6,000,000	6,000,000	0	0	12,751,715	12,751,715	12,751,715	0	0	0	0
1908	12,218,817	12,751,715	12,751,715	12,751,715	6,250,000	6,250,000	6,000,000	6,000,000	0	0	10,720,532	10,720,532	10,720,532	0	0	0	0
1909	22,356,301	10,720,532	10,720,532	10,720,532	7,500,000	7,500,000	6,000,000	6,000,000	0	0	19,576,833	19,576,833	19,576,833	0	0	0	0
1910	14,650,616	19,576,833	19,576,833	19,576,833	8,250,000	8,250,000	6,000,000	6,000,000	0	0	19,977,449	19,977,449	19,977,449	0	0	0	0
1911	15,499,729	19,977,449	19,977,449	19,977,449	8,250,000	8,250,000	6,000,000	6,000,000	0	0	21,227,178	21,227,178	21,227,178	0	0	0	0
1912	18,623,410	21,227,178	21,227,178	21,227,178	7,500,000	7,500,000	6,000,000	6,000,000	0	0	26,350,588	26,350,588	26,350,588	2,458,565	0	0	0
1913	14,536,373	25,665,339	25,665,339	25,665,339	8,250,000	8,250,000	6,000,000	6,000,000	0	0	25,951,712	25,665,339	25,665,339	2,059,689	0	0	0
1914	21,354,814	25,665,339	25,665,339	25,665,339	7,500,000	7,500,000	6,000,000	6,000,000	0	0	33,520,153	25,665,339	25,665,339	9,628,130	0	0	0
1915	13,623,277	25,665,339	25,665,339	25,665,339	8,250,000	8,250,000	6,000,000	6,000,000	0	0	25,038,616	25,038,616	25,038,616	1,146,593	0	0	0
1916	20,142,892	25,038,616	25,038,616	25,038,616	7,500,000	7,500,000	6,000,000	6,000,000	0	0	31,681,508	25,665,339	25,665,339	7,789,485	0	0	0
1917	22,942,804	25,665,339	25,665,339	25,665,339	7,500,000	7,500,000	6,000,000	6,000,000	0	0	35,108,143	25,665,339	25,665,339	11,216,120	0	0	0
1918	15,865,939	25,665,339	25,665,339	25,665,339	8,250,000	8,250,000	6,000,000	6,000,000	0	0	27,281,278	25,665,339	25,665,339	3,389,255	0	0	0
1919	12,651,369	25,665,339	25,665,339	25,665,339	8,250,000	8,250,000	6,000,000	6,000,000	0	0	24,066,708	24,066,708	24,066,708	174,685	0	0	0
1920	22,287,632	24,066,708	24,066,708	24,066,708	7,500,000	7,500,000	6,000,000	6,000,000	0	0	32,854,340	25,665,339	25,665,339	8,962,317	0	0	0
1921	22,526,781	25,665,339	25,665,339	25,665,339	7,500,000	7,500,000	6,000,000	6,000,000	0	0	34,692,120	25,665,339	25,665,339	10,800,097	0	0	0
1922	18,447,198	25,665,339	25,665,339	25,665,339	7,500,000	7,500,000	6,000,000	6,000,000	0	0	30,612,537	25,665,339	25,665,339	6,720,514	0	0	0
1923	19,024,046	25,665,339	25,665,339	25,665,339	7,500,000	7,500,000	6,000,000	6,000,000	0	0	31,189,385	25,665,339	25,665,339	7,297,362	0	0	0
1924	13,877,798	25,665,339	25,665,339	25,665,339	8,250,000	8,250,000	6,000,000	6,000,000	0	0	25,293,137	25,293,137	25,293,137	1,401,114	0	0	0
1925	14,430,701	25,293,137	25,293,137	25,293,137	8,250,000	8,250,000	6,000,000	6,000,000	0	0	25,473,838	25,473,838	25,473,838	1,581,815	0	0	0
1926	15,213,731	25,473,838	25,473,838	25,473,838	8,250,000	8,250,000	6,000,000	6,000,000	0	0	26,437,569	25,665,339	25,665,339	2,545,546	0	0	0
1927	19,539,212	25,665,339	25,665,339	25,665,339	7,500,000	7,500,000	6,000,000	6,000,000	0	0	31,704,551	25,665,339	25,665,339	7,812,528	0	0	0
1928	16,954,334	25,665,339	25,665,339	25,665,339	7,500,000	7,500,000	6,000,000	6,000,000	0	0	28,719,673	25,665,339	25,665,339	4,827,650	0	0	0
1929	21,829,585	25,665,339	25,665,339	25,665,339	7,500,000	7,500,000	6,000,000	6,000,000	0	0	33,994,924	25,665,339	25,665,339	10,102,901	0	0	0
1930	14,621,041	25,665,339	25,665,339	25,665,339	8,250,000	8,250,000	6,000,000	6,000,000	0	0	26,036,380	25,665,339	25,665,339	2,144,357	0	0	0
1931	8,474,134	25,665,339	25,665,339	25,665,339	8,250,000	8,250,000	6,000,000	6,000,000	0	0	19,889,473	19,889,473	19,889,473	0	0	0	0
1932	17,422,187	19,889,473	19,889,473	19,889,473	7,500,000	7,500,000	6,000,000	6,000,000	0	0	23,411,660	23,411,660	23,411,660	0	0	0	0
1933	12,183,500	23,411,660	23,411,660	23,411,660	8,250,000	8,250,000	6,000,000	6,000,000	0	0	21,345,160	21,345,160	21,345,160	0	0	0	0
1934	6,178,192	21,345,160	21,345,160	21,345,160	8,250,000	8,250,000	6,000,000	6,000,000	0	0	13,273,352	13,273,352	13,273,352	0	0	0	0
1935	12,630,349	13,273,352	13,273,352	13,273,352	8,250,000	8,250,000	6,000,000	6,000,000	0	0	11,653,701	11,653,701	11,653,701	0	0	0	0
1936	14,648,873	11,653,701	11,653,701	11,653,701	8,250,000	8,250,000	6,000,000	6,000,000	0	0	12,052,574	12,052,574	12,052,574	0	0	0	0
1937	14,306,056	12,052,574	12,052,574	12,052,574	8,250,000	8,250,000	6,000,000	6,000,000	0	0	12,108,630	12,108,630	12,108,630	0	0	0	0
1938	18,148,319	12,108,630	12,108,630	12,108,630	7,500,000	7,500,000	6,000,000	6,000,000	0	0	16,756,949	16,756,949	16,756,949	0	0	0	0
1939	11,164,059	16,756,949	16,756,949	16,756,949	8,250,000	8,250,000	6,000,000	6,000,000	0	0	13,671,008	13,671,008	13,671,008	0	0	0	0
1940	9,931,657	13,671,008	13,671,008	13,671,008	8,250,000	8,250,000	6,000,000	6,000,000	0	0	9,352,665	9,352,665	9,352,665	0	0	0	0
1941	20,116,678	9,352,665	9,352,665	9,352,665	7,500,000	7,500,000	6,000,000	6,000,000	0	0	15,969,343	15,969,343	15,969,343	0	0	0	0
1942	17,225,136	15,969,343	15,969,343	15,969,343	7,500,000	7,500,000	6,000,000	6,000,000	0	0	19,294,479	19,294,479	19,294,479	0	0	0	0
1943	13,731,401	19,294,479	19,294,479	19,294,479	8,250,000	8,250,000	6,000,000	6,000,000	0	0	18,775,880	18,775,880	18,775,880	0	0	0	0
1944	15,369,422	18,775,880	18,775,880	18,775,880	8,250,000	8,250,000	6,000,000	6,000,000	0	0	19,895,302	19,895,302	19,895,302	0	0	0	0
1945	14,140,528	19,895,302	19,895,302	19,895,302	8,250,000	8,250,000	6,000,000	6,000,000	0	0	19,785,830	19,785,830	19,785,830	0	0	0	0
1946	11,095,453	19,785,830	19,785,830	19,785,830	8,250,000	8,250,000	6,000,000	6,000,000	0	0	16,631,283	16,631,283	16,631,283	0	0	0	0

0 Pinch Point

1947	16,439,486	16,631,283	7,900,000	5,000,000	0	19,170,769	19,170,769	0	80,300,000
1948	15,139,294	19,170,769	8,250,000	5,000,000	0	20,060,063	20,060,063	0	81,050,000
1949	16,933,584	20,060,063	7,400,000	6,000,000	0	23,093,647	23,093,647	0	80,700,000
1950	13,140,416	23,093,647	8,250,000	6,000,000	0	21,984,063	21,984,063	0	80,700,000
1951	12,505,894	21,984,063	8,250,000	6,000,000	0	20,239,957	20,239,957	0	81,450,000
1952	20,805,422	20,239,957	7,500,000	6,000,000	0	27,545,379	25,665,339	3,653,356	84,703,356
1953	11,165,411	25,665,339	8,250,000	6,000,000	0	22,580,758	22,580,758	0	84,703,356
1954	8,496,102	22,580,758	8,250,000	6,000,000	0	16,826,860	16,826,860	0	84,703,356
1955	9,413,908	16,826,860	8,250,000	6,000,000	0	11,990,768	11,990,768	0	84,703,356
1956	11,426,874	11,990,768	8,250,000	6,000,000	0	9,167,642	9,167,642	0	84,703,356
1957	21,500,963	9,167,642	7,500,000	6,000,000	0	17,168,605	17,168,605	0	84,303,356
1958	15,862,511	17,168,605	8,250,000	6,000,000	0	18,781,116	18,781,116	0	84,303,356
1959	9,598,169	18,781,116	8,250,000	6,000,000	0	14,129,285	14,129,285	0	84,653,356
1960	11,524,160	14,129,285	8,250,000	6,000,000	0	11,403,445	11,403,445	0	84,653,356
1961	10,010,259	11,403,445	8,250,000	6,000,000	0	7,163,704	7,163,704	0	84,653,356
1962	17,377,609	7,163,704	7,500,000	6,000,000	0	10,641,313	10,641,313	0	81,400,000
1963	8,840,900	10,641,313	8,250,000	6,000,000	0	5,232,213	5,232,213	0	81,400,000
1964	10,863,586	5,232,213	8,250,000	6,000,000	0	1,845,799	1,845,799	0	81,400,000
1965	19,875,027	1,845,799	7,500,000	6,000,000	0	8,220,826	8,220,826	0	80,650,000
1966	10,679,844	8,220,826	8,250,000	6,000,000	0	4,650,670	4,650,670	0	80,650,000
1967	11,670,830	4,650,670	8,250,000	6,000,000	0	2,071,500	2,071,500	0	81,400,000
1968	13,739,932	2,071,500	8,250,000	6,000,000	0	1,561,432	1,561,432	0	81,400,000
1969	15,272,159	1,561,432	8,250,000	6,000,000	0	2,583,591	2,583,591	0	81,400,000
1970	15,344,136	2,583,591	8,250,000	6,000,000	0	3,677,727	3,677,727	0	81,400,000
1971	15,290,433	3,677,727	8,250,000	6,000,000	0	4,718,160	4,718,160	0	81,400,000
1972	12,959,652	4,718,160	8,250,000	6,000,000	0	3,427,811	3,427,811	0	81,750,000
1973	18,397,816	3,427,811	7,500,000	6,000,000	0	8,325,627	8,325,627	0	81,000,000
1974	13,089,042	8,325,627	8,250,000	6,000,000	0	7,164,670	7,164,670	0	81,000,000
1975	16,825,996	7,164,670	7,900,000	6,000,000	0	10,090,666	10,090,666	0	81,400,000
1976	11,140,311	10,090,666	8,250,000	6,000,000	0	6,980,977	6,980,977	0	81,400,000
1977	5,438,897	6,980,977	8,250,000	6,000,000	0	933,722	933,722	0	81,400,000
1978	15,183,722	933,722	8,250,000	6,000,000	0	4,705,592	4,705,592	0	81,050,000
1979	17,671,870	4,705,592	7,900,000	6,000,000	0	8,970,775	8,970,775	0	80,300,000
1980	17,765,183	8,970,775	8,250,000	6,000,000	0	3,735,975	3,735,975	0	80,300,000
1981	9,015,200	3,735,975	8,250,000	6,000,000	0	7,325,374	7,325,374	0	79,950,000
1982	17,489,400	7,325,374	7,500,000	6,000,000	0	18,187,363	18,187,363	0	79,950,000
1983	24,361,989	18,187,363	7,500,000	6,000,000	0	30,046,740	25,665,339	6,154,717	85,354,717
1984	25,359,376	25,665,339	7,500,000	6,000,000	0	33,411,448	25,665,339	9,519,425	94,474,141
1985	21,246,109	25,665,339	7,500,000	6,000,000	0	35,178,785	25,665,339	11,286,762	105,010,903
1986	23,013,446	25,665,339	8,250,000	6,000,000	0	27,055,817	25,665,339	3,163,794	108,174,698
1987	15,640,478	25,665,339	8,250,000	6,000,000	0	22,871,696	22,871,696	0	108,174,698
1988	11,456,357	25,665,339	8,250,000	6,000,000	0	18,543,542	18,543,542	0	108,524,698
1989	9,921,847	22,871,696	8,250,000	6,000,000	0	13,933,345	13,933,345	0	109,274,698
1990	9,639,803	18,543,542	8,250,000	6,000,000	0	11,853,366	11,853,366	0	109,274,698
1991	12,170,021	13,933,345	8,250,000	6,000,000	0	8,498,946	8,498,946	0	109,624,698
1992	10,895,580	11,853,366	8,250,000	6,000,000	0	13,159,064	13,159,064	0	109,624,698
1993	18,160,118	8,498,946	7,500,000	6,000,000	0	1,830,127	1,830,127	0	81,400,000

31% shortage
 0 shortage if use min pool)

1994	11,125,503	13,159,064	8,250,000	0	10,034,566	10,034,566	0	104,219,981
1995	20,047,166	10,034,566	7,300,000	0	16,581,732	16,581,732	0	94,700,557
1996	14,502,333	16,581,732	8,250,000	0	16,834,025	16,834,025	0	84,163,794
1997	21,622,438	16,834,025	7,300,000	0	24,956,463	24,956,463	1,064,440	81,314,440
1998	18,798,378	24,956,463	7,300,000	0	27,854,841	25,665,339	3,962,818	84,927,258
1999	15,934,210	25,665,339	8,250,000	0	27,349,549	25,665,339	3,457,526	88,384,784
2000	10,646,526	25,665,339	8,250,000	0	22,061,865	22,061,865	0	88,384,784

Average

6,000,000

Upper Colorado Basin Hydrologic Determination - draft 5/23/05 Whipple

Calendar Year	Upper Basin			Upper Basin			Upper Basin			10-yr Moving Average to LC
	CR Natural Flow (plus)	Carryover Storage (plus)	Release 8.25MAF (minus)	Depletion Level (minus)	Shortage (plus)	Net Available to Store	UC Basin Year-end Storage	Spill to LC		
1906	18,550,021	0	8,100,000	6,100,000	0	4,350,021	4,350,021	0	0	
1907	21,201,694	4,350,021	8,100,000	6,100,000	0	11,351,715	11,351,715	0	0	
1908	12,218,817	11,351,715	8,100,000	5,900,000	0	9,570,532	9,570,532	0	0	
1909	22,356,301	9,570,532	8,100,000	6,100,000	0	17,726,833	17,726,833	0	0	
1910	14,650,616	17,726,833	8,100,000	6,000,000	0	18,277,449	18,277,449	0	0	
1911	15,499,729	18,277,449	8,100,000	6,000,000	0	19,677,178	19,677,178	0	0	
1912	18,623,410	19,677,178	8,100,000	6,100,000	0	24,100,588	24,100,588	208,565	0	
1913	14,536,373	24,100,588	8,100,000	6,000,000	0	24,536,961	24,536,961	644,938	0	
1914	21,354,814	24,536,961	8,100,000	5,100,000	0	31,691,775	25,665,339	7,799,752	0	
1915	13,623,277	25,665,339	8,100,000	6,000,000	0	25,188,616	25,188,616	1,296,593	90,949,848	
1916	20,142,892	25,188,616	8,100,000	6,000,000	0	31,131,508	25,665,339	7,239,485	98,189,333	
1917	22,942,804	25,665,339	8,100,000	6,100,000	0	34,408,143	25,665,339	10,516,120	108,705,453	
1918	15,865,939	25,665,339	8,100,000	6,000,000	0	27,431,278	25,665,339	3,539,255	112,244,708	
1919	12,651,369	25,665,339	8,100,000	5,900,000	0	24,316,708	24,316,708	424,685	112,669,393	
1920	22,287,632	24,316,708	8,100,000	6,100,000	0	32,404,340	25,665,339	8,512,317	121,181,710	
1921	22,526,781	25,665,339	8,100,000	6,100,000	0	33,992,120	25,665,339	10,100,097	131,281,807	
1922	18,447,198	25,665,339	8,100,000	5,100,000	0	29,912,537	25,665,339	6,020,514	137,093,756	
1923	19,024,046	25,665,339	8,100,000	6,000,000	0	30,489,385	25,665,339	6,597,362	143,046,180	
1924	13,877,798	25,665,339	8,100,000	6,000,000	0	25,443,137	25,443,137	1,551,114	136,797,542	
1925	14,430,701	25,443,137	8,100,000	6,000,000	0	25,773,838	25,665,339	1,881,815	137,382,764	
1926	15,213,731	25,665,339	8,100,000	6,000,000	0	26,779,070	25,665,339	2,887,047	133,030,326	
1927	19,539,212	25,665,339	8,100,000	6,100,000	0	31,004,551	25,665,339	7,112,528	129,626,734	
1928	16,954,334	25,665,339	8,100,000	6,000,000	0	28,519,673	25,665,339	4,627,650	130,715,129	
1929	21,829,585	25,665,339	8,100,000	6,100,000	0	33,294,924	25,665,339	9,402,901	139,693,345	
1930	14,621,041	25,665,339	8,100,000	6,000,000	0	26,186,380	25,665,339	2,294,357	133,475,385	
1931	8,474,134	25,665,339	8,100,000	5,900,000	0	20,139,473	20,139,473	0	123,375,288	
1932	17,422,187	20,139,473	8,100,000	6,100,000	0	23,361,660	23,361,660	0	117,354,774	
1933	12,183,500	23,361,660	8,100,000	5,900,000	0	21,545,160	21,545,160	0	110,757,412	
1934	6,178,192	21,545,160	8,100,000	5,900,000	0	13,723,352	13,723,352	0	109,206,298	
1935	12,630,349	13,723,352	8,100,000	5,900,000	0	12,353,701	12,353,701	0	107,324,483	
1936	14,648,873	12,353,701	8,100,000	6,000,000	0	12,902,574	12,902,574	0	104,437,436	
1937	14,306,056	12,902,574	8,100,000	6,000,000	0	13,108,630	13,108,630	0	97,324,908	
1938	18,148,319	13,108,630	8,100,000	5,100,000	0	17,056,949	17,056,949	0	92,697,258	
1939	11,164,059	17,056,949	8,100,000	5,900,000	0	14,221,008	14,221,008	0	83,294,357	
1940	9,931,657	14,221,008	8,100,000	5,900,000	0	10,152,665	10,152,665	0	81,000,000	
1941	20,116,678	10,152,665	8,100,000	6,100,000	0	16,069,343	16,069,343	0	81,000,000	
1942	17,225,136	16,069,343	8,100,000	6,100,000	0	19,094,479	19,094,479	0	81,000,000	
1943	13,731,401	19,094,479	8,100,000	6,000,000	0	18,725,880	18,725,880	0	81,000,000	
1944	15,369,422	18,725,880	8,100,000	6,000,000	0	19,995,302	19,995,302	0	81,000,000	
1945	14,140,528	19,995,302	8,100,000	6,000,000	0	20,035,830	20,035,830	0	81,000,000	
1946	11,095,453	20,035,830	8,100,000	6,900,000	0	17,131,283	17,131,283	0	81,000,000	

1947	16,439,486	17,131,283	8,100,000	8,100,000	0	19,470,769	19,470,769	0	81,000,000
1948	15,139,294	19,470,769	8,100,000	8,100,000	0	20,510,063	20,510,063	0	81,000,000
1949	16,933,584	20,510,063	8,100,000	8,100,000	0	23,343,647	23,343,647	0	81,000,000
1950	13,140,416	23,343,647	8,100,000	8,100,000	0	22,384,063	22,384,063	0	81,000,000
1951	12,505,894	22,384,063	8,100,000	8,100,000	0	20,889,957	20,889,957	0	81,000,000
1952	20,805,422	20,889,957	8,100,000	8,100,000	0	27,495,379	25,665,339	3,603,356	84,603,356
1953	11,165,419	25,665,339	8,100,000	8,100,000	0	22,830,758	22,830,758	0	84,603,356
1954	8,496,102	22,830,758	8,100,000	8,100,000	0	17,326,860	17,326,860	0	84,603,356
1955	9,413,908	17,326,860	8,100,000	8,100,000	0	12,740,768	12,740,768	0	84,603,356
1956	11,426,874	12,740,768	8,100,000	8,100,000	0	10,167,642	10,167,642	0	84,603,356
1957	21,500,963	10,167,642	8,100,000	8,100,000	0	17,468,605	17,468,605	0	84,603,356
1958	15,862,511	17,468,605	8,100,000	8,100,000	0	19,231,116	19,231,116	0	84,603,356
1959	9,598,169	19,231,116	8,100,000	8,100,000	0	14,829,285	14,829,285	0	84,603,356
1960	11,524,160	14,829,285	8,100,000	8,100,000	0	12,353,445	12,353,445	0	84,603,356
1961	10,010,259	12,353,445	8,100,000	8,100,000	0	8,363,704	8,363,704	0	84,603,356
1962	17,377,609	8,363,704	8,100,000	8,100,000	0	11,541,313	11,541,313	0	81,000,000
1963	8,840,900	11,541,313	8,100,000	8,100,000	0	6,382,213	6,382,213	0	81,000,000
1964	10,863,586	6,382,213	8,100,000	8,100,000	0	3,245,799	3,245,799	0	81,000,000
1965	19,875,027	3,245,799	8,100,000	8,100,000	0	8,920,826	8,920,826	0	81,000,000
1966	10,679,844	8,920,826	8,100,000	8,100,000	0	5,600,670	5,600,670	0	81,000,000
1967	11,670,830	5,600,670	8,100,000	8,100,000	0	3,271,500	3,271,500	0	81,000,000
1968	13,739,932	3,271,500	8,100,000	8,100,000	0	2,911,432	2,911,432	0	81,000,000
1969	15,272,159	2,911,432	8,100,000	8,100,000	0	4,083,591	4,083,591	0	81,000,000
1970	15,344,136	4,083,591	8,100,000	8,100,000	0	5,327,727	5,327,727	0	81,000,000
1971	15,290,433	5,327,727	8,100,000	8,100,000	0	6,518,160	6,518,160	0	81,000,000
1972	12,959,652	6,518,160	8,100,000	8,100,000	0	5,477,811	5,477,811	0	81,000,000
1973	18,397,816	5,477,811	8,100,000	8,100,000	0	9,675,627	9,675,627	0	81,000,000
1974	13,089,042	9,675,627	8,100,000	8,100,000	0	8,664,670	8,664,670	0	81,000,000
1975	16,825,996	8,664,670	8,100,000	8,100,000	0	11,390,666	11,390,666	0	81,000,000
1976	11,140,311	11,390,666	8,100,000	8,100,000	0	8,530,977	8,530,977	0	81,000,000
1977	5,438,897	8,530,977	8,100,000	8,100,000	30,127	0	0	0	81,000,000
1978	15,183,722	0	8,100,000	8,100,000	0	1,083,722	1,083,722	0	81,000,000
1979	17,671,870	1,083,722	8,100,000	8,100,000	0	4,555,592	4,555,592	0	81,000,000
1980	17,765,183	4,555,592	8,100,000	8,100,000	0	8,120,775	8,120,775	0	81,000,000
1981	9,015,200	8,120,775	8,100,000	8,100,000	0	3,135,975	3,135,975	0	81,000,000
1982	17,489,400	3,135,975	8,100,000	8,100,000	0	6,425,374	6,425,374	0	81,000,000
1983	24,361,989	6,425,374	8,100,000	8,100,000	0	16,587,363	16,587,363	0	81,000,000
1984	25,359,376	16,587,363	8,100,000	8,100,000	0	27,746,740	25,665,339	3,854,717	84,854,717
1985	21,246,109	25,665,339	8,100,000	8,100,000	0	32,711,448	25,665,339	8,819,425	93,674,141
1986	23,013,446	25,665,339	8,100,000	8,100,000	0	34,478,785	25,665,339	10,586,762	104,260,903
1987	15,640,478	25,665,339	8,100,000	8,100,000	0	27,205,817	25,665,339	3,313,794	107,574,698
1988	11,456,357	25,665,339	8,100,000	8,100,000	0	23,121,696	23,121,696	0	107,574,698
1989	9,921,847	23,121,696	8,100,000	8,100,000	0	19,043,542	19,043,542	0	107,574,698
1990	9,639,803	19,043,542	8,100,000	8,100,000	0	14,683,345	14,683,345	0	107,574,698
1991	12,170,021	14,683,345	8,100,000	8,100,000	0	12,853,366	12,853,366	0	107,574,698
1992	10,895,580	12,853,366	8,100,000	8,100,000	0	9,748,946	9,748,946	0	107,574,698
1993	18,160,118	9,748,946	8,100,000	8,100,000	0	13,709,064	13,709,064	0	107,574,698

1% Storage

1994	11,125,503	13,709,064	8,100,000	5,900,000	0	10,834,566	10,834,566	0	103,719,981
1995	20,047,166	10,834,566	8,100,000	6,100,000	0	16,681,732	16,681,732	0	94,900,557
1996	14,502,293	16,681,732	8,100,000	6,900,000	0	17,084,025	17,084,025	0	84,313,794
1997	21,622,438	17,084,025	8,100,000	6,100,000	0	24,506,463	24,506,463	614,440	81,614,440
1998	16,798,378	24,506,463	8,100,000	6,000,000	0	27,204,841	25,665,339	3,312,818	84,927,258
1999	18,934,210	25,665,339	8,100,000	6,000,000	0	27,499,549	25,665,339	3,607,526	88,534,784
2000	10,646,526	25,665,339	8,100,000	5,900,000	0	22,311,865	22,311,865	0	88,534,784

Average

6,000,000

Upper Basin
Natural Flow
P. Level
5.9 32yr
6.0 31yr
6.1 32yr

May 2005

Upper Colorado Basin Hydrologic Determination - draft 5/23/05 Whipple

Calendar Year	Upper Basin			Upper Basin			Upper Basin			10-yr Moving Average to LC
	CR Natural Flow (plus)	Carryover Storage (plus)	Release 8.25MAF (minus)	Depletion Level (minus)	Shortage (plus)	Net Available to Store	Year-end Storage	Spill to LC		
1906	18,550,021	0	8,000,000	6,100,000	0	4,450,021	4,450,021	0	696,557	
1907	21,201,694	4,450,021	8,000,000	6,100,000	0	11,551,715	11,551,715	0	Pinch Point	
1908	12,218,817	11,551,715	8,000,000	5,900,000	0	9,870,532	9,870,532	0		
1909	22,356,301	9,870,532	8,000,000	6,100,000	0	18,126,833	18,126,833	0		
1910	14,650,616	18,126,833	8,000,000	6,000,000	0	18,777,449	18,777,449	0		
1911	15,499,729	18,777,449	8,000,000	6,000,000	0	20,277,178	20,277,178	0		
1912	18,623,410	20,277,178	8,000,000	6,100,000	0	24,800,588	23,892,023	908,565		
1913	14,536,373	23,892,023	8,000,000	6,000,000	0	24,428,396	23,892,023	536,373		
1914	21,354,814	23,892,023	8,000,000	6,100,000	0	31,146,837	23,892,023	7,254,814		
1915	13,623,277	23,892,023	8,000,000	6,000,000	0	23,515,300	23,515,300	0	88,699,752	
1916	20,142,892	23,515,300	8,000,000	6,100,000	0	29,558,192	23,892,023	5,666,169	94,365,921	
1917	22,942,804	23,892,023	8,000,000	6,100,000	0	32,734,827	23,892,023	8,842,804	103,208,725	
1918	15,865,939	23,892,023	8,000,000	6,000,000	0	25,757,962	23,892,023	1,865,939	105,074,664	
1919	12,651,369	23,892,023	8,000,000	6,000,000	0	22,643,392	22,643,392	0	105,074,664	
1920	22,287,632	22,643,392	8,000,000	6,100,000	0	30,831,024	23,892,023	6,939,001	112,013,665	
1921	22,526,781	23,892,023	8,000,000	6,100,000	0	32,318,804	23,892,023	8,426,781	120,440,446	
1922	18,447,198	23,892,023	8,000,000	6,100,000	0	28,239,221	23,892,023	4,347,198	123,879,079	
1923	19,024,046	23,892,023	8,000,000	6,000,000	0	28,816,069	23,892,023	4,924,046	128,266,752	
1924	13,877,798	23,892,023	8,000,000	6,000,000	0	23,769,821	23,769,821	0	121,011,938	
1925	14,430,701	23,769,821	8,000,000	6,000,000	0	24,200,522	23,892,023	308,499	121,320,437	
1926	15,213,731	23,892,023	8,000,000	6,000,000	0	25,105,754	23,892,023	1,213,731	116,867,999	
1927	19,539,212	23,892,023	8,000,000	6,100,000	0	29,331,235	23,892,023	5,439,212	113,464,407	
1928	16,954,334	23,892,023	8,000,000	6,000,000	0	26,846,357	23,892,023	2,954,334	114,552,802	
1929	21,829,585	23,892,023	8,000,000	6,100,000	0	31,621,608	23,892,023	7,729,585	122,282,387	
1930	14,621,041	23,892,023	8,000,000	6,000,000	0	24,513,064	23,892,023	621,041	115,964,427	
1931	8,474,134	23,892,023	8,000,000	5,900,000	0	18,466,157	18,466,157	0	107,537,646	
1932	17,422,187	18,466,157	8,000,000	6,100,000	0	21,788,344	21,788,344	0	103,190,448	
1933	12,183,500	21,788,344	8,000,000	5,900,000	0	20,071,844	20,071,844	0	98,266,402	
1934	6,178,192	20,071,844	8,000,000	5,900,000	0	12,350,036	12,350,036	0	98,266,402	
1935	12,630,349	12,350,036	8,000,000	5,900,000	0	11,080,385	11,080,385	0	97,957,903	
1936	14,648,873	11,080,385	8,000,000	6,000,000	0	11,729,258	11,729,258	0	96,744,172	
1937	14,306,056	11,729,258	8,000,000	6,000,000	0	12,035,314	12,035,314	0	91,304,960	
1938	18,148,319	12,035,314	8,000,000	6,100,000	0	16,083,633	16,083,633	0	88,350,626	
1939	11,164,059	16,083,633	8,000,000	6,100,000	0	13,347,692	13,347,692	0	80,621,041	
1940	9,931,657	13,347,692	8,000,000	5,900,000	0	9,379,349	9,379,349	0	80,000,000	
1941	20,116,678	9,379,349	8,000,000	5,900,000	0	15,396,027	15,396,027	0	80,000,000	
1942	17,225,136	15,396,027	8,000,000	6,100,000	0	18,521,163	18,521,163	0	80,000,000	
1943	13,731,401	18,521,163	8,000,000	6,000,000	0	18,252,564	18,252,564	0	80,000,000	
1944	15,369,422	18,252,564	8,000,000	6,000,000	0	19,621,986	19,621,986	0	80,000,000	
1945	14,140,528	19,621,986	8,000,000	6,000,000	0	19,762,514	19,762,514	0	80,000,000	
1946	11,095,453	19,762,514	8,000,000	5,900,000	0	16,957,967	16,957,967	0	80,000,000	

1947	16,439,486	16,957,967	8,000,000	5,000,000	0	19,397,453	19,397,453	0	80,000,000
1948	15,139,294	19,397,453	8,000,000	5,000,000	0	20,536,747	20,536,747	0	80,000,000
1949	16,933,584	20,536,747	8,000,000	5,000,000	0	23,470,331	23,470,331	0	80,000,000
1950	13,140,416	23,470,331	8,000,000	5,000,000	0	22,610,747	22,610,747	0	80,000,000
1951	12,505,894	22,610,747	8,000,000	5,000,000	0	21,216,641	21,216,641	0	80,000,000
1952	20,805,422	21,216,641	8,000,000	5,000,000	0	27,922,063	23,892,023	4,030,040	84,030,040
1953	11,165,419	23,892,023	8,000,000	5,000,000	0	21,157,442	21,157,442	0	84,030,040
1954	8,496,102	21,157,442	8,000,000	5,000,000	0	15,753,544	15,753,544	0	84,030,040
1955	9,413,908	15,753,544	8,000,000	5,000,000	0	11,267,452	11,267,452	0	84,030,040
1956	11,426,874	11,267,452	8,000,000	5,000,000	0	8,794,326	8,794,326	0	84,030,040
1957	21,500,963	8,794,326	8,000,000	5,000,000	0	16,195,289	16,195,289	0	84,030,040
1958	15,862,511	16,195,289	8,000,000	5,000,000	0	18,057,800	18,057,800	0	84,030,040
1959	9,598,169	18,057,800	8,000,000	5,000,000	0	13,755,969	13,755,969	0	84,030,040
1960	11,524,160	13,755,969	8,000,000	5,000,000	0	11,380,129	11,380,129	0	84,030,040
1961	10,010,259	11,380,129	8,000,000	5,000,000	0	7,490,388	7,490,388	0	84,030,040
1962	17,377,609	7,490,388	8,000,000	5,000,000	0	10,767,997	10,767,997	0	80,000,000
1963	8,840,900	10,767,997	8,000,000	5,000,000	0	5,708,897	5,708,897	0	80,000,000
1964	10,863,586	5,708,897	8,000,000	5,000,000	0	2,672,483	2,672,483	0	80,000,000
1965	19,875,027	2,672,483	8,000,000	5,000,000	0	8,447,510	8,447,510	0	80,000,000
1966	10,679,844	8,447,510	8,000,000	5,000,000	0	5,227,354	5,227,354	0	80,000,000
1967	11,670,830	5,227,354	8,000,000	5,000,000	0	2,998,184	2,998,184	0	80,000,000
1968	13,739,932	2,998,184	8,000,000	5,000,000	0	2,738,116	2,738,116	0	80,000,000
1969	15,272,159	2,738,116	8,000,000	5,000,000	0	4,010,275	4,010,275	0	80,000,000
1970	15,344,136	4,010,275	8,000,000	5,000,000	0	5,354,411	5,354,411	0	80,000,000
1971	15,290,433	5,354,411	8,000,000	5,000,000	0	6,644,844	6,644,844	0	80,000,000
1972	12,959,652	6,644,844	8,000,000	5,000,000	0	5,704,495	5,704,495	0	80,000,000
1973	18,397,816	5,704,495	8,000,000	5,000,000	0	10,002,311	10,002,311	0	80,000,000
1974	13,089,042	10,002,311	8,000,000	5,000,000	0	9,091,354	9,091,354	0	80,000,000
1975	16,825,996	9,091,354	8,000,000	5,000,000	0	11,917,350	11,917,350	0	80,000,000
1976	11,140,311	11,917,350	8,000,000	5,000,000	0	9,157,661	9,157,661	0	80,000,000
1977	5,438,897	9,157,661	8,000,000	5,000,000	0	696,557	696,557	0	80,000,000
1978	15,183,722	696,557	8,000,000	5,000,000	0	1,880,279	1,880,279	0	80,000,000
1979	17,671,870	1,880,279	8,000,000	5,000,000	0	5,452,149	5,452,149	0	80,000,000
1980	17,765,183	5,452,149	8,000,000	5,000,000	0	9,117,332	9,117,332	0	80,000,000
1981	9,015,200	9,117,332	8,000,000	5,000,000	0	4,232,532	4,232,532	0	80,000,000
1982	17,489,400	4,232,532	8,000,000	5,000,000	0	7,621,931	7,621,931	0	80,000,000
1983	24,361,989	7,621,931	8,000,000	5,000,000	0	17,883,920	17,883,920	0	80,000,000
1984	25,359,376	17,883,920	8,000,000	5,000,000	0	29,143,297	23,892,023	5,251,274	85,251,274
1985	21,246,109	23,892,023	8,000,000	5,000,000	0	31,038,132	23,892,023	7,146,109	92,397,382
1986	23,013,446	23,892,023	8,000,000	5,000,000	0	32,805,469	23,892,023	8,913,446	101,310,828
1987	15,640,478	23,892,023	8,000,000	5,000,000	0	25,532,501	23,892,023	1,640,478	102,951,307
1988	11,456,357	23,892,023	8,000,000	5,000,000	0	21,448,380	21,448,380	0	102,951,307
1989	9,921,847	21,448,380	8,000,000	5,000,000	0	17,470,226	17,470,226	0	102,951,307
1990	9,639,803	17,470,226	8,000,000	5,000,000	0	13,210,029	13,210,029	0	102,951,307
1991	12,170,021	13,210,029	8,000,000	5,000,000	0	11,480,050	11,480,050	0	102,951,307
1992	10,895,580	11,480,050	8,000,000	5,000,000	0	8,475,630	8,475,630	0	102,951,307
1993	18,160,118	8,475,630	8,000,000	5,000,000	0	12,535,748	12,535,748	0	102,951,307

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Handwritten notes:
 NO Deficiency 7/10.0
 100% Deficiency 2/16.0

Handwritten note:
 + total inflows up to above Mead.

Upper Colorado Basin Hydrologic Determination - draft 5/23/05 Whipple

Calendar Year	Upper Basin				Upper Basin				10-yr Moving Average to LC	Pinch Point
	CR Natural Flow (plus)	Carryover Storage (plus)	Release 8.25MAF (minus)	Depletion Level (minus)	Shortage (plus)	Net Available to Store	Year-end Storage	Spill to LC		
1906	18,550,021	0	8,100,000	5,100,000	0	4,350,021	4,350,021	0	0	0
1907	21,201,694	4,350,021	8,100,000	5,100,000	0	11,351,715	11,351,715	0	0	0
1908	12,218,817	11,351,715	8,100,000	5,100,000	0	9,570,532	9,570,532	0	0	0
1909	22,356,301	9,570,532	8,100,000	5,100,000	0	17,726,833	17,726,833	0	0	0
1910	14,650,616	17,726,833	8,100,000	5,100,000	0	18,277,449	18,277,449	0	0	0
1911	15,499,729	18,277,449	8,100,000	5,100,000	0	19,677,178	19,677,178	0	0	0
1912	18,623,410	19,677,178	8,100,000	5,100,000	0	24,100,588	23,892,023	208,565	0	0
1913	14,536,373	23,892,023	8,100,000	5,100,000	0	24,328,396	23,892,023	436,373	0	0
1914	21,354,814	23,892,023	8,100,000	5,100,000	0	31,046,837	23,892,023	7,154,814	0	0
1915	13,623,277	23,892,023	8,100,000	5,100,000	0	23,415,300	23,415,300	0	88,799,752	88,799,752
1916	20,142,892	23,415,300	8,100,000	5,100,000	0	29,358,192	23,892,023	5,466,169	94,265,921	94,265,921
1917	22,942,804	23,892,023	8,100,000	5,100,000	0	32,634,827	23,892,023	8,742,804	103,008,725	103,008,725
1918	15,865,939	23,892,023	8,100,000	5,100,000	0	25,657,962	23,892,023	1,765,939	104,774,664	104,774,664
1919	12,651,369	23,892,023	8,100,000	5,100,000	0	22,543,392	22,543,392	0	104,774,664	104,774,664
1920	22,287,632	22,543,392	8,100,000	5,100,000	0	30,631,024	23,892,023	6,739,001	111,513,665	111,513,665
1921	22,526,781	23,892,023	8,100,000	5,100,000	0	32,218,804	23,892,023	8,326,781	119,840,446	119,840,446
1922	18,447,198	23,892,023	8,100,000	5,100,000	0	28,139,221	23,892,023	4,247,198	123,879,079	123,879,079
1923	19,024,046	23,892,023	8,100,000	5,100,000	0	28,716,069	23,892,023	4,824,046	128,266,752	128,266,752
1924	13,877,798	23,892,023	8,100,000	5,100,000	0	23,669,821	23,669,821	0	121,111,938	121,111,938
1925	14,430,701	23,669,821	8,100,000	5,100,000	0	24,000,522	23,892,023	108,499	121,220,437	121,220,437
1926	15,213,731	23,892,023	8,100,000	5,100,000	0	25,005,754	23,892,023	1,113,731	116,867,999	116,867,999
1927	19,539,212	23,892,023	8,100,000	5,100,000	0	29,231,235	23,892,023	5,339,212	113,464,407	113,464,407
1928	16,954,334	23,892,023	8,100,000	5,100,000	0	26,746,357	23,892,023	2,854,334	114,552,802	114,552,802
1929	21,829,585	23,892,023	8,100,000	5,100,000	0	31,521,608	23,892,023	7,629,585	122,182,387	122,182,387
1930	14,621,041	23,892,023	8,100,000	5,100,000	0	24,413,064	23,892,023	521,041	115,964,427	115,964,427
1931	8,474,134	23,892,023	8,100,000	5,100,000	0	18,366,157	18,366,157	0	107,637,646	107,637,646
1932	17,422,187	18,366,157	8,100,000	5,100,000	0	21,588,344	21,588,344	0	103,390,448	103,390,448
1933	12,183,500	19,771,844	8,100,000	5,100,000	0	19,771,844	19,771,844	0	98,566,402	98,566,402
1934	6,178,192	11,950,036	8,100,000	5,100,000	0	11,950,036	11,950,036	0	98,566,402	98,566,402
1935	12,630,349	11,950,036	8,100,000	5,100,000	0	10,580,385	10,580,385	0	98,457,903	98,457,903
1936	14,648,873	10,580,385	8,100,000	5,100,000	0	11,129,258	11,129,258	0	97,344,172	97,344,172
1937	14,306,056	11,129,258	8,100,000	5,100,000	0	11,335,314	11,335,314	0	92,004,960	92,004,960
1938	18,148,319	11,335,314	8,100,000	5,100,000	0	15,283,633	15,283,633	0	89,150,626	89,150,626
1939	11,164,059	15,283,633	8,100,000	5,100,000	0	12,447,692	12,447,692	0	81,521,041	81,521,041
1940	9,931,657	12,447,692	8,100,000	5,100,000	0	8,379,349	8,379,349	0	81,000,000	81,000,000
1941	20,116,678	8,379,349	8,100,000	5,100,000	0	14,296,027	14,296,027	0	81,000,000	81,000,000
1942	17,225,136	14,296,027	8,100,000	5,100,000	0	17,321,163	17,321,163	0	81,000,000	81,000,000
1943	13,731,401	17,321,163	8,100,000	5,100,000	0	16,952,564	16,952,564	0	81,000,000	81,000,000
1944	15,369,422	16,952,564	8,100,000	5,100,000	0	18,221,986	18,221,986	0	81,000,000	81,000,000
1945	14,140,528	18,221,986	8,100,000	5,100,000	0	18,262,514	18,262,514	0	81,000,000	81,000,000
1946	11,095,453	18,262,514	8,100,000	5,100,000	0	15,357,967	15,357,967	0	81,000,000	81,000,000

1947	16,439,486	15,357,967	8,100,000	5,000,000	0	17,697,453	17,697,453	0	81,000,000
1948	15,139,294	17,697,453	8,100,000	5,000,000	0	18,736,747	18,736,747	0	81,000,000
1949	16,933,584	18,736,747	8,100,000	5,000,000	0	21,570,331	21,570,331	0	81,000,000
1950	13,140,416	21,570,331	8,100,000	5,000,000	0	20,610,747	20,610,747	0	81,000,000
1951	12,505,894	20,610,747	8,100,000	5,000,000	0	19,116,641	19,116,641	0	81,000,000
1952	20,805,422	19,116,641	8,100,000	5,100,000	0	25,722,063	23,892,023	1,830,040	82,830,040
1953	11,165,419	23,892,023	8,100,000	5,900,000	0	21,057,442	21,057,442	0	82,830,040
1954	8,496,102	21,057,442	8,100,000	5,900,000	0	15,553,544	15,553,544	0	82,830,040
1955	9,413,908	15,553,544	8,100,000	5,900,000	0	10,967,452	10,967,452	0	82,830,040
1956	11,426,874	10,967,452	8,100,000	5,900,000	0	8,394,326	8,394,326	0	82,830,040
1957	21,500,963	8,394,326	8,100,000	6,100,000	0	15,695,289	15,695,289	0	82,830,040
1958	15,862,511	15,695,289	8,100,000	6,000,000	0	17,457,800	17,457,800	0	82,830,040
1959	9,598,169	17,457,800	8,100,000	5,900,000	0	13,055,969	13,055,969	0	82,830,040
1960	11,524,160	13,055,969	8,100,000	5,900,000	0	10,580,129	10,580,129	0	82,830,040
1961	10,010,259	10,580,129	8,100,000	5,900,000	0	6,590,388	6,590,388	0	82,830,040
1962	17,377,609	6,590,388	8,100,000	6,100,000	0	9,767,997	9,767,997	0	81,000,000
1963	8,840,900	9,767,997	8,100,000	5,900,000	0	4,608,897	4,608,897	0	81,000,000
1964	10,863,586	4,608,897	8,100,000	5,900,000	0	1,472,483	1,472,483	0	81,000,000
1965	19,875,027	1,472,483	8,100,000	6,100,000	0	7,147,510	7,147,510	0	81,000,000
1966	10,679,844	7,147,510	8,100,000	5,900,000	0	3,827,354	3,827,354	0	81,000,000
1967	11,670,830	3,827,354	8,100,000	5,900,000	0	1,498,184	1,498,184	0	81,000,000
1968	13,739,932	1,498,184	8,100,000	6,000,000	0	1,138,116	1,138,116	0	81,000,000
1969	15,272,159	1,138,116	8,100,000	6,000,000	0	2,310,275	2,310,275	0	81,000,000
1970	15,344,136	2,310,275	8,100,000	6,000,000	0	3,554,411	3,554,411	0	81,000,000
1971	15,290,433	3,554,411	8,100,000	6,000,000	0	4,744,844	4,744,844	0	81,000,000
1972	12,959,652	4,744,844	8,100,000	5,900,000	0	3,704,495	3,704,495	0	81,000,000
1973	18,397,816	3,704,495	8,100,000	6,100,000	0	7,902,311	7,902,311	0	81,000,000
1974	13,089,042	7,902,311	8,100,000	6,000,000	0	6,891,354	6,891,354	0	81,000,000
1975	16,825,996	6,891,354	8,100,000	6,000,000	0	9,617,350	9,617,350	0	81,000,000
1976	11,140,311	9,617,350	8,100,000	5,900,000	0	6,757,661	6,757,661	0	81,000,000
1977	5,438,897	6,757,661	8,100,000	5,900,000	1,803,443	0	0	0	81,000,000
1978	15,183,722	0	8,100,000	6,000,000	0	1,083,722	1,083,722	0	81,000,000
1979	17,671,870	1,083,722	8,100,000	5,100,000	0	4,555,592	4,555,592	0	81,000,000
1980	17,765,183	4,555,592	8,100,000	6,100,000	0	8,120,775	8,120,775	0	81,000,000
1981	9,015,200	8,120,775	8,100,000	5,900,000	0	3,135,975	3,135,975	0	81,000,000
1982	17,489,400	3,135,975	8,100,000	6,100,000	0	6,425,374	6,425,374	0	81,000,000
1983	24,361,989	6,425,374	8,100,000	6,100,000	0	16,587,363	16,587,363	0	81,000,000
1984	25,359,376	16,587,363	8,100,000	6,100,000	0	27,746,740	23,892,023	3,854,717	84,854,717
1985	21,246,109	23,892,023	8,100,000	6,100,000	0	30,938,132	23,892,023	7,046,109	91,900,825
1986	23,013,446	23,892,023	8,100,000	6,100,000	0	32,705,469	23,892,023	8,813,446	100,714,271
1987	15,640,478	23,892,023	8,100,000	6,000,000	0	25,432,501	23,892,023	1,540,478	102,254,750
1988	11,456,357	23,892,023	8,100,000	5,900,000	0	21,348,380	21,348,380	0	102,254,750
1989	9,921,847	21,348,380	8,100,000	5,900,000	0	17,270,226	17,270,226	0	102,254,750
1990	9,639,803	17,270,226	8,100,000	5,600,000	0	12,910,029	12,910,029	0	102,254,750
1991	12,170,021	12,910,029	8,100,000	5,900,000	0	11,080,050	11,080,050	0	102,254,750
1992	10,895,580	11,080,050	8,100,000	5,900,000	0	7,975,630	7,975,630	0	102,254,750
1993	18,160,118	7,975,630	8,100,000	5,100,000	0	11,935,748	11,935,748	0	102,254,750

5.1% Shortage

1994	11,125,503	11,935,748	8,100,000	3,900,000	0	9,061,250	9,061,250	0	98,400,033
1995	20,047,166	9,061,250	8,100,000	5,100,000	0	14,908,416	14,908,416	0	91,353,925
1996	14,502,293	14,908,416	8,100,000	5,900,000	0	15,310,709	15,310,709	0	82,540,478
1997	21,522,435	15,310,709	8,100,000	5,100,000	0	22,733,147	22,733,147	0	81,000,000
1998	16,798,378	22,733,147	8,100,000	5,000,000	0	25,431,525	23,892,023	1,539,502	82,539,502
1999	15,934,210	23,892,023	8,100,000	5,900,000	0	25,726,233	23,892,023	1,834,210	84,373,712
2000	10,545,526	23,892,023	8,100,000	5,900,000	0	20,538,549	20,538,549	0	84,373,712

Average

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