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Whipple, John J., OSE

From: Whipple, John J., OSE
To: randy.seaholm@state.co.us; robertking@utah.gov; jshiel@seo.wyo.gov; dostler@uc.usbr.gov; dtrueman@uc.usbr.gov
Cc: Lopez, Estevan, OSE
Subject: Hydro Determination update
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All:

The attached yield studies provided for your review and consideration incorporate the flow adjustments for 1971-1980 indicated by Brenda Kinkel's work sent to you earlier today. Also attached is a provisional revised New Mexico depletion schedule for discussion purposes.

John Whipple

OSE-0157

<https://webmail.state.nm.us/exchange/john.whipple/Sent%20Items/Hydro%20Determination%20update.EML...> 5/2/2006

**Upper Basin Yield Study - May 2, 2006, Draft
Summary of Results**

Study	Natural Flow Data	Upper Basin Use	Storage Capacity	Lower Basin Delivery (maf)	Period	Average Annual Upper Basin Use (maf)	Average Annual Shared CRSP Evap (maf)	Total Annual Upper Basin Depletion, inc. CRSP Evap (maf)	Computed Annual Amounts of Shortage (maf)					Total Computed Shortage Amount (maf)	Percent Shortage over Period
									1963	1964	1967	1968	1977		
1	CRSS	Constant Average	CRSP Active	8.25	1953-1977	5.65	0.26	5.91	1.17	3.17	0.07	0.29	3.43	8.13	5.8
					1931-1977	5.65	0.37	6.02							3.1
					1906-2000	5.65	0.49	6.14							1.5
2	CRSS	Constant Average	CRSP Active + Other UB	8.25	1953-1977	5.75	0.26	6.01	0.00	3.16	0.37	0.39	4.33	8.25	5.7
					1931-1977	5.75	0.37	6.12							3.1
					1906-2000	5.75	0.49	6.24							1.5
3	CRSS	Constant Average	CRSP Active + Other UB (same % full)	8.25	1953-1977	5.75	0.25	6.00	0.17	3.27	0.34	0.39	4.12	8.29	5.8
					1931-1977	5.75	0.37	6.12							3.1
					1906-2000	5.75	0.50	6.25							1.5
4	Adjusted CRSS	Constant Average	CRSP Active + Other UB (same % full)	8.25	1953-1977	5.55	0.32	5.87	0.00	0.00	0.00	0.00	0.00	0.00	0.0
					1931-1977	5.55	0.42	5.97							0.0
					1906-2000	5.55	0.53	6.08							0.0
5	Adjusted CRSS	Constant Average	CRSP Active + Other UB (same % full)	8.25	1953-1977	5.79	0.25	6.04	1.15	3.31	0.45	0.43	3.14	8.48	5.9
					1931-1977	5.79	0.36	6.15							3.1
					1906-2000	5.79	0.49	6.28							1.5
6	Adjusted CRSS	Variable	CRSP Active + Other UB (same % full)	8.25	1953-1977	5.37	0.35	5.72	0.00	0.00	0.00	0.00	0.00	0.00	0.0
					1931-1977	5.47	0.45	5.92							0.0
					1906-2000	5.79	0.54	6.33							0.0
7	Adjusted CRSS	Shorted Supply (5.79 maf demand)	CRSP Active + Other UB (same % full)	8.25	1953-1977	5.57	0.29	5.86	0.00	0.00	0.00	0.00	1.36	1.36	1.0
					1931-1977	5.60	0.40	6.00							0.5
					1906-2000	5.66	0.52	6.18							0.3
9	Adjusted CRSS	Constant Average	CRSP Active + Other UB (same % full)	8.00	1953-1977	5.80	0.32	6.12	0.00	0.00	0.00	0.00	0.00	0.00	0.0
					1931-1977	5.80	0.42	6.22							0.0
					1906-2000	5.80	0.53	6.33							0.0
9	Adjusted CRSS	Constant Average	CRSP Active + Other UB (same % full)	8.00	1953-1977	6.05	0.25	6.30	1.40	3.32	0.48	0.44	3.22	8.86	5.9
					1931-1977	6.05	0.36	6.41							3.1
					1906-2000	6.05	0.49	6.54							1.5
10	Adjusted CRSS	Constant Average	CRSP Live + Other UB (same % full)	8.25	1953-1977	5.72	0.21	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.0
					1931-1977	5.72	0.34	6.06							0.0
					1906-2000	5.72	0.46	6.18							0.0
11	Adjusted CRSS	Constant Average	CRSP Live + Other UB (same % full)	8.25	1953-1977	5.98	0.13	6.11	0.70	3.37	0.64	0.50	3.67	8.88	5.9
					1931-1977	5.98	0.27	6.25							3.2
					1906-2000	5.98	0.42	6.40							1.6
12	Adjusted CRSS	Constant Average	CRSP Live + Other UB (same % full)	8.00	1953-1977	5.97	0.21	6.18	0.00	0.00	0.00	0.00	0.00	0.00	0.0
					1931-1977	5.97	0.34	6.31							0.0
					1906-2000	5.97	0.46	6.43							0.0
13	Adjusted CRSS	Constant Average	CRSP Live + Other UB (same % full)	8.00	1953-1977	6.24	0.13	6.37	0.95	3.38	0.67	0.51	3.75	9.26	5.9
					1931-1977	6.24	0.26	6.50							3.2
					1906-2000	6.24	0.42	6.66							1.6
14	Adjusted CRSS	Constant Average	CRSP Active + Other UB (same % full)	8.25	1953-1977	5.72	0.26	5.98	0.00	2.68	0.25	0.36	2.56	5.85	4.1
					1931-1977	5.72	0.38	6.10							2.2
					1906-2000	5.72	0.50	6.22							1.1
15	Adjusted CRSS	Constant Average	CRSP Active + Other UB (same % full)	8.25	1953-1977	5.76	0.26	6.02	0.42	3.28	0.37	0.40	2.89	7.36	5.1
					1931-1977	5.76	0.37	6.13							2.7
					1906-2000	5.76	0.50	6.26							1.3
16	Adjusted CRSS	Shorted Supply (5.76 maf demand)	CRSP Active + Other UB (same % full)	8.25	1953-1977	5.54	0.30	5.84	0.00	0.00	0.00	0.00	0.44	0.44	0.3
					1931-1977	5.57	0.41	5.98							0.2
					1906-2000	5.63	0.52	6.15							0.1
17	Adjusted CRSS	Constant Average	CRSP Live + Other UB (same % full)	8.25	1953-1977	5.76	0.19	5.95	0.00	0.00	0.00	0.00	0.98	0.98	0.7
					1931-1977	5.76	0.32	6.08							0.4
					1906-2000	5.76	0.45	6.21							0.2

- es:
- (1) The New Mexico Interstate Stream Commission staff prepared this table using the annual water balance spreadsheet and CRSP evaporation equations developed for the current yield study. The ISC and USBR jointly developed the spreadsheet and evaporation equations. The spreadsheets for each study and the CRSP evaporation correlations are attached.
 - (2) The Upper Basin yields shown in Studies 1-7 and 10-11 assume a delivery of 8.25 maf per year to the Lower Basin at Lee Ferry. The yields can be increased by 0.1 maf for each 0.1 maf of decrease in the delivery at Lee Ferry as shown by Studies 8-9 and 12-13.
 - (3) If CRSP live storage is used instead of CRSP active storage, either the Upper Basin demands can be increased or computed shortages can be reduced. Using CRSP live storage plus all other Upper Basin live storage, and also adjusting CRSS natural flows for 1971-1980 to natural flows that would have been computed if the historic irrigation depletions had been calculated using the modified Blaney-Criddle method with SCS effective precipitation and SCS recommended growth season start temperatures for all crops consistent with 1981-2000 natural flows, a constant Upper Basin use of 5.72 maf/yr can be met without shortage (see Study 7). The evaporation amounts using CRSP live storage are less than the evaporation amounts using CRSP active storage due to storage draw downs below minimum power pools.
 - (4) The 1988 Hydrologic Determination concluded that the yield to the Upper Basin with tolerable shortages is at least 6.0 maf per year over a 25-year, 7-month critical period, including CRSP evaporation. In the current Upper Basin yield study, the draw down in reservoir storage from full storage conditions begins at the end of 1930, and full storage conditions are next attained in 1984 or 1985. In general, reservoir levels are drawn down from 1930 to 1940, recover to about 3/4-capacity by 1952, are drawn down again during the mid 1950s, are kept at very low levels from about 1956-1981, and then recover by 1984. Increasing the average annual Upper Basin demand above the firm yield demand first results in the occurrence of computed shortage in 1977, and further increases in demand cause shortages to also be computed in the 1960s. Although the critical period may differ from the 1988 Hydrologic Determination, the most significant difference between the current and 1988 studies is that the current studies recognize that CRSP reservoir evaporation changes with reservoir storage. CRSP reservoir storage is maintained at significantly lower levels, on average, during the 1953-1977 period as compared to the 1931-1964 period, primarily because CRSP active storage is maintained at under 10 maf for most of twenty years beginning the early 1960s. CRSP active storage rarely dips below 10 maf for the remainder of the period of record. The average annual evaporation amounts shown in this table for different periods illustrate the effects of storage on evaporation. To account for this, the current yield study segregates CRSP reservoir evaporation from the Upper Basin demand.
 - (5) Evaporation amounts include shared CRSP evaporation only. For the CRSP plus all other Upper Basin storage condition, inclusion of the existing Upper Basin storage capacity in the yield studies generally increases the yield by 0.1 maf. Thus, the evaporation amounts for the latter storage condition in Study 2 were assumed to be the same as the evaporation amounts for the CRSP only storage condition in Study 1. Study 3 assumes that CRSP unit and other reservoirs are the same percent full, and the CRSP reservoir evaporation is computed accordingly. The results essentially are the same, and the latter assumption is used for the remaining studies. The CRSP reservoirs generally will operate in about the same manner as they have historically, although other Upper Basin reservoirs are generally upstream from CRSP reservoirs and therefore may fill first. This upstream storage effect may cause the CRSP evaporation amounts to be slightly overstated for the CRSP plus all other Upper Basin storage condition.
 - (6) The 1988 Hydrologic Determination assumed that a total shortage of 6 percent overall for a 25-year, 7-month critical period was tolerable (with the shortage measured against the total Upper Basin depletion including shared CRSP reservoir evaporation). In this yield study, a 6 percent overall shortage limitation is applied for the worst 25-year period of reservoir draw down (with the shortage measured against the Upper Basin use exclusive of shared CRSP reservoir evaporation). CRSS natural flows for 1971-1980 are adjusted to reflect historic irrigation depletions recalculated using the modified Blaney-Criddle method with SCS effective precipitation and SCS recommended growth season start temperatures (consistent with 1981-2000 natural flows). Use of the water stored in CRSP minimum power pools to meet demands is not considered except in study 7. In 1977, the computed shortage of as much as about 3 maf under some scenarios would not actually materialize because Upper Basin uses in that year would be substantially lower than the average Upper Basin use demand as illustrated in studies 5 and 6. In below-average periods of runoff during which reservoir storage will be substantially drawn down, physical water supply shortages will cause Upper Basin uses to be less, on average, than the long-term average consumptive use by the Upper Basin states. Use of a constant Upper Basin consumptive use does not reflect, however, annual variations in consumptive uses caused by annual variations in water supply availability and physical water shortages in the Upper Basin. To this extent, the computed shortages are overstated as illustrated by studies 5 and 6. Also, if the yield studies were to include Upper Basin storage in excess of existing capacity as will be needed to fully develop the Upper Basin yield available for use by the states, either the computed yields could be increased or the computed shortages could be reduced (loss of existing storage capacity to sedimentation may be replaced).
 - (7) Study 5 incorporates annual variations in Upper Basin consumptive uses about the long-term average consumptive use that result from annual variations in water supply and physical shortages. The following is an excerpt from "Water Supplies of the Colorado River Available for Use by the States of the Upper Division and for Use from the Main Stem by the States of Arizona, California and Nevada in the Lower Basin," Part I - Text, Tipton and Kalmbach, Inc., July 1965, page 15: "A depletion factor was used to modify the assumed basic depletions by the States of the upper division of the Colorado River Basin. The philosophy of the depletion factor is based on the fact that during periods of low water supply in the Upper Basin all projects in operation will not receive a full water supply. Most of them will not have reservoirs, and some that have reservoirs will not have water in some years to fill those reservoirs. No rational means have been derived for varying the estimated uses by the States of the upper division because of varying water supply. The means used by the U.S. Bureau of Reclamation in its past studies, which it is assumed it is still using, are based on the assumption that the uses would vary from the normal use in a particular year by one-half of the percent that the virgin flow at Lee Ferry in that particular year varies from a long-time average of virgin flow." Using this assumption, the sensitivity of the amount of computed shortages to possible annual variations in physical water supplies and actual uses in the Upper Basin is illustrated. Under this scenario, actual Upper Basin uses by the states exclusive of shared CRSP evaporation would average about 5.37 maf during 1953-1977, 5.47 maf during 1931-1977, and 5.79 maf for the period of record, and except for physical water supply shortages in the Upper Basin, no other shortages are computed. Study 6 incorporates physical water supply shortages in the Upper Basin computed by the USBR's CRSS model under development of up to 5.48 maf in the Upper Basin, exclusive of shared CRSP evaporation. Under this assumption, no use in excess of an average long-term demand of 5.79 maf/yr is assumed, and the computed shortage in 1977 of about 1.5 maf is in addition to the CRSS physical shortages. The CRSS model understates actual use in above-average runoff years because it does not model variations in use above the average, and it also overstates actual use in below-average runoff years because it understates physical water supply shortages on tributaries to the mainstream rivers. Overall, the long-term average use under Studies 7 and 16 is understated.
 - (8) The following is a general summary of the results of this yield study:

	Minimum LB Delivery (maf)	Yield without Shortages (maf)	Yield with Shortages (maf)
Maintain minimum power pools	8.25	5.55	5.79
	8.00	5.80	6.05
Use minimum power pools	8.25	5.72	5.98
	8.00	5.97	6.24

Note: Yield defined as the amount of water available at Lee Ferry for use, on average, by the Upper Basin, exclusive of shared CRSP reservoir evaporation. Shortages defined as 6 percent or less overall shortage for any period of 25 consecutive years consistent with 1988 Hydrologic Determination.

- (9) Assuming use of the minimum power pools and a minimum Lower Basin delivery of 8.25 maf, the firm annual yield is 5.72 maf. Study 14 indicates that if the minimum power pools are maintained and the Upper Basin use is 5.72 maf/yr, there would be an overall shortage of about 4 percent for the period 1953-1977 (with annual shortages of about 2.6 maf in 1964 and 1977). Thus, about 70 percent of the overall shortage amount, and about 80 percent of the annual shortage amounts for 1964 and 1977, at Lee Ferry computed under Study 5 (maintain power pools, Upper Basin use of 5.79 maf, and 6 percent overall shortage) are caused by protection of the power pools. An Upper-Basin use of 5.76 maf/yr would result in a 5 percent overall shortage for 1953-1977 assuming maintenance of the power pools (Study 15), and would result in a shortage in 1977 only of about 10 percent of the use that year after CRSS-modeled physical water supply shortages are considered (Study 16). Using the power pools, an Upper Basin use of 5.76 maf/yr would result in a shortage in 1977 of about 1 maf (Study 17), which is less than the CRSS-modeled physical water supply shortage that year. The risk of shortages at Lee Ferry actually is less than computed in these studies because during years of below-average supply as occur during the critical period, the actual Upper Basin use will be less than the average.
- (10) The Upper Colorado River Commission last approved depletion schedules for the Upper Division States for planning purposes in December 1999. The depletion schedules, dated January 2000, project that the total Upper Basin use exclusive of shared CRSP reservoir evaporation will average about 5.365 maf under 2060 development conditions. The January 2000 depletion schedule for New Mexico assumed its use would average about 619,000 af by 2060. New Mexico's current revisions to its depletion schedule indicate that its use would average about 642,000 af under full development, which compares to a New Mexico allocation of 642,400 af that is derived from an Upper Basin yield of 5.76 maf exclusive of shared CRSP reservoir evaporation. The increase in New Mexico's projected depletions is due to recalculation of irrigation depletions using the modified Blaney-Criddle method and minor adjustments for the NIP, the Navajo-Gallup Project and other uses. Adjusting the total Upper Basin depletion for the revised New Mexico depletions indicates that the total Upper Basin use will develop to about 5.388 maf, exclusive of CRSP reservoir evaporation, unless the other Upper Division States schedule increased development by 2060. Thus, total Upper Basin use through much, if not all, the next 54 years extending to 2060 may be anticipated to be below the firm yield of 5.55 maf computed assuming a minimum Lower Basin delivery of 8.25 maf and maintenance of the minimum power pools. The time required to develop the Upper Basin allocation reduces risk of shortage within the planning horizon.

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 1: CRSS Natural Flows, CRSP Active Storage Only, Constant Upper Basin Use

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	Variables	
1906	18,550,021	24,847,704	8,250,000	5,650,000	749,290	28,748,435	3,900,731	0	24,847,704	Storage	25,665,339 af
1907	21,201,694	24,847,704	8,250,000	5,650,000	749,290	31,400,108	6,552,404	0	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	24,847,704	8,250,000	5,650,000	719,512	22,447,009	0	0	22,447,009	Bank Storage	4%
1909	22,356,301	22,447,009	8,250,000	5,650,000	719,512	30,183,797	5,336,093	0	24,847,704	Adjusted Storage (2060)	24,847,704 af
1910	14,650,616	24,847,704	8,250,000	5,650,000	749,290	24,849,030	1,326	0	24,847,704	UB Demand Level	5,650,000 af/yr
1911	15,499,729	24,847,704	8,250,000	5,650,000	749,290	25,698,143	850,439	0	24,847,704	LB Delivery	8,250,000 af/yr
1912	18,623,410	24,847,704	8,250,000	5,650,000	749,290	28,821,824	3,974,120	0	24,847,704		
1913	14,536,373	24,847,704	8,250,000	5,650,000	747,907	24,736,170	0	0	24,736,170		
1914	21,354,814	24,736,170	8,250,000	5,650,000	747,907	31,443,077	6,595,374	0	24,847,704		
1915	13,623,277	24,847,704	8,250,000	5,650,000	736,720	23,834,261	0	0	23,834,261	Results	
1916	20,142,892	23,834,261	8,250,000	5,650,000	736,720	29,340,434	4,492,730	0	24,847,704	Average CRSP Evap	494,700 af/yr
1917	22,942,804	24,847,704	8,250,000	5,650,000	749,290	33,141,218	8,293,514	0	24,847,704	Total Yield w/ CRSP evap	6,144,700 af/yr
1918	15,865,939	24,847,704	8,250,000	5,650,000	749,290	26,064,353	1,216,649	0	24,847,704		
1919	12,651,369	24,847,704	8,250,000	5,650,000	724,812	22,874,261	0	0	22,874,261	Shortage Years	Shortage
1920	22,287,632	22,874,261	8,250,000	5,650,000	724,812	30,537,081	5,689,377	0	24,847,704		
1921	22,526,781	24,847,704	8,250,000	5,650,000	749,290	32,725,195	7,877,491	0	24,847,704	1963	1,168,309 af
1922	18,447,198	24,847,704	8,250,000	5,650,000	749,290	28,645,612	3,797,908	0	24,847,704	1964	3,169,290 af
1923	19,024,046	24,847,704	8,250,000	5,650,000	749,290	29,222,460	4,374,756	0	24,847,704	1967	73,567 af
1924	13,877,798	24,847,704	8,250,000	5,650,000	739,838	24,085,664	0	0	24,085,664	1968	292,944 af
1925	14,430,701	24,085,664	8,250,000	5,650,000	727,939	23,888,426	0	0	23,888,426	1977	3,427,291 af
1926	15,213,731	23,888,426	8,250,000	5,650,000	732,700	24,469,457	0	0	24,469,457		
1927	19,539,212	24,469,457	8,250,000	5,650,000	744,598	29,364,071	4,516,367	0	24,847,704	NM allocation (w/o evap)	630,000 af/yr
1928	16,954,334	24,847,704	8,250,000	5,650,000	749,290	27,152,748	2,305,044	0	24,847,704		
1929	21,829,585	24,847,704	8,250,000	5,650,000	749,290	32,027,999	7,180,295	0	24,847,704		
1930	14,621,041	24,847,704	8,250,000	5,650,000	748,944	24,819,801	0	0	24,819,801	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1931	8,474,134	24,819,801	8,250,000	5,650,000	672,949	18,720,986	0	0	18,720,986		
1932	17,422,187	18,720,986	8,250,000	5,650,000	633,136	21,610,037	0	0	21,610,037		
1933	12,183,500	21,610,037	8,250,000	5,650,000	639,745	19,253,792	0	0	19,253,792		
1934	6,178,192	19,253,792	8,250,000	5,650,000	508,432	11,023,553	0	0	11,023,553	Total Upper Basin depletion, inc. CRSP evap:	
1935	12,630,349	11,023,553	8,250,000	5,650,000	385,811	9,368,091	0	0	9,368,091	1953-1977	5,913,354 af/yr
1936	14,648,873	9,368,091	8,250,000	5,650,000	369,976	9,746,987	0	0	9,746,987	1931-1977	6,015,855 af/yr
1937	14,306,056	9,746,987	8,250,000	5,650,000	375,061	9,777,983	0	0	9,777,983	1906-2000	6,144,700 af/yr
1938	18,146,319	9,777,983	8,250,000	5,650,000	422,895	13,603,406	0	0	13,603,406		
1939	11,164,059	13,603,406	8,250,000	5,650,000	431,062	10,436,403	0	0	10,436,403		
1940	9,931,657	10,436,403	8,250,000	5,650,000	338,359	6,129,701	0	0	6,129,701		
1941	20,116,678	6,129,701	8,250,000	5,650,000	357,815	11,988,764	0	0	11,988,764		
1942	17,225,136	11,988,764	8,250,000	5,650,000	465,757	14,848,143	0	0	14,848,143		
1943	13,731,401	14,848,143	8,250,000	5,650,000	493,018	14,186,527	0	0	14,186,527		
1944	15,369,422	14,186,527	8,250,000	5,650,000	496,874	15,159,075	0	0	15,159,075		
1945	14,140,528	15,159,075	8,250,000	5,650,000	505,649	14,893,953	0	0	14,893,953		
1946	11,095,453	14,893,953	8,250,000	5,650,000	461,845	11,627,562	0	0	11,627,562		
1947	16,439,486	11,627,562	8,250,000	5,650,000	447,280	13,719,767	0	0	13,719,767		
1948	15,139,294	13,719,767	8,250,000	5,650,000	482,617	14,476,444	0	0	14,476,444		
1949	16,933,584	14,476,444	8,250,000	5,650,000	523,142	16,986,885	0	0	16,986,885		
1950	13,140,416	16,986,885	8,250,000	5,650,000	538,184	15,689,117	0	0	15,689,117		
1951	12,505,894	15,689,117	8,250,000	5,650,000	498,610	13,796,402	0	0	13,796,402		
1952	20,805,422	13,796,402	8,250,000	5,650,000	553,916	20,147,908	0	0	20,147,908		
1953	11,165,419	20,147,908	8,250,000	5,650,000	591,444	16,821,883	0	0	16,821,883		
1954	8,496,102	16,821,883	8,250,000	5,650,000	477,239	10,940,746	0	0	10,940,746		
1955	9,413,908	10,940,746	8,250,000	5,650,000	344,374	6,110,279	0	0	6,110,279		
1956	11,426,874	6,110,279	8,250,000	5,650,000	250,672	3,386,481	0	0	3,386,481		
1957	21,500,963	3,386,481	8,250,000	5,650,000	307,356	10,680,088	0	0	10,680,088		
1958	15,862,511	10,680,088	8,250,000	5,650,000	416,995	12,225,605	0	0	12,225,605		
1959	9,598,169	12,225,605	8,250,000	5,650,000	378,116	7,545,658	0	0	7,545,658		
1960	11,524,160	7,545,658	8,250,000	5,650,000	287,036	4,882,782	0	0	4,882,782		
1961	10,010,259	4,882,782	8,250,000	5,650,000	203,238	789,803	0	0	789,803		
1962	17,377,609	789,803	8,250,000	5,650,000	193,208	4,074,203	0	0	4,074,203		
1963	8,840,900	4,074,203	8,250,000	5,650,000	183,412	-1,168,309	0	1,168,309	0		
1964	10,863,585	0	8,250,000	5,650,000	132,876	-3,169,290	0	3,169,290	0		
1965	19,875,027	0	8,250,000	5,650,000	204,453	5,770,574	0	0	5,770,574		
1966	10,679,844	5,770,574	8,250,000	5,650,000	233,196	2,317,222	0	0	2,317,222		
1967	11,670,830	2,317,222	8,250,000	5,650,000	161,818	-73,567	0	73,567	0		
1968	13,739,932	0	8,250,000	5,650,000	132,876	-292,944	0	292,944	0		
1969	15,272,159	0	8,250,000	5,650,000	148,060	1,224,099	0	0	1,224,099		
1970	15,344,136	1,224,099	8,250,000	5,650,000	178,936	2,489,299	0	0	2,489,299		
1971	15,290,433	2,489,299	8,250,000	5,650,000	209,281	3,670,451	0	0	3,670,451		
1972	12,959,652	3,670,451	8,250,000	5,650,000	209,667	2,520,436	0	0	2,520,436		
1973	18,397,816	2,520,436	8,250,000	5,650,000	248,115	6,770,137	0	0	6,770,137		
1974	13,089,042	6,770,137	8,250,000	5,650,000	287,206	5,671,973	0	0	5,671,973		
1975	16,825,996	5,671,973	8,250,000	5,650,000	306,082	8,291,888	0	0	8,291,888		
1976	11,140,311	8,291,888	8,250,000	5,650,000	300,619	5,231,580	0	0	5,231,580		
1977	5,438,897	5,231,580	8,250,000	5,650,000	197,768	-3,427,291	0	3,427,291	0		
1978	15,183,722	0	8,250,000	5,650,000	146,976	1,136,746	0	0	1,136,746		
1979	17,671,870	1,136,746	8,250,000	5,650,000	205,315	4,703,300	0	0	4,703,300		
1980	17,765,183	4,703,300	8,250,000	5,650,000	293,852	8,274,631	0	0	8,274,631		
1981	9,015,200	8,274,631	8,250,000	5,650,000	274,160	3,115,671	0	0	3,115,671		
1982	17,489,400	3,115,671	8,250,000	5,650,000	251,571	6,453,500	0	0	6,453,500		
1983	24,361,989	6,453,500	8,250,000	5,650,000	417,562	16,497,927	0	0	16,497,927		
1984	25,359,376	16,497,927	8,250,000	5,650,000	645,721	27,311,583	2,463,879	0	24,847,704		
1985	21,246,109	24,847,704	8,250,000	5,650,000	749,290	31,444,522	6,596,818	0	24,847,704		
1986	23,013,446	24,847,704	8,250,000	5,650,000	749,290	33,211,860	8,364,156	0	24,847,704		
1987	15,640,478	24,847,704	8,250,000	5,650,000	749,290	25,838,892	991,188	0	24,847,704		
1988	11,456,357	24,847,704	8,250,000	5,650,000	710,171	21,693,890	0	0	21,693,890		
1989	9,921,847	21,693,890	8,250,000	5,650,000	614,090	17,101,646	0	0	17,101,646		
1990	9,639,803	17,101,646	8,250,000	5,650,000	498,107	12,343,342	0	0	12,343,342		
1991	12,170,021	12,343,342	8,250,000	5,650,000	412,511	10,200,852	0	0	10,200,852		
1992	10,895,580	10,200,852	8,250,000	5,650,000	344,397	6,852,035	0	0	6,852,035		
1993	18,160,118	6,852,035	8,250,000	5,650,000	351,343	10,760,810	0	0			

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 2: CRSS Natural Flows, CRSP Active plus All Other UB Live Storage, Constant Upper Basin Use

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	Variables
1906	18,550,021	29,530,030	8,250,000	5,750,000	749,290	33,330,761	3,800,731	0	29,530,030	Storage 30,167,576 af
1907	21,201,694	29,530,030	8,250,000	5,750,000	749,290	35,982,434	6,452,404	0	29,530,030	Sedimentation Rate (Active) 24,292 af/yr
1908	12,218,817	29,530,030	8,250,000	5,750,000	719,512	27,029,335	0	0	27,029,335	Bank Storage 4%
1909	22,356,301	27,029,335	8,250,000	5,750,000	719,512	34,666,124	5,136,093	0	29,530,030	Adjusted Storage (2060) 29,530,030 af
1910	14,650,616	29,530,030	8,250,000	5,750,000	749,290	29,431,356	0	0	29,431,356	UB Demand Level 5,750,000 af/yr
1911	15,499,729	29,431,356	8,250,000	5,750,000	749,290	30,181,795	651,765	0	29,530,030	LB Delivery 8,250,000 af/yr
1912	18,623,410	29,530,030	8,250,000	5,750,000	749,290	33,404,150	3,874,120	0	29,530,030	
1913	14,536,373	29,530,030	8,250,000	5,750,000	747,907	29,318,497	0	0	29,318,497	
1914	21,354,814	29,318,497	8,250,000	5,750,000	747,907	35,925,404	6,395,374	0	29,530,030	
1915	13,623,277	29,530,030	8,250,000	5,750,000	736,720	28,416,588	0	0	28,416,588	Results
1916	20,142,892	28,416,588	8,250,000	5,750,000	736,720	33,822,760	4,292,730	0	29,530,030	Average CRSP Evap 494,700 af/yr
1917	22,942,804	29,530,030	8,250,000	5,750,000	749,290	37,723,544	8,193,514	0	29,530,030	Total Yield w/ CRSP evap 6,244,700 af/yr
1918	15,865,939	29,530,030	8,250,000	5,750,000	749,290	30,646,679	1,116,649	0	29,530,030	
1919	12,651,969	29,530,030	8,250,000	5,750,000	724,812	27,456,587	0	0	27,456,587	Shortage Years Shortage
1920	22,287,632	27,456,587	8,250,000	5,750,000	724,812	35,019,408	5,489,377	0	29,530,030	
1921	22,526,781	29,530,030	8,250,000	5,750,000	749,290	37,307,521	7,777,491	0	29,530,030	1963 0 af
1922	18,447,198	29,530,030	8,250,000	5,750,000	749,290	33,227,938	3,687,908	0	29,530,030	1964 3,155,272 af
1923	19,024,046	29,530,030	8,250,000	5,750,000	749,290	33,804,786	4,274,756	0	29,530,030	1967 373,567 af
1924	13,877,798	29,530,030	8,250,000	5,750,000	739,838	28,667,990	0	0	28,667,990	1968 392,944 af
1925	14,430,701	28,667,990	8,250,000	5,750,000	727,939	28,370,752	0	0	28,370,752	1977 4,327,291 af
1926	15,213,731	28,370,752	8,250,000	5,750,000	732,700	28,851,783	0	0	28,851,783	
1927	19,539,212	28,851,783	8,250,000	5,750,000	744,588	33,646,397	4,116,367	0	29,530,030	NM allocation(w/o evap) 641,250 af/yr
1928	16,954,334	29,530,030	8,250,000	5,750,000	749,290	31,735,074	2,205,044	0	29,530,030	
1929	21,829,585	29,530,030	8,250,000	5,750,000	749,290	36,610,325	7,080,295	0	29,530,030	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.
1930	14,621,041	29,530,030	8,250,000	5,750,000	748,944	29,402,127	0	0	29,402,127	
1931	8,474,134	29,402,127	8,250,000	5,750,000	672,949	23,203,312	0	0	23,203,312	
1932	17,422,187	23,203,312	8,250,000	5,750,000	633,136	25,992,363	0	0	25,992,363	
1933	12,183,500	25,992,363	8,250,000	5,750,000	639,745	23,536,119	0	0	23,536,119	
1934	6,178,192	23,536,119	8,250,000	5,750,000	508,432	15,205,879	0	0	15,205,879	
1935	12,630,349	15,205,879	8,250,000	5,750,000	385,811	13,450,417	0	0	13,450,417	Total Upper Basin depletion, inc. CRSP evap:
1936	14,648,873	13,450,417	8,250,000	5,750,000	369,976	13,729,314	0	0	13,729,314	1953-1977 6,013,354 af/yr
1937	14,306,056	13,729,314	8,250,000	5,750,000	375,081	13,660,309	0	0	13,660,309	1931-1977 6,115,655 af/yr
1938	18,148,319	13,660,309	8,250,000	5,750,000	422,895	17,385,733	0	0	17,385,733	1906-2000 6,244,700 af/yr
1939	11,164,059	17,385,733	8,250,000	5,750,000	431,062	14,118,730	0	0	14,118,730	
1940	9,931,657	14,118,730	8,250,000	5,750,000	338,359	9,712,027	0	0	9,712,027	
1941	20,116,678	9,712,027	8,250,000	5,750,000	357,615	15,471,091	0	0	15,471,091	
1942	17,225,136	15,471,091	8,250,000	5,750,000	465,757	18,230,470	0	0	18,230,470	
1943	13,731,401	18,230,470	8,250,000	5,750,000	493,018	17,468,853	0	0	17,468,853	
1944	15,369,422	17,468,853	8,250,000	5,750,000	496,874	18,341,401	0	0	18,341,401	
1945	14,140,528	18,341,401	8,250,000	5,750,000	505,649	17,976,280	0	0	17,976,280	
1946	11,095,453	17,976,280	8,250,000	5,750,000	461,845	14,609,888	0	0	14,609,888	
1947	16,439,486	14,609,888	8,250,000	5,750,000	447,280	16,602,094	0	0	16,602,094	
1948	15,139,294	16,602,094	8,250,000	5,750,000	482,617	17,258,770	0	0	17,258,770	
1949	16,933,584	17,258,770	8,250,000	5,750,000	523,142	19,669,212	0	0	19,669,212	
1950	13,140,416	19,669,212	8,250,000	5,750,000	538,184	18,271,444	0	0	18,271,444	
1951	12,505,894	18,271,444	8,250,000	5,750,000	498,610	16,278,728	0	0	16,278,728	
1952	20,805,422	16,278,728	8,250,000	5,750,000	553,916	22,530,234	0	0	22,530,234	
1953	11,165,419	22,530,234	8,250,000	5,750,000	591,444	19,104,209	0	0	19,104,209	
1954	8,496,102	19,104,209	8,250,000	5,750,000	477,239	13,123,072	0	0	13,123,072	
1955	9,413,908	13,123,072	8,250,000	5,750,000	344,374	8,192,606	0	0	8,192,606	
1956	11,426,874	8,192,606	8,250,000	5,750,000	250,672	5,368,807	0	0	5,368,807	
1957	21,500,963	5,368,807	8,250,000	5,750,000	307,356	12,562,415	0	0	12,562,415	
1958	15,862,511	12,562,415	8,250,000	5,750,000	416,995	14,007,931	0	0	14,007,931	
1959	9,598,169	14,007,931	8,250,000	5,750,000	378,116	9,227,984	0	0	9,227,984	
1960	11,524,160	9,227,984	8,250,000	5,750,000	287,036	6,465,108	0	0	6,465,108	
1961	10,010,259	6,465,108	8,250,000	5,750,000	203,238	2,272,129	0	0	2,272,129	
1962	17,377,609	2,272,129	8,250,000	5,750,000	193,208	5,456,530	0	0	5,456,530	
1963	8,840,900	5,456,530	8,250,000	5,750,000	183,412	114,018	0	0	114,018	
1964	10,863,586	114,018	8,250,000	5,750,000	132,876	-3,155,272	0	3,155,272	0	
1965	19,875,027	0	8,250,000	5,750,000	204,453	5,670,574	0	0	5,670,574	
1966	10,679,844	5,670,574	8,250,000	5,750,000	233,196	2,117,222	0	0	2,117,222	
1967	11,670,830	2,117,222	8,250,000	5,750,000	161,618	-373,567	0	373,567	0	
1968	13,739,932	0	8,250,000	5,750,000	132,876	-392,944	0	392,944	0	
1969	15,272,159	0	8,250,000	5,750,000	148,060	1,124,099	0	0	1,124,099	
1970	15,344,136	1,124,099	8,250,000	5,750,000	178,936	2,289,299	0	0	2,289,299	
1971	15,290,433	2,289,299	8,250,000	5,750,000	209,281	3,370,451	0	0	3,370,451	
1972	12,959,652	3,370,451	8,250,000	5,750,000	209,667	2,120,436	0	0	2,120,436	
1973	18,397,816	2,120,436	8,250,000	5,750,000	248,115	6,270,137	0	0	6,270,137	
1974	13,089,042	6,270,137	8,250,000	5,750,000	287,206	5,071,973	0	0	5,071,973	
1975	16,825,996	5,071,973	8,250,000	5,750,000	306,082	7,591,888	0	0	7,591,888	
1976	11,140,311	7,591,888	8,250,000	5,750,000	300,619	4,431,580	0	0	4,431,580	
1977	5,438,897	4,431,580	8,250,000	5,750,000	197,768	-4,327,291	0	4,327,291	0	
1978	15,183,722	0	8,250,000	5,750,000	146,976	1,036,746	0	0	1,036,746	
1979	17,671,870	1,036,746	8,250,000	5,750,000	205,315	4,503,300	0	0	4,503,300	
1980	17,765,183	4,503,300	8,250,000	5,750,000	293,852	7,974,631	0	0	7,974,631	
1981	9,015,200	7,974,631	8,250,000	5,750,000	274,160	2,715,671	0	0	2,715,671	
1982	17,489,400	2,715,671	8,250,000	5,750,000	251,571	5,953,500	0	0	5,953,500	
1983	24,361,989	5,953,500	8,250,000	5,750,000	417,562	15,897,927	0	0	15,897,927	
1984	25,359,376	15,897,927	8,250,000	5,750,000	645,721	26,611,583	0	0	26,611,583	
1985	21,246,109	26,611,583	8,250,000	5,750,000	749,290	33,108,401	3,578,371	0	29,530,030	
1986	23,013,446	29,530,030	8,250,000	5,750,000	749,290	37,794,186	8,264,156	0	29,530,030	
1987	15,640,478	29,530,030	8,250,000	5,750,000	749,290	30,421,219	891,188	0	29,530,030	
1988	11,456,357	29,530,030	8,250,000	5,750,000	710,171	26,276,216	0	0	26,276,216	
1989	9,921,847	26,276,216	8,250,000	5,750,000	614,090	21,583,973	0	0	21,583,973	
1990	9,639,803	21,583,973	8,250,000	5,750,000	498,107	16,725,669	0	0	16,725,669	
1991	12,170,021	16,725,669	8,250,000	5,750,000	412,511	14,483,179	0	0	14,483,179	
1992	10,895,580	14,483,179	8,250,000	5,750,000	344,397	11,034,361	0	0	11,034,361	
1993	18,160,118	11,034,361	8,250,000	5,750,000	351,343	14,843,136	0	0	14,843,136	
1994	11,125,503	14,843,136	8,250,000	5,750,000	360,935	11,607,703	0	0	11,607,703	
1995	20,047,166	11,607,703	8,250,000	5,750,000	393,413	17,261,457	0	0	17,261,457	
1996										

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 3: CRSS Natural Flows, CRSP Active plus All Other UB Live Storage (assumed same percent full), Constant Upper Basin Use

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry- Over Storage (plus)	CRSP Carry- Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Storage (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
1906	18,550,021	29,530,030	24,847,704	8,250,000	5,750,000	749,290	33,330,761	3,800,731	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,694	29,530,030	24,847,704	8,250,000	5,750,000	749,290	35,982,434	6,452,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,750,000	723,152	27,025,695	0	0	27,025,695	22,740,460	Bank Storage	4%
1909	22,356,301	27,025,695	22,740,460	8,250,000	5,750,000	723,152	34,658,844	5,128,813	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,750,000	748,271	29,432,375	0	0	29,432,375	24,765,533	UB Demand Level	5,750,000 af/yr
1911	15,499,729	29,432,375	24,765,533	8,250,000	5,750,000	748,271	30,183,833	653,803	0	29,530,030	24,847,704	LB Delivery	8,250,000 af/yr
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,750,000	749,290	33,404,150	3,874,120	0	29,530,030	24,847,704		
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,750,000	747,091	29,319,312	0	0	29,319,312	24,670,398		
1914	21,354,814	29,319,312	24,670,398	8,250,000	5,750,000	747,091	35,927,036	6,397,005	0	29,530,030	24,847,704		
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,750,000	737,659	28,415,648	0	0	28,415,648	23,910,020	Results	
1916	20,142,892	28,415,648	23,910,020	8,250,000	5,750,000	737,659	33,820,881	4,290,850	0	29,530,030	24,847,704	Average CRSP Evap	495,155 af/yr
1917	22,942,804	29,530,030	24,847,704	8,250,000	5,750,000	749,290	37,723,544	8,193,514	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,245,155 af/yr
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,750,000	749,290	30,646,679	1,116,649	0	29,530,030	24,847,704		
1919	12,651,369	29,530,030	24,847,704	8,250,000	5,750,000	727,620	27,453,779	0	0	27,453,779	23,100,666	Shortage Years	Shortage
1920	22,287,632	27,453,779	23,100,666	8,250,000	5,750,000	727,620	35,013,791	5,483,761	0	29,530,030	24,847,704		
1921	22,526,781	29,530,030	24,847,704	8,250,000	5,750,000	749,290	37,307,621	7,777,491	0	29,530,030	24,847,704	1963	169,288 af
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,750,000	749,290	33,227,938	3,697,908	0	29,530,030	24,847,704	1964	3,269,290 af
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,750,000	749,290	33,804,786	4,274,756	0	29,530,030	24,847,704	1967	336,391 af
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,750,000	740,288	28,667,540	0	0	28,667,540	24,121,971	1968	392,944 af
1925	14,430,701	28,667,540	24,121,971	8,250,000	5,750,000	728,182	28,370,059	0	0	28,370,059	23,871,660	1977	4,123,919 af
1926	15,213,731	28,370,059	23,871,660	8,250,000	5,750,000	730,124	28,853,666	0	0	28,853,666	24,278,585		
1927	19,539,212	28,853,666	24,278,585	8,250,000	5,750,000	742,231	33,650,647	4,120,617	0	29,530,030	24,847,704	NM allocation(w/o evap)	641,250 af/yr
1928	16,954,334	29,530,030	24,847,704	8,250,000	5,750,000	749,290	31,735,074	2,205,044	0	29,530,030	24,847,704		
1929	21,829,589	29,530,030	24,847,704	8,250,000	5,750,000	749,290	36,610,325	7,080,295	0	29,530,030	24,847,704	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,750,000	747,965	29,403,106	0	0	29,403,106	24,740,905		
1931	8,474,134	29,403,106	24,740,905	8,250,000	5,750,000	681,850	23,195,390	0	0	23,195,390	19,517,493		
1932	17,422,187	23,195,390	19,517,493	8,250,000	5,750,000	646,035	25,971,542	0	0	25,971,542	21,853,455		
1933	12,183,500	25,971,542	21,853,455	8,250,000	5,750,000	649,274	23,505,767	0	0	23,505,767	19,778,657		
1934	6,178,192	23,505,767	19,778,657	8,250,000	5,750,000	536,305	15,147,655	0	0	15,147,655	12,745,820		
1935	12,630,349	15,147,655	12,745,820	8,250,000	5,750,000	430,284	13,347,719	0	0	13,347,719	11,231,285	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	13,347,719	11,231,285	8,250,000	5,750,000	413,950	13,582,642	0	0	13,582,642	11,428,958	1953-1977	6,004,020 af/yr
1937	14,306,056	13,582,642	11,428,958	8,250,000	5,750,000	415,262	13,473,436	0	0	13,473,436	11,337,068	1931-1977	6,116,585 af/yr
1938	18,148,319	13,473,436	11,337,068	8,250,000	5,750,000	452,694	17,169,061	0	0	17,169,061	14,446,709	1906-2000	6,245,155 af/yr
1939	11,164,059	17,169,061	14,446,709	8,250,000	5,750,000	456,898	13,876,222	0	0	13,876,222	11,675,987		
1940	9,931,657	13,876,222	11,675,987	8,250,000	5,750,000	376,143	9,431,736	0	0	9,431,736	7,936,226		
1941	20,116,678	9,431,736	7,936,226	8,250,000	5,750,000	389,530	15,158,884	0	0	15,158,884	12,755,268		
1942	17,225,136	15,158,884	12,755,268	8,250,000	5,750,000	477,977	17,906,043	0	0	17,906,043	15,056,834		
1943	13,731,401	17,906,043	15,056,834	8,250,000	5,750,000	498,642	17,138,802	0	0	17,138,802	14,421,248		
1944	15,369,422	17,138,802	14,421,248	8,250,000	5,750,000	499,711	18,008,513	0	0	18,008,513	15,153,056		
1945	14,140,528	18,008,513	15,153,056	8,250,000	5,750,000	504,984	17,644,057	0	0	17,644,057	14,846,388		
1946	11,095,453	17,644,057	14,846,388	8,250,000	5,750,000	466,002	14,273,508	0	0	14,273,508	12,010,279		
1947	16,439,486	14,273,508	12,010,279	8,250,000	5,750,000	451,571	16,261,423	0	0	16,261,423	13,682,987		
1948	15,139,294	16,261,423	13,682,987	8,250,000	5,750,000	479,209	16,921,508	0	0	16,921,508	14,238,408		
1949	16,933,584	16,921,508	14,238,408	8,250,000	5,750,000	511,379	19,343,713	0	0	19,343,713	16,276,545		
1950	13,140,416	19,343,713	16,276,545	8,250,000	5,750,000	522,237	17,961,892	0	0	17,961,892	15,113,827		
1951	12,505,894	17,961,892	15,113,827	8,250,000	5,750,000	487,137	15,980,649	0	0	15,980,649	13,446,733		
1952	20,805,422	15,980,649	13,446,733	8,250,000	5,750,000	531,935	22,254,136	0	0	22,254,136	18,725,486		
1953	11,165,419	22,254,136	18,725,486	8,250,000	5,750,000	561,962	18,857,593	0	0	18,857,593	15,867,504		
1954	8,496,102	18,857,593	15,867,504	8,250,000	5,750,000	464,222	12,889,472	0	0	12,889,472	10,845,698		
1955	9,413,908	12,889,472	10,845,698	8,250,000	5,750,000	350,410	7,952,970	0	0	7,952,970	6,691,935		
1956	11,426,874	7,952,970	6,691,935	8,250,000	5,750,000	269,222	5,110,622	0	0	5,110,622	4,300,274		
1957	21,500,963	5,110,622	4,300,274	8,250,000	5,750,000	314,561	12,297,024	0	0	12,297,024	10,347,190		
1958	15,862,511	12,297,024	10,347,190	8,250,000	5,750,000	404,780	13,754,755	0	0	13,754,755	11,573,780		
1959	9,598,169	13,754,755	11,573,780	8,250,000	5,750,000	370,189	8,982,735	0	0	8,982,735	7,558,419		
1960	11,524,160	8,982,735	7,558,419	8,250,000	5,750,000	291,500	6,215,395	0	0	6,215,395	5,229,873		
1961	10,010,259	6,215,395	5,229,873	8,250,000	5,750,000	218,693	2,006,961	0	0	2,006,961	1,686,734		
1962	17,377,609	2,006,961	1,686,734	8,250,000	5,750,000	207,853	5,176,717	0	0	5,176,717	4,355,889		
1963	8,840,900	5,176,717	4,355,889	8,250,000	5,750,000	186,906	-169,288	0	169,288	0	0		
1964	10,863,586	0	0	8,250,000	5,750,000	132,876	-3,269,290	0	3,269,290	0	0		
1965	19,875,027	0	0	8,250,000	5,750,000	192,188	5,682,839	0	0	5,682,839	4,781,759		
1966	10,679,844	5,682,839	4,781,759	8,250,000	5,750,000	214,608	2,148,075	0	0	2,148,075	1,807,473		
1967	11,670,830	2,148,075	1,807,473	8,250,000	5,750,000	155,296	-336,391	0	336,391	0	0		
1968	13,739,932	0	0	8,250,000	5,750,000	132,876	-392,944	0	392,944	0	0		
1969	15,272,159	0	0	8,250,000	5,750,000	144,644	1,127,515	0	0	1,127,515	948,735		
1970	15,344,136	1,127,515	948,735	8,250,000	5,750,000	168,680	2,302,971	0	0	2,302,971	1,937,808		
1971	15,280,433	2,302,971	1,937,808	8,250,000	5,750,000	192,409	3,400,995	0	0	3,400,995	2,861,728		
1972	12,959,652	3,400,995	2,861,728	8,250,000	5,750,000	191,017	2,169,629	0	0	2,169,629	1,825,609		
1973	18,397,816	2,169,629	1,825,609	8,250,000	5,750,000	221,751	6,345,694	0	0	6,345,694	5,339,511		
1974	13,089,042	6,345,694	5,339,511	8,250,000	5,750,000	253,187	5,181,550	0	0	5,181,550	4,359,955		
1975	16,825,996	5,181,550	4,359,955	8,250,000	5,750,000	267,737	7,739,809	0	0	7,739,809	6,512,573		
1976	11,140,311	7,739,809	6,512,573	8,250,000	5,750,000	261,858	4,618,262	0	0	4,618,262	3,885,983		
1977	5,438,897	4,618,262	3,885,983	8,250,000	5,750,000	181,077	-4,123,919						

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 4: Flows Adjusted for SCS Precip., CRSP Active + All Other UB Live Storage (assumed same percent full), Constant Upper Basin Use, No Shortage

CR Natural	Total Carry-	Lower	Shared	Net	UC Basin								
Flow at Lee	Over	Basin	CRSP	Available to	Year-end	CRSP	CRSP	CRSP	CRSP	CRSP	CRSP	CRSP	CRSP
Ferry	Storage	Delivery	Evap	Store	Storage	Evap	Evap	Evap	Evap	Evap	Evap	Evap	Evap
(plus)	(plus)	(minus)	(minus)	(subtotal)	(equals)	(minus)	(minus)	(minus)	(minus)	(minus)	(minus)	(minus)	(minus)
CY		Basin Use	Store	Spill to LC	Year-end Storage	Shortage	Shortage	Shortage	Shortage	Shortage	Shortage	Shortage	Shortage
		(minus)	(subtotal)	(minus)	(equals)	(plus)	(plus)	(plus)	(plus)	(plus)	(plus)	(plus)	(plus)
1906	18,550,021	29,530,030	24,847,704	8,250,000	5,550,000	749,290	33,530,761	4,000,731	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,694	29,530,030	24,847,704	8,250,000	5,550,000	749,290	36,182,434	6,652,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,550,000	725,218	27,223,629	0	0	27,223,629	22,907,009	Bank Storage	4%
1909	22,356,301	27,223,629	22,907,009	8,250,000	5,550,000	725,218	35,054,712	5,524,682	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,550,000	749,290	29,631,356	101,326	0	29,530,030	24,847,704	UB Demand Level	5,550,000 af/yr
1911	15,499,729	29,530,030	24,847,704	8,250,000	5,550,000	749,290	30,480,469	950,439	0	29,530,030	24,847,704	LB Delivery	8,250,000 af/yr
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,550,000	749,290	33,604,150	4,074,120	0	29,530,030	24,847,704		
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,550,000	749,157	29,517,247	0	0	29,517,247	24,836,947		
1914	21,354,814	29,517,247	24,836,947	8,250,000	5,550,000	749,157	36,322,904	6,792,873	0	29,530,030	24,847,704		
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,550,000	739,725	28,613,582	0	0	28,613,582	24,076,569	Results	
1916	20,142,892	28,613,582	24,076,569	8,250,000	5,550,000	739,725	34,216,749	4,686,719	0	29,530,030	24,847,704	Average CRSP Evap	527,920 af/yr
1917	22,962,804	29,530,030	24,847,704	8,250,000	5,550,000	749,290	37,923,544	8,393,514	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,077,920 af/yr
1918	15,845,939	29,530,030	24,847,704	8,250,000	5,550,000	749,290	30,846,679	1,316,649	0	29,530,030	24,847,704		
1919	12,651,369	29,530,030	24,847,704	8,250,000	5,550,000	729,686	27,651,713	0	0	27,651,713	23,267,216	Shortage Years	Shortage
1920	22,287,632	27,651,713	23,267,216	8,250,000	5,550,000	729,686	35,409,659	5,879,629	0	29,530,030	24,847,704		
1921	22,526,781	29,630,030	24,847,704	8,250,000	5,550,000	749,290	37,507,521	7,977,491	0	29,530,030	24,847,704	1963	0 af
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,550,000	749,290	33,427,938	3,897,908	0	29,530,030	24,847,704	1964	0 af
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,550,000	749,290	34,004,786	4,474,756	0	29,530,030	24,847,704	1967	0 af
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,550,000	742,354	28,865,474	0	0	28,865,474	24,288,521	1968	0 af
1925	14,430,701	28,865,474	24,288,521	8,250,000	5,550,000	734,337	28,761,839	0	0	28,761,839	24,201,318	1977	0 af
1926	15,213,713	28,761,839	24,201,318	8,250,000	5,550,000	740,284	29,435,286	0	0	29,435,286	24,767,982		
1927	19,539,212	29,435,286	24,767,982	8,250,000	5,550,000	748,301	34,426,197	4,896,166	0	29,530,030	24,847,704	NM allocation(w/o evap)	618,750 af/yr
1928	16,954,334	29,530,030	24,847,704	8,250,000	5,550,000	749,290	31,935,074	2,405,044	0	29,530,030	24,847,704		
1929	21,829,589	29,530,030	24,847,704	8,250,000	5,550,000	749,290	36,810,325	7,280,295	0	29,530,030	24,847,704		
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,550,000	749,290	29,601,781	71,751	0	29,530,030	24,847,704	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1931	8,474,134	29,530,030	24,847,704	8,250,000	5,550,000	686,538	23,517,626	0	0	23,517,626	19,788,636		
1932	17,422,187	23,517,626	19,788,636	8,250,000	5,550,000	654,758	26,485,055	0	0	26,485,055	22,285,545		
1933	12,183,500	26,485,055	22,285,545	8,250,000	5,550,000	661,949	24,206,607	0	0	24,206,607	20,368,371		
1934	6,178,192	24,206,607	20,368,371	8,250,000	5,550,000	552,849	16,031,950	0	0	16,031,950	13,489,900	Total Upper Basin depletion, inc. CRSP evap:	
1935	12,630,349	16,031,950	13,489,900	8,250,000	5,550,000	450,618	14,411,681	0	0	14,411,681	12,126,543	1953-1977	5,870,057 af/yr
1936	14,648,873	14,411,681	12,126,543	8,250,000	5,550,000	447,996	14,822,558	0	0	14,822,558	12,472,271	1951-1977	5,971,255 af/yr
1937	14,306,056	14,822,558	12,472,271	8,250,000	5,550,000	442,943	14,885,671	0	0	14,885,671	12,525,376	1906-2000	6,077,920 af/yr
1938	18,148,319	14,885,671	12,525,376	8,250,000	5,550,000	483,935	18,750,055	0	0	18,750,055	15,777,018		
1939	11,164,059	18,750,055	15,777,018	8,250,000	5,550,000	491,625	15,622,489	0	0	15,622,489	13,145,364		
1940	9,931,657	15,622,489	13,145,364	8,250,000	5,550,000	414,284	11,339,862	0	0	11,339,862	9,541,797		
1941	20,116,678	11,339,862	9,541,797	8,250,000	5,550,000	431,015	17,225,525	0	0	17,225,525	14,494,220	Flow Adjustments:	
1942	17,225,136	17,225,525	14,494,220	8,250,000	5,550,000	522,737	20,127,925	0	0	20,127,925	16,936,410	1971	203,226 af
1943	13,731,401	20,127,925	16,936,410	8,250,000	5,550,000	546,608	19,512,717	0	0	19,512,717	16,418,751	1972	228,985 af
1944	15,369,422	19,512,717	16,418,751	8,250,000	5,550,000	550,819	20,531,321	0	0	20,531,321	17,275,843	1973	196,384 af
1945	14,140,528	20,531,321	17,275,843	8,250,000	5,550,000	559,168	20,312,681	0	0	20,312,681	17,091,871	1974	246,665 af
1946	11,095,453	20,312,681	17,091,871	8,250,000	5,550,000	523,198	17,084,936	0	0	17,084,936	14,375,923	1975	173,250 af
1947	16,439,486	17,084,936	14,375,923	8,250,000	5,550,000	511,717	19,212,705	0	0	19,212,705	16,166,309	1976	112,291 af
1948	15,139,294	19,212,705	16,166,309	8,250,000	5,550,000	542,244	20,009,755	0	0	20,009,755	16,836,978	1977	152,187 af
1949	16,933,584	20,009,755	16,836,978	8,250,000	5,550,000	577,243	22,566,096	0	0	22,566,096	18,987,982	1978	153,559 af
1950	13,140,416	22,566,096	18,987,982	8,250,000	5,550,000	590,873	21,315,639	0	0	21,315,639	17,935,799	1979	161,883 af
1951	12,505,894	21,315,639	17,935,799	8,250,000	5,550,000	558,486	19,463,047	0	0	19,463,047	16,376,957		
1952	20,805,422	19,463,047	16,376,957	8,250,000	5,550,000	605,942	25,862,527	0	0	25,862,527	21,761,725		
1953	11,165,419	25,862,527	21,761,725	8,250,000	5,550,000	638,572	22,589,374	0	0	22,589,374	19,007,568		
1954	8,496,102	22,589,374	19,007,568	8,250,000	5,550,000	543,381	16,742,094	0	0	16,742,094	14,087,442		
1955	9,413,908	16,742,094	14,087,442	8,250,000	5,550,000	432,065	11,923,937	0	0	11,923,937	10,033,259		
1956	11,426,874	11,923,937	10,033,259	8,250,000	5,550,000	353,322	9,197,489	0	0	9,197,489	7,739,121		
1957	21,500,963	9,197,489	7,739,121	8,250,000	5,550,000	401,055	16,497,397	0	0	16,497,397	13,881,544		
1958	15,862,511	16,497,397	13,881,544	8,250,000	5,550,000	493,620	18,066,288	0	0	18,066,288	15,201,670		
1959	9,598,169	18,066,288	15,201,670	8,250,000	5,550,000	461,325	13,403,132	0	0	13,403,132	11,277,911		
1960	11,524,160	13,403,132	11,277,911	8,250,000	5,550,000	384,885	10,742,407	0	0	10,742,407	9,039,075		
1961	10,010,259	10,742,407	9,039,075	8,250,000	5,550,000	314,281	6,638,386	0	0	6,638,386	5,585,793		
1962	17,377,609	6,638,386	5,585,793	8,250,000	5,550,000	305,597	9,910,398	0	0	9,910,398	8,338,990		
1963	8,840,900	9,910,398	8,338,990	8,250,000	5,550,000	285,014	4,666,284	0	0	4,666,284	3,926,391		
1964	10,863,586	4,666,284	3,926,391	8,250,000	5,550,000	197,571	1,532,299	0	0	1,532,299	1,289,335		
1965	19,875,027	1,532,299	1,289,335	8,250,000	5,550,000	225,909	7,381,417	0	0	7,381,417	6,211,008		
1966	10,679,844	7,381,417	6,21										

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 5: Flows Adjusted for SCS Precip., CRSP Active + Other UB Live Storage (assumed same percent full), Constant Upper Basin Use, 6% Shortage

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage	Variables
1906	18,550,021	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,290,761	3,760,731	0	29,530,030	24,847,704	Storage
1907	21,201,694	29,530,030	24,847,704	8,250,000	5,790,000	749,290	35,942,434	6,412,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,790,000	722,739	26,986,108	0	0	26,986,108	22,707,150	Bank Storage
1909	22,356,301	26,986,108	22,707,150	8,250,000	5,790,000	722,739	34,579,670	5,049,640	0	29,530,030	24,847,704	Adjusted Storage (2060)
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,790,000	747,858	29,392,789	0	0	29,392,789	24,732,223	UB Demand Level
1911	15,499,729	29,392,789	24,732,223	8,250,000	5,790,000	747,858	30,104,660	574,629	0	29,530,030	24,847,704	LB Delivery
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,364,150	3,834,120	0	29,530,030	24,847,704	
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,790,000	746,678	29,279,726	0	0	29,279,726	24,637,088	
1914	21,354,814	29,279,726	24,637,088	8,250,000	5,790,000	746,678	35,847,862	6,317,832	0	29,530,030	24,847,704	
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,790,000	737,246	28,376,061	0	0	28,376,061	23,876,710	Results
1916	20,142,892	28,376,061	23,876,710	8,250,000	5,790,000	737,246	33,741,707	4,211,677	0	29,530,030	24,847,704	Average CRSP Evap
1917	22,942,804	29,530,030	24,847,704	8,250,000	5,790,000	749,290	37,683,544	8,153,514	0	29,530,030	24,847,704	Total Yield w/ CRSP evap
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,790,000	749,290	30,606,679	1,076,649	0	29,530,030	24,847,704	
1919	12,651,369	29,530,030	24,847,704	8,250,000	5,790,000	727,207	27,414,192	0	0	27,414,192	23,067,356	Shortage Years
1920	22,827,632	27,414,192	23,067,356	8,250,000	5,790,000	727,207	34,934,617	5,404,587	0	29,530,030	24,847,704	Shortage
1921	22,526,781	29,530,030	24,847,704	8,250,000	5,790,000	749,290	37,267,521	7,737,491	0	29,530,030	24,847,704	1963
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,790,000	749,290	31,187,938	3,657,908	0	29,530,030	24,847,704	1964
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,764,786	4,234,756	0	29,530,030	24,847,704	1967
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,790,000	739,875	28,627,953	0	0	28,627,953	24,088,662	1968
1925	14,430,701	28,627,953	24,088,662	8,250,000	5,790,000	726,951	28,291,704	0	0	28,291,704	23,805,728	1977
1926	15,213,731	28,291,704	23,805,728	8,250,000	5,790,000	728,092	28,737,342	0	0	28,737,342	24,180,706	
1927	19,539,212	28,737,342	24,180,706	8,250,000	5,790,000	741,017	33,495,537	3,965,507	0	29,530,030	24,847,704	NM allocation(w/o evap)
1928	16,954,334	29,530,030	24,847,704	8,250,000	5,790,000	749,290	31,695,074	2,165,044	0	29,530,030	24,847,704	
1929	21,829,585	29,530,030	24,847,704	8,250,000	5,790,000	749,290	36,570,325	7,040,295	0	29,530,030	24,847,704	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,790,000	747,552	29,363,519	0	0	29,363,519	24,707,595	
1931	8,474,134	29,363,519	24,707,595	8,250,000	5,790,000	680,619	23,117,034	0	0	23,117,034	19,451,562	
1932	17,422,187	23,117,034	19,451,562	8,250,000	5,790,000	644,003	25,855,218	0	0	25,855,218	21,755,575	
1933	12,183,500	25,855,218	21,755,575	8,250,000	5,790,000	646,458	23,352,260	0	0	23,352,260	19,649,490	
1934	6,178,192	23,352,260	19,649,490	8,250,000	5,790,000	532,720	14,957,731	0	0	14,957,731	12,586,011	
1935	12,630,349	14,957,731	12,586,011	8,250,000	5,790,000	425,948	13,122,133	0	0	13,122,133	11,041,468	Total Upper Basin depletion, inc. CRSP evap:
1936	14,648,873	13,122,133	11,041,468	8,250,000	5,790,000	408,877	13,322,129	0	0	13,322,129	11,209,752	1953-1977
1937	14,306,056	13,322,129	11,209,752	8,250,000	5,790,000	409,467	13,178,718	0	0	13,178,718	11,089,080	1931-1977
1938	18,148,319	13,178,718	11,089,080	8,250,000	5,790,000	446,192	16,840,844	0	0	16,840,844	14,170,535	1906-2000
1939	11,164,059	16,840,844	14,170,535	8,250,000	5,790,000	449,704	13,515,199	0	0	13,515,199	11,372,209	
1940	9,931,657	13,515,199	11,372,209	8,250,000	5,790,000	368,272	9,038,585	0	0	9,038,585	7,605,413	Flow Adjustments:
1941	20,116,678	9,038,585	7,605,413	8,250,000	5,790,000	380,995	14,734,268	0	0	14,734,268	12,397,980	
1942	17,225,136	14,734,268	12,397,980	8,250,000	5,790,000	468,792	17,450,612	0	0	17,450,612	14,683,616	1971
1943	13,731,401	17,450,612	14,683,616	8,250,000	5,790,000	488,820	16,653,193	0	0	16,653,193	14,012,637	1972
1944	15,369,422	16,653,193	14,012,637	8,250,000	5,790,000	489,266	17,493,349	0	0	17,493,349	14,719,577	1973
1945	14,140,528	17,493,349	14,719,577	8,250,000	5,790,000	493,929	17,099,948	0	0	17,099,948	14,388,554	1974
1946	11,095,453	17,099,948	14,388,554	8,250,000	5,790,000	454,348	13,701,053	0	0	13,701,053	11,528,593	1975
1947	16,439,486	13,701,053	11,528,593	8,250,000	5,790,000	439,332	15,661,207	0	0	15,661,207	13,177,942	1976
1948	15,139,294	15,661,207	13,177,942	8,250,000	5,790,000	466,396	16,294,105	0	0	16,294,105	13,710,487	1977
1949	16,933,584	16,294,105	13,710,487	8,250,000	5,790,000	498,004	18,689,684	0	0	18,689,684	15,728,220	1978
1950	13,140,416	18,689,684	15,728,220	8,250,000	5,790,000	508,313	17,281,788	0	0	17,281,788	14,541,561	1979
1951	12,505,894	17,281,788	14,541,561	8,250,000	5,790,000	472,674	15,275,008	0	0	15,275,008	12,852,979	1980
1952	20,805,422	15,275,008	12,852,979	8,250,000	5,790,000	516,945	21,523,485	0	0	21,523,485	18,110,689	
1953	11,165,419	21,523,485	18,110,689	8,250,000	5,790,000	546,455	18,102,449	0	0	18,102,449	15,232,098	
1954	8,496,102	18,102,449	15,232,098	8,250,000	5,790,000	448,209	12,110,342	0	0	12,110,342	10,190,108	
1955	9,413,908	12,110,342	10,190,108	8,250,000	5,790,000	333,901	7,150,349	0	0	7,150,349	6,016,579	
1956	11,426,874	7,150,349	6,016,579	8,250,000	5,790,000	252,228	4,284,996	0	0	4,284,996	3,605,560	
1957	21,500,963	4,284,996	3,605,560	8,250,000	5,790,000	297,091	11,448,867	0	0	11,448,867	9,633,517	
1958	15,862,511	11,448,867	9,633,517	8,250,000	5,790,000	386,845	12,884,533	0	0	12,884,533	10,841,542	
1959	9,998,169	12,884,533	10,841,542	8,250,000	5,790,000	351,798	8,090,903	0	0	8,090,903	6,807,998	
1960	11,524,160	8,090,903	6,807,998	8,250,000	5,790,000	272,663	5,302,401	0	0	5,302,401	4,461,644	
1961	10,010,259	5,302,401	4,461,644	8,250,000	5,790,000	199,419	1,073,241	0	0	1,073,241	903,066	
1962	17,377,609	903,066	825,000	8,250,000	5,790,000	188,150	4,222,699	0	0	4,222,699	3,553,142	
1963	8,840,900	4,222,699	3,553,142	8,250,000	5,790,000	176,949	-1,153,349	0	1,153,349	0	0	
1964	10,863,586	0	0	8,250,000	5,790,000	132,876	-3,309,290	0	3,309,290	0	0	
1965	19,875,027	0	0	8,250,000	5,790,000	191,775	5,643,252	0	0	5,643,252	4,748,449	
1966	10,679,844	5,643,252	4,748,449	8,250,000	5,790,000	213,377	2,069,719	0	0	2,069,719	1,741,541	
1967	11,670,830	2,069,719	1,741,541	8,250,000	5,790,000	154,478	-453,929	0	453,929	0	0	
1968	13,739,932	0	0	8,250,000	5,790,000	132,876	-432,944	0	432,944	0	0	
1969	15,272,159	0	0	8,250,000	5,790,000	144,231	1,087,928	0	0	1,087,928	915,425	
1970	15,344,136	1,087,928	915,425	8,250,000	5,790,000	167,449	2,224,615	0	0	2,224,615	1,871,877	
1971	15,493,659	2,224,615	1,871,877	8,250,000	5,790,000	192,476	3,485,798	0	0	3,485,798	2,933,084	
1972	13,186,637	3,485,798	2,933,084	8,250,000	5,790,000	194,700	2,437,734	0	0	2,437,734	2,051,203	
1973	18,650,193	2,437,734	2,051,203	8,250,000	5,790,000	229,483	6,818,443	0	0	6,818,443	5,737,301	
1974	13,285,426	6,818,443	5,737,301	8,250,000	5,790,000	264,568	5,799,301	0	0	5,799,301	4,879,755	
1975	17,072,661	5,799,301	4,879,755	8,250,000	5,790,000	282,634	8,549,329	0	0	8,549,329	7,193,734	
1976	11,313,561	8,549,329	7,193,734	8,250,000	5,790,000	279,958	5,542,932	0	0	5,542,932	4,664,036	
1977	5,551,188	5,542,932	4,664,036	8,250,000	5,790,000	190,728	-1,136,608	0	3,136,608	0	0	
1978	15,335,909	0	0	8,250,000	5,790,000	144,889	1,151,019	0	0	1,151,019	968,512	
1979	17,825,429	1,151,019	968,512	8,250,000	5,790,000	194,383	4,742,065	0	0	4,742,065	3,990,156	
1980	17,927,076	4,742,065	3,990,156	8,250,000	5,790,000	269,618	8,359,523	0	0	8,359,523	7,034,02	

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 6: Flows Adjusted for MBC with SCS Precip., CRSP Active plus All Other Upper Basin Live Storage (assumed same percent full), Variable Upper Basin Use

Year	CR Natural Flow at Ferry (plus)	Percent of Average Natural Flow	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Average Upper Basin Use	Depletion		Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin		Variables	
							Factor after Tipton-Kalmbach	Upper Basin Use (minus)					Year-end Storage (equals)	CRSP Year-end Storage		
1906	18,550,021	1.214	29,530,030	24,847,704	8,250,000	5,790,000	1.107	6,408,459	749,290	32,672,303	3,142,272	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,694	1.387	29,530,030	24,847,704	8,250,000	5,790,000	1.194	6,910,698	749,290	34,621,737	5,291,706	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	0.799	29,530,030	24,847,704	8,250,000	5,790,000	0.900	5,209,300	728,737	27,560,810	0	0	29,530,030	23,190,726	Bank Storage	4%
1909	22,356,301	1.463	29,530,030	24,847,704	8,250,000	5,790,000	1.231	7,129,386	728,737	33,808,989	4,278,958	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	0.969	29,530,030	24,847,704	8,250,000	5,790,000	0.979	5,669,894	749,098	29,511,654	0	0	29,530,030	24,847,704	UB Demand Level	5,790,000 af/yr
1911	15,494,729	1.014	29,530,030	24,847,704	8,250,000	5,790,000	1.007	5,830,719	749,098	30,181,566	651,535	0	29,530,030	24,847,704	LB Delivery	8,250,000 af/yr
1912	18,623,410	1.218	29,530,030	24,847,704	8,250,000	5,790,000	1.109	6,422,359	749,290	32,731,791	3,201,761	0	29,530,030	24,847,704		
1913	14,536,373	0.951	29,530,030	24,847,704	8,250,000	5,790,000	0.976	5,648,255	748,142	29,420,006	0	0	29,530,030	24,847,704		
1914	21,354,814	1.397	29,530,030	24,847,704	8,250,000	5,790,000	1.199	6,939,699	748,142	34,836,979	5,306,949	0	29,530,030	24,847,704		
1915	13,623,277	0.891	29,530,030	24,847,704	8,250,000	5,790,000	0.946	5,475,311	740,497	28,687,500	0	0	29,530,030	24,847,704		
1916	20,142,892	1.318	29,530,030	24,847,704	8,250,000	5,790,000	1.159	6,710,156	740,497	33,129,739	3,599,709	0	29,530,030	24,847,704	Results	
1917	22,942,804	1.501	29,530,030	24,847,704	8,250,000	5,790,000	1.251	7,240,472	749,290	36,233,072	6,703,042	0	29,530,030	24,847,704	Average CRSP Evap	544,351 af/yr
1918	15,865,939	1.038	29,530,030	24,847,704	8,250,000	5,790,000	1.019	5,800,081	749,290	30,496,598	966,567	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,334,351 af/yr
1919	22,651,369	0.828	29,530,030	24,847,704	8,250,000	5,790,000	0.914	5,291,227	732,359	27,907,813	0	0	29,530,030	24,847,704	Shortage Years	
1920	22,827,632	1.458	27,907,813	23,482,708	8,250,000	5,790,000	1.229	7,116,379	732,359	35,095,707	4,566,677	0	29,530,030	24,847,704	1963	0 af
1921	22,526,781	1.474	29,530,030	24,847,704	8,250,000	5,790,000	1.237	7,161,675	749,290	35,695,846	3,058,524	0	29,530,030	24,847,704	1964	0 af
1922	18,447,198	1.207	29,530,030	24,847,704	8,250,000	5,790,000	1.103	6,388,984	749,290	32,598,955	3,058,524	0	29,530,030	24,847,704	1967	0 af
1923	19,024,046	1.245	29,530,030	24,847,704	8,250,000	5,790,000	0.954	5,523,518	742,828	28,891,682	3,526,515	0	28,891,682	24,310,573	1968	0 af
1924	13,877,798	0.908	29,530,030	24,847,704	8,250,000	5,790,000	0.872	5,628,241	734,070	28,710,073	0	0	28,710,073	24,157,760	1977	0 af
1925	14,430,701	0.944	28,891,682	24,310,573	8,250,000	5,790,000	0.998	5,776,550	736,874	29,160,380	0	0	29,160,380	24,536,666		
1926	15,213,731	0.995	28,710,073	24,157,760	8,250,000	5,790,000	1.019	6,585,816	745,432	33,108,344	3,578,313	0	29,530,030	24,847,704	NM allocation (w/o evap)	645,750 af/yr
1927	19,539,212	1.278	29,160,380	24,536,666	8,250,000	5,790,000	1.055	6,106,228	749,290	31,378,846	1,848,816	0	29,530,030	24,847,704		
1928	16,954,334	1.109	29,530,030	24,847,704	8,250,000	5,790,000	1.214	7,029,623	749,290	35,330,702	5,800,872	0	29,530,030	24,847,704	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1929	21,829,589	1.428	29,530,030	24,847,704	8,250,000	5,790,000	0.978	5,664,292	749,290	29,487,929	0	0	29,487,929	24,812,278		
1930	14,521,041	0.954	29,530,030	24,847,704	8,250,000	5,790,000	0.777	4,500,040	696,514	24,515,509	0	0	24,515,509	20,628,293		
1931	8,474,134	0.554	29,487,929	24,812,278	8,250,000	5,790,000	1.070	6,194,842	668,712	26,824,143	0	0	26,824,143	22,570,866		
1932	17,422,187	1.140	24,515,509	20,628,293	8,250,000	5,790,000	0.899	5,202,611	672,542	24,882,490	0	0	24,882,490	20,937,855		
1933	12,183,500	0.797	26,824,143	22,570,866	8,250,000	5,790,000	0.912	4,065,178	582,149	18,163,356	0	0	18,163,356	15,283,346		
1934	6,178,192	0.404	24,882,490	20,937,855	8,250,000	5,790,000	0.703	2,867,246	497,364	16,759,095	0	0	16,759,095	14,104,747		
1935	12,630,349	0.826	18,163,356	15,283,346	8,250,000	5,790,000	0.969	5,669,563	485,255	17,003,149	0	0	17,003,149	14,307,104	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	0.958	16,759,095	14,101,747	8,250,000	5,790,000	0.978	5,604,632	487,428	16,967,146	0	0	16,967,146	14,276,810	1953-1977	5,723,835 af/yr
1937	14,306,056	0.936	17,003,149	14,307,104	8,250,000	5,790,000	0.968	5,604,632	485,255	17,003,149	0	0	17,003,149	14,276,810	1931-1977	5,916,165 af/yr
1938	18,148,319	1.187	16,967,146	14,276,810	8,250,000	5,790,000	1.094	6,332,375	518,853	20,014,238	0	0	20,014,238	16,840,750	1906-2000	6,334,351 af/yr
1939	11,164,059	0.730	20,014,238	16,840,750	8,250,000	5,790,000	0.865	5,009,524	528,324	17,986,449	0	0	17,986,449	14,637,200		
1940	9,831,657	0.650	17,986,449	14,637,200	8,250,000	5,790,000	0.825	4,776,101	458,505	13,842,100	0	0	13,842,100	11,647,276	Flow Adjustments	
1941	20,118,678	1.316	13,842,100	11,647,276	8,250,000	5,790,000	1.083	6,705,191	470,775	18,532,812	0	0	18,532,812	15,594,221	1971	203,226 af
1942	17,225,136	1.127	18,532,812	15,594,221	8,250,000	5,790,000	1.158	6,705,191	470,775	18,532,812	0	0	18,532,812	15,594,221	1972	226,985 af
1943	13,731,401	0.898	20,981,961	17,507,777	8,250,000	5,790,000	0.949	5,495,790	561,196	20,231,376	0	0	20,231,376	17,023,458	1973	252,377 af
1944	15,369,422	1.008	20,231,376	17,023,458	8,250,000	5,790,000	1.003	5,806,039	563,020	20,981,739	0	0	20,981,739	17,654,842	1974	166,384 af
1945	14,140,528	0.925	20,981,739	17,023,458	8,250,000	5,790,000	0.963	5,573,281	568,232	20,730,754	0	0	20,730,754	17,443,654	1975	246,665 af
1946	11,095,453	0.726	20,730,754	17,443,654	8,250,000	5,790,000	0.863	4,986,529	537,551	18,042,126	0	0	18,042,126	15,181,339	1976	173,250 af
1947	16,439,486	1.078	18,042,126	15,181,339	8,250,000	5,790,000	1.038	6,008,714	526,753	19,696,145	0	0	19,696,145	16,573,094	1977	112,291 af
1948	15,139,294	0.980	18,042,126	15,181,339	8,250,000	5,790,000	0.995	5,782,451	550,036	20,272,951	0	0	20,272,951	17,058,441	1978	162,187 af
1949	16,933,584	1.108	20,272,951	17,058,441	8,250,000	5,790,000	1.054	6,102,288	576,976	22,277,261	0	0	22,277,261	18,744,945	1979	153,559 af
1950	13,140,416	0.860	22,277,261	18,744,945	8,250,000	5,790,000	0.930	5,383,855	586,622	21,197,200	0	0	21,197,200	17,536,140	1980	161,893 af
1951	12,505,894	0.818	21,197,200	17,536,140	8,250,000	5,790,000	0.909	5,263,673	558,997	19,630,424	0	0	19,630,424	16,517,794		
1952	20,805,422	1.361	19,630,424	16,517,794	8,250,000	5,790,000	1.181	6,835,642	596,120	24,754,084	0	0	24,754,084	20,828,039		
1953	11,165,419	0.730	24,754,084	20,828,039	8,250,000	5,790,000	0.865	5,009,781	621,253	22,038,468	0	0	22,038,468	18,544,015		
1954	8,496,102	0.556	22,038,468	18,544,015	8,250,000	5,790,000	0.778	4,504,201	542,803	17,237,567	0	0	17,237,567	14,504,352		
1955	9,413,908	0.616	17,237,567	14,504,352	8,250,000	5,790,000	0.808	4,678,037	451,308	13,272,129	0	0	13,272,129	11,167,680		
1956	11,426,874	0.748	13,272,129	11,167,680	8,250,000	5,790,000	0.874	5,059,302	386,242	11,003,459	0	0	11,003,459	9,258,734		
1957	21,500,963	1.407	11,003,459	9,258,734	8,250,000	5,790,000	1.203	6,967,381	423,724	16,863,318	0	0	16,863,318	14,189,445		
1958	16,862,511	1.038	16,863,318	14,189,445	8,250,000	5,790,000	1.019	5,899,432	487,570	10,878,827	0	0	10,878,827	15,212,221		
1959	9,598,169	0.628	18,078,827	15,212,221	8,250,000	5,790,000	0.877	5,077,729	407,131	12,033,130	0	0	12,033,130	10,125,139		
1960	11,524,160	0.754	14,243,829	11,985,306	8,250,000	5,790,000	0.827	4,790,989	348,785	8,653,615	0	0	8,653,615	7,281,485		
1961	10,010,259	0.655	12,033,130	10,125,139	8,250,000	5,790,000	0.868	4,986,529	340,655	11,254,171	0	0	11,254,171	9,469,692		
1962	17,777,609	1.137	8,653,615	7,281,485	8,250,000	5,790,000	0.789	4,569,507	322,902	6,952,662	0	0	6,952,662	5,850,237		
1963	8,840,900	0.578	11,254,171	9,469,692	8,250,000	5,790,000	0.855	4,952,61								

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 7: Flows Adjusted for MBC with SCS Precip., CRSP Active plus Other UB Live Storage (assumed same percent full), Constant Demand less CRSS Physical Shortage

Y	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Demand (minus)	Physical Shortage (plus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage	Variables
1906	18,550,021	29,530,030	24,847,704	8,250,000	5,790,000	10,460	5,779,540	749,290	33,301,221	3,771,191	0	29,530,030	24,847,704	Storage
1907	21,201,684	29,530,030	24,847,704	8,250,000	5,790,000	2,705	5,787,295	749,290	35,945,139	6,415,109	0	29,530,030	24,847,704	Sedimentation Rate (Active)
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,790,000	42,161	5,747,839	723,175	27,027,834	0	0	27,027,834	22,742,259	Bank Storage
1909	22,356,301	27,027,834	22,742,259	8,250,000	5,790,000	3,995	5,786,005	723,175	34,624,955	5,094,925	0	29,530,030	24,847,704	Adjusted Storage (2060)
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,790,000	80,533	5,709,467	748,690	29,472,490	0	0	29,472,490	24,799,287	UB Demand Level
1911	15,499,729	29,472,490	24,799,287	8,250,000	5,790,000	10,253	5,779,747	748,690	30,193,782	663,752	0	29,530,030	24,847,704	LB Delivery
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,790,000	10,053	5,779,947	749,290	33,374,203	3,844,173	0	29,530,030	24,847,704	
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,790,000	18,830	5,771,170	746,872	29,295,361	0	0	29,530,030	24,847,704	
1914	21,354,814	29,295,361	24,652,769	8,250,000	5,790,000	4,438	5,785,562	746,872	35,870,741	6,340,711	0	28,408,533	23,904,033	Results
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,790,000	32,811	5,757,189	737,585	28,408,533	0	0	29,530,030	24,847,704	Average CRSP Evap
1916	20,142,892	28,408,533	23,904,033	8,250,000	5,790,000	2,413	5,787,587	737,585	33,776,253	4,246,223	0	29,530,030	24,847,704	Total Yield w/ CRSP evap
1917	22,942,804	29,530,030	24,847,704	8,250,000	5,790,000	7,025	5,782,975	749,290	37,690,569	8,160,539	0	29,530,030	24,847,704	
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,790,000	28,187	5,761,813	759,676	30,634,866	1,104,838	0	29,530,030	24,847,704	
1919	12,851,369	29,530,030	24,847,704	8,250,000	5,790,000	239,034	5,550,968	729,676	27,650,757	0	0	27,650,757	23,266,411	Shortage Years
1920	22,287,632	27,650,757	23,266,411	8,250,000	5,790,000	12,719	5,777,281	729,676	35,181,432	5,651,402	0	29,530,030	24,847,704	Shortage
1921	22,526,781	29,530,030	24,847,704	8,250,000	5,790,000	5,096	5,784,904	749,290	37,272,617	7,742,587	0	29,530,030	24,847,704	1963
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,790,000	9,479	5,790,521	749,290	33,197,417	3,667,387	0	29,530,030	24,847,704	1964
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,790,000	2,492	5,787,508	749,290	33,767,278	4,237,248	0	29,530,030	24,847,704	1967
1924	15,877,798	29,530,030	24,847,704	8,250,000	5,790,000	70,862	5,719,138	740,607	28,698,083	0	0	28,698,083	24,147,672	1968
1925	14,430,701	29,530,030	24,847,704	8,250,000	5,790,000	73,448	5,716,552	729,158	28,433,074	0	0	28,433,074	23,924,683	1977
1926	15,213,731	28,433,074	23,924,683	8,250,000	5,790,000	81,349	5,708,651	731,853	28,956,301	0	0	28,956,301	24,364,946	
1927	19,639,212	28,956,301	24,364,946	8,250,000	5,790,000	8,124	5,781,876	743,302	33,720,335	4,190,305	0	29,530,030	24,847,704	NM allocation(w/o evap)
1928	16,954,334	29,530,030	24,847,704	8,250,000	5,790,000	15,271	5,774,729	749,290	31,710,345	2,180,315	0	29,530,030	24,847,704	
1929	21,829,585	29,530,030	24,847,704	8,250,000	5,790,000	7,088	5,782,912	749,290	36,577,413	7,047,383	0	29,530,030	24,847,704	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,790,000	20,438	5,769,562	747,763	29,833,746	0	0	29,383,746	24,724,615	
1931	8,474,134	29,383,746	24,724,615	8,250,000	5,790,000	378,737	5,411,263	684,949	23,511,668	0	0	23,511,668	19,783,622	
1932	17,422,187	23,511,668	19,783,622	8,250,000	5,790,000	11,712	5,778,288	682,277	26,251,980	0	0	26,253,290	22,090,529	
1933	12,183,500	26,253,290	22,090,529	8,250,000	5,790,000	146,176	5,643,824	656,192	23,886,775	0	0	23,886,775	20,099,251	
1934	6,178,192	23,886,775	20,099,251	8,250,000	5,790,000	1,244,551	4,545,449	556,618	16,712,900	0	0	16,712,900	14,062,877	
1935	12,630,349	16,712,900	14,062,877	8,250,000	5,790,000	168,644	5,621,356	463,949	15,007,844	0	0	15,007,844	12,628,262	Total Upper Basin depletion, inc. CRSP evap:
1936	14,648,873	15,007,844	12,628,262	8,250,000	5,790,000	29,202	5,760,798	448,136	15,197,883	0	0	15,197,883	12,788,083	1953-1977
1937	14,306,056	15,197,883	12,788,083	8,250,000	5,790,000	106,533	5,683,467	449,318	15,121,154	0	0	15,121,154	12,723,521	1931-1977
1938	18,148,319	15,121,154	12,723,521	8,250,000	5,790,000	12,686	5,777,314	486,451	18,755,707	0	0	18,755,707	15,781,774	1906-2000
1939	11,164,059	18,755,707	15,781,774	8,250,000	5,790,000	307,789	5,482,211	492,442	15,695,114	0	0	15,695,114	13,206,473	
1940	9,931,657	15,695,114	13,206,473	8,250,000	5,790,000	513,385	5,276,615	418,608	11,681,547	0	0	11,681,547	9,829,303	Flow Adjustments:
1941	20,116,678	11,681,547	9,829,303	8,250,000	5,790,000	28,624	5,761,376	435,890	17,350,959	0	0	17,350,959	14,599,765	1971
1942	17,225,136	17,350,959	14,599,765	8,250,000	5,790,000	16,223	5,773,777	523,017	20,029,301	0	0	20,029,301	16,853,425	1972
1943	13,731,401	20,029,301	16,853,425	8,250,000	5,790,000	18,824	5,771,176	542,238	19,197,240	0	0	19,197,240	16,153,297	1973
1944	15,369,422	19,197,240	16,153,297	8,250,000	5,790,000	30,542	5,759,458	542,136	20,015,066	0	0	20,015,066	16,841,447	1974
1945	14,140,528	20,015,066	16,841,447	8,250,000	5,790,000	18,385	5,771,615	546,214	19,587,766	0	0	19,587,766	16,481,900	1975
1946	11,085,453	19,587,766	16,481,900	8,250,000	5,790,000	78,791	5,711,209	506,557	16,215,453	0	0	16,215,453	13,644,306	1976
1947	16,439,486	16,215,453	13,644,306	8,250,000	5,790,000	13,115	5,776,885	491,411	18,136,643	0	0	18,136,643	15,260,869	1977
1948	15,139,294	18,136,643	15,260,869	8,250,000	5,790,000	65,312	5,724,688	518,209	18,783,039	0	0	18,783,039	15,804,772	1978
1949	16,933,584	18,783,039	15,804,772	8,250,000	5,790,000	13,567	5,776,433	549,562	21,140,628	0	0	21,140,628	17,788,538	1979
1950	13,140,416	21,140,628	17,788,538	8,250,000	5,790,000	102,741	5,687,259	560,007	19,783,778	0	0	19,783,778	16,646,832	1978
1951	12,505,894	19,783,778	16,646,832	8,250,000	5,790,000	80,512	5,709,488	525,193	17,804,991	0	0	17,804,991	14,981,805	1980
1952	20,805,422	17,804,991	14,981,805	8,250,000	5,790,000	1,807	5,788,193	599,229	24,002,991	0	0	24,002,991	20,197,400	
1953	11,165,419	24,002,991	20,197,400	8,250,000	5,790,000	82,306	5,697,694	598,631	20,622,085	0	0	20,622,085	17,352,216	
1954	8,496,102	20,622,085	17,352,216	8,250,000	5,790,000	635,994	5,154,006	506,830	15,207,350	0	0	15,207,350	12,796,050	
1955	9,413,906	15,207,350	12,796,050	8,250,000	5,790,000	305,879	5,484,121	401,040	10,486,097	0	0	10,486,097	8,823,406	
1956	11,426,874	10,486,097	8,823,406	8,250,000	5,790,000	210,513	5,579,487	323,314	7,760,170	0	0	7,760,170	6,529,706	
1957	21,500,963	7,760,170	6,529,706	8,250,000	5,790,000	98,720	5,691,280	369,903	14,949,850	0	0	14,949,850	12,579,463	
1958	15,862,511	14,949,850	12,579,463	8,250,000	5,790,000	98,575	5,691,425	460,191	16,410,845	0	0	16,410,845	13,808,717	
1959	9,598,169	16,410,845	13,808,717	8,250,000	5,790,000	258,189	5,533,811	427,293	11,797,910	0	0	11,797,910	9,827,216	
1960	11,524,190	11,797,910	9,827,216	8,250,000	5,790,000	375,552	5,414,448	353,123	9,304,499	0	0	9,304,499	7,829,164	
1961	10,010,259	9,304,499	7,829,164	8,250,000	5,790,000	544,095	5,245,905	287,717	5,531,136	0	0	5,531,136	4,654,111	
1962	17,377,609	5,531,136	4,654,111	8,250,000	5,790,000	17,132	5,772,868	280,421	8,605,457	0	0	8,605,457	7,240,962	
1963	8,840,900	8,605,457	7,240,962	8,250,000	5,790,000	448,784	5,341,216	260,212	3,594,928	0	0	3,594,928	3,024,911	

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 8: Flows Adjusted, CRSP Active+Other UB Live Storage (same percent full), Constant Upper Basin Use, No Shortage, 8.0 maf Lower Basin Delivery

CY	CR Natural Flow at Lee Feery (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage	Variables	
1906	18,550,021	29,530,030	24,847,704	8,000,000	5,800,000	749,290	33,530,761	4,000,731	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,694	29,530,030	24,847,704	8,000,000	5,800,000	749,290	36,182,434	6,652,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	29,530,030	24,847,704	8,000,000	5,800,000	725,218	27,223,629	0	0	27,223,629	22,907,009	Bank Storage	4%
1909	22,356,301	27,223,629	22,907,009	8,000,000	5,800,000	725,218	35,054,712	5,524,682	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	29,530,030	24,847,704	8,000,000	5,800,000	749,290	29,631,356	101,326	0	29,530,030	24,847,704	UB Demand Level	5,800,000 af/yr
1911	15,499,729	29,530,030	24,847,704	8,000,000	5,800,000	749,290	30,480,469	950,439	0	29,530,030	24,847,704	LB Delivery	8,000,000 af/yr
1912	18,623,410	29,530,030	24,847,704	8,000,000	5,800,000	749,290	33,604,150	4,074,120	0	29,530,030	24,847,704		
1913	14,536,373	29,530,030	24,847,704	8,000,000	5,800,000	749,157	29,517,247	0	0	29,517,247	24,836,947		
1914	21,354,814	29,517,247	24,836,947	8,000,000	5,800,000	749,157	36,322,904	6,792,873	0	29,530,030	24,847,704		
1915	13,623,277	29,530,030	24,847,704	8,000,000	5,800,000	739,725	28,613,582	0	0	28,613,582	24,076,569	Results	
1916	20,142,892	28,613,582	24,076,569	8,000,000	5,800,000	739,725	34,216,749	4,686,719	0	29,530,030	24,847,704	Average CRSP Evap	527,920 af/yr
1917	22,942,804	29,530,030	24,847,704	8,000,000	5,800,000	749,290	37,923,544	8,393,514	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,327,920 af/yr
1918	15,866,939	29,530,030	24,847,704	8,000,000	5,800,000	749,290	30,846,679	1,316,649	0	29,530,030	24,847,704		
1919	12,651,369	29,530,030	24,847,704	8,000,000	5,800,000	729,686	27,651,713	0	0	27,651,713	23,267,216	Shortage Years	Shortage
1920	22,287,632	27,651,713	23,267,216	8,000,000	5,800,000	729,686	35,409,659	5,879,629	0	29,530,030	24,847,704		
1921	22,526,781	29,530,030	24,847,704	8,000,000	5,800,000	749,290	37,507,521	7,877,491	0	29,530,030	24,847,704	1963	0 af
1922	18,447,198	29,530,030	24,847,704	8,000,000	5,800,000	749,290	33,427,938	3,897,908	0	29,530,030	24,847,704	1964	0 af
1923	19,024,046	29,530,030	24,847,704	8,000,000	5,800,000	749,290	34,004,786	4,474,756	0	29,530,030	24,847,704	1967	0 af
1924	13,877,798	29,530,030	24,847,704	8,000,000	5,800,000	742,354	28,865,474	0	0	28,865,474	24,288,521	1968	0 af
1925	14,430,701	28,865,474	24,288,521	8,000,000	5,800,000	734,337	28,761,839	0	0	28,761,839	24,201,318	1977	0 af
1926	15,213,713	28,761,839	24,201,318	8,000,000	5,800,000	740,284	29,435,286	0	0	29,435,286	24,767,982		
1927	19,539,212	29,435,286	24,767,982	8,000,000	5,800,000	748,301	34,426,197	4,896,166	0	29,530,030	24,847,704	NM allocation(w/o evap)	646,875 af/yr
1928	16,954,334	29,530,030	24,847,704	8,000,000	5,800,000	749,290	31,935,074	2,405,044	0	29,530,030	24,847,704		
1929	21,829,585	29,530,030	24,847,704	8,000,000	5,800,000	749,290	36,810,325	7,280,295	0	29,530,030	24,847,704	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1930	14,621,041	29,530,030	24,847,704	8,000,000	5,800,000	749,290	29,601,781	71,751	0	29,530,030	24,847,704		
1931	8,474,134	29,530,030	24,847,704	8,000,000	5,800,000	696,538	23,517,626	0	0	23,517,626	19,788,636		
1932	17,422,187	23,517,626	19,788,636	8,000,000	5,800,000	654,758	26,485,055	0	0	26,485,055	22,285,545		
1933	12,183,500	26,485,055	22,285,545	8,000,000	5,800,000	661,949	24,206,607	0	0	24,206,607	20,368,371		
1934	6,178,192	24,206,607	20,368,371	8,000,000	5,800,000	552,849	16,031,950	0	0	16,031,950	13,489,900		
1935	12,630,349	16,031,950	13,489,900	8,000,000	5,800,000	450,618	14,411,681	0	0	14,411,681	12,126,543	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	14,411,681	12,126,543	8,000,000	5,800,000	437,996	14,822,558	0	0	14,822,558	12,472,271	1953-1977	6,120,057 af/yr
1937	14,306,056	14,822,558	12,472,271	8,000,000	5,800,000	442,943	14,885,671	0	0	14,885,671	12,525,376	1931-1977	6,221,255 af/yr
1938	18,148,319	14,885,671	12,525,376	8,000,000	5,800,000	489,935	18,750,055	0	0	18,750,055	15,777,018	1906-2000	6,327,920 af/yr
1939	11,164,059	18,750,055	15,777,018	8,000,000	5,800,000	491,625	15,622,489	0	0	15,622,489	13,145,364		
1940	9,931,657	15,622,489	13,145,364	8,000,000	5,800,000	414,284	11,339,862	0	0	11,339,862	9,541,797		
1941	20,116,678	11,339,862	9,541,797	8,000,000	5,800,000	431,015	17,225,525	0	0	17,225,525	14,494,220	Flow Adjustments:	
1942	17,225,136	17,225,525	14,494,220	8,000,000	5,800,000	522,737	20,127,925	0	0	20,127,925	16,936,410	1971	203,226 af
1943	13,731,401	20,127,925	16,936,410	8,000,000	5,800,000	546,608	19,512,717	0	0	19,512,717	16,418,751	1972	226,985 af
1944	15,369,422	19,512,717	16,418,751	8,000,000	5,800,000	550,819	20,531,321	0	0	20,531,321	17,275,843	1973	252,377 af
1945	14,140,528	20,531,321	17,275,843	8,000,000	5,800,000	558,168	20,312,681	0	0	20,312,681	17,091,871	1974	196,384 af
1946	11,095,453	20,312,681	17,091,871	8,000,000	5,800,000	523,198	17,084,936	0	0	17,084,936	14,375,923	1975	246,665 af
1947	16,439,486	17,084,936	14,375,923	8,000,000	5,800,000	511,717	19,212,705	0	0	19,212,705	16,166,309	1976	173,250 af
1948	15,139,294	19,212,705	16,166,309	8,000,000	5,800,000	542,244	20,009,755	0	0	20,009,755	16,836,978	1977	112,291 af
1949	16,933,584	20,009,755	16,836,978	8,000,000	5,800,000	577,243	22,566,096	0	0	22,566,096	18,987,982	1978	152,187 af
1950	13,140,416	22,566,096	18,987,982	8,000,000	5,800,000	590,873	21,315,639	0	0	21,315,639	17,935,799	1979	153,559 af
1951	12,505,894	21,315,639	17,935,799	8,000,000	5,800,000	558,486	19,463,047	0	0	19,463,047	16,376,957	1980	161,893 af
1952	20,805,422	19,463,047	16,376,957	8,000,000	5,800,000	605,942	25,862,527	0	0	25,862,527	21,761,725		
1953	11,165,419	25,862,527	21,761,725	8,000,000	5,800,000	638,572	22,589,374	0	0	22,589,374	19,007,568		
1954	8,496,102	22,589,374	19,007,568	8,000,000	5,800,000	543,381	16,742,094	0	0	16,742,094	14,087,442		
1955	9,413,908	16,742,094	14,087,442	8,000,000	5,800,000	432,065	11,923,937	0	0	11,923,937	10,033,259		
1956	11,426,874	11,923,937	10,033,259	8,000,000	5,800,000	353,322	9,197,489	0	0	9,197,489	7,739,121		
1957	21,500,963	9,197,489	7,739,121	8,000,000	5,800,000	401,055	16,497,397	0	0	16,497,397	13,881,544		
1958	15,862,511	16,497,397	13,881,544	8,000,000	5,800,000	493,620	18,066,288	0	0	18,066,288	15,201,670		
1959	9,598,169	18,066,288	15,201,670	8,000,000	5,800,000	461,325	13,403,132	0	0	13,403,132	11,277,911		
1960	11,524,160	13,403,132	11,277,911	8,000,000	5,800,000	384,885	10,742,407	0	0	10,742,407	9,039,075		
1961	10,010,259	10,742,407	9,039,075	8,000,000	5,800,000	314,281	6,638,386	0	0	6,638,386	5,585,793		
1962	17,377,609	6,638,386	5,585,793	8,000,000	5,800,000	305,597	9,910,398	0	0	9,910,398	8,338,990		
1963	8,840,900	9,910,398	8,338,990	8,000,000	5,800,000	285,014	4,666,284	0	0	4,666,284	3,926,391		
1964	10,863,586	4,666,284	3,926,391	8,000,000	5,800,000	197,571	1,532,299	0	0	1,532,299	1,289,335		
1965	19,875,027	1,532,299	1,289,335	8,000,000	5,800,000	225,909	7,381,417	0	0	7,381,417	6,211,008		
1966	10,679,844	7,381,417	6,211,008	8,000,000	5,800,000	251,764	4,009,497	0	0	4,009,497	3,373,745		
1967	11,870,830	4,009,497	3,373,745	8,000,000	5,800,000	192,341	1,687,986	0	0	1,687,986	1,420,336		
1968	13,739,932	1,687,986	1,420,336	8,000,000	5,800,000	165,754	1,462,164	0	0	1,462,164	1,230,321		
1969	15,272,159	1,462,164	1,230,321	8,000,000	5,800,000	176,916	2,757,407	0	0	2,757,407	2,320,188		
1970	15,344,136	2,757,407	2,320,188	8,000,000	5,800,000	204,417	4,097,125	0	0	4,097,125	3,447,479		
1971	15,493,659	4,097,125	3,447,479	8,000,000	5,800,000	233,638	5,557,146	0	0	5,557,146	4,675,996		
1972	13,186,637	5,557,146	4,675,996	8,000,000	5,800,000	239,970	4,703,812	0	0	4,703,812	3,957,968		
1973	18,650,183	4,703,812	3,957,968	8,000,000	5,800,000	278,776	9,275,229	0	0	9,275,229	7,804,534		
1974	13,285,426	9,275,229	7,804,534	8,000,000	5,800,000	317,801	8,442,854	0	0	8,442,854	7,104,142		
1975	17,072,661	8,442,854	7,104,142	8,000,000	5,800,000	339,725	11,375,790	0	0	11,375,790	9,572,028		
1976	11,313,561	11,375,790	9,572,028	8,000,000									

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 9: Flows Adjusted, CRSP Active+Other UB Live Storage (same percent full), Constant Upper Basin Use, 6% Shortage, 8.0 maf Lower Basin Delivery

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry- Over Storage (plus)	CRSP Carry- Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
1906	18,550,021	29,530,030	24,847,704	8,000,000	6,050,000	749,290	33,280,761	3,750,731	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,694	29,530,030	24,847,704	8,000,000	6,050,000	749,290	35,932,434	6,402,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	29,530,030	24,847,704	8,000,000	6,050,000	722,636	26,976,212	0	0	26,976,212	22,698,823	Bank Storage	4%
1909	22,356,301	26,976,212	22,698,823	8,000,000	6,050,000	722,636	34,559,877	5,029,846	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	29,530,030	24,847,704	8,000,000	6,050,000	747,755	29,382,892	0	0	29,382,892	24,723,896	UB Demand Level	6,050,000 af/yr
1911	15,499,729	29,382,892	24,723,896	8,000,000	6,050,000	747,755	30,084,866	554,836	0	29,530,030	24,847,704	LB Delivery	8,000,000 af/yr
1912	18,623,410	29,530,030	24,847,704	8,000,000	6,050,000	749,290	33,354,150	3,824,120	0	29,530,030	24,847,704		
1913	14,536,373	29,530,030	24,847,704	8,000,000	6,050,000	746,574	29,269,829	0	0	29,269,829	24,628,760		
1914	21,354,814	29,269,829	24,628,760	8,000,000	6,050,000	746,574	35,828,068	6,298,038	0	29,530,030	24,847,704		
1915	13,623,277	29,530,030	24,847,704	8,000,000	6,050,000	737,143	28,366,165	0	0	28,366,165	23,868,382		
1916	20,142,892	28,366,165	23,868,382	8,000,000	6,050,000	737,143	33,721,914	4,191,883	0	29,530,030	24,847,704	Results	
1917	22,942,804	29,530,030	24,847,704	8,000,000	6,050,000	749,290	37,673,544	8,143,514	0	29,530,030	24,847,704	Average CRSP Evap	490,091 af/yr
1918	15,865,939	29,530,030	24,847,704	8,000,000	6,050,000	749,290	30,560,679	1,066,649	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,540,091 af/yr
1919	12,651,369	29,530,030	24,847,704	8,000,000	6,050,000	727,104	27,404,296	0	0	27,404,296	23,059,029	Shortage Years	Shortage
1920	22,287,632	27,404,296	23,059,029	8,000,000	6,050,000	727,104	34,914,824	5,384,794	0	29,530,030	24,847,704		
1921	22,526,781	29,530,030	24,847,704	8,000,000	6,050,000	749,290	37,257,521	7,727,491	0	29,530,030	24,847,704	1963	1,399,364 af
1922	18,447,198	29,530,030	24,847,704	8,000,000	6,050,000	749,290	33,177,938	3,647,908	0	29,530,030	24,847,704	1964	3,319,290 af
1923	19,024,046	29,530,030	24,847,704	8,000,000	6,050,000	749,290	33,754,786	4,224,756	0	29,530,030	24,847,704	1967	483,313 af
1924	13,877,798	29,530,030	24,847,704	8,000,000	6,050,000	739,772	28,618,057	0	0	28,618,057	24,080,334	1968	442,944 af
1925	14,430,701	28,618,057	24,080,334	8,000,000	6,050,000	726,643	28,272,115	0	0	28,272,115	23,789,245	1977	3,219,519 af
1926	15,213,731	28,272,115	23,789,245	8,000,000	6,050,000	727,584	28,708,261	0	0	28,708,261	24,156,238		
1927	19,539,212	28,708,261	24,156,238	8,000,000	6,050,000	740,713	33,456,760	3,926,730	0	29,530,030	24,847,704	NM allocation(w/o evap)	675,000 af/yr
1928	16,964,334	29,530,030	24,847,704	8,000,000	6,050,000	749,290	31,685,074	2,155,044	0	29,530,030	24,847,704		
1929	21,829,585	29,530,030	24,847,704	8,000,000	6,050,000	749,290	36,560,325	7,030,295	0	29,530,030	24,847,704		
1930	14,621,041	29,530,030	24,847,704	8,000,000	6,050,000	747,449	29,353,622	0	0	29,353,622	24,699,268	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1931	8,474,134	29,353,622	24,699,268	8,000,000	6,050,000	680,312	23,097,445	0	0	23,097,445	19,435,079		
1932	17,422,187	23,097,445	19,435,079	8,000,000	6,050,000	643,495	25,826,137	0	0	25,826,137	21,731,105		
1933	12,183,500	25,826,137	21,731,105	8,000,000	6,050,000	645,754	23,313,883	0	0	23,313,883	19,617,198		
1934	6,178,192	23,313,883	19,617,198	8,000,000	6,050,000	531,824	14,910,251	0	0	14,910,251	12,546,059		
1935	12,630,349	14,910,251	12,546,059	8,000,000	6,050,000	424,863	13,065,736	0	0	13,065,736	10,994,013	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	13,065,736	10,994,013	8,000,000	6,050,000	407,608	13,257,001	0	0	13,257,001	11,154,951	1953-1977	6,296,839 af/yr
1937	14,306,058	13,257,001	11,154,951	8,000,000	6,050,000	408,019	13,105,038	0	0	13,105,038	11,027,084	1931-1977	6,407,741 af/yr
1938	18,148,319	13,105,038	11,027,084	8,000,000	6,050,000	444,567	16,758,790	0	0	16,758,790	14,101,491	1906-2000	6,540,091 af/yr
1939	11,164,059	16,758,790	14,101,491	8,000,000	6,050,000	447,906	13,424,944	0	0	13,424,944	11,296,264		
1940	9,931,657	13,424,944	11,296,264	8,000,000	6,050,000	366,304	8,940,297	0	0	8,940,297	7,522,710		
1941	20,116,678	8,940,297	7,522,710	8,000,000	6,050,000	378,861	14,628,114	0	0	14,628,114	12,308,658	Flow Adjustments:	
1942	17,225,136	12,308,658	10,994,013	8,000,000	6,050,000	466,496	17,336,754	0	0	17,336,754	14,587,812	1971	203,226 af
1943	13,731,401	17,336,754	14,587,812	8,000,000	6,050,000	486,364	16,531,790	0	0	16,531,790	13,910,485	1972	226,985 af
1944	15,369,422	16,531,790	13,910,485	8,000,000	6,050,000	486,655	17,364,558	0	0	17,364,558	14,611,207	1973	252,377 af
1945	14,140,528	17,364,558	14,611,207	8,000,000	6,050,000	491,165	16,963,921	0	0	16,963,921	14,274,096	1974	196,384 af
1946	11,095,453	16,963,921	14,274,096	8,000,000	6,050,000	451,435	13,557,939	0	0	13,557,939	11,408,172	1975	246,665 af
1947	16,439,486	13,557,939	11,408,172	8,000,000	6,050,000	436,272	15,511,153	0	0	15,511,153	13,051,681	1976	173,250 af
1948	15,139,294	15,511,153	13,051,681	8,000,000	6,050,000	463,193	16,137,254	0	0	16,137,254	13,578,507	1977	112,291 af
1949	16,933,584	16,137,254	13,578,507	8,000,000	6,050,000	494,661	18,526,177	0	0	18,526,177	15,588,638	1978	152,187 af
1950	13,140,416	18,526,177	15,588,638	8,000,000	6,050,000	504,832	17,111,761	0	0	17,111,761	14,398,495	1979	153,559 af
1951	12,505,894	17,111,761	14,398,495	8,000,000	6,050,000	469,058	15,098,598	0	0	15,098,598	12,704,541	1980	161,893 af
1952	20,805,422	15,098,598	12,704,541	8,000,000	6,050,000	513,197	21,340,823	0	0	21,340,823	17,956,989		
1953	11,165,419	21,340,823	17,956,989	8,000,000	6,050,000	542,578	17,913,664	0	0	17,913,664	15,073,246		
1954	8,496,102	17,913,664	15,073,246	8,000,000	6,050,000	444,206	11,915,560	0	0	11,915,560	10,026,211		
1955	9,413,908	11,915,560	10,026,211	8,000,000	6,050,000	329,774	6,949,694	0	0	6,949,694	5,847,740		
1956	11,426,874	6,949,694	5,847,740	8,000,000	6,050,000	247,979	4,078,589	0	0	4,078,589	3,431,882		
1957	21,500,963	4,078,589	3,431,882	8,000,000	6,050,000	292,724	11,236,828	0	0	11,236,828	9,455,099		
1958	15,862,511	11,236,828	9,455,099	8,000,000	6,050,000	382,362	12,666,977	0	0	12,666,977	10,658,482		
1959	9,598,169	12,666,977	10,658,482	8,000,000	6,050,000	347,200	7,867,945	0	0	7,867,945	6,620,392		
1960	11,524,160	7,867,945	6,620,392	8,000,000	6,050,000	267,954	5,074,152	0	0	5,074,152	4,269,587		
1961	10,010,259	5,074,152	4,269,587	8,000,000	6,050,000	194,600	839,810	0	0	839,810	706,649		
1962	17,377,609	839,810	706,649	8,000,000	6,050,000	183,224	3,984,195	0	0	3,984,195	3,352,455		
1963	8,840,900	3,984,195	3,352,455	8,000,000	6,050,000	174,459	-1,399,364	0	1,399,364	0	0		
1964	10,863,586	0	0	8,000,000	6,050,000	132,876	-3,319,290	0	3,319,290	0	0		
1965	19,875,027	0	0	8,000,000	6,050,000	191,672	5,633,355	0	0	5,633,355	4,740,122		
1966	10,679,844	5,633,355	4,740,122	8,000,000	6,050,000	213,069	2,050,130	0	0	2,050,130	1,725,058		
1967	11,670,830	2,050,130	1,725,058	8,000,000	6,050,000	154,273	-483,313	0	483,313	0	0		
1968	13,739,932	0	0	8,000,000	6,050,000	132,876	-442,944	0	442,944	0	0		
1969	15,272,159	0	0	8,000,000	6,050,000	144,127	1,078,032	0	0	1,078,032	907,097		
1970	15,344,136	1,078,032	907,097	8,000,000	6,050,000	167,142	2,205,026	0	0	2,205,026	1,655,394		
1971	15,493,659	2,205,026	1,655,394	8,000,000	6,050,000	191,968	3,456,717	0	0	3,456,717	2,908,614		
1972	13,186,637	3,456,717	2,908,614	8,000,000	6,050,000	193,996	2,399,357	0	0	2,399,357	2,018,911		
1973	18,650,193	2,399,357	2,018,911	8,000,000	6,050,000	228,587	6,770,963	0	0	6,770,963	5,697,348		
1974	13,285,426	6,770,963	5,697,348	8,000,000	6,050,000	263,484	5,742,905	0	0	5,742,905	4,832,301		
1975	17,072,661	5,742,905	4,832,301	8,000,000	6,050,000	281,365	8,484,200	0	0	8,484,200	7,138,933		
1976	11,313,561	8,484,200	7,138,933	8,000,000	6,050,000	278,509	5,469,253	0	0	5			

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 10: Flows Adjusted for MBC with SCS Precip., CRSP Live + Other UB Live Storage (same percent full), Constant Upper Basin Use, No Shortage

CY	CR Natural Flow at Lea Ferry (plus)	Total Carry- Over Storage (plus)	CRSP Carry- Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin		Variables	
										Year-end Storage (equals)	CRSP Year- end Storage		
1906	18,550,021	33,833,590	29,151,263	8,250,000	5,720,000	725,390	37,688,221	3,854,631	0	33,833,590	29,151,263	Storage	35,233,298 af
1907	21,201,894	33,833,590	29,151,263	8,250,000	5,720,000	725,390	40,339,894	6,506,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)	37,000 af/yr
1908	12,218,817	33,833,590	29,151,263	8,250,000	5,720,000	699,302	31,383,105	0	0	31,383,105	27,039,907	Bank Storage	4%
1909	22,356,301	31,383,105	27,039,907	8,250,000	5,720,000	699,302	39,070,104	5,236,514	0	33,833,590	29,151,263	Adjusted Storage (2060)	33,833,590 af
1910	14,650,616	33,833,590	29,151,263	8,250,000	5,720,000	724,918	33,789,288	0	0	33,789,288	29,113,092	UB Demand Level	5,720,000 af/yr
1911	15,499,729	33,789,288	29,113,092	8,250,000	5,720,000	724,918	34,594,099	760,509	0	33,833,590	29,151,263	LB Delivery	8,250,000 af/yr
1912	18,623,410	33,833,590	29,151,263	8,250,000	5,720,000	725,390	37,761,610	3,928,020	0	33,833,590	29,151,263		
1913	14,536,373	33,833,590	29,151,263	8,250,000	5,720,000	723,715	33,676,248	0	0	33,676,248	29,015,696		
1914	21,354,814	33,676,248	29,015,696	8,250,000	5,720,000	723,715	40,337,348	6,503,758	0	33,833,590	29,151,263		
1915	13,623,277	33,833,590	29,151,263	8,250,000	5,720,000	714,096	32,772,771	0	0	32,772,771	28,237,254	Results	
1916	20,142,892	32,772,771	28,237,254	8,250,000	5,720,000	714,096	38,231,566	4,397,976	0	33,833,590	29,151,263	Average CRSP Evap	463,436 af/yr
1917	22,942,804	33,833,590	29,151,263	8,250,000	5,720,000	725,390	42,081,004	8,247,414	0	33,833,590	29,151,263	Total Yield w/ CRSP evap	6,183,436 af/yr
1918	15,865,939	33,833,590	29,151,263	8,250,000	5,720,000	725,390	35,004,139	1,170,549	0	33,833,590	29,151,263		
1919	12,651,369	33,833,590	29,151,263	8,250,000	5,720,000	703,858	31,811,100	0	0	31,811,100	27,408,672	Shortage Years	Shortage
1920	22,287,632	31,811,100	27,408,672	8,250,000	5,720,000	703,858	39,424,874	5,591,284	0	33,833,590	29,151,263		
1921	22,526,781	33,833,590	29,151,263	8,250,000	5,720,000	725,390	41,664,981	7,831,391	0	33,833,590	29,151,263	1963	0 af
1922	18,447,198	33,833,590	29,151,263	8,250,000	5,720,000	725,390	37,585,398	3,751,808	0	33,833,590	29,151,263	1964	0 af
1923	19,024,046	33,833,590	29,151,263	8,250,000	5,720,000	725,390	38,162,246	4,328,656	0	33,833,590	29,151,263	1967	0 af
1924	13,877,798	33,833,590	29,151,263	8,250,000	5,720,000	716,777	33,024,611	0	0	33,024,611	28,454,241	1968	0 af
1925	14,430,701	33,024,611	28,454,241	8,250,000	5,720,000	705,558	32,779,753	0	0	32,779,753	28,243,270	1977	0 af
1926	15,213,731	32,779,753	28,243,270	8,250,000	5,720,000	708,648	33,314,836	0	0	33,314,836	28,704,301		
1927	19,539,212	33,314,836	28,704,301	8,250,000	5,720,000	719,667	38,164,181	4,330,591	0	33,833,590	29,151,263	NM allocation (w/o evap)	637,875 af/yr
1928	16,954,334	33,833,590	29,151,263	8,250,000	5,720,000	725,390	36,092,534	2,258,944	0	33,833,590	29,151,263		
1929	21,829,585	33,833,590	29,151,263	8,250,000	5,720,000	725,390	40,967,785	7,134,195	0	33,833,590	29,151,263	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1930	14,621,041	33,833,590	29,151,263	8,250,000	5,720,000	724,606	33,760,025	0	0	33,760,025	29,087,879		
1931	8,474,134	33,760,025	29,087,879	8,250,000	5,720,000	658,307	27,605,852	0	0	27,605,852	23,785,399		
1932	17,422,187	27,605,852	23,785,399	8,250,000	5,720,000	622,911	30,435,128	0	0	30,435,128	26,223,124		
1933	12,183,500	30,435,128	26,223,124	8,250,000	5,720,000	627,333	28,021,294	0	0	28,021,294	24,143,347		
1934	6,178,192	28,021,294	24,143,347	8,250,000	5,720,000	513,222	19,716,264	0	0	19,716,264	16,987,674		
1935	12,630,349	19,716,264	16,987,674	8,250,000	5,720,000	406,222	17,970,391	0	0	17,970,391	15,483,417	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	17,970,391	15,483,417	8,250,000	5,720,000	390,704	18,258,560	0	0	18,258,560	15,731,706	1953-1977	5,934,611 af/yr
1937	14,306,056	18,258,560	15,731,706	8,250,000	5,720,000	393,164	18,201,452	0	0	18,201,452	15,682,501	1931-1977	6,058,021 af/yr
1938	18,148,319	18,201,452	15,682,501	8,250,000	5,720,000	432,434	21,947,337	0	0	21,947,337	18,909,983	1906-2000	6,183,436 af/yr
1939	11,164,059	21,947,337	18,909,983	8,250,000	5,720,000	437,780	18,703,617	0	0	18,703,617	16,115,170		
1940	9,931,657	18,703,617	16,115,170	8,250,000	5,720,000	356,461	14,308,812	0	0	14,308,812	12,329,575		
1941	20,116,678	14,308,812	12,329,575	8,250,000	5,720,000	371,160	20,084,330	0	0	20,084,330	17,304,802	Flow Adjustments:	
1942	17,225,136	20,084,330	17,304,802	8,250,000	5,720,000	462,377	22,877,090	0	0	22,877,090	19,711,064	1971	203,226 af
1943	13,731,401	22,877,090	19,711,064	8,250,000	5,720,000	484,411	22,154,080	0	0	22,154,080	19,088,114	1972	226,985 af
1944	15,369,422	22,154,080	19,088,114	8,250,000	5,720,000	486,433	23,067,069	0	0	23,067,069	19,874,751	1973	252,377 af
1945	14,140,528	23,067,069	19,874,751	8,250,000	5,720,000	492,723	22,744,874	0	0	22,744,874	19,597,146	1974	196,384 af
1946	11,095,453	22,744,874	19,597,146	8,250,000	5,720,000	453,859	19,416,468	0	0	19,416,468	16,729,368	1975	246,665 af
1947	16,439,486	19,416,468	16,729,368	8,250,000	5,720,000	440,031	21,445,923	0	0	21,445,923	18,477,961	1976	173,250 af
1948	15,139,294	21,445,923	18,477,961	8,250,000	5,720,000	469,090	22,146,127	0	0	22,146,127	19,081,262	1977	112,291 af
1949	16,933,584	22,146,127	19,081,262	8,250,000	5,720,000	502,742	24,606,969	0	0	24,606,969	21,201,541	1978	152,187 af
1950	13,140,416	24,606,969	21,201,541	8,250,000	5,720,000	514,629	23,262,756	0	0	23,262,756	20,043,357	1979	153,559 af
1951	12,505,894	23,262,756	20,043,357	8,250,000	5,720,000	479,827	21,319,023	0	0	21,319,023	18,368,623	1980	161,893 af
1952	20,805,422	21,319,023	18,368,623	8,250,000	5,720,000	526,102	27,628,343	0	0	27,628,343	23,804,778		
1953	11,165,419	27,628,343	23,804,778	8,250,000	5,720,000	557,478	24,266,285	0	0	24,266,285	20,908,004		
1954	8,496,102	24,266,285	20,908,004	8,250,000	5,720,000	458,530	18,333,656	0	0	18,333,656	15,796,582		
1955	9,413,908	18,333,656	15,796,582	8,250,000	5,720,000	343,218	13,434,547	0	0	13,434,547	11,575,301		
1956	11,426,874	13,434,547	11,575,301	8,250,000	5,720,000	261,206	10,630,214	0	0	10,630,214	9,159,069		
1957	21,500,963	10,630,214	9,159,069	8,250,000	5,720,000	308,243	17,852,934	0	0	17,852,934	15,382,216		
1958	15,862,511	17,852,934	15,382,216	8,250,000	5,720,000	401,013	19,344,432	0	0	19,344,432	16,687,301		
1959	9,598,169	19,344,432	16,687,301	8,250,000	5,720,000	366,449	14,606,152	0	0	14,606,152	12,584,765		
1960	11,524,160	14,606,152	12,584,765	8,250,000	5,720,000	286,914	11,873,398	0	0	11,873,398	10,230,205		
1961	10,010,259	11,873,398	10,230,205	8,250,000	5,720,000	213,395	7,700,263	0	0	7,700,263	6,634,601		
1962	17,377,609	7,700,263	6,634,601	8,250,000	5,720,000	203,083	10,904,789	0	0	10,904,789	9,395,644		
1963	8,840,900	10,904,789	9,395,644	8,250,000	5,720,000	180,671	5,595,018	0	0	5,595,018	4,820,707		
1964	10,863,586	5,595,018	4,820,707	8,250,000	5,720,000	90,114	2,398,489	0	0	2,398,489	2,066,556		
1965	19,875,027	2,398,489	2,066,556	8,250,000	5,720,000	117,696	8,185,821	0	0	8,185,821	7,052,962		
1966	10,679,844	8,185,821	7,052,962	8,250,000	5,720,000	142,760	4,752,904	0	0	4,752,904	4,095,136		
1967	11,670,830	4,752,904	4,095,136	8,250,000	5,720,000	80,877	2,372,858	0	0	2,372,858	2,044,471		
1968	13,739,932	2,372,858	2,044,471	8,250,000	5,720,000	52,531	2,090,259	0	0	2,090,259	1,800,982		
1969	15,272,159	2,090,259	1,800,982	8,250,000	5,720,000	62,717	3,329,701	0	0	3,329,701	2,868,894		
1970	15,344,136	3,329,701	2,868,894	8,250,000	5,720,000	89,587	4,614,250	0	0	4,614,250	3,975,671		
1971	15,493,659	4,614,250	3,975,671	8,250,000	5,720,000	118,224	6,019,685	0	0	6,019,685	5,186,604		
1972	13,186,637	6,019,685	5,186,604	8,250,000	5,720,000	123,531	5,112,790	0	0	5,112,790	4,405,217		
1973	18,650,193	5,112,790	4,405,217	8,250,000	5,720,000	161,977	9,631,006	0	0	9,631,006	8,298,144		
1974	13,285,426	9,631,006	8,298,144	8,250,000	5,720,000	200,653	8,745,780	0	0	8,745,780	7,535,427		
1975	17,072,661	8,745,780	7,535,427	8,250,000	5,720,000	221,897	11,626,544	0	0	11,626,			

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 11: Flows Adjusted for MBC with SCS Precip., CRSP Live + Other UB Live Storage (same percent full), Constant Upper Basin Use, 6% Shortage

CV	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Use	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage	Variables	
1906	18,550,021	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,428,221	3,594,631	0	33,833,590	29,151,263	Storage	35,233,298 af
1907	21,201,694	33,833,590	29,151,263	8,250,000	5,980,000	725,390	40,079,894	6,246,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)	37,000 af/yr
1908	12,218,817	33,833,590	29,151,263	8,250,000	5,980,000	696,563	31,125,844	0	0	31,125,844	26,818,249	Bank Storage	4%
1909	22,356,201	31,125,844	26,818,249	8,250,000	5,980,000	696,563	38,555,581	4,721,991	0	33,833,590	29,151,263	Adjusted Storage (2060)	33,833,590 af
1910	14,650,616	33,833,590	29,151,263	8,250,000	5,980,000	722,179	33,532,027	0	0	33,532,027	28,891,434	UB Demand Level	5,980,000 af/yr
1911	15,499,729	33,532,027	28,891,434	8,250,000	5,980,000	722,179	34,079,577	245,987	0	33,833,590	29,151,263	LB Delivery	8,250,000 af/yr
1912	18,623,410	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,501,610	3,668,020	0	33,833,590	29,151,263		
1913	14,536,373	33,833,590	29,151,263	8,250,000	5,980,000	720,976	33,418,987	0	0	33,418,987	28,794,038		
1914	21,354,814	33,418,987	28,794,038	8,250,000	5,980,000	720,976	39,822,825	5,989,235	0	33,833,590	29,151,263		
1915	13,623,277	33,833,590	29,151,263	8,250,000	5,980,000	711,358	32,515,509	0	0	32,515,509	28,015,595	Results	
1916	20,142,892	32,515,509	28,015,595	8,250,000	5,980,000	711,358	37,717,044	3,883,454	0	33,833,590	29,151,263	Average CRSP Evap	420,659 af/yr
1917	22,942,804	33,833,590	29,151,263	8,250,000	5,980,000	725,390	41,821,004	7,987,414	0	33,833,590	29,151,263	Total Yield w/ CRSP evap	6,400,659 af/yr
1918	15,865,939	33,833,590	29,151,263	8,250,000	5,980,000	725,390	34,744,139	910,549	0	33,833,590	29,151,263		
1919	12,651,369	33,833,590	29,151,263	8,250,000	5,980,000	701,120	31,553,839	0	0	31,553,839	27,187,013	Shortage Years	Shortage
1920	22,287,632	31,553,839	27,187,013	8,250,000	5,980,000	701,120	38,910,351	5,076,762	0	33,833,590	29,151,263		
1921	22,526,781	33,833,590	29,151,263	8,250,000	5,980,000	725,390	41,404,981	7,571,391	0	33,833,590	29,151,263	1963	703,237 af
1922	18,447,198	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,325,398	3,491,808	0	33,833,590	29,151,263	1964	3,371,431 af
1923	19,024,046	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,902,246	4,068,656	0	33,833,590	29,151,263	1967	639,589 af
1924	13,877,798	33,833,590	29,151,263	8,250,000	5,980,000	714,039	32,767,349	0	0	32,767,349	28,232,583	1968	495,085 af
1925	14,430,701	32,767,349	28,232,583	8,250,000	5,980,000	697,400	32,270,651	0	0	32,270,651	27,804,623	1977	3,665,093 af
1926	15,213,731	32,270,651	27,804,623	8,250,000	5,980,000	695,184	32,559,198	0	0	32,559,198	28,053,238		
1927	19,539,212	32,559,198	28,053,238	8,250,000	5,980,000	711,823	37,156,587	3,322,997	0	33,833,590	29,151,263	NM allocation (w/o evap)	667,125 af/yr
1928	16,954,334	33,833,590	29,151,263	8,250,000	5,980,000	725,390	35,832,534	1,998,944	0	33,833,590	29,151,263		
1929	21,829,585	33,833,590	29,151,263	8,250,000	5,980,000	725,390	40,707,785	6,874,195	0	33,833,590	29,151,263	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1930	14,621,041	33,833,590	29,151,263	8,250,000	5,980,000	721,868	33,502,763	0	0	33,502,763	28,866,220		
1931	8,474,134	33,502,763	28,866,220	8,250,000	5,980,000	650,148	27,096,749	0	0	27,096,749	23,346,753		
1932	17,422,187	27,096,749	23,346,753	8,250,000	5,980,000	609,447	29,679,489	0	0	29,679,489	25,572,060		
1933	12,183,500	29,679,489	25,572,060	8,250,000	5,980,000	608,675	27,024,314	0	0	27,024,314	23,284,342		
1934	6,178,192	27,024,314	23,284,342	8,250,000	5,980,000	489,480	18,483,026	0	0	18,483,026	15,925,107	Total Upper Basin depletion, inc. CRSP evap:	
1935	12,630,349	18,483,026	15,925,107	8,250,000	5,980,000	377,502	16,505,872	0	0	16,505,872	14,221,578	1953-1977	6,109,607 af/yr
1936	14,648,873	16,505,872	14,221,578	8,250,000	5,980,000	357,112	16,567,634	0	0	16,567,634	14,274,792	1931-1977	6,246,233 af/yr
1937	14,306,056	16,567,634	14,274,792	8,250,000	5,980,000	354,802	16,288,888	0	0	16,288,888	14,034,623	1906-2000	6,400,659 af/yr
1938	18,148,319	16,288,888	14,034,623	8,250,000	5,980,000	389,402	19,817,805	0	0	19,817,805	17,075,162		
1939	11,164,059	19,817,805	17,075,162	8,250,000	5,980,000	390,177	16,361,687	0	0	16,361,687	14,097,346		
1940	9,951,657	16,361,687	14,097,346	8,250,000	5,980,000	304,384	11,758,959	0	0	11,758,959	10,131,603		
1941	20,116,678	11,758,959	10,131,603	8,250,000	5,980,000	314,703	17,330,935	0	0	17,330,935	14,932,457	Flow Adjustments:	
1942	17,225,136	17,330,935	14,932,457	8,250,000	5,980,000	401,631	19,924,440	0	0	19,924,440	17,167,040	1971	203,226 af
1943	13,731,401	19,924,440	17,167,040	8,250,000	5,980,000	419,467	19,006,373	0	0	19,006,373	16,376,027	1972	226,985 af
1944	15,369,422	19,006,373	16,376,027	8,250,000	5,980,000	417,381	19,728,415	0	0	19,728,415	16,998,143	1973	252,377 af
1945	14,140,528	19,728,415	16,998,143	8,250,000	5,980,000	419,647	19,219,295	0	0	19,219,295	16,559,482	1974	196,384 af
1946	11,095,453	19,219,295	16,559,482	8,250,000	5,980,000	376,846	15,707,903	0	0	15,707,903	13,534,041	1975	246,665 af
1947	16,439,486	15,707,903	13,534,041	8,250,000	5,980,000	359,162	17,558,227	0	0	17,558,227	15,128,294	1976	173,250 af
1948	15,139,294	17,558,227	15,128,294	8,250,000	5,980,000	384,448	18,083,073	0	0	18,083,073	15,580,505	1977	112,291 af
1949	16,933,584	18,083,073	15,580,505	8,250,000	5,980,000	414,405	20,372,251	0	0	20,372,251	17,552,877	1978	152,187 af
1950	13,140,416	20,372,251	17,552,877	8,250,000	5,980,000	422,676	18,859,991	0	0	18,859,991	16,249,903	1979	153,559 af
1951	12,505,894	18,859,991	16,249,903	8,250,000	5,980,000	384,133	16,751,752	0	0	16,751,752	14,433,429	1980	161,893 af
1952	20,805,422	16,751,752	14,433,429	8,250,000	5,980,000	427,143	22,900,031	0	0	22,900,031	19,730,831		
1953	11,165,419	22,900,031	19,730,831	8,250,000	5,980,000	455,126	19,380,324	0	0	19,380,324	16,698,226		
1954	8,496,102	19,380,324	16,698,226	8,250,000	5,980,000	352,857	13,293,569	0	0	13,293,569	11,453,834		
1955	9,413,908	13,293,569	11,453,834	8,250,000	5,980,000	234,293	8,243,183	0	0	8,243,183	7,102,386		
1956	11,426,874	8,243,183	7,102,386	8,250,000	5,980,000	149,099	5,290,958	0	0	5,290,958	4,558,728		
1957	21,500,963	5,290,958	4,558,728	8,250,000	5,980,000	193,021	12,368,901	0	0	12,368,901	10,657,133		
1958	15,862,511	12,368,901	10,657,133	8,250,000	5,980,000	282,741	13,718,671	0	0	13,718,671	11,820,103		
1959	9,988,169	13,718,671	11,820,103	8,250,000	5,980,000	245,190	8,841,650	0	0	8,841,650	7,818,029		
1960	11,524,160	8,841,650	7,818,029	8,250,000	5,980,000	162,732	5,973,078	0	0	5,973,078	5,146,447		
1961	10,010,259	5,973,078	5,146,447	8,250,000	5,980,000	86,352	1,666,985	0	0	1,666,985	1,436,286		
1962	17,377,609	1,666,985	1,436,286	8,250,000	5,980,000	73,239	4,741,355	0	0	4,741,355	4,085,186		
1963	8,440,900	4,741,355	4,085,186	8,250,000	5,980,000	55,493	-703,237	0	703,237	0	0		
1964	10,863,586	0	0	8,250,000	5,980,000	5,017	-3,371,431	0	3,371,431	0	0		
1965	19,875,027	0	0	8,250,000	5,980,000	64,427	5,580,800	0	0	5,580,800	4,808,285		
1966	10,679,844	5,580,800	4,808,285	8,250,000	5,980,000	85,136	1,945,307	0	0	1,945,307	1,676,091		
1967	11,670,830	1,945,307	1,676,091	8,250,000	5,980,000	25,726	-639,589	0	639,589	0	0		
1968	13,739,932	0	0	8,250,000	5,980,000	5,017	-495,085	0	495,085	0	0		
1969	15,272,159	0	0	8,250,000	5,980,000	15,942	1,026,217	0	0	1,026,217	884,196		
1970	15,344,136	1,026,217	884,196	8,250,000	5,980,000	38,320	2,102,033	0	0	2,102,033	1,811,127		
1971	15,493,659	2,102,033	1,811,127	8,250,000	5,980,000	62,559	3,303,132	0	0	3,303,132	2,846,003		
1972	13,186,637	3,303,132	2,846,003	8,250,000	5,980,000	63,562	2,196,207	0	0	2,196,207	1,892,268		
1973	18,650,193	2,196,207	1,892,268	8,250,000	5,980,000	97,793	6,518,607	0	0	6,518,607	5,616,478		
1974	13,285,426	6,518,607	5,616,478	8,250,000	5,980,000	132,344	5,441,689	0	0	5,441,689	4,688,598		
1975	17,072,661	5,441,689	4,688,598	8,250,000	5,980,000	149,550	8,134,800	0	0	8,134,800	7,009,002		
1976	11,313,561	8,134,800	7,009,002	8,250,000	5,980,000	145,622	5,072,739	0	0	5,072,739	4,370,709		
1977	5,551,188	5,0											

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 12: Flows Adjusted, CRSP Live+Other UB Live Storage (same percent full), Constant Upper Basin Use, No Shortage, 8.0 maf Lower Basin Delivery

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry- Over Storage (plus)	CRSP Carry- Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
												Storage	Shortage
1906	18,550,021	33,833,590	29,151,263	8,000,000	5,970,000	725,390	37,688,221	3,854,631	0	33,833,590	29,151,263	Storage	35,233,298 af
1907	21,201,694	33,833,590	29,151,263	8,000,000	5,970,000	725,390	40,339,894	6,506,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)	37,000 af/yr
1908	12,218,817	33,833,590	29,151,263	8,000,000	5,970,000	699,302	31,383,105	0	0	31,383,105	27,039,907	Bank Storage	4%
1909	22,356,301	31,383,105	27,039,907	8,000,000	5,970,000	699,302	39,070,104	5,236,514	0	33,833,590	29,151,263	Adjusted Storage (2060)	33,833,590 af
1910	14,650,616	33,833,590	29,151,263	8,000,000	5,970,000	724,918	33,789,288	0	0	33,789,288	29,113,092	UB Demand Level	5,970,000 af/yr
1911	15,499,729	33,789,288	29,113,092	8,000,000	5,970,000	724,918	34,594,099	760,509	0	33,833,590	29,151,263	LB Delivery	8,000,000 af/yr
1912	18,623,410	33,833,590	29,151,263	8,000,000	5,970,000	725,390	37,761,610	3,928,202	0	33,833,590	29,151,263		
1913	14,536,373	33,833,590	29,151,263	8,000,000	5,970,000	723,715	33,676,248	0	0	33,676,248	29,015,696		
1914	21,354,814	33,676,248	29,015,696	8,000,000	5,970,000	723,715	40,337,348	6,503,758	0	33,833,590	29,151,263		
1915	13,623,277	33,833,590	29,151,263	8,000,000	5,970,000	714,096	32,772,771	0	0	32,772,771	28,237,254		
1916	20,142,892	32,772,771	28,237,254	8,000,000	5,970,000	714,096	38,231,566	4,397,976	0	33,833,590	29,151,263	Results	
1917	22,942,804	33,833,590	29,151,263	8,000,000	5,970,000	725,390	42,081,004	8,247,414	0	33,833,590	29,151,263	Average CRSP Evap	463,436 af/yr
1918	15,865,939	33,833,590	29,151,263	8,000,000	5,970,000	725,390	35,004,139	1,170,549	0	33,833,590	29,151,263	Total Yield w/ CRSP evap	6,433,436 af/yr
1919	12,651,369	33,833,590	29,151,263	8,000,000	5,970,000	703,858	31,811,100	0	0	31,811,100	27,408,672	Shortage Years	
1920	22,827,632	31,811,100	27,408,672	8,000,000	5,970,000	703,858	39,424,874	5,591,284	0	33,833,590	29,151,263	Shortage	
1921	22,526,781	33,833,590	29,151,263	8,000,000	5,970,000	725,390	41,664,981	7,831,391	0	33,833,590	29,151,263	1963	0 af
1922	18,447,198	33,833,590	29,151,263	8,000,000	5,970,000	725,390	37,585,398	3,751,808	0	33,833,590	29,151,263	1964	0 af
1923	19,024,046	33,833,590	29,151,263	8,000,000	5,970,000	725,390	38,162,246	4,328,656	0	33,833,590	29,151,263	1967	0 af
1924	13,877,798	33,833,590	29,151,263	8,000,000	5,970,000	716,777	33,024,611	0	0	33,024,611	28,454,241	1968	0 af
1925	14,430,701	33,024,611	28,454,241	8,000,000	5,970,000	705,558	32,779,753	0	0	32,779,753	28,243,270	1977	0 af
1926	15,213,731	32,779,753	28,243,270	8,000,000	5,970,000	708,648	33,314,836	0	0	33,314,836	28,704,301		
1927	19,539,212	33,314,836	28,704,301	8,000,000	5,970,000	719,867	38,164,181	4,330,591	0	33,833,590	29,151,263	NM allocation (w/o evap)	666,000 af/yr
1928	16,954,334	33,833,590	29,151,263	8,000,000	5,970,000	725,390	36,092,534	2,258,944	0	33,833,590	29,151,263		
1929	21,829,585	33,833,590	29,151,263	8,000,000	5,970,000	725,390	40,967,785	7,134,195	0	33,833,590	29,151,263		
1930	14,621,041	33,833,590	29,151,263	8,000,000	5,970,000	724,606	33,760,025	0	0	33,760,025	29,087,879		
1931	8,474,134	33,760,025	29,087,879	8,000,000	5,970,000	658,307	27,605,852	0	0	27,605,852	23,785,399	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1932	17,422,187	27,605,852	23,785,399	8,000,000	5,970,000	622,911	30,435,128	0	0	30,435,128	26,223,124		
1933	12,183,500	30,435,128	26,223,124	8,000,000	5,970,000	627,333	28,021,294	0	0	28,021,294	24,143,347		
1934	6,178,192	28,021,294	24,143,347	8,000,000	5,970,000	513,222	19,716,264	0	0	19,716,264	16,987,674		
1935	12,630,349	19,716,264	16,987,674	8,000,000	5,970,000	406,222	17,970,391	0	0	17,970,391	15,483,417	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	17,970,391	15,483,417	8,000,000	5,970,000	390,704	18,258,560	0	0	18,258,560	15,731,706	1953-1977	6,184,611 af/yr
1937	14,306,056	18,258,560	15,731,706	8,000,000	5,970,000	393,164	18,201,452	0	0	18,201,452	15,682,501	1931-1977	6,308,021 af/yr
1938	18,148,319	18,201,452	15,682,501	8,000,000	5,970,000	432,434	21,947,337	0	0	21,947,337	18,909,983	1906-2000	6,433,436 af/yr
1939	11,164,059	21,947,337	18,909,983	8,000,000	5,970,000	437,780	18,703,617	0	0	18,703,617	16,115,170		
1940	9,931,657	18,703,617	16,115,170	8,000,000	5,970,000	356,461	14,308,812	0	0	14,308,812	12,328,575		
1941	20,116,678	14,308,812	12,328,575	8,000,000	5,970,000	371,160	20,084,330	0	0	20,084,330	17,304,802	Flow Adjustments:	
1942	17,225,136	20,084,330	17,304,802	8,000,000	5,970,000	462,377	22,877,090	0	0	22,877,090	19,711,064	1971	203,226 af
1943	13,731,401	22,877,090	19,711,064	8,000,000	5,970,000	484,411	22,154,800	0	0	22,154,800	19,088,114	1972	226,985 af
1944	15,369,422	22,154,800	19,088,114	8,000,000	5,970,000	486,433	23,067,069	0	0	23,067,069	19,874,751	1973	252,377 af
1945	14,140,528	23,067,069	19,874,751	8,000,000	5,970,000	492,723	22,744,874	0	0	22,744,874	19,597,146	1974	196,384 af
1946	11,095,453	22,744,874	19,597,146	8,000,000	5,970,000	453,859	19,416,468	0	0	19,416,468	16,729,368	1975	248,665 af
1947	16,439,486	19,416,468	16,729,368	8,000,000	5,970,000	440,031	21,445,923	0	0	21,445,923	18,477,961	1976	173,250 af
1948	15,139,294	21,445,923	18,477,961	8,000,000	5,970,000	469,090	22,146,127	0	0	22,146,127	19,081,262	1977	112,291 af
1949	16,933,584	22,146,127	19,081,262	8,000,000	5,970,000	502,742	24,606,969	0	0	24,606,969	21,201,541	1978	152,187 af
1950	13,140,416	24,606,969	21,201,541	8,000,000	5,970,000	514,629	23,262,756	0	0	23,262,756	20,043,357	1979	153,559 af
1951	12,505,894	23,262,756	20,043,357	8,000,000	5,970,000	479,627	21,319,023	0	0	21,319,023	18,368,623	1980	161,893 af
1952	20,805,422	21,319,023	18,368,623	8,000,000	5,970,000	526,102	27,628,343	0	0	27,628,343	23,804,778		
1953	11,165,419	27,628,343	23,804,778	8,000,000	5,970,000	557,478	24,266,285	0	0	24,266,285	20,908,004		
1954	8,496,102	24,266,285	20,908,004	8,000,000	5,970,000	458,530	18,333,856	0	0	18,333,856	15,796,582		
1955	9,413,908	18,333,856	15,796,582	8,000,000	5,970,000	343,218	13,434,547	0	0	13,434,547	11,575,301		
1956	11,426,874	13,434,547	11,575,301	8,000,000	5,970,000	261,206	10,630,214	0	0	10,630,214	9,159,069		
1957	21,500,963	10,630,214	9,159,069	8,000,000	5,970,000	308,243	17,852,934	0	0	17,852,934	15,382,216		
1958	15,862,511	17,852,934	15,382,216	8,000,000	5,970,000	401,013	19,344,432	0	0	19,344,432	16,667,301		
1959	9,598,169	19,344,432	16,667,301	8,000,000	5,970,000	366,449	14,606,152	0	0	14,606,152	12,584,765		
1960	11,524,160	14,606,152	12,584,765	8,000,000	5,970,000	286,914	11,873,398	0	0	11,873,398	10,230,205		
1961	10,010,259	11,873,398	10,230,205	8,000,000	5,970,000	213,395	7,700,263	0	0	7,700,263	6,634,601		
1962	17,377,609	7,700,263	6,634,601	8,000,000	5,970,000	203,083	10,904,789	0	0	10,904,789	9,395,644		
1963	8,840,900	10,904,789	9,395,644	8,000,000	5,970,000	180,671	5,595,018	0	0	5,595,018	4,820,707		
1964	10,863,586	5,595,018	4,820,707	8,000,000	5,970,000	90,114	2,398,489	0	0	2,398,489	2,066,556		
1965	19,875,027	2,398,489	2,066,556	8,000,000	5,970,000	117,696	8,185,821	0	0	8,185,821	7,052,962		
1966	10,579,844	8,185,821	7,052,962	8,000,000	5,970,000	142,760	4,752,904	0	0	4,752,904	4,095,136		
1967	11,670,830	4,752,904	4,095,136	8,000,000	5,970,000	80,877	2,372,858	0	0	2,372,858	2,044,471		
1968	13,739,932	2,372,858	2,044,471	8,000,000	5,970,000	52,531	2,090,259	0	0	2,090,259	1,800,982		
1969	15,272,159	2,090,259	1,800,982	8,000,000	5,970,000	62,717	3,329,701	0	0	3,329,701	2,868,894		
1970	15,344,136	3,329,701	2,868,894	8,000,000	5,970,000	89,587	4,614,250	0	0	4,614,250	3,975,671		
1971	15,493,659	4,614,250	3,975,671	8,000,000	5,970,000	118,224	6,019,685	0	0	6,019,685	5,186,604		
1972	13,186,637	6,019,685	5,186,604	8,000,000	5,970,000	123,531	5,112,790	0	0	5,112,790	4,405,217		
1973	18,650,193	5,112,790	4,405,217	8,000,000	5,970,000	161,977	9,631,006	0	0	9,631,006	8,298,144		
1974	13,285,426	9,631,006	8,298,144	8,000,000	5,970,000	200,653	8,745,780	0	0	8,745,780	7,535,427		
1975	17,072,661	8,745,780	7,535,427	8,000,000	5,970,000	221,897	11,626,544	0					

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 13: Flows Adjusted, CRSP Live+Other UB Live Storage (same percent full), Constant Upper Basin Use, 6% Shortage, 8.0 maf Lower Basin Delivery

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage	Variables	
1906	18,550,021	33,833,590	29,151,263	8,000,000	6,240,000	725,390	37,418,221	3,584,631	0	33,833,590	29,151,263	Storage	35,233,298 af
1907	21,201,694	33,833,590	29,151,263	8,000,000	6,240,000	725,390	40,069,894	6,236,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)	37,000 af/yr
1908	12,218,817	33,833,590	29,151,263	8,000,000	6,240,000	696,458	31,115,949	0	0	31,115,949	26,809,724	Bank Storage	4%
1909	22,356,301	31,115,949	26,809,724	8,000,000	6,240,000	696,458	38,535,792	4,702,202	0	33,833,590	29,151,263	Adjusted Storage (2060)	33,833,590 af
1910	14,650,616	33,833,590	29,151,263	8,000,000	6,240,000	722,074	33,522,132	0	0	33,522,132	28,882,909	UB Demand Level	6,240,000 af/yr
1911	15,499,729	33,522,132	28,882,909	8,000,000	6,240,000	722,074	34,059,787	226,197	0	33,833,590	29,151,263	LB Delivery	8,000,000 af/yr
1912	18,623,410	33,833,590	29,151,263	8,000,000	6,240,000	725,390	37,491,610	3,658,020	0	33,833,590	29,151,263		
1913	14,536,373	33,833,590	29,151,263	8,000,000	6,240,000	720,870	33,409,092	0	0	33,409,092	28,785,513		
1914	21,354,814	33,409,092	28,785,513	8,000,000	6,240,000	720,870	39,803,036	5,969,446	0	33,833,590	29,151,263		
1915	13,623,277	33,833,590	29,151,263	8,000,000	6,240,000	711,252	32,505,615	0	0	32,505,615	28,007,070	Results	
1916	20,142,892	32,505,615	28,007,070	8,000,000	6,240,000	711,252	37,697,255	3,863,665	0	33,833,590	29,151,263	Average CRSP Evap	419,298 af/yr
1917	22,942,804	33,833,590	29,151,263	8,000,000	6,240,000	725,390	41,811,004	7,977,414	0	33,833,590	29,151,263	Total Yield w/ CRSP evap	6,659,298 af/yr
1918	15,865,939	33,833,590	29,151,263	8,000,000	6,240,000	725,390	34,734,139	900,549	0	33,833,590	29,151,263		
1919	12,651,369	33,833,590	29,151,263	8,000,000	6,240,000	701,014	31,543,945	0	0	31,543,945	27,178,488	Shortage Years	Shortage
1920	22,287,632	31,543,945	27,178,488	8,000,000	6,240,000	701,014	38,890,562	5,056,972	0	33,833,590	29,151,263		
1921	22,526,781	33,833,590	29,151,263	8,000,000	6,240,000	725,390	41,394,981	7,561,391	0	33,833,590	29,151,263	1963	947,769 af
1922	18,447,196	33,833,590	29,151,263	8,000,000	6,240,000	725,390	37,315,398	3,481,808	0	33,833,590	29,151,263	1964	3,381,431 af
1923	19,024,046	33,833,590	29,151,263	8,000,000	6,240,000	725,390	37,892,246	4,058,656	0	33,833,590	29,151,263	1967	666,961 af
1924	13,877,798	33,833,590	29,151,263	8,000,000	6,240,000	713,933	32,757,455	0	0	32,757,455	28,224,057	1968	505,085 af
1925	14,430,701	32,757,455	28,224,057	8,000,000	6,240,000	697,086	32,251,070	0	0	32,251,070	27,787,752	1977	3,747,871 af
1926	15,213,731	32,251,070	27,787,752	8,000,000	6,240,000	694,666	32,530,135	0	0	32,530,135	28,028,197		
1927	19,539,212	32,530,135	28,028,197	8,000,000	6,240,000	711,513	37,117,634	3,284,244	0	33,833,590	29,151,263	NM allocation (w/o evap)	696,375 af/yr
1928	16,954,334	33,833,590	29,151,263	8,000,000	6,240,000	725,390	35,822,534	1,988,944	0	33,833,590	29,151,263		
1929	21,829,585	33,833,590	29,151,263	8,000,000	6,240,000	725,390	40,697,786	6,864,195	0	33,833,590	29,151,263		
1930	14,621,041	33,833,590	29,151,263	8,000,000	6,240,000	721,762	33,492,869	0	0	33,492,869	28,857,695	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1931	8,474,134	33,492,869	28,857,695	8,000,000	6,240,000	649,835	27,077,168	0	0	27,077,168	23,329,882		
1932	17,422,187	27,077,168	23,329,882	8,000,000	6,240,000	608,929	29,650,426	0	0	29,650,426	25,547,019		
1933	12,193,500	29,650,426	25,547,019	8,000,000	6,240,000	607,958	26,985,968	0	0	26,985,968	23,251,303		
1934	6,178,192	26,985,968	23,251,303	8,000,000	6,240,000	488,567	18,435,594	0	0	18,435,594	15,884,239	Total Upper Basin depletion, inc. CRSP evap:	
1935	12,630,349	18,435,594	15,884,239	8,000,000	6,240,000	376,398	16,449,545	0	0	16,449,545	14,173,045	1953-1977	6,367,400 af/yr
1936	14,648,873	16,449,545	14,173,045	8,000,000	6,240,000	355,820	16,502,598	0	0	16,502,598	14,218,757	1931-1977	6,504,037 af/yr
1937	14,306,056	16,502,598	14,218,757	8,000,000	6,240,000	353,326	16,215,328	0	0	16,215,328	13,971,243	1906-2000	6,659,298 af/yr
1938	18,148,319	16,215,328	13,971,243	8,000,000	6,240,000	387,747	19,735,900	0	0	19,735,900	17,004,592		
1939	11,164,059	19,735,900	17,004,592	8,000,000	6,240,000	388,346	16,271,612	0	0	16,271,612	14,019,738		
1940	9,931,657	16,271,612	14,019,738	8,000,000	6,240,000	302,381	11,660,888	0	0	11,660,888	10,047,105		
1941	20,116,678	11,660,888	10,047,105	8,000,000	6,240,000	312,531	17,225,035	0	0	17,225,035	14,841,213	Flow Adjustments:	
1942	17,225,136	17,225,035	14,841,213	8,000,000	6,240,000	399,295	19,810,876	0	0	19,810,876	17,069,193	1971	203,226 af
1943	13,731,401	19,810,876	17,069,193	8,000,000	6,240,000	416,970	18,885,308	0	0	18,885,308	16,271,716	1972	226,985 af
1944	15,369,422	18,885,308	16,271,716	8,000,000	6,240,000	414,725	19,600,005	0	0	19,600,005	16,887,504	1973	252,377 af
1945	14,140,528	19,600,005	16,887,504	8,000,000	6,240,000	416,837	19,083,696	0	0	19,083,696	16,442,649	1974	196,384 af
1946	11,095,453	19,083,696	16,442,649	8,000,000	6,240,000	373,884	15,565,266	0	0	15,565,266	13,411,144	1975	246,665 af
1947	16,439,486	15,565,266	13,411,144	8,000,000	6,240,000	356,052	17,408,700	0	0	17,408,700	14,999,460	1976	173,250 af
1948	15,139,294	17,408,700	14,999,460	8,000,000	6,240,000	381,192	17,926,801	0	0	17,926,801	15,445,860	1977	112,291 af
1949	16,933,584	17,926,801	15,445,860	8,000,000	6,240,000	411,008	20,209,378	0	0	20,209,378	17,412,544	1978	152,187 af
1950	13,140,416	20,209,378	17,412,544	8,000,000	6,240,000	419,140	18,690,654	0	0	18,690,654	16,104,001	1979	153,559 af
1951	12,505,894	18,690,654	16,104,001	8,000,000	6,240,000	380,460	16,576,088	0	0	16,576,088	14,282,076	1980	161,893 af
1952	20,805,422	16,576,088	14,282,076	8,000,000	6,240,000	423,337	22,718,173	0	0	22,718,173	19,574,140		
1953	11,165,419	22,718,173	19,574,140	8,000,000	6,240,000	451,189	19,192,403	0	0	19,192,403	16,536,311		
1954	8,496,102	19,192,403	16,536,311	8,000,000	6,240,000	348,793	13,099,712	0	0	13,099,712	11,286,805		
1955	9,413,908	13,099,712	11,286,805	8,000,000	6,240,000	230,104	8,043,516	0	0	8,043,516	6,930,351		
1956	11,426,874	8,043,516	6,930,351	8,000,000	6,240,000	144,787	5,085,602	0	0	5,085,602	4,381,791		
1957	21,500,963	5,085,602	4,381,791	8,000,000	6,240,000	188,589	12,157,976	0	0	12,157,976	10,475,399		
1958	15,862,511	12,157,976	10,475,399	8,000,000	6,240,000	278,192	13,502,296	0	0	13,502,296	11,633,675		
1959	9,598,169	13,502,296	11,633,675	8,000,000	6,240,000	240,526	8,619,938	0	0	8,619,938	7,427,001		
1960	11,524,160	8,619,938	7,427,001	8,000,000	6,240,000	157,956	5,746,143	0	0	5,746,143	4,950,918		
1961	10,010,259	5,746,143	4,950,918	8,000,000	6,240,000	81,465	1,434,936	0	0	1,434,936	1,236,351		
1962	17,377,609	1,434,936	1,236,351	8,000,000	6,240,000	68,245	4,504,300	0	0	4,504,300	3,880,937		
1963	8,840,900	4,504,300	3,880,937	8,000,000	6,240,000	52,969	-947,769	0	947,769	0	0		
1964	10,863,586	0	0	8,000,000	6,240,000	5,017	-3,381,431	0	3,381,431	0	0		
1965	19,875,027	0	0	8,000,000	6,240,000	64,322	5,570,705	0	0	5,570,705	4,799,760		
1966	10,679,844	5,570,705	4,799,760	8,000,000	6,240,000	84,823	1,925,727	0	0	1,925,727	1,659,220		
1967	11,670,830	1,925,727	1,659,220	8,000,000	6,240,000	25,518	-668,961	0	668,961	0	0		
1968	13,739,932	0	0	8,000,000	6,240,000	5,017	-505,085	0	505,085	0	0		
1969	15,272,159	0	0	8,000,000	6,240,000	15,837	1,016,322	0	0	1,016,322	875,671		
1970	15,344,136	1,016,322	875,671	8,000,000	6,240,000	38,006	2,082,452	0	0	2,082,452	1,794,256		
1971	15,493,659	2,082,452	1,794,256	8,000,000	6,240,000	62,042	3,274,069	0	0	3,274,069	2,820,962		
1972	13,186,637	3,274,069	2,820,962	8,000,000	6,240,000	62,844	2,157,862	0	0	2,157,862	1,859,229		
1973	18,650,193	2,157,862	1,859,229	8,000,000	6,240,000	96,980	6,471,174	0	0	6,471,174	5,575,610		
1974	13,285,426	6,471,174	5,575,610	8,000,000	6,240,000	131,240	5,385,361	0	0	5,385,361	4,640,066		
1975	17,072,661	5,385,361	4,640,066	8,000,000	6,240,000	148,258	8,069,765	0	0	8,069,765	6,952,967		
1976	11,313,561	8,069,765	6,952,967	8,000,000	6,240,000	144,147	4,999,179	0	0	4,999,179	4,307,329		
1977	5,551,188												

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 14: Flows Adjusted for SCS Precip., CRSP Active + Other UB Live Storage (assumed same percent full), Constant 5.72 maf Upper Basin Use

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage	Variables	
1906	18,550,021	29,530,030	24,847,704	8,250,000	5,720,000	749,290	33,360,761	3,830,731	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,694	29,530,030	24,847,704	8,250,000	5,720,000	749,290	36,012,434	6,482,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,720,000	723,462	27,055,385	0	0	27,055,385	22,765,442	Bank Storage	4%
1909	22,356,301	27,055,385	22,765,442	8,250,000	5,720,000	723,462	34,718,224	5,188,194	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,720,000	748,581	29,462,066	0	0	29,462,066	24,790,516	UB Demand Level	5,720,000 af/yr
1911	15,499,729	29,462,066	24,790,516	8,250,000	5,720,000	748,581	30,243,214	713,183	0	29,530,030	24,847,704	LB Delivery	8,250,000 af/yr
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,720,000	749,290	33,434,150	3,904,120	0	29,530,030	24,847,704		
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,720,000	747,401	29,349,003	0	0	29,349,003	24,695,380		
1914	21,354,814	29,349,003	24,695,380	8,250,000	5,720,000	747,401	35,986,416	6,456,385	0	29,530,030	24,847,704		
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,720,000	737,969	28,445,338	0	0	28,445,338	23,935,002	Results	
1916	20,142,892	28,445,338	23,935,002	8,250,000	5,720,000	737,969	33,880,261	4,350,231	0	29,530,030	24,847,704	Average CRSP Evap	500,794 af/yr
1917	22,942,804	29,530,030	24,847,704	8,250,000	5,720,000	749,290	37,753,544	8,223,514	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,220,794 af/yr
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,720,000	749,290	30,676,679	1,146,649	0	29,530,030	24,847,704		
1919	12,651,369	29,530,030	24,847,704	8,250,000	5,720,000	727,930	27,483,469	0	0	27,483,469	23,125,649	Shortage Years	Shortage
1920	22,287,632	27,483,469	23,125,649	8,250,000	5,720,000	727,930	35,073,171	5,543,141	0	29,530,030	24,847,704		
1921	22,526,781	29,530,030	24,847,704	8,250,000	5,720,000	749,290	37,337,521	7,807,491	0	29,530,030	24,847,704	1963	0 af
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,720,000	749,290	33,257,938	3,727,908	0	29,530,030	24,847,704	1964	2,682,283 af
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,720,000	749,290	33,834,786	4,304,756	0	29,530,030	24,847,704	1967	148,237 af
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,720,000	740,598	28,697,230	0	0	28,697,230	24,146,954	1968	362,944 af
1925	14,430,701	28,697,230	24,146,954	8,250,000	5,720,000	729,105	28,428,826	0	0	28,428,826	23,921,109	1977	2,556,235 af
1926	15,213,731	28,428,826	23,921,109	8,250,000	5,720,000	731,648	28,940,909	0	0	28,940,909	24,351,995		
1927	19,539,212	28,940,909	24,351,995	8,250,000	5,720,000	743,141	33,766,980	4,236,949	0	29,530,030	24,847,704	NM allocation(w/o evap)	637,875 af/yr
1928	16,954,334	29,530,030	24,847,704	8,250,000	5,720,000	749,290	31,765,074	2,235,044	0	29,530,030	24,847,704		
1929	21,829,585	29,530,030	24,847,704	8,250,000	5,720,000	749,290	36,640,325	7,110,295	0	29,530,030	24,847,704	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,720,000	748,275	29,432,796	0	0	29,432,796	24,765,887		
1931	8,474,134	29,432,796	24,765,887	8,250,000	5,720,000	682,774	23,254,156	0	0	23,254,156	19,566,942		
1932	17,422,187	23,254,156	19,566,942	8,250,000	5,720,000	647,559	28,058,785	0	0	28,058,785	21,926,864		
1933	12,183,500	26,058,785	21,926,864	8,250,000	5,720,000	651,387	23,620,898	0	0	23,620,898	19,875,533		
1934	6,178,192	23,620,898	19,875,533	8,250,000	5,720,000	538,993	15,290,097	0	0	15,290,097	12,865,676		
1935	12,630,349	15,290,097	12,865,676	8,250,000	5,720,000	433,537	13,516,909	0	0	13,516,909	11,373,648	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	13,516,909	11,373,648	8,250,000	5,720,000	417,755	13,778,027	0	0	13,778,027	11,593,362	1953-1977	5,984,701 af/yr
1937	14,306,056	13,778,027	11,593,362	8,250,000	5,720,000	419,609	13,694,475	0	0	13,694,475	11,523,058	1931-1977	6,095,282 af/yr
1938	18,148,319	13,694,475	11,523,058	8,250,000	5,720,000	457,570	17,415,223	0	0	17,415,223	14,653,839	1906-2000	6,220,794 af/yr
1939	11,164,059	17,415,223	14,653,839	8,250,000	5,720,000	462,293	14,146,989	0	0	14,146,989	11,903,821		
1940	9,931,657	14,146,989	11,903,821	8,250,000	5,720,000	382,046	9,726,600	0	0	9,726,600	8,184,335		
1941	20,116,678	9,726,600	8,184,335	8,250,000	5,720,000	395,931	15,477,346	0	0	15,477,346	13,023,235	Flow Adjustments:	
1942	17,225,136	15,477,346	13,023,235	8,250,000	5,720,000	484,866	18,247,617	0	0	18,247,617	15,354,247	1971	203,226 af
1943	13,731,041	18,247,617	15,354,247	8,250,000	5,720,000	506,008	17,503,010	0	0	17,503,010	14,727,706	1972	226,985 af
1944	15,369,422	17,503,010	14,727,706	8,250,000	5,720,000	507,545	18,394,887	0	0	18,394,887	15,478,166	1973	252,377 af
1945	14,140,528	18,394,887	15,478,166	8,250,000	5,720,000	513,276	18,052,138	0	0	18,052,138	15,189,764	1974	196,384 af
1946	11,095,453	18,052,138	15,189,764	8,250,000	5,720,000	474,742	14,702,849	0	0	14,702,849	12,371,543	1975	246,665 af
1947	16,439,486	14,702,849	12,371,543	8,250,000	5,720,000	460,751	16,711,584	0	0	16,711,584	14,061,770	1976	173,250 af
1948	15,139,294	16,711,584	14,061,770	8,250,000	5,720,000	488,818	17,392,060	0	0	17,392,060	14,634,349	1977	112,291 af
1949	16,933,584	17,392,060	14,634,349	8,250,000	5,720,000	521,410	19,834,235	0	0	19,834,235	16,689,288	1978	152,187 af
1950	13,140,416	19,834,235	16,689,288	8,250,000	5,720,000	532,681	18,471,970	0	0	18,471,970	15,543,026	1979	153,559 af
1951	12,505,894	18,471,970	15,543,026	8,250,000	5,720,000	497,984	16,509,880	0	0	16,509,880	13,892,048	1980	161,893 af
1952	20,805,422	16,509,880	13,892,048	8,250,000	5,720,000	543,178	22,802,123	0	0	22,802,123	19,186,584		
1953	11,165,419	22,802,123	19,186,584	8,250,000	5,720,000	573,593	19,423,950	0	0	19,423,950	16,344,059		
1954	8,496,102	19,423,950	16,344,059	8,250,000	5,720,000	476,232	13,473,819	0	0	13,473,819	11,337,390		
1955	9,413,908	13,473,819	11,337,390	8,250,000	5,720,000	362,792	8,554,936	0	0	8,554,936	7,198,452		
1956	11,428,874	8,554,936	7,198,452	8,250,000	5,720,000	281,967	5,729,842	0	0	5,729,842	4,821,310		
1957	21,500,963	5,729,842	4,821,310	8,250,000	5,720,000	327,663	12,933,142	0	0	12,933,142	10,882,444		
1958	15,862,511	12,933,142	10,882,444	8,250,000	5,720,000	418,231	14,407,422	0	0	14,407,422	12,122,959		
1959	9,598,169	14,407,422	12,122,959	8,250,000	5,720,000	383,982	9,651,609	0	0	9,651,609	8,121,235		
1960	11,524,160	9,651,609	8,121,235	8,250,000	5,720,000	305,628	6,900,141	0	0	6,900,141	5,806,044		
1961	10,010,259	6,900,141	5,806,044	8,250,000	5,720,000	233,149	2,707,251	0	0	2,707,251	2,277,985		
1962	17,377,609	2,707,251	2,277,985	8,250,000	5,720,000	222,629	5,892,231	0	0	5,892,231	4,957,950		
1963	8,840,900	5,892,231	4,957,950	8,250,000	5,720,000	200,248	562,882	0	0	562,882	473,631		
1964	10,863,586	562,882	473,631	8,250,000	5,720,000	138,751	-2,682,283	0	2,682,283	0	0		
1965	19,875,027	0	0	8,250,000	5,720,000	192,498	5,712,529	0	0	5,712,529	4,806,742		
1966	10,679,844	5,712,529	4,806,742	8,250,000	5,720,000	215,531	2,206,842	0	0	2,206,842	1,856,922		
1967	11,670,830	2,206,842	1,856,922	8,250,000	5,720,000	165,909	-248,237	0	248,237	0	0		
1968	13,739,932	0	0	8,250,000	5,720,000	132,876	-362,944	0	362,944	0	0		
1969	15,272,159	0	0	8,250,000	5,720,000	144,954	1,157,205	0	0	1,157,205	973,717		
1970	15,344,136	1,157,205	973,717	8,250,000	5,720,000	169,603	2,361,738	0	0	2,361,738	1,987,257		
1971	15,493,659	2,361,738	1,987,257	8,250,000	5,720,000	196,032	3,689,364	0	0	3,689,364	3,104,373		
1972	13,186,637	3,689,364	3,104,373	8,250,000	5,720,000	199,629	2,706,372	0	0	2,706,372	2,277,246		
1973	18,650,193	2,706,372	2,277,246	8,250,000	5,720,000	235,756	7,150,809	0	0	7,150,809	6,016,966		
1974	13,285,426	7,150,809	6,016,966	8,250,000	5,720,000	272,158	6,194,078	0	0	6,194,078	5,211,936		
1975	17,072,561	6,194,078	5,211,936	8,250,000	5,720,000	291,512	9,005,227	0	0	9,005,227	7,577,344		
1976	11,313,561	9,005,227	7,577,344	8,250,000	5,720,000	280,089	6,058,689	0	0	6,058,689	5,098,014		
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Upper Basin Yield Study - May 2, 2006, Draft

Study No. 15: Flows Adjusted for SCS Precip., CRSP Active + Other UB Live Storage (assumed same percent full), Constant 5.76 maf Upper Basin Use

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage	Variables
1906	18,550,021	29,530,030	24,847,704	8,250,000	5,760,000	749,290	33,320,761	3,790,731	0	29,530,030	24,847,704	Storage
1907	21,201,694	29,530,030	24,847,704	8,250,000	5,760,000	749,290	35,972,434	6,442,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,760,000	723,049	27,015,798	0	0	27,015,798	22,732,132	Bank Storage
1909	22,356,801	27,015,798	22,732,132	8,250,000	5,760,000	723,049	34,639,050	5,109,020	0	29,530,030	24,847,704	Adjusted Storage (2060)
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,760,000	748,168	29,422,479	0	0	29,422,479	24,757,206	UB Demand Level
1911	15,499,729	29,422,479	24,757,206	8,250,000	5,760,000	748,168	30,164,040	634,010	0	29,530,030	24,847,704	LB Delivery
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,760,000	749,290	33,394,150	3,864,120	0	29,530,030	24,847,704	
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,760,000	746,988	29,309,416	0	0	29,309,416	24,662,070	
1914	21,354,814	29,309,416	24,662,070	8,250,000	5,760,000	746,988	35,907,242	6,377,212	0	29,530,030	24,847,704	
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,760,000	737,556	28,405,751	0	0	28,405,751	23,901,692	Results
1916	20,142,892	28,405,751	23,901,692	8,250,000	5,760,000	737,556	33,801,087	4,271,057	0	29,530,030	24,847,704	Average CRSP Evap
1917	22,942,804	29,530,030	24,847,704	8,250,000	5,760,000	749,290	37,713,544	8,183,514	0	29,530,030	24,847,704	Total Yield w/ CRSP evap
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,760,000	749,290	30,636,879	1,106,649	0	29,530,030	24,847,704	
1919	12,651,369	29,530,030	24,847,704	8,250,000	5,760,000	727,517	27,443,882	0	0	27,443,882	23,092,339	
1920	22,287,632	27,443,882	23,092,339	8,250,000	5,760,000	727,517	34,993,998	5,463,967	0	29,530,030	24,847,704	Shortage Years
1921	22,526,787	29,530,030	24,847,704	8,250,000	5,760,000	749,290	37,297,521	7,767,491	0	29,530,030	24,847,704	1963
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,760,000	749,290	33,217,938	3,687,908	0	29,530,030	24,847,704	1964
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,760,000	749,290	33,794,786	4,264,756	0	29,530,030	24,847,704	1967
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,760,000	740,185	28,657,643	0	0	28,657,643	24,113,644	1968
1925	14,430,701	28,657,643	24,113,644	8,250,000	5,760,000	727,874	28,350,470	0	0	28,350,470	23,855,177	1977
1926	15,213,731	28,350,470	23,855,177	8,250,000	5,760,000	729,616	28,824,585	0	0	28,824,585	24,254,115	
1927	19,539,212	28,824,585	24,254,115	8,250,000	5,760,000	741,927	33,611,870	4,081,839	0	29,530,030	24,847,704	NM allocation(w/o evap)
1928	16,964,334	29,530,030	24,847,704	8,250,000	5,760,000	749,290	31,725,074	2,195,044	0	29,530,030	24,847,704	
1929	21,829,585	29,530,030	24,847,704	8,250,000	5,760,000	749,290	36,600,325	7,070,295	0	29,530,030	24,847,704	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,760,000	747,862	29,393,209	0	0	29,393,209	24,732,577	
1931	8,474,134	29,393,209	24,732,577	8,250,000	5,760,000	681,543	23,175,801	0	0	23,175,801	19,501,011	
1932	17,422,187	23,175,801	19,501,011	8,250,000	5,760,000	645,527	25,942,461	0	0	25,942,461	21,828,985	
1933	12,183,500	25,942,461	21,828,985	8,250,000	5,760,000	648,570	23,467,390	0	0	23,467,390	19,746,365	
1934	6,178,192	23,467,390	19,746,365	8,250,000	5,760,000	535,409	15,100,174	0	0	15,100,174	12,705,867	
1935	12,630,349	15,100,174	12,705,867	8,250,000	5,760,000	429,200	13,291,323	0	0	13,291,323	11,183,831	Total Upper Basin depletion, inc. CRSP evap:
1936	14,648,873	13,291,323	11,183,831	8,250,000	5,760,000	412,682	13,517,514	0	0	13,517,514	11,374,156	1953-1977
1937	14,306,056	13,517,514	11,374,156	8,250,000	5,760,000	413,814	13,399,756	0	0	13,399,756	11,275,071	1931-1977
1938	18,148,319	13,399,756	11,275,071	8,250,000	5,760,000	451,069	17,087,007	0	0	17,087,007	14,377,665	1906-2000
1939	11,164,059	17,087,007	14,377,665	8,250,000	5,760,000	455,099	13,785,966	0	0	13,785,966	11,600,043	
1940	9,931,657	13,785,966	11,600,043	8,250,000	5,760,000	374,175	9,333,448	0	0	9,333,448	7,853,523	Flow Adjustments:
1941	20,116,678	9,333,448	7,853,523	8,250,000	5,760,000	387,396	15,052,730	0	0	15,052,730	12,665,946	
1942	17,225,136	15,052,730	12,665,946	8,250,000	5,760,000	475,681	17,792,185	0	0	17,792,185	14,971,029	1971
1943	13,731,401	17,792,185	14,971,029	8,250,000	5,760,000	496,186	17,017,400	0	0	17,017,400	14,319,095	1972
1944	15,369,422	17,017,400	14,319,095	8,250,000	5,760,000	497,100	17,879,722	0	0	17,879,722	15,044,686	1973
1945	14,140,528	17,879,722	15,044,686	8,250,000	5,760,000	502,221	17,508,030	0	0	17,508,030	14,731,930	1974
1946	11,095,453	17,508,030	14,731,930	8,250,000	5,760,000	463,089	14,130,394	0	0	14,130,394	11,889,857	1975
1947	16,439,486	14,130,394	11,889,857	8,250,000	5,760,000	448,511	16,111,369	0	0	16,111,369	13,556,726	1976
1948	15,139,294	16,111,369	13,556,726	8,250,000	5,760,000	476,005	16,764,657	0	0	16,764,657	14,106,428	1977
1949	16,933,584	16,764,657	14,106,428	8,250,000	5,760,000	508,035	19,180,206	0	0	19,180,206	16,138,963	1978
1950	13,140,416	19,180,206	16,138,963	8,250,000	5,760,000	518,756	17,791,866	0	0	17,791,866	14,970,760	1979
1951	12,505,894	17,791,866	14,970,760	8,250,000	5,760,000	483,521	15,804,239	0	0	15,804,239	13,298,295	1980
1952	20,805,422	15,804,239	13,298,295	8,250,000	5,760,000	528,188	22,071,473	0	0	22,071,473	18,571,787	
1953	11,165,419	22,071,473	18,571,787	8,250,000	5,760,000	558,085	18,668,807	0	0	18,668,807	15,708,652	
1954	8,496,102	18,668,807	15,708,652	8,250,000	5,760,000	460,219	12,694,690	0	0	12,694,690	10,681,800	
1955	9,413,908	12,694,690	10,681,800	8,250,000	5,760,000	346,283	7,752,315	0	0	7,752,315	6,523,096	
1956	11,426,874	7,752,315	6,523,096	8,250,000	5,760,000	264,973	4,904,216	0	0	4,904,216	4,126,596	
1957	21,500,963	4,904,216	4,126,596	8,250,000	5,760,000	310,194	12,084,985	0	0	12,084,985	10,168,772	
1958	15,862,511	12,084,985	10,168,772	8,250,000	5,760,000	400,297	13,537,199	0	0	13,537,199	11,390,721	
1959	9,598,169	13,537,199	11,390,721	8,250,000	5,760,000	365,591	8,759,777	0	0	8,759,777	7,370,814	
1960	11,524,160	8,759,777	7,370,814	8,250,000	5,760,000	286,791	5,987,147	0	0	5,987,147	5,037,816	
1961	10,010,259	5,987,147	5,037,816	8,250,000	5,760,000	213,875	1,773,531	0	0	1,773,531	1,492,317	
1962	17,377,609	1,773,531	1,492,317	8,250,000	5,760,000	202,927	4,938,213	0	0	4,938,213	4,155,202	
1963	8,840,900	4,938,213	4,155,202	8,250,000	5,760,000	184,416	-415,304	0	415,304	0	0	
1964	10,863,586	0	0	8,250,000	5,760,000	132,876	-3,279,290	0	3,279,290	0	0	
1965	19,875,027	0	0	8,250,000	5,760,000	192,085	5,672,942	0	0	5,672,942	4,773,432	
1966	10,679,844	5,672,942	4,773,432	8,250,000	5,760,000	214,300	2,128,486	0	0	2,128,486	1,790,990	
1967	11,670,830	2,128,486	1,790,990	8,250,000	5,760,000	155,091	-365,775	0	365,775	0	0	
1968	13,739,932	0	0	8,250,000	5,760,000	132,876	-402,944	0	402,944	0	0	
1969	15,272,159	0	0	8,250,000	5,760,000	144,541	1,117,618	0	0	1,117,618	940,407	
1970	15,344,136	1,117,618	940,407	8,250,000	5,760,000	168,372	2,283,382	0	0	2,283,382	1,921,325	
1971	15,493,659	2,283,382	1,921,325	8,250,000	5,760,000	194,000	3,573,040	0	0	3,573,040	3,006,494	
1972	13,186,637	3,573,040	3,006,494	8,250,000	5,760,000	196,813	2,552,864	0	0	2,552,864	2,148,078	
1973	18,650,193	2,552,864	2,148,078	8,250,000	5,760,000	232,172	6,960,886	0	0	6,960,886	5,857,157	
1974	13,285,426											

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 16: Flows Adjusted for SCS Precip., CRSP Active + Other UB Live Storage (same percent full), Constant 5.76 maf Demand less CRSS Physical Shortage

Year	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Demand (minus)	CRSS			Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage	Variables
						Physical Drought (plus)	Upper Basin Use (minus)	CRSS Drought (plus)							
1906	18,550,021	29,530,030	24,847,704	8,250,000	5,760,000	10,460	5,749,540	749,290	33,331,221	3,801,191	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,694	29,530,030	24,847,704	8,250,000	5,760,000	2,705	5,757,295	749,290	35,975,139	6,445,109	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,617	29,530,030	24,847,704	8,250,000	5,760,000	42,161	5,717,839	723,484	27,057,524	0	0	27,057,524	22,767,242	Bank Storage	4%
1909	22,356,301	27,057,524	22,767,242	8,250,000	5,760,000	3,995	5,756,005	723,484	34,684,335	5,154,305	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,760,000	80,533	5,678,467	749,000	29,502,180	0	0	29,502,180	24,824,270	UB Demand Level	5,760,000 af/yr
1911	15,499,729	29,502,180	24,824,270	8,250,000	5,760,000	10,253	5,749,747	749,000	30,253,162	723,132	0	29,530,030	24,847,704	LB Delivery	8,250,000 af/yr
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,760,000	10,053	5,749,947	749,290	33,404,203	3,874,173	0	29,530,030	24,847,704		
1913	14,354,814	29,530,030	24,847,704	8,250,000	5,760,000	18,830	5,741,170	747,182	29,328,051	0	0	29,328,051	24,677,751		
1914	21,354,814	29,530,030	24,847,704	8,250,000	5,760,000	4,438	5,755,562	747,182	35,930,121	6,400,091	0	29,530,030	24,847,704		
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,760,000	32,811	5,727,189	737,895	28,438,223	0	0	28,438,223	23,928,016	Results	
1916	20,142,892	28,438,223	23,928,016	8,250,000	5,760,000	2,413	5,757,587	749,290	33,835,634	4,305,603	0	29,530,030	24,847,704	Average CRSP Evap	521,532 af/yr
1917	22,942,804	29,530,030	24,847,704	8,250,000	5,760,000	7,025	5,752,975	749,290	37,720,589	8,190,539	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,147,717 af/yr
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,760,000	28,187	5,731,813	749,290	30,664,866	1,134,836	0	29,530,030	24,847,704		
1919	12,851,369	29,530,030	24,847,704	8,250,000	5,760,000	239,034	5,520,966	729,986	27,680,447	0	0	27,680,447	23,291,394	Shortage Years	
1920	22,287,632	27,680,447	23,291,394	8,250,000	5,760,000	12,719	5,747,281	729,986	33,836,632	5,710,782	0	29,530,030	24,847,704	Shortage	
1921	22,526,781	29,530,030	24,847,704	8,250,000	5,760,000	5,098	5,754,904	749,290	37,302,617	7,772,587	0	29,530,030	24,847,704	1963	0 af
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,760,000	9,479	5,750,521	749,290	33,227,417	3,697,387	0	29,530,030	24,847,704	1964	0 af
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,760,000	2,492	5,757,508	749,290	33,797,278	4,267,248	0	29,530,030	24,847,704	1967	0 af
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,760,000	70,862	5,689,138	740,917	28,727,773	0	0	28,727,773	24,172,654	1968	0 af
1925	14,430,701	28,727,773	24,172,654	8,250,000	5,760,000	73,448	5,686,552	730,081	28,491,841	0	0	28,491,841	23,974,132	1977	436,680 af
1926	15,213,731	28,491,841	23,974,132	8,250,000	5,760,000	81,349	5,678,651	733,377	29,043,544	0	0	29,043,544	24,438,356		
1927	19,539,212	29,043,544	24,438,356	8,250,000	5,760,000	8,124	5,751,876	744,213	33,836,667	4,306,637	0	29,530,030	24,847,704	NM allocation(w/o evap)	642,375 af/yr
1928	16,954,334	29,530,030	24,847,704	8,250,000	5,760,000	15,271	5,744,729	749,290	31,740,345	2,210,315	0	29,530,030	24,847,704		
1929	21,829,585	29,530,030	24,847,704	8,250,000	5,760,000	7,088	5,752,912	749,290	36,607,413	7,077,383	0	29,530,030	24,847,704		
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,760,000	20,438	5,739,562	749,073	29,413,436	0	0	29,413,436	24,749,597	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1931	8,474,134	29,413,436	24,749,597	8,250,000	5,760,000	378,737	5,381,263	685,873	23,570,435	0	0	23,570,435	19,833,071		
1932	17,422,187	23,570,435	19,833,071	8,250,000	5,760,000	11,712	5,748,288	653,800	29,833,071	0	0	26,340,533	22,163,938		
1933	12,183,500	26,340,533	22,163,938	8,250,000	5,760,000	146,176	5,613,824	658,304	24,001,905	0	0	24,001,905	20,196,127		
1934	6,178,192	24,001,905	20,196,127	8,250,000	5,760,000	1,244,551	5,154,449	559,306	16,855,342	0	0	16,855,342	14,182,734		
1935	12,630,340	16,855,342	14,182,734	8,250,000	5,760,000	168,644	5,591,356	467,201	15,177,134	0	0	15,177,134	12,770,625	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	15,177,134	12,770,625	8,250,000	5,760,000	29,202	5,730,798	451,942	15,393,267	0	0	15,393,267	12,952,488	1953-1977	5,838,135 af/yr
1937	14,306,056	15,393,267	12,952,488	8,250,000	5,760,000	106,533	5,653,467	453,664	15,342,192	0	0	15,342,192	12,909,511	1931-1977	5,979,699 af/yr
1938	18,148,319	15,342,192	12,909,511	8,250,000	5,760,000	12,686	5,747,314	491,327	19,001,870	0	0	19,001,870	15,988,904	1906-2000	6,147,717 af/yr
1939	11,164,059	19,001,870	15,988,904	8,250,000	5,760,000	307,789	5,452,211	497,837	15,965,881	0	0	15,965,881	13,434,306		
1940	9,931,657	15,965,881	13,434,306	8,250,000	5,760,000	513,385	5,246,815	424,512	11,976,411	0	0	11,976,411	10,077,413	Flow Adjustments:	
1941	20,116,678	11,976,411	10,077,413	8,250,000	5,760,000	28,624	5,731,377	442,292	17,669,421	0	0	17,669,421	14,867,731	1971	203,228 af
1942	17,225,136	17,669,421	14,867,731	8,250,000	5,760,000	16,223	5,737,777	529,905	20,370,875	0	0	20,370,875	17,140,838	1972	226,985 af
1943	13,731,401	20,370,875	17,140,838	8,250,000	5,760,000	18,824	5,741,176	549,653	19,561,447	0	0	19,561,447	16,459,758	1973	252,377 af
1944	15,369,422	19,561,447	16,459,758	8,250,000	5,760,000	30,542	5,729,488	549,972	20,401,440	0	0	20,401,440	17,168,556	1974	196,384 af
1945	14,140,523	20,401,440	17,168,556	8,250,000	5,760,000	16,385	5,741,615	554,505	19,995,847	0	0	19,995,847	16,825,275	1975	246,965 af
1946	11,095,453	19,995,847	16,825,275	8,250,000	5,760,000	78,791	5,681,209	515,297	16,644,794	0	0	16,644,794	14,905,570	1976	173,250 af
1947	16,439,486	16,644,794	14,905,570	8,250,000	5,760,000	13,115	5,746,888	502,819	18,586,804	0	0	18,586,804	16,839,653	1977	112,291 af
1948	15,139,284	18,586,804	16,200,713	8,250,000	5,760,000	65,312	5,694,688	507,819	19,253,591	0	0	19,253,591	16,200,713	1978	152,187 af
1949	16,933,544	19,253,591	16,200,713	8,250,000	5,760,000	13,567	5,746,433	559,953	21,631,149	0	0	21,631,149	18,201,282	1979	153,559 af
1950	13,140,416	21,631,149	18,201,282	8,250,000	5,760,000	102,741	5,687,259	570,450	20,293,856	0	0	20,293,856	17,076,031	1980	161,893 af
1951	12,505,894	20,293,856	17,076,031	8,250,000	5,760,000	80,512	5,679,488	536,040	18,334,222	0	0	18,334,222	15,427,120		
1952	20,805,422	18,334,222	15,427,120	8,250,000	5,760,000	1,807	5,758,193	580,472	24,550,979	0	0	24,550,979	20,658,138		
1953	11,165,419	24,550,979	20,658,138	8,250,000	5,760,000	92,306	5,687,694	610,262	21,189,442	0	0	21,189,442	17,828,771		
1954	8,496,102	21,189,442	17,828,771	8,250,000	5,760,000	635,994	5,124,006	518,840	15,791,698	0	0	15,791,698	13,287,742		
1955	9,413,908	15,791,698	13,287,742	8,250,000	5,760,000	305,879	5,454,121	413,422	11,088,063	0	0	11,088,063	9,329,823		
1956	11,426,874	11,088,063	9,329,823	8,250,000	5,760,000	210,513	5,549,487	336,059	8,379,391	0	0	8,379,391	7,050,742		
1957	21,500,963	8,379,391	7,050,742	8,250,000	5,760,000	98,720	5,661,280	393,005	15,586,068	0	0	15,586,068	13,114,718		
1958	15,862,511	15,586,068	13,114,718	8,250,000	5,760,000	98,575	5,691,425	441,088	12,466,784	0	0	12,466,784	10,490,032		
1959	9,598,169	17,063,512	14,357,896	8,250,000	5,760,000	256,189	5,593,911	387,251	9,889,245	0	0	9,889,245	8,405,335		
1960	11,524,160	12,466,784	10,490,032	8,250,000	5,760,000	375,552	5,384,448	483,252	6,231,427	0	0	6,231,427	5,243,362		

Upper Basin Yield Study - May 2, 2006, Draft

Study No. 17: Flows Adjusted for MBC with SCS Precip., CRSP Live + Other UB Live Storage (same percent full), Constant 5.76 maf Upper Basin Use

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry- Over Storage (plus)	CRSP Carry- Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables	
1906	18,550,021	33,833,590	29,151,263	8,250,000	5,760,000	725,390	37,648,221	3,814,631	0	33,833,590	29,151,263	Storage	35,233,298 af
1907	21,201,894	33,833,590	29,151,263	8,250,000	5,760,000	725,390	40,298,894	6,466,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)	37,000 af/yr
1908	12,218,817	33,833,590	29,151,263	8,250,000	5,760,000	698,881	31,343,526	0	0	31,343,526	27,005,806	Bank Storage	4%
1909	22,356,301	31,343,526	27,005,806	8,250,000	5,760,000	698,881	38,990,946	5,157,356	0	33,833,590	29,151,263	Adjusted Storage (2060)	33,833,590 af
1910	14,650,616	33,833,590	29,151,263	8,250,000	5,760,000	724,497	33,749,709	0	0	33,749,709	29,078,991	UB Demand Level	5,760,000 af/yr
1911	15,499,729	33,749,709	29,078,991	8,250,000	5,760,000	724,497	34,514,942	681,352	0	33,833,590	29,151,263	LB Delivery	8,250,000 af/yr
1912	18,623,410	33,833,590	29,151,263	8,250,000	5,760,000	725,390	37,721,610	3,888,020	0	33,833,590	29,151,263		
1913	14,536,373	33,833,590	29,151,263	8,250,000	5,760,000	723,293	33,636,670	0	0	33,636,670	28,981,595		
1914	21,354,814	33,636,670	28,981,595	8,250,000	5,760,000	723,293	40,258,191	6,424,601	0	33,833,590	29,151,263		
1915	13,623,277	33,833,590	29,151,263	8,250,000	5,760,000	713,675	32,733,192	0	0	32,733,192	28,203,152	Results	
1916	20,142,892	32,733,192	28,203,152	8,250,000	5,760,000	713,675	38,152,409	4,318,819	0	33,833,590	29,151,263	Average CRSP Evap	454,611 af/yr
1917	22,942,804	33,833,590	29,151,263	8,250,000	5,760,000	725,390	42,041,004	8,207,414	0	33,833,590	29,151,263	Total Yield w/ CRSP evap	6,214,611 af/yr
1918	15,865,939	33,833,590	29,151,263	8,250,000	5,760,000	725,390	34,964,139	1,130,549	0	33,833,590	29,151,263		
1919	12,651,369	33,833,590	29,151,263	8,250,000	5,760,000	703,437	31,771,522	0	0	31,771,522	27,374,570	Shortage Years	Shortage
1920	22,827,632	31,771,522	27,374,570	8,250,000	5,760,000	703,437	39,345,717	5,512,127	0	33,833,590	29,151,263		
1921	22,526,781	33,833,590	29,151,263	8,250,000	5,760,000	725,390	41,624,981	7,791,391	0	33,833,590	29,151,263	1963	0 af
1922	18,447,198	33,833,590	29,151,263	8,250,000	5,760,000	725,390	37,545,398	3,711,808	0	33,833,590	29,151,263	1964	0 af
1923	19,024,046	33,833,590	29,151,263	8,250,000	5,760,000	725,390	38,122,246	4,288,656	0	33,833,590	29,151,263	1967	0 af
1924	13,877,798	33,833,590	29,151,263	8,250,000	5,760,000	716,356	32,985,032	0	0	32,985,032	28,420,139	1968	0 af
1925	14,430,701	32,985,032	28,420,139	8,250,000	5,760,000	704,303	32,701,430	0	0	32,701,430	28,175,786	1977	984,192 af
1926	15,213,731	32,701,430	28,175,786	8,250,000	5,760,000	706,577	33,198,584	0	0	33,198,584	28,604,137		
1927	19,539,212	33,198,584	28,604,137	8,250,000	5,760,000	718,629	38,009,167	4,175,577	0	33,833,590	29,151,263	NM allocation (w/o evap)	642,375 af/yr
1928	16,954,334	33,833,590	29,151,263	8,250,000	5,760,000	725,390	36,052,534	2,218,944	0	33,833,590	29,151,263		
1929	21,829,585	33,833,590	29,151,263	8,250,000	5,760,000	725,390	40,927,785	7,094,195	0	33,833,590	29,151,263	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1930	14,621,041	33,833,590	29,151,263	8,250,000	5,760,000	724,185	33,720,446	0	0	33,720,446	29,053,777		
1931	8,474,134	33,720,446	29,053,777	8,250,000	5,760,000	667,052	27,527,528	0	0	27,527,528	23,717,915	Total Upper Basin depletion, inc. CRSP evap:	
1932	17,422,187	27,527,528	23,717,915	8,250,000	5,760,000	620,839	30,318,876	0	0	30,318,876	26,122,960	1953-1977	5,954,033 af/yr
1933	12,183,500	30,318,876	26,122,960	8,250,000	5,760,000	624,463	27,867,913	0	0	27,867,913	24,011,193	1931-1977	6,082,987 af/yr
1934	6,178,192	27,867,913	24,011,193	8,250,000	5,760,000	509,570	19,526,535	0	0	19,526,535	16,824,202	1906-2000	6,214,611 af/yr
1935	12,630,349	19,526,535	16,824,202	8,250,000	5,760,000	401,804	17,745,080	0	0	17,745,080	15,289,288		
1936	14,648,873	17,745,080	15,289,288	8,250,000	5,760,000	385,536	17,998,417	0	0	17,998,417	15,507,565		
1937	16,306,056	17,998,417	15,507,565	8,250,000	5,760,000	387,052	17,907,211	0	0	17,907,211	15,428,981		
1938	18,148,319	17,907,211	15,428,981	8,250,000	5,760,000	425,814	21,619,717	0	0	21,619,717	18,627,703		
1939	11,164,059	21,619,717	18,627,703	8,250,000	5,760,000	430,458	18,343,320	0	0	18,343,320	15,804,735		
1940	9,931,657	18,343,320	15,804,735	8,250,000	5,760,000	348,449	13,916,527	0	0	13,916,527	11,990,579		
1941	20,116,678	13,916,527	11,990,579	8,250,000	5,760,000	362,474	19,660,731	0	0	19,660,731	16,939,826	Flow Adjustments:	
1942	17,225,136	19,660,731	16,939,826	8,250,000	5,760,000	453,031	22,422,836	0	0	22,422,836	19,319,876	1971	203,226 af
1943	13,731,401	22,422,836	19,319,876	8,250,000	5,760,000	474,419	21,669,817	0	0	21,669,817	18,670,870	1972	226,985 af
1944	15,369,422	21,669,817	18,670,870	8,250,000	5,760,000	475,810	22,553,430	0	0	22,553,430	19,432,196	1973	252,377 af
1945	14,140,528	22,553,430	19,432,196	8,250,000	5,760,000	481,480	22,202,477	0	0	22,202,477	19,129,813	1974	196,384 af
1946	11,095,453	22,202,477	19,129,813	8,250,000	5,760,000	442,011	18,845,920	0	0	18,845,920	16,237,779	1975	246,665 af
1947	16,439,486	18,845,920	16,237,779	8,250,000	5,760,000	427,589	20,847,816	0	0	20,847,816	17,962,627	1976	173,250 af
1948	15,139,294	20,847,816	17,962,627	8,250,000	5,760,000	456,068	21,521,042	0	0	21,521,042	18,542,684	1977	112,291 af
1949	16,933,584	21,521,042	18,542,684	8,250,000	5,760,000	489,152	23,955,474	0	0	23,955,474	20,640,208	1978	152,187 af
1950	13,140,416	23,955,474	20,640,208	8,250,000	5,760,000	500,483	22,585,407	0	0	22,585,407	19,459,749	1979	153,559 af
1951	12,505,894	22,585,407	19,459,749	8,250,000	5,760,000	464,935	20,616,366	0	0	20,616,366	17,763,208	1980	161,893 af
1952	20,805,422	20,616,366	17,763,208	8,250,000	5,760,000	510,877	26,900,911	0	0	26,900,911	23,178,017		
1953	11,165,419	26,900,911	23,178,017	8,250,000	5,760,000	541,731	23,514,598	0	0	23,514,598	20,260,346		
1954	8,496,102	23,514,598	20,260,346	8,250,000	5,760,000	442,273	17,558,427	0	0	17,558,427	15,128,467		
1955	9,413,908	17,558,427	15,128,467	8,250,000	5,760,000	328,460	12,635,875	0	0	12,635,875	10,887,161		
1956	11,426,874	12,635,875	10,887,161	8,250,000	5,760,000	243,959	9,808,790	0	0	9,808,790	8,451,324		
1957	21,500,963	9,808,790	8,451,324	8,250,000	5,760,000	290,517	17,009,237	0	0	17,009,237	14,655,280		
1958	15,862,511	17,009,237	14,655,280	8,250,000	5,760,000	382,818	18,478,930	0	0	18,478,930	15,921,578		
1959	9,598,169	18,478,930	15,921,578	8,250,000	5,760,000	347,794	13,719,305	0	0	13,719,305	11,620,652		
1960	11,524,160	13,719,305	11,620,652	8,250,000	5,760,000	267,800	10,965,657	0	0	10,965,657	9,448,088		
1961	10,010,259	10,965,657	9,448,088	8,250,000	5,760,000	193,850	6,772,066	0	0	6,772,066	5,834,861		
1962	17,377,600	6,772,066	5,834,861	8,250,000	5,760,000	183,107	9,956,568	0	0	9,956,568	8,578,650		
1963	8,840,900	9,956,568	8,578,650	8,250,000	5,760,000	160,273	4,627,195	0	0	4,627,195	3,986,824		
1964	10,863,586	4,627,195	3,986,824	8,250,000	5,760,000	69,304	1,411,477	0	0	1,411,477	1,216,139		
1965	19,875,027	1,411,477	1,216,139	8,250,000	5,760,000	96,481	7,180,024	0	0	7,180,024	6,186,360		
1966	10,679,840	7,180,024	6,186,360	8,250,000	5,760,000	121,149	3,728,718	0	0	3,728,718	3,212,690		
1967	11,670,834	3,728,718	3,212,690	8,250,000	5,760,000	58,878	1,330,670	0	0	1,330,670	1,146,515		
1968	13,739,932	1,330,670	1,146,515	8,250,000	5,760,000	30,153	1,030,449	0	0	1,030,449	887,842		
1969	15,272,159	1,030,449	887,842	8,250,000	5,760,000	39,968	2,252,640	0	0	2,252,640	1,940,891		
1970	15,344,136	2,252,640	1,940,891	8,250,000	5,760,000	66,475	3,520,301	0	0	3,520,301	3,033,117		
1971	15,493,659	3,520,301	3,033,117	8,250,000	5,760,000	94,756	4,909,204	0	0	4,909,204	4,229,805		
1972	13,186,637	4,909,204	4,229,805	8,250,000	5,760,000	99,715	3,986,125	0	0	3,986,125	3,434,474		
1973	18,650,193	3,986,125	3,434,474	8,250,000	5,760,000	137,820	8,488,499	0	0	8,488,499	7,313,751		
1974	13,285,426	8,488,499	7,313,751	8,250,000	5,760,000	176,162	7,587,763	0	0	7,587,763	6,537,671		
1975	17,072,661	7,587,763	6,537,671	8,250,000	5,760,000	197,079	10,453,345	0	0	10,453,345	9,006,677		
1976	11,												

Upper Colorado River Basin
Reservoirs

	Complete	Live Capacity	CRSP Live	CRSP Active	CRSP Active +Other	State	Major Basin	Hydromet	Source
1 Big Sandy	X	38,300	829,500	748,500	30,167,576	WY	GR	BGRW	Hydromet
2 Blue Mesa	X	829,500	829,500	748,500	30,167,576	CO	CR	BMDC	Hydromet
3 Boulder Lake	X	22,280				WY	GR		Jade Henderson Superintendent for Region IV
4 Bottle Hollow	X	11,779				UT	GR	BHRU	Erik Knight from G.J. office
5 Crawford	X	13,970				CO	CR	CFRC	Hydromet
6 Crystal	X	17,538	17,538	13,000		CO	CR	CRRC	Hydromet
7 Curmant Creek	X	15,460				UT	GR	CURU	Hydromet
8 Dillon	X	252,678				CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html NRCS Website
9 Eden	X	13,164				WY	GR	EDRU	Hydromet
10 Electric Lake - Utah Power & Light	X	31,500				UT	GR		Comely Baldwin at Pacific Corp. Connelly Baldwin@pacifiCorp.com or 801-220-4636
11 Elkhed	X	10,400				CO	GR	FGRU	Bill Easley with the City of Craig Public Works Dept. 970-826-2014
12 Flaming Gorge	X	3,749,000	3,749,000	3,515,700		UT	GR	FTRW	Hydromet
13 Fontenelle	X	344,800				WY	GR		Jade Henderson Superintendent for Region IV
14 Fremont Lake	X	30,899				WY	GR		Jade Henderson Superintendent for Region IV
15 Gould	X	10,380				CO	CR	FGRC	Hydromet
16 Fruitgrowers	X	4,460				CO	CR	GMRC	NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html
17 Granby	X	540,033				CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html
18 Green Mountain	X	153,678				CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html
19 Groundhog	X	27,500				CO	CR		George Wear with Colorado Division of Water Resources http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html
20 Gurley	X	12,035				CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html
21 Homestake	X	42,882				CO	CR	JGRC	Hydromet
22 Jackson Gulch	X	9,951				CO	CR	JVRU	Hydromet
23 Joe's Valley	X	61,590				UT	GR		Hydromet
24 Johnson	X	15,300				CO	GR777		Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado
25 Kenny Reservoir (Taylor Dra	X	9,400				CO	CR	GLDA	Hydromet
26 Lake Powell	X	24,322,000	24,322,000	20,309,919		AZ	CR		Comely Baldwin at Pacific Corp. Connelly Baldwin@pacifiCorp.com or 801-220-4636
27 Lake Viva Naughton	X	69,645				WY	GR	LMRC	Hydromet
28 Lemon	X	39,792				CO	SJR		Hydromet
29 Long Park	X	14,800				UT	GR	MCRW	Hydromet
30 McPhee	X	247,400				CO	CR		Hydromet
31 Meeks Cabin	X	29,870				WY	GR	MERW	Hydromet
32 Milesite	X	20,000				UT	GR		Hydromet
33 Miramonte	X	11,620				CO	CR	MNLU	Hydromet
34 Moon Lake	X	49,500				UT	GR		George Wear with Colorado Division of Water Resources http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html
35 Morgan Lake Dam	X	42,800				NM	SJR	MPRC	Hydromet
36 Morrow Point	X	117,025	117,025	42,120		CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html
37 Naraguinep	X	22,700				CO	SJR	NVRN	Hydromet
38 Navajo	X	1,696,000	1,696,000	1,036,100		NM	GR	PARC	Hydromet
39 New Fork Lake	X	20,340				WY	GR		Jade Henderson Superintendent for Region IV
40 Paonia	X	16,703				CO	GR		Hydromet
41 Pelican Lake	X	15,850				UT	GR777		Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado
42 Pleasant Valley (Lake Catan	X	7,275				CO	CR		Hydromet
43 Recapture Creek	X	16,000				UT	GR777		Hydromet
44 Redfeet	X	25,700				UT	GR	RFRU	Hydromet
45 Ridgway	X	62,980				CO	CR	RWRC	Hydromet
46 Rifle Gap	X	12,708				CO	CR	RGRC	Hydromet
47 Ruedi	X	102,330				CO	CR	RURC	Great Planes Region Website
48 Scofield	X	65,800				UT	GR	SFRU	Hydromet
49 Shadow Mountain	X	18,368				CO	CR	SMRC	Great Planes Region Website
50 Silver Jack	X	13,000				CO	CR	SJRC	Hydromet
51 Soldier Creek	X	1,105,910				UT	GR	SCRU	Hydromet
52 Stagecoach	X	33,275				CO	GR	SVRU	Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado
53 Starvation	X	165,320				UT	GR	SLRW	Hydromet
54 Stetline	X	13,880				WY	GR	SLRW	Hydromet
55 Steamboat Lake	X	25,400				CO	GR	STRU	Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado
56 Steiner	X	34,455				UT	GR	TPIRC	Hydromet
57 Taylor Park	X	106,210				CO	GR	USRU	Hydromet
58 Upper Stillwater	X	31,382				UT	GR	VCRC	Hydromet
59 Vallecito	X	125,400				CO	SJR	VGRU	Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado
60 Vega	X	33,311				CO	CR	WFRU	Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado
61 Williams Creek	X	10,094				CO	CR	WFRU	Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado
62 Williams Fork	X	96,824				CO	GR	WFRU	Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado
63 Willow Lake	X	18,816				WY	GR	WFRU	Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado
64 Willow Creek	X	10,550				CO	CR	WCRU	Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado
65 Wolford Mountain	X	66,000				CO	CR	WCRU	Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado
66 Yarmolo	X	8,000				CO	GR	WCRU	Erin.Light@state.co.us_Division 5 Water Resources for State of Colorado

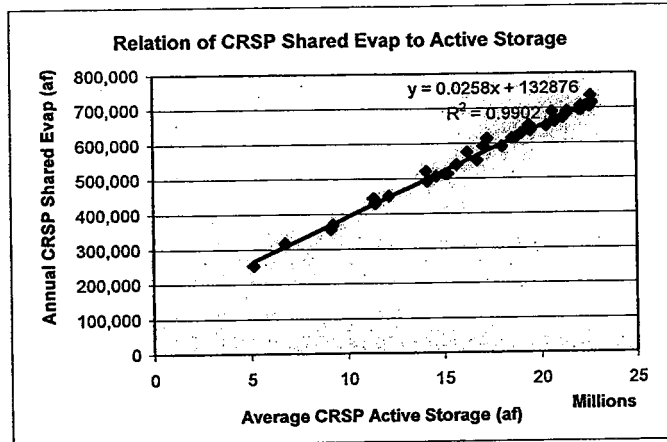
Total Capacity 35,233,298 CRSP Live 30,731,061 CRSP Active 25,665,339 CRSP Active +Other 30,167,576

Relationships of CRSP Shared Reservoir Evaporation to Total CRSP Storage

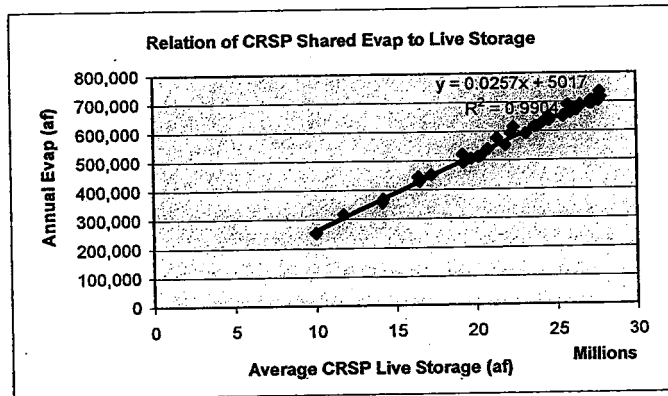
Year	Average CRSP Live Storage (af)	Average CRSP Active Storage (af)	CRSP Shared Evap (af)
1968	10,006,534	5,123,250	251,646
1969	11,701,142	6,764,000	315,083
1970	14,222,401	9,231,741	367,164
1971	16,417,858	11,354,088	442,260
1972	17,229,715	12,165,945	449,544
1973	19,703,066	14,639,296	504,409
1974	22,158,563	17,094,793	590,940
1975	23,634,096	18,570,326	613,612
1976	24,105,743	19,041,973	626,694
1977	20,730,592	15,672,536	537,406
1978	19,158,480	14,106,380	519,065
1979	22,336,514	17,284,414	612,639
1980	25,709,770	20,657,670	688,502
1981	25,392,305	20,340,205	648,525
1982	25,835,729	20,783,629	666,691
1983	27,692,454	22,640,354	734,416
1984	27,759,568	22,707,468	714,727
1985	27,619,938	22,567,838	702,973
1986	27,414,909	22,362,809	706,131
1987	27,153,464	22,101,364	705,172
1988	26,465,639	21,413,539	689,455
1989	24,540,351	19,488,251	634,821
1990	21,806,134	16,754,034	549,702
1991	20,141,572	15,089,472	510,689
1992	19,208,740	14,156,640	491,352
1993	21,297,564	16,245,464	573,884
1994	23,080,796	18,028,696	589,440
1995	24,500,724	19,448,624	649,206
1996	26,252,053	21,199,953	671,123
1997	26,416,641	21,364,541	681,115
1998	27,174,302	22,122,202	693,294
1999	27,050,819	21,998,719	694,007
2000	25,830,330	20,778,230	660,675
2001	23,802,258	18,750,158	614,593
2002	20,256,954	15,204,854	512,030
2003	16,472,537	11,420,437	427,526
2004	14,160,551	9,108,451	355,545

Regression Analyses

Active Storage:



Live Storage:



Notes:

- (1) Historic calendar year data from Bureau of Reclamation. Average storage values are based on the average of the end-of-year storage amounts for the year indicated and for the previous year. Storage amounts include storage in all CRSP units, including Lake Powell, Flaming Gorge Reservoir, Navajo Reservoir and the Aspinall Unit (Blue Mesa, Morrow Point and Crystal reservoirs).
- (2) CRSP shared evaporation includes lake evaporation for Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs, and is shared between the Upper Division States in proportions to their Upper Colorado River Basin Compact Article III(a) apportionments. CRSP shared evaporation is approximately 10,000 af at zero live CRSP storage (5,000 af based on the regression analyses) and approximately 130,000 af if storage in all CRSP reservoirs were at the top of the inactive pools (133,000 af based on the regression analysis). Lake evaporation for Navajo Reservoir is not included in CRSP shared evaporation.
- (3) Data for the period 1968-2004 were used in the regression analyses. Data prior to 1968 do not reflect a normal distribution of storage between CRSP unit reservoirs under future operational conditions (for example, Navajo Reservoir storage remained below the top of the inactive pool required for operation of the Navajo Indian Irrigation Project diversion from 1962 when it began storing water until 1968, and Morrow Point Reservoir began operation in 1968). For the period 1968-1977, the historic average end-of-year CRSP storage and annual CRSP evaporation amount were increased to reflect the average storage of 15,670 af and average evaporation amount of 340 af occurring at Crystal Reservoir after its initial filling in 1978.

Historic Storage and Evaporation at Colorado River Storage Project Reservoirs

Table with columns for Year and various reservoirs: Lake Powell, Flaming Gorge Reservoir, Navajo Reservoir, Blue Mesa Reservoir, Morrow Point Reservoir, Crystal Reservoir, and Total All CRSP Reservoirs. Each reservoir section contains sub-columns for EOY Live Storage (af), Annual Evap Amount (af), and Annual Evap Storage (af). The Total All CRSP Reservoirs section includes sub-columns for EOY Live Storage (af), EOY Active Storage (af), and Annual Shared Evap (af).

Notes: (1) Lake Powell statistics: Dead storage 1,893,000 af at elevation 3370; Live storage capacity 24,322,000 af between elevations 3370 and 3700; Active storage capacity 20,325,000 af between elevations 3490 and 3700. Storage began March 1963.

(2) Flaming Gorge Reservoir statistics: Dead storage 99,700 af at elevation 5740; Live storage capacity 3,749,500 af between elevations 5740 and 6040; Active storage capacity 3,516,000 af between elevations 5871 and 6040. Storage began November 1962.

(3) Navajo Reservoir statistics: Dead storage 12,600 af at elevation 5775; Live storage capacity 1,701,300 af between elevations 5775 and 6095; Active storage capacity 1,039,500 af between elevations 5990 and 6095. Storage began June 1962.

(4) Aspinall Unit statistics: Blue Mesa Reservoir - Dead storage 111,200 af at elevation 7568; Live storage capacity 829,600 af between elevations 7358 and 7519; Active storage capacity 748,800 af between elevations 7393 and 7519. Storage began October 1965. End-of-year 1965 total storage for Blue Mesa Reservoir was 55,240 af (0 live storage).

Morrow Point Reservoir - Dead storage 165 af at elevation 6808; Live storage capacity 117,000 af between elevations 6808 and 7160; Active storage capacity 42,000 af between elevations 7100 and 7160. Storage began January 1968.

Crystal Reservoir - Dead storage 8,000 af at elevation 6670; Live storage capacity 17,000 af between elevations 6670 and 6755; Active storage capacity 13,000 af between elevations 6700 and 6755. Storage began March 1977.

(5) Total CRSP Live storage capacity is 30,736,400 af, and total CRSP Active storage capacity is 25,664,300 af. The total CRSP Inactive storage capacity is 5,052,100 af.

(6) Evaporation amounts were computed using the method and coefficients described in Historical Inflows, Colorado River Storage Project, Bureau of Reclamation (Tom Ryan), October 1983.

(7) The following evaporation amounts are estimated from calculated evaporation for other years and relative total storage amounts: Lake Powell for 1962-63, Navajo Reservoir for 1962-78, Blue Mesa Reservoir for 1966-68; Morrow Point Reservoir for 1968-70, and Crystal Reservoir for 1977-78. These evaporation amounts for Flaming Gorge, Navajo and Blue Mesa reservoirs also were reduced for when storage began. Crystal Reservoir evaporation for 1979-2004 was estimated based on the evaporation amounts at Morrow Point Reservoir and the ratio of the surface area of Crystal Reservoir to the surface area of Morrow Point Reservoir at full capacity.


(8) CRSP shared evaporation includes lake evaporation for Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs, and is shared between the Upper Division States in proportion to their Upper Colorado River Basin Compact Article III(e) apportionments. Lake evaporation for Navajo Reservoir is accounted separately.

STATE OF NEW MEXICO SCHEDULE OF ANTICIPATED UPPER BASIN DEPLETIONS
(Units: 1000 acre-feet per year)


Year	2000	2010	2020	2030	2040	2050	2060
IRRIGATION USES (1)							
Navajo Nation Irrigation:							
Navajo Indian Irrigation Project	150.0	215.0	250.0	270.0	270.0	270.0	270.0
Fruitland-Cambridge Irrigation Project	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Hogback-Cudei Irrigation Project	15.5	15.5	21.3	21.3	21.3	21.3	21.3
Chaco River drainage irrigation	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Crystal area irrigation	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Navajo Nation Irrigation Subtotal	176.9	241.9	282.7	302.7	302.7	302.7	302.7
Non-Navajo Irrigation:							
Above Navajo Dam (including Jicarilla)	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Upper San Juan (excluding Hammond)	10.3	10.3	10.3	10.3	10.3	10.3	10.3
Hammond Irrigation Project	12.1	12.1	12.1	12.1	12.1	12.1	12.1
Animas River ditches	40.7	40.7	40.7	40.7	40.7	40.7	40.7
La Plata River ditches	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Farmers Mutual Ditch	11.2	11.2	11.2	11.2	11.2	11.2	11.2
Jewett Valley Ditch	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Chaco River drainage irrigation	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Non-Navajo Irrigation Subtotal	86.5	86.5	86.5	86.5	86.5	86.5	86.5
Irrigation Total	263.4	328.4	369.2	389.2	389.2	389.2	389.2
STOCKPOND EVAPORATION AND STOCK USE							
	4.0	4.0	4.0	4.0	4.0	4.0	4.0
MUNICIPAL AND DOMESTIC USES (1)							
Current Municipal and Industrial Uses	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Animas-La Plata Project:							
San Juan Water Commission	1.0	5.0	10.4	10.4	10.4	10.4	10.4
Navajo Nation	0.0	1.0	2.0	2.3	2.3	2.3	2.3
La Plata Conservancy District	0.0	0.0	0.8	0.8	0.8	0.8	0.8
Ridges Basin Reservoir Evaporation - NM share	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Animas-La Plata Project Subtotal	1.0	6.0	13.3	13.6	13.6	13.6	13.6
Navajo-Gallup Water Supply Project: (2)							
Navajo Nation	0.0	0.0	7.9	10.2	12.5	12.5	12.5
Jicarilla Apache Nation	0.0	0.0	0.8	1.0	1.2	1.2	1.2
Navajo-Gallup Project Subtotal (within Basin)	0.0	0.0	8.7	11.2	13.7	13.7	13.7
Navajo Nation Municipal Use, Future (exc. NGWSP)	0.0	0.0	1.0	1.0	2.0	2.0	2.0
Jicarilla Apache Nation Municipal Use (exc. NGWSP)	0.0	0.0	0.0	0.4	0.6	0.6	0.6
Scattered Rural Domestic (including Jicarilla)	1.0	1.0	1.0	1.1	1.1	1.2	1.2
Municipal and Domestic Total	11.7	16.7	33.7	37.0	40.7	40.8	40.8
POWER AND INDUSTRIAL USES							
PNM - Navajo Reservoir contract (3)	16.2	16.2	16.2	16.2	16.2	16.2	16.2
BHP Billiton	37.0	37.0	38.0	39.0	39.0	39.0	39.0
Bloomfield Industrial	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Navajo Nation - Shiprock	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Navajo-Gallup Water Supply Project - NAPI (2)	0.0	0.0	0.7	0.7	0.7	0.7	0.7
Small Navajo Reservoir Contracts	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Power and Industrial Total	56.1	56.1	57.8	58.8	58.8	58.8	58.8
EXPORTS							
San Juan-Chama Project	105.2	105.2	105.2	105.2	105.2	105.2	105.2
Navajo-Gallup Water Supply Project: (2)							
Navajo Nation in New Mexico	0.0	0.0	4.0	5.8	7.6	7.6	7.6
City of Gallup	0.0	0.0	4.7	6.1	7.5	7.5	7.5
Navajo-Gallup Project Subtotal (Export)	0.0	0.0	8.7	11.9	15.1	15.1	15.1
Export Total	105.2	105.2	113.9	117.1	120.3	120.3	120.3
RESERVOIR EVAPORATION							
Navajo Reservoir Evaporation	28.3	28.0	27.7	27.7	27.7	27.7	27.7
Small Reservoir Evaporation	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Reservoir Evaporation Total	29.5	29.2	28.9	28.9	28.9	28.9	28.9
TOTAL DEPLETIONS (4)							
	469.9	539.6	607.5	635.0	641.9	642.0	642.0
State Share of Upper Basin Yield (5)	642.4	642.4	642.4	642.4	642.4	642.4	642.4
Remaining Available (5,6)	172.5	102.8	34.9	7.4	0.5	0.4	0.4
Percent of State Share Remaining	26.9%	16.0%	5.4%	1.2%	0.1%	0.1%	0.1%

NOTES:

- (1) Does not reflect post-1965 transfers from irrigation to municipal and industrial uses.
- (2) Proposed Navajo-Gallup Water Supply Project depletions in New Mexico total 29,500 acre-feet per year. Exports to Gallup are anticipated to be supplied through a subcontract with the Jicarilla Apache Nation. Exports for Navajo Nation uses in Arizona are not included.
- (3) Supplied through a subcontract with the Jicarilla Apache Nation.
- (4) This is a schedule of anticipated depletions for planning purposes only. It is not a tabulation or determination of water rights or actual uses. Total depletions exclude New Mexico's share of reservoir evaporation from the major reservoirs constructed under the Colorado River Storage Project (CRSP) Act that are used principally to regulate compact deliveries at Lee Ferry and generate CRSP hydroelectric power. These include Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit.
- (5) This depletion schedule does not attempt to interpret the Colorado River Compact, the Upper Colorado River Basin Compact, or any other element of the "Law of the River." This schedule should not be construed as an acceptance of any assumption that limits the Upper Colorado River Basin's depletion or New Mexico's depletion. Of the water available to the Upper Basin at Lee Ferry, the allocation for use by New Mexico is listed in this schedule, for planning purposes, as 642,400 acre-feet. This amount does not include New Mexico's share of CRSP reservoir evaporation other than Navajo Reservoir evaporation.
- (6) Reserved.

 This message was sent with high importance.
 Attachments can contain viruses that may harm your computer. Attachments may not display correctly.

Whipple, John J., OSE

From: Whipple, John J., OSE **Sent:** Tue 5/2/2006 4:07 PM
To: randy.seaholm@state.co.us; robertking@utah.gov; jshiel@seo.wyo.gov; dostler@uc.usbr.gov
Cc:
Subject: FW: Analysis of the 1971-80 Irrigation Consumptive Use
Attachments:  [SCS1971-80Ag.xls\(361KB\)](#)

All:

Attached are the results of Brenda Kinkel's recalculation of 1971-1980 Upper Basin irrigation depletions using SCS effective precip and SCS recommended start and end temps, and the increase in the computed depletions over those used to compute CRSS natural flows for that period. The CRSS natural flows for the period should be increased accordingly to be consistent with those for 1981-2000.

John Whipple

From: Dave Trueman [mailto:DTRUEMAN@uc.usbr.gov]
Sent: Tue 5/2/2006 9:17 AM
To: Whipple, John J., OSE
Subject: Fwd: Analysis of the 1971-80 Irrigation Consumptive Use

**** High Priority ****

John, How's this look. - Dave

Dave Trueman
 Division Manager
 Resources Management Division
 US Bureau of Reclamation
 125 S. State Street, Rm 6432
 Salt Lake City, UT 84138-1174
 (801) 524-3759 work
 801-633-5039 cell
 (801) 524-5499 fax
 dtrueman@uc.usbr.gov

>>> Brenda Kinkel 5/2/2006 3:51:16 AM >>>
 Attached is a summary spreadsheet with the results of the analysis.
 Increased depletions at Lee's Ferry range from 250,000 acre-feet to
 150,000 acre-feet. The input and output files for all of the xcons runs
 are available if needed.

OSE-0181

<https://webmail.state.nm.us/exchange/john.whipple/Sent%20Items/FW:%20Analysis%20of%20the%201971-...> 5/2/2006

Tech. App.
CURRENT XCONS program
+ Growth Season & other data corrections
include incidentals

STATE	HYDROLOGIC SUB-AREA	YEAR	XCONS IRRIGATED AREA (ACRES)	BOR Precip	BOR Precip	SCS Precip	SCS Precip	BOR Precip	SCS Precip	Revised	SCS Precip
				HISTORIC XCONS NET IRRIG C.U. (AC-FT)	CURRENT XCONS NET IRRIG C.U. (AC-FT)	CURRENT XCONS NET IRRIG C.U. (AC-FT)	FINAL XCONS NET IRRIG C.U. (AC-FT)	COMPUTED CURRENT TOTAL IRRIG C.U. (1000 AC-FT)	FINAL XCONS NET IRRIG C.U. (1000 AC-FT)	CU&L REPORT TABLES IRRIGATION (1000 AC-FT)	FINAL INCREASE TOTAL IRRIG C.U. (1000 AC-FT)
UG Basin	Grand Total	1971	1481000	1759365	1789765	1862548	1933199.1	2125.0	2293.1	2089.9	203.226
		1972	1470500	1734050	1750385	1840578	1929911.9	2082.4	2291.6	2064.6	226.985
		1973	1466800	1582768	1593407	1706958	1796899.8	1890.9	2129.3	1876.9	252.377
		1974	1466000	1853299	1870223	1925778	2034533.6	2219.3	2411.5	2215.1	196.384
		1975	1468600	1552940	1581058	1666814	1772979.2	1878.0	2103.1	1856.4	246.665
		1976	1432850	1602396	1637343	1750952	1750680.4	1942.1	2074.6	1901.3	173.250
		1977	1262480	1252144	1274280	1342899	1347012.2	1516.8	1602.8	1490.5	112.291
		1978	1432820	1751561	1782465	1878030	1880426.2	2114.5	2230.1	2077.9	152.187
		1979	1450130	1821874	1852248	1948251	1951052.4	2187.9	2304.9	2151.3	153.559
		1980	1471030	1814538	1845046	1949871	1951084.9	2178.8	2304.1	2142.2	161.893
		Colorado	State Total	1971	829900	983555	1005247	1050512	1087295	1210.1	1308.0
1972	819100			983319	995173	1045705	1091132	1198.8	1313.1	1186.6	126.500
1973	812100			829082	836174	910732	964701	1004.6	1157.9	995.2	162.678
1974	811500			1030316	1040343	1079440	1130779	1251.5	1360.4	1255.4	104.987
1975	811500			923737	938698	986333	1046626	1127.8	1256.7	1121.7	135.043
1976	794020			904767	921930	989372	987984	1111.0	1189.8	1090.5	99.318
1977	782270			808692	821556	870503	871760	993.2	1053.3	977.6	75.725
1978	770860			978484	995682	1053387	1055373	1203.3	1274.9	1182.4	92.476
1979	777430			1000349	1018769	1085016	1085317	1225.2	1305.1	1203.0	102.124
1980	783090			1006249	1025214	1084385	1085388	1236.7	1309.0	1213.9	95.088
New Mexico	State Total	1971	39600	67503	68774	70832	72790.5	81.9	86.6	80.3	6.327
		1972	40600	77867	78875	80385	82373.1	93.9	98.0	92.7	5.319
		1973	42700	73290	74735	77472	79280.0	88.9	94.3	87.2	7.064
		1974	42900	80543	82400	83996	85643.7	98.2	102.1	96.0	6.050
		1975	45500	74198	74962	77098	79078.3	89.2	94.1	88.3	5.815
		1976	58030	123879	125732	128294	128320.4	143.5	146.6	141.3	5.328
		1977	51700	115626	117075	118554	121089.7	133.7	138.4	132.0	6.355
		1978	67790	138317	139817	143688	143709.0	158.9	163.5	157.1	6.426
		1979	71970	156592	161630	164554	166520.4	180.8	186.5	174.7	11.794
		1980	78550	186123	187812	190942	190949.8	206.7	210.5	204.7	5.779
Utah	State Total	1971	305800	456444	463857	476830	489476.8	557.8	588.6	549.2	39.363
		1972	305800	454891	459916	474931	489389.5	553.3	588.7	547.1	41.607
		1973	305800	465010	470294	486309	495894.9	565.6	596.3	559.2	37.115
		1974	305800	478446	481939	487968	502780.8	579.5	604.5	575.2	29.291
		1975	305800	365432	374781	394797	409881.4	450.6	492.8	439.3	53.538
		1976	284800	386940	393715	409382	409821.7	473.4	492.8	465.4	27.350
		1977	150900	206047	209754	218941	219037.9	252.3	263.5	247.9	15.586
		1978	293200	410789	416506	432965	433340.7	500.5	520.7	493.7	27.000
		1979	292400	433055	440981	454021	454338.9	529.7	545.7	520.2	25.482
		1980	293700	403046	411715	435814	435993.2	494.6	523.8	484.2	39.550
Wyoming	State Total	1971	305700	251863	251888	264374	283636.4	275.2	309.9	275.2	34.716
		1972	305000	217972	216421	239558	267017.4	236.5	291.8	238.2	53.559
		1973	306200	215386	212203	232445	257023.6	231.8	280.8	235.3	45.520
		1974	305800	263995	265541	274374	315329.7	290.1	344.6	288.5	56.056
		1975	305800	189573	192617	208585	237393.3	210.4	259.4	207.1	52.269
		1976	296000	186810	195967	223904	224554.2	214.1	245.4	204.1	41.254
		1977	277610	121779	125895	134901	135124.2	137.5	147.6	133.0	14.625
		1978	300970	223971	230459	247990	248003.7	251.8	271.0	244.7	26.285
		1979	308330	231878	230868	244660	244876.1	252.3	267.6	253.4	14.159
		1980	315690	219120	220305	238729	238754.2	240.7	260.9	239.4	21.476

Basis for Natural Flow Model

STATE	HYDROLOGIC SUB-AREA	YEAR	XCONS IRRIGATED AREA (ACRES)	BOR Precip	BOR Precip	SCS Precip	SCS Precip	BOR Precip	SCS Precip	Revised	SCS Precip
				HISTORIC	CURRENT	CURRENT	FINAL	COMPUTED	FINAL	CJ&L	FINAL
				NET	NET	NET	NET	TOTAL	TOTAL	REPORT	INCREASE
				IRRIG C.U.	IRRIG C.U.	IRRIG C.U.	IRRIG C.U.	IRRIG C.U.	IRRIG C.U.	TABLES	TOTAL
				(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)	(1000 AC-FT)	(1000 AC-FT)	(1000 AC-FT)	(1000 AC-FT)
Colorado	Green River	1971	112300	104829	107764	112636	118658.2	133.7	147.2	130.0	17.229
		1972	112000	87755	89721	95436	103200.3	111.3	128.0	108.4	19.645
		1973	112400	76839	78880	88871	97182.5	97.8	120.5	94.7	25.833
		1974	112200	90837	92675	98606	113162.2	114.9	140.3	111.9	28.436
		1975	112200	80799	82992	90101	100618.4	102.9	124.8	99.7	25.135
		1976	105140	81694	83329	94593	94681.9	103.3	117.4	101.3	16.13
		1977	104060	72026	73447	81621	81648.5	91.1	101.3	89.3	11.985
		1978	103510	97828	100065	109119	109176.6	124.1	135.4	121.3	14.12
		1979	103110	96662	98526	108191	108236.0	122.2	134.3	119.9	14.359
		1980	103390	93781	94794	104134	104220.5	117.6	129.3	116.4	12.91
Colorado	Upper Colorado	1971	555800	725255	740628	772069	789606.0	908.6	969.2	890.9	78.335
		1972	546300	721063	728756	764779	791105.4	898.2	974.2	891.2	83.015
		1973	539600	594525	602453	651312	685510.8	740.8	842.5	731.4	111.08
		1974	541400	759262	767917	794741	824733.4	944.2	1013.6	951.7	61.897
		1975	541400	670948	680988	711624	749063.4	837.9	921.3	825.7	95.569
		1976	546000	683461	696368	737889	736248.0	855.7	904.7	840.0	64.678
		1977	543700	625587	635284	667274	668483.5	781.7	822.3	769.8	52.462
		1978	541510	749355	762202	800477	802398.0	937.1	986.2	921.2	65.044
		1979	546240	743090	756485	802436	802677.3	928.3	984.8	911.8	73.031
		1980	552800	762225	776883	818112	818999.3	955.3	1006.7	937.2	69.478
Colorado	San Juan-Colo	1971	161800	153472	156855	165808	179031.2	167.9	191.6	164.3	27.256
		1972	160800	174502	176695	185490	196826.2	189.3	210.8	187.0	23.84
		1973	160100	157718	154842	170549	182008.0	165.9	194.9	169.1	25.765
		1974	157900	180217	179751	186092	192883.8	192.5	206.5	191.8	14.654
		1975	157900	171990	174718	184609	196944.4	187.0	210.6	196.3	14.339
		1976	142880	139612	142233	156890	157054.2	151.9	167.7	149.2	18.51
		1977	134510	111079	112825	121607	121628.4	120.4	129.8	118.5	11.278
		1978	125840	131301	133416	143791	143798.2	142.2	153.2	139.9	13.312
		1979	128080	160597	163759	174390	174403.7	174.7	186.0	171.3	14.734
		1980	126900	150243	153537	162139	162167.9	163.8	173.0	160.3	12.7
Colorado	State Total	1971	829900	983555	1005247	1050512	1087295.4	1210.1	1308.0	1185.2	122.82
		1972	819100	983319	995173	1045705	1091131.9	1198.8	1313.1	1186.6	126.5
		1973	812100	829082	836174	910732	964701.3	1004.6	1157.9	995.2	162.678
		1974	811500	1030316	1040343	1079440	1130779.4	1251.5	1360.4	1255.4	104.987
		1975	811500	923737	938698	986333	1046626.2	1127.8	1256.7	1121.7	135.043
		1976	794020	904767	921930	989372	987984.1	1111.0	1189.8	1090.5	99.318
		1977	782270	808692	821556	870503	871760.4	993.2	1053.3	977.6	75.725
		1978	770860	978484	995682	1053387	1055372.8	1203.3	1274.9	1182.4	92.476
		1979	777430	1000349	1018769	1085016	1085317.0	1225.2	1305.1	1203.0	102.124
		1980	783090	1006249	1025214	1084385	1085387.7	1236.7	1309.0	1213.9	95.088
Average											
Colorado	Area C-1 Incidental Loss 24.3%	1971	38800	27636	28376	30323	32827.100	35.272	40.8		
		1972	38700	21105	22024	24615	27271.900	27.376	33.9		
		1973	38900	16222	16666	21110	25256.400	20.716	31.4		
		1974	38700	21303	22021	25127	32023.700	27.372	39.8		
		1975	38700	20462	21027	23791	28435.800	26.136	35.3		
		1976	34220	19990	20418	25203	25250.400	25.379	31.4		
		1977	34150	14701	15209	18818	18832.000	18.904	23.4		
		1978	34090	24475	25210	28766	28770.000	31.337	35.8		
		1979	33960	25050	25412	28932	28970.200	31.587	36.0		
		1980	34080	26525	26686	29767	29795.500	33.171	37.0		
Colorado	Area C-2 Incidental Loss 24.3%	1971	7900	7925	8181	8407	8572.900	10.169	10.7		
		1972	7900	6880	7012	7171	8046.200	8.716	10.0		
		1973	8000	8605	8804	9108	9514.600	10.943	11.8		
		1974	7900	7931	8192	8494	9062.800	10.183	11.3		
		1975	7900	8320	8562	8929	9351.300	10.642	11.6		
		1976	7900	7641	7810	8404	8417.000	9.708	10.5		
		1977	7710	6834	6987	7500	7499.900	8.685	9.3		
		1978	7560	7397	7610	8265	8266.400	9.459	10.3		
		1979	7510	8030	8211	8745	8744.800	10.206	10.9		
		1980	7520	6609	6707	7382	7382.800	8.336	9.2		
Colorado	Area C-3 Incidental Loss 24.3%	1971	32200	32752	33726	34875	36578.800	41.921	45.5		
		1972	32000	27317	27992	28990	31080.900	34.794	38.6		
		1973	32400	24936	25571	28225	29720.400	31.784	36.9		
		1974	32300	31201	31525	32757	35005.100	39.185	43.5		
		1975	32300	28631	29398	30980	32668.000	36.542	40.6		
		1976	30540	25540	25831	28510	28511.700	32.108	35.4		
		1977	30010	24327	24572	26355	26364.900	30.543	32.8		
		1978	29550	30652	31415	33532	33546.300	39.049	41.7		
		1979	29440	28821	29518	32418	32408.900	36.691	40.3		
		1980	29490	29870	30252	33049	33061.700	37.604	41.1		
Colorado	Area C-3A Incidental Loss 17.4%	1971	3200	3404	3491	3651	3798.400	4.098	4.5		
		1972	3100	2798	2822	2912	3371.600	3.313	4.0		
		1973	3200	3384	3468	3631	3845.900	4.072	4.5		

		1974	3200	4321	4369	4468	4690.000	5.129	5.5
		1975	3200	3030	3114	3281	3379.800	3.656	4.0
		1976	3160	3535	3584	3763	3766.200	4.207	4.4
		1977	3060	2796	2804	2956	2957.900	3.292	3.5
		1978	2990	3853	3911	4142	4144.000	4.591	4.9
		1979	2980	3805	3876	4028	4028.700	4.550	4.7
		1980	2970	3186	3240	3429	3431.300	3.804	4.0
Colorado	Area C-4	1971	4200	3082	3139	3283	3466.700	3.901	4.3
	Incidental Loss	1972	4200	1897	1922	2203	2420.800	2.389	3.0
	24.3%	1973	4200	1074	1119	1428	1765.500	1.391	2.2
		1974	4200	1018	1064	1299	1992.900	1.323	2.5
		1975	4200	1508	1582	1855	2222.400	1.966	2.8
		1976	4080	2028	2080	2474	2474.400	2.586	3.1
		1977	4050	2117	2155	2570	2570.200	2.678	3.2
		1978	4090	2705	2766	3197	3197.400	3.438	4.0
		1979	4070	2966	3011	3275	3281.000	3.743	4.1
		1980	4090	2890	2920	3182	3200.000	3.629	4.0
Colorado	Area C-5	1971	22100	24114	24842	25881	26989.300	30.879	33.5
	Incidental Loss	1972	22200	21975	22084	23388	24655.700	27.451	30.6
	24.3%	1973	21800	17690	18299	20125	21681.400	22.746	27.0
		1974	22000	20117	20508	21372	24636.900	25.492	30.6
		1975	22000	13753	14163	15853	18860.000	17.604	23.4
		1976	21460	18179	18714	21081	21104.200	23.262	26.2
		1977	21330	17849	18261	19829	19828.800	22.698	24.6
		1978	21470	23047	23386	25175	25205.200	29.069	31.3
		1979	21400	22192	22614	24656	24661.600	28.110	30.7
		1980	21470	20026	20243	22265	22288.500	25.161	27.7
Colorado	Area C-6	1971	3900	5915	6009	6217	6425.000	7.469	8.0
	Incidental Loss	1972	3900	5783	5865	6158	6353.200	7.291	7.9
	24.3%	1973	3900	4928	4952	5244	5398.300	6.155	6.7
		1974	3900	4945	4997	5091	5750.800	6.211	7.1
		1975	3900	5095	5147	5411	5701.100	6.398	7.1
		1976	3780	4781	4891	5158	5158.000	6.080	6.4
		1977	3750	3402	3460	3595	3594.800	4.301	4.5
		1978	3760	5699	5766	6042	6047.300	7.168	7.5
		1979	3750	5798	5883	6137	6140.800	7.313	7.6
		1980	3770	4675	4747	5060	5060.700	5.900	6.3
Colorado	Area C-7	1971	20200	9452	9859	11572	13212.400	11.722	15.7
	Incidental Loss	1972	20200	9526	9801	11759	13702.800	11.653	16.3
	18.9%	1973	20200	7787	7961	9542	13023.100	9.465	15.5
		1974	20200	9040	9166	10805	14448.300	10.898	17.2
		1975	20200	9991	10332	11634	13641.700	12.285	16.2
		1976	18330	14126	14352	15651	15650.600	17.064	18.6
		1977	18330	10376	10632	12552	12551.800	12.641	14.9
		1978	18290	14486	14849	16022	15957.200	17.656	19.0
		1979	18280	11530	11646	13552	13600.200	13.847	16.2
		1980	18290	12575	12848	14502	14502.100	15.277	17.2
Colorado	Area C-8	1971	36800	30901	31745	34062	37217.200	37.744	44.3
	Incidental Loss	1972	36700	26406	27151	30459	34049.900	32.282	40.5
	18.9%	1973	36700	18667	19300	23906	27556.100	22.948	32.8
		1974	36700	25334	25717	29074	34937.400	30.578	41.5
		1975	36700	27926	28260	30627	35150.100	33.601	41.8
		1976	33330	20767	20965	25159	25225.800	24.927	30.0
		1977	32970	27552	27844	31269	31269.200	33.107	37.2
		1978	32580	31265	31857	34642	34692.400	37.878	41.2
		1979	32560	25558	25924	30663	30704.600	30.823	36.5
		1980	32560	24680	25369	28916	28982.500	30.163	34.5
Colorado	Area C-9&9A	1971	35000	35300	36294	37804	40366.800	43.154	48.0
	Incidental Loss	1972	34300	34606	35260	36992	38922.600	41.924	46.3
	18.9%	1973	34400	27585	28111	30738	34522.700	33.424	41.0
		1974	34100	37578	38062	39662	41511.900	45.255	49.4
		1975	34100	28909	29609	31623	34294.600	35.206	40.8
		1976	29000	22332	22636	24569	24569.000	26.914	29.2
		1977	28840	20814	21037	22260	22294.200	25.013	26.5
		1978	28870	25446	25946	26885	26894.500	30.850	32.0
		1979	29140	23397	23851	25863	25874.600	28.359	30.8
		1980	28880	27214	27629	28678	28690.300	32.850	34.1
Colorado	Area C-10	1971	11100	11896	12326	13167		14.656	0.0
	Incidental Loss	1972	11100	11346	11696	12810	13222.000	13.906	15.7
	18.9%	1973	11000	7725	7901	9187	10319.100	9.395	12.3
		1974	10700	11185	11290	12377	13108.800	13.424	15.6
		1975	10700	8810	9095	10132	10844.800	10.814	12.9
		1976	12740	12614	12886	14499	14535.600	15.322	17.3
		1977	12550	12868	13195	14558	14571.300	15.688	17.3
		1978	12740	13461	13768	15259	15260.300	16.371	18.1
		1979	12650	10793	11032	12816	12834.300	13.117	15.3
		1980	12550	13754	13871	15120	15120.000	16.493	18.0
Colorado	Area C-10A	1971	18700	24782	25412	26460	26955.300	30.214	32.1
	Incidental Loss	1972	18500	18351	18657	20273	20717.300	22.183	24.6
	18.9%	1973	18500	12601	12780	15412	16118.200	15.196	19.2
		1974	18500	22845	23110	24128	24697.000	27.477	29.4

		1975	18500	21070	21688	23087	24280.800	25.787	28.9
		1976	17080	18918	19378	20885	20884.300	23.040	24.8
		1977	17220	15415	15601	17305	17305.800	18.549	20.6
		1978	17210	19189	19620	21026	21026.300	23.329	25.0
		1979	17600	22371	22856	24988	24987.900	27.176	29.7
		1980	17590	21348	21871	23389	23389.500	26.005	27.8
Colorado	Area C-11	1971	48200	70655	72349	74804	75291.900	86.023	89.5
	Incidental Loss	1972	47500	56114	57039	60090	61417.100	67.819	73.0
	18.9%	1973	47400	47370	48518	53282	54488.500	57.687	64.8
		1974	47500	66436	67096	68162	68572.500	79.777	81.5
		1975	47500	56377	57867	60530	61977.700	68.804	73.7
		1976	45380	53824	54992	58253	58255.300	65.386	69.3
		1977	46060	39291	40061	41379	41378.800	47.632	49.2
		1978	45850	62316	63200	65716	65758.600	75.144	78.2
		1979	47160	67390	68671	72251	72250.900	81.650	85.9
		1980	47430	60856	61788	65865	65866.500	73.465	78.3
Colorado	Area C-12	1971	23600	31306	31919	33167	35046.600	37.952	41.7
	Incidental Loss	1972	23000	31821	32195	33671	34684.200	38.279	41.2
	18.9%	1973	22500	24175	24738	26671	28255.300	29.414	34.8
		1974	23100	33146	33410	34224	35717.600	39.724	42.5
		1975	23100	23571	24215	26060	28040.300	28.792	33.3
		1976	24240	35482	36236	37971	37981.000	43.084	45.2
		1977	24250	26137	26856	28830	28844.200	31.932	34.3
		1978	23670	30996	31350	33359	33745.800	37.275	40.1
		1979	24570	39132	40026	42315	42307.500	47.591	50.3
		1980	25760	39053	40035	42389	42360.000	47.601	50.4
Colorado	Area C-13	1971	67300	145416	148873	151960	155978.000	177.010	185.5
	Incidental Loss	1972	65500	152615	154056	158226	159562.800	183.172	189.7
	18.9%	1973	64100	130700	133215	137367	138690.100	158.393	164.9
		1974	65900	156500	158854	162506	162929.300	188.877	193.7
		1975	65900	130121	132398	135878	137838.800	157.421	163.9
		1976	68960	153601	155937	160629	160729.900	185.409	191.1
		1977	69060	152084	153991	157213	157366.700	183.095	187.1
		1978	67380	162314	164393	169560	170250.600	195.463	202.4
		1979	69990	164361	166112	171049	171083.500	197.507	203.4
		1980	73360	162563	164853	170430	170534.000	196.010	202.8
Colorado	Area C-14	1971	68800	36307	37066	43189	49887.800	47.741	64.3
	Incidental Loss	1972	68800	46987	47343	49498	57265.400	60.977	73.8
	28.8%	1973	68600	42311	42814	46436	55337.700	55.144	71.3
		1974	67300	36868	37688	41089	51254.400	48.543	66.0
		1975	67300	38534	39197	42188	54198.000	50.485	69.8
		1976	75380	31645	32519	38827	38890.100	41.884	50.1
		1977	75040	27265	26337	29640	29693.300	33.922	38.2
		1978	75180	52884	54376	57691	57694.600	70.037	74.3
		1979	75250	52773	54001	58181	58186.100	69.553	74.9
		1980	75290	55655	57048	59790	59961.300	73.478	77.2
Colorado	Area C-15	1971	68600	103556	105358	109385	111366.600	135.701	143.4
	Incidental Loss	1972	67400	108154	109780	114242	116027.400	141.397	149.4
	28.8%	1973	66900	80503	81949	89289	91706.900	105.551	118.1
		1974	68100	117455	119601	122236	122731.700	154.046	158.1
		1975	68100	111224	113117	115867	118032.700	145.694	152.0
		1976	67500	92002	93757	98024	98048.400	120.760	126.3
		1977	66700	92196	94378	98623	98645.600	121.558	127.1
		1978	67710	97746	99577	105497	105490.800	128.255	135.9
		1979	66920	89969	92100	98848	98846.200	118.625	127.3
		1980	66530	105596	107429	113442	113442.300	138.368	146.1
Colorado	Area C-16	1971	18300	21287	21567	22911	24483.900	27.778	31.5
	Incidental Loss	1972	18200	23241	22922	24206	25616.900	29.523	33.0
	28.8%	1973	17900	21886	21775	24146	25210.200	28.047	32.5
		1974	17800	26910	26566	27667	28026.900	34.216	36.1
		1975	17800	19239	19312	20877	21952.000	24.873	28.3
		1976	16830	19784	20163	21953	21950.900	25.970	28.3
		1977	16070	16345	16595	18128	18127.300	21.374	23.3
		1978	15460	19855	20163	21922	21921.200	25.969	28.2
		1979	15460	18341	18662	20654	20653.400	24.037	26.6
		1980	15380	19755	20073	21404	21418.000	25.854	27.6
Colorado	Area C-17&17A	1971	96600	165130	167601	170928	175466.300	215.870	226.0
	Incidental Loss	1972	92900	174186	174547	181388	181924.400	224.817	234.3
	28.8%	1973	90000	141449	140919	148667	151169.000	181.503	194.7
		1974	90300	177349	178206	181655	183778.200	229.529	236.7
		1975	90300	158514	158513	163109	166713.200	204.164	214.7
		1976	97720	173704	177122	182303	182328.400	228.134	234.8
		1977	98200	158513	161599	166807	166829.200	208.140	214.9
		1978	100270	181105	184388	191209	191570.900	237.492	246.7
		1979	99840	175574	178797	185591	185675.800	230.291	239.2
		1980	101880	179724	183769	190944	190922.200	236.694	245.9
Colorado	Area C-18	1971	9500	6354	6479	7398	7726.500	6.919	8.3
	Incidental Loss	1972	9500	3439	3620	4524	5161.700	3.866	5.5
	6.8%	1973	9500	4564	4683	5938	6443.400	5.002	6.9
		1974	9200	5878	5948	6729	7384.200	6.353	7.9
		1975	9200	6595	6748	7498	8278.400	7.207	8.8

		1976	7830	4684	4783	5595	5598.000	5.108	6.0
		1977	7140	3282	3367	4027	4026.800	3.596	4.3
		1978	6360	4980	5107	5456	5456.300	5.454	5.8
		1979	6530	4303	4398	5199	5199.600	4.697	5.6
		1980	6650	5330	5370	5983	5985.200	5.735	6.4
Colorado	Area C-18A	1971	6300	4862	5059	5059	5100.400	5.403	5.4
	Incidental Loss	1972	6600	5502	5632	6303	6710.000	6.015	7.2
	6.8%	1973	6500	4661	4802	5616	5939.800	5.128	6.3
		1974	6600	6882	6991	7476	7696.500	7.466	8.2
		1975	6600	5073	5197	5851	6200.500	5.550	6.6
		1976	5760	4057	4203	5021	5025.600	4.489	5.4
		1977	5610	2774	2835	3396	3393.800	3.028	3.6
		1978	5010	4446	4543	5034	5033.300	4.852	5.4
		1979	4930	4622	4713	5173	5172.800	5.034	5.5
		1980	4760	4269	4364	4852	4851.900	4.661	5.2
Colorado	Area C-19	1971	17600	16760	17199	18313	19308.400	18.368	20.6
	Incidental Loss	1972	17100	9441	9679	10648	12007.400	10.337	12.8
	6.8%	1973	16700	12553	12859	14513	14955.200	13.734	16.0
		1974	16500	16082	16271	16860	17471.000	17.378	18.7
		1975	16500	16290	16640	17424	18184.800	17.771	19.4
		1976	16660	15393	15740	17225	15249.500	16.810	16.3
		1977	16310	14084	14256	14256	15157.600	15.226	16.2
		1978	16050	18014	18055	19541	19907.100	19.283	21.3
		1979	16120	20276	20803	21803	21806.200	22.217	23.3
		1980	16490	18551	19066	20221	20231.200	20.362	21.6
Colorado	Area C-20+20A	1971	9200	11291	11523	11891	12197.900	12.307	13.0
	Incidental Loss	1972	9000	9328	9381	9691	10113.500	10.019	10.8
	6.8%	1973	8700	9988	10127	10603	10775.500	10.816	11.5
		1974	8900	9774	9942	10093	10467.700	10.618	11.2
		1975	8900	8705	8801	9240	9435.000	9.400	10.1
		1976	9260	10528	10700	11325	11325.600	11.428	12.1
		1977	9350	6591	6701	7030	7027.900	7.157	7.5
		1978	8900	10852	11009	11659	11738.100	11.758	12.5
		1979	9240	12700	12893	13490	13493.700	13.769	14.4
		1980	9400	11302	11502	12187	12742.300	12.284	13.6
Colorado	Area C-21	1971	14600	6567	6694	7283	8291.200	7.036	8.7
	Incidental Loss	1972	14700	5982	7043	7786	8109.100	7.402	8.5
	5.1%	1973	14700	6221	6461	7659	8898.200	6.790	9.4
		1974	14700	9835	7991	8601	9212.900	8.399	9.7
		1975	14700	7700	7670	8491	9907.600	8.061	10.4
		1976	18500	8373	8490	10101	10120.100	8.923	10.6
		1977	19700	4817	4985	6211	6220.900	5.239	6.5
		1978	20820	9799	9949	11351	11365.400	10.457	11.9
		1979	21220	13709	13894	15590	15612.500	14.602	16.4
		1980	21060	12488	12795	14174	14183.700	13.448	14.9
Colorado	Area C-22	1971	49100	45225	46275	48234	52732.200	48.634	55.4
	Incidental Loss	1972	48000	48229	48678	50981	53754.800	51.161	56.5
	5.1%	1973	47600	41406	42246	47060	50514.600	44.401	53.1
		1974	47100	46918	47221	49174	51505.700	49.629	54.1
		1975	47100	49724	50650	53234	57229.400	53.233	60.1
		1976	42170	36983	37791	42782	42847.300	39.718	45.0
		1977	40310	31119	31578	34060	34063.700	33.188	35.8
		1978	37270	38880	39514	42642	42654.900	41.529	44.8
		1979	37510	45924	46966	50403	50399.100	49.361	53.0
		1980	36780	42270	43379	46014	46030.000	45.591	48.4
Colorado	Area C-22A	1971	30900	32143	33347	35936	38765.500	35.048	40.7
	Incidental Loss	1972	30200	40086	40064	42536	44776.400	42.107	47.1
	5.1%	1973	29900	29707	30256	33786	37091.100	31.799	39.0
		1974	29600	40594	40975	42697	44372.400	43.065	46.6
		1975	29600	35067	35738	38338	41021.200	37.561	43.1
		1976	25890	28972	29644	33811	33880.600	31.156	35.6
		1977	24420	30067	30536	32816	32824.300	32.093	34.5
		1978	22150	28944	29523	32445	32447.800	31.028	34.1
		1979	22240	32104	32736	35084	35081.600	34.406	36.9
		1980	21780	29729	30423	32673	32672.800	31.975	34.3
Colorado	Area C-23	1971	16700	7495	7761	8236	8541.800	8.157	9.0
	Incidental Loss	1972	16300	5452	5450	6137	7355.200	5.728	7.7
	5.1%	1973	16100	9436	9396	10321	11025.100	9.875	11.6
		1974	16000	9129	9148	9304	9995.400	9.614	10.5
		1975	16000	11206	11293	11921	12726.300	11.869	13.4
		1976	13960	14854	15098	15098	15104.300	15.868	15.9
		1977	13170	7797	7961	7961	7960.800	8.367	8.4
		1978	11930	13764	13986	13986	13985.900	14.699	14.7
		1979	11990	16021	16319	16319	16318.300	17.152	17.2
		1980	11740	15636	15908	15908	15906.100	16.719	16.7
Colorado	Area C-24&24A	1971	50500	62042	62778	66119	70700.500	68.993	77.7
	Incidental Loss	1972	51600	74753	75460	78050	82830.700	82.930	91.0
	9.9%	1973	51800	70948	66484	71723	74479.000	73.065	81.9
		1974	50500	73740	74417	76315	77797.400	81.784	85.5
		1975	50500	68294	69368	72626	76059.900	76.235	83.6
		1976	42360	50430	51210	55097	55101.900	56.280	60.6

1977	36910	37279	37765	40559	40558.700	41.504	44.6
1978	33670	39914	40444	43367	43344.200	44.448	47.6
1979	35120	52839	53844	56992	56992.200	59.175	62.6
1980	35540	50120	51032	53371	53375.300	56.084	58.7

STATE	HYDROLOGIC SUB-AREA	YEAR	XCONS IRRIGATED AREA (ACRES)	BOR Precip	BOR Precip	SCS Precip	SCS Precip	BOR Precip	SCS Precip	Revised CU&L REPORT TABLES (1000 AC-FT)	SCS Precip	
				HISTORIC XCONS NET IRRIG C.U. (AC-FT)	CURRENT XCONS NET IRRIG C.U. (AC-FT)	CURRENT XCONS NET IRRIG C.U. (AC-FT)	FINAL XCONS NET IRRIG C.U. (AC-FT)	COMPUTED CURRENT TOTAL IRRIG C.U. (1000 AC-FT)	FINAL CURRENT TOTAL IRRIG C.U. (1000 AC-FT)		FINAL INCREASE TOTAL IRRIG C.U. (1000 AC-FT)	
New Mexico	San Juan-Colo	1971	39600	67503	68774	70832	72790.5	81.9	86.6	80.3	6.327	
		1972	40600	77867	78875	80385	82373.1	93.9	98.0	92.7	5.319	
		1973	42700	73290	74735	77472	79280.0	88.9	94.3	87.2	7.064	
		1974	42900	80543	82400	83996	85643.7	98.2	102.1	96.0	6.05	
		1975	45500	74198	74962	77098	79078.3	89.2	94.1	88.3	5.815	
		1976	58030	123879	125732	128294	128320.4	143.5	146.6	141.3	5.328	
		1977	51700	115626	117075	118554	121089.7	133.7	138.4	132.0	6.355	
		1978	67790	138317	139817	143688	143709.0	158.9	163.5	157.1	6.426	
		1979	71970	156592	161630	164554	166520.4	180.8	186.5	174.7	11.794	
		1980	78550	186123	187812	190942	190949.8	206.7	210.5	204.7	5.779	
Average												
New Mexico	Area NM-1 Incidental Loss 0.184	1971	1400	1523	1565	1686	1801.6	1.9	2.1			
		1972	1400	2144	2139	2239	2238.7	2.5	2.7			
		1973	1500	1792	1808	1964	1964.1	2.1	2.3			
		1974	1500	2398	2402	2498	2555.5	2.8	3.0			
		1975	1500	1733	1772	1928	2104.5	2.1	2.5			
		1976	1220	2102	2123	2281	2281.3	2.5	2.7	2.5		
		1977	1010	2044	2064	2155	2155.4	2.4	2.6		2.4	
		1978	1310	2558	2561	2713	2713.1	3.0	3.2		3.0	
		1979	1210	2331	2345	2478	2488.2	2.8	2.9		2.8	
		1980	1250	2498	2517	2633	2632.9	3.0	3.1		3.0	
New Mexico	Area NM-2 Incidental Loss 0.206	1971	14400	29418	29930	30647	31369.2	36.1	37.8			
		1972	14700	34899	35242	35893	36352.3	42.5	43.8			
		1973	15600	32360	32851	33871	34278.7	39.6	41.3			
		1974	15700	37265	38024	39017	39452.6	45.9	47.6			
		1975	16700	32055	31973	32947	33419.3	38.6	40.3			
		1976	21160	44826	45758	46780	46793.4	55.2	56.4	54.1		
		1977	17510	44783	45510	46179	46179.2	54.9	55.7		54.0	
		1978	22790	49101	49837	51594	51596.8	60.1	62.2		59.2	
		1979	21010	42981	47209	48581	48595.5	56.9	58.6		51.8	
		1980	21740	45343	46235	47780	47779.9	55.8	57.6		54.7	
New Mexico	Area NM-2A Incidental Loss 0.206	1971	3100	6077	6222	6339	6554.8	7.5	7.9			
		1972	3100	7415	7493	7678	7766.2	9.0	9.4			
		1973	3200	6547	6667	6872	7093.5	8.0	8.6			
		1974	3200	7564	7693	7758	8014.8	9.3	9.7			
		1975	3500	5896	6014	6268	6478.5	7.3	7.8			
		1976	4520	9550	9732	9842	9847.4	11.7	11.9		11.5	
		1977	3740	9410	9607	9711	9711.4	11.6	11.7		11.3	
		1978	4870	10748	10924	11258	11258.5	13.2	13.6		13.0	
		1979	4480	9587	9761	9974	9974.0	12	12.0		11.6	
		1980	4640	9009	9196	9520	9518.8	11	11.5		10.9	
New Mexico	Area NM-3&4 Incidental Loss 17.8%	1971	15900	27309	27795	28827	29425.0	32.742	34.7			
		1972	16500	28703	29230	29737	30999.4	34.433	36.5			
		1973	17500	27493	28266	29378	30317.4	33.297	35.7			
		1974	17500	29986	30852	31258	32155.1	36.344	37.9			
		1975	18600	31897	32352	32989	33879.4	38.110	39.9			
		1976	19180	31465	32178	33377	33385.3	37.906	39.3		37.1	
		1977	15870	26269	26755	27333	27360.1	31.517	32.2		30.9	
		1978	20660	32706	33249	34691	34707.4	39.168	40.9		38.5	
		1979	19040	37058	37648	38764	38781.2	44.349	45.7		43.7	
		1980	19700	37463	38029	39169	39176.7	44.798	46.2		44.1	
New Mexico	Area NM-5&5A Incidental Loss 12.5%	1971	4800	3177	3262	3334	3639.9	3.670	4.1			
		1972	4900	4707	4771	4839	5016.5	5.367	5.6			
		1973	4900	5098	5145	5387	5626.3	5.788	6.3			
		1974	5000	3330	3429	3465	3465.7	3.857	3.9			
		1975	5200	2618	2852	2966	3196.6	3.209	3.6			
		1976	2750	2136	2141	2213	2213.0	2.408	2.5		2.4	
		1977	2270	1320	1339	1375	3883.6	1.506	4.4		1.5	
		1978	2960	1304	1346	1532	1533.2	1.514	1.7		1.5	
		1979	2730	2335	2368	2457	4381.5	2.664	4.9		2.6	
		1980	2820	2110	2136	2141	2141.5	2.402	2.4		2.4	
New Mexico	NIIP	1971										
		1972										
		1973										
		1974										
		1975										
		1976	Computed	9200	33800	33800	33800	33800.0	33.800	33.8		33.8
		1977	Diversion less	11300	31800	31800	31800	31800.0	31.800	31.8		31.8
		1978	returns	15200	41900	41900	41900	41900.0	41.900	41.9		41.9
1979	multiplied by	23500	62300	62300	62300	62300.0	62.300	62.3		62.3		
1980	C.U. factor	28400	89700	89700	89700	89700.0	89.700	89.7		89.7		

STATE	HYDROLOGIC SUB-AREA	YEAR	XCONS IRRIGATED AREA (ACRES)	BOR Precip	BOR Precip	SCS Precip	SCS Precip	BOR Precip	SCS Precip	Revised	SCS Precip
				HISTORIC IRRIG C.U.	CURRENT IRRIG C.U.	CURRENT IRRIG C.U.	FINAL IRRIG C.U.	COMPUTED TOTAL IRRIG C.U.	FINAL IRRIG C.U.	CU&L REPORT TABLES IRRIGATION (1000 AC-FT)	FINAL INCREASE TOTAL IRRIG C.U.
Utah	Green River	1971	270200	415155	421454	432961	444253.2	508.0	535.5	500.4	35.087
		1972	270200	418083	422667	436270	449292.4	509.6	541.7	504.0	37.662
		1973	270200	416490	420985	435310	443748.9	507.6	534.9	502.1	32.835
		1974	270200	435218	437969	443274	456949.4	527.9	550.7	524.5	26.21
		1975	270200	326622	335235	353781	367845.3	404.2	443.5	393.8	49.687
		1976	250600	345447	351536	365260	365700.7	424.0	441.0	416.7	24.303
		1977	140000	189089	192633	201207	201300.7	232.2	242.7	228.0	14.681
		1978	251700	362347	367340	381990	382209.0	442.9	460.8	436.9	23.946
		1979	251000	373334	380217	391381	391607.8	458.4	472.1	450.1	21.982
		1980	251100	347196	354688	375987	376051.2	427.7	453.4	418.6	34.813
Utah	Upper Colorado	1971	5600	8470	8853	9132	9255.5	9.8	10.3	9.6	0.674
		1972	5600	7973	8032	8284	8447.6	8.9	9.4	8.8	0.577
		1973	5600	8179	8327	8484	8533.5	9.2	9.5	9.1	0.373
		1974	5600	8880	8967	9281	9372.1	10.0	10.4	9.8	0.603
		1975	5600	7828	7954	8268	8331.3	8.8	9.2	8.7	0.547
		1976	6000	9419	9521	9885	9893.4	10.6	11.0	10.5	0.482
		1977	2500	3600	3482	3587	3587.8	3.9	4.0	4.0	-0.017
		1978	7000	11220	11349	11815	11885.5	12.6	13.2	12.5	0.693
		1979	7200	12451	12582	13021	13064.0	14.0	14.5	13.8	0.701
		1980	7100	11768	12034	12476	12583.7	13.4	14.0	13.1	0.868
Utah	San Juan-Colo	1971	30000	32819	33550	34736	35968.1	39.9	42.8	39.2	3.602
		1972	30000	28836	29217	30376	31649.5	34.8	37.7	34.3	3.368
		1973	30000	40340	40983	42515	43612.5	48.8	51.9	48.0	3.907
		1974	30000	34347	35003	35413	36459.3	41.6	43.4	40.9	2.478
		1975	30000	30982	31592	32749	33704.8	37.6	40.1	36.8	3.304
		1976	28200	32074	32658	34238	34227.6	38.9	40.8	38.2	2.565
		1977	8400	13358	13639	14148	14149.4	16.2	16.8	15.9	0.922
		1978	34500	37222	37817	39161	39246.2	45.0	46.7	44.3	2.361
		1979	34200	47270	48182	49619	49667.1	57.3	59.1	56.3	2.799
		1980	35500	44082	44993	47351	47358.3	53.6	56.4	52.5	3.869
Utah	State Total	1971	305800	456444	463857	476830	489476.8	557.8	588.6	549.2	39.363
		1972	305800	454891	459916	474931	489389.5	553.3	588.7	547.1	41.607
		1973	305800	465010	470294	486309	495894.9	565.6	596.3	559.2	37.115
		1974	305800	478446	481939	487968	502780.8	579.5	604.5	575.2	29.291
		1975	305800	365432	374781	394797	409881.4	450.6	492.8	439.3	53.538
		1976	284800	386940	393715	409382	409821.7	473.4	492.8	465.4	27.35
		1977	150900	206047	209754	218941	219037.9	252.3	263.5	247.9	15.586
		1978	293200	410789	416506	432965	433340.7	500.5	520.7	493.7	27
		1979	292400	433055	440981	454021	454338.9	529.7	545.7	520.2	25.482
		1980	293700	403046	411715	435814	435993.2	494.6	523.8	484.2	39.55
		Average									
Utah	Area U-1 Incidental Loss 11.8%	1971	8600	11941	12257	12888	12998.600	13.703	14.5		
		1972	8600	11027	11217	11613	12031.700	12.541	13.5		
		1973	8600	10817	11052	12023	12382.700	12.356	13.8		
		1974	8600	13209	13417	13579	14281.600	15.000	16.0		
		1975	8600	8653	8790	9635	9668.800	9.827	10.8		
		1976	8500	7554	7646	8270	8482.700	8.548	9.5	8.4	
		1977	5100	4927	5091	5457	5462.900	5.692	6.1	5.5	
		1978	9000	8717	8974	9588	9587.800	10.033	10.7	9.7	
		1979	9000	10090	10323	10892	10898.900	11.541	12.2	11.3	
		1980	9200	8595	8714	9518	9517.900	9.742	10.6	9.6	
Utah	Area U-2 Incidental Loss 20.8%	1971	26100	36598	37282	38710	39478.400	45.036	47.7		
		1972	26100	42975	43680	44972	45682.800	52.766	55.2		
		1973	26100	43369	44011	45393	46091.900	53.166	55.7		
		1974	26100	35151	35460	35779	36867.600	42.835	44.5		
		1975	26100	28176	29041	30859	31824.700	35.082	38.4		
		1976	26900	41644	42389	43909	43936.500	51.206	53.1	50.3	
		1977	16100	19989	20084	21086	21093.500	24.262	25.5	24.1	
		1978	26900	43116	43666	45202	45211.900	52.748	54.6	52.1	
		1979	26900	45180	45867	47011	47023.600	55.407	56.8	54.6	
		1980	26900	45599	46562	48291	48324.300	56.247	58.4	55.1	
Utah	Area U-3 Incidental Loss 20.8%	1971	3400	4588	4653	4750	4754.500	5.620	5.7		
		1972	3400	4826	4908	5052	5105.100	5.929	6.2		
		1973	3400	4113	4162	4311	4317.600	5.027	5.2		
		1974	3400	5358	5408	5443	6948.800	6.533	8.4		
		1975	3400	4009	4085	4289	4314.500	4.935	5.2		
		1976	800	1336	1365	1410	1410.200	1.648	1.7	1.6	
		1977	400	688	706	724	724.000	0.853	0.9	0.8	
		1978	1400	1172	1208	1257	1256.500	1.460	1.5	1.4	
		1979	1400	1121	1139	1179	1179.000	1.376	1.4	1.4	
		1980	1500	1365	1397	1465	1465.300	1.688	1.8	1.6	
Utah	Area U-4 Incidental Loss 20.8%	1971	82300	126500	128241	131412	135556.000	154.915	163.8		
		1972	82300	122832	123353	126984	132004.300	149.011	159.5		
		1973	82300	116587	117305	121506	126567.100	141.704	152.9		

		1974	82300	121689	122209	123062	128812.400	147.628	155.6	
		1975	82300	97210	100002	105038	113903.200	120.802	137.6	
		1976	81600	118875	120582	123851	123945.900	145.663	149.7	143.6
		1977	48900	63821	64980	67985	68049.800	78.496	82.2	77.1
		1978	81600	106071	107090	112820	112842.600	129.364	136.3	128.1
		1979	81600	118721	120756	123973	124101.900	145.874	149.9	143.4
		1980	81600	116195	118898	124721	124770.900	143.629	150.7	140.4
Utah	Area U-5	1971	93200	146090	148220	152238	157653.300	179.050	190.4	
	Incidental Loss	1972	93200	137709	139247	145060	152152.000	168.211	183.8	
	20.8%	1973	93200	143587	144982	150073	151685.000	175.138	183.2	
		1974	93200	153928	154255	157185	160705.100	186.339	194.1	
		1975	93200	105665	108685	116581	119543.200	131.292	144.4	
		1976	81500	96608	98209	103829	103934.300	118.637	125.6	116.7
		1977	48900	62657	64163	66861	66874.900	77.509	80.8	75.7
		1978	81500	111260	113288	117681	117804.500	136.852	142.3	134.4
		1979	81500	100607	102638	107215	107235.600	123.986	129.5	121.5
		1980	81500	95384	97685	105367	105346.000	118.003	127.3	115.2
Utah	Area U-6	1971	22300	41834	42331	43330	42885.200	51.136	51.8	
	Incidental Loss	1972	22300	44106	44865	45815	45069.300	54.197	54.4	
	20.8%	1973	22300	42106	42715	44058	44009.600	51.599	53.2	
		1974	22300	50144	50837	51145	51110.800	61.411	61.7	
		1975	22300	36553	37254	38593	38714.600	45.002	46.8	
		1976	21800	39441	40428	41736	41736.300	48.837	50.4	47.6
		1977	11000	19247	19558	20343	20343.300	23.626	24.6	23.3
		1978	21800	43253	43874	44801	44800.700	52.999	54.1	52.2
		1979	21500	46448	47326	48057	48085.300	57.170	58.1	56.1
		1980	21000	35833	36440	38911	38910.500	44.019	47.0	43.3
Utah	Area U-7	1971	1800	4014	4083	4159	4179.200	4.932	5.0	
	Incidental Loss	1972	1800	4360	4394	4448	4494.400	5.308	5.4	
	20.8%	1973	1800	3806	3896	4017	4047.200	4.706	4.9	
		1974	1800	4124	4196	4256	4334.100	5.068	5.2	
		1975	1800	3324	3383	3443	3513.300	4.087	4.2	
		1976	1500	3618	3666	3748	3750.300	4.429	4.5	4.4
		1977	700	1975	1999	2022	2021.600	2.415	2.4	2.4
		1978	1600	4111	4157	4237	4236.600	5.022	5.1	5
		1979	1600	4365	4409	4477	4482.000	5.326	5.4	5.3
		1980	1700	4214	4265	4403	4404.300	5.152	5.3	5.1
Utah	Area U-8	1971	32500	43590	44388	45475	46748.000	53.621	56.5	
	Incidental Loss	1972	32500	50247	51002	52327	52752.800	61.611	63.7	
	20.8%	1973	32500	52105	52863	53929	54647.800	63.858	66.0	
		1974	32500	51617	52190	52824	53889.000	63.045	65.1	
		1975	32500	43031	43996	45343	46363.000	53.147	56.0	
		1976	28000	36371	37251	38507	38504.500	44.999	46.5	43.9
		1977	8900	15785	16052	16728	16730.700	19.390	20.2	19.1
		1978	27900	44647	45083	46405	46468.400	54.460	56.1	53.9
		1979	27500	46802	47759	48578	48601.500	57.693	58.7	56.5
		1980	27700	40011	40728	43311	43312.000	49.199	52.3	48.3
Utah	Area U-9	1971	2200	4243	4284	4378	4418.500	4.755	4.9	
	Incidental Loss	1972	2200	4316	4335	4409	4463.600	4.812	5.0	
	11.0%	1973	2200	4313	4349	4506	4517.600	4.827	5.0	
		1974	2200	4243	4265	4383	4421.000	4.734	4.9	
		1975	2200	3845	3854	3993	3979.500	4.278	4.4	
		1976	2800	6330	6381	6504	6512.600	7.083	7.2	
		1977	600	1871	1891	1926	1925.900	2.099	2.1	7
		1978	4000	8060	8089	8453	8523.400	8.978	9.5	2.1
		1979	4100	8733	8778	9056	9098.300	9.744	10.1	8.9
		1980	4100	8508	8592	8897	9004.100	9.537	10.0	9.7
Utah	Area U-10	1971	3400	4228	4569	4754	4837.000	5.071	5.4	
	Incidental Loss	1972	3400	3657	3697	3875	3984.000	4.104	4.4	
	11.0%	1973	3400	3866	3978	3978	4015.900	4.415	4.5	
		1974	3400	4637	4702	4898	4951.100	5.219	5.5	
		1975	3400	3983	4099	4274	4351.800	4.550	4.8	
		1976	3200	3089	3140	3381	3380.800	3.486	3.8	3.4
		1977	1900	1729	1591	1661	1661.900	1.765	1.8	1.9
		1978	3000	3160	3261	3362	3362.100	3.619	3.7	3.5
		1979	3100	3718	3803	3965	3965.700	4.222	4.4	4.1
		1980	3000	3260	3443	3580	3579.600	3.821	4.0	3.6
Utah	Area U-11	1971	3800	4413	4500	4645	4731.400	5.414	5.7	
	Incidental Loss	1972	3800	4201	4330	4432	4568.000	5.209	5.5	
	20.3%	1973	3800	5897	6026	6266	6318.500	7.250	7.6	
		1974	3800	4224	4269	4312	4351.200	5.135	5.2	
		1975	3800	3876	3941	4041	4093.900	4.741	4.9	
		1976	3400	6544	6677	6889	6879.200	8.032	8.3	7.9
		1977	500	764	774	813	813.600	0.931	1.0	0.9
		1978	3400	2357	2378	2484	2493.800	2.860	3.0	2.8
		1979	3400	5984	6095	6250	6250.400	7.332	7.5	7.2
		1980	3300	6927	7029	7251	7253.000	8.456	8.7	8.3
Utah	Area U-12	1971	6500	6242	6310	6544	6809.800	7.496	8.1	
	Incidental Loss	1972	6500	7094	7137	7293	7475.700	8.479	8.9	
	18.8%	1973	6500	8094	8172	8472	8694.200	9.708	10.3	
		1974	6500	8795	8895	9004	9175.300	10.567	10.9	


		1975	6500	6860	6984	7261	7498.300	8.297	8.9	
		1976	2900	4487	4578	4815	4815.200	5.438	5.7	5.3
		1977	1700	2837	2880	3002	3002.300	3.422	3.6	3.4
		1978	5400	7512	7621	7849	7857.300	9.054	9.3	8.9
		1979	5300	6455	6601	6802	6801.700	7.841	8.1	7.7
		1980	5800	4636	4739	5027	5029.800	5.630	6.0	5.5
Utah	Area U-13	1971	10900	9887	10217	10741	11190.700	12.137	13.3	
	Incidental Loss	1972	10900	8709	8889	9515	9876.300	10.560	11.7	
	18.8%	1973	10900	11292	11441	11945	12538.100	13.592	14.9	
		1974	10900	11425	11835	11976	12452.000	14.060	14.8	
		1975	10900	10547	10847	11311	11768.300	12.887	14.0	
		1976	12300	12590	12816	13422	13421.900	15.226	15.9	15
		1977	4500	6487	6653	6906	6906.200	7.903	8.2	7.7
		1978	14400	15808	16208	16751	16751.100	19.255	19.9	18.8
		1979	14200	16333	16696	17209	17253.800	19.834	20.5	19.4
		1980	15000	16059	16440	17143	17143.400	19.530	20.4	19.1
Utah	Area U-14	1971	1300	2487	2523	2548	2533.300	2.997	3.0	
	Incidental Loss	1972	1300	1901	1903	1929	1943.800	2.261	2.3	
	18.8%	1973	1300	2545	2614	2651	2618.600	3.106	3.1	
		1974	1300	2439	2471	2501	2497.800	2.936	3.0	
		1975	1300	2295	2350	2391	2333.900	2.792	2.8	
		1976	1500	2122	2152	2203	2202.900	2.557	2.6	2.5
		1977	300	775	787	796	796.400	0.934	0.9	0.9
		1978	1800	3292	3320	3378	3445.200	3.945	4.1	3.9
		1979	1800	2991	3009	3126	3125.900	3.574	3.7	3.6
		1980	1900	3628	3668	3744	3743.500	4.358	4.4	4.3
Utah	Area U-15	1971	4400	6284	6392	6537	6826.100	7.593	8.1	
	Incidental Loss	1972	4400	4122	4157	4274	4609.300	4.938	5.5	
	18.8%	1973	4400	8036	8198	8446	8631.800	9.739	10.3	
		1974	4400	4535	4582	4624	4892.500	5.444	5.8	
		1975	4400	4863	4896	5025	5179.800	5.816	6.2	
		1976	4600	3454	3528	3844	3843.800	4.191	4.6	4.1
		1977	900	1745	1771	1827	1827.800	2.104	2.2	2.1
		1978	5300	4869	4859	5133	5132.800	5.772	6.1	5.8
		1979	5400	9202	9365	9664	9666.400	11.126	11.5	10.9
		1980	5300	7901	8070	8654	8655.500	9.587	10.3	9.4
Utah	Area U-16	1971	3100	3505	3609	3723	3876.800	4.287	4.6	
	Incidental Loss	1972	3100	2809	2802	2934	3176.400	3.328	3.8	
	18.8%	1973	3100	4476	4532	4736	4811.300	5.384	5.7	
		1974	3100	2928	2951	2996	3090.500	3.506	3.7	
		1975	3100	2542	2574	2721	2830.600	3.058	3.4	
		1976	3500	2877	2907	3065	3064.600	3.453	3.6	3.4
		1977	500	750	774	803	803.100	0.920	1.0	0.9
		1978	4200	3384	3431	3567	3566.000	4.077	4.2	4
		1979	4100	6305	6417	6569	6568.900	7.624	7.8	7.5
		1980	4200	4931	5047	5533	5533.100	5.996	6.6	5.9

STATE	HYDROLOGIC SUB-AREA	YEAR	XCONS IRRIGATED AREA (ACRES)	BOR Precip	BOR Precip	SCS Precip	SCS Precip	BOR Precip	SCS Precip	Revised	SCS Precip
				HISTORIC XCONS NET IRRIG C.U. (AC-FT)	CURRENT XCONS NET IRRIG C.U. (AC-FT)	CURRENT XCONS NET IRRIG C.U. (AC-FT)	FINAL XCONS NET IRRIG C.U. (AC-FT)	CURRENT TOTAL IRRIG C.U. (1000 AC-FT)	FINAL CURRENT TOTAL IRRIG C.U. (1000 AC-FT)	CU&L REPORT TABLES IRRIGATION (1000 AC-FT)	FINAL INCREASE TOTAL IRRIG C.U. (1000 AC-FT)
Wyoming	Green River	1971	305700	251863	251888	264374	283636	275.2	309.9	275.2	34.7
		1972	305000	217972	216421	239558	267017	236.5	291.8	238.2	53.6
		1973	306200	215386	212203	232445	257024	231.8	280.8	235.3	45.5
		1974	305800	263995	265541	274374	315330	290.1	344.6	288.5	56.1
		1975	305800	189573	192617	208585	237393	210.4	259.4	207.1	52.3
		1976	296000	186810	195967	223904	224554	214.1	245.4	204.1	41.3
		1977	277610	121779	125895	134901	135124	137.5	147.6	133.0	14.6
		1978	300970	223971	230459	247990	248004	251.8	271.0	244.7	26.3
		1979	308330	231878	230868	244660	244876	252.3	267.6	253.4	14.2
		1980	315690	219120	220305	238729	238754	240.7	260.9	239.4	21.5
		Average									
Wyoming	Area W-1 Incidental Loss 9.3%	1971	18700	24380	24870	26220	26438	27.183	28.897		
		1972	18700	21366	21703	22572	23621	23.722	25.818		
		1973	18700	21761	22180	24357	25334	24.243	27.690		
		1974	18600	26037	26411	26760	28429	28.867	31.073		
		1975	18600	16729	16949	18764	18827	18.525	20.577		
		1976	16540	14840	15111	16631	16646	16.517	18.195	16.2	
		1977	15780	14700	15338	16418	16420	16.764	17.947	16.1	
		1978	16250	15890	16408	17481	17483	17.934	19.109	17.4	
		1979	16460	18806	19157	20201	20202	20.938	22.081	20.6	
		1980	16370	15390	15631	17072	17072	17.085	18.659	16.8	
Wyoming	Area W-2 Incidental Loss 9.3%	1971	62100	51981	52236	54578	58563	57.094	64.009		
		1972	62000	47995	47268	51208	58110	51.664	63.514		
		1973	62100	45067	43822	49009	53861	47.898	58.870		
		1974	62000	64618	64642	66452	77311	70.654	84.501		
		1975	62000	41372	42552	47518	53315	46.509	58.273		
		1976	56280	24913	24947	29765	29765	27.267	32.533		
		1977	56160	28414	29605	29605	29633	32.358	32.389	27.2	
		1978	60900	36934	37931	41599	41599	41.459	45.468	40.4	
		1979	63390	38785	34581	37181	37181	37.797	40.639	42.4	
		1980	64650	43731	43988	47321	47324	48.079	51.725	47.8	
Wyoming	Area W-3 Incidental Loss 9.3%	1971	9900	9285	9145	9432	10324	9.995	11.284		
		1972	9800	7764	7671	8376	9157	8.384	10.009		
		1973	10000	6929	6747	7248	8310	7.374	9.083		
		1974	10000	7045	6975	7312	8720	7.623	9.531		
		1975	10000	5294	5545	6151	7014	6.061	7.666		
		1976	9970	9557	9779	10632	10657	10.688	11.648	10.4	
		1977	11150	7338	7549	8026	8031	8.251	8.778	8.0	
		1978	13240	11753	12076	13184	13194	13.200	14.421	12.8	
		1979	12840	14416	14564	15205	15205	15.918	16.619	15.8	
		1980	13360	11465	11733	12785	12793	12.824	13.982	12.5	
Wyoming	Area W-4 Incidental Loss 9.3%	1971	3000	3008	3057	3231	3224	3.341	3.524		
		1972	3000	3459	3372	3481	3634	3.686	3.972		
		1973	3000	2451	2430	2606	2749	2.656	3.004		
		1974	3000	3961	3924	3983	4096	4.289	4.477		
		1975	3000	2772	2808	2973	3083	3.069	3.369		
		1976	2500	3467	3533	3761	3765	3.861	4.115	3.8	
		1977	2320	2046	2109	2269	2269	2.305	2.480	2.2	
		1978	2290	2502	2564	2791	2797	2.802	3.057	2.7	
		1979	2260	2986	2903	3028	3028	3.173	3.310	3.3	
		1980	2210	2573	2616	2816	2816	2.860	3.077	2.8	
Wyoming	Area W-5 Incidental Loss 9.3%	1971	17800	18964	19494	20387	20860	21.307	22.800		
		1972	17600	20067	20182	20941	22218	22.059	24.284		
		1973	18200	18853	18843	20055	21299	20.595	23.279		
		1974	18100	22271	22596	23188	24794	24.698	27.100		
		1975	18100	17871	17727	18423	20556	19.376	22.467		
		1976	18210	19134	18807	20336	20915	20.556	22.860	20.9	
		1977	15310	12635	12903	14115	14127	14.103	15.441	13.7	
		1978	17430	15272	15492	16506	16478	16.932	18.010	16.7	
		1979	18740	25488	26053	26817	26864	28.476	29.363	27.9	
		1980	18980	20444	20547	21191	21194	22.458	23.165	22.3	
Wyoming	Area W-6 Incidental Loss 9.3%	1971	11900	11930	12085	12580	13102	13.209	14.320		
		1972	11700	10783	10705	11300	12123	11.700	13.251		
		1973	12000	10063	10164	10722	11302	11.109	12.353		
		1974	11900	13134	12920	13213	14141	14.122	15.456		
		1975	11900	10081	10043	10412	11366	10.977	12.423		
		1976	12080	10401	10602	11620	11622	11.587	12.703	11.4	
		1977	13740	6946	7210	7712	7719	7.880	8.437	7.6	
		1978	16540	13910	14344	15012	15024	15.677	16.421	15.2	
		1979	16020	11206	11447	12160	12160	12.512	13.290	12.2	
		1980	16750	15688	15836	16289	16301	17.309	17.817	17.1	
Wyoming	Area W-7 Incidental Loss 9.3%	1971	168500	119342	117640	124204	137003	128.581	149.745		
		1972	168400	95770	94556	110438	125245	103.350	136.892		
		1973	168400	96636	94104	104040	118954	102.856	130.017		

		1974	168400	114489	115304	120177	143424	126.027	156.763	
		1975	168400	82877	84066	90804	108833	91.884	118.954	
		1976	168400	93456	102106	119089	119089	111.602	130.165	102.1
		1977	152740	41142	42423	47194	47363	46.369	51.768	45.0
		1978	162790	117162	120903	129521	129522	132.147	141.567	128.1
		1979	167180	108381	110203	117158	117325	120.452	128.236	118.5
		1980	171490	99797	99822	109823	109823	109.105	120.036	109.1
Wyoming	Area W-8	1971	13800	12975	13362	13742	14123	14.511	15.337	
	Incidental Loss	1972	13800	10767	10964	11242	12909	11.906	14.019	
	8.6%	1973	13800	13627	13914	14408	15216	15.111	16.524	
		1974	13800	12439	12770	13291	14415	13.868	15.655	
		1975	13800	12576	12928	13541	14402	14.040	15.640	
		1976	12020	11042	11083	12071	12095	12.036	13.135	12.0
		1977	10410	8658	8759	9563	9563	9.512	10.385	9.4
		1978	11530	10548	10743	11895	11908	11.666	12.932	11.5
		1979	11440	11810	11961	12911	12911	12.989	14.021	12.8
		1980	11880	10032	10132	11432	11432	11.003	12.415	10.9

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Whipple, John J., OSE

Fro: Whipple, John J., OSE **Sent:** Mon 5/1/2006 12:35 PM
To: dtrueman@uc.usbr.gov; randy.seaholm@state.co.us; robertking@utah.gov; jshiel@seo.wyo.gov; dostler@uc.usbr.gov
Cc: Lopez, Estevan, OSE
Subject: Hydro Determination Call
Attachments:  [Navset.hydrodeter.yieldstudy2.xls\(954KB\)](#)

All:

Randy and I have set up a conference call with Dave Trueman to discuss the hydrologic determination update at 3:30 pm today. The call in number is 801-524-3838 or 1-888-457-3505. Join us if you can. The attached yield studies will be discussed, including in particular Study 6 which is a corrected version of the yield spreadsheet sent to you all late last week. The discussion will include how CRSS computes physical water supply shortages, what they mean, and what are their implications for the depletions schedules.

John Whipple

OSE-0194

<https://webmail.state.nm.us/exchange/john.whipple/Sent%20Items/Hydro%20Determination%20Call.EML?C...> 5/1/2006

Upper Basin Yield Study - May 1, 2006, Draft
Summary of Results

Study	Natural Flow Data	Upper Basin Use	Storage Capacity	Period	Average Annual Upper Basin Use (maf)	Average Annual Shared CRSP Evap (maf)	Total Annual Upper Basin Depletion, inc. CRSP Evap (maf)	Computed Annual Amounts of Shortage (maf)					Total Computed Shortage Amount (maf)	Percent Shortage over Period		
								1961	1963	1964	1967	1968			1977	
1	CRSS	Constant Average	CRSP Active	1953-1977	5.65	0.26	5.91	0.00	1.17	3.17	0.07	0.29	3.43	8.13	5.8	
				1931-1977	5.65	0.37	6.02									3.1
				1906-2000	5.65	0.49	6.14									
2	CRSS	Constant Average	CRSP Active + Other UB	1953-1977	5.75	0.26	6.01	0.00	0.00	3.16	0.37	0.39	4.33	8.25	5.7	
				1931-1977	5.75	0.37	6.12									3.1
				1906-2000	5.75	0.49	6.24									1.5
3	CRSS	Constant Average	CRSP Active + Other UB (same % full)	1953-1977	5.75	0.25	6.00	0.00	0.17	3.27	0.34	0.39	4.12	8.29	5.8	
				1931-1977	5.75	0.37	6.12									3.1
				1906-2000	5.75	0.50	6.25									1.5
4	Adjusted CRSS	Constant Average	CRSP Active + Other UB (same % full)	1953-1977	5.79	0.25	6.04	0.00	1.15	3.31	0.45	0.43	3.32	8.66	6.0	
				1931-1977	5.79	0.36	6.15									3.2
				1906-2000	5.79	0.49	6.28									1.6
5	Adjusted CRSS	Variable	CRSP Active + Other UB (same % full)	1953-1977	5.37	0.35	5.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	
				1931-1977	5.47	0.45	5.92									0.0
				1906-2000	5.79	0.54	6.33									0.0
6	Adjusted CRSS	Shorted Supply (5.79 maf demand)	CRSP Active + Other UB (same % full)	1953-1977	5.57	0.29	5.86	0.00	0.00	0.00	0.00	0.00	1.54	1.54	1.1	
				1931-1977	5.60	0.40	6.00									0.6
				1906-2000	5.66	0.52	6.18									0.3
7	Adjusted CRSS	Constant Average	CRSP Live + Other UB (same % full)	1953-1977	5.72	0.21	5.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	
				1931-1977	5.72	0.34	6.06									0.0
				1906-2000	5.72	0.46	6.18									0.0

Notes:

- The New Mexico Interstate Stream Commission staff prepared this table using the annual water balance spreadsheet and CRSP evaporation equations developed for the current yield study. The ISC and USBR jointly developed the spreadsheet and evaporation equations. The spreadsheets for each study and the historic CRSP evaporation correlations are attached.
The Upper Basin yields shown in this table assume a delivery of 8.25 maf per year to the Lower Basin at Lee Ferry. The yields can be increased by 0.1 maf for each 0.1 maf of decrease in the delivery at Lee Ferry. The yields would be 0.75 maf greater than those shown assuming a delivery to the Lower Basin of 7.5 maf per year.
- If CRSP live storage is used instead of CRSP active storage, either the Upper Basin demands can be increased or computed shortages can be reduced. Using CRSP live storage plus all other Upper Basin live storage, and also adjusting CRSS natural flows for 1971-1980 to natural flows that would have been computed if the historic irrigation depletions had been calculated using the modified Blaney-Criddle method with SCS effective precipitation and SCS recommended growth season start temperatures for all crops consistent with 1981-2000 natural flows, a constant Upper Basin use of 5.72 maf/yr can be met without shortage (see Study 7). The evaporation amounts using CRSP live storage are less than the evaporation amounts using CRSP active storage due to storage draw downs below minimum power pools.
- The 1988 Hydrologic Determination concluded that the yield to the Upper Basin with tolerable shortages is at least 6.0 maf per year over a 25-year, 7-month critical period, including CRSP evaporation. In the current Upper Basin yield study, the draw down in reservoir storage from full storage conditions begins at the end of 1930, and full storage conditions are next attained in 1984 or 1985. In general, reservoir levels are drawn down from 1930 to 1940, recover to about 3/4-capacity by 1952, are drawn down again during the mid 1950s, are kept at very low levels from about 1956-1981, and then recover by 1984. Increasing the average annual Upper Basin demand above the firm yield demand first results in the occurrence of computed shortage in 1977, and further increases in demand cause shortages to also be computed in the 1960s. Although the critical period may differ from the 1988 Hydrologic Determination, the most significant difference between the current and 1988 studies is that the current studies recognize that CRSP reservoir evaporation changes with reservoir storage. CRSP reservoir storage is maintained at significantly lower levels, on average, during the 1953-1977 period as compared to the 1931-1964 period, primarily because CRSP active storage is maintained at under 10 maf for most of twenty years beginning the early 1960s. CRSP active storage rarely dips below 10 maf for the remainder of the period of record. The average annual evaporation amounts shown in this table for different periods illustrate the effects of storage on evaporation. To account for this, the current yield study segregates CRSP reservoir evaporation from the Upper Basin demand.
- Evaporation amounts include shared CRSP evaporation only. For the CRSP plus all other Upper Basin storage condition, inclusion of the existing Upper Basin storage capacity in the yield studies generally increases the yield by 0.1 maf. Thus, the evaporation amounts for the latter storage condition in Study 2 were assumed to be the same as the evaporation amounts for the CRSP only storage condition in Study 1. Study 3 assumes that CRSP unit and other reservoirs are the same percent full, and the CRSP reservoir evaporation is computed accordingly. The results essentially are the same, and the latter assumption is used for the remaining studies. The CRSP reservoirs generally will operate in about the same manner as they have historically, although other Upper Basin reservoirs are generally upstream from CRSP reservoirs and therefore may fill first. This upstream storage effect may cause the CRSP evaporation amounts to be slightly overstated for the CRSP plus all other Upper Basin storage condition.
- The 1988 Hydrologic Determination assumed that a total shortage of 6 percent overall for a 25-year, 7-month critical period was tolerable (with the shortage measured against the total Upper Basin depletion including shared CRSP reservoir evaporation). In this yield study, a 6 percent overall shortage limitation is applied for the worst 25-year period of reservoir draw down (with the shortage measured against the Upper Basin use exclusive of shared CRSP reservoir evaporation). CRSS natural flows for 1971-1980 are adjusted to reflect historic irrigation depletions recalculated using the modified Blaney-Criddle method with SCS effective precipitation and SCS recommended growth season start temperatures (consistent with 1981-2000 natural flows). Use of the water stored in CRSP minimum power pools to meet demands is not considered except in study 7. In 1977, the computed shortage of as much as about 3 maf under some scenarios would not actually materialize because Upper Basin uses in that year would be substantially lower than the average Upper Basin use demand as illustrated in studies 5 and 6. In below-average periods of runoff during which reservoir storage will be substantially drawn down, physical water supply shortages will cause Upper Basin uses to be less, on average, than the long-term average consumptive use by the Upper Basin states. Use of a constant Upper Basin consumptive use does not reflect, however, annual variations in consumptive uses caused by annual variations in water supply availability and physical water shortages in the Upper Basin. To this extent, the computed shortages are overstated as illustrated by studies 5 and 6. Also, if the yield studies were to include Upper Basin storage in excess of existing capacity as will be needed to fully develop the Upper Basin yield available for use by the states, either the computed yields could be increased or the computed shortages could be reduced (loss of existing storage capacity to sedimentation may be replaced).
- Study 5 incorporates annual variations in Upper Basin consumptive uses about the long-term average consumptive use that result from annual variations in water supply and physical shortages. The following is an excerpt from "Water Supplies of the Colorado River Available for Use by the States of the Upper Division and for Use from the Main Stem by the States of Arizona, California and Nevada in the Lower Basin," Part I - Text, Tipton and Kalmbach, Inc., July 1965, page 15: "A depletion factor was used to modify the assumed basic depletions by the States of the upper division of the Colorado River Basin. The philosophy of the depletion factor is based on the fact that during periods of low water supply in the Upper Basin all projects in operation will not receive a full water supply. Most of them will not have reservoirs, and some that have reservoirs will not have water in some years to fill those reservoirs. No rational means have been derived for varying the estimated uses by the States of the upper division because of varying water supply. The means used by the U.S. Bureau of Reclamation in its past studies, which it is assumed it is still using, are based on the assumption that the uses would vary from the normal use in a particular year by one-half of the percent that the virgin flow at Lee Ferry in that particular year varies from a long-time average of virgin flow." Using this assumption, the sensitivity of the amount of computed shortages to possible annual variations in physical water supplies and actual uses in the Upper Basin is illustrated. Under this scenario, actual Upper Basin uses by the states exclusive of shared CRSP evaporation would average about 5.37 maf during 1953-1977, 5.47 maf during 1931-1977, and 5.79 maf for the period of record, and except for physical water supply shortages in the Upper Basin, no other shortages are computed. Study 6 incorporates physical water supply shortages in the Upper Basin computed by the USBR's CRSS model under development of up to 5.48 maf in the Upper Basin, exclusive of shared CRSP evaporation. Under this assumption, no use in excess of an average long-term demand of 5.79 maf/yr is assumed, and the computed shortage in 1977 of about 1.5 maf is in addition to the CRSS physical shortages.

Upper Basin Yield Study - May 1, 2006, Draft

Study No. 1: CRSS Natural Flows, CRSP Active Storage Only, Constant Upper Basin Use

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	Variables
1906	18,550,021	24,847,704	8,250,000	5,650,000	749,290	28,748,435	3,900,731	0	24,847,704	Storage 25,665,339 af
1907	21,201,694	24,847,704	8,250,000	5,650,000	749,290	31,400,108	6,552,404	0	24,847,704	Sedimentation Rate (Active) 24,292 af/yr
1908	12,218,817	24,847,704	8,250,000	5,650,000	719,512	22,447,009	0	0	22,447,009	Bank Storage 4%
1909	22,356,301	22,447,009	8,250,000	5,650,000	719,512	30,183,797	5,336,093	0	24,847,704	Adjusted Storage (2060) 24,847,704 af
1910	14,650,616	24,847,704	8,250,000	5,650,000	749,290	24,849,030	1,326	0	24,847,704	UB Demand Level 5,650,000 af/yr
1911	15,499,729	24,847,704	8,250,000	5,650,000	749,290	25,698,143	850,439	0	24,847,704	LB Delivery 8,250,000 af/yr
1912	18,623,410	24,847,704	8,250,000	5,650,000	749,290	28,821,824	3,974,120	0	24,847,704	
1913	14,536,373	24,847,704	8,250,000	5,650,000	747,907	24,736,170	0	0	24,736,170	
1914	21,354,814	24,736,170	8,250,000	5,650,000	747,907	31,443,077	6,595,374	0	24,847,704	
1915	13,623,277	24,847,704	8,250,000	5,650,000	736,720	23,834,261	0	0	23,834,261	Results
1916	20,142,892	23,834,261	8,250,000	5,650,000	786,720	29,340,434	4,492,730	0	24,847,704	Average CRSP Evap 494,700 af/yr
1917	22,942,804	24,847,704	8,250,000	5,650,000	749,290	33,141,218	8,293,514	0	24,847,704	Total Yield w/ CRSP evap 6,144,700 af/yr
1918	15,865,939	24,847,704	8,250,000	5,650,000	749,290	26,064,353	1,216,649	0	24,847,704	
1919	12,651,369	24,847,704	8,250,000	5,650,000	724,812	22,874,261	0	0	22,874,261	Shortage Years
1920	22,287,632	22,874,261	8,250,000	5,650,000	724,812	30,537,081	5,689,377	0	24,847,704	1961 0 af
1921	22,526,781	24,847,704	8,250,000	5,650,000	749,290	32,725,195	7,877,491	0	24,847,704	1963 1,168,309 af
1922	18,447,198	24,847,704	8,250,000	5,650,000	749,290	28,645,612	3,797,908	0	24,847,704	1964 3,169,290 af
1923	19,024,046	24,847,704	8,250,000	5,650,000	749,290	29,222,460	4,374,756	0	24,847,704	1967 73,567 af
1924	13,877,798	24,847,704	8,250,000	5,650,000	739,838	24,085,664	0	0	24,085,664	1968 292,944 af
1925	14,430,701	24,085,664	8,250,000	5,650,000	727,939	23,888,426	0	0	23,888,426	1977 3,427,291 af
1926	15,213,731	23,888,426	8,250,000	5,650,000	732,700	24,469,457	0	0	24,469,457	
1927	19,539,212	24,469,457	8,250,000	5,650,000	744,598	29,364,071	4,516,367	0	24,847,704	NM allocation (w/o evap) 630,000 af/yr
1928	16,954,334	24,847,704	8,250,000	5,650,000	749,290	27,152,748	2,305,044	0	24,847,704	
1929	21,829,585	24,847,704	8,250,000	5,650,000	749,290	32,027,989	7,180,295	0	24,847,704	Note: NM allocation is exclusive of its portion of -
1930	14,621,041	24,847,704	8,250,000	5,650,000	748,944	24,819,801	0	0	24,819,801	CRSP evaporation. Navajo evaporation would be
1931	8,474,134	24,819,801	8,250,000	5,650,000	672,949	18,720,986	0	0	18,720,986	primarily charged against NM's allocation. Shared
1932	17,422,187	18,720,986	8,250,000	5,650,000	633,136	21,610,037	0	0	21,610,037	CRSP evaporation is already removed from UC
1933	12,183,500	21,610,037	8,250,000	5,650,000	639,745	19,253,792	0	0	19,253,792	demands.
1934	6,178,192	19,253,792	8,250,000	5,650,000	508,432	11,023,553	0	0	11,023,553	
1935	12,630,349	11,023,553	8,250,000	5,650,000	385,811	9,368,091	0	0	9,368,091	Total Upper Basin depletion, inc. CRSP evap:
1936	14,648,873	9,368,091	8,250,000	5,650,000	369,976	9,746,987	0	0	9,746,987	1953-1977 5,913,354 af/yr
1937	14,306,056	9,746,987	8,250,000	5,650,000	375,061	9,777,983	0	0	9,777,983	1931-1977 6,015,655 af/yr
1938	18,148,319	9,777,983	8,250,000	5,650,000	422,895	13,603,406	0	0	13,603,406	1906-2000 6,144,700 af/yr
1939	11,164,059	13,603,406	8,250,000	5,650,000	431,062	10,436,403	0	0	10,436,403	
1940	9,931,657	10,436,403	8,250,000	5,650,000	338,359	6,129,701	0	0	6,129,701	
1941	20,116,678	6,129,701	8,250,000	5,650,000	357,615	11,988,764	0	0	11,988,764	
1942	17,225,136	11,988,764	8,250,000	5,650,000	465,757	14,848,143	0	0	14,848,143	
1943	13,731,401	14,848,143	8,250,000	5,650,000	493,018	14,186,527	0	0	14,186,527	
1944	15,369,422	14,186,527	8,250,000	5,650,000	496,874	15,159,075	0	0	15,159,075	
1945	14,140,528	15,159,075	8,250,000	5,650,000	505,649	14,893,953	0	0	14,893,953	
1946	11,095,453	14,893,953	8,250,000	5,650,000	461,845	11,627,562	0	0	11,627,562	
1947	16,439,486	11,627,562	8,250,000	5,650,000	447,280	13,719,767	0	0	13,719,767	
1948	15,139,294	13,719,767	8,250,000	5,650,000	482,617	14,476,444	0	0	14,476,444	
1949	16,933,584	14,476,444	8,250,000	5,650,000	523,142	16,986,885	0	0	16,986,885	
1950	13,140,416	16,986,885	8,250,000	5,650,000	538,184	15,689,117	0	0	15,689,117	
1951	12,505,894	15,689,117	8,250,000	5,650,000	498,610	13,796,402	0	0	13,796,402	
1952	20,805,422	13,796,402	8,250,000	5,650,000	553,916	20,147,908	0	0	20,147,908	
1953	11,165,419	20,147,908	8,250,000	5,650,000	591,444	16,821,883	0	0	16,821,883	
1954	8,496,102	16,821,883	8,250,000	5,650,000	477,239	10,940,746	0	0	10,940,746	
1955	9,413,908	10,940,746	8,250,000	5,650,000	344,374	6,110,279	0	0	6,110,279	
1956	11,426,874	6,110,279	8,250,000	5,650,000	250,672	3,386,481	0	0	3,386,481	
1957	21,500,963	3,386,481	8,250,000	5,650,000	307,356	10,680,088	0	0	10,680,088	
1958	15,862,511	10,680,088	8,250,000	5,650,000	416,995	12,225,605	0	0	12,225,605	
1959	9,598,169	12,225,605	8,250,000	5,650,000	378,116	7,545,658	0	0	7,545,658	
1960	11,524,160	7,545,658	8,250,000	5,650,000	287,036	4,882,782	0	0	4,882,782	
1961	10,010,259	4,882,782	8,250,000	5,650,000	203,238	789,803	0	0	789,803	
1962	17,377,609	789,803	8,250,000	5,650,000	193,208	4,074,203	0	0	4,074,203	
1963	8,840,900	4,074,203	8,250,000	5,650,000	183,412	-1,168,309	0	1,168,309	0	
1964	10,863,586	0	8,250,000	5,650,000	132,876	-3,169,290	0	3,169,290	0	
1965	19,875,027	0	8,250,000	5,650,000	204,453	5,770,574	0	0	5,770,574	
1966	10,679,844	5,770,574	8,250,000	5,650,000	233,196	2,317,222	0	0	2,317,222	
1967	11,670,830	2,317,222	8,250,000	5,650,000	161,618	-73,567	0	73,567	0	
1968	13,739,932	0	8,250,000	5,650,000	132,876	-292,944	0	292,944	0	
1969	15,272,159	0	8,250,000	5,650,000	148,060	1,224,099	0	0	1,224,099	
1970	15,344,136	1,224,099	8,250,000	5,650,000	178,936	2,489,299	0	0	2,489,299	
1971	15,290,433	2,489,299	8,250,000	5,650,000	209,281	3,670,451	0	0	3,670,451	
1972	12,959,652	3,670,451	8,250,000	5,650,000	209,667	2,520,436	0	0	2,520,436	
1973	18,397,816	2,520,436	8,250,000	5,650,000	248,115	6,770,137	0	0	6,770,137	
1974	13,089,042	6,770,137	8,250,000	5,650,000	287,206	5,671,973	0	0	5,671,973	
1975	16,825,996	5,671,973	8,250,000	5,650,000	306,082	8,291,888	0	0	8,291,888	
1976	11,140,311	8,291,888	8,250,000	5,650,000	300,619	5,231,580	0	0	5,231,580	
1977	5,438,897	5,231,580	8,250,000	5,650,000	197,768	-3,427,291	0	3,427,291	0	
1978	15,183,722	0	8,250,000	5,650,000	146,976	1,136,746	0	0	1,136,746	
1979	17,671,870	1,136,746	8,250,000	5,650,000	205,315	4,703,300	0	0	4,703,300	
1980	17,765,183	4,703,300	8,250,000	5,650,000	293,852	8,274,631	0	0	8,274,631	
1981	9,015,200	8,274,631	8,250,000	5,650,000	274,160	3,115,671	0	0	3,115,671	
1982	17,489,400	3,115,671	8,250,000	5,650,000	251,571	6,453,500	0	0	6,453,500	
1983	24,361,989	6,453,500	8,250,000	5,650,000	417,562	16,497,927	0	0	16,497,927	
1984	25,359,376	16,497,927	8,250,000	5,650,000	645,721	27,311,583	2,463,879	0	24,847,704	
1985	21,246,109	24,847,704	8,250,000	5,650,000	749,290	31,444,522	6,596,818	0	24,847,704	
1986	23,013,446	24,847,704	8,250,000	5,650,000	749,290	33,211,860	8,364,156	0	24,847,704	
1987	15,640,478	24,847,704	8,250,000	5,650,000	749,290	25,838,892	991,188	0	24,847,704	
1988	11,456,357	24,847,704	8,250,000	5,650,000	710,171	21,693,890	0	0	21,693,890	
1989	9,921,847	21,693,890	8,250,000	5,650,000	614,090	17,101,646	0	0	17,101,646	
1990	9,639,803	17,101,646	8,250,000	5,650,000	498,107	12,343,342	0	0	12,343,342	
1991	12,170,021	12,343,342	8,250,000	5,650,000	412,511	10,200,852	0	0	10,200,852	
1992	10,895,580	10,200,852	8,250,000	5,650,000	344,397	6,852,035	0	0	6,852,035	
1993	18,160,118	6,852,035	8,250,000	5,650,000	351,343	10,760,810	0	0	10,760,810	
1994	11,125,503	10,760,810	8,250,000	5,650,000	360,935	7,625,377	0	0	7,625,377	
1995	20,047,166	7,625,377	8,250,000	5,650,000	393,413	13,379,130	0	0	13,379,130	
1996	14,502,293	13,379,1								

Upper Basin Yield Study - May 1, 2006, Draft

Study No. 2: CRSS Natural Flows, CRSP Active plus All Other UB Live Storage, Constant Upper Basin Use

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	Variables
1906	18,550,021	29,530,030	8,250,000	5,750,000	749,290	33,330,761	3,800,731	0	29,530,030	Storage 30,167,576 af
1907	21,201,694	29,530,030	8,250,000	5,750,000	749,290	35,982,434	6,452,404	0	29,530,030	Sedimentation Rate (Active) 24,292 af/yr
1908	12,218,817	29,530,030	8,250,000	5,750,000	719,512	27,029,335	0	0	27,029,335	Bank Storage 4%
1909	22,356,301	27,029,335	8,250,000	5,750,000	719,512	34,666,124	5,136,093	0	29,530,030	Adjusted Storage (2060) 29,530,030 af
1910	14,850,616	29,530,030	8,250,000	5,750,000	749,290	29,431,356	0	0	29,431,356	UB Demand Level 5,750,000 af/yr
1911	15,499,729	29,431,356	8,250,000	5,750,000	749,290	30,181,795	651,765	0	29,530,030	LB Delivery 8,250,000 af/yr
1912	18,629,410	29,530,030	8,250,000	5,750,000	749,290	33,404,150	3,874,120	0	29,530,030	
1913	14,536,373	29,530,030	8,250,000	5,750,000	747,907	29,318,497	0	0	29,318,497	
1914	21,354,814	29,318,497	8,250,000	5,750,000	747,907	35,925,404	6,395,374	0	29,530,030	
1915	13,623,277	29,530,030	8,250,000	5,750,000	736,720	28,416,588	0	0	28,416,588	Results
1916	20,142,892	28,416,588	8,250,000	5,750,000	736,720	33,822,760	4,292,730	0	29,530,030	Average CRSP Evap 494,700 af/yr
1917	22,942,804	29,530,030	8,250,000	5,750,000	749,290	37,723,544	8,193,514	0	29,530,030	Total Yield w/ CRSP evap 6,244,700 af/yr
1918	15,865,939	29,530,030	8,250,000	5,750,000	749,290	30,846,679	1,116,649	0	29,530,030	
1919	12,651,369	29,530,030	8,250,000	5,750,000	724,812	27,456,587	0	0	27,456,587	Shortage Years
1920	22,287,632	27,456,587	8,250,000	5,750,000	724,812	35,019,408	5,489,377	0	29,530,030	1961 0 af
1921	22,526,781	29,530,030	8,250,000	5,750,000	749,290	37,307,521	7,777,491	0	29,530,030	1963 0 af
1922	18,447,198	29,530,030	8,250,000	5,750,000	749,290	33,227,938	3,697,908	0	29,530,030	1964 3,155,272 af
1923	19,024,046	29,530,030	8,250,000	5,750,000	749,290	33,804,786	4,274,756	0	29,530,030	1967 373,567 af
1924	13,877,798	29,530,030	8,250,000	5,750,000	739,838	28,667,990	0	0	28,667,990	1968 392,944 af
1925	14,430,701	28,667,990	8,250,000	5,750,000	727,939	28,370,752	0	0	28,370,752	1977 4,327,291 af
1926	15,213,731	28,370,752	8,250,000	5,750,000	732,700	28,851,783	0	0	28,851,783	
1927	19,539,212	28,851,783	8,250,000	5,750,000	744,598	33,646,397	4,116,367	0	29,530,030	NM allocation(w/o evap) 641,250 af/yr
1928	16,954,334	29,530,030	8,250,000	5,750,000	749,290	31,735,074	2,205,044	0	29,530,030	
1929	21,829,585	29,530,030	8,250,000	5,750,000	749,290	36,610,325	7,080,295	0	29,530,030	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.
1930	14,621,041	29,530,030	8,250,000	5,750,000	748,944	29,402,127	0	0	29,402,127	
1931	8,474,134	29,402,127	8,250,000	5,750,000	672,949	23,203,312	0	0	23,203,312	
1932	17,422,187	23,203,312	8,250,000	5,750,000	633,136	25,992,363	0	0	25,992,363	
1933	12,183,500	25,992,363	8,250,000	5,750,000	639,745	23,536,119	0	0	23,536,119	
1934	6,178,192	23,536,119	8,250,000	5,750,000	508,432	15,205,879	0	0	15,205,879	Total Upper Basin depletion, inc. CRSP evap:
1935	12,630,349	15,205,879	8,250,000	5,750,000	385,811	13,450,417	0	0	13,450,417	1953-1977 6,013,354 af/yr
1936	14,648,873	13,450,417	8,250,000	5,750,000	369,976	13,729,314	0	0	13,729,314	1931-1977 6,115,655 af/yr
1937	14,306,056	13,729,314	8,250,000	5,750,000	375,061	13,660,309	0	0	13,660,309	1906-2000 6,244,700 af/yr
1938	18,148,319	13,660,309	8,250,000	5,750,000	422,895	17,385,733	0	0	17,385,733	
1939	11,164,059	17,385,733	8,250,000	5,750,000	431,062	14,118,730	0	0	14,118,730	
1940	9,931,657	14,118,730	8,250,000	5,750,000	338,359	9,712,027	0	0	9,712,027	
1941	20,116,678	9,712,027	8,250,000	5,750,000	357,615	15,471,091	0	0	15,471,091	
1942	17,225,136	15,471,091	8,250,000	5,750,000	465,757	18,230,470	0	0	18,230,470	
1943	13,731,401	18,230,470	8,250,000	5,750,000	493,018	17,468,853	0	0	17,468,853	
1944	15,369,422	17,468,853	8,250,000	5,750,000	496,874	18,341,401	0	0	18,341,401	
1945	14,140,528	18,341,401	8,250,000	5,750,000	505,649	17,976,280	0	0	17,976,280	
1946	11,095,453	17,976,280	8,250,000	5,750,000	461,845	14,609,888	0	0	14,609,888	
1947	16,439,486	14,609,888	8,250,000	5,750,000	447,280	16,602,094	0	0	16,602,094	
1948	15,139,294	16,602,094	8,250,000	5,750,000	482,617	17,258,770	0	0	17,258,770	
1949	16,933,584	17,258,770	8,250,000	5,750,000	523,142	19,669,212	0	0	19,669,212	
1950	13,140,416	19,669,212	8,250,000	5,750,000	538,184	18,271,444	0	0	18,271,444	
1951	12,505,894	18,271,444	8,250,000	5,750,000	498,610	16,278,728	0	0	16,278,728	
1952	20,805,422	16,278,728	8,250,000	5,750,000	553,916	22,530,234	0	0	22,530,234	
1953	11,165,419	22,530,234	8,250,000	5,750,000	591,444	19,104,209	0	0	19,104,209	
1954	8,496,102	19,104,209	8,250,000	5,750,000	477,239	13,123,072	0	0	13,123,072	
1955	9,413,908	13,123,072	8,250,000	5,750,000	344,374	8,192,606	0	0	8,192,606	
1956	11,428,874	8,192,606	8,250,000	5,750,000	250,672	5,368,807	0	0	5,368,807	
1957	21,500,963	5,368,807	8,250,000	5,750,000	307,356	12,562,415	0	0	12,562,415	
1958	15,862,511	12,562,415	8,250,000	5,750,000	416,995	14,007,931	0	0	14,007,931	
1959	9,598,169	14,007,931	8,250,000	5,750,000	378,116	9,227,984	0	0	9,227,984	
1960	11,524,160	9,227,984	8,250,000	5,750,000	287,036	6,465,108	0	0	6,465,108	
1961	10,010,259	6,465,108	8,250,000	5,750,000	203,238	2,272,129	0	0	2,272,129	
1962	17,377,609	2,272,129	8,250,000	5,750,000	193,208	5,456,530	0	0	5,456,530	
1963	8,840,900	5,456,530	8,250,000	5,750,000	183,412	114,018	0	0	114,018	
1964	10,863,586	114,018	8,250,000	5,750,000	132,876	-3,165,272	3,155,272	0	0	
1965	19,875,027	0	8,250,000	5,750,000	204,453	5,670,574	0	0	5,670,574	
1966	10,679,844	5,670,574	8,250,000	5,750,000	233,196	2,117,222	0	0	2,117,222	
1967	11,670,830	2,117,222	8,250,000	5,750,000	161,618	-373,567	373,567	0	0	
1968	13,739,932	0	8,250,000	5,750,000	132,876	-392,944	392,944	0	0	
1969	15,272,159	0	8,250,000	5,750,000	148,060	1,124,089	0	0	1,124,089	
1970	15,344,136	1,124,089	8,250,000	5,750,000	178,936	2,289,299	0	0	2,289,299	
1971	15,290,433	2,289,299	8,250,000	5,750,000	209,281	3,370,451	0	0	3,370,451	
1972	12,959,652	3,370,451	8,250,000	5,750,000	209,667	2,120,436	0	0	2,120,436	
1973	18,397,816	2,120,436	8,250,000	5,750,000	248,115	6,270,137	0	0	6,270,137	
1974	13,089,042	6,270,137	8,250,000	5,750,000	287,206	5,071,973	0	0	5,071,973	
1975	16,825,996	5,071,973	8,250,000	5,750,000	306,082	7,591,888	0	0	7,591,888	
1976	11,140,311	7,591,888	8,250,000	5,750,000	300,619	4,431,580	0	0	4,431,580	
1977	5,438,897	4,431,580	8,250,000	5,750,000	197,768	-4,327,291	4,327,291	0	0	
1978	15,183,722	0	8,250,000	5,750,000	146,976	1,036,746	0	0	1,036,746	
1979	17,671,870	1,036,746	8,250,000	5,750,000	205,315	4,503,300	0	0	4,503,300	
1980	17,765,183	4,503,300	8,250,000	5,750,000	293,852	7,974,631	0	0	7,974,631	
1981	9,015,200	7,974,631	8,250,000	5,750,000	274,160	2,715,671	0	0	2,715,671	
1982	17,489,400	2,715,671	8,250,000	5,750,000	251,571	5,953,500	0	0	5,953,500	
1983	24,361,989	5,953,500	8,250,000	5,750,000	417,582	15,897,927	0	0	15,897,927	
1984	25,359,376	15,897,927	8,250,000	5,750,000	645,721	26,611,583	0	0	26,611,583	
1985	21,246,109	26,611,583	8,250,000	5,750,000	749,290	33,108,401	3,578,371	0	29,530,030	
1986	29,013,446	29,530,030	8,250,000	5,750,000	749,290	37,794,186	8,264,156	0	29,530,030	
1987	15,640,478	29,530,030	8,250,000	5,750,000	749,290	30,421,219	891,188	0	29,530,030	
1988	11,456,357	29,530,030	8,250,000	5,750,000	710,171	26,276,216	0	0	26,276,216	
1989	9,921,847	26,276,216	8,250,000	5,750,000	614,090	21,583,973	0	0	21,583,973	
1990	9,639,803	21,583,973	8,250,000	5,750,000	498,107	16,725,669	0	0	16,725,669	
1991	12,170,021	16,725,669	8,250,000	5,750,000	412,511	14,483,179	0	0	14,483,179	
1992	10,895,580	14,483,179	8,250,000	5,750,000	344,397	11,034,361	0	0	11,034,361	
1993	18,160,118	11,034,361	8,250,000	5,750,000	351,343	14,843,136	0	0	14,843,136	
1994	11,125,503	14,843,136	8,250,000	5,750,000	360,935	11,607,703	0	0	11,607,703	
1995	20,047,166	11,607,703	8,250,000	5,750,000	393,413	17,261,457	0	0	17,261,457	
1996	14,502,293	17,26								

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Study No. 3: CRSS Natural Flows, CRSP Active plus All Other UB Live Storage (assumed same percent full), Constant Upper Basin Use

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin		Variables	
										Year-end Storage (equals)	CRSP Year-end Storage		
1906	18,550,021	29,530,030	24,847,704	8,250,000	5,750,000	749,290	33,330,761	3,800,731	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	17,201,694	29,530,030	24,847,704	8,250,000	5,750,000	749,290	35,982,434	6,452,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,750,000	723,152	27,025,695	0	0	27,025,695	22,740,460	Bank Storage	4%
1909	22,356,301	27,025,695	22,740,460	8,250,000	5,750,000	723,152	34,658,844	5,128,813	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,750,000	748,271	28,432,375	0	0	28,432,375	24,765,533	UB Demand Level	5,750,000 af/yr
1911	15,499,729	29,432,375	24,765,533	8,250,000	5,750,000	748,271	30,183,833	853,803	0	29,530,030	24,847,704	LB Delivery	8,250,000 af/yr
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,750,000	749,290	33,404,150	3,874,120	0	29,530,030	24,847,704		
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,750,000	747,091	29,319,312	0	0	29,319,312	24,670,398		
1914	21,354,814	29,319,312	24,670,398	8,250,000	5,750,000	747,091	35,927,036	6,397,005	0	29,530,030	24,847,704		
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,750,000	737,659	28,415,648	0	0	28,415,648	23,910,020		
1916	20,142,892	28,415,648	23,910,020	8,250,000	5,750,000	737,659	33,820,881	4,290,850	0	29,530,030	24,847,704	Average CRSP Evap	495,155 af/yr
1917	22,942,804	29,530,030	24,847,704	8,250,000	5,750,000	749,290	37,723,544	8,193,514	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,245,155 af/yr
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,750,000	749,290	30,646,679	1,116,649	0	29,530,030	24,847,704		
1919	12,651,369	29,530,030	24,847,704	8,250,000	5,750,000	727,620	27,453,779	0	0	27,453,779	23,100,666		
1920	22,287,632	27,453,779	23,100,666	8,250,000	5,750,000	727,620	35,013,791	5,483,761	0	29,530,030	24,847,704		
1921	22,526,781	29,530,030	24,847,704	8,250,000	5,750,000	749,290	37,307,521	7,777,491	0	29,530,030	24,847,704		
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,750,000	749,290	33,227,938	3,697,908	0	29,530,030	24,847,704		
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,750,000	749,290	33,804,786	4,274,756	0	29,530,030	24,847,704		
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,750,000	740,288	28,667,540	0	0	28,667,540	24,121,971		
1925	14,430,701	28,667,540	24,121,971	8,250,000	5,750,000	728,182	28,370,059	0	0	28,370,059	23,871,660		
1926	15,213,731	28,370,059	23,871,660	8,250,000	5,750,000	730,124	28,853,666	0	0	28,853,666	24,278,585		
1927	19,539,212	28,853,666	24,278,585	8,250,000	5,750,000	742,231	33,850,647	4,120,617	0	29,530,030	24,847,704		
1928	16,954,334	29,530,030	24,847,704	8,250,000	5,750,000	749,290	31,735,074	2,205,044	0	29,530,030	24,847,704		
1929	21,829,585	29,530,030	24,847,704	8,250,000	5,750,000	749,290	36,610,325	7,080,295	0	29,530,030	24,847,704		
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,750,000	747,965	29,403,106	0	0	29,403,106	24,740,903		
1931	8,474,134	29,403,106	24,740,903	8,250,000	5,750,000	681,850	23,195,390	0	0	23,195,390	19,517,493		
1932	17,422,187	23,195,390	19,517,493	8,250,000	5,750,000	646,035	25,971,542	0	0	25,971,542	21,853,455		
1933	12,183,500	25,971,542	21,853,455	8,250,000	5,750,000	649,274	23,505,767	0	0	23,505,767	19,778,657		
1934	6,178,192	23,505,767	19,778,657	8,250,000	5,750,000	536,305	15,147,655	0	0	15,147,655	12,745,820		
1935	12,630,349	15,147,655	12,745,820	8,250,000	5,750,000	430,284	13,347,719	0	0	13,347,719	11,231,285		
1936	14,648,873	13,347,719	11,231,285	8,250,000	5,750,000	413,950	13,582,642	0	0	13,582,642	11,428,958		
1937	14,306,056	13,582,642	11,428,958	8,250,000	5,750,000	415,262	13,473,436	0	0	13,473,436	11,337,068		
1938	18,148,319	13,473,436	11,337,068	8,250,000	5,750,000	452,694	17,169,061	0	0	17,169,061	14,448,709		
1939	11,164,059	17,169,061	14,448,709	8,250,000	5,750,000	456,898	13,876,222	0	0	13,876,222	11,675,987		
1940	9,931,657	13,876,222	11,675,987	8,250,000	5,750,000	376,143	9,431,736	0	0	9,431,736	7,936,226		
1941	20,116,678	9,431,736	7,936,226	8,250,000	5,750,000	389,530	15,158,884	0	0	15,158,884	12,755,268		
1942	17,225,136	15,158,884	12,755,268	8,250,000	5,750,000	477,977	17,906,043	0	0	17,906,043	15,066,834		
1943	13,731,401	17,906,043	15,066,834	8,250,000	5,750,000	498,642	17,138,802	0	0	17,138,802	14,421,248		
1944	15,369,422	17,138,802	14,421,248	8,250,000	5,750,000	499,711	18,008,513	0	0	18,008,513	15,153,056		
1945	14,140,528	18,008,513	15,153,056	8,250,000	5,750,000	504,984	17,644,057	0	0	17,644,057	14,846,388		
1946	11,095,453	17,644,057	14,846,388	8,250,000	5,750,000	466,002	14,273,508	0	0	14,273,508	12,010,279		
1947	16,439,486	14,273,508	12,010,279	8,250,000	5,750,000	451,571	16,261,423	0	0	16,261,423	13,682,987		
1948	15,139,294	16,261,423	13,682,987	8,250,000	5,750,000	479,209	16,921,508	0	0	16,921,508	14,238,408		
1949	16,933,584	16,921,508	14,238,408	8,250,000	5,750,000	511,379	19,343,713	0	0	19,343,713	16,276,545		
1950	13,140,416	19,343,713	16,276,545	8,250,000	5,750,000	522,237	17,961,892	0	0	17,961,892	15,113,827		
1951	12,505,894	17,961,892	15,113,827	8,250,000	5,750,000	487,137	15,980,649	0	0	15,980,649	13,446,733		
1952	20,805,422	15,980,649	13,446,733	8,250,000	5,750,000	531,935	22,254,136	0	0	22,254,136	18,725,486		
1953	11,165,419	22,254,136	18,725,486	8,250,000	5,750,000	561,962	18,857,593	0	0	18,857,593	15,867,504		
1954	8,496,102	18,857,593	15,867,504	8,250,000	5,750,000	464,222	12,889,472	0	0	12,889,472	10,845,698		
1955	9,413,908	12,889,472	10,845,698	8,250,000	5,750,000	350,410	7,952,970	0	0	7,952,970	6,691,935		
1956	11,426,874	7,952,970	6,691,935	8,250,000	5,750,000	269,222	5,110,622	0	0	5,110,622	4,300,274		
1957	21,500,963	5,110,622	4,300,274	8,250,000	5,750,000	314,561	12,297,024	0	0	12,297,024	10,347,190		
1958	15,862,511	12,297,024	10,347,190	8,250,000	5,750,000	404,780	13,754,755	0	0	13,754,755	11,573,780		
1959	9,598,169	13,754,755	11,573,780	8,250,000	5,750,000	370,189	8,982,735	0	0	8,982,735	7,558,419		
1960	11,524,160	8,982,735	7,558,419	8,250,000	5,750,000	291,500	6,215,395	0	0	6,215,395	5,229,873		
1961	10,010,259	6,215,395	5,229,873	8,250,000	5,750,000	218,693	2,006,961	0	0	2,006,961	1,688,734		
1962	17,377,609	2,006,961	1,688,734	8,250,000	5,750,000	207,853	5,176,717	0	0	5,176,717	4,355,889		
1963	8,840,900	5,176,717	4,355,889	8,250,000	5,750,000	186,906	-169,288	0	169,288	0	0		
1964	10,863,526	0	0	8,250,000	5,750,000	132,876	-3,269,290	0	3,269,290	0	0		
1965	19,875,027	0	0	8,250,000	5,750,000	192,188	5,682,839	0	0	5,682,839	4,781,759		
1966	10,679,844	5,682,839	4,781,759	8,250,000	5,750,000	214,608	2,148,075	0	0	2,148,075	1,807,473		
1967	11,670,830	2,148,075	1,807,473	8,250,000	5,750,000	155,296	-336,391	0	336,391	0	0		
1968	13,739,832	0	0	8,250,000	5,750,000	132,876	-392,944	0	392,944	0	0		
1969	15,272,159	0	0	8,250,000	5,750,000	144,644	1,127,515	0	0	1,127,515	948,735		
1970	15,344,136	1,127,515	948,735	8,250,000	5,750,000	168,680	2,302,971	0	0	2,302,971	1,937,808		
1971	15,290,433	2,302,971	1,937,808	8,250,000	5,750,000	192,409	3,400,995	0	0	3,400,995	2,861,728		
1972	12,959,652	3,400,995	2,861,728	8,250,000	5,7								

Upper Basin Yield Study - May 1, 2006, Draft

Study No. 4: Flows Adjusted for MBC with SCS Precip., CRSP Active plus All Other UB Live Storage (assumed same percent full), Constant Upper Basin Use

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage	Variables
1906	18,550,021	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,290,761	3,760,731	0	29,530,030	24,847,704	Storage
1907	21,201,694	29,530,030	24,847,704	8,250,000	5,790,000	749,290	35,942,434	6,412,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,790,000	722,739	26,986,108	0	0	26,986,108	22,707,150	Bank Storage
1909	22,356,301	26,986,108	22,707,150	8,250,000	5,790,000	722,739	34,579,670	5,049,640	0	29,530,030	24,847,704	Adjusted Storage (2060)
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,790,000	747,858	29,392,789	0	0	29,392,789	24,732,223	UB Demand Level
1911	15,499,729	29,392,789	24,732,223	8,250,000	5,790,000	747,858	30,104,660	574,629	0	29,530,030	24,847,704	LB Delivery
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,364,150	3,834,120	0	29,530,030	24,847,704	
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,790,000	746,678	29,279,726	0	0	29,279,726	24,637,088	
1914	21,354,814	29,279,726	24,637,088	8,250,000	5,790,000	746,678	35,847,862	6,317,832	0	29,530,030	24,847,704	
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,790,000	737,246	28,376,061	0	0	28,376,061	23,876,710	
1916	20,142,892	28,376,061	23,876,710	8,250,000	5,790,000	737,246	33,741,707	4,211,677	0	29,530,030	24,847,704	Results
1917	22,942,804	29,530,030	24,847,704	8,250,000	5,790,000	749,290	37,683,544	8,153,514	0	29,530,030	24,847,704	Average CRSP Evap
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,790,000	749,290	30,606,679	1,076,649	0	29,530,030	24,847,704	Total Yield w/ CRSP evap
1919	12,651,369	29,530,030	24,847,704	8,250,000	5,790,000	727,207	27,414,192	0	0	27,414,192	23,067,356	Shortage Years
1920	22,877,632	27,414,192	23,067,356	8,250,000	5,790,000	727,207	34,934,617	5,404,587	0	29,530,030	24,847,704	1961
1921	22,526,781	29,530,030	24,847,704	8,250,000	5,790,000	749,290	37,287,521	7,737,491	0	29,530,030	24,847,704	1963
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,187,938	3,657,908	0	29,530,030	24,847,704	1964
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,764,786	4,234,756	0	29,530,030	24,847,704	1967
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,790,000	739,875	28,627,953	0	0	28,627,953	24,088,662	1968
1925	14,430,701	28,627,953	24,088,662	8,250,000	5,790,000	726,951	28,291,704	0	0	28,291,704	23,805,728	1977
1926	15,213,731	28,291,704	23,805,728	8,250,000	5,790,000	728,092	28,737,342	0	0	28,737,342	24,180,706	
1927	19,539,212	28,737,342	24,180,706	8,250,000	5,790,000	741,017	33,495,537	3,965,507	0	29,530,030	24,847,704	NM allocation(w/o evap)
1928	16,954,334	28,530,030	24,847,704	8,250,000	5,790,000	749,290	31,695,074	2,165,044	0	29,530,030	24,847,704	
1929	21,829,585	29,530,030	24,847,704	8,250,000	5,790,000	749,290	36,570,325	7,040,295	0	29,530,030	24,847,704	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,790,000	747,858	29,363,519	0	0	29,363,519	24,707,595	
1931	8,474,134	29,363,519	24,707,595	8,250,000	5,790,000	680,619	23,117,034	0	0	23,117,034	19,451,562	
1932	17,422,187	23,117,034	19,451,562	8,250,000	5,790,000	644,003	25,855,218	0	0	25,855,218	21,755,575	
1933	12,183,500	25,855,218	21,755,575	8,250,000	5,790,000	646,458	23,352,260	0	0	23,352,260	19,649,490	
1934	6,178,192	23,352,260	19,649,490	8,250,000	5,790,000	532,720	14,957,731	0	0	14,957,731	12,586,011	
1935	12,630,349	14,957,731	12,586,011	8,250,000	5,790,000	425,948	13,122,133	0	0	13,122,133	11,041,468	Total Upper Basin depletion, inc. CRSP evap:
1936	14,648,873	13,122,133	11,041,468	8,250,000	5,790,000	408,877	13,322,129	0	0	13,322,129	11,209,752	1953-1977
1937	14,306,056	13,322,129	11,209,752	8,250,000	5,790,000	409,467	13,178,718	0	0	13,178,718	11,089,080	1931-1977
1938	18,148,319	13,178,718	11,089,080	8,250,000	5,790,000	445,192	16,840,844	0	0	16,840,844	14,170,535	1906-2000
1939	11,164,059	16,840,844	14,170,535	8,250,000	5,790,000	449,704	13,515,199	0	0	13,515,199	11,372,209	
1940	9,931,657	13,515,199	11,372,209	8,250,000	5,790,000	368,272	9,038,585	0	0	9,038,585	7,605,413	
1941	20,116,678	9,038,585	7,605,413	8,250,000	5,790,000	380,995	14,734,268	0	0	14,734,268	12,397,980	Flow Adjustments:
1942	17,225,136	14,734,268	12,397,980	8,250,000	5,790,000	468,792	17,450,612	0	0	17,450,612	14,683,616	1971
1943	13,731,401	17,450,612	14,683,616	8,250,000	5,790,000	488,820	16,653,193	0	0	16,653,193	14,012,637	1972
1944	15,369,422	16,653,193	14,012,637	8,250,000	5,790,000	489,266	17,493,349	0	0	17,493,349	14,719,577	1973
1945	14,140,528	17,493,349	14,719,577	8,250,000	5,790,000	493,929	17,099,948	0	0	17,099,948	14,388,554	1974
1946	11,095,453	17,099,948	14,388,554	8,250,000	5,790,000	454,348	13,701,053	0	0	13,701,053	11,528,593	1975
1947	16,439,486	13,701,053	11,528,593	8,250,000	5,790,000	439,332	15,661,207	0	0	15,661,207	13,177,942	1976
1948	15,139,294	15,661,207	13,177,942	8,250,000	5,790,000	466,396	16,294,105	0	0	16,294,105	13,710,487	1977
1949	16,933,584	16,294,105	13,710,487	8,250,000	5,790,000	498,004	18,689,684	0	0	18,689,684	15,726,220	1978
1950	13,140,416	18,689,684	15,726,220	8,250,000	5,790,000	508,313	17,281,788	0	0	17,281,788	14,541,561	1979
1951	12,505,894	17,281,788	14,541,561	8,250,000	5,790,000	472,674	15,275,008	0	0	15,275,008	12,852,979	1980
1952	20,805,422	15,275,008	12,852,979	8,250,000	5,790,000	516,945	21,523,485	0	0	21,523,485	18,110,689	
1953	11,165,419	21,523,485	18,110,689	8,250,000	5,790,000	546,455	18,102,449	0	0	18,102,449	15,232,098	
1954	8,496,102	18,102,449	15,232,098	8,250,000	5,790,000	448,209	12,110,342	0	0	12,110,342	10,190,108	
1955	9,413,908	12,110,342	10,190,108	8,250,000	5,790,000	333,901	7,150,349	0	0	7,150,349	6,016,579	
1956	11,426,874	7,150,349	6,016,579	8,250,000	5,790,000	252,228	4,284,996	0	0	4,284,996	3,605,560	
1957	21,500,963	4,284,996	3,605,560	8,250,000	5,790,000	297,091	11,448,867	0	0	11,448,867	9,633,517	
1958	15,862,511	11,448,867	9,633,517	8,250,000	5,790,000	386,845	12,884,533	0	0	12,884,533	10,841,542	
1959	9,598,169	12,884,533	10,841,542	8,250,000	5,790,000	351,798	8,090,903	0	0	8,090,903	6,807,998	
1960	11,524,160	8,090,903	6,807,998	8,250,000	5,790,000	272,663	5,302,401	0	0	5,302,401	4,461,644	
1961	10,010,259	5,302,401	4,461,644	8,250,000	5,790,000	199,419	1,073,241	0	0	1,073,241	903,066	
1962	17,377,609	1,073,241	903,066	8,250,000	5,790,000	188,150	4,222,699	0	0	4,222,699	3,553,142	
1963	8,840,900	4,222,699	3,553,142	8,250,000	5,790,000	176,949	-1,153,349	0	1,153,349	0	0	
1964	10,863,586	0	0	8,250,000	5,790,000	132,876	-3,309,290	0	3,309,290	0	0	
1965	19,875,027	0	0	8,250,000	5,790,000	191,775	5,643,252	0	0	5,643,252	4,748,449	
1966	10,679,844	5,643,252	4,748,449	8,250,000	5,790,000	213,377	2,069,719	0	0	2,069,719	1,741,541	
1967	11,670,830	2,069,719	1,741,541	8,250,000	5,790,000	154,478	-453,929	0	453,929	0	0	
1968	13,739,932	0	0	8,250,000	5,790,000	132,876	-432,944	0	432,944	0	0	
1969	15,272,159	0	0	8,250,000	5,790,000	144,231	1,087,928	0	0	1,087,928	915,425	
1970	15,344,136	1,087,928	915,425	8,250,000	5,790,000	167,449	2,224,615	0	0	2,224,615	1,871,877	
1971	15,468,912	2,224,615	1,871,877	8,250,000	5,790,000	192,220	3,461,306	0	0	3,461,306	2,912,476	
1972	13,151,441	3,461,306	2,912,476	8,250,000	5,790,000	193,831	2,378,916	0	0	2,378,916	2,001,711	
1973	18,614,466	2,378,916	2,001,711	8,250,000	5,790,000	227,899	6,725,483	0	0	6,725,483	5,659,080	
1974	13,251,347</											

Upper Basin Yield Study - May 1, 2006, Draft

Study No. 5: Flows Adjusted for MBC with SCS Precip., CRSP Active plus All Other Upper Basin Live Storage (assumed same percent full), Variable Upper Basin Use

Y	CR Natural Flow at Lee Ferry (plus)	Percent of Average CR Flow	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Average Upper Basin Use	Factor after Tipton-Kalmach	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage	Variables	
															Storage	Evaporation
1906	18,550,021	1.214	29,530,030	24,847,704	8,250,000	5,790,000	1.107	6,409,121	749,290	32,671,640	3,141,609	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,634	1.387	29,530,030	24,847,704	8,250,000	5,790,000	1.194	6,911,455	749,290	34,820,979	5,290,949	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,292 af/yr
1908	12,218,817	0.800	29,530,030	24,847,704	8,250,000	5,790,000	0.900	5,209,736	728,733	27,560,378	0	0	27,560,378	23,190,363	Bank Storage	4%
1909	22,356,301	1.463	27,560,378	23,190,363	8,250,000	5,790,000	1.231	7,130,184	728,733	33,807,762	4,277,732	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	0.959	29,530,030	24,847,704	8,250,000	5,790,000	0.979	5,670,417	749,093	29,511,136	0	0	29,511,136	24,831,806	UB Demand Level	5,790,000 af/yr
1911	15,499,729	1.014	28,511,136	24,831,806	8,250,000	5,790,000	1.007	5,831,273	749,093	30,180,499	650,469	0	29,530,030	24,847,704	LB Delivery	8,250,000 af/yr
1912	18,623,410	1.219	29,530,030	24,847,704	8,250,000	5,790,000	1.109	6,423,024	749,290	32,731,126	3,201,096	0	29,530,030	24,847,704		
1913	14,536,373	0.951	29,530,030	24,847,704	8,250,000	5,790,000	0.976	5,648,775	748,137	29,419,492	0	0	29,419,492	24,754,693		
1914	21,354,814	1.397	29,419,492	24,754,693	8,250,000	5,790,000	1.199	6,940,462	748,137	34,835,708	5,305,677	0	29,530,030	24,847,704		
1915	13,623,277	0.891	29,530,030	24,847,704	8,250,000	5,790,000	0.946	5,475,798	740,492	28,687,018	0	0	28,687,018	24,138,361		
1916	20,142,892	1.318	28,687,018	24,138,361	8,250,000	5,790,000	1.159	6,710,875	740,492	33,128,543	3,598,513	0	29,530,030	24,847,704	Results:	
1917	22,942,804	1.501	29,530,030	24,847,704	8,250,000	5,790,000	1.251	7,241,291	749,290	36,232,253	6,702,222	0	29,530,030	24,847,704	Average CRSP Evap	543,799 af/yr
1918	15,865,939	1.038	29,530,030	24,847,704	8,250,000	5,790,000	1.019	5,900,648	749,290	30,496,031	966,001	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,333,799 af/yr
1919	12,651,369	0.828	29,530,030	24,847,704	8,250,000	5,790,000	0.814	5,291,679	732,354	27,907,366	0	0	27,907,366	23,482,332	Shortage Years	Shortage
1920	22,287,632	1.458	27,907,366	23,482,332	8,250,000	5,790,000	1.229	7,117,175	732,354	34,095,468	4,565,438	0	29,530,030	24,847,704	1961	0 af
1921	22,528,781	1.474	29,530,030	24,847,704	8,250,000	5,790,000	1.237	7,162,480	749,290	35,895,041	6,365,011	0	29,530,030	24,847,704	1963	0 af
1922	18,447,198	1.207	29,530,030	24,847,704	8,250,000	5,790,000	1.104	6,389,643	749,290	32,588,296	3,058,265	0	29,530,030	24,847,704	1964	0 af
1923	19,024,046	1.245	29,530,030	24,847,704	8,250,000	5,790,000	1.122	6,498,821	749,290	33,055,685	3,525,835	0	29,530,030	24,847,704	1967	0 af
1924	13,877,799	0.908	29,530,030	24,847,704	8,250,000	5,790,000	0.954	5,524,014	742,623	28,891,192	0	0	28,891,192	24,310,161	1968	0 af
1925	14,490,701	0.944	28,891,192	24,310,161	8,250,000	5,790,000	0.972	5,628,756	734,054	28,709,082	0	0	28,709,082	24,156,927	1970	0 af
1926	15,213,731	0.996	28,709,082	24,156,927	8,250,000	5,790,000	1.039	5,777,094	736,848	29,158,872	0	0	29,158,872	24,535,397		
1927	19,539,212	1.279	29,158,872	24,535,397	8,250,000	5,790,000	1.198	6,596,514	745,416	33,106,153	3,576,123	0	29,530,030	24,847,704	NM allocation (w/ evap)	645,750 af/yr
1928	16,954,334	1.109	29,530,030	24,847,704	8,250,000	5,790,000	1.055	6,106,834	749,290	31,378,240	1,848,210	0	29,530,030	24,847,704		
1929	21,829,585	1.428	29,530,030	24,847,704	8,250,000	5,790,000	1.214	7,030,403	749,290	35,329,922	5,799,892	0	29,530,030	24,847,704	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1930	14,621,041	0.957	29,530,030	24,847,704	8,250,000	5,790,000	0.978	5,664,814	748,845	29,487,412	0	0	29,487,412	24,811,843		
1931	8,474,134	0.555	29,487,412	24,811,843	8,250,000	5,790,000	0.777	4,500,342	696,500	24,514,703	0	0	24,514,703	20,627,615		
1932	17,422,187	1.140	24,514,703	20,627,615	8,250,000	5,790,000	1.079	6,195,464	668,898	26,822,738	0	0	26,822,738	22,569,684		
1933	12,183,500	0.797	26,822,738	22,569,684	8,250,000	5,790,000	0.899	5,203,046	672,508	24,880,683	0	0	24,880,683	20,935,565		
1934	6,178,192	0.404	24,880,683	20,935,565	8,250,000	5,790,000	0.702	4,065,398	582,109	18,161,368	0	0	18,161,368	15,281,674		
1935	12,630,349	0.826	18,161,368	15,281,674	8,250,000	5,790,000	0.913	5,287,697	497,318	16,756,701	0	0	16,756,701	14,099,733	Total Upper Basin depletion, inc. CRSP evap:	
1936	14,648,873	0.959	16,756,701	14,099,733	8,250,000	5,790,000	0.979	5,670,087	485,200	17,000,288	0	0	17,000,288	14,304,696	1953-1977	5,722,111 af/yr
1937	14,306,056	0.936	17,000,288	14,304,696	8,250,000	5,790,000	0.968	5,605,143	487,262	16,963,838	0	0	16,963,838	14,274,026	1931-1977	5,915,436 af/yr
1938	18,148,319	1.188	16,963,838	14,274,026	8,250,000	5,790,000	1.094	6,333,023	518,778	20,010,356	0	0	20,010,356	16,637,484	1906-2000	6,333,799 af/yr
1939	11,164,059	0.731	20,010,356	16,637,484	8,250,000	5,790,000	0.885	5,009,923	523,239	17,391,253	0	0	17,391,253	14,633,623		
1940	9,931,657	0.650	17,391,253	14,633,623	8,250,000	5,790,000	0.825	4,776,456	458,814	13,637,640	0	0	13,637,640	11,643,523		
1941	20,168,678	1.316	13,637,640	11,643,523	8,250,000	5,790,000	1.158	6,705,909	470,676	18,527,733	0	0	18,527,733	15,589,947	Flow Adjustments:	
1942	17,225,136	1.127	18,527,733	15,589,947	8,250,000	5,790,000	1.064	6,158,135	543,357	20,801,277	0	0	20,801,277	17,503,079	1971	178,479 af
1943	13,731,401	0.889	20,801,277	17,503,079	8,250,000	5,790,000	0.949	4,986,281	561,076	20,228,422	0	0	20,228,422	17,018,448	1972	191,789 af
1944	15,353,422	1.006	20,228,422	17,018,448	8,250,000	5,790,000	1.003	5,806,588	562,892	20,975,365	0	0	20,975,365	17,648,449	1973	216,650 af
1945	14,140,528	0.925	20,975,365	17,648,449	8,250,000	5,790,000	0.963	5,573,788	568,095	20,724,011	0	0	20,724,011	17,437,981	1974	162,305 af
1946	11,095,453	0.726	20,724,011	17,437,981	8,250,000	5,790,000	0.863	4,996,926	537,408	18,035,131	0	0	18,035,131	15,175,453	1975	226,629 af
1947	16,439,486	1.076	18,035,131	15,175,453	8,250,000	5,790,000	1.038	6,009,301	526,603	19,686,713	0	0	19,686,713	16,566,841	1976	147,130 af
1948	15,139,294	0.991	19,686,713	16,566,841	8,250,000	5,790,000	0.995	5,762,992	549,877	20,265,138	0	0	20,265,138	17,051,867	1977	94,739 af
1949	16,933,584	1.108	20,265,138	17,051,867	8,250,000	5,790,000	1.054	6,102,903	576,808	22,269,011	0	0	22,269,011	18,738,002	1978	125,827 af
1950	13,140,416	0.860	22,269,011	18,738,002	8,250,000	5,790,000	0.930	5,384,324	586,447	21,188,656	0	0	21,188,656	17,826,950	1979	126,757 af
1951	12,505,894	0.818	21,188,656	17,826,950	8,250,000	5,790,000	0.909	5,264,120	558,816	19,621,614	0	0	19,621,614	16,510,381	1980	134,713 af
1952	20,805,422	1.361	19,621,614	16,510,381	8,250,000	5,790,000	1.181	6,836,385	595,931	24,744,720	0	0	24,744,720	20,821,159		
1953	11,165,419	0.731	24,744,720	20,821,159	8,250,000	5,790,000	0.875	5,010,180	621,056	22,028,903	0	0	22,028,903	18,535,967		
1954	8,496,102	0.556	22,028,903	18,535,967	8,250,000	5,790,000	0.768	4,504,504	542,602	17,227,899	0	0	17,227,899	14,496,217		
1955	9,413,908	0.616	17,227,899	14,496,217	8,250,000	5,790,000	0.808	4,678,373	451,105	13,262,329	0	0	13,262,329	11,159,434		
1956	11,426,874	0.748	13,262,329	11,159,434	8,250,000	5,790,000	0.874	5,059,710	388,035	10,993,457	0	0	10,993,457	9,250,318		
1957	21,500,963	1.407	10,993,457	9,250,318	8,250,000	5,790,000	1.203	6,968,149	423,508	16,852,762	0	0	16,852,762	14,180,563		
1958	15,862,911	1.038	16,852,762	14,180,563	8,250,000											

Upper Basin Yield Study - May 1, 2006, Draft

Study No. 6: Flows Adjusted for MBC with SCS Precip., CRSP Active plus Other UB Live Storage (assumed same percent full), Constant Demand less CRSS Physical Shortage

Year	CR Natural Flow at Lee Ferry (plus)	Total Carry-Over Storage (plus)	CRSP Carry-Over Storage	Lower Basin Delivery (minus)	Upper Basin Demand (minus)	Physical Shortage (plus)	Upper Basin Evap (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year-end Storage	Variables	
														Storage	Storage
1906	18,550,021	29,530,030	24,847,704	8,250,000	5,790,000	10,460	5,779,540	749,290	33,301,221	3,771,191	0	29,530,030	24,847,704	Storage	30,167,576 af
1907	21,201,694	29,530,030	24,847,704	8,250,000	5,790,000	2,705	5,787,295	749,290	35,945,139	6,415,109	0	29,530,030	24,847,704	Sedimentation Rate (Active)	24,252 af/yr
1908	12,218,817	29,530,030	24,847,704	8,250,000	5,790,000	42,161	5,747,839	723,175	27,027,834	0	0	27,027,834	22,742,259	Bank Storage	4%
1909	22,356,301	27,027,834	22,742,259	8,250,000	5,790,000	3,995	5,786,005	723,175	34,624,955	5,094,925	0	29,530,030	24,847,704	Adjusted Storage (2060)	29,530,030 af
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,790,000	80,533	5,709,467	748,690	29,472,490	0	0	29,472,490	24,799,287	UB Demand Level	5,790,000 af/yr
1911	15,499,729	29,472,490	24,799,287	8,250,000	5,790,000	10,253	5,779,747	748,690	30,193,782	663,752	0	29,530,030	24,847,704	LB Delivery	8,250,000 af/yr
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,790,000	10,053	5,779,947	749,290	33,374,203	3,844,173	0	29,530,030	24,847,704		
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,790,000	18,830	5,771,170	746,872	29,298,361	0	0	29,298,361	24,652,769		
1914	21,354,614	29,298,361	24,652,769	8,250,000	5,790,000	4,438	5,785,562	746,872	35,870,741	6,340,711	0	29,530,030	24,847,704		
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,790,000	32,811	5,757,189	737,585	28,408,533	0	0	28,408,533	23,904,033	Results	
1916	20,142,892	28,408,533	23,904,033	8,250,000	5,790,000	2,413	5,787,587	737,585	33,776,253	4,248,223	0	29,530,030	24,847,704	Average CRSP Evap	515,059 af/yr
1917	22,942,804	29,530,030	24,847,704	8,250,000	5,790,000	7,025	5,782,975	749,290	37,690,569	8,160,539	0	29,530,030	24,847,704	Total Yield w/ CRSP evap	6,171,244 af/yr
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,790,000	28,187	5,761,813	749,290	30,634,866	1,104,836	0	29,530,030	24,847,704		
1919	12,651,369	29,530,030	24,847,704	8,250,000	5,790,000	239,034	5,550,966	729,676	27,650,757	0	0	27,650,757	23,266,411	Shortage Years	Shortage
1920	22,287,632	27,650,757	23,266,411	8,250,000	5,790,000	12,719	5,777,281	729,676	35,181,432	5,651,402	0	29,530,030	24,847,704	1981	0 af
1921	22,226,781	29,530,030	24,847,704	8,250,000	5,790,000	5,096	5,784,904	749,290	37,272,617	7,742,587	0	29,530,030	24,847,704	1963	0 af
1922	18,447,198	29,530,030	24,847,704	8,250,000	5,790,000	9,479	5,780,521	749,290	33,197,417	3,667,387	0	29,530,030	24,847,704	1964	0 af
1923	19,024,046	29,530,030	24,847,704	8,250,000	5,790,000	2,492	5,787,508	749,290	33,767,278	4,237,248	0	29,530,030	24,847,704	1967	0 af
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,790,000	70,862	5,719,138	740,607	28,698,083	0	0	28,698,083	24,147,704	1968	0 af
1925	14,330,701	28,698,083	24,147,672	8,250,000	5,790,000	73,448	5,716,552	729,158	28,433,074	0	0	28,433,074	23,824,683	1977	1,536,466 af
1926	15,213,731	28,433,074	23,824,683	8,250,000	5,790,000	81,349	5,708,651	731,853	28,956,301	0	0	28,956,301	24,264,948		
1927	19,539,212	28,956,301	24,264,948	8,250,000	5,790,000	8,124	5,781,876	743,302	33,720,335	4,190,305	0	29,530,030	24,847,704	NM allocation(w/o evap)	645,750 af/yr
1928	16,954,334	29,530,030	24,847,704	8,250,000	5,790,000	15,271	5,774,729	749,290	31,710,345	0	0	29,530,030	24,847,704		
1929	21,829,585	29,530,030	24,847,704	8,250,000	5,790,000	7,088	5,782,912	749,290	36,577,413	7,047,393	0	29,530,030	24,847,704		
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,790,000	20,438	5,769,562	747,763	29,363,746	0	0	29,530,030	24,847,704	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.	
1931	8,474,134	29,363,746	24,724,615	8,250,000	5,790,000	378,737	5,411,263	684,949	28,511,868	0	0	29,363,746	24,724,615	Total Upper Basin depletion, inc. CRSP evap:	
1932	17,422,187	23,511,668	19,783,622	8,250,000	5,790,000	11,712	5,778,288	652,277	26,253,290	0	0	23,511,668	19,783,622	1953-1977	5,852,469 af/yr
1933	12,183,500	28,253,290	22,090,529	8,250,000	5,790,000	146,176	5,645,824	656,192	23,686,775	0	0	28,253,290	22,090,529	1931-1977	5,998,351 af/yr
1934	6,178,182	23,886,775	20,099,251	8,250,000	5,790,000	1,244,551	5,454,449	663,948	16,712,800	0	0	23,886,775	20,099,251	1906-2000	6,171,244 af/yr
1935	12,630,349	16,712,800	14,062,877	8,250,000	5,790,000	168,844	5,621,356	684,949	15,007,944	0	0	16,712,800	14,062,877		
1936	14,646,873	15,007,944	12,628,262	8,250,000	5,790,000	29,202	5,760,789	684,949	15,007,944	0	0	15,007,944	12,628,262		
1937	10,306,056	15,197,883	12,788,083	8,250,000	5,790,000	106,533	5,683,467	448,318	15,121,154	0	0	15,197,883	12,788,083		
1938	18,148,319	15,121,154	12,723,521	8,250,000	5,790,000	307,789	5,482,211	486,451	18,755,707	0	0	15,121,154	12,723,521		
1939	11,164,059	18,755,707	15,781,774	8,250,000	5,790,000	513,385	5,276,615	418,608	11,681,547	0	0	18,755,707	15,781,774		
1940	9,931,657	15,695,114	13,206,473	8,250,000	5,790,000	28,624	5,761,376	435,890	17,350,959	0	0	15,695,114	13,206,473	Flow Adjustments:	
1941	20,116,678	11,681,547	9,629,303	8,250,000	5,790,000	16,223	5,773,777	523,017	20,029,301	0	0	11,681,547	9,629,303	1971	178,479 af
1942	17,225,136	17,350,959	14,599,765	8,250,000	5,790,000	18,824	5,771,176	542,286	19,197,240	0	0	17,350,959	14,599,765	1972	191,789 af
1943	13,731,401	20,029,301	16,853,425	8,250,000	5,790,000	30,542	5,759,458	542,138	20,015,066	0	0	20,029,301	16,853,425	1973	216,650 af
1944	15,369,422	19,197,240	16,153,297	8,250,000	5,790,000	18,385	5,771,615	546,214	19,587,768	0	0	19,197,240	16,153,297	1974	162,305 af
1945	14,140,528	20,015,066	16,841,447	8,250,000	5,790,000	78,791	5,711,209	506,557	16,215,453	0	0	20,015,066	16,841,447	1975	125,827 af
1946	11,095,453	19,587,768	16,481,900	8,250,000	5,790,000	13,115	5,776,885	491,411	18,136,643	0	0	19,587,768	16,481,900	1976	147,130 af
1947	16,439,486	16,215,453	13,644,308	8,250,000	5,790,000	65,312	5,724,688	518,209	18,783,039	0	0	16,215,453	13,644,308	1977	94,739 af
1948	15,139,294	18,136,643	15,260,869	8,250,000	5,790,000	13,567	5,778,433	549,562	21,140,628	0	0	18,136,643	15,260,869	1978	125,827 af
1949	16,933,584	18,783,039	15,804,772	8,250,000	5,790,000	102,741	5,687,259	560,007	19,783,778	0	0	18,783,039	15,804,772	1979	126,757 af
1950	13,140,416	21,140,628	17,788,538	8,250,000	5,790,000	80,512	5,708,488	525,193	17,804,991	0	0	21,140,628	17,788,538	1980	134,713 af
1951	12,505,894	19,783,778	16,646,832	8,250,000	5,790,000	1,807	5,788,193	598,229	24,002,991	0	0	19,783,778	16,646,832		
1952	20,805,422	17,804,991	14,881,805	8,250,000	5,790,000	92,306	5,697,694	598,631	20,622,085	0	0	17,804,991	14,881,805		
1953	11,165,419	24,002,991	20,197,040	8,250,000	5,790,000	635,894	5,154,006	506,830	15,207,350	0	0	24,002,991	20,197,040		
1954	8,496,102	20,622,085	17,352,216	8,250,000	5,790,000	305,879	5,484,121	401,040	10,486,097	0	0	20,622,085	17,352,216		
1955	9,413,908	15,207,350	12,795,050	8,250,000	5,790,000	210,513	5,578,487	323,314	7,760,170	0	0	15,207,350	12,795,050		
1956	11,428,874	10,486,097	8,529,706	8,250,000	5,790,000	98,720	5,691,280	369,903	14,949,950	0	0	10,486,097	8,529,706		
1957	21,500,963	7,760,170	6,529,483	8,250,000	5,790,000	98,575	5,691,425	460,191	16,410,845	0	0	7,760,170	6,529,706		
1958	15,862,511	14,949,950	13,808,717	8,250,000	5,790,000	256,189	5,533,811	427,293	11,797,910	0	0	14,949,950	13,808,717		
1959	9,598,169	16,410,845	13,808,717	8,250,000	5,790,000	375,552	5,414,448	353,123	9,304,499	0	0	16,410,845	13,808,717		
1960	11,524,160	11,797,910	9,227,216	8,250,000	5,790,000	544,095	5,245,905	287,717	5,531,136	0	0	11,797,910	9,227,216		
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Upper Basin Yield Study - May 1, 2006, Draft

Study No. 7: Flows Adjusted for MBC Method with SCS Precip., CRSP Live plus All Other UB Live Storage, Constant Upper Basin Use

CY	CR Natural Flow at Lee Ferry (plus)	Total Carry- Over Storage (plus)	CRSP Carry- Over Storage	Lower Basin Delivery (minus)	Upper Basin Use (minus)	Shared CRSP Evap (minus)	Net Available to Store (subtotal)	Spill to LC (minus)	Shortage (plus)	UC Basin Year-end Storage (equals)	CRSP Year- end Storage	Variables
1906	18,550,021	33,833,590	29,151,263	8,250,000	5,720,000	725,390	37,688,221	3,854,631	0	33,833,590	29,151,263	Storage
1907	21,201,694	33,833,590	29,151,263	8,250,000	5,720,000	725,390	40,339,894	6,506,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)
1908	12,218,817	33,833,590	29,151,263	8,250,000	5,720,000	699,302	31,383,105	0	0	31,383,105	27,039,907	Bank Storage
1909	22,356,301	31,383,105	27,039,907	8,250,000	5,720,000	699,302	39,070,104	5,236,514	0	33,833,590	29,151,263	Adjusted Storage (2060)
1910	14,650,616	33,833,590	29,151,263	8,250,000	5,720,000	724,918	33,789,288	0	0	33,789,288	29,113,092	UB Demand Level
1911	15,499,729	33,789,288	29,113,092	8,250,000	5,720,000	724,918	34,594,099	760,509	0	33,833,590	29,151,263	LB Delivery
1912	18,623,410	33,833,590	29,151,263	8,250,000	5,720,000	725,390	37,761,610	3,928,020	0	33,833,590	29,151,263	
1913	14,536,373	33,833,590	29,151,263	8,250,000	5,720,000	723,715	33,676,248	0	0	33,676,248	29,015,696	
1914	21,354,814	33,676,248	29,015,696	8,250,000	5,720,000	723,715	40,337,348	6,503,758	0	33,833,590	29,151,263	
1915	13,623,277	33,833,590	29,151,263	8,250,000	5,720,000	714,096	32,772,771	0	0	32,772,771	28,237,254	
1916	20,142,892	32,772,771	28,237,254	8,250,000	5,720,000	714,096	38,231,566	4,397,976	0	33,833,590	29,151,263	Results
1917	22,942,804	33,833,590	29,151,263	8,250,000	5,720,000	725,390	42,081,004	8,247,414	0	33,833,590	29,151,263	Average CRSP Evap
1918	15,865,939	33,833,590	29,151,263	8,250,000	5,720,000	725,390	35,004,139	1,170,549	0	33,833,590	29,151,263	Total Yield w/ CRSP evap
1919	12,651,369	33,833,590	29,151,263	8,250,000	5,720,000	703,858	31,811,100	0	0	31,811,100	27,408,672	
1920	22,287,632	31,811,100	27,408,672	8,250,000	5,720,000	703,858	39,424,874	5,591,284	0	33,833,590	29,151,263	Shortage Years
1921	22,526,781	33,833,590	29,151,263	8,250,000	5,720,000	725,390	41,864,981	7,831,391	0	33,833,590	29,151,263	1961
1922	18,447,198	33,833,590	29,151,263	8,250,000	5,720,000	725,390	37,585,398	3,751,808	0	33,833,590	29,151,263	1963
1923	19,024,046	33,833,590	29,151,263	8,250,000	5,720,000	725,390	38,162,246	4,328,656	0	33,833,590	29,151,263	1964
1924	13,877,798	33,833,590	29,151,263	8,250,000	5,720,000	716,777	33,024,611	0	0	33,024,611	28,454,241	1967
1925	14,430,701	33,024,611	28,454,241	8,250,000	5,720,000	705,558	32,779,753	0	0	32,779,753	28,243,270	1968
1926	15,213,731	32,779,753	28,243,270	8,250,000	5,720,000	708,648	33,314,836	0	0	33,314,836	28,704,301	1977
1927	19,539,212	33,314,836	28,704,301	8,250,000	5,720,000	719,867	38,164,181	4,330,591	0	33,833,590	29,151,263	NM allocation (w/o evap)
1928	16,954,334	33,833,590	29,151,263	8,250,000	5,720,000	725,390	36,092,534	2,258,944	0	33,833,590	29,151,263	
1929	21,829,585	33,833,590	29,151,263	8,250,000	5,720,000	725,390	40,967,785	7,134,195	0	33,833,590	29,151,263	Note: NM allocation is exclusive of its portion of CRSP evaporation. Navajo evaporation would be primarily charged against NM's allocation. Shared CRSP evaporation is already removed from UC demands.
1930	14,621,041	33,833,590	29,151,263	8,250,000	5,720,000	724,606	33,760,025	0	0	33,760,025	29,087,879	
1931	8,474,134	33,760,025	29,087,879	8,250,000	5,720,000	658,307	27,605,852	0	0	27,605,852	23,785,399	
1932	17,422,187	27,605,852	23,785,399	8,250,000	5,720,000	622,911	30,435,128	0	0	30,435,128	26,223,124	
1933	12,183,500	30,435,128	26,223,124	8,250,000	5,720,000	627,333	28,021,294	0	0	28,021,294	24,143,347	
1934	6,178,192	28,021,294	24,143,347	8,250,000	5,720,000	513,222	19,716,264	0	0	19,716,264	16,887,674	
1935	12,630,349	19,716,264	16,887,674	8,250,000	5,720,000	406,222	17,970,391	0	0	17,970,391	15,483,417	Total Upper Basin depletion, inc. CRSP evap:
1936	14,648,873	17,970,391	15,483,417	8,250,000	5,720,000	390,704	18,258,560	0	0	18,258,560	15,731,708	1953-1977
1937	14,306,056	18,258,560	15,731,706	8,250,000	5,720,000	393,164	18,201,452	0	0	18,201,452	15,682,501	1931-1977
1938	18,148,319	18,201,452	15,682,501	8,250,000	5,720,000	432,434	21,947,337	0	0	21,947,337	18,909,983	1906-2000
1939	11,164,059	21,947,337	18,909,983	8,250,000	5,720,000	437,780	18,703,617	0	0	18,703,617	16,115,170	
1940	9,931,657	18,703,617	16,115,170	8,250,000	5,720,000	356,461	14,308,812	0	0	14,308,812	12,328,575	
1941	20,116,678	14,308,812	12,328,575	8,250,000	5,720,000	371,160	20,084,330	0	0	20,084,330	17,304,802	Flow Adjustments:
1942	17,225,136	20,084,330	17,304,802	8,250,000	5,720,000	462,377	22,877,090	0	0	22,877,090	19,711,064	1971
1943	13,731,401	22,877,090	19,711,064	8,250,000	5,720,000	484,411	22,154,080	0	0	22,154,080	19,088,114	1972
1944	15,369,422	22,154,080	19,088,114	8,250,000	5,720,000	486,433	23,067,069	0	0	23,067,069	19,874,751	1973
1945	14,140,528	23,067,069	19,874,751	8,250,000	5,720,000	492,723	22,744,874	0	0	22,744,874	19,597,146	1974
1946	11,095,453	22,744,874	19,597,146	8,250,000	5,720,000	453,859	19,416,468	0	0	19,416,468	16,729,368	1975
1947	16,439,486	19,416,468	16,729,368	8,250,000	5,720,000	440,031	21,445,923	0	0	21,445,923	18,477,961	1976
1948	15,139,294	21,445,923	18,477,961	8,250,000	5,720,000	469,090	22,146,127	0	0	22,146,127	19,081,262	1977
1949	16,933,584	22,146,127	19,081,262	8,250,000	5,720,000	502,742	24,606,969	0	0	24,606,969	21,201,541	1978
1950	13,140,416	24,606,969	21,201,541	8,250,000	5,720,000	514,629	23,262,756	0	0	23,262,756	20,043,357	1979
1951	12,505,894	23,262,756	20,043,357	8,250,000	5,720,000	479,627	21,319,023	0	0	21,319,023	18,368,623	1980
1952	20,805,422	21,319,023	18,368,623	8,250,000	5,720,000	526,102	27,628,343	0	0	27,628,343	23,804,778	
1953	11,165,419	27,628,343	23,804,778	8,250,000	5,720,000	557,478	24,266,285	0	0	24,266,285	20,908,004	
1954	8,496,102	24,266,285	20,908,004	8,250,000	5,720,000	458,530	18,333,856	0	0	18,333,856	15,796,582	
1955	9,413,908	18,333,856	15,796,582	8,250,000	5,720,000	343,218	13,434,547	0	0	13,434,547	11,575,301	
1956	11,426,874	13,434,547	11,575,301	8,250,000	5,720,000	261,206	10,630,214	0	0	10,630,214	9,159,069	
1957	21,500,963	10,630,214	9,159,069	8,250,000	5,720,000	308,243	17,852,934	0	0	17,852,934	15,382,216	
1958	15,862,511	17,852,934	15,382,216	8,250,000	5,720,000	401,013	19,344,432	0	0	19,344,432	16,667,301	
1959	9,598,169	19,344,432	16,667,301	8,250,000	5,720,000	366,449	14,606,152	0	0	14,606,152	12,584,765	
1960	11,524,160	14,606,152	12,584,765	8,250,000	5,720,000	286,914	11,873,398	0	0	11,873,398	10,230,205	
1961	10,010,259	11,873,398	10,230,205	8,250,000	5,720,000	213,395	7,700,263	0	0	7,700,263	6,634,601	
1962	17,377,609	7,700,263	6,634,601	8,250,000	5,720,000	203,083	10,904,789	0	0	10,904,789	9,395,644	
1963	8,840,900	10,904,789	9,395,644	8,250,000	5,720,000	180,671	5,595,018	0	0	5,595,018	4,820,707	
1964	10,863,586	5,595,018	4,820,707	8,250,000	5,720,000	90,114	2,398,489	0	0	2,398,489	2,066,556	
1965	19,875,027	2,398,489	2,066,556	8,250,000	5,720,000	117,898	8,185,821	0	0	8,185,821	7,052,962	
1966	10,679,844	8,185,821	7,052,962	8,250,000	5,720,000	142,760	4,752,904	0	0	4,752,904	4,095,136	
1967	11,670,830	4,752,904	4,095,136	8,250,000	5,720,000	80,877	2,372,858	0	0	2,372,858	2,044,471	
1968	13,739,932	2,372,858	2,044,471	8,250,000	5,720,000	52,531	2,090,259	0	0	2,090,259	1,800,982	
1969	15,272,159	2,090,259	1,800,982	8,250,000	5,720,000	62,717	3,329,701	0	0	3,329,701	2,868,894	
1970	15,344,136	3,329,701	2,868,894	8,250,000	5,720,000	89,587	4,614,250	0	0	4,614,250	3,975,671	
1971	15,468,912	4,614,250	3,975,671	8,250,000	5,720,000	117,963	5,995,199	0	0	5,995,199	5,165,506	
1972	13,151,441	5,995,199	5,165,506	8,250,000	5,720,000	122,645	5,053,995	0	0	5,053,995	4,354,558	

Upper Colorado River Basin Reservoirs	Complete	Live Capacity	CRSP Live	CRSP Active	CRSP Active +Other	State	Major Basin	Hydromet	Source
		35,233,298	30,731,061	25,665,339	30,167,576				
1 Big Sandy	X	38,300	829,500	748,500	748,500	WY	GR	BGRW	Hydromet
2 Blue Mesa	X	829,500				CO	CR	BMDC	Hydromet
3 Boulder Lake	X	22,280				WY	GR		Jade Henderson Superintendent for Region IV
4 Bottle Hollow	X	11,779				UT	GR	BHRU	
5 Crawford	X	13,970				CO	CR	CFRC	Erik Knight from GJ office
6 Crystal	X	17,536	17,536	13,000	13,000	CO	CR	CRRC	Hydromet
7 Currant Creek	X	15,480				UT	GR	CURU	Hydromet
8 Dillon	X	252,678				CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsr/reservoir/resv_pt.html NRCS Website
9 Eden	X	13,164				WY	GR	EDRU	
10 Electric Lake - Utah Power a	X	31,500				UT	GR		Connely Baldwin at Pacific Corp. Connely Baldwin@pacificcorp.com or 801-220-4636
11 Elkhead	X	10,400				CO	GR	BLR	Bill Enslay with the City of Craig Public Works Dept. 970-826-2014
12 Fleming Gorge	X	3,749,000	3,749,000	3,515,700	3,515,700	UT	GR	FGRU	
13 Fontenelle	X	344,800				WY	GR	FTRW	Hydromet
14 Fremont Lake	X	30,899				WY	GR		Jade Henderson Superintendent for Region IV
15 Gould	X	10,380				CO	CR		George Wear with Colorado Division of Water Resources george.wear@dwr.state.co.us
16 Fruitgrowers	X	4,460				CO	CR	FGRC	Hydromet
17 Granby	X	540,033				CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsr/reservoir/resv_pt.html
18 Green Mountain	X	153,678				CO	CR	GMRC	NRCS Website http://www.wcc.nrcs.usda.gov/wsr/reservoir/resv_pt.html
19 Groundhog	X	27,500				CO	CR		NRCS Website http://www.wcc.nrcs.usda.gov/wsr/reservoir/resv_pt.html
20 Gurley	X	12,035				CO	CR		George Wear with Colorado Division of Water Resources george.wear@dwr.state.co.us
21 Homestead	X	42,882				CO	CR	JGRC	NRCS Website http://www.wcc.nrcs.usda.gov/wsr/reservoir/resv_pt.html
22 Jackson Gulch	X	9,951				CO	CR	JGRU	Hydromet
23 Joe's Valley	X	61,560				UT	GR	JVRU	Hydromet
24 Johnson	X	15,300				CO	GR		Edin.Light@state.co.us_Division 6 Water Resources for State of Colorado
25 Kenny Reservoir (Taylor Dra	X	9,400				CO	CR	GLDA	
26 Lake Powell	X	24,322,000	24,322,000	20,309,919	20,309,919	AZ	GR		Connely Baldwin at Pacific Corp. Connely Baldwin@pacificcorp.com or 801-220-4636
27 Lake Viva Naughton	X	69,645				WY	GR	LMRC	Hydromet
28 Lemon	X	39,792				CO	SJR		
29 Long Park	X	14,600				UT	GR		
30 McPhee	X	247,400				CO	GR	MCRU	Hydromet
31 Meeks Cabin	X	29,870				WY	GR	MERW	Hydromet
32 Millsite	X	20,000				UT	GR		
33 Miramonte	X	11,620				CO	CR	MNLU	Hydromet
34 Moon Lake	X	49,500				UT	GR		George Wear with Colorado Division of Water Resources george.wear@dwr.state.co.us
35 Morgan Lake Dam	X	42,800				NM	SJR		
36 Morrow Point	X	117,025	117,025	42,120	42,120	CO	CR	MPRC	Hydromet
37 Narraquinnep	X	22,700				CO	SJR		NRCS Website http://www.wcc.nrcs.usda.gov/wsr/reservoir/resv_pt.html
38 Navajo	X	1,686,000	1,686,000	1,036,100	1,036,100	NM	SJR	NVRN	Hydromet
39 New Fork Lake	X	20,340				WY	GR	PARC	Jade Henderson Superintendent for Region IV
40 Paonia	X	16,703				CO	GR		Hydromet
41 Palcan Lake	X	15,850				UT	GR		Edin.Light@state.co.us_Division 6 Water Resources for State of Colorado
42 Pleasant Valley Lake Catan	X	7,275				CO	GR		
43 Recapture Creek	X	16,000				UT	GR		
44 Redfleet	X	25,700				UT	GR	RFRU	Hydromet
45 Ridgway	X	82,980				CO	CR	RWRC	Hydromet
46 Rifle Gap	X	12,708				CO	CR	RGRC	Hydromet
47 Ruedi	X	102,330				CO	CR		Great Plains Region Website
48 Scofield	X	65,800				UT	GR	SFRU	Hydromet
49 Shadow Mountain	X	18,368				CO	CR	SMRC	Great Plains Region Website
50 Silver Jack	X	13,000				CO	CR	SJRC	Hydromet
51 Soldier Creek	X	1,105,910				UT	GR	SCRU	Hydromet
52 Stagecoach	X	33,275				CO	GR		Edin.Light@state.co.us_Division 6 Water Resources for State of Colorado
53 Starvation	X	165,320				UT	GR	SVRU	Hydromet
54 Stateline	X	13,880				WY	GR	SLRW	Hydromet
55 Steamboat Lake	X	25,400				CO	GR		Edin.Light@state.co.us_Division 6 Water Resources for State of Colorado
56 Steinkner	X	34,455				UT	GR	STRU	Hydromet
57 Taylor Park	X	108,210				CO	CR	TPRC	Hydromet
58 Upper Stillwater	X	31,382				UT	GR	USRU	Hydromet
59 Vallecito	X	125,400				CO	SJR	VCRU	Hydromet
60 Vavra	X	33,311				CO	CR	VGRU	Erik Knight from GJ office
61 Williams Creek	X	10,084				CO	CR		George Wear with Colorado Division of Water Resources george.wear@dwr.state.co.us
62 Williams Fork	X	96,824				CO	CR	WFRU	Great Plains Region Website
63 Willow Lake	X	18,816				WY	GR		Jade Henderson Superintendent for Region IV
64 Willow Creek	X	10,550				CO	CR	WCRC	Great Plains Region Website
65 Wolford Mountain	X	66,000				CO	CR		George Wear with Colorado Division of Water Resources george.wear@dwr.state.co.us
66 Yarncolo	X	8,000				CO	GR		Edin.Light@state.co.us_Division 6 Water Resources for State of Colorado

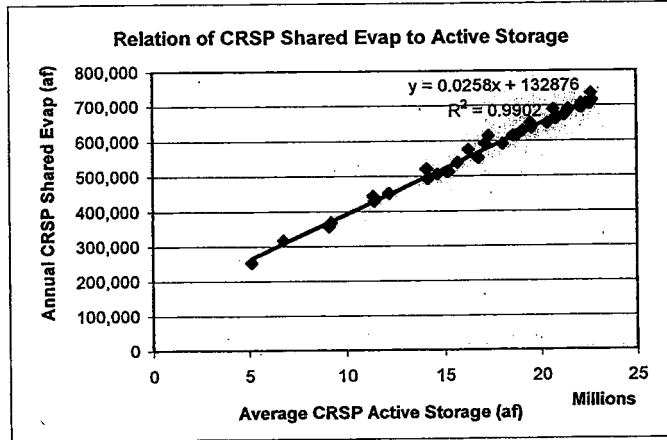
Total Capacity 35,233,298 30,731,061 25,665,339 30,167,576

Relationships of CRSP Shared Reservoir Evaporation to Total CRSP Storage

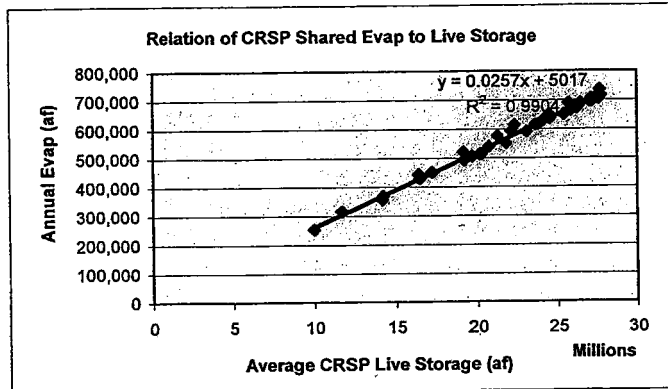
Year	Average CRSP Live Storage (af)	Average CRSP Active Storage (af)	CRSP Shared Evap (af)
1968	10,006,534	5,123,250	251,646
1969	11,701,142	6,764,000	315,083
1970	14,222,401	9,231,741	367,164
1971	16,417,858	11,354,088	442,260
1972	17,229,715	12,165,945	449,544
1973	19,703,066	14,639,296	504,409
1974	22,158,563	17,094,793	590,940
1975	23,634,096	18,570,326	613,612
1976	24,105,743	19,041,973	626,694
1977	20,730,592	15,672,536	537,406
1978	19,158,480	14,106,380	519,065
1979	22,336,514	17,284,414	612,639
1980	25,709,770	20,657,670	688,502
1981	25,392,305	20,340,205	648,525
1982	25,835,729	20,783,629	666,691
1983	27,692,454	22,640,354	734,416
1984	27,759,568	22,707,468	714,727
1985	27,619,938	22,567,838	702,973
1986	27,414,909	22,362,809	706,131
1987	27,153,464	22,101,364	705,172
1988	26,465,639	21,413,539	689,455
1989	24,540,351	19,488,251	634,821
1990	21,806,134	16,754,034	549,702
1991	20,141,572	15,089,472	510,689
1992	19,208,740	14,156,640	491,352
1993	21,297,564	16,245,464	573,884
1994	23,080,796	18,028,696	589,440
1995	24,500,724	19,448,624	649,206
1996	26,252,053	21,199,953	671,123
1997	26,416,641	21,364,541	681,115
1998	27,174,302	22,122,202	693,294
1999	27,050,819	21,998,719	694,007
2000	25,830,330	20,778,230	660,675
2001	23,802,258	18,750,158	614,593
2002	20,256,954	15,204,854	512,030
2003	16,472,537	11,420,437	427,526
2004	14,160,551	9,108,451	355,545

Regression Analyses

Active Storage:



Live Storage:



Notes:

- (1) Historic calendar year data from Bureau of Reclamation. Average storage values are based on the average of the end-of-year storage amounts for the year indicated and for the previous year. Storage amounts include storage in all CRSP units, including Lake Powell, Flaming Gorge Reservoir, Navajo Reservoir and the Aspinall Unit (Blue Mesa, Morrow Point and Crystal reservoirs).
- (2) CRSP shared evaporation includes lake evaporation for Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs, and is shared between the Upper Division States in proportions to their Upper Colorado River Basin Compact Article III(a) apportionments. CRSP shared evaporation is approximately 10,000 af at zero live CRSP storage (5,000 af based on the regression analyses) and approximately 130,000 af if storage in all CRSP reservoirs were at the top of the inactive pools (133,000 af based on the regression analysis). Lake evaporation for Navajo Reservoir is not included in CRSP shared evaporation.
- (3) Data for the period 1968-2004 were used in the regression analyses. Data prior to 1968 do not reflect a normal distribution of storage between CRSP unit reservoirs under future operational conditions (for example, Navajo Reservoir storage remained below the top of the inactive pool required for operation of the Navajo Indian Irrigation Project diversion from 1962 when it began storing water until 1968, and Morrow Point Reservoir began operation in 1968). For the period 1968-1977, the historic average end-of-year CRSP storage and annual CRSP evaporation amount were increased to reflect the average storage of 15,670 af and average evaporation amount of 340 af occurring at Crystal Reservoir after its initial filling in 1978.

Historic Storage and Evaporation at Colorado River Storage Project Reservoirs

Year	Lake Powell		Fleming Gorge Reservoir		Navajo Reservoir		Blue Mesa Reservoir		Morrow Point Reservoir		Crystal Reservoir		Total All CRSP Reservoirs			
	EOY Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	Annual Evap Amount (af)	EOY Live Storage (af)	EOY Active Storage (af)	Total Annual Evap (af)	Annual Shared Evap (af)
1961	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1962	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1963	970,000	25,000	863,500	13,000	20,000	200	8,323	700	0	0	0	0	70,000	650,500	53,323	45,000
1964	4,226,877	76,171	1,097,900	863,500	42,320	8,323	10,647	0	0	0	0	0	2,185,334	1,199,800	129,137	118,490
1965	6,755,838	144,900	2,395,300	1,097,900	47,402	10,647	14,930	0	0	0	0	0	5,707,097	5,026,100	207,031	192,401
1966	5,692,764	181,801	2,243,300	2,395,300	65,869	404,111	14,930	0	0	0	0	0	9,565,248	4,178,900	260,900	250,170
1967	6,237,331	158,145	2,288,300	66,614	586,132	13,048	248,900	2,500	0	0	0	0	8,785,352	4,641,100	242,308	229,259
1968	7,035,300	185,829	1,912,939	59,077	973,592	13,048	321,500	4,500	0	0	0	0	10,546,465	5,605,400	269,937	251,308
1969	9,527,861	282,105	1,565,599	54,074	1,043,002	22,326	652,343	6,064	0	0	0	0	12,824,480	7,922,600	337,066	314,743
1970	12,014,346	305,979	1,261,250	51,442	1,049,100	22,564	647,667	8,804	0	0	0	0	15,688,982	10,540,882	389,389	366,024
1971	12,873,499	385,262	1,049,100	981,286	981,286	20,505	431,077	7,297	0	0	0	0	17,215,384	12,167,294	462,425	441,920
1972	12,811,547	382,114	3,086,594	79,091	982,869	19,991	416,961	7,155	0	0	0	0	17,215,384	12,167,294	462,425	441,920
1973	17,397,040	417,269	2,938,138	77,932	1,112,631	28,408	598,694	8,028	0	0	0	0	22,162,095	17,113,995	532,477	504,069
1974	19,846,868	488,708	3,262,393	83,468	1,185,693	26,432	533,575	7,980	0	0	0	0	25,113,181	20,065,061	639,704	613,272
1975	18,139,140	533,889	3,129,279	83,640	1,195,470	24,307	594,351	8,040	0	0	0	0	23,066,984	18,018,884	651,609	626,354
1976	18,050,697	487,524	2,673,304	66,716	1,233,240	27,623	578,788	8,040	0	0	0	0	18,376,288	13,326,188	599,605	557,166
1977	15,343,792	443,358	2,397,144	67,120	1,382,000	28,916	558,000	8,314	0	0	0	0	19,938,673	14,886,573	543,372	519,065
1978	20,395,402	615,388	3,013,072	72,311	1,382,000	28,916	558,000	8,314	0	0	0	0	24,734,354	19,682,254	640,261	612,639
1979	21,602,374	606,694	2,783,188	74,001	1,234,201	26,237	540,276	7,579	0	0	0	0	26,685,186	21,633,066	717,417	688,502
1980	19,610,504	566,573	3,307,239	78,299	1,475,159	30,891	593,402	8,266	0	0	0	0	24,099,424	19,047,324	674,762	648,525
1981	22,095,450	638,987	3,451,988	85,654	1,545,720	30,891	593,402	8,266	0	0	0	0	27,572,033	22,519,933	695,028	666,691
1982	22,052,326	578,538	3,307,239	84,057	1,535,197	31,194	666,201	8,373	0	0	0	0	27,705,261	22,654,161	748,921	714,727
1983	21,991,934	621,218	3,176,535	84,057	1,535,197	31,194	666,201	8,373	0	0	0	0	27,296,202	22,444,102	736,331	706,151
1984	22,324,682	613,050	3,257,068	81,239	1,429,801	30,200	576,633	8,304	0	0	0	0	27,010,726	21,956,626	729,523	705,172
1985	21,900,656	615,388	3,216,414	81,987	1,075,143	24,336	458,550	8,217	0	0	0	0	25,820,552	20,868,452	713,791	689,455
1986	22,041,008	603,875	2,996,441	77,191	1,148,810	26,906	583,467	8,362	0	0	0	0	23,160,150	18,108,050	661,727	634,821
1987	18,292,024	551,911	2,843,401	75,352	1,381,613	30,621	571,167	9,008	0	0	0	0	18,831,025	14,778,925	541,310	510,689
1988	15,246,718	484,809	3,049,072	78,847	1,526,220	30,954	594,902	8,546	0	0	0	0	18,568,468	13,534,356	522,907	491,352
1989	14,251,955	420,380	3,328,132	80,305	1,551,852	31,564	580,846	8,354	0	0	0	0	24,006,671	18,966,571	604,638	573,884
1990	13,334,385	403,360	3,317,593	80,461	1,567,223	30,450	579,329	8,525	0	0	0	0	22,152,920	17,100,620	619,690	589,440
1991	18,402,436	483,689	2,835,277	75,469	1,391,103	30,450	579,329	8,525	0	0	0	0	25,848,528	21,796,429	679,359	649,206
1992	17,220,702	504,284	2,835,277	75,469	1,461,480	27,184	601,723	8,707	0	0	0	0	25,655,578	20,603,478	698,308	671,123
1993	20,497,886	692,091	3,248,287	79,159	1,187,285	28,612	578,983	8,392	0	0	0	0	26,848,528	22,126,604	708,727	681,115
1994	21,595,054	692,091	3,248,287	79,159	1,187,285	28,612	578,983	8,392	0	0	0	0	25,655,578	20,603,478	698,308	671,123
1995	21,595,054	692,091	3,248,287	79,159	1,187,285	28,612	578,983	8,392	0	0	0	0	26,848,528	22,126,604	708,727	681,115
1996	19,823,236	676,888	3,299,090	78,846	1,412,077	29,148	589,147	8,749	0	0	0	0	27,170,899	22,118,799	722,442	693,284
1997	19,823,236	676,888	3,299,090	78,846	1,412,077	29,148	589,147	8,749	0	0	0	0	26,930,739	21,878,639	721,976	694,007
1998	17,995,652	632,668	2,876,393	72,363	1,334,015	26,563	544,265	8,102	0	0	0	0	24,729,920	19,677,820	687,525	660,675
1999	13,773,641	436,468	2,631,819	67,919	826,616	20,891	283,191	6,507	0	0	0	0	22,874,586	17,822,466	641,166	614,583
2000	11,486,774	352,779	2,906,068	67,223	710,076	17,085	376,564	6,359	0	0	0	0	17,639,512	12,587,212	582,921	512,030
2001	8,663,616	278,349	2,742,643	66,248	691,373	20,353	481,453	7,778	0	0	0	0	15,305,762	10,253,662	444,611	427,928
2002													13,015,340	7,963,240	375,898	355,546
2003																
2004																

Notes:

- Lake Powell statistics: Dead storage 1,893,000 af at elevation 3370; Live storage capacity 24,322,000 af between elevations 3370 and 3700; Active storage capacity 20,325,000 af between elevations 3490 and 3700. Storage began March 1963.
- Fleming Gorge Reservoir statistics: Dead storage 39,700 af at elevation 5740; Live storage capacity 3,749,500 af between elevations 5740 and 6040; Active storage capacity 3,516,000 af between elevations 5871 and 6040. Storage began November 1962.
- Navajo Reservoir statistics: Dead storage 12,900 af at elevation 5775; Live storage capacity 1,701,300 af between elevations 5775 and 6085; Active storage capacity 1,038,900 af between elevations 5990 and 6085. Storage began June 1962.
- Aspinall Unit statistics: Blue Mesa Reservoir - Dead storage 111,200 af at elevation 7358; Live storage capacity 829,600 af between elevations 7358 and 7519; Active storage capacity 748,800 af between elevations 7393 and 7519. Morrow Point Reservoir - Dead storage 165 af at elevation 6808; Live storage capacity 117,000 af between elevations 6808 and 7160; Active storage capacity 42,000 af between elevations 7100 and 7160. Storage began January 1968. Crystal Reservoir - Dead storage 9,000 af at elevation 6670; Live storage capacity 17,000 af between elevations 6670 and 6755; Active storage capacity 13,000 af between elevations 6700 and 6755. Storage began March 1977.
- Total CRSP Live storage capacity is 30,786,400 af, and total CRSP Active storage capacity is 25,684,300 af. The total CRSP Inactive storage capacity is 5,052,100 af.
- Evaporation amounts were computed using the method and coefficients described in Historical Inflows, Colorado River Storage Project, Bureau of Reclamation (Tom Ryan), October 1993.
- The following evaporation amounts are estimated from calculated evaporation for other years and relative total storage amounts: Lake Powell for 1963, Fleming Gorge Reservoir for 1962-63, Navajo Reservoir for 1962, Blue Mesa Reservoir for 1965-68, Morrow Point Reservoir for 1977-78. These evaporation amounts for 1977-78 were estimated based on the evaporation amounts at Morrow Point Reservoir and the ratio of the surface area of Crystal Reservoir reduced for when storage began; Crystal Reservoir evaporation for 1979-2004 was estimated based on the evaporation amounts at Morrow Point Reservoir and the ratio of the surface area of Crystal Reservoir to the surface area of Morrow Point Reservoir at full capacity.
- CRSP shared evaporation includes lake evaporation for Lake Powell, Fleming Gorge Reservoir and the Aspinall Unit reservoirs, and is shared between the Upper Division States in proportion to their Upper Colorado River Basin Compact Article III(a) apportionments. Lake evaporation for Navajo Reservoir is accounted separately.