



THE SECRETARY OF THE INTERIOR  
WASHINGTON

JUN 26 2007

Honorable Joe Shirley, Jr.  
President, Navajo Nation  
PO Box 9000  
Window Rock, Arizona 86515

Dear President Shirley:

I am writing this letter to inform you that I have approved and signed the 2007 Hydrologic Determination (Determination) for a proposed contract from Navajo Reservoir to support the Navajo-Gallup Water Supply Project (Project). The Project, if authorized through legislation, has been proposed to settle the water rights claims of the Navajo Nation in the San Juan River Basin of New Mexico.

Each of the Colorado River Basin States has a vital interest in the Colorado River, and I wanted to personally inform you of the completion of the Determination in light of the importance of having direct and open communication on this valuable resource. A Determination for all proposed long-term contracts for water from Navajo Reservoir is mandated by Public Law 87-483, which requires the Secretary of the Interior to undertake an investigation of whether there is sufficient water within New Mexico's Compact apportionment to support any such long-term contract for water from Navajo Reservoir. That law further requires the Determination and the proposed contract be forwarded to Congress for its approval. Because the United States has not negotiated a contract with the Navajo Nation, the City of Gallup, or any other potential water users of the Project as of this time, it is premature to forward the Determination to Congress. As soon as such a contract(s) is (are) negotiated, we will forward them and the Determination to Congress.

The finding in the Determination that there is likely to be sufficient water to support the proposed contract will remove any Department of the Interior concerns about potential limitations on water supply. This is in keeping with my commitment to the New Mexico Congressional delegation that we will attempt to resolve all procedural requirements in order to facilitate a fair and open debate on the merits of the proposed settlement, even though the Administration has no position on the settlement at this time.

In developing the Determination, the Bureau of Reclamation has worked closely with all of the Colorado River Basin States in a manner keeping with the spirit of cooperation the Basin is currently enjoying and is in compliance with the Colorado River Compact and the Law of the River. I am personally thankful for the assistance of all the Basin States in finding a way to allow the Determination to move forward.

Please contact me if you have any questions or concerns in this matter.

Sincerely,

DIRK KEMPTHORNE

Enclosure

Identical Letters Sent To:

Honorable Dave Freudenthal  
Governor of Wyoming  
Cheyenne, Wyoming 82002

Honorable Jon Huntsman, Jr.  
Governor of Utah  
Salt Lake City, Utah 84114-2220

Honorable Bill Ritter  
Governor of Colorado  
Denver, Colorado 80203

Honorable Bill Richardson  
Governor of New Mexico  
Sante Fe, New Mexico 87501

Honorable Jim Gibbons  
Governor of Nevada  
Carson City, Nevada 89701

Honorable Janet Napolitano  
Governor of Arizona  
Phoenix, Arizona 85007

Honorable Arnold Schwarzenegger  
Governor of California  
Sacramento, California 95814

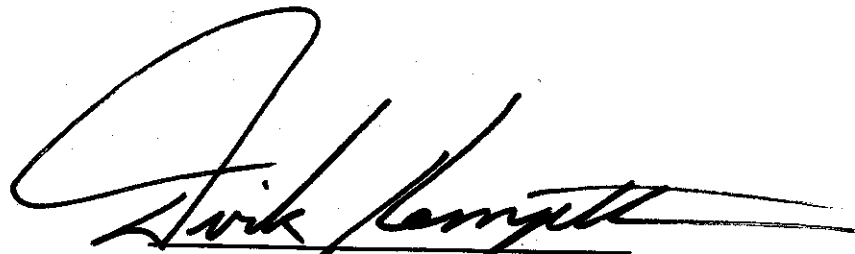
**HYDROLOGIC DETERMINATION  
2007**

**Water Availability from Navajo Reservoir and  
the Upper Colorado River Basin for Use in New Mexico**

**April 2007**

**MAY 23 2007**

**Date**

A handwritten signature in black ink, appearing to read "Dirk Kempthorne", written over a horizontal line.

**Secretary of the Interior**

## **I. Executive Summary**

Determination as to the availability of water under long-term service contracts for uses from Navajo Reservoir involves a projection into the future of estimated water uses and water supplies. On the basis of this hydrologic investigation, water depletions by the Upper Basin states from the Upper Colorado River Basin can be reasonably allowed to rise to an annual average of 5.76 million acre-feet (maf) per year, exclusive of Colorado River Storage Project (CRSP) reservoir evaporation from Lake Powell, Flaming Gorge Reservoir, and the Aspinall Unit. This depletion level can be achieved under the same shortage criteria upon which the allowable Upper Basin yield was determined in the 1988 Hydrologic Determination.

This document determines the availability through at least 2060 of water from New Mexico's Upper Basin allocation and Navajo Reservoir to service a proposed contract for the Navajo Nation's consumptive uses in New Mexico under the Navajo-Gallup Water Supply Project in the annual amount of 20,780 acre-feet (af) and the Navajo Indian Irrigation Project (NIIP) in the amount of 270,000 af per year on average over any period of ten consecutive years. It also is likely that sufficient water will be available from Navajo Reservoir to service the proposed contract after the 2060 planning horizon, depending upon future storage, hydrologic conditions, and other factors. This determination does not guarantee that the United States will be able to deliver water under the proposed contract without shortages in deliveries, and does not obligate the United States to maintain storage facilities beyond their useful lives. The proposed contract is part of a Navajo Nation water rights settlement in the Upper Basin in New Mexico, and the settlement provides that uses made pursuant to the contract will be subject to administration in accordance with the Upper Colorado River Basin Compact and New Mexico state law. Implementation of the Navajo-Gallup Water Supply Project and the NIIP is subject to compliance with federal environmental laws including the National Environmental Policy Act and the Endangered Species Act.

## **II. Introduction**

The State of New Mexico has proposed the Navajo-Gallup Water Supply Project to provide a renewable water supply from the San Juan River for municipal and domestic uses for Indian and non-Indian communities located within New Mexico. Uses under the project by the Jicarilla Apache Nation and the City of Gallup would be supplied through the Jicarilla Apache Nation's Navajo Reservoir water supply contract approved by Congress in 1992. Uses in New Mexico under the project by the Navajo Nation would be supplied through a proposed new Navajo Reservoir water supply contract that is a component of the San Juan River Basin in New Mexico Navajo Nation Water Rights Settlement Agreement (hereinafter referred to as the Settlement Agreement) that the State of New Mexico and the Navajo Nation executed on April 19, 2005. The new contract also would supersede the existing Navajo Reservoir water supply contract for the NIIP.

On June 19, 2003, the Upper Colorado River Commission resolved that the States of the Upper Division consent to the Navajo-Gallup Water Supply Project, provided that water diverted by the project for use in New Mexico shall be a part of the consumptive use apportionment made to the State of New Mexico by Article III(a) of the Upper Colorado River Basin Compact. The maximum amount of consumptive use through the project by the Navajo Nation in New Mexico that would be permitted in any one year under the Settlement Agreement and the proposed contract is 20,780 acre-feet.

Public Law 87-483 at section 11(a) requires that no long-term contract, except contracts for the NIIP and the San Juan-Chama Project, shall be entered into for the delivery of water stored in Navajo Reservoir, or any other waters of the San Juan River and its tributaries to which the United States is entitled, until the Secretary of the Interior has determined by hydrologic investigation that sufficient water to fulfill such contract is reasonably likely to be available for use in the State of New Mexico under the allocations made in Articles III and XIV of the Upper Colorado River Basin Compact, has submitted such determination to Congress, and Congress has approved the contract. The last such hydrologic determination was approved by the Secretary on February 2, 1989 (Hydrologic Determination, 1988, Water Availability from Navajo Reservoir and the Upper Colorado River Basin for Use in New Mexico, hereinafter referred to as the 1988 Hydrologic Determination). The 1988 Hydrologic Determination evaluated the availability of water from the Navajo Reservoir water supply for the Jicarilla Apache Nation's Navajo Reservoir water supply contract. The State of New Mexico, by letter dated May 3, 2005, requested that the 1988 Hydrologic Determination be updated to evaluate the availability of water to service the proposed Navajo-Gallup Water Supply Project.

This hydrologic investigation is made for the purpose of contracting for water from the Navajo Reservoir water supply for the Navajo Nation's uses in New Mexico under the Navajo-Gallup Water Supply Project. The Bureau of Reclamation prepared this hydrologic investigation in consultation with the Upper Colorado River Commission because of the critical nature of this determination of the Upper Basin water supply. The Upper Colorado River Basin Compact created and defined several areas of responsibility for the Commission that directly and indirectly relate to this investigation.

### **III. Upper Basin Yield**

#### **A. General Upper Basin Hydrology**

Based on the Bureau of Reclamation's Colorado River Simulation System (CRSS), natural flows for the period 1906-2000, the natural runoff from the Upper Colorado River Basin averages about 15.3 maf per year at Lee Ferry. Of this amount, approximately 2 maf per year originates in the San Juan River Basin above Bluff, Utah. New Mexico can only develop its Upper Basin allocation from the San Juan River and its tributaries. The Bureau of Reclamation's Colorado River System Consumptive Uses and Losses Report for 1996-2000 indicates that current consumptive uses from the San Juan River Basin

average about 382,400 af per year in New Mexico and about 192,500 af per year in Colorado. Only minor amounts of depletions are made in the San Juan River Basin in Utah and Arizona.

## **B. Approach**

This hydrologic investigation considers and uses many of the same basic assumptions as the 1988 Hydrologic Determination. Both investigations assume use of the CRSS natural flows at Lee Ferry, minimum releases from Lake Powell of between 7.48 maf and 8.23 maf annually, an allowable overall shortage of no more than 6 percent for a critical period, either maintenance or use of the minimum power pools at CRSP units, reduced storage capacity in Lake Powell due to sedimentation, and inclusion of bank storage. The CRSS natural flows at Lee Ferry for the period 1971-1980 were increased to reflect recalculation of historic irrigation depletions in the Upper Basin using the Soil Conservation Service (SCS) modified Blaney-Criddle method with SCS effective precipitation. The revised CRSS natural flows for 1971-1980 are consistent with the CRSS natural flows at Lee Ferry determined for the remainder of the 1906-2000 period of record. Also, sedimentation in Lake Powell was adjusted to reflect a 2060 planning horizon, and a 4 percent bank storage factor was used in this investigation consistent with Reclamation's current CRSS model.

Neither the Lower Division states nor the Upper Colorado River Commission agree with the modeling assumption for the objective minimum release used in this report. At the request of the Commission, this hydrologic investigation considers for planning purposes both the objective minimum release of 8.23 maf and a minimum release from Lake Powell of 7.48 maf annually. However, this hydrologic determination does not quantify the Colorado River Compact Article III(c) requirement or make or rely on a critical compact interpretation regarding Article III(c). The 1988 Hydrologic Determination also showed the Upper Basin yields under these minimum release scenarios.

Mass balance analyses were used to analyze potential water use by the Upper Basin under 2060 conditions. The mass balance considers Upper Basin reservoir storage, natural flows at Lee Ferry, deliveries to the Lower Basin, consumptive use demands in the Upper Basin, and CRSP evaporation as a function of storage volume. All existing Upper Basin storage capacity was included in the analysis because all storage supports water use in the Upper Basin and impacts stream flows. The CRSP and non-CRSP reservoirs as groups were assumed to be the same percent full each year, and CRSP storage was assumed to be distributed between units in accordance with the average historic storage distribution. The CRSP reservoir evaporation that is used in the mass balance analyses includes evaporation from Lake Powell, Flaming Gorge Reservoir, and the Aspinall Unit that is shared among the Upper Division States, but excludes evaporation from Navajo Reservoir which is chargeable to the states based on use. Shared CRSP reservoir evaporation is modeled using a regression equation relating historic shared CRSP reservoir evaporation from Lake Powell, Flaming Gorge Reservoir, and the Aspinall Unit to the aggregate historic storage volume in these reservoirs plus Navajo Reservoir. Evaporation equations were developed for both active and live storage, and were applied

to estimate annual shared CRSP evaporation based upon yearly reservoir storage volume (surface area). The 1988 Hydrologic Determination considered variations in shared CRSP reservoir evaporation with storage for conducting statistical trace analyses to evaluate possible frequencies and magnitudes of shortages; however, it deducted a long-term average shared CRSP reservoir evaporation of 0.52 maf per year from the critical-period Upper Basin yield of at least 6.0 maf/yr to determine the amount of water available for Upper Basin uses through the critical period.

### C. Results

Mass balance analyses were performed for various combinations of storage, Lower Basin deliveries, and overall shortages to evaluate the allocation of water to the Upper Basin (see mass balance analyses provided in Appendix A). The following is a summary of the results of the analyses:

<u>Storage Assumption</u>	Minimum Lower Basin Delivery (maf)	Yield without Shortages (maf)	Yield with 6% Overall Shortages (maf)
Maintain minimum power pools	8.25	5.55	5.79
	7.50	6.30	6.57
Use minimum power pools	8.25	5.72	5.98
	7.50	6.47	6.76

The yield for this analysis is 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 in the above table are defined as 6 percent or less overall computed shortage for any period of 25 consecutive years consistent with the 1988 Hydrologic Determination. Results are shown for minimum Lower Basin deliveries of 8.25 maf and 7.50 maf as was done in the 1988 Hydrologic Determination. The analyses in this investigation should not be construed to prejudice the positions of either the Upper Colorado River Commission or the States of the Lower Division as to the interpretation or administration of Article III of the Colorado River Compact.

For those analyses that use an allowable or tolerable overall shortage of 6 percent or less of the use over any period of 25 consecutive years, the results indicate that there would be 5 years of shortage to meet all demands on the Upper Basin out of 95 years of record used in this investigation. However, the annual amounts of computed shortages for those five years would not fully materialize because Upper Basin consumptive uses will be below average under critical period hydrology due to physical water supply shortages at the sites of use in the Upper Basin. For example, the natural flow at Lee Ferry for 1977 was only 5.55 maf, and severe water supply shortages occurred throughout the Upper Basin in that year. The computations of shortage in this analysis give conservatively large estimates of annual shortages at Lee Ferry and do not fully reflect all factors,

including physical shortages in the Upper Basin that might contribute or relate to a shortage condition at any given time. The computed shortages in this investigation do not equate to administrative calls to curtail Upper Basin uses.

#### **D. Comparison to 1988 Hydrologic Determination**

The 1988 Hydrologic Determination concluded that the total Upper Basin yield, including CRSP reservoir evaporation, is at least 6.0 maf per year for the 1953-1977 critical period hydrology with a 6 percent allowable overall shortage for the period. Under the conditions assumed in the current investigation, the shared CRSP evaporation varies with CRSP storage assumptions and storage levels. Assuming an average annual Upper Basin use of 5.79 maf, an annual Lower Basin delivery of 8.25 maf, and maintenance of the power pools, the shared CRSP evaporation would range from an average of about 0.25 maf per year over the worst 25-year period of reservoir storage draw down (1953-1977) to an average of about 0.49 maf per year over the period of record used in the analysis (1906-2000). Thus, the total Upper Basin depletion, including both Upper Basin uses and CRSP reservoir evaporation, would average about 6.04 maf per year or more over any period of 25 consecutive years. The total Upper Basin depletion amount for this scenario for the 1953-1977 period is comparable to the total Upper Basin depletion of 6.0 maf per year determined to be available for the period by the 1988 Hydrologic Determination. The difference is due to the revisions made to the CRSS natural flows for 1971-1980. If the minimum power pools are used, the shared CRSP reservoir evaporation is reduced due to increased reservoir storage draw downs.

### **IV. Water Use Projections**

#### **A. Upper Basin**

The Upper Colorado River Commission last approved depletions schedules for the Upper Division States for planning purposes in 1999. The depletions schedules, dated January 2000, project that the total Upper Basin use exclusive of shared CRSP reservoir evaporation will average about 5.37 maf per year under 2060 development conditions. Unless additional Upper Basin water development occurs by 2060 as compared to the January 2000 depletions schedules, the Upper Basin use may average less than about 5.40 maf per year from now through 2060. The time required to develop the Upper Basin allocation reduces risk of shortage within the 2060 planning horizon.

#### **B. State of New Mexico**

For use in this investigation, the New Mexico Interstate Stream Commission provided the Bureau of Reclamation with a preliminary revised schedule of anticipated depletions through 2060 from the Upper Basin in New Mexico dated May 2006 (see Appendix B). The revised depletions schedule includes irrigation depletions calculated using the SCS modified Blaney-Criddle method with SCS effective precipitation so that demands and supply for this hydrologic investigation are evaluated using consistent methodologies.



The irrigation depletions for the Navajo Nation's irrigation projects are water right depletion amounts provided by the Settlement Agreement. Both this hydrologic investigation and the 1988 Hydrologic Determination assume use of the full depletion amount for the NIIP. This is a conservative assumption because the total NIIP depletion right is not expected to be fully utilized under normal farm management practices. The revised depletions schedule does not include New Mexico's allocation of shared CRSP reservoir evaporation. The revised New Mexico depletions schedule shows a total anticipated depletion of 642,000 af per year, on average, for uses in New Mexico under 2060 development conditions. This represents an increase in New Mexico's total Upper Basin depletion, excluding shared CRSP reservoir evaporation, of 23,000 af per year, or about 0.02 maf per year, as compared to the January 2000 depletions schedules.

#### **V. Probabilities of Calls to Curtail Upper Basin Uses**

The 1988 Hydrologic Determination included a probabilistic risk analysis of administrative calls to curtail Upper Basin uses that indicated that: (1) such calls would occur rarely at an Upper Basin demand level of 6.1 maf per year, though their effects could have significant impact to the Upper Basin; and (2) the frequency and magnitude of such calls would diminish rapidly below this demand level. The risk analysis was made using the CRSS model. It is not necessary for this investigation to duplicate such a risk analysis.

The computations of shortage in this current investigation give conservatively large estimates of annual shortages at Lee Ferry and do not fully reflect all factors, including physical shortages in the Upper Basin that might contribute or relate to a shortage condition at any given time. While this investigation uses a 2060 reservoir storage sedimentation condition for Lake Powell, a risk analysis should vary the storage development and sedimentation conditions over time. In addition, it will take decades to develop the Upper Basin allocation. Therefore, risk of shortage is reduced within a 2060 planning horizon. Even using the CRSS model, computed shortages would not necessarily equate to administrative calls to curtail Upper Basin uses.

#### **VI. Physical Availability of Water from Navajo Reservoir**

The Bureau of Reclamation, using a detailed hydrologic model for the San Juan River Basin, has evaluated the physical availability of water from Navajo Reservoir and the San Juan River for the Navajo-Gallup Water Supply Project, taking into account, among other things, the habitat needs of San Juan River populations of fish species listed as endangered under the Endangered Species Act. The physical water supply analysis contained in the Biological Assessment, Navajo-Gallup Water Supply Project, dated August 16, 2005, indicates that sufficient water is likely to be available from the Navajo Reservoir water supply for the Navajo Nation's uses under the project. Although the depletions for individual uses in New Mexico that were used in the Biological Assessment differ slightly from those in New Mexico's May 2006 revised depletions

schedule, the physical water supply analysis in the Biological Assessment assumes up to about 640,500 af per year of depletion, on average, in New Mexico from the San Juan River. This amount of total average depletion in New Mexico is not significantly different than the amount of total average depletion in New Mexico shown in the May 2006 revised New Mexico depletions schedule under 2060 development conditions.

## **VII. Conclusions**

It is concluded that based on the analysis performed by Reclamation in consultation with the Upper Colorado River Commission, the Upper Basin yield and New Mexico water allocation needed to support New Mexico's revised Upper Basin depletions schedule are reasonably likely to be available. The mass balance analyses results are sufficient to conclude that: (1) the Upper Basin yield is at least 5.76 maf per year, on average, excluding shared CRSP reservoir evaporation; (2) New Mexico's Upper Basin allocation is at least 642,400 af per year, excluding shared CRSP reservoir evaporation; and (3) the total anticipated average annual consumptive use in New Mexico from the Upper Basin, including Navajo Reservoir evaporation of 642,000 af per year as shown in the revised New Mexico depletions schedule is not likely to exceed New Mexico's Upper Basin allocation. This conclusion is reached assuming full use of the Navajo Nation's proposed depletion rights under the Settlement Agreement for both the Navajo-Gallup Water Supply Project and the NIIP.

Based upon this hydrologic investigation for a planning horizon through 2060, the May 2006 revised New Mexico depletions schedule, and the Biological Assessment for the Navajo-Gallup Water Supply Project, sufficient water is reasonably likely to be available from the Navajo Reservoir water supply through at least 2060 to fulfill the contract that is proposed by the Settlement Agreement to provide water for the Navajo Nation's uses in New Mexico under the Navajo-Gallup Water Supply Project and the NIIP. If the term of the contract extends beyond 2060, or is perpetual as proposed by the Settlement Agreement, the risk of shortages in deliveries under the contract may increase after 2060 depending upon future storage, hydrologic conditions, and other factors. Section 11(a) of Public Law 87-483 allows for contracting of water from Navajo Reservoir up to a total amount that, in the event of shortage, still results in a reasonable amount of water being available for the diversion requirements of the NIIP and the San Juan-Chama Project.

## **VIII. Disclaimers**

### **A. Interstate Compacts and Federal Laws**

Nothing in this report is intended to interpret the provisions of the Colorado River Compact (45 Stat. 1057), the Upper Colorado River Basin Compact (63 Stat. 31), the Water Treaty of 1944 between the United States of America and the United Mexican States (59 Stat. 1219), the decree entered by the Supreme Court of the United States in *Arizona v. California, et al.* (376 U.S. 340), the Boulder Canyon Project Act (45 Stat.

1057), the Boulder Canyon Project Adjustment Act (54 Stat. 774), the Colorado River Storage Project Act (70 Stat. 105), or the Colorado River Basin Project Act (82 Stat. 885). Implementation of the Navajo-Gallup Water Supply Project and the NIIP is subject to compliance with federal environmental laws including the National Environmental Policy Act and the Endangered Species Act.

**B. Proposed Navajo Reservoir Water Contract**

This determination is not to be construed as acceptance by the Department of the Interior of the terms of the Settlement Agreement, including the terms of the proposed contract. This determination also does not guarantee that the United States would be able to deliver water under the proposed contract without shortages in deliveries on account of drought or other causes outside the control of the Secretary. Nothing in this determination shall be construed to impose on the United States any obligation to maintain CRSP storage facilities, including Navajo Dam and Reservoir, or NIIP or Navajo-Gallup Water Supply Project facilities beyond their useful lives or to take extraordinary measures to keep these facilities operating.

## **List of Appendices**

APPENDIX A - Mass Balance Analysis

APPENDIX B - Reservoir Storage

APPENDIX C - CRSP Evaporation Analysis

APPENDIX D - New Mexico Depletion Schedule

APPENDIX E - Upper Colorado River Commission Resolution

## **APPENDIX A**

### **Mass Balance Analysis**

Upper Basin Yield Mass Balance Analysis

Run 1 - Maintain CRSP Minimum Power Pools, 8.25 maf Lower Basin Delivery, No 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	5,550,000	749,290	33,530,761	4,000,731	0	29,530,030	24,847,704	Storage
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)
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
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)
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
1911	15,496,729	29,530,030	24,847,704	8,250,000	5,550,000	749,290	33,904,150	950,439	0	29,530,030	24,847,704	LB Delivery
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,550,000	749,290	30,480,469	0	0	29,530,030	24,847,704	
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,550,000	749,290	29,517,247	0	0	29,530,030	24,847,704	
1914	21,354,814	29,517,247	24,836,947	8,250,000	5,550,000	749,157	36,322,904	6,792,673	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	29,530,030	24,847,704	
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	Results
1917	22,942,046	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	Average CRSP Evap
1918	15,865,939	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	Total Yield w/ CRSP evap
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	
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	Shortage Years
1921	22,526,781	29,530,030	24,847,704	8,250,000	5,550,000	749,290	37,507,521	7,977,491	0	29,530,030	24,847,704	Shortage
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	1963
1923	19,022,446	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	1964
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,550,000	742,354	28,865,474	0	0	29,530,030	24,847,704	1967
1925	14,430,701	28,865,474	24,286,521	8,250,000	5,550,000	734,337	28,761,839	0	0	28,865,474	24,286,521	1968
1926	15,213,731	28,761,839	24,201,318	8,250,000	5,550,000	740,284	29,435,286	0	0	28,761,839	24,201,318	1988
1927	15,939,212	28,435,286	24,767,982	8,250,000	5,550,000	748,301	34,426,197	4,896,166	0	29,530,030	24,847,704	1977
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	NM allocation(w/o evap)
1930	14,621,134	29,530,030	24,847,704	8,250,000	5,550,000	749,290	29,601,781	0	0	29,530,030	24,847,704	
1931	8,474,134	29,530,030	24,847,704	8,250,000	5,550,000	686,538	23,517,626	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.
1932	17,422,187	23,517,626	19,786,636	8,250,000	5,550,000	654,758	26,485,055	0	0	23,517,626	19,786,636	
1933	12,183,500	28,485,055	22,285,545	8,250,000	5,550,000	661,949	24,206,607	0	0	28,485,055	22,285,545	
1934	6,178,192	24,206,607	20,369,371	8,250,000	5,550,000	552,849	16,031,950	0	0	24,206,607	20,369,371	
1935	12,630,349	16,031,950	13,489,900	8,250,000	5,550,000	490,618	14,411,681	0	0	16,031,950	13,489,900	
1936	14,648,873	14,411,681	12,126,543	8,250,000	5,550,000	437,996	14,822,558	0	0	14,411,681	12,126,543	Total Upper Basin depletion, inc. CRSP evap:
1937	14,306,056	14,822,558	12,472,271	8,250,000	5,550,000	442,943	14,885,671	0	0	14,822,558	12,472,271	1953-1977
1938	18,148,319	14,885,671	12,525,376	8,250,000	5,550,000	483,935	18,750,055	0	0	14,885,671	12,525,376	5,870,057 af
1939	11,184,059	18,750,055	15,777,018	8,250,000	5,550,000	491,825	15,622,489	0	0	18,750,055	15,777,018	1931-1977
1940	9,931,657	15,622,489	13,145,364	8,250,000	5,550,000	414,284	11,339,862	0	0	15,622,489	13,145,364	5,971,255 af
1941	20,116,678	11,339,862	9,541,797	8,250,000	5,550,000	431,015	17,225,525	0	0	11,339,862	9,541,797	1906-2000
1942	17,225,136	17,225,525	14,494,220	8,250,000	5,550,000	522,737	20,127,925	0	0	17,225,525	14,494,220	6,077,920 af
1943	13,731,401	20,127,925	16,936,410	8,250,000	5,550,000	546,608	19,512,717	0	0	20,127,925	16,936,410	
1944	15,369,422	19,512,717	16,418,751	8,250,000	5,550,000	550,819	20,531,321	0	0	19,512,717	16,418,751	203,226 af
1945	14,140,528	20,531,321	17,275,843	8,250,000	5,550,000	559,188	20,312,681	0	0	20,531,321	17,275,843	226,965 af
1946	11,095,453	20,312,681	17,091,871	8,250,000	5,550,000	523,198	17,084,936	0	0	20,312,681	17,091,871	252,377 af
1947	16,439,486	17,084,936	14,375,923	8,250,000	5,550,000	511,717	19,212,705	0	0	17,084,936	14,375,923	196,384 af
1948	15,136,294	19,212,705	16,166,309	8,250,000	5,550,000	542,244	20,009,755	0	0	19,212,705	16,166,309	246,665 af
1949	16,933,584	20,009,755	16,836,976	8,250,000	5,550,000	577,243	22,566,096	0	0	20,009,755	16,836,976	173,250 af
1950	13,140,416	22,566,096	18,987,982	8,250,000	5,550,000	590,873	21,315,639	0	0	22,566,096	18,987,982	1977
1951	12,505,894	21,315,639	17,935,799	8,250,000	5,550,000	568,486	19,483,047	0	0	21,315,639	17,935,799	152,187 af
1952	20,805,422	19,483,047	16,376,937	8,250,000	5,550,000	605,942	25,862,527	0	0	19,483,047	16,376,937	1979
1953	11,185,419	25,862,527	21,761,725	8,250,000	5,550,000	636,572	22,569,374	0	0	25,862,527	21,761,725	153,559 af
1954	8,496,102	22,569,374	19,007,568	8,250,000	5,550,000	543,381	16,742,004	0	0	22,569,374	19,007,568	161,893 af
1955	9,413,908	16,742,004	14,087,442	8,250,000	5,550,000	492,065	11,923,937	0	0	16,742,004	14,087,442	
1956	11,426,874	11,923,937	10,033,259	8,250,000	5,550,000	353,322	9,197,489	0	0	11,923,937	10,033,259	
1957	21,500,963	9,197,489	7,739,121	8,250,000	5,550,000	401,055	16,497,397	0	0	9,197,489	7,739,121	
1958	15,892,511	16,497,397	13,881,544	8,250,000	5,550,000	493,620	18,068,288	0	0	16,497,397	13,881,544	
1959	9,598,169	18,068,288	15,201,670	8,250,000	5,550,000	481,325	13,403,132	0	0	18,068,288	15,201,670	
1960	11,524,160	13,403,132	11,277,911	8,250,000	5,550,000	384,885	10,742,407	0	0	13,403,132	11,277,911	
1961	10,010,259	10,742,407	9,039,075	8,250,000	5,550,000	314,281	6,638,386	0	0	10,742,407	9,039,075	
1962	17,377,609	6,638,386	5,585,793	8,250,000	5,550,000	305,597	9,910,398	0	0	6,638,386	5,585,793	
1963	8,840,900	9,910,398	8,338,990	8,250,000	5,550,000	285,014	4,666,284	0	0	9,910,398	8,338,990	
1964	10,863,586	4,666,284	3,926,391	8,250,000	5,550,000	197,571	1,532,299	0	0	4,666,284	3,926,391	
1965	19,875,027	1,532,299	1,289,336	8,250,000	5,550,000	225,909	7,381,417	0	0	1,532,299	1,289,336	
1966	10,679,844	7,381,417	6,211,008	8,250,000	5,550,000	251,764	4,009,497	0	0	7,381,417	6,211,008	
1967	11,870,830	4,009,497	3,373,745	8,250,000	5,550,000	192,341	1,687,986	0	0	4,009,497	3,373,745	
1968	13,739,932	1,687,986	1,420,336	8,250,000	5,550,000	165,734	1,462,164	0	0	1,687,986	1,420,336	
1969	15,272,159	1,462,164	1,230,321	8,250,000	5,550,000	204,417	4,087,125	0	0	1,462,164	1,230,321	
1970	15,344,136	2,757,407	2,320,188	8,250,000	5,550,000	233,638	5,557,148	0	0	2,757,407	2,320,188	
1971	15,493,659	4,087,125	3,447,479	8,250,000	5,550,000	239,970	4,703,812	0	0	4,087,125	3,447,479	
1972	13,186,637	5,557,148	4,575,998	8,250,000	5,550,000	278,776	9,275,229	0	0	5,557,148	4,575,998	
1973	18,650,193	4,703,812	3,957,968	8,250,000	5,550,000	317,801	8,442,854	0	0	4,703,812	3,957,968	
1974	13,285,426	9,275,229	7,804,534	8,250,000	5,550,000	340,828	8,548,524	0	0	9,275,229	7,804,534	
1975	17,072,861	8,442,854	7,104,142	8,250,000	5,550,000	339,725	11,375,790	0	0	8,442,854	7,104,142	
1976	11,313,561	11,375,790	9,572,028	8,250,000	5,550,000	222,899	76,813	0	0	11,375,790	9,572,028	
1977	5,561,188	8,548,524	7,193,057	8,250,000	5,550,000	148,955	1,463,768	0	0	8,548,524	7,193,057	
1978	15,335,909	76,813	64,633	8,250,000	5,550,000	203,322	5,285,872	0	0	76,813	64,633	
1979	17,825,429	1,463,768	1,231,969	8,250,000	5,550,000	283,332						

Upper Basin Yield Mass Balance Analysis

Run 2 - Maintain CRSP Minimum Power Pools, 8.25 maf Lower Basin Delivery, 6% Overall 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	
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	Storage
1908	12,216,817	29,530,030	24,847,704	8,250,000	5,790,000	722,739	28,986,108	0	0	26,986,108	22,707,150	Sedimentation Rate (Active)
1909	22,365,301	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	Bank Storage
1910	14,650,616	29,530,030	24,847,704	8,250,000	5,790,000	747,858	30,332,789	0	0	29,530,030	24,847,704	Adjusted Storage (2060)
1911	15,499,729	29,392,789	24,732,223	8,250,000	5,790,000	747,858	30,104,660	574,629	0	29,392,789	24,732,223	UB Demand Level
1912	18,623,410	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,384,150	3,854,120	0	29,530,030	24,847,704	LB Delivery
1913	14,536,373	29,530,030	24,847,704	8,250,000	5,790,000	746,678	29,279,726	0	0	29,530,030	24,847,704	
1914	21,354,814	29,279,726	24,637,088	8,250,000	5,790,000	746,678	35,847,862	6,317,632	0	29,279,726	24,637,088	
1915	13,623,277	29,530,030	24,847,704	8,250,000	5,790,000	737,246	28,376,061	0	0	29,530,030	24,847,704	
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	28,376,061	23,876,710	
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	Results
1918	15,865,939	29,530,030	24,847,704	8,250,000	5,790,000	749,290	30,606,879	1,076,649	0	29,530,030	24,847,704	Average CRSP Evap
1919	22,651,369	29,530,030	24,847,704	8,250,000	5,790,000	749,290	30,606,879	0	0	29,530,030	24,847,704	Total Yield w/ CRSP evap
1920	22,287,632	27,414,192	23,067,356	8,250,000	5,790,000	727,207	27,414,192	0	0	27,414,192	23,067,356	Shortage Years
1921	18,526,781	29,530,030	24,847,704	8,250,000	5,790,000	727,207	34,934,617	5,404,587	0	29,530,030	24,847,704	Shortage
1922	18,447,198	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
1923	19,024,048	29,530,030	24,847,704	8,250,000	5,790,000	749,290	33,187,838	3,657,908	0	29,530,030	24,847,704	1964
1924	13,877,798	29,530,030	24,847,704	8,250,000	5,790,000	728,515	28,627,585	4,234,756	0	29,530,030	24,847,704	1965
1925	14,430,701	28,627,585	24,088,662	8,250,000	5,790,000	728,515	28,627,585	0	0	28,627,585	24,088,662	1966
1926	15,213,731	28,291,704	23,805,728	8,250,000	5,790,000	728,092	28,737,342	0	0	28,291,704	23,805,728	1967
1927	19,539,212	28,737,342	24,180,706	8,250,000	5,790,000	741,017	33,486,537	3,965,507	0	28,737,342	24,180,706	1968
1928	16,934,334	29,530,030	24,847,704	8,250,000	5,790,000	749,290	31,686,074	3,965,507	0	29,530,030	24,847,704	1969
1929	21,829,585	29,530,030	24,847,704	8,250,000	5,790,000	749,290	36,870,325	7,040,295	0	29,530,030	24,847,704	NM allocation(w/o evap)
1930	14,621,041	29,530,030	24,847,704	8,250,000	5,790,000	747,552	29,365,519	0	0	29,530,030	24,847,704	
1931	8,474,134	29,363,519	24,707,595	8,250,000	5,790,000	680,610	23,117,034	0	0	29,363,519	24,707,595	
1932	17,422,187	23,117,034	19,451,562	8,250,000	5,790,000	644,003	25,858,218	0	0	23,117,034	19,451,562	
1933	12,183,500	25,858,218	21,755,575	8,250,000	5,790,000	646,458	23,352,580	0	0	25,858,218	21,755,575	
1934	5,178,192	23,352,580	19,649,490	8,250,000	5,790,000	532,720	14,957,731	0	0	23,352,580	19,649,490	
1935	12,630,349	14,957,731	12,586,011	8,250,000	5,790,000	425,948	13,122,133	0	0	14,957,731	12,586,011	
1936	14,648,873	13,122,133	11,041,468	8,250,000	5,790,000	408,877	13,322,123	0	0	13,122,133	11,041,468	
1937	14,306,058	13,322,129	11,209,752	8,250,000	5,790,000	409,467	13,178,714	0	0	13,322,129	11,209,752	
1938	18,148,319	13,178,714	11,089,080	8,250,000	5,790,000	446,192	16,840,844	0	0	13,178,714	11,089,080	
1939	11,164,069	16,840,844	14,170,535	8,250,000	5,790,000	449,704	13,515,199	0	0	16,840,844	14,170,535	
1940	9,931,657	13,515,199	11,372,209	8,250,000	5,790,000	368,272	9,038,585	0	0	13,515,199	11,372,209	
1941	20,116,878	9,038,585	7,605,413	8,250,000	5,790,000	380,995	14,734,268	0	0	9,038,585	7,605,413	
1942	17,225,136	14,734,268	12,397,980	8,250,000	5,790,000	468,792	17,450,612	0	0	14,734,268	12,397,980	
1943	13,731,401	17,450,612	14,683,616	8,250,000	5,790,000	488,820	16,653,193	0	0	17,450,612	14,683,616	
1944	15,369,422	16,653,193	14,012,637	8,250,000	5,790,000	489,266	17,493,349	0	0	16,653,193	14,012,637	
1945	14,140,528	17,493,349	14,719,577	8,250,000	5,790,000	493,929	17,099,948	0	0	17,493,349	14,719,577	
1946	11,095,453	17,099,948	14,388,554	8,250,000	5,790,000	454,348	13,701,053	0	0	17,099,948	14,388,554	
1947	16,439,486	13,701,053	11,528,593	8,250,000	5,790,000	439,322	15,661,207	0	0	13,701,053	11,528,593	
1948	15,139,294	15,661,207	13,177,942	8,250,000	5,790,000	466,396	16,294,105	0	0	15,661,207	13,177,942	
1949	16,933,584	16,294,105	13,710,487	8,250,000	5,790,000	498,004	16,689,684	0	0	16,294,105	13,710,487	
1950	13,140,416	16,689,684	15,726,220	8,250,000	5,790,000	508,313	17,261,788	0	0	16,689,684	15,726,220	
1951	12,505,894	17,261,788	14,541,561	8,250,000	5,790,000	472,674	15,275,006	0	0	17,261,788	14,541,561	
1952	20,805,422	15,275,006	12,852,979	8,250,000	5,790,000	516,945	21,523,485	0	0	15,275,006	12,852,979	
1953	11,165,419	21,523,485	18,110,689	8,250,000	5,790,000	546,455	18,102,449	0	0	21,523,485	18,110,689	
1954	8,496,102	18,102,449	15,232,098	8,250,000	5,790,000	448,209	12,110,342	0	0	18,102,449	15,232,098	
1955	9,413,908	12,110,342	10,190,108	8,250,000	5,790,000	333,901	7,150,349	0	0	12,110,342	10,190,108	
1956	11,426,874	7,150,349	6,016,579	8,250,000	5,790,000	252,228	4,284,996	0	0	7,150,349	6,016,579	
1957	21,500,963	4,284,996	3,605,560	8,250,000	5,790,000	297,091	11,448,867	0	0	4,284,996	3,605,560	
1958	15,862,511	11,448,867	9,633,517	8,250,000	5,790,000	386,845	12,884,533	0	0	11,448,867	9,633,517	
1959	9,598,169	12,884,533	10,841,542	8,250,000	5,790,000	351,798	8,090,903	0	0	12,884,533	10,841,542	
1960	11,524,160	8,090,903	6,807,998	8,250,000	5,790,000	272,683	5,302,401	0	0	8,090,903	6,807,998	
1961	10,010,259	5,302,401	4,461,644	8,250,000	5,790,000	199,419	1,073,241	0	0	5,302,401	4,461,644	
1962	17,377,609	1,073,241	903,066	8,250,000	5,790,000	189,150	4,222,699	0	0	1,073,241	903,066	
1963	8,840,900	4,222,699	3,553,142	8,250,000	5,790,000	176,949	-1,153,349	0	0	4,222,699	3,553,142	
1964	10,863,586	0	0	8,250,000	5,790,000	132,876	-3,309,290	0	0	0	0	
1965	19,875,027	0	0	8,250,000	5,790,000	191,775	5,643,252	0	0	0	0	
1966	10,679,844	5,643,252	4,748,449	8,250,000	5,790,000	213,377	2,069,719	0	0	5,643,252	4,748,449	
1967	11,670,830	2,069,719	1,741,541	8,250,000	5,790,000	154,478	-453,929	0	0	2,069,719	1,741,541	
1968	13,739,932	0	0	8,250,000	5,790,000	132,876	-432,944	0	0	453,929	0	
1969	15,272,199	0	0	8,250,000	5,790,000	144,231	1,087,928	0	0	432,944	0	
1970	15,344,136	1,087,928	915,425	8,250,000	5,790,000	167,449	2,224,615	0	0	1,087,928	915,425	
1971	15,493,659	2,224,615	1,871,877	8,250,000	5,790,000	192,476	3,485,798	0	0	2,224,615	1,871,877	
1972	13,186,837	3,485,798	2,933,084	8,250,000	5,790,000	194,700	2,437,734	0	0	3,485,798	2,933,084	
1973	16,850,193	2,437,734	2,051,203	8,250,000	5,790,000	229,483	6,818,443	0	0	2,437,734	2,051,203	
1974	13,285,426	6,818,443	5,737,301	8,250,000	5,790,000	264,568	5,799,301	0	0	6,818,443	5,737,301	
1975	17,072,561	5,799,301	4,879,755	8,250,000	5,790,000	282,634	8,549,329	0	0	5,799,301	4,879,755	
1976	11,313,561	8,549,329	7,193,734	8,250,000	5,790,000	279,958	5,542,932	0	0	8,549,329	7,193,734	
1977	5,551,188	5,542,932	4,664,036	8,250,000	5,790,000	190,728	-3,136,608	0	0	5,542,932	4,664,036	
1978	15,335,906	0	0	8,250,000	5,790,000	144,889	1,151,019	0	0	0	0	
1979	17,825,429	1,151,019	968,512	8,250,000	5,790,000	194,383	4,742,065	0	0	1,151,019	968,512	
1980	17,927,076	4,742,065	3,990,156	8,250,000	5,790,000	269,618	8,359,523	0	0	4,742,065	3,990,156	
1981	9,015,200	8,359,523	7,034,025	8,250,000	5,790,000	252,296	3,082,427	0	0	8,359,523	7,034,025	

**Upper Basin Yield Mass Balance Analysis**  
**Run 3 - Maintain CRSP Minimum Power Pools, 7.50 maf Lower Basin Delivery, No 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	7,500,000	6,300,000	749,298	33,530,761	4,000,731	0	29,530,030	24,847,704	Storage
1907	21,201,894	29,530,030	24,847,704	7,500,000	6,300,000	749,290	36,182,434	6,652,404	0	29,530,030	24,847,704	Sedimentation Rate (Active)
1908	12,218,817	29,530,030	24,847,704	7,500,000	6,300,000	725,218	27,223,629	0	0	27,223,629	22,907,009	Bank Storage
1909	22,356,301	27,223,629	22,907,009	7,500,000	6,300,000	725,218	35,054,712	5,524,682	0	29,530,030	24,847,704	Adjusted Storage (2060)
1910	14,850,816	29,530,030	24,847,704	7,500,000	6,300,000	749,290	29,631,356	101,326	0	29,530,030	24,847,704	UB Demand Level
1911	15,498,729	29,530,030	24,847,704	7,500,000	6,300,000	749,290	30,480,469	950,439	0	29,530,030	24,847,704	LB Delivery
1912	18,623,410	29,530,030	24,847,704	7,500,000	6,300,000	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	7,500,000	6,300,000	749,290	29,517,247	0	0	29,530,030	24,847,704	
1914	21,354,814	29,517,247	24,836,947	7,500,000	6,300,000	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	7,500,000	6,300,000	739,725	28,613,582	0	0	28,613,582	24,076,569	
1916	20,142,892	28,613,582	24,076,569	7,500,000	6,300,000	739,725	34,216,749	4,686,719	0	29,530,030	24,847,704	Results
1917	22,942,804	29,530,030	24,847,704	7,500,000	6,300,000	749,290	37,923,544	8,393,514	0	29,530,030	24,847,704	Average CRSP Evap
1918	15,865,939	29,530,030	24,847,704	7,500,000	6,300,000	749,290	30,846,679	1,316,649	0	29,530,030	24,847,704	Total Yield w/ CRSP evap
1919	12,851,369	29,530,030	24,847,704	7,500,000	6,300,000	729,686	27,651,713	0	0	27,651,713	23,267,216	
1920	22,287,632	27,651,713	23,267,216	7,500,000	6,300,000	729,686	35,409,659	5,879,629	0	29,530,030	24,847,704	Shortage Years
1921	22,526,781	29,530,030	24,847,704	7,500,000	6,300,000	749,290	37,507,521	7,977,491	0	29,530,030	24,847,704	Shortage
1922	18,447,198	29,530,030	24,847,704	7,500,000	6,300,000	749,290	33,427,938	3,897,908	0	29,530,030	24,847,704	1963
1923	19,024,046	29,530,030	24,847,704	7,500,000	6,300,000	749,290	34,004,786	4,474,756	0	29,530,030	24,847,704	1964
1924	13,877,798	29,530,030	24,847,704	7,500,000	6,300,000	742,354	28,865,474	0	0	29,530,030	24,847,704	1965
1925	14,430,701	28,865,474	24,288,521	7,500,000	6,300,000	734,337	28,761,839	0	0	28,761,839	24,201,318	1966
1926	15,213,731	28,761,839	24,201,318	7,500,000	6,300,000	740,284	29,435,286	0	0	29,435,286	24,787,882	1967
1927	12,929,585	29,530,030	24,847,704	7,500,000	6,300,000	749,290	31,935,074	4,896,166	0	29,530,030	24,847,704	1968
1928	16,954,334	29,530,030	24,847,704	7,500,000	6,300,000	749,290	34,226,197	2,405,044	0	29,530,030	24,847,704	1969
1929	21,829,585	29,530,030	24,847,704	7,500,000	6,300,000	749,290	36,810,325	7,280,295	0	29,530,030	24,847,704	NM allocation(w/o evap)
1930	14,621,041	29,530,030	24,847,704	7,500,000	6,300,000	749,290	29,601,781	71,751	0	29,530,030	24,847,704	703,125 af/yr
1931	8,474,134	29,530,030	24,847,704	7,500,000	6,300,000	686,538	23,517,626	0	0	23,517,626	24,847,704	
1932	17,422,187	23,517,626	19,788,636	7,500,000	6,300,000	654,758	26,485,055	0	0	26,485,055	22,855,545	
1933	12,183,500	26,485,055	22,285,545	7,500,000	6,300,000	681,949	24,206,607	0	0	24,206,607	20,368,371	
1934	5,178,192	24,206,607	20,368,371	7,500,000	6,300,000	552,849	16,031,950	0	0	16,031,950	13,489,900	
1935	12,830,349	16,031,950	13,489,900	7,500,000	6,300,000	450,818	14,411,681	0	0	14,411,681	12,126,543	
1936	14,648,873	14,411,681	12,126,543	7,500,000	6,300,000	437,996	14,822,558	0	0	14,822,558	12,472,271	
1937	14,306,056	14,822,558	12,472,271	7,500,000	6,300,000	442,943	14,885,671	0	0	14,885,671	12,525,376	
1938	18,148,319	14,885,671	12,525,376	7,500,000	6,300,000	483,935	18,750,055	0	0	18,750,055	15,777,018	
1939	11,164,059	18,750,055	15,777,018	7,500,000	6,300,000	491,225	15,622,489	0	0	15,622,489	13,145,364	
1940	9,931,657	15,622,489	13,145,364	7,500,000	6,300,000	414,284	11,339,862	0	0	11,339,862	9,541,797	
1941	20,116,678	11,339,862	9,541,797	7,500,000	6,300,000	431,015	17,225,525	0	0	17,225,525	14,494,220	
1942	17,225,136	17,225,525	14,494,220	7,500,000	6,300,000	522,737	20,127,925	0	0	20,127,925	16,936,410	
1943	13,731,401	20,127,925	16,936,410	7,500,000	6,300,000	546,809	18,512,717	0	0	18,512,717	16,418,751	
1944	15,398,422	19,512,717	16,418,751	7,500,000	6,300,000	550,819	20,531,321	0	0	20,531,321	17,275,843	
1945	14,140,528	20,531,321	17,275,843	7,500,000	6,300,000	559,168	20,312,681	0	0	20,312,681	17,091,871	
1946	11,096,453	20,312,681	17,091,871	7,500,000	6,300,000	523,198	17,084,936	0	0	17,084,936	14,375,923	
1947	16,439,486	17,084,936	14,375,923	7,500,000	6,300,000	511,717	19,212,705	0	0	19,212,705	16,166,309	
1948	15,139,294	19,212,705	16,166,309	7,500,000	6,300,000	544,244	20,009,755	0	0	20,009,755	16,836,978	
1949	16,933,584	20,009,755	16,836,978	7,500,000	6,300,000	577,243	22,566,096	0	0	22,566,096	18,987,982	
1950	13,140,416	22,566,096	18,987,982	7,500,000	6,300,000	590,873	21,315,639	0	0	21,315,639	17,935,799	
1951	12,505,894	21,315,639	17,935,799	7,500,000	6,300,000	558,486	19,463,047	0	0	19,463,047	16,378,957	
1952	20,805,422	19,463,047	16,378,957	7,500,000	6,300,000	605,942	25,862,527	0	0	25,862,527	21,761,725	
1953	11,165,419	25,862,527	21,761,725	7,500,000	6,300,000	638,572	22,599,374	0	0	22,599,374	19,007,588	
1954	8,496,102	22,599,374	19,007,588	7,500,000	6,300,000	543,381	16,742,094	0	0	16,742,094	14,087,442	
1955	9,413,908	16,742,094	14,087,442	7,500,000	6,300,000	432,065	11,923,937	0	0	11,923,937	10,033,259	
1956	11,426,874	11,923,937	10,033,259	7,500,000	6,300,000	353,322	9,197,489	0	0	9,197,489	7,739,121	
1957	21,500,963	9,197,489	7,739,121	7,500,000	6,300,000	401,055	16,497,397	0	0	16,497,397	13,881,544	
1958	15,862,511	16,497,397	13,881,544	7,500,000	6,300,000	493,620	18,066,288	0	0	18,066,288	15,201,670	
1959	9,598,169	18,066,288	15,201,670	7,500,000	6,300,000	461,325	13,403,132	0	0	13,403,132	11,277,911	
1960	11,524,180	13,403,132	11,277,911	7,500,000	6,300,000	384,885	10,742,407	0	0	10,742,407	9,039,075	
1961	10,010,259	10,742,407	9,039,075	7,500,000	6,300,000	314,281	6,638,386	0	0	6,638,386	5,585,793	
1962	17,377,609	6,638,386	5,585,793	7,500,000	6,300,000	305,597	9,910,398	0	0	9,910,398	8,338,990	
1963	8,840,900	9,910,398	8,338,990	7,500,000	6,300,000	285,014	4,666,284	0	0	4,666,284	3,926,391	
1964	10,863,586	4,666,284	3,926,391	7,500,000	6,300,000	197,571	1,532,299	0	0	1,532,299	1,289,335	
1965	19,875,027	1,532,299	1,289,335	7,500,000	6,300,000	225,909	7,381,417	0	0	7,381,417	6,211,008	
1966	10,679,844	7,381,417	6,211,008	7,500,000	6,300,000	251,764	4,009,497	0	0	4,009,497	3,373,745	
1967	11,670,830	4,009,497	3,373,745	7,500,000	6,300,000	192,341	1,687,986	0	0	1,687,986	1,420,336	
1968	13,739,932	1,687,986	1,420,336	7,500,000	6,300,000	165,794	1,462,164	0	0	1,462,164	1,230,321	
1969	15,272,159	1,462,164	1,230,321	7,500,000	6,300,000	176,916	2,757,407	0	0	2,757,407	2,320,188	
1970	15,344,136	2,757,407	2,320,188	7,500,000	6,300,000	204,417	4,097,125	0	0	4,097,125	3,447,479	
1971	15,493,659	4,097,125	3,447,479	7,500,000	6,300,000	233,638	5,567,146	0	0	5,567,146	4,675,996	
1972	13,186,637	5,567,146	4,675,996	7,500,000	6,300,000	239,970	4,703,812	0	0	4,703,812	3,957,968	
1973	18,850,193	4,703,812	3,957,968	7,500,000	6,300,000	278,776	9,275,229	0	0	9,275,229	7,804,534	
1974	13,285,426	9,275,229	7,804,534	7,500,000	6,300,000	317,801	8,442,854	0	0	8,442,854	7,104,142	
1975	17,072,661	8,442,854	7,104,142	7,500,000	6,300,000	339,725	11,375,790	0	0	11,375,790	9,572,028	
1976	11,313,561	11,375,790	9,572,028	7,500,000	6,300,000	340,628	8,548,524	0	0	8,548,524	7,193,057	
1977	5,551,188	8,548,524	7,193,057	7,500,000	6,300,000	222,998	76,813	0	0	76,813	64,633	
1978	15,335,909	76,813	64,633	7,500,000	6,300,000	149,955	1,463,786	0	0	1,463,786	1,231,689	
1979	17,825,429	1,463,786	1,231,689	7,500,000	6,300,000	203,322	5,285,872	0	0	5,285,872	4,447,736	
1980	17,827,076	5,285,872	4,447,736	7,500,000	6,300,000	283,332	9,129,617	0	0	9,129,617	7,682,	



Upper Basin Yield Mass Balance Analysis

Run 4 - Maintain CRSP Minimum Power Pools, 7.50 maf Lower Basin Delivery, 6% Overall 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	7,500,000	6,570,000	749,290	33,260,761	3,730,731	0	29,530,030	24,847,704	
1907	21,201,694	29,530,030	24,847,704	7,500,000	6,570,000	749,290	35,912,434	6,382,404	0	29,530,030	24,847,704	Storage
1908	12,218,817	29,530,030	24,847,704	7,500,000	6,570,000	722,429	29,958,418	0	0	26,956,418	22,682,168	Sedimentation Rate (Active)
1909	22,356,301	26,956,418	22,682,168	7,500,000	6,570,000	722,429	34,530,290	4,990,260	0	29,530,030	24,847,704	Bank Storage
1910	14,650,616	29,530,030	24,847,704	7,500,000	6,570,000	747,548	29,363,098	0	0	29,530,030	24,847,704	Adjusted Storage (2060)
1911	15,499,729	29,363,098	24,707,241	7,500,000	6,570,000	747,548	30,045,280	515,249	0	29,363,098	24,707,241	UB Demand Level
1912	18,623,410	29,530,030	24,847,704	7,500,000	6,570,000	749,290	33,334,150	3,804,120	0	29,530,030	24,847,704	LB Delivery
1913	14,536,373	29,530,030	24,847,704	7,500,000	6,570,000	746,368	29,250,036	0	0	29,530,030	24,847,704	
1914	21,354,814	29,250,036	24,612,106	7,500,000	6,570,000	746,368	35,768,482	6,258,451	0	29,250,036	24,612,106	
1915	13,623,277	29,530,030	24,847,704	7,500,000	6,570,000	736,936	35,662,327	4,152,296	0	29,530,030	24,847,704	
1916	20,142,892	28,346,371	23,851,728	7,500,000	6,570,000	749,290	37,683,544	8,123,514	0	29,530,030	24,847,704	
1917	22,942,804	29,530,030	24,847,704	7,500,000	6,570,000	749,290	30,576,679	1,046,649	0	29,530,030	24,847,704	
1918	15,985,939	29,530,030	24,847,704	7,500,000	6,570,000	749,290	27,384,502	0	0	27,384,502	23,042,374	
1919	12,651,369	29,530,030	24,847,704	7,500,000	6,570,000	728,897	28,598,263	5,345,207	0	29,530,030	24,847,704	
1920	22,287,632	27,384,502	23,042,374	7,500,000	6,570,000	728,897	34,875,837	7,707,491	0	29,530,030	24,847,704	
1921	22,526,781	29,530,030	24,847,704	7,500,000	6,570,000	749,290	37,237,521	3,827,908	0	29,530,030	24,847,704	
1922	18,447,198	29,530,030	24,847,704	7,500,000	6,570,000	749,290	33,734,786	4,204,756	0	29,530,030	24,847,704	
1923	19,024,046	29,530,030	24,847,704	7,500,000	6,570,000	749,290	28,598,263	0	0	28,598,263	24,063,679	
1924	13,877,798	29,530,030	24,847,704	7,500,000	6,570,000	738,565	28,232,937	0	0	28,232,937	23,756,276	
1925	14,430,701	28,598,263	24,063,679	7,500,000	6,570,000	726,027	28,598,263	0	0	28,598,263	24,107,296	
1926	15,213,731	28,232,937	23,756,276	7,500,000	6,570,000	749,290	33,379,205	3,849,175	0	29,530,030	24,847,704	
1927	19,538,212	28,650,099	24,107,296	7,500,000	6,570,000	749,290	31,665,074	2,135,044	0	29,530,030	24,847,704	
1928	16,934,334	29,530,030	24,847,704	7,500,000	6,570,000	749,290	36,540,325	7,010,295	0	29,530,030	24,847,704	
1929	21,829,585	29,530,030	24,847,704	7,500,000	6,570,000	747,242	29,333,829	0	0	29,333,829	24,682,613	
1930	14,621,041	29,530,030	24,847,704	7,500,000	6,570,000	679,696	23,058,267	0	0	23,058,267	19,402,113	
1931	8,474,134	29,333,829	24,682,613	7,500,000	6,570,000	642,479	25,767,975	0	0	25,767,975	21,682,166	
1932	17,422,187	23,058,267	19,402,113	7,500,000	6,570,000	644,348	23,237,129	0	0	23,237,129	19,552,614	
1933	12,183,500	25,767,975	21,682,166	7,500,000	6,570,000	530,032	14,815,289	0	0	14,815,289	12,466,154	
1934	8,178,192	23,237,129	19,552,614	7,500,000	6,570,000	422,895	12,952,943	0	0	12,952,943	10,899,105	
1935	12,630,349	14,815,289	12,466,154	7,500,000	6,570,000	405,121	12,957,679	0	0	12,957,679	10,903,090	
1936	14,848,873	12,952,943	10,899,105	7,500,000	6,570,000	444,309	13,244,432	0	0	13,244,432	11,144,375	
1937	14,306,056	13,126,744	11,045,348	7,500,000	6,570,000	374,584	8,743,721	0	0	8,743,721	7,357,303	
1938	18,148,319	12,957,679	10,903,090	7,500,000	6,570,000	461,903	17,109,038	0	0	17,109,038	14,396,203	
1939	11,184,059	16,594,682	13,963,404	7,500,000	6,570,000	481,454	16,288,986	0	0	16,288,986	13,706,179	
1940	9,931,657	13,244,432	11,144,375	7,500,000	6,570,000	455,637	16,691,867	0	0	16,691,867	14,045,179	
1941	20,116,678	8,743,721	7,357,303	7,500,000	6,570,000	485,608	13,271,712	0	0	13,271,712	11,167,329	
1942	17,225,136	14,415,805	12,130,013	7,500,000	6,570,000	481,454	16,288,986	0	0	16,288,986	14,045,179	
1943	13,731,401	17,109,038	14,396,203	7,500,000	6,570,000	456,786	15,823,553	0	0	15,823,553	13,314,546	
1944	15,369,422	16,288,986	13,706,179	7,500,000	6,570,000	487,874	18,199,163	0	0	18,199,163	15,313,476	
1945	14,140,528	17,106,976	14,394,468	7,500,000	6,570,000	485,608	13,271,712	0	0	13,271,712	11,167,329	
1946	11,095,453	16,691,867	14,045,179	7,500,000	6,570,000	456,786	15,823,553	0	0	15,823,553	13,314,546	
1947	16,439,496	13,271,712	11,167,329	7,500,000	6,570,000	456,786	15,823,553	0	0	15,823,553	13,314,546	
1948	15,139,294	15,211,045	12,799,159	7,500,000	6,570,000	456,786	15,823,553	0	0	15,823,553	13,314,546	
1949	16,933,584	15,823,553	13,314,546	7,500,000	6,570,000	456,786	15,823,553	0	0	15,823,553	13,314,546	
1950	13,140,416	18,199,163	15,313,476	7,500,000	6,570,000	487,874	18,199,163	0	0	18,199,163	15,313,476	
1951	12,505,894	16,771,709	14,112,362	7,500,000	6,570,000	487,874	18,199,163	0	0	18,199,163	15,313,476	
1952	20,805,422	14,745,777	12,407,664	7,500,000	6,570,000	461,822	14,745,777	0	0	14,745,777	12,407,664	
1953	11,165,419	20,975,497	17,649,591	7,500,000	6,570,000	505,702	20,975,497	0	0	20,975,497	17,649,591	
1954	8,496,102	17,536,092	14,755,543	7,500,000	6,570,000	496,199	11,525,995	0	0	11,525,995	9,696,416	
1955	9,413,908	11,525,995	9,696,416	7,500,000	6,570,000	321,520	8,548,383	0	0	8,548,383	5,510,062	
1956	11,426,874	6,548,383	5,510,062	7,500,000	6,570,000	239,482	3,865,775	0	0	3,865,775	3,084,525	
1957	21,500,963	3,865,775	3,084,525	7,500,000	6,570,000	283,989	10,812,749	0	0	10,812,749	9,098,283	
1958	15,862,511	10,812,749	9,098,283	7,500,000	6,570,000	373,394	12,231,868	0	0	12,231,868	10,292,363	
1959	9,598,169	12,231,868	10,292,363	7,500,000	6,570,000	338,005	7,422,030	0	0	7,422,030	6,245,181	
1960	11,524,160	7,422,030	6,245,181	7,500,000	6,570,000	184,963	4,617,655	0	0	4,617,655	3,885,472	
1961	10,010,259	4,617,655	3,885,472	7,500,000	6,570,000	173,373	3,507,186	0	0	3,507,186	2,951,081	
1962	17,377,609	3,507,186	2,951,081	7,500,000	6,570,000	189,481	-1,891,395	1,891,395	0	0	0	
1963	8,840,900	0	0	7,500,000	6,570,000	191,465	-3,339,290	3,339,290	0	0	0	
1964	10,863,586	0	0	7,500,000	6,570,000	212,454	2,010,952	0	0	2,010,952	1,682,093	
1965	19,875,027	0	0	7,500,000	6,570,000	153,854	-542,082	542,082	0	0	0	
1966	10,679,844	5,613,562	4,723,467	7,500,000	6,570,000	143,921	-462,944	462,944	0	0	0	
1967	11,670,830	2,010,952	1,682,093	7,500,000	6,570,000	143,921	-462,944	462,944	0	0	0	
1968	13,739,932	0	0	7,500,000	6,570,000	143,921	-462,944	462,944	0	0	0	
1969	15,272,159	0	0	7,500,000	6,570,000	143,921	-462,944	462,944	0	0	0	
1970	15,344,136	1,058,238	890,442	7,500,000	6,570,000	166,526	2,165,848	0	0	2,165,848	1,822,428	
1971	15,493,659	2,165,848	1,822,428	7,500,000	6,570,000	190,952	3,398,555	0	0	3,398,555	2,859,675	
1972	13,186,637	3,398,555	2,859,675	7,500,000	6,570,000	192,588	2,322,603	0	0	2,322,603	1,954,327	
1973	18,650,193	2,322,603	1,954,327	7,500,000	6,570,000	226,795	6,876,001	0	0	6,876,001	5,617,444	
1974	13,285,426	6,876,001	5,617,444	7,500,000	6,570,000	261,316	5,830,111	0	0	5,830,111	4,737,392	
1975	17,072,661	5,630,111	4,737,392	7,500,000	6,570,000	278,829	8,353,944	0	0	8,353,944	7,029,330	
1976	11,313,561	8,353,944	7,029,330	7,500,000	6,570,000	275,612	5,321,894	0	0	5,321,894	4,478,046	
1977	5,551,188	5,321,894	4,478,046	7,500,000	6,570,000	188,421	-3,365,340	3,365,340	0	0	0	
1978	15,335,909	0	0	7,500,000	6,570,000	144,579	1,121,329	0	0	1,121,329	943,530	
1979	17,825,429	1,121,329	943,530	7,500,000	6,570,000	193,450	4,683,298	0	0	4,683,298	3,940,708	
1980	17,927,076	4,683,298	3,940,708	7,500,000	6,570,000	250,184	8,272,280	0	0	8,272,280	6,960,615	
1981	9,015,200	8,272,280	6,960,615	7,500,000	6,570,000	228,123	2,967,296	0	0	2,967,296	2,496,797	
1982	17,489,400	2,967,296	2,496,797	7,500,000	6,570,000	365,0						

Upper Basin Yield Mass Balance Analysis

Run 5 - Use CRSP Minimum Power Pools, 8.25 maf Lower Basin Delivery, No 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	33,833,590	29,151,263	8,250,000	5,720,000	725,390	37,888,221	3,854,831	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	33,833,590	29,151,263	Bank Storage
1909	22,386,301	33,833,590	29,151,263	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	33,833,590	29,151,263	LB Demand Level
1911	15,499,729	33,833,590	29,151,263	8,250,000	5,720,000	724,918	33,789,288	0	0	33,833,590	29,151,263	UC Delivery
1912	18,623,410	33,833,590	29,151,263	8,250,000	5,720,000	724,918	34,594,099	760,509	0	33,833,590	29,151,263	
1913	14,536,373	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	
1914	21,354,814	33,833,590	29,151,263	8,250,000	5,720,000	723,715	33,676,248	0	0	33,833,590	29,151,263	
1915	13,623,277	33,833,590	29,151,263	8,250,000	5,720,000	723,715	40,337,348	6,503,758	0	33,833,590	29,151,263	
1916	20,142,892	32,772,771	28,237,254	8,250,000	5,720,000	714,096	32,772,771	0	0	32,772,771	28,237,254	
1917	22,942,804	33,833,590	29,151,263	8,250,000	5,720,000	714,096	38,221,566	4,397,976	0	33,833,590	29,151,263	Results
1918	15,865,939	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
1919	12,651,369	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
1920	22,287,632	31,811,100	27,408,672	8,250,000	5,720,000	703,858	31,811,100	0	0	31,811,100	27,408,672	
1921	22,526,781	33,833,590	29,151,263	8,250,000	5,720,000	703,858	39,424,874	5,591,284	0	33,833,590	29,151,263	
1922	18,447,198	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	
1923	19,024,046	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	
1924	13,877,798	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	
1925	14,430,701	33,024,611	28,454,241	8,250,000	5,720,000	716,777	33,024,611	0	0	33,024,611	28,454,241	
1926	15,213,731	32,779,753	28,243,270	8,250,000	5,720,000	705,558	32,779,753	0	0	32,779,753	28,243,270	
1927	19,539,212	33,314,836	28,704,301	8,250,000	5,720,000	708,648	33,314,836	0	0	33,314,836	28,704,301	
1928	16,954,334	33,833,590	29,151,263	8,250,000	5,720,000	719,867	38,164,181	4,330,591	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	36,082,534	2,258,944	0	33,833,590	29,151,263	
1930	14,821,041	33,833,590	29,151,263	8,250,000	5,720,000	725,390	40,867,778	7,134,195	0	33,833,590	29,151,263	
1931	8,474,134	33,760,025	29,087,879	8,250,000	5,720,000	724,808	33,760,025	0	0	33,760,025	29,087,879	
1932	17,422,187	27,605,852	23,785,399	8,250,000	5,720,000	658,397	27,605,852	0	0	27,605,852	23,785,399	
1933	12,183,500	30,435,128	26,223,124	8,250,000	5,720,000	622,911	30,435,128	0	0	30,435,128	26,223,124	
1934	6,178,192	28,021,294	24,143,347	8,250,000	5,720,000	627,333	28,021,294	0	0	28,021,294	24,143,347	
1935	12,630,349	19,716,264	16,987,674	8,250,000	5,720,000	519,222	19,716,264	0	0	19,716,264	16,987,674	
1936	14,648,873	17,970,391	15,483,417	8,250,000	5,720,000	406,222	17,970,391	0	0	17,970,391	15,483,417	
1937	14,308,056	18,258,560	15,731,706	8,250,000	5,720,000	390,704	18,258,560	0	0	18,258,560	15,731,706	
1938	18,148,319	18,201,452	15,682,501	8,250,000	5,720,000	393,164	18,201,452	0	0	18,201,452	15,682,501	
1939	11,164,059	21,947,337	18,909,583	8,250,000	5,720,000	432,434	21,947,337	0	0	21,947,337	18,909,583	
1940	9,931,657	18,703,617	16,115,170	8,250,000	5,720,000	437,780	18,703,617	0	0	18,703,617	16,115,170	
1941	20,116,678	14,308,812	12,328,575	8,250,000	5,720,000	356,461	14,308,812	0	0	14,308,812	12,328,575	
1942	17,225,136	20,084,330	17,304,802	8,250,000	5,720,000	371,160	20,084,330	0	0	20,084,330	17,304,802	
1943	13,731,401	22,877,090	19,711,064	8,250,000	5,720,000	482,377	22,877,090	0	0	22,877,090	19,711,064	
1944	15,369,422	22,154,080	19,088,114	8,250,000	5,720,000	484,411	22,154,080	0	0	22,154,080	19,088,114	
1945	14,140,528	23,067,069	19,874,751	8,250,000	5,720,000	486,433	23,067,069	0	0	23,067,069	19,874,751	
1946	11,095,453	22,744,874	19,597,146	8,250,000	5,720,000	492,723	22,744,874	0	0	22,744,874	19,597,146	
1947	16,439,486	19,416,468	16,729,368	8,250,000	5,720,000	453,859	19,416,468	0	0	19,416,468	16,729,368	
1948	15,139,294	21,445,923	18,477,961	8,250,000	5,720,000	440,031	21,445,923	0	0	21,445,923	18,477,961	
1949	16,933,584	22,146,127	19,081,262	8,250,000	5,720,000	469,090	22,146,127	0	0	22,146,127	19,081,262	
1950	13,140,416	24,606,969	21,201,541	8,250,000	5,720,000	502,742	24,606,969	0	0	24,606,969	21,201,541	
1951	12,505,894	23,282,756	20,043,357	8,250,000	5,720,000	514,629	23,282,756	0	0	23,282,756	20,043,357	
1952	20,805,422	21,319,023	19,388,623	8,250,000	5,720,000	479,827	21,319,023	0	0	21,319,023	19,388,623	
1953	11,165,419	27,628,343	23,804,778	8,250,000	5,720,000	526,102	27,628,343	0	0	27,628,343	23,804,778	
1954	8,496,102	24,266,285	20,908,004	8,250,000	5,720,000	557,478	24,266,285	0	0	24,266,285	20,908,004	
1955	9,413,908	18,333,856	15,796,582	8,250,000	5,720,000	458,530	18,333,856	0	0	18,333,856	15,796,582	
1956	11,426,874	13,434,547	11,575,301	8,250,000	5,720,000	343,218	13,434,547	0	0	13,434,547	11,575,301	
1957	21,500,963	10,630,214	9,159,969	8,250,000	5,720,000	281,206	10,630,214	0	0	10,630,214	9,159,969	
1958	15,862,511	17,852,934	15,382,216	8,250,000	5,720,000	308,243	17,852,934	0	0	17,852,934	15,382,216	
1959	9,598,169	19,344,432	16,662,161	8,250,000	5,720,000	401,013	19,344,432	0	0	19,344,432	16,662,161	
1960	11,524,160	14,606,152	12,564,765	8,250,000	5,720,000	366,449	14,606,152	0	0	14,606,152	12,564,765	
1961	10,010,259	11,873,398	10,230,205	8,250,000	5,720,000	286,914	11,873,398	0	0	11,873,398	10,230,205	
1962	17,377,609	7,700,263	6,634,501	8,250,000	5,720,000	213,395	7,700,263	0	0	7,700,263	6,634,501	
1963	8,840,900	10,904,789	9,305,644	8,250,000	5,720,000	203,083	10,904,789	0	0	10,904,789	9,305,644	
1964	10,863,588	5,995,018	4,820,707	8,250,000	5,720,000	180,571	5,995,018	0	0	5,995,018	4,820,707	
1965	19,875,027	2,398,489	2,066,556	8,250,000	5,720,000	90,114	2,398,489	0	0	2,398,489	2,066,556	
1966	10,679,844	8,185,821	7,052,962	8,250,000	5,720,000	117,896	8,185,821	0	0	8,185,821	7,052,962	
1967	11,670,830	4,752,904	4,095,136	8,250,000	5,720,000	142,760	4,752,904	0	0	4,752,904	4,095,136	
1968	13,739,932	2,372,858	2,044,471	8,250,000	5,720,000	80,877	2,372,858	0	0	2,372,858	2,044,471	
1969	15,272,159	2,090,259	1,800,382	8,250,000	5,720,000	52,531	2,090,259	0	0	2,090,259	1,800,382	
1970	15,344,136	3,329,701	2,868,894	8,250,000	5,720,000	62,717	3,329,701	0	0	3,329,701	2,868,894	
1971	15,493,659	4,614,250	3,975,671	8,250,000	5,720,000	89,587	4,614,250	0	0	4,614,250	3,975,671	
1972	13,186,637	6,019,685	5,186,604	8,250,000	5,720,000	118,224	6,019,685	0	0	6,019,685	5,186,604	
1973	18,650,193	5,112,790	4,408,217	8,250,000	5,720,000	123,531	5,112,790	0	0	5,112,790	4,408,217	
1974	13,285,426	6,931,006	6,298,144	8,250,000	5,720,000	161,977	6,931,006	0	0	6,931,006	6,298,144	
1975	17,072,661	8,745,780	7,538,427	8,250,000	5,720,000	200,653	8,745,780	0	0	8,745,780	7,538,427	
1976	11,313,561	11,626,544	10,017,513	8,250,000	5,720,000	221,897	11,626,544	0	0	11,626,544	10,017,513	
1977	5,551,188	8,748,183	7,537,487	8,250,000	5,720,000	100,584	8,748,183	0	0	8,748,183	7,537,487	
1978	15,335,909	228,786	197,124	8,250,000	5,720,000	24,172	228,786	0	0	228,786	197,124	
1979	17,825,429	1,570,522	1,353,173	8,250,000	5,720,000	1,570,522	1,570,522	0	0	1,570,522	1,353,173	
1980	17,927,076	5,347,288	4,607,262	8,250,000	5,720,000	78,883	5,347,288	0	0	5,347,288	4,607,262	
1981	9,015,20											

Upper Basin Yield Mass Balance Analysis

Run 6 - Use CRSP Minimum Power Pools, 8.25 maf Lower Basin Delivery, 6% Overall 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	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
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)
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
1909	22,356,301	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)
1910	14,650,816	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
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
1912	18,623,410	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,501,810	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	720,676	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	720,676	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	20,142,882	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
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
1918	15,865,938	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	31,583,839	0	0	31,583,839	27,187,013	Shortage Years
1920	22,287,632	31,583,839	27,187,013	8,250,000	5,980,000	701,120	36,910,351	5,076,762	0	33,833,590	29,151,263	Shortage
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
1922	18,447,198	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,325,998	3,481,808	0	33,833,590	29,151,263	1964
1923	19,024,046	33,833,590	29,151,263	8,250,000	5,980,000	725,390	37,902,246	4,068,856	0	33,833,590	29,151,263	1967
1924	13,877,798	33,833,590	29,151,263	8,250,000	5,980,000	714,039	32,767,349	0	0	33,833,590	29,151,263	1968
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	27,804,823	1977
1926	15,213,731	32,270,651	27,804,823	8,250,000	5,980,000	696,184	32,559,186	0	0	32,559,186	28,053,238	
1927	19,539,212	32,559,186	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)
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	
1930	14,621,041	33,833,590	29,151,263	8,250,000	5,980,000	721,868	33,502,763	0	0	33,833,590	29,151,263	Note: NM allocation is exclusive of its portion of
1931	8,474,134	33,502,763	28,866,220	8,250,000	5,980,000	650,148	27,096,749	0	0	33,802,763	28,866,220	CRSP evaporation. Navajo evaporation would be
1932	17,422,187	27,096,749	23,346,753	8,250,000	5,980,000	609,447	29,679,489	0	0	27,096,749	23,346,753	primarily charged against NM's allocation. Shared
1933	12,183,500	29,679,489	25,572,060	8,250,000	5,980,000	608,675	27,024,314	0	0	29,679,489	25,572,060	CRSP evaporation is already removed from UC
1934	6,178,192	27,024,314	23,284,342	8,250,000	5,980,000	489,480	18,483,026	0	0	27,024,314	23,284,342	demands.
1935	12,630,349	18,483,026	15,925,107	8,250,000	5,980,000	377,512	16,505,872	0	0	18,483,026	15,925,107	
1936	14,648,873	16,505,872	14,221,578	8,250,000	5,980,000	357,102	16,567,634	0	0	16,505,872	14,221,578	Total Upper Basin depletion, inc. CRSP evap:
1937	14,306,056	16,567,634	14,274,792	8,250,000	5,980,000	354,802	16,288,888	0	0	16,567,634	14,274,792	1953-1977
1938	18,148,319	16,288,888	14,034,623	8,250,000	5,980,000	389,402	19,817,805	0	0	16,288,888	14,034,623	1931-1977
1939	11,164,059	19,817,805	17,075,162	8,250,000	5,980,000	390,177	16,381,687	0	0	19,817,805	17,075,162	1906-2000
1940	9,931,657	16,381,687	14,007,346	8,250,000	5,980,000	401,631	19,824,440	0	0	16,381,687	14,007,346	
1941	20,116,878	11,758,959	10,131,603	8,250,000	5,980,000	314,703	17,330,935	0	0	11,758,959	10,131,603	Flow Adjustments:
1942	17,225,136	17,330,935	14,932,457	8,250,000	5,980,000	419,467	19,006,373	0	0	17,330,935	14,932,457	1971
1943	13,731,401	19,824,440	17,167,040	8,250,000	5,980,000	417,381	19,728,415	0	0	19,824,440	17,167,040	1972
1944	15,369,422	19,006,373	16,376,027	8,250,000	5,980,000	419,847	19,219,295	0	0	19,006,373	16,376,027	1973
1945	14,140,528	19,728,415	16,998,143	8,250,000	5,980,000	376,846	15,707,903	0	0	19,728,415	16,998,143	1974
1946	11,095,453	19,219,295	16,559,482	8,250,000	5,980,000	359,162	17,558,227	0	0	19,219,295	16,559,482	1975
1947	16,439,486	15,707,903	13,534,041	8,250,000	5,980,000	384,448	18,083,073	0	0	15,707,903	13,534,041	1976
1948	15,139,294	17,558,227	15,128,294	8,250,000	5,980,000	414,405	20,372,251	0	0	17,558,227	15,128,294	1977
1949	16,933,584	18,083,073	15,580,505	8,250,000	5,980,000	422,676	18,859,981	0	0	18,083,073	15,580,505	1978
1950	13,140,416	20,372,251	17,552,877	8,250,000	5,980,000	384,133	16,751,752	0	0	20,372,251	17,552,877	1979
1951	12,505,894	18,859,981	16,249,903	8,250,000	5,980,000	427,143	22,900,031	0	0	18,859,981	16,249,903	1980
1952	20,805,422	16,751,752	14,433,429	8,250,000	5,980,000	455,126	19,380,324	0	0	16,751,752	14,433,429	
1953	11,165,419	22,900,031	19,730,831	8,250,000	5,980,000	352,857	13,293,569	0	0	22,900,031	19,730,831	
1954	8,496,102	19,380,324	16,698,226	8,250,000	5,980,000	234,293	8,243,183	0	0	19,380,324	16,698,226	
1955	9,413,908	13,293,569	11,453,834	8,250,000	5,980,000	149,099	5,290,558	0	0	13,293,569	11,453,834	
1956	11,426,874	8,243,183	7,102,386	8,250,000	5,980,000	193,021	12,368,901	0	0	8,243,183	7,102,386	
1957	21,500,963	5,290,558	4,558,728	8,250,000	5,980,000	282,741	13,718,671	0	0	5,290,558	4,558,728	
1958	15,862,511	12,368,901	10,657,133	8,250,000	5,980,000	245,190	8,841,650	0	0	12,368,901	10,657,133	
1959	9,598,169	13,718,671	11,820,105	8,250,000	5,980,000	162,732	5,973,078	0	0	13,718,671	11,820,105	
1960	11,524,160	8,841,650	7,618,029	8,250,000	5,980,000	86,352	1,666,985	0	0	8,841,650	7,618,029	
1961	10,010,259	5,973,078	5,146,447	8,250,000	5,980,000	73,239	4,741,355	0	0	5,973,078	5,146,447	
1962	17,377,609	1,666,985	1,436,286	8,250,000	5,980,000	58,493	-703,237	0	703,237	1,666,985	1,436,286	
1963	8,840,900	4,741,355	4,085,186	8,250,000	5,980,000	5,017	-3,371,431	0	3,371,431	4,741,355	4,085,186	
1964	10,863,586	0	0	8,250,000	5,980,000	84,427	5,880,600	0	0	0	0	0
1965	19,875,027	0	0	8,250,000	5,980,000	85,136	1,945,307	0	0	5,880,600	4,808,285	
1966	10,679,844	5,880,600	4,808,285	8,250,000	5,980,000	23,726	-839,589	0	639,589	1,945,307	1,678,091	
1967	11,670,830	1,945,307	1,678,091	8,250,000	5,980,000	5,017	-495,085	0	495,085	0	0	
1968	13,739,932	0	0	8,250,000	5,980,000	15,942	1,026,217	0	0	0	0	0
1969	15,272,159	0	0	8,250,000	5,980,000	38,320	2,102,033	0	0	1,026,217	884,196	
1970	15,344,136	1,026,217	884,196	8,250,000	5,980,000	62,559	3,303,132	0	0	2,102,033	1,811,127	
1971	15,493,859	2,102,033	1,811,127	8,250,000	5,980,000	63,562	2,196,207	0	0	3,303,132	2,846,003	
1972	13,186,637	3,303,132	2,846,003	8,250,000	5,980,000	97,793	6,518,607	0	0	2,196,207	1,892,268	
1973	18,650,193	2,196,207	1,892,268	8,250,000	5,980,000	132,344	5,441,689	0	0	6,518,607	5,616,478	
1974	13,285,426	6,518,607	5,616,478	8,250,000	5,980,000	149,550	8,134,800	0	0	5,441,689	4,688,598	
1975	17,072,661	5,441,689	4,688,598	8,250,000	5,980,000	145,822	5,072,739	0	0	8,134,800	7,009,002	
1976	11,313,561	8,134,800	7,009,002	8,250,000	5,980,000	59,200	-3,865,093	0	3,865,093	5,072,739	4,370,709	
1977	5,551,188	5,072,739	4,370,709	8,250,000	5,980,000	16,613	1,089,295	0	0	0	0	0
1978	15,335,909	0	0	8,250,000	5,980,000	65,786	4,818,938	0	0	1,089,295	938,544	
1979	17,825,429	1,089,295	938,544	8,250,000	5,980,000	141,217	8,174,797	0	0	4,818,938	3,979,710	
1980	19,927,076	4,818,938	3,979,710	8,250,000	5,980,000	122,255	2,837,743	0	0	8,174,797	7,043,464	

**Upper Basin Yield Mass Balance Analysis**  
**Run 7 - Use CRSP Minimum Power Pools, 7.50 maf Lower Basin Delivery, No 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	33,833,590	29,151,263	7,500,000	6,470,000	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	7,500,000	6,470,000	725,390	40,339,894	6,506,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)
1908	12,216,817	33,833,590	29,151,263	7,500,000	6,470,000	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	7,500,000	6,470,000	699,302	39,070,104	5,236,514	0	33,833,590	29,151,263	Adjusted Storage (2080)
1910	14,850,616	33,833,590	29,151,263	7,500,000	6,470,000	724,918	33,789,288	0	0	33,789,288	29,113,092	UB Demand Level
1911	15,493,729	33,789,288	29,113,092	7,500,000	6,470,000	724,918	34,594,099	760,590	0	33,833,590	29,151,263	LB Delivery
1912	18,623,410	33,833,590	29,151,263	7,500,000	6,470,000	725,390	37,761,810	3,928,020	0	33,833,590	29,151,263	
1913	14,536,373	33,833,590	29,151,263	7,500,000	6,470,000	723,715	33,676,248	0	0	33,676,248	29,015,696	
1914	21,354,814	33,676,248	29,015,696	7,500,000	6,470,000	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	7,500,000	6,470,000	714,096	32,772,771	0	0	32,772,771	28,237,254	
1916	20,142,892	32,772,771	28,237,254	7,500,000	6,470,000	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	7,500,000	6,470,000	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	7,500,000	6,470,000	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	7,500,000	6,470,000	703,856	31,911,100	0	0	31,911,100	27,408,672	463,436 af/yr
1920	22,287,632	31,911,100	27,408,672	7,500,000	6,470,000	703,856	39,424,874	5,591,284	0	33,833,590	29,151,263	6,933,436 af/yr
1921	22,526,781	33,833,590	29,151,263	7,500,000	6,470,000	725,390	41,684,981	7,831,391	0	33,833,590	29,151,263	Shortage Years
1922	18,447,198	33,833,590	29,151,263	7,500,000	6,470,000	725,390	37,585,398	3,751,808	0	33,833,590	29,151,263	Shortage
1923	19,024,046	33,833,590	29,151,263	7,500,000	6,470,000	725,390	38,162,246	4,328,656	0	33,833,590	29,151,263	1963
1924	13,877,798	33,833,590	29,151,263	7,500,000	6,470,000	718,777	33,024,611	0	0	33,024,611	28,454,241	1964
1925	14,430,701	33,024,611	28,454,241	7,500,000	6,470,000	705,558	32,779,753	0	0	32,779,753	28,243,270	1965
1926	15,213,731	32,779,753	28,243,270	7,500,000	6,470,000	708,848	33,314,836	0	0	33,314,836	28,704,301	1966
1927	19,539,212	33,314,836	28,704,301	7,500,000	6,470,000	719,857	38,164,181	4,330,591	0	33,833,590	29,151,263	1967
1928	16,954,334	33,833,590	29,151,263	7,500,000	6,470,000	725,390	36,092,534	2,258,944	0	33,833,590	29,151,263	1968
1929	21,629,585	33,833,590	29,151,263	7,500,000	6,470,000	725,390	40,987,785	7,134,195	0	33,833,590	29,151,263	1969
1930	14,621,041	33,833,590	29,151,263	7,500,000	6,470,000	724,806	33,760,025	0	0	33,760,025	29,151,263	NM allocation (w/o evap)
1931	8,474,134	33,760,025	29,087,879	7,500,000	6,470,000	658,307	27,605,852	0	0	27,605,852	23,785,399	722,250 af/yr
1932	17,422,187	27,605,852	23,785,399	7,500,000	6,470,000	622,911	30,435,128	0	0	30,435,128	26,223,124	
1933	12,183,500	30,435,128	26,223,124	7,500,000	6,470,000	627,333	28,021,294	0	0	28,021,294	24,143,347	
1934	8,178,192	28,021,294	24,143,347	7,500,000	6,470,000	513,222	19,716,264	0	0	19,716,264	16,987,674	
1935	12,830,349	19,716,264	16,987,674	7,500,000	6,470,000	406,222	17,970,391	0	0	17,970,391	15,483,417	
1936	14,648,873	17,970,391	15,483,417	7,500,000	6,470,000	390,704	18,258,560	0	0	18,258,560	15,731,706	
1937	14,306,056	18,258,560	15,731,706	7,500,000	6,470,000	393,164	18,201,452	0	0	18,201,452	15,682,501	
1938	18,148,319	18,201,452	15,682,501	7,500,000	6,470,000	432,544	21,947,337	0	0	21,947,337	18,909,983	
1939	11,164,059	21,947,337	18,909,983	7,500,000	6,470,000	437,780	18,703,617	0	0	18,703,617	16,115,170	
1940	9,931,657	18,703,617	16,115,170	7,500,000	6,470,000	356,481	14,308,812	0	0	14,308,812	12,328,575	
1941	20,116,678	14,308,812	12,328,575	7,500,000	6,470,000	371,160	20,084,330	0	0	20,084,330	17,304,802	
1942	17,225,136	20,084,330	17,304,802	7,500,000	6,470,000	462,377	22,877,090	0	0	22,877,090	19,711,084	
1943	13,731,401	22,877,090	19,711,084	7,500,000	6,470,000	484,411	22,154,080	0	0	22,154,080	19,088,114	
1944	15,369,422	22,154,080	19,088,114	7,500,000	6,470,000	486,433	23,067,069	0	0	23,067,069	19,874,751	
1945	14,140,528	23,067,069	19,874,751	7,500,000	6,470,000	492,723	22,744,874	0	0	22,744,874	19,597,146	
1946	11,095,453	22,744,874	19,597,146	7,500,000	6,470,000	453,859	19,416,468	0	0	19,416,468	16,729,368	
1947	16,439,488	19,416,468	16,729,368	7,500,000	6,470,000	440,031	21,445,923	0	0	21,445,923	18,477,981	
1948	15,139,294	21,445,923	18,477,981	7,500,000	6,470,000	469,090	22,146,127	0	0	22,146,127	19,081,262	
1949	16,933,584	22,146,127	19,081,262	7,500,000	6,470,000	502,742	24,806,969	0	0	24,806,969	21,201,541	
1950	13,140,416	24,806,969	21,201,541	7,500,000	6,470,000	514,629	23,262,756	0	0	23,262,756	20,043,357	
1951	12,505,894	23,262,756	20,043,357	7,500,000	6,470,000	479,627	21,319,023	0	0	21,319,023	18,368,623	
1952	20,805,422	21,319,023	18,368,623	7,500,000	6,470,000	528,102	27,628,343	0	0	27,628,343	23,804,778	
1953	11,165,419	27,628,343	23,804,778	7,500,000	6,470,000	557,478	24,266,285	0	0	24,266,285	20,908,004	
1954	8,496,102	24,266,285	20,908,004	7,500,000	6,470,000	458,530	18,333,856	0	0	18,333,856	15,796,582	
1955	9,413,908	18,333,856	15,796,582	7,500,000	6,470,000	343,218	13,434,547	0	0	13,434,547	11,575,301	
1956	11,426,874	13,434,547	11,575,301	7,500,000	6,470,000	281,206	10,630,214	0	0	10,630,214	9,159,089	
1957	21,500,963	10,630,214	9,159,089	7,500,000	6,470,000	308,243	17,852,934	0	0	17,852,934	15,382,216	
1958	15,862,511	17,852,934	15,382,216	7,500,000	6,470,000	401,013	19,344,432	0	0	19,344,432	16,667,301	
1959	9,598,169	19,344,432	16,667,301	7,500,000	6,470,000	366,449	14,606,152	0	0	14,606,152	12,584,765	
1960	11,524,180	14,606,152	12,584,765	7,500,000	6,470,000	286,914	11,873,398	0	0	11,873,398	10,230,206	
1961	10,010,259	11,873,398	10,230,206	7,500,000	6,470,000	213,395	7,700,263	0	0	7,700,263	6,834,601	
1962	17,377,609	7,700,263	6,834,601	7,500,000	6,470,000	203,083	10,904,789	0	0	10,904,789	9,395,644	
1963	8,840,900	10,904,789	9,395,644	7,500,000	6,470,000	180,671	5,595,018	0	0	5,595,018	4,820,707	
1964	10,863,586	5,595,018	4,820,707	7,500,000	6,470,000	90,114	2,398,489	0	0	2,398,489	2,066,556	
1965	19,875,027	2,398,489	2,066,556	7,500,000	6,470,000	117,696	8,185,821	0	0	8,185,821	7,052,982	
1966	10,679,844	8,185,821	7,052,982	7,500,000	6,470,000	142,760	4,752,904	0	0	4,752,904	4,095,136	
1967	11,670,830	4,752,904	4,095,136	7,500,000	6,470,000	80,877	2,372,858	0	0	2,372,858	2,044,471	
1968	13,739,932	2,372,858	2,044,471	7,500,000	6,470,000	52,591	2,090,259	0	0	2,090,259	1,800,982	
1969	15,272,159	2,090,259	1,800,982	7,500,000	6,470,000	82,717	3,329,701	0	0	3,329,701	2,868,894	
1970	15,344,136	3,329,701	2,868,894	7,500,000	6,470,000	99,587	4,614,250	0	0	4,614,250	3,975,871	
1971	15,493,659	4,614,250	3,975,871	7,500,000	6,470,000	118,224	6,019,685	0	0	6,019,685	5,186,604	
1972	13,186,637	6,019,685	5,186,604	7,500,000	6,470,000	123,531	5,112,790	0	0	5,112,790	4,405,217	
1973	18,650,193	5,112,790	4,405,217	7,500,000	6,470,000	161,977	9,631,006	0	0	9,631,006	8,298,144	
1974	13,285,426	9,631,006	8,298,144	7,500,000	6,470,000	200,653	8,745,780	0	0	8,745,780	7,535,427	
1975	17,072,661	8,745,780	7,535,427	7,500,000	6,470,000	221,897	11,626,544	0	0	11,626,544	10,017,513	
1976	11,313,581	11,626,544	10,017,513	7,500,000	6,470,000	221,923	8,748,183	0	0	8,748,183	7,537,497	
1977	5,551,188	8,748,183	7,537,497	7,500,000	6,470,000	100,584	226,786	0	0	226,786	197,124	
1978	15,335,909	226,786	197,124	7,500,000	6,470,000	24,172	1,570,522	0	0	1,570,522	1,353,173	
1979	17,825,429	1,570,522	1,353,173	7,500,000	6,470,000	78,663	5,347,288	0	0	5,347,288	4,607,262	
1980	17,927,076	5,347,288	4,607,262	7,500,000	6,470,000	159,900	9,145,065	0	0</			

Upper Basin Yield Mass Balance Analysis

Run 8 - Use CRSP Minimum Power Pools, 7.50 maf Lower Basin Delivery, 6% Overall 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	33,833,590	29,151,263	7,500,000	6,760,000	725,390	37,398,221	3,564,631	0	33,833,590	29,151,263	Storage
1907	21,201,694	33,833,590	29,151,263	7,500,000	6,760,000	725,390	40,049,884	6,216,304	0	33,833,590	29,151,263	Sedimentation Rate (Active)
1908	12,218,817	33,833,590	29,151,263	7,500,000	6,760,000	696,247	31,096,160	0	0	31,096,160	28,792,673	Bank Storage
1909	22,356,301	31,096,160	26,792,673	7,500,000	6,760,000	696,247	38,496,213	4,662,623	0	33,833,590	29,151,263	Adjusted Storage (2060)
1910	14,650,616	33,833,590	29,151,263	7,500,000	6,760,000	721,863	33,502,343	0	0	33,502,343	28,868,858	UB Demand Level
1911	15,489,729	33,833,590	29,151,263	7,500,000	6,760,000	721,863	34,020,209	186,619	0	33,833,590	29,151,263	LB Delivery
1912	18,623,410	33,833,590	29,151,263	7,500,000	6,760,000	725,390	37,471,810	3,638,020	0	33,833,590	29,151,263	
1913	14,536,373	33,833,590	29,151,263	7,500,000	6,760,000	720,860	33,389,303	0	0	33,389,303	28,768,462	
1914	21,354,814	33,389,303	28,768,462	7,500,000	6,760,000	720,860	39,763,457	5,929,867	0	33,833,590	29,151,263	
1915	13,623,277	33,833,590	29,151,263	7,500,000	6,760,000	711,041	32,485,825	0	0	33,833,590	29,151,263	
1916	20,142,892	32,485,825	27,960,019	7,500,000	6,760,000	711,041	37,657,676	3,824,086	0	32,485,825	27,960,019	Results
1917	22,942,804	33,833,590	29,151,263	7,500,000	6,760,000	725,390	41,791,004	7,957,414	0	33,833,590	29,151,263	Average CRSP Evap
1918	15,865,939	33,833,590	29,151,263	7,500,000	6,760,000	725,390	34,714,139	880,549	0	33,833,590	29,151,263	Total Yield w/ CRSP evap
1919	12,651,369	33,833,590	29,151,263	7,500,000	6,760,000	700,804	31,624,155	0	0	31,624,155	27,161,438	
1920	22,287,632	31,624,155	27,161,438	7,500,000	6,760,000	700,804	38,850,983	5,017,394	0	33,833,590	29,151,263	Shortage Years
1921	22,526,781	33,833,590	29,151,263	7,500,000	6,760,000	725,390	41,374,981	7,541,391	0	33,833,590	29,151,263	1983
1922	18,447,198	33,833,590	29,151,263	7,500,000	6,760,000	725,390	37,295,398	3,461,808	0	33,833,590	29,151,263	1964
1923	19,024,048	33,833,590	29,151,263	7,500,000	6,760,000	725,390	37,872,246	4,038,656	0	33,833,590	29,151,263	1967
1924	13,877,798	33,833,590	29,151,263	7,500,000	6,760,000	713,723	32,737,665	0	0	32,737,665	28,207,007	1968
1925	14,430,701	32,737,665	28,207,007	7,500,000	6,760,000	693,630	32,211,908	0	0	32,211,908	27,754,010	1977
1926	15,213,731	32,211,908	27,754,010	7,500,000	6,760,000	693,630	32,472,009	0	0	32,472,009	27,978,115	
1927	19,539,212	32,472,009	27,978,115	7,500,000	6,760,000	710,894	37,040,326	3,206,736	0	33,833,590	29,151,263	
1928	16,954,334	33,833,590	29,151,263	7,500,000	6,760,000	725,390	35,802,534	1,968,944	0	33,833,590	29,151,263	NM allocation (w/o evap)
1929	21,829,585	33,833,590	29,151,263	7,500,000	6,760,000	725,390	40,677,785	6,844,195	0	33,833,590	29,151,263	754,875 af/yr
1930	14,621,041	33,833,590	29,151,263	7,500,000	6,760,000	725,390	33,473,079	0	0	33,833,590	29,151,263	
1931	8,274,134	33,833,590	29,151,263	7,500,000	6,760,000	711,041	32,485,825	0	0	33,833,590	29,151,263	
1932	17,422,187	27,038,006	23,296,139	7,500,000	6,760,000	649,207	27,038,006	0	0	27,038,006	23,296,139	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.
1933	12,183,500	29,582,300	25,496,937	7,500,000	6,760,000	607,893	29,582,300	0	0	29,582,300	25,496,937	
1934	6,178,192	28,909,278	23,185,226	7,500,000	6,760,000	606,523	26,908,278	0	0	26,908,278	23,185,226	
1935	12,630,349	18,340,729	15,802,503	7,500,000	6,760,000	486,740	18,340,729	0	0	18,340,729	15,802,503	
1936	14,648,873	16,396,890	14,075,981	7,500,000	6,760,000	374,186	16,396,890	0	0	16,396,890	14,075,981	
1937	14,306,056	16,372,527	14,106,686	7,500,000	6,760,000	353,236	16,372,527	0	0	16,372,527	14,106,686	Total Upper Basin depletion, inc. CRSP evap:
1938	18,148,319	16,068,208	13,844,483	7,500,000	6,760,000	350,375	16,068,208	0	0	16,068,208	13,844,483	1953-1977
1939	11,164,059	19,572,090	16,863,452	7,500,000	6,760,000	384,437	19,572,090	0	0	19,572,090	16,863,452	8,882,986 af/yr
1940	9,931,657	16,091,464	13,864,520	7,500,000	6,760,000	384,685	16,091,464	0	0	16,091,464	13,864,520	1931-1977
1941	20,116,678	11,464,746	9,878,107	7,500,000	6,760,000	308,188	11,464,746	0	0	11,464,746	9,878,107	7,019,645 af/yr
1942	17,225,136	17,013,235	14,658,725	7,500,000	6,760,000	394,622	17,013,235	0	0	17,013,235	14,658,725	1906-2000
1943	13,731,401	19,583,749	16,873,498	7,500,000	6,760,000	394,622	19,583,749	0	0	19,583,749	16,873,498	7,176,577 af/yr
1944	15,369,422	18,643,176	16,063,094	7,500,000	6,760,000	411,974	18,643,176	0	0	18,643,176	16,063,094	
1945	14,140,528	19,343,185	16,666,227	7,500,000	6,760,000	409,413	19,343,185	0	0	19,343,185	16,666,227	Flow Adjustments:
1946	11,095,453	18,812,498	16,208,983	7,500,000	6,760,000	367,959	18,812,498	0	0	18,812,498	16,208,983	1971
1947	16,439,486	15,279,991	13,165,350	7,500,000	6,760,000	349,831	15,279,991	0	0	15,279,991	13,165,350	203,226 af
1948	15,139,294	17,109,646	14,741,793	7,500,000	6,760,000	374,681	17,109,646	0	0	17,109,646	14,741,793	1972
1949	16,933,584	17,614,259	15,176,571	7,500,000	6,760,000	404,213	17,614,259	0	0	17,614,259	15,176,571	226,985 af
1950	13,140,416	19,883,630	17,131,878	7,500,000	6,760,000	412,066	19,883,630	0	0	19,883,630	17,131,878	1973
1951	12,505,894	16,351,980	15,812,197	7,500,000	6,760,000	373,115	16,351,980	0	0	16,351,980	15,812,197	252,377 af
1952	20,805,422	16,224,759	13,979,388	7,500,000	6,760,000	415,724	16,224,759	0	0	16,224,759	13,979,388	1964
1953	11,185,419	22,354,457	19,250,760	7,500,000	6,760,000	443,316	22,354,457	0	0	22,354,457	19,250,760	1967
1954	8,496,102	18,816,559	16,212,492	7,500,000	6,760,000	340,684	18,816,559	0	0	18,816,559	16,212,492	246,685 af
1955	9,413,908	12,711,997	10,982,748	7,500,000	6,760,000	221,725	12,711,997	0	0	12,711,997	10,982,748	1975
1956	11,426,874	7,644,180	6,586,280	7,500,000	6,760,000	136,164	7,644,180	0	0	7,644,180	6,586,280	173,250 af
1957	21,500,963	4,674,890	4,027,919	7,500,000	6,760,000	179,726	4,674,890	0	0	4,674,890	4,027,919	1976
1958	15,862,511	11,736,128	10,111,931	7,500,000	6,760,000	269,084	11,736,128	0	0	11,736,128	10,111,931	246,685 af
1959	9,598,169	13,069,545	11,280,813	7,500,000	6,760,000	231,199	13,069,545	0	0	13,069,545	11,280,813	1977
1960	11,524,160	8,176,515	7,044,944	7,500,000	6,760,000	148,403	8,176,515	0	0	8,176,515	7,044,944	173,250 af
1961	10,010,259	5,292,272	4,559,859	7,500,000	6,760,000	71,893	5,292,272	0	0	5,292,272	4,559,859	1978
1962	17,377,690	970,838	836,481	7,500,000	6,760,000	58,257	970,838	0	0	970,838	836,481	152,187 af
1963	8,840,900	4,030,190	3,472,440	7,500,000	6,760,000	47,922	4,030,190	0	0	4,030,190	3,472,440	1979
1964	10,863,586	0	0	7,500,000	6,760,000	5,017	-1,436,832	1,436,832	0	0	0	153,559 af
1965	18,875,027	0	0	7,500,000	6,760,000	64,111	-3,401,431	3,401,431	0	0	0	161,893 af
1966	10,679,844	5,550,916	4,782,709	7,500,000	6,760,000	84,195	5,550,916	0	0	5,550,916	4,782,709	
1967	11,670,830	1,886,565	1,625,478	7,500,000	6,760,000	25,101	1,886,565	0	0	1,886,565	1,625,478	
1968	13,739,932	0	0	7,500,000	6,760,000	5,017	-727,706	727,706	0	0	0	
1969	15,272,158	0	0	7,500,000	6,760,000	5,017	-525,085	525,085	0	0	0	
1970	15,344,136	996,533	858,620	7,500,000	6,760,000	37,378	996,533	0	0	996,533	858,620	
1971	15,493,656	2,043,291	1,760,514	7,500,000	6,760,000	61,006	2,043,291	0	0	2,043,291	1,760,514	
1972	13,186,637	3,215,943	2,770,889	7,500,000	6,760,000	61,409	3,215,943	0	0	3,215,943	2,770,889	
1973	18,850,193	2,081,171	1,793,152	7,500,000	6,760,000	95,0						

**APPENDIX B**

**Reservoir Storage**

### Upper Colorado River Basin Reservoir Storage

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	629,500	748,500	38,300	WY	GR	BGRW	Hydromet
2 Blue Mesa	X	829,500			748,500	CO	CR	BMDC	Hydromet
3 Boulder Lake	X	22,280			22,280	WY	GR		Jade Henderson Superintendent for Region IV
4 Bottle Hollow	X	11,779			11,779	UT	GR	BHRU	
5 Crawford	X	13,970			13,970	CO	CR	CFRC	Erik Knight from GJ office
6 Crystal	X	17,536	17,536	13,000	13,000	CO	CR	CFRC	Hydromet
7 Currant Creek	X	15,460			15,460	UT	GR	CURU	Hydromet
8 Dillon	X	252,878			252,878	CO	CR		NRCS Website <a href="http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html">http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html</a>
9 Eden	X	13,184			13,184	WY	GR	EDRU	NRCS Website
10 Electric Lake - Utah Power a	X	31,500			31,500	UT	GR		Connelly Baldwin at Pacific Corp. <a href="http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html">http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html</a>
11 Elkhead	X	10,400			10,400	CO	CR		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	3,515,700	UT	GR	FGRU	Hydromet
13 Fontenelle	X	344,800			344,800	WY	GR	FTRW	Hydromet
14 Fremont Lake	X	30,899			30,899	WY	GR		Jade Henderson Superintendent for Region IV
15 Gould	X	10,380			10,380	CO	CR		George Wear with Colorado Division of Water Resources <a href="mailto:george.wear@dwr.state.co.us">george.wear@dwr.state.co.us</a>
16 Fruitgrowers	X	4,460			4,460	CO	CR	FGRC	Hydromet
17 Granby	X	540,033			540,033	CO	CR		NRCS Website <a href="http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html">http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html</a>
18 Green Mountain	X	153,678			153,678	CO	CR	GMRC	NRCS Website <a href="http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html">http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html</a>
19 Groundhog	X	27,500			27,500	CO	CR		NRCS Website <a href="http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html">http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html</a>
20 Gurley	X	12,035			12,035	CO	CR		George Wear with Colorado Division of Water Resources <a href="mailto:george.wear@dwr.state.co.us">george.wear@dwr.state.co.us</a>
21 Homestake	X	42,882			42,882	CO	CR	JGRC	Hydromet
22 Jackson Gulch	X	9,951			9,951	CO	CR		NRCS Website <a href="http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html">http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html</a>
23 Joe's Valley	X	61,500			61,500	UT	CR	JVRU	Hydromet
24 Johnson	X	15,300			15,300	UT	CR		
25 Kenny Reservoir (Taylor Drg	X	9,400			9,400	CO	CR		
26 Lake Powell	X	24,322,000	24,322,000	20,308,919	20,308,919	AZ	CR	GLDA	<a href="mailto:Erin.Light@state.co.us">Erin.Light@state.co.us</a> Division 6 Water Resources for State of Colorado
27 Lake Vista Naughton	X	89,645			89,645	WY	GR		Connelly Baldwin at Pacific Corp. <a href="mailto:Connelly.Baldwin@pacifiCorp.com">Connelly.Baldwin@pacifiCorp.com</a> or 801-220-4636
28 Lemon	X	89,645			89,645	WY	GR	LMRC	Hydromet
29 Long Park	X	14,600			14,600	UT	GR		
30 McPhee	X	247,400			247,400	CO	CR	MCRC	Hydromet
31 Meads Cabin	X	29,870			29,870	WY	GR	MERW	Hydromet
32 Millsite	X	20,000			20,000	UT	GR		
33 Miramonte	X	11,620			11,620	CO	CR	MNLU	George Wear with Colorado Division of Water Resources <a href="mailto:george.wear@dwr.state.co.us">george.wear@dwr.state.co.us</a>
34 Moon Lake	X	49,500			49,500	NM	SJR		
35 Morgan Lake Dam	X	42,800			42,800	UT	CR		
36 Morrow Point	X	117,025	117,025	42,120	42,120	CO	CR	MPRC	Hydromet
37 Naraguineap	X	22,700			22,700	CO	SJR		NRCS Website <a href="http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html">http://www.wcc.nrcs.usda.gov/wsf/reservoir/resv_rpt.html</a>
38 Navajo	X	1,696,000			1,696,000	NM	SJR	NVRN	Hydromet
39 New Fork Lake	X	20,340			20,340	WY	GR		Jade Henderson Superintendent for Region IV
40 Paozia	X	16,703			16,703	CO	CR	PARC	Hydromet
41 Pelican Lake	X	15,850			15,850	UT	GR		
42 Pleasant Valley (Lake Catarr	X	7,275			7,275	CO	CR		<a href="mailto:Erin.Light@state.co.us">Erin.Light@state.co.us</a> Division 6 Water Resources for State of Colorado
43 Recapture Creek	X	16,000			16,000	UT	GR		
44 Redfleet	X	25,700			25,700	UT	GR	RFRU	Hydromet
45 Ridgway	X	82,980			82,980	CO	CR	RWRC	Hydromet
46 Rifle Gap	X	12,708			12,708	CO	CR	RGRC	Hydromet
47 Ruedi	X	102,330			102,330	CO	CR	RURC	Great Planes Region Website
48 Scofield	X	65,600			65,600	UT	GR	SFRU	Hydromet
49 Shadow Mountain	X	18,388			18,388	CO	CR	SMRC	Great Planes Region Website
50 Silver Jack	X	13,000			13,000	CO	CR	SJRC	Hydromet
51 Soddler Creek	X	1,105,910			1,105,910	UT	GR		
52 Stagecoach	X	33,275			33,275	CO	GR	SJRW	Hydromet
53 Stevens	X	165,320			165,320	CO	GR	SVRU	<a href="mailto:Erin.Light@state.co.us">Erin.Light@state.co.us</a> Division 6 Water Resources for State of Colorado
54 Stetline	X	13,880			13,880	WY	GR	SLRW	Hydromet
55 Steamboat Lake	X	25,400			25,400	CO	GR		
56 Steinkjer	X	34,455			34,455	UT	GR	STRU	<a href="mailto:Erin.Light@state.co.us">Erin.Light@state.co.us</a> Division 6 Water Resources for State of Colorado
57 Taylor Park	X	106,210			106,210	CO	GR	TPRC	Hydromet
58 Upper Stillwater	X	31,382			31,382	UT	GR	USRU	Hydromet
59 Vallejo	X	125,400			125,400	CO	GR	VCRU	Hydromet
60 Vega	X	33,311			33,311	CO	SJR	VGRU	Erik Knight from GJ office
61 Williams Creek	X	10,084			10,084	CO	CR		George Wear with Colorado Division of Water Resources <a href="mailto:george.wear@dwr.state.co.us">george.wear@dwr.state.co.us</a>
62 Williams Fork	X	96,824			96,824	WY	GR	WFRC	Great Planes Region Website
63 Willow Lake	X	18,816			18,816	WY	GR		Jade Henderson Superintendent for Region IV
64 Willow Creek	X	10,550			10,550	CO	CR	WFRC	Great Planes Region Website
65 Wolford Mountain	X	66,000			66,000	CO	CR	WCRU	George Wear with Colorado Division of Water Resources <a href="mailto:george.wear@dwr.state.co.us">george.wear@dwr.state.co.us</a>
66 Yampico	X	8,000			8,000	CO	CR		<a href="mailto:Erin.Light@state.co.us">Erin.Light@state.co.us</a> Division 6 Water Resources for State of Colorado
<b>Total Capacity</b>		<b>35,233,296</b>	<b>30,731,061</b>	<b>25,665,339</b>	<b>30,167,576</b>				

## **APPENDIX C**

### **CRSP Evaporation Analysis**

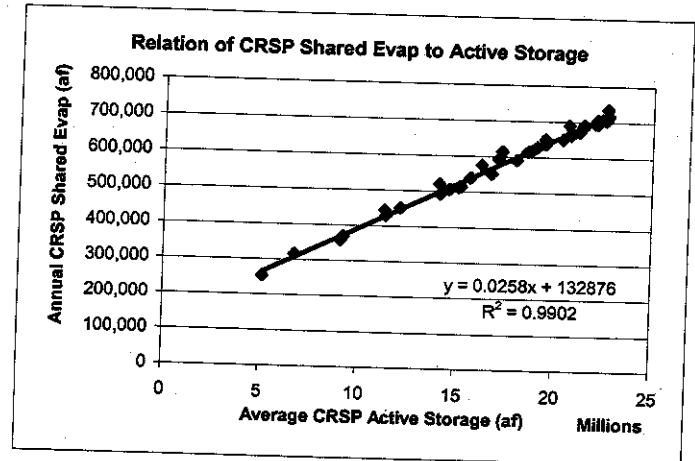


### Relationships of CRSP Shared Reservoir Evaporation to Total CRSP Storage

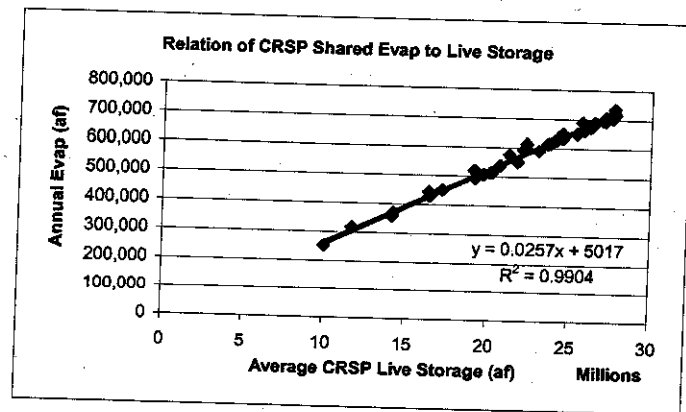
Year	Average CRSP Live Storage (af)	Average CRSP Active Storage (af)	CRSP Shared Evap (af)
1968	10,006,534	5,123,250	251,646
1969	11,701,142	6,764,000	315,083
1970	14,222,401	9,231,741	367,164
1971	16,417,858	11,354,088	442,260
1972	17,229,715	12,165,945	449,544
1973	19,703,066	14,639,296	504,409
1974	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		Flamingo Gorge Reservoir		Navajo Reservoir		Blue Mesa Reservoir		Morrow Point Reservoir		Crystal Reservoir		Total All CRSP Reservoirs	
	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)	Annual Evap Amount (af)	EOY Active Storage (af)	Annual Shared Evap (af)
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	57,000	700	0	0	0	0	0	0	0	0
1983	870,000	25,000	683,500	20,000	331,634	8,323	0	0	0	0	0	0	70,000	53,323
1984	4,228,977	76,171	1,087,900	42,320	382,320	10,647	0	0	0	0	0	0	2,185,334	650,500
1985	8,755,838	144,900	2,395,300	47,402	404,111	14,630	0	0	0	0	0	0	5,707,097	1,188,800
1986	5,862,784	181,801	2,243,300	66,889	400,369	10,730	100	0	0	0	0	0	9,555,248	5,028,100
1987	6,237,331	158,145	2,288,300	66,889	400,369	10,730	2,500	0	0	0	0	0	8,785,352	4,178,900
1988	7,036,300	185,029	1,912,939	54,077	598,132	13,048	4,500	0	0	0	0	0	8,435,293	4,641,100
1989	9,527,861	252,105	1,595,939	54,077	1,043,002	22,326	6,000	0	0	0	0	0	10,546,485	5,695,400
1990	12,014,346	305,678	1,781,250	51,442	1,048,180	22,564	8,064	0	0	0	0	0	12,824,480	7,922,600
1991	12,973,459	385,262	2,704,322	98,523	981,266	20,505	431,077	0	0	0	0	0	15,588,982	10,540,982
1992	17,397,040	417,269	3,088,954	79,091	982,889	19,991	415,061	0	0	0	0	0	17,126,304	12,167,284
1993	17,298,392	498,708	3,262,393	77,932	1,112,831	21,646	598,694	0	0	0	0	0	17,075,590	12,065,061
1994	18,846,968	524,418	3,430,797	83,884	1,185,683	21,646	533,575	0	0	0	0	0	17,075,590	12,065,061
1995	18,138,140	533,889	3,129,279	83,884	1,205,201	25,255	478,276	0	0	0	0	0	17,075,590	12,065,061
1996	15,060,897	467,624	1,980,703	62,883	979,918	22,439	355,326	0	0	0	0	0	15,113,161	20,065,061
1997	15,343,792	443,338	2,873,304	66,716	1,954,470	24,307	295,326	0	0	0	0	0	15,376,288	13,328,188
1998	20,395,402	536,288	2,997,144	67,120	1,233,240	27,623	594,351	0	0	0	0	0	22,123,980	17,075,590
1999	21,892,374	600,984	3,013,072	72,311	1,382,000	29,616	538,000	0	0	0	0	0	25,113,161	20,065,061
2000	19,670,864	596,573	2,763,188	74,001	1,382,000	29,616	538,000	0	0	0	0	0	23,096,884	16,018,884
2001	22,062,326	579,638	3,307,239	78,296	1,475,159	30,937	400,276	0	0	0	0	0	19,936,073	14,888,573
2002	22,062,326	639,987	3,371,988	85,864	1,545,720	30,937	400,276	0	0	0	0	0	26,685,188	21,693,088
2003	21,991,934	621,218	3,478,535	84,957	1,538,197	31,194	668,201	0	0	0	0	0	24,099,424	19,047,324
2004	22,300,656	613,058	3,116,559	80,368	1,382,591	30,937	400,276	0	0	0	0	0	27,572,033	22,519,833
2005	22,000,000	613,058	3,257,088	81,239	1,429,601	30,200	547,283	0	0	0	0	0	27,706,281	22,654,161
2006	22,000,000	613,058	3,257,088	81,239	1,429,601	30,200	547,283	0	0	0	0	0	27,533,616	22,244,102
2007	22,223,202	603,875	2,858,441	77,191	1,149,810	24,350	468,550	0	0	0	0	0	27,010,728	21,968,628
2008	18,292,024	561,811	2,943,401	73,516	1,230,357	26,906	568,467	0	0	0	0	0	23,246,202	20,868,452
2009	15,246,718	484,809	3,949,072	60,368	1,381,813	26,704	647,084	0	0	0	0	0	23,180,150	18,108,050
2010	14,251,955	420,198	3,326,132	50,368	1,381,813	26,704	647,084	0	0	0	0	0	20,452,119	15,409,019
2011	13,334,385	403,390	3,913,793	48,461	1,567,023	30,954	504,046	0	0	0	0	0	18,831,025	14,779,928
2012	18,402,438	483,899	3,317,500	60,461	1,567,023	30,954	504,046	0	0	0	0	0	18,598,456	13,534,376
2013	17,220,702	504,294	2,835,277	78,489	1,391,103	30,153	578,329	0	0	0	0	0	18,598,456	13,534,376
2014	20,497,980	562,091	3,246,287	78,489	1,461,480	30,153	578,329	0	0	0	0	0	24,098,871	18,868,571
2015	21,955,054	592,707	3,246,287	78,489	1,461,480	30,153	578,329	0	0	0	0	0	22,152,920	17,100,620
2016	21,955,054	592,707	3,246,287	78,489	1,461,480	30,153	578,329	0	0	0	0	0	22,152,920	17,100,620
2017	21,955,054	592,707	3,246,287	78,489	1,461,480	30,153	578,329	0	0	0	0	0	22,152,920	17,100,620
2018	21,955,054	592,707	3,246,287	78,489	1,461,480	30,153	578,329	0	0	0	0	0	22,152,920	17,100,620
2019	21,955,054	592,707	3,246,287	78,489	1,461,480	30,153	578,329	0	0	0	0	0	22,152,920	17,100,620
2020	19,823,238	605,738	3,289,090	76,352	1,500,893	28,612	671,723	0	0	0	0	0	20,903,478	16,903,478
2001	17,985,982	532,983	2,981,270	74,184	1,288,792	28,850	504,011	0	0	0	0	0	21,170,889	16,879,889
2002	13,773,841	436,498	2,631,819	67,919	828,816	20,983	283,191	0	0	0	0	0	22,874,598	17,822,488
2003	14,688,774	352,778	2,600,058	67,223	710,076	17,985	376,594	0	0	0	0	0	17,689,312	12,587,212
2004	8,063,016	278,348	2,742,843	68,248	991,373	20,953	491,453	0	0	0	0	0	13,015,340	7,983,240

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 3480 and 3700. Storage began March 1983.
- (2) Flamingo Gorge Reservoir statistics: Dead storage 39,700 af at elevation 5740; Live storage capacity 3,748,500 af between elevations 5740 and 6040; Active storage capacity 3,516,000 af between elevations 5871 and 6040. Storage began November 1982.
- (3) Navajo Reservoir statistics: Dead storage 12,800 af at elevation 5775; Live storage capacity 1,701,300 af between elevations 5775 and 6085; Active storage capacity 1,039,500 af between elevations 5890 and 6085. Storage began June 1982.
- (4) Aspinall Unit statistics: Blue Mesa Reservoir - Dead storage 111,200 af at elevation 7398; Live storage capacity 829,800 af between elevations 7358 and 7519; Active storage capacity 748,800 af between elevations 7398 and 7519. Storage began October 1965. End-of-year 1965 total storage for Blue Mesa Reservoir was 85,240 af (0 live storage). Storage began January 1968. Crystal Reservoir - Dead storage 8,000 af at elevation 6870; Live storage capacity 17,000 af between elevations 6870 and 6785; Active storage capacity 13,000 af between elevations 6700 and 6785. Storage began March 1977.
- (5) Total CRSP Live storage capacity is 30,736,400 af, and total CRSP Active storage capacity is 25,684,300 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 1968-70, and Crystal Reservoir for 1968-70, Navajo Reservoir for 1962-83, Navajo Reservoir reduced for when storage began, Crystal Reservoir evaporation for 1970-2004 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, Flamingo 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(g) apportionments. Lake evaporation for Navajo Reservoir is accounted separately.

**APPENDIX D**

**New Mexico Depletion Schedule**

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

	<u>2000</u>	<u>2010</u>	<u>2020</u>	<u>2030</u>	<u>2040</u>	<u>2050</u>	<u>2060</u>
<b>IRRIGATION USES (1)</b>							
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
Farmers Mutual Ditch	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Jewett Valley Ditch	11.2	11.2	11.2	11.2	11.2	11.2	11.2
Chaco River drainage irrigation	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Non-Navajo Irrigation Subtotal	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Irrigation Total	86.5	86.5	86.5	86.5	86.5	86.5	86.5
<b>STOCKPOND EVAPORATION AND STOCK USE</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>
<b>MUNICIPAL AND DOMESTIC USES (1)</b>							
Current Municipal and Industrial Uses							
Animas-La Plata Project:	9.7	9.7	9.7	9.7	9.7	9.7	9.7
San Juan Water Commission							
Navajo Nation	1.0	5.0	10.4	10.4	10.4	10.4	10.4
La Plata Conservancy District	0.0	1.0	2.0	2.3	2.3	2.3	2.3
Ridges Basin Reservoir Evaporation - NM share	0.0	0.0	0.8	0.8	0.8	0.8	0.8
Animas-La Plata Project Subtotal	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Navajo-Gallup Water Supply Project: (2)	1.0	6.0	13.3	13.6	13.6	13.6	13.6
Navajo Nation							
Jicarilla Apache Nation	0.0	0.0	7.9	10.2	12.5	12.5	12.5
Navajo-Gallup Project Subtotal (within Basin)	0.0	0.0	0.8	1.0	1.2	1.2	1.2
Navajo Nation Municipal Use, Future (exc. NGWSP)	0.0	0.0	8.7	11.2	13.7	13.7	13.7
Jicarilla Apache Nation Municipal Use (exc. NGWSP)	0.0	0.0	1.0	1.0	2.0	2.0	2.0
Scattered Rural Domestic (including Jicarilla)	0.0	0.0	0.0	0.4	0.6	0.6	0.6
Municipal and Domestic Total	1.0	1.0	1.0	1.1	1.1	1.2	1.2
<b>POWER AND INDUSTRIAL USES</b>	<b>11.7</b>	<b>16.7</b>	<b>33.7</b>	<b>37.0</b>	<b>40.7</b>	<b>40.8</b>	<b>40.8</b>
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
<b>EXPORTS</b>							
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
<b>RESERVOIR EVAPORATION</b>							
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
<b>TOTAL DEPLETIONS (4)</b>							
State Share of Upper Basin Yield (5)	469.9	539.6	607.5	635.0	641.9	642.0	642.0
Remaining Available (5,6)	642.4	642.4	642.4	642.4	642.4	642.4	642.4
Percent of State Share Remaining	172.5	102.8	34.9	7.4	0.5	0.4	0.4
	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.

**APPENDIX E**

**Upper Colorado River Commission  
Resolution**

**RESOLUTION OF THE  
UPPER COLORADO RIVER COMMISSION**

Regarding the Availability of Water from Navajo Reservoir for Navajo Nation Uses  
within the State of New Mexico

WHEREAS, the State of New Mexico has proposed the Navajo-Gallup Water Supply Project to provide a needed renewable water supply from the San Juan River for municipal and domestic uses for Indian and non-Indian communities located within New Mexico in both the Upper Basin and the Lower Basin; and

WHEREAS, the State of New Mexico and the Navajo Nation on April 19, 2005, executed the San Juan River Basin in New Mexico Navajo Nation Water Rights Settlement Agreement (the "Settlement Agreement"), which is conditioned upon, among other things, the implementation of the Navajo Nation components of the Navajo-Gallup Water Supply Project within New Mexico; and

WHEREAS, the source of water supply for the proposed Navajo-Gallup Water Supply Project would be Navajo Reservoir and the San Juan River in New Mexico; and

WHEREAS, water from Navajo Reservoir and the San Juan River would be delivered to the proposed Navajo-Gallup Water Supply Project to meet the water demands of Navajo Nation communities in New Mexico through a proposed Settlement Contract between the United States, acting through the Secretary of the Interior, and the Navajo Nation (Appendix 4 to the Settlement Agreement); and

WHEREAS, Public Law 87-483 at section 11(a) requires that no new long-term contracts "... shall be entered into for the delivery of water stored in Navajo Reservoir or any other waters of the San Juan River and its tributaries, as aforesaid, until the Secretary has determined by hydrologic investigations that sufficient water to fulfill said contract is reasonably likely to be available for use in the State of New Mexico during the term thereof under the allocations made in articles III and XIV of the Upper Colorado River Basin compact, and has submitted such determination to the Congress of the United States and the Congress has approved such contracts"; and

WHEREAS, pursuant to Public Law 87-483, and in furtherance of the Jicarilla Apache Tribe Water Rights Settlement Act of 1992 and the Navajo Reservoir water supply contract approved by said Act, the Secretary of the Interior on February 2, 1989, approved the report on "Hydrologic Determination, 1988, Water Availability from Navajo Reservoir and the Upper Colorado River Basin for Use in New Mexico" (the "1988 Hydrologic Determination"); and

WHEREAS, the 1988 Hydrologic Determination evaluated the availability of water from the Navajo Reservoir supply for uses in New Mexico through the 2040 planning horizon; and

WHEREAS, an update and extension to the 1988 Hydrologic Determination is needed to evaluate the availability of water from the Navajo Reservoir supply through a 2060 planning horizon under the allocation of water made to the State of New Mexico by the Upper Colorado River Basin Compact for the purpose of furthering Congressional legislative approval of the Settlement Agreement, the authorization of the proposed Navajo-Gallup Water Supply Project, and the legislative approval of the proposed Settlement Contract for the Navajo Nation's project uses in New Mexico; and

WHEREAS, the proposed Settlement Contract between the United States and the Navajo Nation would provide water supplies for Navajo Nation uses in New Mexico under both the Navajo-Gallup Water Supply Project and the Navajo Indian Irrigation Project which was authorized by Public Law 87-483, and would supersede the existing Navajo Reservoir water supply contract for the Navajo Indian Irrigation Project; and

WHEREAS, the US Bureau of Reclamation has presented to the Upper Colorado River Commission for its consideration a draft hydrologic determination, dated May 2006, that evaluates the availability of water from the Navajo Reservoir supply through 2060 and shows: (1) at least 5.76 million acre-feet of water is reasonably available annually for use by the Upper Basin, exclusive of reservoir evaporation at Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs of the Colorado River Storage Project; and (2) sufficient water is reasonably likely to be available from the Navajo Reservoir supply to fulfill the proposed Settlement Contract for the Navajo Nation's uses in New Mexico under the Navajo-Gallup Water Supply Project and the Navajo Indian Irrigation Project, in addition to existing Navajo Reservoir water supply contracts for other uses, under the allocations made to New Mexico in Articles III and XIV of the Upper Colorado River Basin Compact; and

WHEREAS, the Settlement Agreement would provide at subparagraph 9.3.1: "The Navajo Nation and the United States agree that the State of New Mexico may administer in priority water rights in the San Juan River Basin in New Mexico, including rights of the Navajo Nation, as may be necessary for New Mexico to comply with its obligations under interstate compacts and other applicable law"; and

WHEREAS, the Upper Colorado River Commission supports water resource development in the Upper Colorado River Basin to enable the Upper Division States to fully develop their compact apportionments of Colorado River water while meeting compact obligations relating to the flow of the Colorado River at Lee Ferry; and

WHEREAS, it is the position of the Upper Colorado River Commission and the Upper Division States that, with the delivery at Lee Ferry of 75 million acre-feet of water in each period of ten consecutive years, the water supply available in the Colorado River

System below Lee Ferry is sufficient to meet the apportionments to the Lower Basin provided for in Articles III (a) and III (b) of the Colorado River Compact; and

WHEREAS, it is the position of the Upper Colorado River Commission and the Upper Division States that the obligation of the Upper Basin under Article III(c) of the Colorado River Compact to deliver water toward the Mexican Treaty obligation does not require the delivery at Lee Ferry of 0.75 million acre-feet of water annually; and

WHEREAS, the Upper Colorado River Commission anticipates that the Upper Division States will take all actions necessary to ensure that all Upper Basin States have access to their respective apportionments as specified in the Upper Colorado River Basin Compact; and

WHEREAS, the Upper Colorado River Commission on June 19, 2003, resolved that: (1) "the States of Colorado, New Mexico, Utah and Wyoming, support and to the extent necessary consent to the diversion of water from the Upper Basin for use in the Lower Basin solely within New Mexico via the proposed Navajo-Gallup Water Supply Project; provided, that any water so diverted by said project to the Lower Basin portion of New Mexico, being a depletion of water at Lee Ferry, shall be a part of the consumptive use apportionment made to the State of New Mexico by Article III (a) of the Upper Colorado River Compact;" and (2) "the Upper Colorado River Commission supports such Congressional action as may be necessary to authorize the Navajo-Gallup Water Supply Project."

NOW, THEREFORE, BE IT RESOLVED by the Upper Colorado River Commission, that the Commission supports Congressional action to: (1) approve the Settlement Agreement; (2) authorize the proposed Navajo-Gallup Water Supply Project; and (3) approve the proposed Settlement Contract for the Navajo Nation's uses in New Mexico from the Navajo Reservoir supply under the Navajo-Gallup Water Supply Project and the Navajo Indian Irrigation Project.

BE IT FURTHER RESOLVED, that while the Upper Colorado River Commission does not endorse all of the study assumptions used by the Bureau of Reclamation in its May 2006 draft hydrologic determination, including an assumption of a 6 percent allowable overall shortage, and specifically disagrees with the modeling assumption of a minimum Upper Basin delivery of 8.25 million acre-feet annually at Lee Ferry, the Commission supports a determination by the Secretary of the Interior that at least 5.76 million acre-feet of water is available annually for use by the Upper Basin, exclusive of reservoir evaporation at Lake Powell, Flaming Gorge Reservoir and the Aspinall Unit reservoirs of the Colorado River Storage Project.

BE IT FURTHER RESOLVED, that the Upper Colorado River Commission supports a determination by the Secretary of the Interior that sufficient water is reasonably likely to be available to fulfill the proposed Settlement Contract for the Navajo Nation's uses in New Mexico from the Navajo Reservoir supply under the Navajo-Gallup Water Supply Project and the Navajo Indian Irrigation Project, in addition



to existing Navajo Reservoir water supply contracts for other uses, under the allocations made to New Mexico in Articles III and XIV of the Upper Colorado River Basin Compact.


BE IT FURTHER RESOLVED, that nothing in this Resolution, or resulting from the adoption of this Resolution, shall limit the right or ability of any Upper Basin State to develop the full apportionment made to it under the Colorado River Compact and the Upper Colorado River Basin Compact.

BE IT FURTHER RESOLVED, that a copy of this resolution be transmitted to the Regional Director, Upper Colorado Region, Bureau of Reclamation, Salt Lake City, Utah.

#### CERTIFICATE

I, Don A. Ostler, Executive Director and Secretary of the Upper Colorado River Commission, do hereby certify that the Upper Colorado River Commission adopted the above Resolution at its regular meeting held in Jackson Hole, Wyoming, on June 5, 2006.

WITNESS my hand this 9th day of June 2006.

  
DON A. OSTLER  
Executive Director and Secretary