RECLAMATION

Managing Water in the West

DRAFT Annual Operating Plan for Colorado River Reservoirs 2013

Edits, in red, indicate changes to the draft 2013 AOP posted on Reclamation's website for the 2013 AOP ~~First~~ Second Consultation.

Hydrologic projections in this draft document of the 2013 AOP are based on the ***August 2012 24-Month Study****.* ~~*Subsequent drafts will be updated with contemporary projections of hydrology.*~~

Text and values highlighted in blue are provisional and subject to change.

U.S. Department of the Interior
Bureau of Reclamation

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INTRODUCTION

Background

Each year's Annual Operating Plan (AOP) for Colorado River Reservoirs reports on both the past operations of the Colorado River reservoirs for the completed year as well as projected operations and releases from these reservoirs for the current (i.e., upcoming) year. Accordingly, this 2013 AOP reports on 2012 operations as well as projected operations for 2013. In recent years, additional operational rules, guidelines, and decisions have been put into place for Colorado River reservoirs including the 1996 Glen Canyon Dam Record of Decision[1] (ROD), the 1997 Operating Criteria for Glen Canyon Dam,[2] the 1999 Off-stream Storage of Colorado River Water Rule (43 CFR Part 414),[3] the 2001 Interim Surplus Guidelines[4] addressing operation of Hoover Dam, the 2006 Flaming Gorge Dam ROD,[5] the 2006 Navajo Dam ROD[6] to implement recommended flows for endangered fish, the 2007 Interim Guidelines for the operations of Lake Powell and Lake Mead,[7] and numerous environmental assessments addressing experimental releases from Glen Canyon Dam. Each AOP incorporates these rules, guidelines, and decisions and implements the criteria contained in the applicable decision document or documents. Thus, the AOP makes projections and reports on how the Bureau of Reclamation (Reclamation) will implement these decisions in response to changing water supply conditions as they unfold during the upcoming year, when conditions become known. Congress has charged the Secretary of the Interior (Secretary) with stewardship and responsibility for a wide range of natural, cultural, recreational, and tribal resources within the Colorado River Basin. The Secretary has the authority to operate and maintain Reclamation facilities within the Colorado River Basin addressed in this AOP to help manage these resources and accomplish their protection and enhancement in a manner fully consistent with applicable provisions of ~~f~~Federal law including the Law of the River, and other project-specific operational limitations.

[1] ROD for the Operation of Glen Canyon Dam, October 9, 1996. Available online at: http://www.usbr.gov/uc/rm/amp/pdfs/sp_appndxG_ROD.pdf.
[2] Operating Criteria for Glen Canyon Dam (62 *Federal Register* 9447, March 3, 1997).
[3] Off-stream Storage of Colorado River Water; Development and Release of Intentionally Created Unused Apportionment in the Lower Division States: Final Rule (43 CFR Part 414; 64 *Federal Register* 59006, November 1, 1999). Available online at: http://www.usbr.gov/lc/region/g4000/contracts/FinalRule43cfr414.pdf.
[4] ROD for the Colorado River Interim Surplus Guidelines, January 16, 2001 (67 *Federal Register* 7772, January 25, 2001). Available online at: http://www.usbr.gov/lc/region/g4000/surplus/surplus_rod_final.pdf.
[5] ROD for the Operation of Flaming Gorge Dam, February 16, 2006. Available online at: http://www.usbr.gov/uc/envdocs/rod/fgFEIS/final-ROD-15feb06.pdf.
[6] ROD for Navajo Reservoir Operation, Navajo Unit – San Juan River, New Mexico, Colorado, Utah, July 31, 2006. Available online at: http://www.usbr.gov/uc/envdocs/eis/navajo/pdfs/NavWaterOpsROD2006.pdf.
[7] ROD for Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead (73 *Federal Register* 19873, April 11, 2008). The ROD adopting the 2007 Interim Guidelines was signed by the Secretary on December 13, 2007. Available online at: http://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf.

The Secretary recognized in the 2007 Interim Guidelines that the AOP serves to integrate numerous federal policies affecting reservoir operations: *"The AOP is used to memorialize operational decisions that are made pursuant to individual federal actions (e.g., ISG* [the 2001 Interim Surplus Guidelines]*, 1996 Glen Canyon Dam ROD, this* [2007 Interim Guidelines] *ROD). Thus, the AOP serves as a single, integrated reference document required by section 602(b) of the CRBPA of 1968* [Colorado River Basin Project Act of September 30, 1968 (Public Law 90-537)] *regarding past and anticipated operations."*

Authority

This 2013 AOP was developed in accordance with the processes set forth in: Section 602 of the CRBPA; the Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs Pursuant to the Colorado River Basin Project Act of September 30, 1968 (P. L. 90-537) (Operating Criteria), as amended, promulgated by the Secretary; and Section 1804(c)(3) of the Grand Canyon Protection Act of 1992 (P. L. 102-575).

Section 602(b) of the CRBPA requires the Secretary to prepare and *"transmit to the Congress and to the Governors of the Colorado River Basin States a report describing the actual operation under the adopted criteria* [i.e., the Operating Criteria] *for the preceding compact water year and the projected operation for the current year."*

This AOP has been developed consistent with: the Operating Criteria; applicable Federal laws; the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, the Treaty Between the United States of America and Mexico, signed February 3, 1944 (1944 United States-Mexico Water Treaty); interstate compacts; court decrees; the Colorado River Water Delivery Agreement;[8] the 2007 Interim Guidelines; and other documents relating to the use of the waters of the Colorado River, which are commonly and collectively known as the "Law of the River."

The 2013 AOP was prepared by Reclamation on behalf of the Secretary, working with other Interior agencies and the Western Area Power Administration (Western). Reclamation consulted with: the seven Colorado River Basin States Governors' representatives; the Upper Colorado River Commission; Native American tribes; other appropriate Federal agencies; representatives of academic and scientific communities, environmental organizations, and the recreation industry; water delivery contractors; contractors for the purchase of Federal power; others interested in Colorado River operations; and the general public: through the Colorado River Management Work Group (CRMWG).

Article I(2) of the Operating Criteria allows for revision of the projected plan of operation to reflect current hydrologic conditions with notification to the Congress and the Governors of the Colorado River Basin States of any changes by June of each year. The process for

[8] Colorado River Water Delivery Agreement: Federal Quantification Settlement Agreement for Purposes of Section 5(B) of Interim Surplus Guidelines, October 10, 2003 (69 *Federal Register* 12202, March 15, 2004). Available online at: http://www.usbr.gov/lc/region/g4000/crwda/crwda_rod.pdf.

revision of the AOP is further described in Section 7.C of the 2007 Interim Guidelines. Any revision to the final AOP may occur only through the AOP consultation process as required by applicable Federal law.

Purpose

The purpose of the AOP is to illustrate the potential range of reservoir operations that might be expected in the upcoming water year, and to determine or address: (1) the quantity of water considered necessary to be in storage in the Upper Basin reservoirs as of September 30, 2013, pursuant to Section 602(a) of the CRBPA; (2) water available for delivery pursuant to the 1944 United States-Mexico Water Treaty and Minutes No. 242,[9] 314,[10] and 318[11] of the International Boundary and Water Commission, United States and Mexico (IBWC); (3) whether the reasonable consumptive use requirements of mainstream users in the Lower Division States will be met under a "Normal," "Surplus," or "Shortage" Condition as outlined in Article III of the Operating Criteria and as implemented by the 2007 Interim Guidelines; and (4) whether water apportioned to, but unused by one or more Lower Division States, exists and can be used to satisfy beneficial consumptive use requests of mainstream users in other Lower Division States as provided in the Consolidated Decree of the Supreme Court of the United States in *Arizona v. California*, 547 U.S. 150 (2006) (Consolidated Decree).

Consistent with the above determinations and in accordance with other applicable provisions of the "Law of the River," the AOP was developed with "appropriate consideration of the uses of the reservoirs for all purposes, including flood control, river regulation, beneficial consumptive uses, power production, water quality control, recreation, enhancement of fish and wildlife, and other environmental factors" (Operating Criteria, Article I.(2)).

Since the hydrologic conditions of the Colorado River Basin can never be completely known in advance, the AOP presents projected operations resulting from three different hydrologic scenarios: the minimum probable, most probable, and maximum probable reservoir inflow conditions. Projected reservoir operations are modified during the water year as runoff forecasts are adjusted to reflect existing snowpack, basin storage, flow conditions, and as changes occur in projected water deliveries.

[9] Minute No. 242, Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River dated August 30, 1973. Available online at: http://www.ibwc.gov/Files/Minutes/Min242.pdf.
[10] Minute No. 314, Extension of the Temporary Emergency Delivery of Colorado River Water for use in Tijuana, Baja California dated November 14, 2008. Available online at: http://www.ibwc.state.gov/Files/Minutes/Minute_314.pdf.
[11] Minute No. 318, Adjustment of Delivery Schedules for Water Allotted to Mexico for the Years 2010 through 2013 as a Result of Infrastructure Damage in Irrigation District 014, Rio Colorado, Caused by the April 2010 Earthquake in the Mexicali Valley, Baja California dated December 17, 2010. Available online at: http://www.ibwc.state.gov/Files/Minutes/Min_318.pdf.

Summary

Upper Basin Delivery. Taking into account (1) the existing water storage conditions in the basin, (2) the August 2012 24-Month Study[12] projection of the most probable near-term water supply conditions in the basin, and (3) Section 6.~~A~~ B of the 2007 Interim Guidelines, the Upper Elevation Balancing Tier will govern the operation of Lake Powell for water year 2013. The August 2012 24-Month Study of the most probable inflow scenario projects the water year 2013 release from Glen Canyon Dam to be 8.23 million acre-feet (maf) (10,150 million cubic meters [mcm]). Given the hydrologic variability of the Colorado River System and based on actual 2012 water year operations, the projected water year release from Lake Powell in 2013 could be in the range of 8.23 maf (10,150 mcm) to an estimated 11.21 maf (13,827 mcm) or greater.

For further information about the variability of projected inflow into Lake Powell, see the 2013 Water Supply Assumptions section and the Lake Powell section under the Summary of Reservoir Operations in 2012 and Projected 2013 Reservoir Operations, and Tables 3 and 4.

Lower Basin Delivery. Taking into account (1) the existing water storage conditions in the basin, (2) the most probable near-term water supply conditions in the basin, and (3) Section 2.B.5 of the 2007 Interim Guidelines, the Intentionally Created Surplus (ICS) Surplus Condition governs the operation of Lake Mead for calendar year 2013 in accordance with Article III(3)(b) of the Operating Criteria and Article II(B)(2) of the Consolidated Decree.

No unused apportionment for calendar year 2013 is anticipated. If any unused apportionment becomes available after adoption of this AOP, Reclamation, on behalf of the Secretary, may allocate any such available unused apportionment for calendar year 2013. Any such allocation shall be made in accordance with Article II(B)(6) of the Consolidated Decree and the Lower Colorado Region Policy for Apportioned but Unused Water[13] (Unused Water Policy).

Colorado River water may be stored off-stream pursuant to individual Storage and Interstate Release Agreements (SIRAs) and 43 CFR Part 414 within the Lower Division States. The Secretary shall make Intentionally Created Unused Apportionment (ICUA) available to contractors in Arizona, California, or Nevada pursuant to individual SIRAs and 43 CFR Part 414.

[12] The 24-Month Study refers to the operational study conducted by Reclamation to project future reservoir operations. The most recent 24-Month Study report is available on Reclamation's Water Operations websites and is updated each month. Available online at: http://www.usbr.gov/uc/water/crsp/studies/index.html and http://www.usbr.gov/lc/region/g4000/24mo.pdf.

[13] Lower Colorado Region Policy for Apportioned but Unused Water, February 11, 2010. Available online at: http://www.usbr.gov/lc/region/g4000/UnusedWaterPolicy.pdf.

The Inadvertent Overrun and Payback Policy (IOPP), which became effective January 1, 2004, will be in effect during calendar year 2013.[14]

The 2007 Interim Guidelines adopted the ICS mechanism that among other things encourages the efficient use and management of Colorado River water in the Lower Basin. ICS may be created and delivered in 2013 pursuant to the 2007 Interim Guidelines and appropriate delivery and forbearance agreements.

1944 United States-Mexico Water Treaty Delivery. A volume of up to 1.500 maf (1,850 mcm) of water will be available to be scheduled for delivery to Mexico during calendar year 2013 in accordance with Article 15 of the 1944 United States-Mexico Water Treaty and Minutes No. 242, 314, and 318 of the IBWC.

2012 HYDROLOGY SUMMARY AND RESERVOIR STATUS

Below average stream flows were observed throughout much of the Colorado River Basin during water year 2012. Unregulated[15] inflow to Lake Powell in water year 2012 was 5.00 maf (6,167 mcm), or 46 percent of the 30-year average[16] which is 10.83 maf (13,360 mcm). Unregulated inflow to Flaming Gorge, Blue Mesa, and Navajo Reservoirs was 71, 44, and 52 percent of average, respectively.

Precipitation in the Upper Colorado River Basin was below average throughout most of water year 2012. During the fall and winter months (October through March) the overall precipitation rate was approximately 80 percent of average. During the spring runoff period (April through July), the precipitation rate was also below average at approximately 30 percent of average. On September 30, 2012, the cumulative precipitation for the Upper Colorado River Basin for water year 2012 was 74 percent of average.

Snowpack conditions trended near average in the Colorado River Basin until the beginning of December 2011. However, accumulation of snow in December was well below average and by January 1, 2012, snowpack levels in the basin were well below average with the basin-wide snow water equivalent measuring 66 percent of average. During January and February, snow accumulation was above average and the snow water equivalent measured 80 percent of average on March 1, 2012. Snow accumulation in March, however, was well below average resulting in an April 1, 2012, basin wide snow water equivalent of only 55 percent of average. On April 1, 2012, the snow water equivalents for the Green River,

[14] Record of Decision for Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions, Final Environmental Impact Statement, October 10, 2003; 69 *Federal Register* 12202, March 15, 2004). Available online at: http://www.usbr.gov/lc/region/g4000/crwda/crwda_rod.pdf.

[15] Unregulated inflow adjusts for the effects of operations at upstream reservoirs. It is computed by adding the change in storage and the evaporation losses from upstream reservoirs to the observed inflow. Unregulated inflow is used because it provides an inflow time series that is not biased by upstream reservoir operations.

[16] Inflow statistics throughout this document will be compared to the 30-year average, 1981-2010, unless otherwise noted.

Upper Colorado River Headwater, and San Juan River Basins were 72, 56 and 55 percent of average, respectively.

During the 2012 spring runoff period, inflows to Lake Powell began to increase in March as temperatures increased across the basin. On May 27, 2012, inflows to Lake Powell peaked at approximately 23,700 cubic feet per second (cfs) (671 cubic meters per second [cms]). During the spring runoff period Lake Powell storage decreased by 0.778 maf (960 mcm). The April through July unregulated inflow volume for Lake Powell was 2.06 maf (2,540 mcm) which was 29 percent of average.

Lower Basin tributary inflows above Lake Mead were below average for water year 2012. Tributary inflow from the Little Colorado River for water year 2012 totaled 0.060 maf (74.0 mcm), or 34 percent of the long-term average.[17] Tributary inflow from the Virgin River for water year 2012 totaled 0.107 maf (132.0 mcm), or 62 percent of the long-term average.

Tributary inflows in the Lower Colorado River Basin below Hoover Dam were below average during water year 2012. Total tributary inflow for water year 2012 from the Bill Williams River was 0.027 maf (33.3 mcm), or 26 percent of the long-term average and total inflow from the Gila River was 0.006 maf (7.40 mcm).[18]

The Colorado River total system storage experienced a net decline of 4.55 maf (5,610 mcm) in water year 2012. Reservoir storage in Lake Powell decreased during water year 2012 by 3.50 maf (4,317 mcm). Reservoir storage in Lake Mead increased during water year 2012 by 0.028 maf (34.5 mcm).[19] At the beginning of water year 2012 (October 1, 2011), Colorado River total system storage was 64 percent of capacity. As of September 30, 2012, total system storage was 57 percent of capacity.

Tables 1 and 2 list the October 1, 2012, reservoir vacant space, live storage, water elevation, percent of capacity, change in storage, and change in water elevation during water year 2012.

[17] The basis for the long-term average of tributary inflows in the Lower Basin is natural flow data from 1906 to 2008. Additional information regarding natural flows may be found at http://www.usbr.gov/lc/region/g4000/NaturalFlow/current.html.

[18] Tributary inflow from the Gila River to the mainstream is very sporadic. These flows occur very seldom and when they do they are typically of high magnitude.

[19] In January 2012, Reclamation implemented updated Lake Mead area and capacity tables. The 2001/2009 survey data indicate that an additional 0.243 maf of capacity is available compared to the 1963-64 survey. The report is available online at: http://www.usbr.gov/lc/region/g4000/LM_AreaCapacityTables2009.pdf.

Table 1. Reservoir Conditions on October 1, 2012 (English Units)

Reservoir	Vacant Space	Live Storage	Water Elevation	Percent of Capacity	Change in Storage*	Change in Elevation*
	(maf)	(maf)	(ft)	(%)	(maf)	(ft)
Fontenelle	0.063	0.282	6,497.7	82	-0.016	-2.2
Flaming Gorge	0.703	3.05	6,021.9	81	-0.420	-11.1
Blue Mesa	0.509	0.320	7,451.3	39	-0.379	-53.2
Navajo	0.612	1.08	6,037.2	64	-0.244	-21.1
Lake Powell	10.23	14.1	3,623.1	58	-3.501	-29.9
Lake Mead	12.9	13.0	1,113.8	50	0.028	-2.2
Lake Mohave	0.206	1.60	639.5	89	-0.006	-0.2
Lake Havasu	0.044	0.576	447.8	93	-0.009	-0.5
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Totals	25.2	34.0		57	-4.547	

* From October 1, 2011, to September 30, 2012.

Table 2. Reservoir Conditions on October 1, 2012 (Metric Units)

Reservoir	Vacant Space	Live Storage	Water Elevation	Percent of Capacity	Change in Storage*	Change in Elevation*
	(mcm)	(mcm)	(m)	(%)	(mcm)	(m)
Fontenelle	77.7	348	1,980.5	82	-20.0	-0.7
Flaming Gorge	867	3,760	1,835.5	81	-518	-3.4
Blue Mesa	628	395	2,271.2	39	-467.7	-16.2
Navajo	754	1,340	1,840.2	64	-300	-6.4
Lake Powell	12,600	17,400	1,104.3	58	-4,318	-9.1
Lake Mead	15,900	16,000	339.5	50	35	-0.7
Lake Mohave	254	1,980	194.9	89	-7.6	-0.1
Lake Havasu	54.0	711	136.5	93	-11.39	-0.1
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Totals	31,100	42,000		57	-5,610	

* From October 1, 2011, to September 30, 2012.

2013 WATER SUPPLY ASSUMPTIONS

For 2013 operations, three reservoir unregulated inflow scenarios were developed and analyzed: minimum probable, most probable, and maximum probable.

There is considerable uncertainty associated with streamflow forecasts and projections of reservoir operations made a year in advance. The National Weather Service's Colorado Basin River Forecast Center (CBRFC) forecasts the inflow for the minimum probable (90 percent exceedance), most probable (50 percent exceedance), and maximum probable (10 percent exceedance) inflow scenarios for 2013 using an Ensemble Streamflow Prediction model. Based upon the August CBRFC forecast, the range of unregulated inflows is projected to be as follows:

- The forecasted minimum probable unregulated inflow to Lake Powell in water year 2013 is 5.00 maf (6,170 mcm), or 46 percent of average.
- The forecasted most probable unregulated inflow to Lake Powell in water year 2013 is 8.85 maf (10,920 mcm), or 82 percent of average.
- The forecasted maximum probable unregulated inflow to Lake Powell in water year 2013 is 16.00 maf (19,740 mcm), or 148 percent of average.

Projected unregulated inflow volumes into Lake Powell for specific time periods for these three forecasted inflow scenarios are shown in Tables 3 and 4.

Inflows to the mainstream from Lake Powell to Lake Mead, Lake Mead to Lake Mohave, Lake Mohave to Lake Havasu, and below Lake Havasu are projected using historic data over the five-year period of January 2007 through December 2011, inclusive. These five years of historic data are representative of the most recent hydrologic conditions in the Lower Basin. The most probable side inflows into each reach are estimated as the arithmetic mean of the five-year record. The maximum probable and minimum probable projections for each reach are the 10 percent and 90 percent exceedance values, respectively, of the five-year record. For the reach from Lake Powell to Lake Mead, the minimum probable inflow during water year 2012 is 0.512 maf (632 mcm), the most probable inflow is 0.861 maf (1,060 mcm), and the maximum probable inflow is 1.270 maf (1,570 mcm).

The projected monthly volumes of inflow were input into the 24-Month Study and used to project potential reservoir operations for 2013. Starting with the projected October 1, 2012, reservoir storage conditions, the projected monthly releases for each reservoir were adjusted until release and storage levels best accomplished project purposes and applicable operational objectives.

For the latest monthly projections for the major reservoirs in the Colorado River system, please see the most recent 24-Month Study report available on these Reclamation websites:

http://www.usbr.gov/uc/water/crsp/studies/index.html, or
http://www.usbr.gov/lc/region/g4000/24mo.pdf.

Table 3. Projected Unregulated Inflow into Lake Powell for Water Year 2013 (English Units)[20]

Time Period	Minimum Probable (maf)	Most Probable (maf)	Maximum Probable (maf)
10/12–12/12	1.01	1.00	1.34
1/13 – 3/13	1.08	1.03	1.66
4/13– 7/13	2.61	6.00	11.57
8/13 – 9/13	0.303	0.825	1.42
10/13 – 12/13	1.02	1.31	1.69
WY 2013	5.00	8.85	16.00
CY 2013	5.01	9.16	16.35

Table 4. Projected Unregulated Inflow into Lake Powell for Water Year 2013 (Metric Units)

Time Period	Minimum Probable (mcm)	Most Probable (mcm)	Maximum Probable (mcm)
10/12 –12/12	1,250	1,230	1,650
1/13–3/13	1,330	1,270	2,050
4/13 –7/13	3,220	7,400	14,270
8/13 –9/13	374	1,020	1,750
10/13 –12/13	1,260	1,620	2,080
WY 2013	6,170	10,920	19,740
CY 2013	6,180	11,300	20,170

[20] All values in Tables 3 and 4 are projected inflows based upon the August CBRFC forecast with the exception of the values for 10/13-12/13. The values for 10/13-12/13 are based upon average unregulated inflow from 1981-2010. The calendar year totals in Tables 3 and 4 also reflect average values for the 10/13-12/13 time period.

SUMMARY OF RESERVOIR OPERATIONS IN 2012 AND PROJECTED 2013 RESERVOIR OPERATIONS

The operation of the Colorado River reservoirs has affected some aquatic and riparian resources. Controlled releases from dams have modified temperature, sediment load, and flow patterns, resulting in increased productivity of some riparian and non-native aquatic resources and the development of economically significant sport fisheries. However, these same releases have detrimental effects on endangered and other native species. Operating strategies designed to protect and enhance aquatic and riparian resources have been established after appropriate National Environmental Policy Act (NEPA) compliance at several locations in the Colorado River Basin.

In the Upper Basin, public stakeholder work groups have been established at Fontenelle Dam, Flaming Gorge Dam, the Aspinall Unit, and Navajo Dam. These work groups provide a public forum for dissemination of information regarding ongoing and projected reservoir operations throughout the year and allow stakeholders the opportunity to provide information and feedback with respect to ongoing reservoir operations. Additionally, the Glen Canyon Dam Adaptive Management Work Group (AMWG)[21] was established in 1997 as a chartered committee under the Federal Advisory Committee Act of 1972 (Public Law 92-463).

Modifications to projected operations are routinely made based on changes in forecasted conditions or other relevant factors. Consistent with the Upper Colorado River Endangered Fish Recovery Program (Upper Colorado Recovery Program),[22] the San Juan River Basin Recovery Implementation Program (San Juan Recovery Program),[23] Section 7 consultations under the Endangered Species Act (ESA), and other downstream concerns, modifications to projected monthly operations may be based on other factors in addition to changes in streamflow forecasts. Decisions on spring peak releases and downstream habitat target flows may be made midway through the runoff season. Reclamation will conduct meetings with Recovery Program participants, the U.S. Fish and Wildlife Service (Service), other Federal agencies, representatives of the Basin States, and with public stakeholder work groups to facilitate the discussions necessary to finalize site-specific projected operations.

The following paragraphs discuss reservoir operations in 2012 and the range of probable projected 2013 operations of each of the reservoirs with respect to applicable provisions of compacts, the Consolidated Decree, statutes, regulations, contracts, and instream flow needs for maintaining or improving aquatic and riparian resources where appropriate.

[21] Information on the AMWG can be found at www.usbr.gov/uc/rm/amp.
[22] Information on the Upper Colorado Recovery Program can be found at http://coloradoriverrecovery.fws.gov.
[23] Information on the San Juan Recovery Program can be found at www.fws.gov/southwest/sjrip.

Fontenelle Reservoir

Fontenelle Reservoir began water year 2012 with 0.298 maf (368 mcm) in storage, which is 86 percent of full capacity and corresponds to an elevation of 6,499.90 feet (1,981.2 meters) above sea level. Hydrologic conditions in the Upper Green River Basin were below average in water year 2012. Snowpack development tracked below average and melt began approximately three weeks earlier than average with the peak snow water equivalent reaching 84 percent of seasonal average on March 22, 2012. The April forecast for the April through July inflow to Fontenelle Reservoir was 0.665 maf (820 mcm), or 92 percent of average. The actual observed inflow during the April to July season was 0.508 maf (627 mcm), or 70 percent of average.

Fontenelle Reservoir filled in water year 2012. The reservoir elevation peaked at 6,503.96 feet (1,982 meters) on July 29, 2012, 2.04 feet (0.62 meters) below the spillway crest. Reservoir releases were increased in the summer months sufficiently to maximize downstream water resources and power production during the high use summer months, while also allowing for filling the reservoir to maintain sufficient water in storage for use through the fall and winter months. Releases peaked at 3,010 cfs (85.2 cms) on June 22, 2012, and ~~continued~~ lasted for 4 days near this level. These releases were made through the powerplant and bypass tubes at Fontenelle Dam. Releases were reduced to 1,100 cfs (31.1 cms) after the inflow subsided. Inflow peaked at 6,090 cfs (172 cms) on June 8, 2012.

Based on the August 2012 24-Month Study, the most probable April through July inflow scenario for Fontenelle Reservoir during water year 2013 is 0.657maf (810 mcm), or 90 percent of average. This volume far exceeds the 0.345 maf (426 mcm) storage capacity of Fontenelle Reservoir. For this reason, the most probable and maximum probable inflow scenarios would require releases during the spring that exceed the capacity of the powerplant to avoid uncontrolled spills from the reservoir. It is very likely that Fontenelle Reservoir will fill during water year 2013. In order to minimize high spring releases and to maximize downstream water resources and power production, the reservoir will most likely be drawn down to about elevation 6,468.00 feet (1,971.45 meters) by early April 2013, which is 5.00 feet (1.52 meters) above the minimum operating level for power generation, and corresponds to a volume of 0.111 maf (137 mcm) of live storage.

Flaming Gorge Reservoir

Inflow to Flaming Gorge Reservoir during water year 2012 was below average. Unregulated inflow in water year 2012 was 1.030 maf (1,270 mcm), which is 71 percent of average. On October 1, 2011, the beginning of water year 2012, the reservoir elevation was 6,033.03 feet (1,838.87 meters). The reservoir elevation showed an overall decrease during water year 2012 ending the water year (September 30, 2012) at elevation 6,021.90 feet (1,835.48 meters) corresponding to a volume of 3.05 maf (3,760 mcm). The elevation of Flaming Gorge Reservoir was at its maximum elevation for water year 2012 on October 1, 2011, which was 6,033.03 feet (1,838.87 meters), with 3.47 maf (4,280 mcm) of live

storage. The end of water year reservoir elevation was 6,021.90 feet (1,835.48 meters), which is 18.10 feet (5.52 meters) below the full pool elevation (6,040.00 feet [1,840.99 meters]) and which corresponds to an available storage space of 0.702 maf (866 mcm).

Flaming Gorge Dam operations in 2012 were in compliance with the 2006 Flaming Gorge ROD. Reclamation convened the Flaming Gorge Technical Working Group (FGTWG) comprised of the Service, Western, and Reclamation personnel, to provide Reclamation three proposed operating scenarios for 2012 based on varying hydrologic conditions and research requests. The FGTWG proposed Reclamation manage releases to the Green River to meet the commitments of the ROD and, to the extent possible, meet the experimental design parameters outlined in the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) Larval Trigger Study Plan (LTSP). The LTSP contained an experimental research and monitoring plan for endangered fish critical habitat below the confluence of the Green and Yampa Rivers (Reach 2). The primary objective of the LTSP is to determine the effects of timing spring releases from Flaming Gorge during the presence of wild razorback sucker larvae in Reach 2. Wild razorback sucker larvae were detected ~~near the end of~~in mid-~~-~~May and on May 18, 2012, releases were increased to 7,400 cfs (209 cms) for two days plus ramping for a total of five days of bypass releases in support of the LTSP.

The hydrologic conditions during spring 2012 consisted of warm and dry weather, below average snow accumulation, early runoff and well below average Yampa River spring peak flows. While ROD Flow Recommendations resulted in a designation of moderately dry based upon Upper Green River conditions, the spring peak flow operation used the dry Flow Recommendation targets based on Yampa conditions. Releases from Flaming Gorge Dam remained at an average daily release of 1,600 cfs (45.3 cms) through May 18, 2012, when releases were increased to meet the LTSP request. After releases for the LTSP concluded, releases were decreased to base flow releases of 1,300 cfs (36.8 cms). Flows at Jensen exceeded 8,300 cfs (235 cms) for five days, May 22-26, 2012, meeting the ROD Flow Recommendations for dry targets in Reach 2 of at least two days above 8,300 cfs (235 cms).

Consistent with the ROD, and considering information provided to the FGTWG, Reclamation operated Flaming Gorge Dam to provide base flows in the Green River during the summer of 2012 that maximized critical habitat in Reach 2. Western requested ~~It is anticipated that 2012-2013~~ winter releases from Flaming Gorge Dam during the months of December through February ~~will~~ follow a daily double peak pattern (peaking during the morning and evening hours) for hydropower purposes ~~during the months of November through March if hydrologic conditions provide~~ with base flows averaging ~~above~~ a daily release rate of 1,500~~800~~ cfs (42.5~~23~~ cms). The ROD base flow period hydrologic classification was ~~dry~~ moderately dry as of August 2012.

During water year 2013, Flaming Gorge Dam will continue to be operated in accordance with the ROD. Under the most probable inflow scenario, winter base flow releases are projected to remain in the moderately dry classification range between 800 cfs (22.6 cms) and plus 25 percent of 1,300 cfs (36.8 cms) or 1,630 cfs (46.1 cms). Daily base flows will

fluctuate to meet the average-year reservoir elevation target of 6,027.00 feet (1,837.03 meters) by May 1, 2013. A spring peak release is projected to occur sometime in May 2013, and will be timed to coincide with either the peak flows of the Yampa River or emergence of razorback larvae. Reclamation is considering long-term implementation strategies for the Recovery Program LTSP.

The Recovery Program, in coordination with Reclamation, the Service, and Western, will continue conducting studies associated with floodplain inundation. Such studies may result in alternatives for meeting flow and temperature recommendations at lower peak flow levels where feasible.[24]

Blue Mesa, Morrow Point, and Crystal Reservoirs (Aspinall Unit)

At the beginning of water year 2012 (October 1, 2011) the elevation of Blue Mesa was 7,504.54 feet (2,287.38 meters), and the storage content was 0.699 maf (862 mcm), which was 84 percent of capacity.

Below average snowpack conditions prevailed in the Gunnison River Basin during water year 2012. Snow measurement sites in the basin reported below average seasonal snow water equivalent levels throughout the winter and into the spring of 2012. On April 1, 2012, the average snow water equivalent for the Gunnison River Basin was 60 percent of average.

Below average snowpack conditions resulted in an April forecast for the April through July unregulated inflow above Blue Mesa that was 0.330 maf (407 mcm) which was 49 percent of average. The actual April through July unregulated inflow into Blue Mesa Reservoir in 2012 was 0.206 maf (254 mcm), which was 31 percent of average.

Releases from Crystal Dam during water year 2012 were below average. In October, 2011 releases were above average at approximately 1,800 cfs (50.9 cms) but were decreased to 600 cfs (17.0 cms) by early November 2011. During the later part of November and through most of December releases were increased to 1,500 cfs (42.5 cms) in order to reduce the elevation of Blue Mesa below the icing target elevation (7,490.00 feet [2,282.95 meters]) by December 31, 2011. In January and February 2012, releases from Crystal Dam were reduced back to 600 cfs (17.0 cms) based on below average snowpack conditions and reduced inflow forecasts. There was a peak flow of 845 cfs (23.9 cms) on June 30, 2012, after which releases were reduced to approximately 690 cfs (19.5 cms). ~~Releases were increased to 1,840 cfs (52.1 cms) for one day on June 30, 2012 and then reduced to approximately 1,600 cfs (45.3 cms).~~ Flows through the Black Canyon and Gunnison River Gorge ~~stabilized for the summer season by mid July at~~averaged approximately ~~500~~ 580 cfs (~~14.2~~ 16.4 cms) over the July through August period.

[24] Flow and Temperature Recommendations for Endangered Fishes in the Green River Downstream of Flaming Gorge Dam, September 2000. Available online at: http://www.ead.anl.gov/pub/doc/flaminggorgeflowrecs.pdf.

For water year 2012, the peak elevation of Blue Mesa Reservoir occurred on April 13, 2012, at an elevation of 7,485.02 feet (2,281.43 meters), 34.38 feet (10.48 meters) below full pool. Storage in Blue Mesa Reservoir decreased during water year 2012 by 0.379 maf (467 mcm) and ended water year 2012 on September 30, 2012, at 0.320 maf (395 mcm) which was 46 percent of capacity. Total unregulated inflow into Blue Mesa Reservoir for water year 2012 was 0.424 maf (523 mcm) and this was 44 percent of average.

On May 3, 2012, Reclamation signed a ROD[25] for the operation of the Aspinall Unit intended to avoid jeopardy to endangered species while maintaining and continuing to meet the congressionally authorized purposes of the Unit. The ROD selected the preferred alternative (Alternative B) described in the January 2012 Environmental Impact Statement (EIS).[26] Significant issues addressed in the EIS and important in the selection of the preferred alternative included addressing the relationship with the recently quantified downstream senior Federal reserved water right for the Gunnison River through the Black Canyon of the Gunnison National Park.[27] The selected alternative is based on operating the Aspinall Unit to meet specific downstream spring peak flow, duration flow, and base flow targets. For water year 2013, the Aspinall Unit will be operated in accordance with the 2012 ROD while maintaining and continuing to meet the congressionally authorized purposes. As part of the operational process, Reclamation will carry out the consultation required under the ROD and will continue to coordinate operations through tri-annual Aspinall Operations meetings.

~~For water year 2013, the Aspinall Unit will be operated in accordance with the April 2012 ROD and to conserve storage while meeting downstream delivery requirements, consistent with authorized purposes. Releases include the delivery requirements of the Uncompahgre Valley Project and other senior water rights downstream, including the Black Canyon water right. As part of the operational process, Reclamation will continue to coordinate operations through tri-annual Aspinall Operations meetings.~~

The projected most probable unregulated inflow for water year 2013 into Blue Mesa Reservoir is 0.755 maf (931 mcm), or 79 percent of average. The reservoir is expected to decrease to a seasonal low elevation of 7,450.00 feet (2,270.76 meters) by March, 2013. The peak elevation is expected to be approximately 7,490.34 feet (2,283.06 meters) by about the end of July, 2013. By the end of water year 2013, Blue Mesa Reservoir is expected to be at elevation 7,480.36 feet (2,280.01 meters), with a storage of 0.509 maf (628 mcm), or 76 percent of capacity.

[25] Record of Decision for the Aspinall Unit Operations Final Environmental Impact Statement, signed May 3, 2012. Available online at: http://www.usbr.gov/uc/envdocs/eis/AspinallEIS/ROD.pdf.

[26] Final Environmental Impact Statement for the Aspinall Unit Operations, January 2012. Available online at: http://www.usbr.gov/uc/envdocs/eis/AspinallEIS/index.html.

[27] Decree quantifying the Federal Reserved Water Right for Black Canyon of the Gunnison National Park (State of Colorado District Court, Water Division Four, Case Number 01CW05), signed on January 8, 2009.

Navajo Reservoir

At the beginning of the 2012 water year, Navajo Reservoir was at an elevation of 6,058.35 feet ~~above sea level~~ (1,846.59 meters) which was 78 percent of full capacity and corresponded to a~~n~~ live storage content of 1.33 maf (1,640 mcm). Snowpack conditions in the San Juan River Basin were persistently below average during the winter months. On April 1, 2012, the snow water equivalent in the San Juan River Basin above Navajo Reservoir was 55 percent of the seasonal average for the basin.

Inflow to Navajo Reservoir in water year 2012 was below average. Water year 2012 modified unregulated inflow[28] to Navajo Reservoir was 0.559 maf (690 mcm), or 52 percent of average. The April through July unregulated inflow into Navajo Reservoir in water year 2012 was 0.310 maf (382 mcm), or 42 percent of average. Unregulated inflow to Navajo Reservoir was below average for all water years from 2000 through 2012, except for 2005 which was 136 percent of average and 2008 which was 120 percent of average.

Navajo Reservoir reached a peak water surface elevation of 6,060.86 feet (1,847.35 meters) on May 23, 2012, 24.14 feet (7.36 meters) below full pool. The water surface elevation at Navajo Reservoir on September 30, 2012, was 6,037.25 feet (1,840.15 meters), with a reservoir storage volume of 1.083 maf (1,335.9 mcm) or ~~at~~ 64 percent of capacity.

A final report which outlines flow recommendations for the San Juan River (San Juan Flow Recommendations) below Navajo Dam was completed by the San Juan Recovery Program in May 1999 after a seven-year research period.[29] The purpose of the report was to provide flow recommendations for the San Juan River that promote the recovery of the endangered Colorado River pikeminnow and razorback sucker, maintain important habitat for these two species as well as the other native species, and provide information for the evaluation of continued water development in the basin. The flow recommendations are currently under review by the San Juan River Basin Recovery Implementation Program.

In 2006, Reclamation completed a NEPA process on the implementation of operations at Navajo Dam that meet the San Juan Flow Recommendations, or a reasonable alternative to them. The ROD for the Navajo Reservoir Operations Final EIS was signed by the Regional Director of Reclamation's Upper Colorado Region on July 31, 2006.

Navajo Reservoir was operated in compliance with the ROD in 2012, including the San Juan Flow Recommendations which ~~required~~ recommend a 1-week spring peak release at 5,000 cfs (142 cms) with a ramp up and down of approximately 3 days.

[28] Modified Unregulated inflow into Navajo Reservoir is equivalent to unregulated inflow adjusted for trans-basin diversion through the San Juan-Chama Project.

[29] Flow Recommendations for the San Juan River, May 1999. Available online at: http://www.fws.gov/southwest/sjrip/pdf/DOC_Flow_recommendations_San_Juan_River.pdf.

In 2012, a four-year agreement was developed among major users to limit their water use to the rates and volumes in years 2013-2016, as indicated in the agreement.[30] The 2013-2016 agreement is similar to agreements that were developed in 2003, 2004, 2005, 2006, 2007-2008, and 2009-2012. Ten major water users (the Jicarilla Apache and Navajo Nations, Hammond Conservancy District, Public Service Company of New Mexico, City of Farmington, Arizona Public Service Company, BHP-Billiton, Bloomfield Irrigation District, Farmers Mutual Ditch, and Jewett Valley Ditch) have been requested to endorse~~d~~ the flow recommendations. The recommendations included limitations on diversions for 2013-2016, criteria for determining a shortage, and shortage-sharing requirements in the event of a water supply shortfall, including sharing of shortages between the water users and the flows for endangered fish habitat. In addition to the ten major water users, the New Mexico Interstate Stream Commission, the Bureau of Indian Affairs, the Service, and the San Juan Recovery Program all provided input to the recommendations. Upon receipt of the endorsements, it is anticipated that ~~The recommendations were acknowledged by~~ Reclamation and the New Mexico State Engineer will acknowledge the recommendations for reservoir operation and river administration purposes.

During water year 2013, Navajo Reservoir will be operated in accordance with the Navajo Reservoir Operations ROD. Navajo Reservoir storage levels are expected to be near average in 2013 under the most probable inflow forecast. Releases from the reservoir will likely remain at a 500 cfs (14.2 cms) base release through the winter. Under the most probable April through July unregulated inflow forecast in 2013, 0.680 maf (839 mcm), the spring release will likely include a 3-week peak release at 5,000 cfs (142 cms), with an extended ramp up and slow ramp down, as described in the San Juan Flow Recommendations. The reservoir is projected to reach a peak elevation of 6,059.28 feet (1,846.87 meters) in June, 2013 prior to the peak of the spring peak release. The reservoir is projected to reach a minimum elevation of 6,034.88 feet (1,839.43 meters) at the end of February~~the~~ 2013 ~~water year~~.

Under the minimum probable 2013 April through July inflow forecast, 0.286 maf (353 mcm), there will likely not be a spring peak release made during the spring of 2013. A 1-week spring peak release would be made, if sufficient water was available in storage. Under the maximum probable 2013 April through July inflow forecast, 1.09 maf (1,340 mcm), a maximum spring peak release (21 days at 5,000 cfs [142 cms]) with an extended ramp up beginning as early as March 1st will likely be ~~required~~ recommended as described in the San Juan Flow Recommendations.

[30] Recommendations for San Juan River Operations and Administration for ~~2009-2012~~2013-2016, July 2, 2012~~, January 29, 2009~~.

Lake Powell

Reservoir storage in Lake Powell decreased during water year 2012. On October 1, 2011, the beginning of water year 2012, reservoir storage in Lake Powell was 72 percent of capacity at elevation 3,653.01 feet (1,113.44 meters), with 17.59 maf (21,700 mcm) in storage. On September 30, 2012, the reservoir storage in Lake Powell was 14.09 maf (17,380 mcm) at 58 percent of full capacity indicating a net loss during water year 2012 of 3.50 maf (4,320 mcm). The unregulated inflow to Lake Powell during water year 2012 was below average at 48 percent of average. Lake Powell ended the water year on September 30, 2012, at elevation 3,623.08 feet (1,104.31 meters).

The August 2011 24-Month Study, using the most probable inflow scenario, was run to project the January 1, 2012, Lake Powell elevation. The projected January 1, 2012, elevation, and guidance under Section 6.A of the 2007 Interim Guidelines, determined the Equalization Tier to be the applicable operational tier for water year 2012. This resulted in an initially projected annual release volume from Lake Powell of 13.57 maf (16,740 mcm) to achieve Equalization by September 30, 2012. However, below average inflow conditions during the water year resulted in the actual annual release volume from Lake Powell for Equalization to decrease to 9.46 maf (11,670 mcm). The annual release volume for water year 2012 includes 1.23 maf (1,520 mcm) that completes Equalization releases for water year 2011. In accordance with the CRBPA ~~of 1968~~, the Operating Criteria, and Section 6 of the 2007 Interim Guidelines, Reclamation attempted to achieve Equalization as nearly as practicable by the end of the water year.

The April through July unregulated inflow to Lake Powell in water year 2012 was 2.06 maf (2,540 mcm) which was 29 percent of average. Lake Powell reached spring peak elevation for water year 2012 at 3,636.90 feet (1,108.53 meters) on June 3, 2012, which was 63.10 feet (19.23 meters) below full pool. This peak elevation corresponds to a live storage content of 15.64 maf (19,290 mcm).

In September and October of 2012 steady flows (steady daily releases) occurred consistent with Reclamation's February 29, 2008, FONSI.[31] Steady flows of approximately 8,000 cfs (226 cms) were made during the two-month period in 2012. 2012 was the last year of this 5-year experiment.

2013 Operating Tier and Projected Operations for Glen Canyon Dam. The January 1, 2013, reservoir elevations of Lake Powell and Lake Mead are projected under the most probable inflow scenario to be 3,614.89 feet (1,101.82 meters) and 1,119.14 feet (341.11 meters), respectively, based on the August 2012 24-Month Study. Given these projections, the annual release volume from Lake Powell during water year 2013 will be consistent with the Upper Elevation Balancing Tier (Section 6.B of the Interim Guidelines) and under

[31] Finding of No Significant Impact - Experimental Releases from Glen Canyon Dam, Arizona, 2008 through 2012 (~~Februaru~~ February 2008). Available online at: http://www.usbr.gov/uc/envdocs/index.html#fonsi.

Section 6.B.1, the annual release would be 8.23 maf (10,150 mcm). The Upper Elevation Balancing Tier, however, does provide for the possibility of adjustments to operation of Lake Powell and these adjustments are based on the projected end of water year conditions of Lake Powell and Lake Mead from the April 24-Month Study.

If the April 2013 24-Month Study, with a water year release volume of 8.23 maf (10,150 mcm), projects the September 30, 2013, Lake Powell elevation to be greater than 3,646.00 feet (1,111.30 meters), operations will be adjusted and "the Equalization Tier will govern the operation of Lake Powell for the remainder of the water year" consistent with Section 6.B.3. If this condition occurs, and an adjustment is made, the water year release volume will likely be greater than 8.23 maf (10,150 mcm) and will be determined based on the Equalization Tier as described in Section 6.A of the 2007 Interim Guidelines.

If the April 2013 24-Month Study projects the September 30, 2013, Lake Mead elevation to be below 1,075.00 feet (327.66 meters) and the September 30, 2013, Lake Powell elevation to be at or above elevation 3,575.00 feet (1,089.66 meters), the Secretary shall balance the contents of Lake Mead and Lake Powell, but shall release not more than 9.00 maf (11,100 mcm) and not less than 8.23 maf (10,150 mcm) from Lake Powell in water year 2013 consistent with Section 6.B.4 of the 2007 Interim Guidelines.

Under the minimum probable inflow scenario the August 2012 24-Month Study, with a projected water year release volume of 8.23 maf (10,150 mcm) in water year 2013, projects that the elevation of Lake Powell on September 30, 2013, would be 3,592.90 feet (1,095.12 meters). This elevation is below the Equalization Level for water year 2013 of ~~(~~3,646.00 feet ~~above sea level~~ (1,111.30 meters)~~)~~. Based on this projection, ~~no~~ an April ~~A~~adjustment is not projected to occur under the minimum probable inflow scenario and the water year release for 2013 is projected to be 8.23 maf (10,150 mcm). The end of water year elevation and storage of Lake Powell is projected to be 3,592.90 feet (1,095.12 meters) and 11.09 maf (13,680 mcm), respectively based on the minimum probable inflow scenario.

Under the most probable inflow scenario, the August 2012 24-Month Study, with a projected water year release volume of 8.23 maf (10,150 mcm) in water year 2013, projects that the elevations of Lake Powell and Lake Mead on September 30, 2013, would be 3,618.19 feet (1,102.82 meters) and 1,104.30 feet (336.59 meters), respectively. Based on these projections, under the most probable inflow scenario, an April adjustment is not projected to occur during water year 2013 pursuant to Sections 6.B.3 and 6.B.4 of the 2007 Interim Guidelines. The 2013 water year release volume projected under the most probable inflow scenario is 8.23 maf (10,150 mcm) and the end of water year elevation and storage of Lake Powell is projected to be 3,618.19 feet (1,102.82 meters) and 13.57 maf (16,740 mcm), respectively.

Under the maximum probable inflow scenario, the August 2012 24-Month Study, with a projected water year release volume of 8.23 maf (10,150 mcm) in water year 2013, projects that the elevation of Lake Powell on September 30, 2013, would be 3,667.22 feet (1,117.77 meters). This elevation is above the Equalization Level for water year 2013. For this

reason, under the maximum probable inflow scenario, an April ~~A~~adjustment is projected to occur such that the Equalization Tier would govern the operation of Lake Powell for the remainder of water year 2013 consistent with Section 6.B.3 of the 2007 Interim Guidelines. The 2013 water year release volume to achieve Equalization under the maximum probable inflow scenario is 11.21 maf (13,830 mcm) and the end of water year elevation and storage of Lake Powell is projected to be 3,646.00 feet (1,111.30 meters) and 16.72 maf (20,620 mcm), respectively.

Recognizing the August 2013 plan for maintenance for Glen Canyon Dam during water year 2013, the full release capability of Glen Canyon Powerplant would result in an estimated annual release volume through the powerplant of approximately 14.83 maf (18,290 mcm). At any point throughout water year 2013, if the 24-Month Study projects the remaining water year release volume to be greater than the release capability of Glen Canyon Powerplant, Reclamation will strive to adjust the maintenance plan as much as possible to accommodate a higher release volume through the powerplant during water year 2013.

In accordance with the CRBPA ~~of 1968~~, the Operating Criteria, and Section 6 of the 2007 Interim Guidelines, Reclamation will attempt to achieve ~~e~~Equalization as nearly as practicable by the end of the water year. Consistent with Section II(4) of the Operating Criteria, "[a]ny water thus retained [after September 30] in Lake Powell to avoid bypass of water at the Glen Canyon Powerplant will be released through the Glen Canyon Powerplant as soon as practicable" to achieve ~~e~~Equalization.

~~The August 2012 24-Month Study under the maximum probable inflow scenario with an annual release volume that achieves Equalization by September 30, 2013 (XX,XX maf [XX,XXX mcm]) and an annual volume that recognizes the August 2012 plan for maintenance for Glen Canyon Dam during water year 2013 (XX.XX maf [XX,XXX mcm]) projects a range of end of water year conditions at Lake Powell. Under these two release scenarios, the projected end of water year 2013 elevation and storage in Lake Powell range from X,XXX.XX feet (X,XXX.XX meters) to X,XXX.XX feet (X,XXX.XX meters) and XX.XX maf (XX,XXX mcm) to XX.XX maf (XX,XXX mcm), respectively.~~

In 2013, scheduled maintenance activities at Glen Canyon Dam powerplant will require that one or more of the eight generating units periodically be offline. Coordination between Reclamation offices in Salt Lake City, Utah, and Page, Arizona, and Western will take place in the scheduling of maintenance activities to minimize impacts to operations throughout the water year including experimental releases.

Because of less than full storage conditions in Lake Powell resulting from drought in the Colorado River Basin, releases from Glen Canyon Dam for dam safety purposes are highly unlikely in 2013. If implemented, releases greater than powerplant capacity would be made consistent with the 1956 Colorado River Storage Project Act, the CRBPA, and to the extent practicable, the recommendations made pursuant to the Grand Canyon Protection Act of 1992. Reservoir releases in excess of powerplant capacity required for dam safety purposes during high reservoir conditions may be used to accomplish the objectives of the

beach/habitat-building flow according to the terms contained in the 1996 Glen Canyon Dam ROD and as published in the 1997 Glen Canyon Dam Operating Criteria.

Daily and hourly releases in 2013 will be made according to the parameters of the 1996 Glen Canyon Dam ROD for the Glen Canyon Dam Final Environmental Impact Statement (GCDFEIS) and the 1997 Glen Canyon Dam Operating Criteria (*Federal Register*, Volume 62, No. 41, March 3, 1997). These parameters set the maximum and minimum flows and ramp rates within which the releases must be made. Exceptions to these parameters may be made during power system emergencies, during experimental releases, or for purposes of humanitarian search and rescue.

Releases from Lake Powell in water year 2013 will continue to reflect consideration of the uses and purposes identified in the authorizing legislation for Glen Canyon Dam. Releases will reflect criteria based on the findings, conclusions, and recommendations made in the 1996 Glen Canyon Dam ROD for the GCDFEIS (required by the Grand Canyon Protection Act of 1992) and other Secretarial decisions.

Monthly releases for 2013 will be consistent with the GCDFEIS/ROD. Monthly releases are updated to be consistent with annual volumes determined pursuant to the 2007 Interim Guidelines.

For the latest monthly projections for Lake Powell, please see the most recent 24-Month Study report available on Reclamation's Upper Colorado Region Water Operations website:

http://www.usbr.gov/uc/water/crsp/studies/index.html.

The ten-year total flow of the Colorado River at Lee Ferry[32] for water years 2003 through 2012 is 90.34 maf (111,400 mcm). This total is computed as the sum of the flow of the Colorado River at Lees Ferry, Arizona, and the Paria River at Lees Ferry, Arizona, surface water discharge stations which are operated and maintained by the United States Geological Survey.

On May 22, 2012, ~~the Bureau of~~ Reclamation released a ~~Finding of No Significant Impact~~FONSI for the development and implementation of a protocol for high-flow experimental releases from Glen Canyon Dam, Arizona, through the year 2020 (Protocol). The Protocol will be implemented through the ongoing Glen Canyon Dam Adaptive Management Program (AMP). High-flow experimental releases have been undertaken in the past as individual events. The Protocol provides a process for implementing multi-year, multi-event, high-flow experimental releases pursuant to the direction of the Secretary of the Interior to assess the ability of such releases to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established consistent with applicable Federal law. As part of the AMP, the Department of the Interior's effort to develop the Protocol is a component of its

[32] A point in the mainstream of the Colorado River one mile below the mouth of the Paria River.

ongoing responsibility to comply with the requirements and obligations established by the Grand Canyon Protection Act of 1992 (P. L. 102-575). The Protocol will be implemented in conjunction with new measures for non-native fish control in the Colorado River below Glen Canyon Dam that also will be conducted through the AMP. Further information on the Protocol may be found at:

http://www.usbr.gov/uc/envdocs/ea/gc/HFEProtocol/index.html.

Lake Mead

For calendar year 2012, the ICS Surplus Condition was the criterion governing the operation of Lake Mead in accordance with Article III(3)(b) of the Operating Criteria, Article II(B)(2) of the Consolidated Decree, and Section 2.B.5 of the 2007 Interim Guidelines. Delivery of water to Mexico was scheduled in accordance with Article 15 of the 1944 United States-Mexico Treaty and Minutes No. 242, 314, ~~316,~~[33] and 318 of the IBWC.

Lake Mead began water year 2012 on October 1, 2011, at elevation 1,116.04 feet (340.2 meters), with 12.98 maf (16,010 mcm) in storage, which is 50 percent of the conservation capacity[34] of 26.12 maf (32,220 mcm). Lake Mead increased to elevation 1,134.18 feet (345.7 meters) by the end of January 2012. After January 2012, Lake Mead steadily declined during water year 2012 to elevation 1,113.80 feet (339.5 meters) with 13.01 maf (16,050 mcm) in storage (50 percent of capacity) on September 30, 2012.

The total release from Lake Mead through Hoover Dam during water year 2012 was 9.46 maf (11,670 mcm). The total release from Lake Mead through Hoover Dam during calendar year 2012 is projected to be 9.31 maf (11,480 mcm). ~~Consumptive use from Lake Mead during calendar year 2012 resulting from diversions for Nevada above Hoover Dam is projected to be 0.242 maf (299 mcm).~~

The total inflow into Lake Mead is a combination of water released from Glen Canyon Dam plus inflows in the reach between Glen Canyon and Hoover Dams. In water year 2012, inflow into Lake Mead was 10.11 maf (12,470 mcm). For water year 2013, under the most probable assumptions, total inflow into Lake Mead is anticipated to be 9.09 maf (11,210 mcm).

~~[33] Minute No. 316, Utilization of the Wellton-Mohawk Bypass Drain and Necessary Infrastructure in the United States for the Conveyance of Water by Mexico and Non-Governmental Organizations of Both Countries to the Santa Clara Wetland During the Yuma Desalting Plant Pilot Run dated April 16, 2010.~~

[34] Conservation capacity is the amount of space available for water storage between Lake Mead's water surface elevations 895 feet (272.8 meters) and 1,219.6 feet (371.7 meters), the start of the exclusive flood control space as defined in the Field Working Agreement Between Department of the Interior, Bureau of Reclamation and Department of the Army, Corps of Engineers for Flood Control of Hoover Dam and Lake Mead, Colorado River, Nevada-Arizona, February 8, 1984.

Under the most probable inflow scenario during 2013, the elevation of Lake Mead is projected to decrease to 1,104.30 feet (336.6 meters), with 12.12 maf (14,950 mcm) in storage, at the end of September 2013, then increase to an elevation of 1,110.38 feet (338.4 meters), with 12.68 maf (15,640 mcm) in storage, at the end of December 2013.

Based on the August 2012 24-Month Study, Lake Mead's elevation on January 1, 2013, is projected to be 1,119.14 feet (341.1 meters). In accordance with Section 2.B.5 of the 2007 Interim Guidelines, the ICS Surplus Condition will govern the releases and diversions from Lake Mead in calendar year 2013. Releases from Lake Mead through Hoover Dam for water year and calendar year 2013 are anticipated to be approximately the same as 2012 releases.

For the latest monthly projections for Lake Mead, please see the most recent 24-Month Study report available on Reclamation's Lower Colorado Region Water Operations website:

http://www.usbr.gov/lc/region/g4000/24mo.pdf.

Lakes Mohave and Havasu

At the beginning of water year 2012, Lake Mohave was at an elevation of 639.73 feet (195.0 meters), with an active storage of 1.61 maf (1,990 mcm). The water level of Lake Mohave was regulated between elevation 633.03 feet (192.9 meters) and 643.35 feet (196.1 meters) during the water year, ending at an elevation of 639.51 feet (194.9 meters), with 1.60 maf (1,980 mcm) in storage. The total release from Lake Mohave through Davis Dam for water year 2012 was 9.10 maf (11,220 mcm) for downstream water use requirements. The calendar year 2012 total release is projected to be 8.95 maf (11,040 mcm).

For water year and calendar year 2013, Davis Dam is projected to release approximately the same amount of water as in 2012. The water level in Lake Mohave will be regulated between an elevation of approximately 630.5 feet (192 meters) and 645 feet (197 meters).

Lake Havasu started water year 2012 at an elevation of 448.28 feet (136.6 meters) with 0.585 maf (722 mcm) in storage. The water level of Lake Havasu was regulated between elevation 445.61 feet (135.8 meters) and 449.13 feet (136.9 meters) during the water year, ending at an elevation of 447.80 feet (136.5 meters), with 0.576 maf (710 mcm) in storage. During water year 2012, 6.67 maf (8,230 mcm) was released from Parker Dam. The calendar year 2012 total release is projected to be 6.68 maf (8,240 mcm). ~~Diversions from Lake Havasu during calendar year 2012 by the Central Arizona Project (CAP) and the Metropolitan Water District of Southern California (MWD) are projected to be 1.57 maf (1,940 mcm) and 0.703 maf (867 mcm), respectively.~~

For water year 2013, Parker Dam is expected to release approximately the same amount of water as in water year 2012. ~~Diversions from Lake Havasu in calendar year 2013 by CAP~~

~~and MWD are projected to be 1.54 maf (1,900 mcm) and 0.706 maf (870 mcm), respectively.~~

Lakes Mohave and Havasu are scheduled to be drawn down in the late summer and fall months to provide storage space for local storm runoff and will be filled in the winter to meet higher summer water needs. This drawdown also corresponds with normal maintenance at both Davis and Parker powerplants scheduled for September through March.

At Davis Dam, a major turbine overhaul of Unit No. 3 will begin in October 2012, and the unit is scheduled to return to service in March 2013.

At Parker Dam, no major turbine overhauls are scheduled in 2013.

Bill Williams River

Abnormally dry to extreme drought conditions persisted in western Arizona, including the Bill Williams River watershed, during water year 2012. Tributary inflows into Alamo Lake were below average during water year 2012 and water released by the U.S. Army Corps of Engineers (USACE) from Alamo Dam totaled 0.027 maf (34.5 mcm) for water year 2012, approximately 27 percent of the long-term average.

Due to the lack of significant runoff and precipitation events during water year 2012, Alamo Lake storage decreased by 0.029 maf (32.9 mcm) from October 1, 2011, to August 29, 2012. During this period, Alamo Lake decreased from elevation 1,110.06 feet (338.3 meters) to elevation 1,099.52 feet (335.1 meters). In 2012, average daily riparian releases from Alamo Lake ranged from 1.3 to 137 cfs (0.54 to 1.4 cms).

Senator Wash and Laguna Reservoirs

Senator Wash Reservoir is an off-stream regulating storage facility below Parker Dam (approximately 142 river miles downstream) and has a storage capacity of 0.014 maf (17.27 mcm) at full pool elevation of 251.0 feet (76.5 meters). The reservoir is used to store excess flows from the river caused by water user cutbacks, side wash inflows due to rain, and other factors. Stored waters are utilized to meet the water demands in the Lower Division States and the delivery obligation to Mexico.

Since 1992, elevation restrictions have been placed on Senator Wash Reservoir due to potential piping and liquefaction of foundation and embankment materials at West Squaw Lake Dike and Senator Wash Dam. Currently, Senator Wash Reservoir is restricted to an elevation of 240.0 feet (73.2 meters) with 0.009 maf (11.10 mcm) of storage, a loss of about 0.005 maf (6.167 mcm) of storage from its original capacity. Senator Wash Reservoir

elevation must not exceed an elevation of 238.0 feet (72.5 meters) for more than 10 consecutive days. This reservoir restriction is expected to continue in 2013.

Laguna Reservoir is a regulating storage facility located approximately five river miles downstream of Imperial Dam and is primarily used to capture sluicing flows from Imperial Dam. The storage capability of Laguna Reservoir has diminished from about 1,500 acre-feet (1.850 mcm) to approximately 400 acre-feet (0.493 mcm) due to sediment accumulation and vegetation growth. Sediment accumulation in the reservoir has occurred primarily due to flood releases that occurred in 1983 and 1984, and flood control or space building releases that occurred between 1985 and 1988 and from 1997 through 1999.

Imperial Dam

Imperial Dam is the last diversion dam on the Colorado River for United States water users. From the head works at Imperial Dam, water is diverted into the All-American Canal for use in the United States and Mexico on the California side of the dam, and into the Gila Gravity Main Canal on the Arizona side of the dam. These diversions supply all the irrigation districts in the Yuma area, in Wellton-Mohawk, in the Imperial and Coachella Valleys, and through Siphon Drop and Pilot Knob, to the Northerly International Boundary (NIB) for diversion at Morelos Dam to the Mexicali Valley in Mexico. The diversions also supply much of the domestic water needs in the Yuma area. Flows arriving at Imperial Dam for calendar year 2012 are projected to be 5.65 maf (6,970 mcm). The flows arriving at Imperial Dam for calendar year 2013 are projected to be 5.45 maf (6,720 mcm).

Gila River Flows

During water year 2012, there was well below average snowfall in the Gila River Basin, including the Salt and Verde River watersheds. Cumulative precipitation for water year 2012 in the Salt and Verde River watersheds was 78 percent of average. The Salt River Project did not release water from its system in excess of diversion requirements at Granite Reef Diversion Dam; therefore, no water reached or was released from Painted Rock Dam by the USACE in water year 2012.

Warren H. Brock Reservoir

The Warren H. Brock (Brock) reservoir is located near the All-American Canal in Imperial County, California. Construction of the reservoir began in 2008 and was completed in the summer of 2010 with commissioning in September. The first filling and drainage test began in September 2010 and was completed in November 2010. In February 2011, Reclamation began operating the reservoir with the Imperial Irrigation District (IID) under an interim operating agreement. On July 5, 2012, Reclamation and IID entered into a long-term operations and maintenance agreement for Brock reservoir.

The purpose of the 0.008 maf (9.9 mcm) Brock Reservoir is to reduce nonstorable flows and to enhance beneficial use of Colorado River water within the United States. The reservoir reduces the impact of loss of water storage at Senator Wash due to operational restrictions and provides additional regulatory storage, allowing for more efficient management of water below Parker Dam.

Yuma Desalting Plant

The Yuma Desalting Plant (YDP) was authorized in 1974 under the Colorado River Basin Salinity Control Act (Public Law 93-320) which authorized the federal government to construct the YDP to desalt the drainage flows from the Wellton-Mohawk Division of the Gila Project. This would allow the treated water to be delivered to Mexico as part of its 1944 United States-Mexico Water Treaty allotment. The United States has met salinity requirements established in IBWC Minute No. 242 primarily through use of a canal to bypass Wellton-Mohawk drain water to the Ciénega de Santa Clara (Ciénega), a wetland of open water, vegetation, and mudflats within a Biosphere Reserve in Mexico. In calendar year 2012, the amount of water discharged from the Wellton-Mohawk Division through the bypass canal is anticipated to be 0.105 maf (130 mcm), measured at the Southerly International Boundary (SIB), at an approximate concentration of total dissolved solids of 2,800 parts per million (ppm).

Reclamation commenced Pilot Run operation of the YDP on May 3, 2010, and operated the plant for 328 days at one-third capacity. A total of approximately 0.030 maf (37.0 mcm) of plant product water blended with drainage flows was discharged into the Colorado River as a result of the Pilot Run. MWD, the Southern Nevada Water Authority (SNWA), and the Central Arizona Water Conservation District (CAWCD) received an amount of water in proportion to their capital contributions to the Pilot Run in accordance with the ICS provisions in the 2007 Interim Guidelines (Section 3.A.3). ~~Reclamation is in the process of completing a~~The final report on the YDP Pilot Run has been issued~~which will be available later in 2012~~.[35]

~~MWD, SNWA, and CAWCD jointly requested that Reclamation conduct the Pilot Run to assist in consideration of potential long term, sustained operation of the YDP as a tool to conserve lower Colorado River water supplies. Such consideration required:~~

~~(a) Collecting actual YDP performance and cost data;~~
~~(b) Identifying any remaining equipment improvements that might be needed; and~~
~~(c) Testing changes that have already been made to the plant.~~

[35] Yuma Desalting Plant Demonstration Run Report, December 2008. Available online at: http://www.usbr.gov/lc/yuma/facilities/ydp/YDPdemrun07.pdf

~~Prior to the Pilot Run, Reclamation consulted with Mexico through the IBWC. As a result of those consultations, the two countries reached agreement on nine joint cooperative actions as described in IBWC Minute No. 316. One of these actions included the United States, Mexico, and non-governmental organizations (NGO) each conveying 0.010 maf (12 mcm) to the Bypass Drain. On December 6, 2011, the IBWC confirmed each party had fulfilled their conveyance commitment. United States conveyance originated from non-storable flows. Mexico's conveyance was accounted for from Mexico's 1944 United States-Mexico Water Treaty allotment. Two-thirds of the NGO's conveyance was also accounted from the Mexican Treaty allotment, and the remaining one-third originated from the Santa Clara (Riito) Drain in Mexico.~~

Off-stream Storage Agreements

Colorado River water may be stored off-stream pursuant to individual SIRAs and 43 CFR Part 414 within the Lower Division States. The Secretary shall make ICUA available to contractors in Arizona, California, or Nevada pursuant to individual SIRAs and 43 CFR Part 414. SNWA may propose to make unused Nevada basic apportionment available for storage by MWD and/or Arizona Water Banking Authority (AWBA) in calendar years 2012 and 2013.[36,37]

Intentionally Created Surplus

The 2007 Interim Guidelines included the adoption of the ICS mechanism that, among other things, encourages the efficient use and management of Colorado River water in the Lower Basin. ICS may be created through several types of activities that include improvements in system efficiency, extraordinary conservation, tributary conservation, and the importation of non-Colorado River System water into the Colorado River mainstream over the course of a calendar year. Several implementing agreements[38] were executed concurrent with the issuance of the ROD for the 2007 Interim Guidelines. ICS credits may be created and delivered in calendar years 2012 and 2013 pursuant to the 2007 Interim Guidelines and the implementing agreements. ICS balances by state, user, and type of ICS may be found in the

[36] Storage and Interstate Release Agreement among The United States of America, acting through the Secretary of the Interior; The Metropolitan Water District of Southern California; the Southern Nevada Water Authority; and the Colorado River Commission of Nevada, October 21, 2004. Available online at: http://www.usbr.gov/lc/region/g4000/contracts/SNWA_MWDSIRAfinal.pdf.

[37] Storage and Interstate Release Agreement among The United States of America, acting through the Secretary of the Interior; The Arizona Water Banking Authority; the Southern Nevada Water Authority; and the Colorado River Commission of Nevada, December 18, 2002. Available online at: http://www.usbr.gov/lc/region/g4000/contracts/SIRAfinal.pdf.

[38] Delivery Agreement between the United States and IID; Delivery Agreement between the United States and MWD; Delivery Agreement between the United States, SNWA and the CRCN; Lower Colorado River Basin Intentionally Created Surplus Forbearance Agreement among the Arizona Department of Water Resources, SNWA, CRCN, the Palo Verde Irrigation District (PVID), IID, Coachella Valley Water District (CVWD), MWD, and the City of Needles; and the California Agreement for the Creation and Delivery of Extraordinary Conservation Intentionally Created Surplus among the PVID, IID, CVWD, MWD, and the City of Needles. These agreements are available online at: http://www.usbr.gov/lc/region/programs/strategies/documents.html.

annual Colorado River Accounting and Water Use Report, Arizona, California, and Nevada.[39]

Extraordinary Conservation ICS. IID has an approved plan to create up to 0.025 maf (30.8 mcm) of Extraordinary Conservation ICS in 2012 and has submitted a plan to create up to 0.025 maf (30.8 mcm) in 2013 for approval. MWD has an approved plan to create up to 0.200 maf (247 mcm) of Extraordinary Conservation ICS in 2012 and has submitted a plan to create up to 0.200 maf (247 mcm) in 2013 for approval. If unanticipated circumstances arise, MWD, SNWA, and/or IID may request delivery of Extraordinary Conservation ICS credits in 2012 and 2013.

System Efficiency ICS. When the Brock reservoir project was funded, CAWCD, MWD, and SNWA received System Efficiency ICS credits in exchange for funding. In 2012 and 2013, MWD and SNWA may request an annual delivery of up to 0.025 maf (30.8 mcm) and 0.040 maf (49.3 mcm) of those System Efficiency ICS credits, respectively. When the YDP Pilot Run was conducted, CAWCD, MWD, and SNWA received System Efficiency ICS credits in exchange for funding. Approximately 0.030 maf (37.0 mcm) of System Efficiency ICS credits from the YDP Pilot Run were created in 2010 and 2011. MWD and SNWA may request delivery of these System Efficiency ICS credits in proportion to their capital contributions in 2012 or a subsequent year. Under the funding arrangement for Brock Reservoir, CAWCD may not request delivery of System Efficiency ICS credits in 2012 and 2013. ~~created for CAWCD will remain in Lake Mead through at least 2015.~~

Tributary Conservation ICS. SNWA has an approved plan to create up to 0.037 maf (45.6 mcm) of Tributary Conservation ICS in 2012 and has submitted a plan to create up to 0.037 maf (45.6 mcm) in 2013 for approval. Any Tributary Conservation ICS not delivered for use by SNWA in the calendar year created will, at the beginning of the following year, be converted to Extraordinary Conservation ICS pursuant to the 2007 Interim Guidelines.

Imported ICS. SNWA has an approved plan to create up to 0.007 maf (8.6 mcm) of Imported ICS in 2012 and has submitted a plan to create up to 0.009 maf (11.1 mcm) in 2013 for approval. Any Imported ICS not delivered for use by SNWA in the calendar year created will, at the beginning of the following year, be converted to Extraordinary Conservation ICS pursuant to the 2007 Interim Guidelines.

Delivery of Water to Mexico

Delivery to Mexico pursuant to the 1944 United States-Mexico Water Treaty, and IBWC Minute No. 318, is anticipated to be approximately 1.368 maf (1,687 mcm) in calendar year 2012, reflecting a downward adjustment of approximately 0.132 maf (163 mcm) in accordance with Minute No. 318. Excess flows arriving at the NIB are anticipated to be 0.045 maf (56.0 mcm) in calendar year 2012. Excess flows result from a combination of

[39] Available online at: http://www.usbr.gov/lc/region/g4000/wtracct.html.

factors, including heavy rain from winter storms, water ordered but not delivered to United States users downstream of Parker Dam, inflows into the Colorado River below Parker Dam, and spills from irrigation facilities below Imperial Dam.

Of the scheduled delivery to Mexico in calendar year 2012, approximately 1.228 maf (1,515 mcm) is projected to be delivered at NIB and approximately 0.140 maf (173 mcm) is projected to be delivered at SIB. ~~The Mexican Section of the IBWC has requested the delivery of 0.0004 maf (0.49 mcm) under IBWC Minute No. 314 and the Emergency Delivery Agreement. Under IBWC Minute No. 314, and the Emergency Delivery Agreement, water may be delivered for Tijuana through MWD, the San Diego County Water Authority (SDCWA), and the Otay Water District's respective distribution system facilities in California.~~ Although the Mexican Section of the IBWC initially requested the delivery of water under IBWC Minute No. 314 and the Emergency Delivery Agreement,[40] the request for these deliveries was later withdrawn. Therefore, no water will be diverted from Lake Havasu and delivered to Tijuana, Baja California in 2012.

Of the total delivery at SIB projected in calendar year 2012, approximately 0.116 maf (143 mcm) is projected to be delivered from the Yuma Project Main Drain and approximately 0.024 maf (29.6 mcm) is expected to be delivered by the Protective and Regulatory Pumping Unit (Minute No. 242 wells).

Pursuant to the 1944 United States-Mexico Water Treaty, and Minute No. 318, a volume of up to 1.500 maf (1,850 mcm) will be available to be scheduled for delivery to Mexico in calendar year 2013, of which approximately 0.140 maf (173 mcm) is projected to be delivered at SIB. Under IBWC Minute No. 314, and the Emergency Delivery Agreement, approximately 0.002 maf (2.5 mcm) may be delivered for Tijuana. The remainder of the water to be scheduled for delivery to Mexico in 2013 will be delivered at NIB.

Drainage flows to the Colorado River from the Yuma Mesa Conduit (YMC) and South Gila Drain Pump Outlet Channels are projected to be 0.016 maf (19.7mcm) and 0.046 maf (56.7 mcm), respectively, for calendar year 2012. This water is available for delivery at NIB in satisfaction of the 1944 United States-Mexico Water Treaty. Reclamation holds a permit[41] from the Arizona Department of Water Resources (ADWR) to pump an additional 0.025 maf (30.8 mcm) of groundwater annually for water delivery to Mexico to replace water bypassed to the Ciénega through the bypass canal. Salinity conditions have not allowed for increased pumping and Reclamation will continue to monitor and evaluate conditions under the permit in the future.

[40] Amendment No. 1 to Agreement for Temporary Emergency Delivery of a Portion of the Mexican Treaty Waters of the Colorado River to the International Boundary in the Vicinity of Tijuana, Baja California, Mexico, and for the Operation of Facilities in the United States, dated November 26, 2008.

[41] ADWR Transport Permit Number 30-001 entitled Permit to Transport Groundwater Withdrawn from the Yuma Groundwater Basin, March 1, 2007.

As stated in Minute No. 242, the maximum allowable salinity differential is 145 ppm by the United States' measurement or count and 151 ppm by the Mexican count. The salinity differential for calendar year 2012 is projected to be 143 ppm by the United States' count.

Mexico has identified four critical months, October through January, regarding improving the quality of water delivered at SIB. As a matter of comity, the United States has agreed to reduce the salinity of water delivered at SIB during this period. To accomplish the reduction in salinity, the United States constructed a diversion channel to bypass up to 0.008 maf (9.87 mcm) of Yuma Valley drainage water during the four critical months identified by Mexico. This water will be replaced by better quality water from the Minute No. 242 well field to reduce the salinity at SIB. Reclamation anticipates bypassing approximately 0.001 maf (1.2 mcm) in calendar year 2012 to the diversion channel for salinity control and up to 0.008 maf (9.87 mcm) in calendar year 2013.

2013 DETERMINATIONS

The AOP provides projections regarding reservoir storage and release conditions during the upcoming year, based upon Congressionally mandated and authorized storage, release, and delivery criteria and determinations. After meeting these criteria and determinations, specific reservoir releases may be modified within these requirements as forecasted inflows change in response to climatic variability and to provide additional benefits coincident to the projects' multiple purposes.

Upper Basin Reservoirs

Section 602(a) of the CRBPA provides for the storage of Colorado River water in Upper Basin reservoirs and the release of water from Lake Powell that the Secretary finds reasonably necessary to assure deliveries to comply with Articles III(c), III(d), and III(e) of the 1922 Colorado River Compact without impairment to the annual consumptive use in the Upper Basin. The Operating Criteria provide that the annual plan of operation shall include a determination of the quantity of water considered necessary to be in Upper Basin storage at the end of the water year after taking into consideration all relevant factors including historic streamflows, the most critical period of record, the probabilities of water supply, and estimated future depletions. Water not required to be so stored will be released from Lake Powell:

- to the extent it can be reasonably applied in the States of the Lower Division to the uses specified in Article III(e) of the 1922 Colorado River Compact, but these releases will not be made when the active storage in Lake Powell is less than the active storage in Lake Mead;

- to maintain, as nearly as practicable, active storage in Lake Mead equal to the active storage in Lake Powell; and

- to avoid anticipated spills from Lake Powell.

Taking into consideration all relevant factors required by Section 602(a)(3) of the CRBPA and the Operating Criteria, it is determined that the active storage in Upper Basin reservoirs projected for September 30, 2013, under the most probable inflow scenario would exceed the storage required under Section 602(a) of the CRBPA.

Taking into account (1) the existing water storage conditions in the basin, (2) the August 2012 24-Month Study projection of the most probable near-term water supply conditions in the basin, and (3) Section 6.B of the 2007 Interim Guidelines, the Upper Elevation Balancing Tier will govern the operation of Lake Powell for water year 2013. The August 2012 24-Month Study of the most probable inflow scenario projects the water year 2013 release from Glen Canyon Dam to be 8.23 maf (10,150 mcm). Given the hydrologic variability of the Colorado River System and based on actual 2012 water year operations,

the projected water year release from Lake Powell in 2013 could be in the range of 8.23 maf (10,150 mcm) to an estimated 11.21 maf (13,830 mcm) or greater.

Lower Basin Reservoirs

Pursuant to Article III of the Operating Criteria and consistent with the Consolidated Decree, water shall be released or pumped from Lake Mead to meet the following requirements:

(a) 1944 United States-Mexico Water Treaty obligations;
(b) Reasonable beneficial consumptive use requirements of mainstream users in the Lower Division States;
(c) Net river losses;
(d) Net reservoir losses;
(e) Regulatory wastes; and
(f) Flood control.

The Operating Criteria provide that after the commencement of delivery of mainstream water by means of the CAP, the Secretary will determine the extent to which the reasonable beneficial consumptive use requirements of mainstream users are met in the Lower Division States. Reasonable beneficial consumptive use requirements are met depending on whether a Normal, Surplus, or Shortage Condition has been determined. The Normal Condition is defined as annual pumping and release from Lake Mead sufficient to satisfy 7.500 maf (9,251 mcm) of consumptive use in accordance with Article III(3)(a) of the Operating Criteria and Article II(B)(1) of the Consolidated Decree. The Surplus Condition is defined as annual pumping and release from Lake Mead sufficient to satisfy in excess of 7.500 maf (9,251 mcm) of consumptive use in accordance with Article III(3)(b) of the Operating Criteria and Article II(B)(2) of the Consolidated Decree. An ICS Surplus Condition is defined as a year in which Lake Mead's elevation is projected to be above elevation 1,075 feet (327.7 meters) on January 1, a Flood Control Surplus has not been determined, and delivery of ICS has been requested. The Secretary may determine an ICS Surplus Condition in lieu of a Normal Condition or in addition to other operating conditions that are based solely on the elevation of Lake Mead. The Shortage Condition is defined as annual pumping and release from Lake Mead insufficient to satisfy 7.500 maf (9,251 mcm) of consumptive use in accordance with Article III(3)(c) of the Operating Criteria and Article II(B)(3) of the Consolidated Decree.

The 2007 Interim Guidelines are being utilized in calendar year 2013 and serve to implement the narrative provisions of Article III(3)(a), Article III(3)(b), and Article III(3)(c) of the Operating Criteria and Article II(B)(1), Article II(B)(2), and Article II(B)(3) of the Consolidated Decree for the period through 2026. The 2007 Interim Guidelines will be used annually by the Secretary to determine the quantity of water available for use within the Lower Division States.

Consistent with the 2007 Interim Guidelines, the August 2012 24-Month Study was used to forecast the system storage as of January 1, 2013. Based on a projected January 1, 2013, Lake Mead elevation of 1,119.14 feet (341.1 meters) and consistent with Section 2.B.5 of the 2007 Interim Guidelines, the ICS Surplus Condition will govern releases for use in the states of Arizona, Nevada, and California during calendar year 2013 in accordance with Article III(3)(b) of the Operating Criteria and Article II(B)(2) of the Consolidated Decree. Water deliveries in the Lower Basin during calendar year 2013 will be limited to 7.5 maf (9,250 mcm) plus or minus any credits for ICS.

Article II(B)(6) of the Consolidated Decree allows the Secretary to allocate water that is apportioned to one Lower Division State but is for any reason unused in that state to another Lower Division State. This determination is made for one year only, and no rights to recurrent use of the water accrue to the state that receives the allocated water. No unused apportionment for calendar year 2013 is anticipated. If any unused apportionment becomes available after adoption of this AOP, Reclamation, on behalf of the Secretary, shall allocate any such available unused apportionment for calendar year 2013 in accordance with Article II(B)(6) of the Consolidated Decree and the Unused Water Policy.

Water may be stored off-stream pursuant to individual SIRAs and 43 CFR Part 414 within the Lower Division States. The Secretary shall make ICUA available to contractors in Arizona, California, or Nevada pursuant to individual SIRAs and 43 CFR Part 414. SNWA may propose to make unused Nevada basic apportionment available for storage by MWD and/or AWBA in calendar year 2013.

The IOPP, which became effective January 1, 2004, will be in effect during calendar year 2013. In calendar year 2013, California and Arizona paybacks are projected to be 0.062 maf (76.5 mcm) and 0.0006 maf (0.74 mcm), respectively. Payback balances by state and user may be found in the annual Colorado River Accounting and Water Use Report, Arizona, California, and Nevada.[42]

The 2007 Interim Guidelines included the adoption of the ICS mechanism that among other things encourages the efficient use and management of Colorado River water in the Lower Basin. The ICS Surplus Condition will govern Lower Basin operations in calendar year 2013 and ICS credits will be created and delivered pursuant to the 2007 Interim Guidelines and appropriate delivery and forbearance agreements.

Given the limitation of available supply and recent low inflow amounts within the Colorado River Basin, the Secretary, through Reclamation, will continue to review Lower Basin operations to assure that all deliveries and diversions of mainstream water are in strict accordance with the Consolidated Decree, applicable statutes, contracts, rules, and agreements.

[42] Available online at: http://www.usbr.gov/lc/region/g4000/wtracct.html.

As provided in Section 7.C of the 2007 Interim Guidelines, the Secretary may undertake a mid-year review to consider revisions of the current AOP. For Lake Mead, the Secretary shall revise the determination in any mid-year review for the current year only to allow for additional deliveries from Lake Mead pursuant to Section 7.C of the 2007 Interim Guidelines.

1944 United States-Mexico Water Treaty

Under the minimum probable, most probable, and maximum probable inflow scenarios, water in excess of that required to supply uses in the United States and the guaranteed quantity of 1.500 maf (1,850 mcm) allotted to Mexico will not be available. Vacant storage space in mainstream reservoirs is substantially greater than that required by flood control regulations. Therefore, a volume of up to 1.500 maf (1,850 mcm) of water will be available to be scheduled for delivery to Mexico during calendar year 2013 in accordance with Article 15 of the 1944 United States-Mexico Water Treaty and Minutes No. 242, 314, and 318 of the IBWC.

Calendar year schedules of the monthly deliveries of Colorado River water are formulated by the Mexican Section of the IBWC and presented to the United States Section before the beginning of each calendar year. Pursuant to the 1944 United States-Mexico Water Treaty, the monthly quantity prescribed by those schedules may be increased or decreased by not more than 20 percent of the monthly quantity, upon 30 days notice in advance to the United States Section. Any change in a monthly quantity is offset in another month so that the total delivery for the calendar year is unchanged, subject to the provisions of the 1944 United States-Mexico Water Treaty and IBWC Minute No. 318.

DISCLAIMER

Nothing in this AOP is intended to interpret the provisions of the Colorado River Compact (45 Stat. 1057); the Upper Colorado River Basin Compact (63 Stat. 31); the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Treaty Between the United States of America and Mexico (Treaty Series 994, 59 Stat. 1219); the United States/Mexico agreement in Minute No. 242 of August 30, 1973, (Treaty Series 7708; 24 UST 1968) or Minute No. 314 of November 26, 2008, or Minute No. 318 of December 17, 2010; the Consolidated Decree entered by the Supreme Court of the United States in *Arizona v. California* (547 U.S 150 (2006)); the Boulder Canyon Project Act (45 Stat. 1057); the Boulder Canyon Project Adjustment Act (54 Stat. 774; 43 U.S.C. 618a); the Colorado River Storage Project Act (70 Stat. 105; 43 U.S.C. 620); the Colorado River Basin Project Act (82 Stat. 885; 43 U.S.C. 1501); the Colorado River Basin Salinity Control Act (88 Stat. 266; 43 U.S.C. 1951); the Hoover Power Plant Act of 1984 (98 Stat. 1333); the Hoover Power Allocation Act of 2011 (125 Stat. 777); the Colorado River Floodway Protection Act (100 Stat. 1129; 43 U.S.C. 1600); or the Grand Canyon Protection Act of 1992 (Title XVIII of Public Law 102-575, 106 Stat. 4669).

Acronyms and Abbreviations

ADWR	Arizona Department of Water Resources
AMP	Glen Canyon Dam Adaptive Management Program
AMWG	Glen Canyon Dam Adaptive Management Work Group
AOP	Annual Operating Plan
AWBA	Arizona Water Banking Authority
BWRCSC	Bill Williams River Corridor Steering Committee
CAP	Central Arizona Project
CAWCD	Central Arizona Water Conservation District
CBRFC	National Weather Service's Colorado Basin River Forecast Center
CFR	Code of Federal Regulations
cfs	cubic feet per second
cms	cubic meters per second
CRBPA	Colorado River Basin Project Act of 1968
CRCN	Colorado River Commission of Nevada
CRMWG	Colorado River Management Work Group
CVWD	Coachella Valley Water District
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FGTWG	Flaming Gorge Technical Work Group
FONSI	Finding of No Significant Impact
ft	feet
GCDFEIS	Glen Canyon Dam Final Environmental Impact Statement of 1996
IBWC	International Boundary and Water Commission, United States and Mexico
ICS	Intentionally Created Surplus
ICUA	Intentionally Created Unused Apportionment
IID	Imperial Irrigation District
IOPP	Inadvertent Overrun and Payback Policy
m	meters
maf	million acre-feet
mcm	million cubic meters
MWD	The Metropolitan Water District of Southern California
NEPA	National Environmental Policy Act of 1969, as amended
NIB	Northerly International Boundary
P.L.	Public Law
ppm	parts per million
Reclamation	United States Bureau of Reclamation
ROD	Record of Decision
SDCWA	San Diego County Water Authority
Secretary	Secretary of the United States Department of the Interior
Service	United States Fish and Wildlife Service
SIB	Southerly International Boundary

1	SIRA	Storage and Interstate Release Agreement
2	SNWA	Southern Nevada Water Authority
3	USACE	United States Army Corps of Engineers
4	Western	Western Area Power Administration
5	YDP	Yuma Desalting Plant