

RECLAMATION

Managing Water in the West

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Draft Annual Operating Plan for Colorado River Reservoirs 2008



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1 **INTRODUCTION**

2
3 **Authority**

4
5 This 2008 Annual Operating Plan (AOP) was developed in accordance with Section 602 of
6 the Colorado River Basin Project Act (Public Law 90-537) and the Criteria for Coordinated
7 Long-Range Operation of Colorado River Reservoirs Pursuant to the Colorado River Basin
8 Project Act of September 30, 1968 (Operating Criteria), as amended, promulgated by the
9 Secretary of the Interior (Secretary). In accordance with the Colorado River Basin Project
10 Act and the Operating Criteria, the AOP must be developed and administered consistent
11 with applicable Federal laws, the Utilization of Waters of the Colorado and Tijuana Rivers
12 and of the Rio Grande, Treaty Between the United States of America and Mexico, signed
13 February 3, 1944 (1944 United States-Mexico Water Treaty), interstate compacts, court
14 decrees, Colorado River Interim Surplus Guidelines (Interim Surplus Guidelines) (66
15 *Federal Register* 7,772, January 25, 2001), Colorado River Water Delivery Agreement (69
16 *Federal Register* 12,202, March 15, 2004), Interim 602(a) Storage Guideline (69 *Federal*
17 *Register* 28,945, May 19, 2004), and other documents relating to the use of the waters of the
18 Colorado River, which are commonly and collectively known as “The Law of the River.”
19

20 The Operating Criteria and Section 602 of the Colorado River Basin Project Act mandate
21 consultation with representatives of the Governors of the seven Basin States and such other
22 parties as the Secretary may deem appropriate in preparing the annual plan for operation of
23 the Colorado River reservoirs. In addition, the Grand Canyon Protection Act of 1992 (Title
24 XVIII of Public Law 102-575) requires consultation to include the general public and others.
25 Accordingly, the 2008 AOP was prepared by the Bureau of Reclamation in consultation
26 with the seven Basin States Governors’ representatives; the Upper Colorado River
27 Commission; Native American tribes; appropriate Federal agencies; representatives of the
28 academic and scientific communities, environmental organizations, and the recreation
29 industry; water delivery contractors; contractors for the purchase of Federal power; others
30 interested in Colorado River operations; and the general public, through the Colorado River
31 Management Work Group (CRMWG).
32

33 Article I(2) of the Operating Criteria allows for revision of this 2008 AOP by June of 2008
34 to reflect the current hydrologic conditions. Any revision to the AOP may occur only
35 through the AOP consultation process as required by applicable Federal law.
36

37 In September, 2005, Reclamation initiated a process in accordance with the National
38 Environmental Policy Act (NEPA) to develop additional operational guidelines for Lake
39 Powell and Lake Mead in response to the continued drought and increasing water demands
40 on the system. A Record of Decision (ROD) to adopt the operational guidelines is
41 anticipated in December, 2007, and upon issuance of that decision, the Secretary will review
42 and revise, as appropriate, the 2008 AOP. Any revision to the AOP may occur only through
43 the AOP consultation process as required by applicable Federal law.
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1
2 **Purpose**
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4 The purposes of the AOP are to determine or address: (1) the projected operation of the
5 Colorado River reservoirs to satisfy project purposes under varying hydrologic and climatic
6 conditions; (2) the quantity of water considered necessary to be in storage in the Upper
7 Basin reservoirs as of September 30, 2008, pursuant to Section 602(a) of the Colorado River
8 Basin Project Act; (3) water available for delivery pursuant to the 1944 United States-
9 Mexico Water Treaty and Minutes No. 242 and 310 of the International Boundary and
10 Water Commission, United States and Mexico (IBWC); (4) whether the reasonable
11 consumptive use requirements of mainstream users in the Lower Division States will be met
12 under a “Normal,” “Surplus,” or “Shortage” Condition as outlined in Article III of the
13 Operating Criteria and as implemented by the Interim Surplus Guidelines; and (5) whether
14 water apportioned to, but unused by one or more Lower Division States exists and can be
15 used to satisfy beneficial consumptive use requests of mainstream users in other Lower
16 Division States as provided in the Consolidated Decree of the Supreme Court of the United
17 States in *Arizona v. California*, 547 U.S. 150 (2006) (Consolidated Decree).
18

19 Consistent with the above determinations and in accordance with other applicable provisions
20 of the “Law of the River,” the AOP was developed with “appropriate consideration of the
21 uses of the reservoirs for all purposes, including flood control, river regulation, beneficial
22 consumptive uses, power production, water quality control, recreation, enhancement of fish
23 and wildlife, and other environmental factors” (Operating Criteria, Article I(2)).
24

25 Since the hydrologic conditions of the Colorado River Basin can never be completely known
26 in advance, the AOP addresses the operations resulting from three different hydrologic
27 scenarios: the probable maximum, most probable, and probable minimum reservoir inflow
28 conditions. River operations under the plan are modified during the year as runoff
29 predictions are adjusted to reflect existing snowpack, basin storage, and flow conditions.
30

31 **Summary**
32

33 **Upper Basin Delivery.** The objective minimum release criterion will most likely control
34 the annual release from Glen Canyon Dam during water year 2008 in accordance with
35 Article II(2) of the Operating Criteria unless spill avoidance and/or the storage equalization
36 criteria in Article II(3) are controlling. To maintain, as nearly as practicable, active storage
37 in Lake Mead equal to the active storage in Lake Powell, releases from Lake Powell greater
38 than the minimum objective of 8.23 million acre-feet (maf), 10,150 million cubic meters
39 (mcm), will be made if (1) storage in Lake Powell on September 30, 2008, is projected to be
40 greater than 14.85 maf (18,320 mcm) (water surface elevation 3,630 feet [1,106.4 meters]);
41 and (2) active storage in Lake Powell is greater than active storage in Lake Mead, consistent
42 with Article II (3) of the Operating Criteria and Section V of the Interim 602(a) Storage
43 Guideline.
44

45 **Lower Basin Delivery.** Under the most probable inflow scenario, downstream deliveries
46 are expected to control the releases from Hoover Dam. Taking into account (1) the existing
47 water storage conditions in the basin, (2) the most probable near-term water supply
48 conditions in the basin, and (3) Sections 2(A)(1) and 7 of the Interim Surplus Guidelines, the

1 Normal Condition is the criterion governing the operation of Lake Mead for calendar year
2 2008 in accordance with Article III(3)(a) of the Operating Criteria, and Article II(B)(1) of
3 the Consolidated Decree.

4
5 If any unused apportionment is available, the Secretary shall allocate any available unused
6 apportionments for calendar year 2008 in accordance with Article II(B)(6) of the
7 Consolidated Decree and Section 1(B) of the Interim Surplus Guidelines. No unused
8 apportionment for calendar years 2007 and 2008 is anticipated.

9
10
11 Water may be made available for diversion pursuant to 43 CFR Part 414¹ to contractors
12 within the Lower Division States. The Secretary shall make Intentionally Created Unused
13 Apportionment (ICUA) available to contractors in Arizona, California, or Nevada for the
14 off-stream storage or consumptive use of water pursuant to individual Storage and Interstate
15 Release Agreements (SIRA) and 43 CFR Part 414. In calendar year 2007, approximately
16 0.017 maf (20.72 mcm) of ICUA water stored in Arizona is projected to be recovered by
17 California.²

18
19
20 The Inadvertent Overrun and Payback Policy (IOPP), which became effective January 1,
21 2004, will be in effect during calendar year 2008.³

22 The Colorado River Water Delivery Agreement requires payback of California overruns
23 occurring in 2001 to 2002 as noted in Exhibit C of that document. Each district with a
24 payback obligation under Exhibit C may at its own discretion elect to accelerate paybacks.
25 It is anticipated that California paybacks for calendar years 2007 and 2008 will total 0.040
26 maf (49.34 mcm) and 0.013 maf (16.04 mcm), respectively.

27 In calendar years 2007 and 2008, paybacks occurring in California result only from Exhibit
28 C obligations, and IOPP overruns. In calendar years 2007 and 2008, paybacks for Arizona
29 result only from IOPP overruns.

30 During calendar year 2007, the scheduled Arizona paybacks were expected to will total 606
31 ac-ft (0.75 mcm). In calendar year 2008, Arizona paybacks are projected to total 3570 ac-ft
32 (4.40 mcm).

33 Reclamation implemented demonstration programs in 2007 in the Lower Basin for the
34 Creation of Intentionally Created Surplus Water (ICS Demonstration Program) and for
35 System Conservation of Colorado River Water (SC Demonstration Program).⁴

¹ 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* 59,006, November 1, 1999).

² Amendatory Agreement to Agreement between the Central Arizona Water Conservation District and the Metropolitan Water District of Southern California for a Demonstration Project on Underground Storage of Colorado River Water, December 1st, 1994.

³ Record of Decision for Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions, Final Environmental Impact Statement.

1 The ICS Demonstration Program allows entitlement holders to undertake extraordinary
2 conservation activities to reduce their approved annual consumptive use of Colorado River
3 water and store that conserved water in Lake Mead (ICS Water). The ICS Demonstration
4 Program does not provide for the release or use of ICS Water until appropriate
5 environmental compliance and forbearance agreements have been completed.

6
7 The SC Demonstration Program allows entitlement holders to participate in voluntary
8 conservation to conserve a portion of their approved annual consumptive use of Colorado
9 River water in exchange for appropriate compensation provided by Reclamation. The water
10 conserved (SC Water) would be stored and retained in Lake Mead to assist in providing an
11 interim, supplemental source of water to replace the drainage water from the Wellton-
12 Mohawk Irrigation and Drainage District that is bypassed to the Cienega de Santa Clara and
13 the reject stream from operation of the Yuma Desalting Plant.

14
15 **1944 United States-Mexico Water Treaty Delivery.** A volume of 1.500 maf (1,852 mcm)
16 of water will be available to be scheduled for delivery to Mexico during calendar year 2008
17 in accordance with Article 15 of the 1944 United States-Mexico Water Treaty and Minutes
18 No. 242 and 310 of the IBWC.

⁴ Agreement between Metropolitan and Reclamation to Implement a Demonstration Program to Create Intentionally Created Surplus Water, May 18, 2006; Agreement between IID and Reclamation to Implement a Demonstration Program to Create Intentionally Created Surplus Water, June 26, 2006; Policy Establishing a Demonstration Program for System Conservation of Colorado River Water, May 26, 2006; [Agreement between Reclamation and Metropolitan to Implement a Demonstration Program for System Conservation of Colorado River Water, August 15, 2006.]

2007 HYDROLOGY SUMMARY AND RESERVOIR STATUS

Below average streamflows were observed in the Colorado River Basin during 2007. Unregulated⁵ inflow to Lake Powell in water year 2007 was 8.296 maf (10,230 mcm), or 69 percent of the 30 year average⁶ which is 12.06 maf (14,870 mcm). Unregulated inflow to Flaming Gorge, Blue Mesa, and Navajo Reservoirs was 44, 88, and 99 percent of average, respectively.

Runoff from numerous precipitation events reached the Upper Colorado River Basin in October 2006 (the first month of water year 2007). These precipitation events were particularly heavy in the regions surrounding Lake Powell. Runoff in the San Juan, Dirty Devil, and San Rafael Rivers was very high in response to these storm events. Lake Powell increased in elevation by 6.2 feet (1.9 meters) during the month. Aggregate precipitation in the Upper Colorado River Basin was nearly 200 percent of normal in October 2006.

Basin hydrologic conditions trended drier beginning in November 2006. This trend continued through the winter months. In almost all areas of the Upper Colorado River Basin, snowpack remained below average throughout the winter of 2006-2007.

Basinwide snowpack above Lake Powell on March 1, 2007, was 81 percent of average. At that time, the projected April through July inflow to Lake Powell was 71 percent of average. Temperatures in the Colorado River Basin were much above average and precipitation was below average in March 2007. Normally, mountain snowpack continues to build in the month of March. However, in March 2007 there was a net loss of snow in most of the Colorado River Basin with a significant reduction in the water supply projections. In April 2007, the April through July inflow projection to Lake Powell was reduced by 21 percentage points to 50 percent of average. Observed April through July unregulated inflow to Lake Powell was 4.051 maf (5,000 mcm), or 51 percent of average.

The Colorado River Basin experienced five consecutive years of extreme drought during water years 2000 through 2004. Unregulated inflow into Lake Powell during this five-year period was only 62, 59, 25, 51, and 49 percent of average, respectively. These years of very low inflow resulted in significant drawdown of Colorado River reservoirs with total system storage decreasing from 92 percent of capacity on October 1, 1999, to 50 percent of capacity on October 1, 2004. Hydrologic conditions improved in 2005 with above average inflow to Lake Powell (105 percent of average) and record-breaking tributary flows in the Lower Colorado Basin. Lower Basin tributary inflow into Lake Mead for water year 2005 totaled approximately 0.882 maf (1,088 mcm), or 253% of average. Colorado River reservoirs gained 5.10 maf (6,290 mcm) of storage in water year 2005. Drier hydrologic conditions returned in 2006. Unregulated inflow to Lake Powell in water year 2006 was 71 percent of average. Inflow to all major Colorado River reservoirs was below average in 2007.

⁵ 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.

⁶ Inflow statistics throughout this document will be compared to the 30-year average, 1971-2000, unless otherwise noted.

1 Inflow to Lake Powell has been below average in seven out of the past eight years. While
2 drought conditions eased in 2005, and the inflow in 2006 and 2007 was not as low as what
3 occurred in 2000 through 2004, drought conditions in the Colorado River Basin persist.
4 Provisional calculations of natural flow for the Colorado River at Lees Ferry, Arizona, show
5 that the average flow over the last eight water years (2000-2007, inclusive) was the lowest
6 eight-year average in 100 years of record keeping.

7
8 Runoff from numerous precipitation events also reached the Lower Colorado River Basin in
9 October 2006, associated with heavy rainfall in regions surrounding Lake Powell. Runoff
10 from the Paria River, Little Colorado River, and Virgin River was also high in response to
11 these storm events. Lake Mead increased in elevation by 1.0 ft (0.31 m) in the first two
12 weeks of October.

13
14 Although tributary inflows in the Lower Colorado River Basin were exceptionally high
15 during water year 2005, and October, 2006, overall tributary inflows were below average for
16 water year 2007. Drought conditions persisted for water year 2007 throughout the Lower
17 Basin, and the southwestern United States.⁷ Abnormally dry to extreme drought conditions
18 persisted throughout Arizona, contributing to 75 percent of average precipitation being
19 recorded in the Gila River Basin. During water year 2007 no tributary inflow from the Gila
20 River reached the mainstem of the Colorado River.⁸

21
22 Tributary inflow from the Little Colorado River for water year 2007 also reflected severe
23 drought conditions in the State of Arizona. Tributary inflow from the Little Colorado for
24 water year 2007 totaled 0.120 maf (148.0 mcm), or 67 percent of the long-term⁹ average.
25 Tributary inflow from the Bill Williams River into the mainstem totaled 0.028 maf (34.5
26 mcm) for water year 2007, or 28 percent of the long-term average. Tributary inflow from
27 the Virgin River for water year 2007 was estimated at being near average, totaling 0.164 maf
28 (202.3 mcm), or 95 percent of the long-term average.¹⁰

29
30 Below average inflow to Colorado River reservoirs in 2007 resulted in a net loss in Colorado
31 River total system storage. Reservoir storage in Lake Powell experienced a nominal
32 increase during water year 2007, increasing by 0.041 maf (51 mcm). Storage in Lake Mead
33 declined by 1.365 maf (1,684 mcm) during water year 2007. At the beginning of water year
34 2007, Colorado River total system storage was 56 percent of capacity. As of September 30,
35 2007, total system storage was 54 percent of capacity, a decrease of approximately 1.360
36 maf (1,680 mcm).

37
38 Tables 1 and 2 list the October 1, 2007, reservoir vacant space, live storage, water elevation,
39 percent of capacity, change in storage, and change in water elevation during water year
40 2007.

⁷ From the US Drought Monitor website: <http://drought.unl.edu/dm/monitor.html>.

⁸ Tributary inflow from the Gila River to the mainstem is very sporadic. These flows occur very seldom and when they do they are typically of high magnitude.

⁹ The basis for the long-term average is natural flow data from 1906 to 2004⁵. Additional information regarding natural flows may be found at <http://www.usbr.gov/lc/region/g4000/NaturalFlow/current.html>.

¹⁰ Water year estimates for the Virgin River are based on projections from a partial water year record due to gage outage. The partial water year record for the Virgin River gage is from October, 2006 to March, 2007.

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Table 1. Reservoir Conditions on October 1, 2007 (English Units)

Reservoir	Vacant Space (maf)	Live Storage (maf)	Water Elevation (ft)	Percent of Capacity (%)	Change in Storage* (maf)	Change in Elevation* (ft)
Fontenelle	0.154	0.191	6,484.2	55	-0.049	-7.6
Flaming Gorge	0.679	3.070	6,022.5	82	-0.060	-1.7
Blue Mesa	0.147	0.682	7,502.5	82	0.015	1.8
Navajo	0.164	1.531	6,073.6	90	0.111	8.1
Lake Powell	12.36	11.99	3,602.2	49	0.041	0.4
Lake Mead	13.36	12.52	1,111.2	48	-1.365	-14.1
Lake Mohave	0.232	1.578	638.5	87	-0.006	-0.3
Lake Havasu	0.061	0.558	446.8	90	0.003	0.2
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Totals	27.16	32.09		54.2	-1.360	

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* From October 1, 2006, to September 30, 2007.

Table 2. Reservoir Conditions on October 1, 2007 (Metric Units)

Reservoir	Vacant Space (mcm)	Live Storage (mcm)	Water Elevation (m)	Percent of Capacity (%)	Change in Storage* (mcm)	Change in Elevation* (m)
Fontenelle	190	236	1,976.4	55	-61	-2.3
Flaming Gorge	838	3,787	1,835.7	82	-74	-0.5
Blue Mesa	202	841	2,286.8	82	19	0.6
Navajo	202	1,888	1,851.2	90	137	2.5
Lake Powell	15,251	14,750	1,098.9	49	51	0.1
Lake Mead	16,473	15,446	338.7	48	-1684	-4.3
Lake Mohave	286	1,946	194.6	87	-8	-0.1
Lake Havasu	76	688	136.2	90	4	0.1
-----	-----	-----	-----	-----	-----	-----
Totals	31,880	41,200		54.1	-1,679	

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* From October 1, 2006, to September 30, 2007.

2008 WATER SUPPLY ASSUMPTIONS

For 2008 operations, three reservoir unregulated inflow scenarios were developed and analyzed and are labeled as probable maximum, most probable, and probable minimum. The attached graphs show these inflow scenarios with associated release patterns and end-of-month contents for each reservoir.

Although there is considerable uncertainty associated with streamflow forecasts and reservoir operating plans made a year in advance, these projections are valuable in analyzing probable impacts on project uses and purposes. The National Weather Service's Colorado Basin River Forecast Center developed the inflow for the probable maximum (10 percent exceedance), most probable (50 percent exceedance), and probable minimum (90 percent exceedance) inflow scenarios in 2008 using the Ensemble Streamflow Prediction (ESP) model. ESP accounts for antecedent streamflows as well as current soil moisture levels with a continuous soil moisture accounting model known as the Sacramento Soil Moisture Accounting Model. The most probable unregulated inflow for Lake Powell in water year 2008 is 9.81 maf (12,090 mcm), or 81 percent of average. The probable minimum unregulated inflow to Lake Powell in water year 2008 is 4.10 maf (5,060 mcm), or 34 percent of average. The probable maximum unregulated inflow is 16.50 maf (20,350 mcm), or 137 percent of average. The three inflow scenarios for Lake Powell are shown in Tables 3 and 4.

Side inflows from Lake Powell to Lake Mead, Lake Mead to Lake Mohave, and Lake Mohave to Lake Havasu are forecasted using historic data over the five year period of January, 2002 through December, 2006, inclusive. The last five years of historic data are being used to best represent most recent hydrologic conditions for operational forecasts. Most probable forecasted side inflows into each reach are the arithmetic mean of the five year record. The probable maximum and probable minimum forecasts for the reach between Lake Powell and Lake Mead are the 90th percentile (10% exceedance) and 10th percentile (90% exceedance), respectively, of the five year record. The most probable side inflow into Lake Mead during water year 2008 is 0.890 maf (1,098 mcm). The probable minimum side inflow into Lake Mead is 0.393 maf (485 mcm). The probable maximum side inflow is 1.602 maf (1,976 mcm).

The monthly volumes of inflow resulting from these assumptions were input into Reclamation's monthly reservoir simulation model and used to plan reservoir operations for 2008. Starting with October 1, 2007, reservoir storage conditions, the monthly releases for each reservoir were adjusted until release and storage levels best accomplished project purposes.

Graphs of the projected 2008 inflows, releases, and storages for each hydrologic scenario are presented in Attachment I.

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**Table 3. Projected Unregulated Inflow into Lake Powell for Water Year 2008
(English Units: maf)**

Time Period	Probable Maximum	Most Probable	Probable Minimum
10/07–12/07	2.14	1.17	0.53
1/08 – 3/08	2.09	1.25	0.52
4/08 – 7/08	10.75	6.42	2.67
8/08 – 9/08	1.52	0.91	0.38
10/08 – 12/08	1.45	1.45	1.45
WY 2008	16.50	9.74	4.10
CY 2008	15.81	10.02	5.01

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**Table 4. Projected Unregulated Inflow into Lake Powell for Water Year 2008
(Metric Units: mcm)**

Time Period	Probable Maximum	Most Probable	Probable Minimum
10/07 –12/07	2,640	1,440	660
1/08 –3/08	2,570	1,540	640
4/08 –7/08	13,260	7,920	3,300
8/08 –9/08	1,870	1,120	460
10/08 –12/08	1,745	1,745	1,745
WY 2008	20,350	12,020	5,060
CY 2008	19,500	12,360	6,190

SUMMARY OF RESERVOIR OPERATIONS IN 2007 AND PROJECTED 2008 RESERVOIR OPERATIONS

The regulation of the Colorado River has had effects on ~~downstream~~ aquatic and riparian resources. Controlled releases from dams have modified temperature, sediment load, and flow patterns, resulting in increased productivity of some introduced 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 downstream aquatic and riparian resources have been established 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. At Glen Canyon Dam, the Glen Canyon Dam Adaptive Management Work Group (AMWG), a Federal Advisory Committee Act (FACA) committee, was established in 1997. Since its inception, the AMWG has met regularly to analyze and make recommendations to the Secretary regarding research and monitoring programs in the Grand Canyon as well as experimental modifications to dam operations.¹¹

Modifications to planned operations may be made based on changes in forecast conditions or other relevant factors. Consistent with the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Upper Colorado Recovery Program),¹² the San Juan River Basin Recovery Implementation Program (San Juan Recovery Program),¹³ Section 7 consultations under the Endangered Species Act (ESA), and other downstream concerns, modifications to monthly operation plans 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 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 operations plans.

In 1995, Reclamation and the Service formed a partnership with other Federal, state, and local public agencies and private organizations to develop the Lower Colorado River Multi-Species conservation program (LCR MSCP). This program permits both non-Federal and Federal parties to participate in and address ESA compliance requirements under Sections 7 and 10 of the ESA. In April 2005 the Secretary signed the Record of Decision to begin implementation of the LCR MSCP.¹⁴

¹¹ Additional information on the AMWG can be found at www.usbr.gov/uc/rm/amp.

¹² Additional information on the Upper Colorado Recovery Program can be found at <http://coloradoriverrecovery.fws.gov>.

¹³ Additional information on the San Juan Recovery Program can be found at www.fws.gov/southwest/sjrip.

¹⁴ Additional information on the LCR MSCP can be found at <http://www.usbr.gov/lc/lcrmscp>.

1
2 The following paragraphs discuss the 2007 and most probable projected 2008 operation of
3 each of the reservoirs with respect to applicable provisions of compacts, the Consolidated
4 Decree, statutes, regulations, contracts, and instream flow needs for maintaining or
5 improving aquatic resources where appropriate.

6 7 **Fontenelle Reservoir**

8
9 Hydrologic conditions in water year 2007 in the Upper Green River Basin were ~~extremely~~
10 ~~poor well below normal~~ when compared to the historic record for the reservoir. The April
11 through July inflow to Fontenelle Reservoir during water year 2007 was 0.293 maf (362
12 mcm), which was only 34 percent of average. While drought conditions ~~were~~ present
13 throughout the Colorado River Basin, drought conditions ~~were~~ most severe in the Upper
14 Green River Basin when compared to other sub-basins in the Upper Colorado River Basin.
15 Inflow to Fontenelle Reservoir has been below average for 8 consecutive years, ~~not having~~
16 ~~had a water year with above average inflow since 1999.~~

17
18
19 Fontenelle Reservoir did not fill in 2007 and bypass releases were not necessary in order to
20 accommodate the spring runoff. Inflow peaked at 3100 cfs (88 cms) on May 24, 2007.
21 Releases from Fontenelle Reservoir were maintained at approximately 800 cfs (23 cms)
22 through the spring runoff period. The peak elevation of Fontenelle Reservoir during water
23 year 2007 was 6,490.0 feet (1,978.1 meters) above sea level which occurred on July 2, 2007.
24 This elevation is 16.0 feet (4.9 meters) below the spillway crest elevation.

25
26 The most probable April through July inflow to Fontenelle Reservoir during water year 2008
27 is 0.590 maf (728 mcm). This volume far exceeds 0.345 maf (426 mcm), the storage
28 capacity of Fontenelle Reservoir. For this reason, the most probable and probable maximum
29 inflow scenarios require releases during the spring that exceed the capacity of the
30 powerplant to avoid uncontrolled spills from the reservoir. It is very likely that Fontenelle
31 Reservoir will fill during water year 2008. In order to minimize high spring releases and to
32 maximize downstream water resources and power production, the reservoir will most likely
33 be drawn down to about elevation 6,468 feet (1,971 meters) by early April 2008, which is
34 five feet (1.5 meters) above minimum power pool, and corresponds to a volume of 0.111
35 maf (137 mcm) of live storage.

36 37 **Flaming Gorge Reservoir**

38
39 Inflows to Flaming Gorge Reservoir during water year 2007 ~~was~~ ~~were well below normal~~
40 ~~extremely low in 2007~~. Unregulated inflow in water year 2007 was 0.753 maf (929 mcm),
41 which is 44 percent of average. Flaming Gorge Reservoir did not fill during water year
42 2007. On October 1, 2006, the beginning of water year 2007, the reservoir elevation was
43 6,024.2 feet (1,836.2 meters). The reservoir elevation decreased during water year 2007 and
44 ended water year 2007 (on September 30, 2007) at an elevation of 6,022.5 feet (1,835.7
45 meters). The water year ending reservoir elevation was 17.5 feet (5.3 meters) below the full
46 pool elevation of 6,040.0 feet (1,841.0 meters) which corresponds to an available storage
47 space of 0.679 maf (838 mcm).

1 Reclamation operated Flaming Gorge Dam in compliance with the Flaming Gorge Record
2 of Decision (Flaming Gorge ROD) in 2007. The hydrologic conditions during the spring of
3 2007 were designated as Moderately Dry. Reclamation convened a technical working
4 group, comprised of Service, Western Area Power Administration (Western), and
5 Reclamation personnel, which proposed that the Green River measured at the Jensen, Utah
6 stream gauge should be managed to maintain flows at or above 8,300 cfs (235 cms) for 7
7 days or more during the peak flows of the Yampa River.

8
9 Releases from Flaming Gorge Reservoir were increased to powerplant capacity of 4,450 cfs
10 (126 cms) on May 14, 2007, in anticipation of peak flows on the Yampa River. On May 17,
11 2007, as a result of releases from Flaming Gorge Dam and flows on the Yampa River, the
12 flows of the Green River at Jensen reached 12,800 cfs (362 cms). Releases were
13 maintained at powerplant capacity until May 20, 2007 which was the 7th day of flows in the
14 Green River above 8,300 cfs (235 cms). Flows ~~in~~ the Green River at Jensen remained
15 above 8,300 cfs (235 cms) until May 26, 2007 (12 days). Releases from Flaming Gorge
16 Reservoir were reduced by 350 cfs (10 cms) per day beginning on May 21, 2007. Releases
17 were maintained at 1,150 cfs (33 cms) during June 2007. Releases were reduced to 800 cfs
18 (23 cms) in July 2007 and remained at this level for the duration of calendar year 2007.

19
20 During water year 2008, Flaming Gorge Dam will continue to be operated in accordance
21 with the Flaming Gorge ROD. High spring releases are scheduled to ~~will likely~~ occur in
22 2008, timed with the Yampa River's spring runoff peak flow, followed by lower summer
23 and autumn base flows. Under the most probable scenario, releases in the winter and early
24 spring of 2008 will be 800 cfs (23 cms).

25
26 The Upper Colorado Recovery Program, in coordination with Reclamation, the Service, and
27 Western, ~~is are~~ conducting studies associated with flood plain inundation. Such studies
28 include: improving connectivity of flood plain habitats, identifying ways to improve
29 entrainment of larval razorback suckers into floodplain habitats, maintaining the river
30 channel, restoring natural variability of the river system, and analyzing possibilities for
31 meeting the goals of the Flow and Temperature Recommendations at lower peak flow levels
32 where feasible.

1 **Blue Mesa, Morrow Point, and Crystal Reservoirs (Aspinall Unit)**
2

3 Below average snowpack conditions prevailed in the Gunnison Basin during water year
4 2007. Snow measurement sites in the basin reported below average moisture throughout the
5 winter and into the spring of 2007. The April through July unregulated runoff into Blue
6 Mesa Reservoir in 2007 was 0.511 maf (620 mcm), or 71 percent of average, and occurred
7 earlier than normal. Water year 2007 unregulated inflow into Blue Mesa Reservoir was
8 0.878 maf (1,080 mcm), or 88 percent of average. Blue Mesa Reservoir nearly filled in
9 2007 reaching a peak elevation of 7,514.7 feet (2,290.5 meters) on July 2, 2007, 4.7 feet (1.4
10 meters) from full pool. Storage in Blue Mesa Reservoir ~~increased~~decreased during water
11 year 2007 by 0.015 maf (19 mcm). Storage in Blue Mesa Reservoir on September 30, 2007
12 was 0.682 maf (841 mcm), or 82 percent of capacity.
13

14 Releases from Aspinall Unit reservoirs in 2007 were below normal levels. Releases from
15 the Aspinall Unit provided for a flow of 900 to 1500 cfs (11.3 to 14.2 cms) from October 1,
16 2006, to January 15, 2007, in the Gunnison River through the Black Canyon (below the
17 Gunnison Tunnel). In January releases began to be decreased in response to decreasing
18 forecasted inflow and reached 800 cfs in March, 2007. Beginning the last week of March,
19 Crystal releases were increased as the diversions through the Gunnison Tunnel increased.
20 Water year 2007 powerplant bypasses were approximately 0.037 maf (62 mcm) at Crystal
21 Dam. These bypass releases occurred because the powerplant was shut down for
22 maintenance during parts of January and February 2007.
23

24 On August 16, 1995, Memorandum of Agreement (MOA) No. 95-07-40-R1760 was signed
25 by the Bureau of Reclamation, the Service, and the Colorado Water Conservation Board.
26 The purpose of the MOA was to provide water to the Redlands Fish Ladder, assure at least
27 300 cfs (8.5 cms) of flow in the 2-mile reach of the Gunnison River between the Redlands
28 Fish Ladder and the confluence of the Gunnison and Colorado Rivers (2-mile reach), and to
29 benefit Colorado River Basin endangered fish. This MOA was extended for an additional
30 five years on June 30, 2000. A key provision of the MOA requires that the parties adopt a
31 plan to share water shortages in dry years, when total storage at Blue Mesa Reservoir is
32 projected to drop below 0.4 maf (493 mcm) by the end of the calendar year. However, the
33 MOA was not renewed in 2005. Reclamation intends to operate the Aspinall Unit to meet
34 the intent of the MOA if water supplies are available. While deliveries of 100 cfs (2.8 cms)
35 to the Redlands Fish Ladder can be protected under Colorado water law, absent the MOA,
36 the additional releases for the benefit of the 2-mile reach cannot. Releases from the Aspinall
37 Unit combined with runoff from intervening tributaries resulted in at least 276 cfs (7.8 cms)
38 being available for the fish ladder and 2-mile reach of the Gunnison River in 2007.
39

40 On January 17, 2001, the United States filed an application to quantify the Federal reserved
41 water right decreed to the Black Canyon of the Gunnison National Monument. The water
42 right is for flows in the Gunnison River through the Black Canyon of the Gunnison National
43 Park which is downstream of the Gunnison Tunnel and downstream of the Aspinall Unit.
44 On April 2, 2003, the Department of the Interior and the State of Colorado reached
45 agreement regarding water for the Park. Under the 2003 agreement, an amended water right
46 application was filed by the United States for the National Park Service for 300 cfs (8.5 cms)
47 with a 1933 priority date. In a separate action, the Colorado Water Conservation Board
48 filed, under the State of Colorado instream flow program, for additional flows in excess of

1 those required to fulfill the purposes of the Aspinall Unit (with a 2003 priority date) to
2 provide for protection of additional water resources for the Park. The 2003 amended
3 Federal reserved water right application was challenged in United States District Court in
4 Colorado. On September 11, 2006, the District Court set aside the 2003 agreement.
5 Currently, both water right applications filed in state water court remain stayed. In short, the
6 reserved water right claim for the Black Canyon of the Gunnison National Park remains
7 unquantified.

8
9 In July 2003, a final report titled, “Flow Recommendations to Benefit Endangered Fishes in
10 the Colorado and Gunnison Rivers” (Flow Recommendations for the Colorado and
11 Gunnison Rivers) was published by the Upper Colorado Recovery Program. The report
12 compiled and summarized the results of endangered fish research in the Gunnison and
13 Upper Colorado Rivers under the Upper Colorado Recovery Program. The report presents
14 flow recommendations for two different river reaches: one for the lower Gunnison River
15 between Delta and Grand Junction, Colorado, as measured at Whitewater (Gunnison River
16 near Grand Junction gage); and the other for the Colorado River downstream of the
17 Gunnison River confluence as measured at the Colorado-Utah State line. In January 2004,
18 Reclamation published a Notice of Intent to prepare an Environmental Impact Statement
19 (EIS). The purpose of Reclamation’s proposed action is to operate the Aspinall Unit to avoid
20 jeopardy to endangered species while maintaining the congressionally authorized Aspinall
21 Unit purposes. Public scoping meetings were held in February 2004 and cooperating agency
22 meetings were held in 2005 and 2006. Reclamation will develop alternatives to address the
23 Flow Recommendations for the Colorado and Gunnison Rivers. Difficulties in resolution of
24 the reserved water right for the Black Canyon of the Gunnison National Park have delayed
25 progress on the EIS. A draft EIS is likely to be released in the 2008-2009 timeframe.

26
27 For water year 2008, the Aspinall Unit will be operated to conserve storage while meeting
28 downstream delivery requirements, consistent with authorized project purposes. Under
29 normal conditions, the minimum release objectives of the Aspinall Unit are to honor the
30 delivery requirements of the Uncompahgre Valley Project, and other senior water rights
31 downstream, to the extent possible to maintain a year round minimum flow of at least 300
32 cfs (8.5 cms) in the Gunnison River through the Black Canyon, and to the extent possible
33 maintain a minimum flow of 300 cfs (8.5 cms) in the 2-mile reach below the Redlands
34 Diversion Dam during the months of July through October. In dry years, the 300 cfs (8.5
35 cms) flow through the canyon and the 2-mile reach can be reduced. In 2008, under the most
36 probable inflow conditions, flows through the Black Canyon of the Gunnison National Park
37 will be above the 300 cfs (8.5 cms) minimum release objective during the summer months.
38 Consideration shall be given to the trout fishery in the Black Canyon and Gunnison Gorge
39 and recreational interests consistent with project purposes. Releases during 2008 will be
40 planned to minimize fluctuations in the daily and monthly flows in the Gunnison River
41 below the Gunnison Tunnel diversion.

42
43 Under the probable minimum inflow scenario, Blue Mesa Reservoir would not fill in 2008.
44 Under the most probable and probable maximum inflow scenarios, Blue Mesa Reservoir is
45 expected to fill in 2008.

1 Navajo Reservoir

2
3 Inflow to Navajo Reservoir in 2007 was near the 30-year average. Water year 2007
4 unregulated inflow was 1.105 maf (1363 mcm), or 99 percent of average. A significant
5 portion of the water year inflow occurred in October 2006 when heavy rains in the San Juan
6 River Basin resulted in inflow being 380 percent of average for the month. The April
7 through July unregulated inflow into Navajo Reservoir in water year 2007 was 0.510 maf
8 (630 mcm), or 76 percent of average. Unregulated inflow to Navajo Reservoir in water
9 years 2000, 2001, 2002, 2003, 2004, 2005 and 2006 was 42, 93, 11, 44, 72, 136 and 62
10 percent of average, respectively.

11
12 Navajo Reservoir reached a peak water surface elevation of 6,080.3 feet (1,853.3 meters) on
13 June 21, 2007, 4.7 feet (1.4 meters) from full pool. The water surface elevation at Navajo
14 Reservoir on September 30, 2007, was 6,073.6 feet (1,851.2 meters), with reservoir storage
15 at 90 percent of capacity.

16
17 The final report titled, "Flow Recommendations for the San Juan River" (San Juan Flow
18 Recommendations), which outlines flow recommendations for the San Juan River below
19 Navajo Dam, was completed by the San Juan Recovery Program in May 1999 after a seven-
20 year research period. The purpose of the report is to provide flow recommendations for the
21 San Juan River that promote the recovery of the endangered Colorado pikeminnow and
22 razorback sucker, maintain important habitat for these two species as well as the other native
23 species, and provide information for the evaluation of continued water development in the
24 basin. These flow recommendations are under review through the San Juan Recovery
25 Program and may be revised in the future. ~~to reflect knowledge gained over the last several~~
26 ~~years of operation.~~

27
28
29 In 2006, Reclamation completed a NEPA process on the implementation of operations at
30 Navajo Dam that meet the San Juan Flow Recommendations, or a reasonable alternative to
31 ~~them, in 2006.~~ A Notice of Intent to prepare an EIS was published on October 1, 1999, in
32 the *Federal Register*. In January 2006, the Service issued a non-jeopardy biological opinion
33 for the operations of Navajo Dam to meet the San Juan Flow Recommendations, or a
34 reasonable alternative. The Navajo Reservoir Operations Final EIS was issued on April 20,
35 2006. The ROD for the Navajo Reservoir Operations Final EIS was signed by the Regional
36 Director of Reclamation's Upper Colorado Region on July 31, 2006.

37
38 The San Juan Flow Recommendations called for making a 13-day spring peak release of
39 5000 cfs (142 cms) from Navajo Reservoir in 2007. In anticipation of a potential early
40 spring runoff, the peak release was started earlier in 2007 than in previous years. Releases
41 were increased beginning on April 30, 2007. A release rate of 5,000 cfs (142 cms) was
42 reached on May 3, 2007, and was maintained until May 17, 2007. Releases were reduced to
43 a flow of 1,250 cfs (35 cms) in late May and remained at this level through the end of June
44 2007. A base summer release rate of 750 cfs (21.2 cms) was implemented on July 1, 2007.

45
46 In 2007, a group of water users developed a 2-year agreement to limit their water use to the
47 rates/volumes indicated in the agreement for the years 2007-2008. The 2007-2008
48 "Recommendations for Administration and Operation of the San Juan River" was similar to

1 the agreements that were developed in 2003, 2004, 2005, and 2006. Ten major water users
2 (the Jicarilla Apache and Navajo Nations, Hammond Conservancy District, Public Service
3 Company of New Mexico, City of Farmington, Arizona Public Service Company, BHP-
4 Billiton, Bloomfield Irrigation District, Farmers Mutual Ditch, and Jewett Valley Ditch)
5 endorsed the recommendations which included limitations on diversions for 2007-2008,
6 criteria for determining a shortage, and shortage-sharing requirements in the event of a water
7 supply shortfall, including sharing of shortages between the water users and the flow
8 demands for endangered fish habitat. In addition to the ten major water users, the New
9 Mexico Interstate Stream Commission, the Bureau of Indian Affairs, the Service, and the
10 San Juan Recovery Program all provided input to the recommendations. The
11 recommendations were acknowledged by Reclamation and the New Mexico State Engineer
12 for reservoir operation and river administration purposes.

13
14 During water year 2008, Navajo Reservoir will be operated in accordance with the Navajo
15 Reservoir Operations ROD. Navajo Reservoir storage levels are expected to be above
16 average in 2008 under the most probable and probable maximum inflow scenarios. Releases
17 from the reservoir will likely be reduced to 500 cfs (14 cms) in December 2007 and remain
18 at that level through the winter. Under the most probable inflow condition in 2008, a 21-
19 day spring peak release of 5,000 cfs (142 cms), as described in the San Juan Flow
20 Recommendations, is likely to occur.

21 22 **Lake Powell**

23
24 Reservoir storage in Lake Powell remains ~~relatively~~ low (49 percent of capacity on
25 September 30, 2007) due to effects of continuing drought in the Colorado River Basin. Lake
26 Powell storage was 97 percent of capacity in July 1999. Extreme drought conditions were
27 observed in the Colorado River Basin for five consecutive years (water years 2000-2004)
28 with Lake Powell storage declining during this period. Lake Powell storage on September 30,
29 2004, was only 38 percent of capacity. Inflow was above average in 2005 and Lake Powell
30 gained 2.77 maf (3,420 mcm) of storage ~~during the in~~ water year ~~2005~~. Below average
31 inflow conditions returned in 2006 and continued in 2007.

32
33 Lake Powell began water year 2007 with 11.92 maf (14,700 mcm) of water in storage (49
34 percent of capacity). Water year 2007 unregulated inflow to Lake Powell was 8.296 maf
35 (10,230 mcm), or 69 percent of average. As water year 2007 ended on September 30, 2007,
36 Lake Powell storage was 11.96 maf (14,750 mcm), or 49 percent of capacity.

37
38 Due to continued low reservoir storage at Lake Powell, and storage in Lake Powell being
39 less than Lake Mead, releases from Glen Canyon Dam in 2007 were scheduled to maintain
40 the minimum release objective from Lake Powell of 8.23 maf (10,150 mcm) in accordance
41 with Article II(2) of the Operating Criteria. Forecasted inflow to Lake Powell combined
42 with observed reservoir storage in Lake Powell in 2007 was not sufficient to trigger storage
43 equalization releases from Lake Powell to Lake Mead. The total release from Lake Powell
44 in water year 2007 was 8.23 maf (10,150 mcm).

45
46 April through July unregulated inflow to Lake Powell in water year 2007 was 4.051 maf
47 (5,000 mcm), or 51 percent of average. Lake Powell reached a seasonal peak elevation of
48 3,611.7 feet (1,100.8 meters), 88.3 feet (26.9 meters) from full pool, on June 25, 2007. On

1 September 30, 2007, the water surface elevation of Lake Powell was 3,602.2 feet (10997.9
2 meters), 97.8 feet (29.8 meters) from full pool.

3
4 Reclamation published a Notice of Intent in the *Federal Register* (71 *Federal Register*
5 74,556, December 12, 2006) in December 2006 announcing Reclamation's intent to prepare
6 an EIS on the adoption of a long-term experimental plan for the operation of Glen Canyon
7 Dam and other associated management activities. The purpose of the plan is to increase
8 scientific understanding of the ecosystem downstream from Glen Canyon Dam and to
9 improve and protect important downstream resources, while minimizing impacts to
10 hydropower capability and flexibility.-

11
12 The Long-Term Experimental Plan (LTEP) EIS will likely consider dam operations,
13 potential modifications to Glen Canyon Dam intake structures, and other potential
14 management actions such as removal of non-native fish species in the Colorado River below
15 Glen Canyon Dam. The LTEP EIS will build on a decade of scientific experimentation and
16 monitoring that has taken place as part of the Glen Canyon Dam Adaptive Management
17 Program (AMP), and will build on the knowledge gained by experiments, operations, and
18 management actions taken under the AMP. The NEPA process for this EIS will evaluate the
19 implications and impacts of each of the alternatives on all of the purposes and benefits of
20 Glen Canyon Dam as well as on downstream resources.

21
22 Reclamation conducted public scoping meetings on January 4 and 5, 2007, in Phoenix and
23 Salt Lake City, respectively. A scoping report was published on March 30, 2007. A draft
24 EIS is scheduled to be published in February 2008. A final EIS is scheduled to be
25 completed in October 2008 and a ROD implementing the long-term experimental plan is
26 expected to be issued in December 2008.

27
28 During water year 2008, under the most probable and probable minimum inflow scenarios,
29 the objective shall be to maintain a minimum release of water from Lake Powell of 8.23 maf
30 (10,150 mcm) consistent with Article II(2) of the Operating Criteria. Under the probable
31 maximum inflow condition, an annual release of approximately 11.77 maf (14,510 mcm)
32 would be required to equalize storage between Lake Powell and Lake Mead on September 30,
33 2008. Releases to equalize storage between Lakes Powell and Mead will be made in 2008 if
34 storage in Lake Powell is projected to be greater than 14.85 maf (18,320 mcm) (elevation
35 3,630 feet [1,106.4 meters]) on September 30, 2008, and active storage in Lake Powell is
36 greater than active storage in Lake Mead. Under the most probable inflow in 2008, the
37 projected water surface elevation at Lake Powell on September 30, 2008, will be 3,611.2
38 feet (1,100.7 meters) with 12.85 maf (15,580 mcm) of storage (53 percent of capacity).

39
40 In 2008, scheduled maintenance activities at Glen Canyon Dam powerplant will require that
41 one or more of the eight generating units periodically be offline. Coordination between
42 Reclamation offices in Salt Lake City, Utah, and Page, Arizona, will take place in the
43 scheduling of maintenance activities to minimize impacts, including those on potential
44 experimental releases.

45
46 Because of less than full storage conditions in Lake Powell resulting from drought in the
47 Colorado River Basin, releases for dam safety purposes are highly unlikely in 2008. If
48 implemented, releases greater than powerplant capacity would be made consistent with the

1 1956 Colorado River Storage Project Act, the 1968 Colorado River Basin Project Act, and
 2 the 1992 Grand Canyon Protection Act. Reservoir releases in excess of powerplant capacity
 3 required for dam safety purposes during high reservoir conditions may be used to
 4 accomplish the objectives of the beach/habitat-building flow according to the terms
 5 contained in the Glen Canyon Dam ROD Record of Decision (ROD) and as published in the
 6 Glen Canyon Dam Operating Criteria (62 *Federal Register* 9,447, March 3, 1997).

7
 8 Daily and hourly releases in 2008 will be made according to the parameters of the ROD for
 9 the Glen Canyon Dam Final Environmental Impact Statement (GCDFEIS) and the Glen
 10 Canyon Dam Operating Criteria, as shown in Table 5. Exceptions to these parameters may
 11 be made during power system emergencies, during experimental releases, or for purposes of
 12 humanitarian search and rescue.

13
 14 **Table 5. Glen Canyon Dam Release Restrictions (Glen Canyon Dam Operating Criteria)**

15

<u>Parameter</u>	(cfs)	(cms)	<u>Conditions</u>
Maximum Flow ¹⁵	25,000	708.0	
Minimum Flow	5,000	141.6	7:00 pm to 7:00 am
	8,000	226.6	7:00 am to 7:00 pm
Ramp Rates			
Ascending	4,000	113.3	per hour
Descending	1,500	42.5	per hour
Daily Fluctuations ¹⁶	5,000 / 8,000	141.6 / 226.6	

16
 17 Releases from Lake Powell in water year 2008 will continue to reflect consideration of the
 18 uses and purposes identified in the authorizing legislation for Glen Canyon Dam.
 19 Powerplant releases will reflect criteria based on the findings, conclusions, and
 20 recommendations made in the ROD for the GCDFEIS pursuant to the Grand Canyon
 21 Protection Act of 1992 and appropriate NEPA documentation regarding experimental flows.
 22 The schedule of monthly releases under the most probable inflow scenario for water year
 23 2008 is displayed in Table 6.

24
 25
 26
 27
 28
 29

¹⁵ May be exceeded during beach/habitat-building flows, habitat maintenance flows, or when necessary to manage above average hydrologic conditions.

¹⁶ Daily fluctuations limit is 5,000 cfs (141.6 cms) for months with release volumes less than 0.600 maf (740 mcm); 6,000 cfs (169.9 cms) for monthly release volumes of 0.600 to 0.800 maf (740 to 987 mcm); and 8,000 cfs (226.6 cms) for monthly release volumes over 0.800 maf (990 mcm).

1
2 **Table 6. Scheduled Monthly Releases from Lake Powell in Water Year 2008**
3 **Under Most Probable Inflow Conditions¹⁷**
4

Month	Monthly Release (maf)	Monthly Release (mcm)
October 2007	0.600	740
November 2007	0.600	740
December 2007	0.800	987
January 2008	0.800	987
February 2008	0.600	740
March 2008	0.600	740
April 2008	0.600	740
May 2008	0.600	740
June 2008	0.650	801
July 2008	0.850	1048
August 2008	0.900	1119
September 2008	0.630	777

5
6
7 The ten-year total flow of the Colorado River at Lee Ferry¹⁸ for water years 1998 through
8 ~~2007-2006~~ is 93.2 maf (115,000 mcm). This total is computed as the sum of the flow of the
9 Colorado River at Lees Ferry, Arizona and the Paria River at Lees Ferry, Arizona, surface-
10 water discharge stations, which are operated and maintained by the United States Geological
11 Survey.

12
13 **Lake Mead**

14
15 For calendar year 2007, the Partial Domestic Surplus Condition was the criterion governing
16 the operation of Lake Mead in accordance with Article III(3)(b) of the Operating Criteria,
17 Article II(B)(2) of the Consolidated Decree, and Section 2(B)(1) of the Interim Surplus
18 Guidelines. A volume of 1.500 maf (1,852 mcm) of water was scheduled for delivery to
19 Mexico in accordance with Article 15 of the 1944 United States-Mexico Treaty and Minutes
20 No. 242 and 310 of the International Boundary and Water Commission.

21
22 Lake Mead began water year 2007 at elevation 1,125.4 feet (343.0 meters), with 13.89 maf
23 (17,130 mcm) in storage, which is 54 percent of the conservation capacity of 25.88 maf
24 (31,923 mcm). Lake Mead's elevation increased to elevation 1,129.55 feet (344.3 meters)
25 by the end of January, 2007. After January, 2007, Lake Mead steadily declined and ended
26 the water year at an elevation of 1,111.24 feet (338.7 meters), with 12.52 maf (15,443 mcm)
27 in storage (48 percent of capacity).

28
29 The total release from Lake Mead through Hoover Dam during water year 2007 was 9.461

¹⁷ Modifications to scheduled monthly releases from Lake Powell would be made based on changes in forecast conditions or other relevant factors.

¹⁸ A point in the main stream of the Colorado River one mile below the mouth of the Paria River.

1 maf (11,670 mcm). The total release from Lake Mead through Hoover Dam during calendar
2 year 2007 is projected to be 9.309 maf (11,482 mcm). Consumptive use from Lake Mead
3 during calendar year 2007 resulting from diversions from the Robert B. Griffith water
4 project diverted through the Robert Griffith Water Project is projected to be 0.308 maf
5 (379.9 mcm).

6
7 The total inflow into Lake Mead is a combination of water released from Glen Canyon Dam
8 plus inflows from the tributaries in the reach between Glen Canyon and Hoover Dams. In
9 water year 2007, inflow into Lake Mead was 8.941 maf (11,029 mcm). For water year 2008,
10 under the most probable assumptions, total inflow into Lake Mead is anticipated to be 9.120
11 maf (11,249 mcm).

12
13 Under the most probable inflow conditions during water year 2008, Lake Mead will be at its
14 maximum elevation of 1,118.19 feet (340.8 meters), with 13.18 maf (16,257 mcm) in
15 storage, at the end of February, 2008. Lake Mead will likely decline during water year 2008
16 to reach its minimum elevation of approximately 1,100.23 feet (335.4 meters), with
17 approximately 11.51 maf (14,197 mcm) in storage, at the end of July, 2008.

18
19 Based on the August, 2007 24-Month Study, Lake Mead's elevation on January 1, 2008,
20 was projected to be 1114.73 feet (339.8 meters). Therefore, in accordance with Sections
21 2(A)(1) and 7 of the Interim Surplus Guidelines, the Normal Condition will govern the
22 releases from Lake Mead in calendar year 2008. Releases from Lake Mead through Hoover
23 Dam for water year and calendar year 2008 are anticipated to be approximately the same as
24 2007 releases. Some variability between the 2007 and 2008 releases may result from the
25 two demonstration programs to create ICS Water in Lake Mead and to achieve System
26 Conservation (SC) and tributary inflows into the mainstem below Lake Mead.^{19,20}

27
28 The Interim Surplus Guidelines ROD included ESA conservation measures. One such
29 conservation measure specified in Article X(4)(1) includes provisions for spawning
30 razorback suckers in Lake Mead. Reclamation continues to provide funding and support for
31 the ongoing Lake Mead Razorback Sucker study. The focus of the study has been on
32 locating populations of razorbacks in Lake Mead, documenting use and availability of
33 spawning areas at various water elevations, continuing aging studies, and confirming
34 recruitment events. Based on the anticipated operation of Lake Powell for water year 2008,
35 no changes in operations to provide rising elevations in Lake Mead are expected in the
36 spring of 2008.

37
38 In a May 2, 2005, letter to the Governors of the seven Colorado River Basin States, the
39 Secretary directed Reclamation to develop Colorado River Lower Basin shortage guidelines
40 and coordinated reservoir management strategies for Lake Powell and Lake Mead under low
41 reservoir conditions and to complete that process by December 2007. Key milestones in the
42 process include: (1) a notice issued on June 15, 2005, (70 *Federal Register* 34,794) to
43 solicit comments and hold public meetings on the development of the guidelines and

¹⁹ In calendar year 2007, it was assumed that 50,000 acre-feet and 1,000 acre-feet of ICS Water would be conserved by the Metropolitan Water District of Southern California (MWD) and the Imperial Irrigation District (IID), respectively.

²⁰ In calendar year 2007, it was assumed that 7,000 acre-feet of SC Water would be conserved.

1 strategies; (2) a Notice of Intent issued on September 30, 2005, (70 *Federal Register*
2 57,322) to prepare an EIS and hold public scoping meetings on the proposed action; (3) the
3 Scoping Summary Report, published March 31, 2006, (71 *Federal Register* 16,341) that
4 among other things, presented and summarized the public comments received through
5 March 1, 2006; (4) a description of draft alternatives published June 30, 2006 to be
6 considered for analysis in the Draft EIS; (5) a Draft EIS noticed on February 28, 2007, (72
7 *Federal Register* 9,026) that presented for public review and comment four possible action
8 alternatives for implementation and a No Action Alternative; (6) the preferred alternative
9 published on the project website on June 15, 2007, (67) a Final EIS anticipated in
10 October/September 2007; and (78) a Record of Decision anticipated in December 2007.²¹

11 **Lakes Mohave and Havasu**

12
13
14 At the beginning of water year 2007, Lake Mohave was at an elevation of 638.76 feet (194.7
15 meters), with an active storage of 1.584 maf (1,954 mcm). The water level of Lake Mohave
16 was regulated between elevation 634.3 feet (193.3 meters) and 644.6 feet (196.5 meters)
17 throughout the water year, ending at an elevation of 638.5 feet (194.6 meters) with 1.578
18 maf (1,946 mcm) in storage. The total release from Lake Mohave through Davis Dam for
19 water year 2007 was 9.22 maf (11,373 mcm) for downstream water use requirements. The
20 calendar year 2007 total release is projected to be 9.023 maf (11,130 mcm).

21
22 For water year and calendar year 2008, Davis Dam is expected to release approximately the
23 same amount of water as in 2007. The water level in Lake Mohave will be regulated
24 between an elevation of approximately 633 feet (193 meters) and 645 feet (197 meters).

25
26 Lake Havasu started water year 2007 at an elevation of 446.7 feet (136.1 meters) with 0.555
27 maf (684.6 mcm) in storage. The water level of Lake Havasu was regulated between
28 elevation 446.0 feet (135.9 meters) and 448.6 feet (136.7 meters). During water year 2007,
29 6.797 maf (8,384 mcm) were released from Parker Dam. The calendar year 2007 total
30 release is projected to be 6.803 maf (8,391 mcm). Diversions from Lake Havasu during
31 calendar year 2007 by the Central Arizona Project (CAP) and the Metropolitan Water
32 District of Southern California (MWD) are projected to be 1.557 maf (1,921 mcm) and
33 0.647 maf (798.1 mcm), respectively.

34
35 For water year 2008, Parker Dam is expected to release approximately the same amount of
36 water as in 2007. Diversions from Lake Havasu in calendar year 2008 by the CAP and the
37 MWD are expected to be 1.575 maf (1,943 mcm) and 0.719 maf (886.9 mcm), respectively.
38 Lakes Mohave and Havasu are scheduled to be drawn down in the late summer and fall
39 months to provide storage space for local storm runoff and will be filled in the winter to
40 meet higher summer water needs. This drawdown will also correspond with normal
41 maintenance at both Davis and Parker powerplants which is scheduled for September
42 through February.

43

²¹ Additional information on the EIS for the proposed adoption of Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead may be found at <http://www.usbr.gov/lc/region/programs/strategies.html>

1 At Davis Dam, a major overhaul of Unit No. 2 is scheduled for October 1, 2007, through
2 March 6, 2008. This overhaul will include removal and maintenance of the fixed wheel gate
3 and hydraulic cylinder, as well as testing the generator windings. Rehabilitation of the
4 fixed wheel gates of Units 5, 4, and 3, ~~were have been~~ completed in water years 2005, 2006,
5 and 2007, respectively. Rehabilitation of the fixed wheel gate of Unit 1 is tentatively
6 scheduled for water year 2009.

7
8 At Parker Dam, the stainless steel turbine was replaced and re-wound on Unit 3 in calendar
9 year 2006. A major turbine overhaul of Unit 1 is scheduled for September 7, 2007 through
10 February 29, 2008.

11
12 During 2008, Lake Mohave will continue to be operated under the constraints as described
13 in the Interim Surplus Guidelines' Biological and Conference Opinion on Lower Colorado
14 River Operations and Maintenance, as extended through the LCR MSCP Biological and
15 Conference Opinion. Reclamation, as provided in the LCR MSCP ROD, will continue these
16 existing operations in Lake Mohave that benefit native fish and will explore additional ways
17 to provide benefits to native fish. The normal filling and drawdown pattern of Lake Mohave
18 coincides well with the fishery spawning period. Since lake elevations for Lake Mohave
19 and Lake Havasu will be typical of previous years, normal conditions are expected for
20 boating and other recreational uses.

21
22 Reclamation is the lead agency in the Native Fish Work Group, a multi-agency group of
23 scientists attempting to augment the ageing stock of the endangered razorback sucker in
24 Lake Mohave. Larval razorback suckers are captured by hand in and around spawning areas
25 in late winter and early spring for rearing at Willow Beach National Fish Hatchery below
26 Hoover Dam. The following year, 1-year old razorback suckers are placed into predator-
27 free, lake-side backwaters for rearing through the spring and summer. When Lake Mohave
28 is normally drawn down during August through October, these fish are harvested from these
29 rearing areas and then released into Lake Mohave. The razorback suckers grow very
30 quickly, usually exceeding 10 inches (254 mm) in length by September.

31
32 ~~In 2006, 12,203 subadult razorback suckers (325 mm minimum size) were repatriated to~~
33 ~~Lake Mohave.~~ Between February and April 2007, some 20,568 wild razorback sucker
34 larvae were captured from spawning congregations on Lake Mohave and delivered to
35 Willow Beach National Fish Hatchery for initial rearing. Approximately 1,000 subadult
36 razorback suckers were stocked into lake-side ponds during March 2007. These latter fish
37 will be harvested in the fall. ~~The program is projected to continue into the foreseeable future.~~
38
39
40

1 **Bill Williams River**

2
3 Tributary inflows were below average for water year 2007. Abnormally dry to extreme
4 drought conditions persisted for water year 2007 throughout western Arizona, including the
5 Bill Williams River watershed. Tributary inflow from the Bill Williams River into the
6 mainstem of the Colorado River totaled 0.028 maf (34.5 mcm) for water year 2007,
7 approximately 28 percent of the long-term average of 0.102 maf (125.3 mcm).
8

9 Releases in water year 2007 from the United States Corp of Engineers' (USACE's) Alamo
10 Dam were coordinated with the Service and the Bill Williams Steering Committee to
11 maintain riparian habitat established in water year's 2005 and 2006. Alamo Lake elevation
12 was approximately 1,119.8 feet (341.3 meters) after October 1, 2006. A storage volume of
13 0.002 maf (2.47 mcm), equivalent to the storage between approximately elevations 1,116.0
14 feet (340.2 meters) and 1,115.4 feet (340.0 meters), was released from April 9, 2007 to April
15 10, 2007. The purpose of the release was to maintain downstream riparian habitat. The April
16 9-10, 2007 release from Alamo Dam increased from approximately 40 cfs (1 cms) to
17 approximately 1,000 cfs (30 cms) for an 18-hour period, tapering to approximately 40 cfs (1
18 cms) over the following day. Data collection associated with Alamo Dam releases supports
19 ongoing studies conducted by the Bill Williams Steering Committee. The Bill Williams
20 Steering Committee is chaired by the Service and is comprised of other stakeholders,
21 including, but not limited to, Reclamation, the USACE, the Bureau of Land Management,
22 and other governmental and non-governmental organizations.
23

24 **Senator Wash and Laguna Reservoirs**

25
26 Operations at Senator Wash Reservoir allow regulation of water deliveries to United States
27 water users upstream and downstream of Imperial Dam, and Mexican water users
28 downstream of Imperial Dam. The reservoir is utilized as an off-stream storage facility to
29 meet downstream water demands and to conserve water for future uses in the United States
30 and the scheduled uses of Mexico in accordance with Treaty obligations. Senator Wash
31 Reservoir is the only major storage facility below Parker Dam (approximately 142 river
32 miles downstream) and has a storage capacity of 0.014 maf (17.04 mcm) at full pool
33 elevation of 251.0 feet (76.5 meters). Operational objectives are to store excess flows from
34 the river caused by water user cutbacks and side wash inflows due to rain. Stored waters are
35 utilized to meet the United States' and Mexico's demands.
36

37 Since 1992, elevation restrictions have been placed on Senator Wash Reservoir due to
38 potential piping and liquefaction of foundation and embankment materials at West Squaw
39 Lake Dike and Senator Wash Dam Reservoir. Currently, Senator Wash is restricted to an
40 elevation of 240.0 feet (73.2 meters) with 0.009 maf (11.28 mcm) of storage, a loss of about
41 0.005 maf (5.802 mcm) of storage from its original capacity. Senator Wash Reservoir
42 elevation must not exceed elevation 240.0 feet (73.2 meters) for more than 10 consecutive
43 days. This reservoir restriction is expected to continue in 2008.
44

45 Laguna Reservoir is a regulating storage facility located approximately five river miles
46 downstream of Imperial Dam. Operational objectives are similar to those for Senator Wash
47 Reservoir and the reservoir is primarily used to capture sluicing flows from Imperial Dam.
48 The storage capability of Laguna Reservoir has diminished from about 1,500 acre-feet

1 (1.852 mcm) to approximately 400 acre-feet (0.494 mcm) due to sediment accumulation and
2 vegetation growth. Sediment accumulation in the reservoir has occurred primarily due to
3 flood releases that occurred in 1983 and 1984, and flood control or space building releases
4 that occurred between 1985 and 1988 and from 1997 through 1999. Action to restore the
5 lost capacity to 1,500 acre-feet at the Laguna Reservoir is ongoing. It is anticipated that
6 dredging to restore its capacity will begin in early 2008, and be completed within a 3 year
7 period, subject to the availability of funds and obtaining a 404 permit from the ~~United States~~
8 ~~Army Corp of Engineers (USACE)~~.

10 **Imperial Dam**

11
12 Imperial Dam is the last diversion dam on the Colorado River for United States water users.
13 From the head works at Imperial Dam, the diversions of flows for the United States' and
14 Mexico's water users occur into the All-American Canal on the California side, and into the
15 Gila Gravity Main Canal on the Arizona side of the dam. These diversions supply all the
16 irrigation districts in the Yuma area, in Wellton-Mohawk, in the Imperial and Coachella
17 Valleys, and through Siphon Drop and Pilot Knob to the Northerly International Boundary
18 (NIB) to the Mexicali Valley in Mexico. The diversions also supply much of the domestic
19 and industrial water needs in the Yuma area. Flows arriving at Imperial Dam for calendar
20 year 2007 are expected to be 5.720 maf (7,061 mcm). The flows arriving at Imperial Dam
21 for calendar year 2008 are anticipated to be approximately the same as calendar year 2007.

23 **Gila River Flows**

24
25 Drought conditions persisted for water 2007 throughout the Lower Division States, and the
26 southwestern United States. Abnormally dry to extreme drought conditions persisted
27 throughout Arizona, contributing to 75 percent of average precipitation being recorded in the
28 Gila River Basin. During water year 2007, no tributary inflow from the Gila River reached
29 the mainstem of the Colorado River.

31 **Additional Regulatory Storage**

32
33 In 2004, Reclamation completed a study that evaluated the needs and developed options for
34 additional water storage facilities on the mainstem of the Colorado River below Parker Dam.
35 The study, developed in cooperation with the IID, Coachella Valley Water District
36 (CVWD), San Diego County Water Authority (SDCWA), and the MWD, recommended the
37 construction of additional storage north of the Drop 2 portion of the All-American Canal.

38
39 The proposed Drop 2 reservoir is in the final engineering design phase, which includes
40 environmental compliance and permitting. The purpose of the planned 0.008 maf (9.875
41 mcm) reservoir is the same as Senator Wash and it will be operated similar to Senator Wash
42 to capture extra water in the system, especially during storm events. The reservoir will make
43 up for the loss of water storage at Senator Wash because of the operational restrictions and
44 allow for additional regulatory storage. Additional storage will allow for more efficient
45 management of water below Parker Dam.

46
47 Construction of the first phase of the Drop 2 reservoir is scheduled to start in calendar year
48 2008, with a tentative completion date in calendar year 2010.

1
2 **Yuma Desalting Plant**
3

4 In calendar year 2007 the amount of water discharged through the Main Outlet Drain
5 (bypass flows) is anticipated to be 0.110 maf (135.8 mcm) at an approximate concentration
6 of total dissolved solids of 2,430 parts per million (ppm). Water users in the Colorado River
7 Basin have raised concerns over the continued bypass of Wellton-Mohawk agricultural
8 return flow around Morelos Dam to the Cienega de Santa Clara, a wetland of approximately
9 40,000 acres (16,200 hectares) of open water and vegetation that is within a Biosphere
10 Reserve in Mexico. These flows do not count as part of Mexico's 1.500 maf (1,852 mcm)
11 allotment under the Treaty of 1944.
12

13 On October 26, 2005, Reclamation submitted to Congress a report that describes activities
14 required to operate the Yuma Desalting Plant (YDP), provides an estimate of how long those
15 activities would take, and presents a current estimate of their anticipated cost. In addition,
16 this report explores interim and/or supplemental opportunities for replacement of water that
17 is bypassed into Mexico, including options that do not potentially have an adverse impact on
18 the Cienega de Santa Clara. Reclamation initiated the Bypass Flow Public Consultation
19 Process on September 22, 2005 to investigate options to replace or recover the bypass flows.
20 One option included an operational demonstration of YDP in conjunction with the System
21 Conservation (SC) Demonstration Program. Reclamation anticipates the Bypass Flow Public
22 Consultation Process will conclude in 2008.
23

24 ~~On March 1, 2007 demonstration operation of the YDP commenced. From March 1, 2007 to~~
25 ~~May 31, 2007, the YDP concluded a three month operating run. The demonstration~~
26 ~~operation of the plant was the culmination of one year of preparation, to demonstrate that the~~
27 ~~plant could run. The demonstration was designed to meet five objectives: 1) show that the~~
28 ~~plant could run, 2) demonstrate the plant's use of current technologies, 3) validate cost and~~
29 ~~performance estimates for the plant, 4) improve overall plant readiness, and 5) provide~~
30 ~~measurements of water quality impacts to the Cienega de Santa Clara. All five objectives~~
31 ~~were successfully achieved.~~
32

33 ~~By the conclusion of the three month run, 4,349 ac-ft (5.364 mcm) had been delivered to the~~
34 ~~Colorado River and included in water deliveries to Mexico, preserving an equivalent volume~~
35 ~~in Colorado River system storage. The plant produced 2,632 ac-ft (3.247 mcm) of product~~
36 ~~water which was blended with 1,717 ac-ft (2.118 mcm) of untreated bypass flow prior to~~
37 ~~discharge into the Colorado River. For the demonstration the plant operated for 90 days at~~
38 ~~10% of full capacity. This duration and capacity were selected in order to meet the~~
39 ~~objectives of demonstration operation while keeping costs reasonable. All five of the~~
40 ~~objectives of demonstration were successfully met. Those objectives were to 1) demonstrate~~
41 ~~the operability of the plant; 2) measure plant performance and estimate plant operating costs~~
42 ~~based on actual plant operations; 3) demonstrate the plant's capabilities given the plant's~~
43 ~~current technology; 4) improve overall plant readiness; and 5) analyze potential water~~
44 ~~quality impacts to the Cienega de Santa Clara.~~
45

46 ~~During the demonstration operation 0.004 maf (4.934 mcm) was returned to the Colorado~~
47 ~~River by the plant and included in water deliveries to Mexico. Accordingly 0.004 maf~~
48 ~~(4.934 mcm) was stored in Lake Mead as a result of the recovered bypass flow.~~

1
2 **Lower Basin Demonstration Programs: Intentionally Created Surplus and**
3 **System Conservation Water**
4

5 Reclamation implemented demonstration programs in 2007 in the Lower Basin to create
6 Intentionally Created Surplus Water (ICS Demonstration Program) and for System
7 Conservation of Colorado River Water (SC Demonstration Program).
8

9 The ICS Demonstration Program allows entitlement holders to undertake extraordinary
10 conservation activities to reduce their approved annual consumptive use of Colorado River
11 water and store that conserved water in Lake Mead (ICS Water). The ICS Demonstration
12 Program does not provide for the release or use of ICS Water until appropriate
13 environmental compliance and forbearance agreements have been completed.
14

15 The SC Demonstration Program allows entitlement holders to participate in voluntary
16 conservation to conserve a portion of their approved annual consumptive use of Colorado
17 River water in exchange for appropriate compensation provided by Reclamation. The water
18 conserved (SC Water) is stored and retained in Lake Mead to assist in providing an interim,
19 supplemental source of water to replace the drainage water from the Wellton-Mohawk
20 Irrigation and Drainage District that is bypassed to the Cienega de Santa Clara and the reject
21 stream from operation of the Yuma Desalting Plant.
22

23 **Intentionally Created Surplus Water (ICS Water) Agreements**
24

25 Reclamation entered into an agreement with the MWD for the creation of Intentionally
26 Created Surplus Water (ICS Water) in calendar year 2007.²² Although the MWD may,
27 either separately or in conjunction with other California agencies with rights to use Colorado
28 River water, create up to 0.200 maf (246.9 mcm) in calendar year 2007, the MWD **does not**
29 **anticipate the creation of ICS water in calendar year 2007.** ~~projects the creation of 0.050 maf~~
30 ~~(61.67 mcm) of ICS Water in calendar year 2007.~~
31

32 Reclamation also entered into an agreement with the IID for the creation of ICS Water in
33 2007.²³ Although the IID may undertake extraordinary conservation measures to create up
34 to 0.025 maf (30.86 mcm) in calendar year 2007, the IID projects the creation of 0.001 maf
35 (.001 mcm).
36

37 **System Conservation Water (SC Water) Agreements**
38

39 Reclamation entered into an agreement with the MWD for the creation of SC Water in
40 2007.²⁴ Through this program, the MWD has undertaken extraordinary measures to conserve
41 0.007 maf (8.641 mcm) of SC Water in calendar year 2007. This water is stored and
42 retained in Lake Mead.

²² Agreement between Reclamation and Metropolitan to Implement a Demonstration Program to Create Intentionally Created Surplus Water, May 18, 2006.

²³ Agreement between Reclamation and IID to Implement a Demonstration Program to Create Intentionally Created Surplus Water, June 26, 2006.

²⁴ Agreement between Reclamation and Metropolitan to Implement a Demonstration Program for System Conservation of Colorado River Water, August 15, 2006.

1
2 **Delivery of Water to Mexico**
3

4 Total delivery to Mexico for calendar year 2007 is projected to be approximately 1.515 maf
5 (1,869 mcm), an over-delivery of approximately 0.015 maf (18.5 mcm). Of the total
6 delivery, approximately 0.140 maf (172.8 mcm) is projected to be delivered at the Southerly
7 International Boundary (SIB) and 1.376 maf (1,697 mcm) is projected to be delivered at the
8 NIB. The over-deliveries in 2007 resulted from a combination of rejected water from water
9 users after rain storms, side-wash inflow into the Colorado River, and spills from irrigation
10 facilities below Imperial Dam to the river. As part of Mexico's delivery schedule, it is
11 anticipated that 602 acre-feet (0.743 mcm) will be diverted from Lake Havasu and delivered
12 through MWD, San Diego County Water Authority, and the Otay Water District's
13 respective distribution system facilities to Tijuana, Baja California at the request of the
14 Mexican section of the IBWC in calendar year 2007.

15
16 In 2008, it is anticipated that 0.140 maf (172.8 mcm) will be delivered to Mexico at the SIB.
17 In accordance with Minute No. 310 and the Emergency Delivery Agreement²⁵ up to 0.001
18 maf per month (1.481 mcm) may be delivered for Tijuana. The remainder of Mexico's
19 available water will be delivered at NIB.

20
21 To further improve control of the deliveries of water from Parker Dam, Senator Wash
22 Reservoir and the reservoirs behind Imperial Dam and Laguna Dam will continue to be
23 operated at lower elevations during periods of potential rain storms to capture flows in
24 excess of water demand at Imperial Dam. -As mentioned previously, the proposed Drop 2
25 Reservoir would improve control of water deliveries below Parker Dam once construction is
26 complete.

27
28 Drainage flows to the Colorado River from the Yuma Mesa Conduit and South Gila Conduit
29 are projected to be 0.049 maf (60.44 mcm) and 0.074 maf (91.28 mcm), respectively, for
30 calendar year 2007. As stated in Minute 242, the maximum allowable salinity differential is
31 145 ppm by the United States' measurement or count and 151 ppm by the Mexican count.
32 The salinity differential for calendar year 2007 is projected to be 143 ppm by the United
33 States' count.

34
35 Mexico has identified four critical months, October through January, regarding improving
36 the quality of water delivered at the SIB. As a matter of comity, the United States has
37 agreed to reduce the salinity of water delivered at SIB. To accomplish the reduction in
38 salinity, the United States constructed a diversion channel to bypass up to 0.008 maf (9.875
39 mcm) of Yuma Valley drainage water during the four critical months identified by Mexico.
40 This water will be replaced by better quality water from the Minute 242 well field to reduce
41 the salinity at SIB. Currently, the facilities required for real time monitoring and control of
42 the flow and salinity of water delivered to SIB will be operational in calendar year 2008. No
43 water is projected to be bypassed in 2007, however, up to .008 maf (9.875 mcm) could

²⁵ "The 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 Operation of the Facilities in the United States," applicable through ~~November 9th, 2008, calendar year 2008-2009.~~

1 | be spilled to the diversion channel for salinity control in 2008.

1 **2008 DETERMINATIONS**

2
3 The AOP provides guidance regarding reservoir storage and release conditions during the
4 upcoming year, based upon congressionally mandated and authorized storage, release, and
5 delivery criteria and determinations. After meeting these requirements, specific reservoir
6 releases may be modified within these requirements as forecasted inflows change in
7 response to climatic variability and to provide additional benefits coincident to the projects’
8 multiple purposes.
9

10 **Upper Basin Reservoirs**

11
12 The objective minimum release criterion will most likely control the annual release from
13 Glen Canyon Dam during water year 2008 in accordance with Article II(2) of the Operating
14 Criteria unless spill avoidance and/or the storage equalization criteria in Article II(3) are
15 controlling. Under the most probable and minimum probable inflow scenario, the objective
16 shall be to maintain a minimum release of water from Lake Powell of 8.23 maf (10,150
17 mcm) in water year 2008. Under the maximum probable inflow scenario, storage
18 equalization would control the release of water from Lake Powell in water year 2008.
19

20 Pursuant to Section 602(b) of the Colorado River Basin Project Act and Section 1804 (c)(3)
21 of the Grand Canyon Protection Act, the Secretary is required to develop this AOP in
22 consultation with the Upper Colorado River Commission, representatives from the three
23 Lower Division States, and with the general public. Section 602(a) of the Colorado River
24 Basin Project Act provides for the storage of Colorado River water in Upper Basin
25 reservoirs and the release of water from Lake Powell that the Secretary finds reasonably
26 necessary to assure deliveries to comply with Articles III(c), III(d), and III(e) of the 1922
27 Colorado River Compact without impairment to the annual consumptive use in the Upper
28 Basin. The Operating Criteria provide that the annual plan of operation shall include a
29 determination of the quantity of water considered necessary to be in Upper Basin storage at
30 the end of the water year after taking into consideration all relevant factors including historic
31 stream flows, the most critical period of record, the probabilities of water supply, and
32 estimated future depletions. Water not required to be so stored will be released from Lake
33 Powell:

- 34
- 35 • to the extent it can be reasonably applied in the States of the Lower Division to the
36 uses specified in Article III(e) of the 1922 Colorado River Compact, but these
37 releases will not be made when the active storage in Lake Powell is less than the
38 active storage in Lake Mead;
39
 - 40 • to maintain, as nearly as practicable, active storage in Lake Mead equal to the active
41 storage in Lake Powell; and
42
 - 43 • to avoid anticipated spills from Lake Powell.
44

45 Taking into consideration all relevant factors required by Section 602(a)(3) of the Colorado
46 River Basin Project Act, the Operating Criteria, and the Interim 602(a) Storage Guideline, it
47 is determined that the active storage in Upper Basin reservoirs forecast for September 30,

1 2008, under the most probable inflow scenario would not exceed the storage required under
2 Section 602(a) of the Colorado River Basin Project Act. Consistent with Section V of the
3 Interim 602(a) Storage Guideline, releases from Lake Powell greater than the minimum
4 objective of 8.23 maf (10,150 mcm), to maintain, as nearly as practicable, active storage in
5 Lake Mead equal to the active storage in Lake Powell, will be made if storage in Lake
6 Powell, on September 30, 2008, is projected to be greater than 14.85 maf (18,320 mcm)
7 (water surface elevation 3,630 feet [1,106.4 meters]) and active storage in Lake Powell is
8 greater than active storage in Lake Mead.

9 10 **Lower Basin Reservoirs**

11
12 Pursuant to Article III of the Operating Criteria and consistent with the Consolidated
13 Decree, water shall be released or pumped from Lake Mead to meet the following
14 requirements:

- 15
- 16 (a) 1944 United States-Mexico Water Treaty obligations,
- 17 (b) Reasonable beneficial consumptive use requirements of mainstream users in the
18 Lower Division States,
- 19 (c) Net river losses,
- 20 (d) Net reservoir losses,
- 21 (e) Regulatory wastes, and
- 22 (f) Flood control.
- 23

24 The Operating Criteria provide that after the commencement of delivery of mainstream
25 water by means of the CAP, the Secretary will determine the extent to which the reasonable
26 beneficial consumptive use requirements of mainstream users are met in the Lower Division
27 States. Reasonable beneficial consumptive use requirements are met depending on whether
28 a Normal, Surplus, or Shortage Condition has been determined. The Normal Condition is
29 defined as annual pumping and release from Lake Mead sufficient to satisfy 7.500 maf
30 (9,258 mcm) of consumptive use in accordance with Article III(3)(a) of the Operating
31 Criteria and Article II(B)(1) of the Consolidated Decree. The Surplus Condition is defined
32 as annual pumping and release from Lake Mead sufficient to satisfy in excess of 7.500 maf
33 (9,258 mcm) of consumptive use in accordance with Article III(3)(b) of the Operating
34 Criteria and Article II(B)(2) of the Consolidated Decree. The Shortage Condition is defined
35 as annual pumping and release from Lake Mead insufficient to satisfy 7.500 maf (9,258
36 mcm) of consumptive use in accordance with Article III(3)(c) of the Operating Criteria and
37 Article II(B)(3) of the Consolidated Decree.

38
39
40 The Interim Surplus Guidelines, which became effective February 26, 2001, and were first
41 utilized in calendar year 2002, serve to implement the narrative provisions of Article
42 III(3)(b) of the Operating Criteria and Article II(B)(2) of the Consolidated Decree for the
43 period through 2016. These specific interim surplus guidelines will be used annually by the
44 Secretary to determine the quantity of water available for use within the Lower Division
45 States.

46
47 Consistent with Section 7 of the Interim Surplus Guidelines, the August, 2007 24-Month
48 Study was used to forecast the system storage as of January 1, 2008. Based on this projected

1 elevation of Lake Mead and consistent with Section 2(A)(1) of the Interim Surplus
2 Guidelines, the Normal Condition will govern releases for use in the states of Arizona,
3 Nevada, and California during calendar year 2008 in accordance with Article III(3)(a) of the
4 Operating Criteria and Article II(B)(1) of the Consolidated Decree.

5
6 Article II(B)(6) of the Consolidated Decree allows the Secretary to allocate water that is
7 apportioned to one Lower Division State but is for any reason unused in that state to another
8 Lower Division State. This determination is made for one year only, and no rights to
9 recurrent use of the water accrue to the state that receives the allocated water. If any unused
10 apportionment is available, the Secretary shall allocate any available unused apportionment
11 for calendar year 2008 in accordance with Article II(B)(6) of the Consolidated Decree, and
12 Section 1(B) of the Interim Surplus Guidelines.

13 Water may be made available for diversion pursuant to 43 CFR Part 414 to contractors
14 within the Lower Division States. The Secretary shall make Intentionally Created Unused
15 Apportionment (ICUA) available to contractors in Arizona, California, or Nevada for the
16 off-stream storage or consumptive use of water pursuant to individual SIRA agreements and
17 43 CFR Part 414. In calendar year 2007, approximately 0.017 maf (20.72 mcm) of ICUA
18 water stored in Arizona is projected to be recovered by California.

19 On October 10, 2003, the Secretary approved the ROD for the Inadvertent Overrun and
20 Payback Policy (IOPP) which became effective January 1, 2004. The IOPP is in effect
21 during calendar year 2008 with calendar year 2006 paybacks to begin in calendar year 2008.

22 The Colorado River Water Delivery Agreement also requires payback of California overruns
23 occurring in 2001 and 2002 ~~overruns~~ as noted in Exhibit C of that document. Each district
24 with a payback obligation under Exhibit C may, at its own discretion, elect to accelerate
25 paybacks, ~~in calendar year 2008~~. It is anticipated that California calendar year paybacks for
26 calendar years 2007 and 2008 will total 0.040 maf (49.34 mcm), and 0.013 maf (16.04
27 mcm), respectively.

28 In calendar years 2007 and 2008, paybacks occurring in California result only from Exhibit
29 C obligations, and IOPP overruns. In calendar years 2007 and 2008, paybacks for Arizona
30 result only from IOPP overruns.

31 During calendar year 2007, the scheduled Arizona paybacks were expected to be ~~will~~ total
32 606 ac-ft (0.75 mcm). In calendar year 2008, Arizona paybacks are projected to total 3570
33 ac-ft (4.40 mcm).

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

39 As provided in Section 3 of the Interim Surplus Guidelines, the Secretary shall undertake a
40 “mid-year review” pursuant to Article I(2) of the Operating Criteria, allowing for the

1 revision of the current AOP, as appropriate, based on actual runoff conditions which are
2 greater than projected or demands which are lower than projected. The Secretary shall
3 revise the determination for the current year only to allow for additional deliveries. Any
4 revision to the AOP may occur only through the AOP consultation process as required by
5 applicable Federal law.

6
7 **1944 United States-Mexico Water Treaty**

8
9 Under the most probable, probable minimum, and probable maximum inflow scenarios,
10 water in excess of that required to supply uses in the United States will not be available.
11 Vacant storage space in main stem reservoirs is substantially greater than that required by
12 flood control regulations. Therefore, a volume of 1.500 maf (1,852 mcm) of water will be
13 available to be scheduled for delivery to Mexico during calendar year 2008 in accordance
14 with Article 15 of the 1944 United States-Mexico Water Treaty and Minutes 242 and 310 of
15 the IBWC.

16
17 Calendar year schedules of the monthly deliveries of Colorado River water are formulated
18 by the Mexican Section of the IBWC and presented to the United States Section before the
19 beginning of each calendar year. The monthly quantity prescribed by those schedules may
20 be increased or decreased by not more than 20 percent of the monthly quantity, upon 30
21 days notice in advance to the United States Section. Any change in a monthly quantity is
22 offset in another month so that the total delivery for the calendar year is unchanged.
23

1 **DISCLAIMER**

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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); 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 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).

Note: All highlighted numbers are from the September-June, 2007 24-month study and will be updated at the close of the water year, October 1, 2007.

1 | **ATTACHMENT 14**

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Monthly inflow, monthly release, and end of month contents for Colorado River reservoirs (October 2005 through December 2007) under the probable maximum, most probable, and probable minimum inflow scenarios, and historic end of month contents.