

RECLAMATION

Managing Water in the West

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Draft Annual Operating Plan for Colorado River Reservoirs 2007



U.S. Department of the Interior
Bureau of Reclamation

September 15, 2006

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1 **INTRODUCTION**

2
3 **Authority**

4
5 This 2007 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), promulgated by the Secretary of the
9 Interior (Secretary) pursuant thereto. 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 7772, January 25, 2001), Colorado River Water Delivery Agreement (69
16 Federal Register 12202, March 15, 2004), Interim 602(a) Storage Guideline (69 Federal
17 Register 28945, 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 2007 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 2007 AOP by June of 2007](#)
34 [to reflect the current hydrologic conditions. Any revision in the AOP would occur only after](#)
35 [a re-initiation of the AOP consultation process as required by law.](#)
36
37

38 **Purpose**

39
40 The purposes of the AOP are to determine: (1) the projected operation of the Colorado
41 River reservoirs to satisfy project purposes under varying hydrologic and climatic
42 conditions; (2) the quantity of water considered necessary to be in storage in the Upper
43 Basin reservoirs as of September 30, 2007, pursuant to Section 602(a) of the Colorado River
44 Basin Project Act; (3) water available for delivery pursuant to the 1944 United States-
45 Mexico Water Treaty and Minutes No. 242 [and 310](#) of the International Boundary and
46 Water Commission, United States and Mexico (IBWC); (4) whether the reasonable
47 consumptive use requirements of mainstream users in the Lower Division States will be met

1 under a “Normal,” “Surplus,” or “Shortage” condition as outlined in Article III of the
2 Operating Criteria and as implemented by the Interim Surplus Guidelines; and (5) whether
3 water apportioned to, but unused by, one or more Lower Division States exists and can be
4 used to satisfy beneficial consumptive use requests of mainstream users in other Lower
5 Division States as provided in the Consolidated Decree of the Supreme Court of the United
6 States in Arizona vs California, 547 U.S. (2006) (Consolidated Decree).

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

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

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21 Summary

23 **Upper Basin Delivery.** The objective minimum release criterion will most likely control
24 the annual release from Glen Canyon Dam during water year 2007 in accordance with
25 Article II(2) of the Operating Criteria unless spill avoidance and/or the storage equalization
26 criteria in Article II(3) are controlling. To maintain, as nearly as practicable, active storage
27 in Lake Mead equal to the active storage in Lake Powell, releases from Lake Powell greater
28 than the minimum objective of 8.23 million acre-feet (maf), 10,150 million cubic meters
29 (mcm), will be made if (1) storage in Lake Powell on September 30, 2007, is projected to be
30 greater than 14.85 maf (water surface elevation 3,630 feet); and (2) active storage in Lake
31 Powell is greater than active storage in Lake Mead, consistent with Article II (3) of the
32 Operating Criteria and Section V of the Interim 602(a) Storage Guideline.

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34 **Lower Basin Delivery.** Under the most probable inflow scenario, downstream deliveries
35 are expected to control the releases from Hoover Dam. Taking into account (1) the existing
36 water storage conditions in the basin, (2) the most probable near-term water supply
37 conditions in the basin, and (3) Sections 2(B)(1) and (7) of the Interim Surplus Guidelines,
38 the Partial Domestic Surplus Condition is the criterion governing the operation of Lake
39 Mead for calendar year 2007 in accordance with Article III(3)(b) of the Operating Criteria,
40 and Article II(B)(2) of the Consolidated Decree. It should be noted, however, that the
41 projected releases in 2007 currently reflect demands under Normal conditions for the
42 Metropolitan Water District of Southern California (MWD), Central Arizona Project (CAP),
43 and the Southern Nevada Water Authority (SNWA), per their request. This does not,
44 however, preclude MWD, CAP and SNWA from requesting Partial Domestic Surplus water
45 in calendar year 2007.

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1 Reclamation does not anticipate any available unused state apportionment for calendar year
2 2007 at this time. However, if any unused apportionment is available, the Secretary shall
3 allocate any available unused apportionments for calendar year 2007 in accordance with
4 Article II(B)(6) of the Consolidated Decree and Section 1(B) of the Interim Surplus
5 Guidelines.

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6
7 Water may be made available for diversion pursuant to 43 CFR Part 414¹ to contractors
8 within the Lower Division States. The Secretary shall make Intentionally Created Unused
9 Apportionment available to contractors in Arizona, California, or Nevada for the off-stream
10 storage or consumptive use of water pursuant to individual Storage and Interstate Release
11 Agreements (SIRA) and 43 CFR Part 414.

12
13 On October 10, 2003, the Secretary approved the Record of Decision for the Inadvertent
14 Overrun and Payback Policy (IOPP) which became effective January 1, 2004. The IOPP will
15 be in effect during calendar year 2007 with calendar year 2005~~5~~ paybacks to begin in
16 calendar year 2007.

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18 The Colorado River Water Delivery Agreement requires payback of overruns from 2001 to
19 2002 as noted in Exhibit C of that document. Each district with a payback obligation under
20 Exhibit C may at its own discretion elect to accelerate paybacks in calendar year 2007.

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22 During 2006, Reclamation implemented a demonstration program and entered into two
23 contracts^{2,3} for the creation of Intentionally Created Surplus (ICS) Water whereby
24 entitlement holders may, through extraordinary conservation, conserve water and store that
25 water in Lake Mead. The ICS Water program will result in the creation of unused water
26 under a State apportionment in 2006 and 2007. The Secretary would not make such unused
27 water available for use in the Lower Basin pursuant to Article II(B)(6) of the Consolidated
28 Decree.

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29
30 Also during 2006, Reclamation implemented a demonstration program and entered into one
31 contract⁴ for the creation of System Conservation (SC) Water. Under this program,
32 Reclamation pays for extraordinary conservation measures that result in conserved water
33 that will be retained in Lake Mead to help mitigate the impacts on storage resulting from the
34 bypassing of drainage water from the Wellton-Mohawk Irrigation and Drainage District.
35 The SC Water program will result in the creation of unused water under a State

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).

² "Implement a Demonstration Program to Create Intentionally Created Surplus Water," between Reclamation and the Metropolitan Water District of Southern California (MWD), dated May 18, 2006.

³ "Implement a Demonstration Program to Create Intentionally Created Surplus Water," between Reclamation and the Imperial Irrigation District (IID), dated June 26, 2006.

⁴ "Implement a Demonstration Program for System Conservation of Colorado River Water," between Reclamation and the Metropolitan Water District of Southern California (MWD), dated August 15, 2006.

⁶ 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.

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1 | apportionment in 2006 and 2007. The Secretary would not make such unused water
2 | available for use in the Lower Basin pursuant to Article II(B)(6) of the Consolidated Decree.

3
4

5 | **1944 United States-Mexico Water Treaty Delivery.** A volume of 1.5 maf (1,850 mcm) of
6 | water will be available to be scheduled for delivery to Mexico during calendar year 2007 in
7 | accordance with Article 15 of the 1944 United States-Mexico Water Treaty and Minutes No.
8 | 242 and 310 of the IBWC.

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1 **2006 HYDROLOGY SUMMARY AND RESERVOIR STATUS**

2
3 Below average streamflows were observed in the Colorado River Basin during 2006.
4 Unregulated⁶ inflow to Lake Powell in water year 2006 was 8.726 maf (10,760 mcm), or 72
5 percent of the 30 year average⁷ which is 12.06 maf (14,870 mcm). Unregulated inflow to
6 Flaming Gorge, Blue Mesa, and Navajo Reservoirs was 60, 82, and 59 percent of average,
7 respectively.

8
9 Snowpack in the Upper Colorado River Basin varied greatly by geographical area
10 throughout the winter of 2005-2006, with the southern regions recording much below
11 average snowpack and the northern regions recording average or above average snowpack.
12 Basinwide snowpack above Lake Powell on April 1, 2006 was 102 percent of average. At
13 that time, the projected April through July inflow to Lake Powell was 97 percent of
14 average. This inflow projection did not hold, however. Below average precipitation was
15 observed in the months of April, May, and June, and inflow projections to Colorado River
16 reservoirs were adjusted downward throughout this period. Observed April through July
17 unregulated inflow to Lake Powell was 5.32 maf (6,560 mcm), or 67 percent of average.
18

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19 The Colorado River Basin experienced five consecutive years of extreme drought during
20 water years 2000 through 2004. Unregulated inflow into Lake Powell during this 5-year
21 period was only 62, 59, 25, 51, and 49 percent of average, respectively. These years of very
22 low inflow resulted in significant drawdown of Colorado River reservoirs with total system
23 storage decreasing from 92 percent of capacity on October 1, 1999, to 50 percent of capacity
24 on October 1, 2004. Hydrologic conditions improved in 2005 with above average inflow to
25 Lake Powell (105 percent of average) and record-breaking tributary flows in the Lower
26 Colorado Basin. Colorado River reservoirs gained 5.10 maf (6,290 mcm) of storage in
27 water year 2005. Drier hydrologic conditions returned in 2006. Inflow to all major
28 Colorado River reservoirs was below average in 2006.
29

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30 Inflow to Lake Powell has been below average in six out of the past seven years. While
31 drought conditions eased in 2005, and the inflow in 2006 was not as low as what occurred in
32 2000 through 2004, drought conditions in the Colorado River Basin persist. Provisional
33 calculations of natural flow for the Colorado River at Lees Ferry, Arizona show that the
34 average flow over the last seven water years (2000-2006, inclusive) was the lowest seven-
35 year average in 100 years of record keeping.

36
37 Although tributary inflows in the Lower Colorado River Basin were exceptionally high
38 during water year 2005, tributary inflows were below average for water year 2006. Severe
39 to extreme drought conditions persisted for water year 2006 throughout the State of Arizona.
40 Drought conditions persisted throughout southeastern Arizona, contributing to 76 percent of
41 average precipitation being recorded in the Gila River Basin. During water year 2006 no
42 tributary inflow from the Gila River reached the main stem of the Colorado River. By

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⁷ Inflow statistics throughout this document will be compared to the 30-year average, 1971-2000, unless otherwise noted.

1 | contrast, for water year 2005, tributary inflow from the Gila River Basin that reached the
2 | mainstem totaled 0.264 maf (326 mcm).

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4 | Tributary inflow from the Little Colorado River for water year 2006 also reflected extreme
5 | drought conditions in the State of Arizona. Tributary inflow from the Little Colorado for
6 | water year 2006 totaled 0.077 maf (95 mcm), or 42 percent of the long-term⁹ average. By
7 | contrast, tributary inflow for water year 2005 totaled 0.29 maf (352 mcm), or 146 percent of
8 | the long-term average of 0.195 maf (241 mcm).

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10 | Tributary inflow from the Bill Williams River into the mainstem totaled 0.056 maf (69
11 | mcm) for water year 2006, or 53 percent of the long-term average. By contrast,
12 | tributary inflow from the Bill Williams River into the mainstem of the Colorado River for
13 | water year 2005 totaled 0.52 maf (641 mcm), or 477 percent of the long-term average of
14 | 0.109 maf (134 mcm).

16 | Tributary inflow from the Virgin River for water year 2006 was below average, totaling
17 | 0.161 maf (199 mcm), or 84 percent of the long-term average. By contrast, tributary inflow
18 | from the Virgin River for water year 2005 totaled 0.52 maf (640 mcm), or 274 percent of the
19 | long-term average of 0.190 maf (234 mcm).

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21 | Below average inflow to Colorado River reservoirs in 2006 resulted in a net loss in Colorado
22 | River total system storage. Reservoir storage in Lake Powell experienced a nominal gain
23 | during water year 2006, increasing by 0.005 maf (6 mcm), but storage at Lake Mead
24 | declined by 1.341 maf (1,654 mcm). At the beginning of water year 2006, Colorado River
25 | total system storage was 59 percent of capacity. As of September 30, 2006, total system
26 | storage was 56 percent of capacity, a decrease of approximately 1.44 maf (1,770 mcm).

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28 | Tables 1 and 2 list the October 1, 2006, reservoir vacant space, live storage, water elevation,
29 | percent of capacity, change in storage, and change in water elevation during water year
30 | 2006.
31

⁹ The basis for the long-term average is natural flow data from 1906 to 1995. Additional information regarding natural flows may be found at www.usbr.gov/lc/region/g4000/NaturalFlow. Future references to long-term averages will utilize the most recent natural flow database, currently 1906 to 2004.

Table 1. Reservoir Conditions on October 1, 2006 (English Units)

Reservoir	Vacant Space (maf)	Live Storage (maf)	Water Elevation (ft)	Percent of Capacity (%)	Change in Storage* (maf)	Change in Elevation* (ft)
Fontenelle	0.115	0.230	6,490.3	67	-0.015	-2.3
Flaming Gorge	0.606	3.143	6,024.5	84	-0.034	-0.9
Blue Mesa	0.174	0.655	7,499.2	79	0.067	8.3
Navajo	0.304	1.391	6,063.4	82	-0.125	-9.2
Lake Powell	12.38	11.94	3,602.0	49	0.005	0.1
Lake Mead	12.00	13.88	1,125.3	54	-1.341	-13.1
Lake Mohave	0.233	1.577	638.5	87	0.004	0.2
Lake Havasu	0.062	0.557	446.8	90	0.003	0.2
-----	-----	-----	-----	-----	-----	-----
Totals	25.87	33.38		56.3	-1.436	

* From October 1, 2005, to September 30, 2006.

Table 2. Reservoir Conditions on October 1, 2006 (Metric Units)

Reservoir	Vacant Space (mcm)	Live Storage (mcm)	Water Elevation (m)	Percent of Capacity (%)	Change in Storage* (mcm)	Change in Elevation* (m)
Fontenelle	142	284	1,978	67	-19	-0.7
Flaming Gorge	748	3,877	1,836	84	-42	-0.3
Blue Mesa	215	808	2,286	79	83	2.5
Navajo	375	1,716	1,848	82	-154	-2.8
Lake Powell	15,270	14,730	1,098	49	6	0.0
Lake Mead	14,800	17,120	343	54	-1654	-4.0
Lake Mohave	287	1,945	195	87	5	0.1
Lake Havasu	77	687	136	90	4	0.1
-----	-----	-----	-----	-----	-----	-----
Totals	31,912	41,168		56.3	-1,771	

* From October 1, 2005, to September 30, 2006.

1 **2007 WATER SUPPLY ASSUMPTIONS**

2
3 For 2007 operations, three reservoir unregulated inflow scenarios were developed and
4 analyzed and are labeled as probable maximum, most probable, and probable minimum.
5 The attached graphs show these inflow scenarios with associated release patterns and end-
6 of-month contents for each reservoir.
7

8 Although there is considerable uncertainty associated with streamflow forecasts and
9 reservoir operating plans made a year in advance, these projections are valuable in analyzing
10 probable impacts on project uses and purposes. The National Weather Service’s Colorado
11 Basin River Forecast Center developed the inflow for the probable maximum (10 percent
12 exceedance), most probable (50 percent exceedance), and probable minimum (90 percent
13 exceedance) inflow scenarios in 2007 using the Ensemble Streamflow Prediction (ESP)
14 model. ESP accounts for antecedent streamflows as well as current soil moisture levels with
15 a continuous soil moisture accounting model known as the Sacramento Soil Moisture
16 Accounting Model. The most probable unregulated inflow for Lake Powell in water year
17 2007 is 10.93 maf (13,490 mcm), or 91 percent of average. The probable minimum
18 unregulated inflow to Lake Powell in water year 2007 is 4.80 maf (5,920 mcm), or 40
19 percent of average. The probable maximum unregulated inflow is 19.00 maf (23,440 mcm),
20 or 158 percent of average. The three inflow scenarios for Lake Powell are shown in Tables
21 3 and 4.
22

Deleted: The minimum inflow scenario (90 percent exceedance) and maximum inflow scenario (10 percent exceedance) were developed with a Pearson Type III statistical distribution using historical inflow data as input¹⁰.

23 The monthly volumes of inflow resulting from these assumptions were input into
24 Reclamation’s monthly reservoir simulation model and used to plan reservoir operations for
25 2007. Starting with October 1, 2006, reservoir storage conditions, the monthly releases for
26 each reservoir were adjusted until release and storage levels best accomplished project
27 purposes.
28

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29 Graphs of the projected 2007 inflows, releases, and storages for each hydrologic scenario are
30 presented in Attachment I.
31

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**Table 3. Projected Unregulated Inflow into Lake Powell for Water Year 2007
(English Units: maf)**

Time Period	Probable Maximum	Most Probable	Probable Minimum
10/06–12/06	2.47	1.27	0.62
1/07 – 3/07	2.54	1.48	0.64
4/07 – 7/07	12.31	7.20	3.11
8/07 – 9/07	1.68	0.98	0.42
10/07 – 12/07	1.41	1.41	1.41
WY 2007	19.00	10.93	4.80
CY 2007	17.94	11.07	5.58

4
5

**Table 4. Projected Unregulated Inflow into Lake Powell for Water Year 2007
(Metric Units: mcm)**

Time Period	Probable Maximum	Most Probable	Probable Minimum
10/06 –12/06	3,050	1,570	770
1/07 –3/07	3,130	1,830	790
4/07 –7/07	15,190	8,880	3,840
8/07 –9/07	2,080	1,210	524
10/07 –12/07	1,730	1,730	1,730
WY 2007	23,440	13,490	5,920
CY 2007	22,120	13,650	6,880

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1 **SUMMARY OF RESERVOIR OPERATIONS IN 2006 AND**
2 **PROJECTED 2007 RESERVOIR OPERATIONS**
3

4 The regulation of the Colorado River has had effects on downstream aquatic and riparian
5 resources. Controlled releases from dams have modified temperature, sediment load, and
6 flow patterns, resulting in increased productivity of some introduced aquatic resources and
7 the development of economically significant sport fisheries. However, these same releases
8 have detrimental effects on endangered and other native species. Operating strategies
9 designed to protect and enhance downstream aquatic and riparian resources have been
10 established at several locations in the Colorado River Basin.
11

12 In the Upper Basin, public stakeholder work groups have been established at Fontenelle
13 Dam, Flaming Gorge Dam, the Aspinall Unit, and Navajo Dam. These work groups provide
14 a public forum for dissemination of information regarding ongoing and projected reservoir
15 operations throughout the year and allow stakeholders the opportunity to provide
16 information and feedback with respect to ongoing reservoir operations. At Glen Canyon
17 Dam, the Glen Canyon Dam Adaptive Management Work Group (AMWG), a Federal
18 Advisory Committee Act (FACA) committee, was established in 1997. Since its inception,
19 the AMWG has met regularly to analyze and make recommendations to the Secretary
20 regarding research and monitoring programs in the Grand Canyon as well as experimental
21 modifications to dam operations.¹¹
22

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Deleted: These work groups provide a public forum for information dissemination regarding ongoing and projected reservoir operations throughout the year. These work groups allow stakeholders the opportunity to provide information and feedback with respect to ongoing reservoir operations.

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23 Modifications to planned operations may be made based on changes in forecast conditions
24 or other relevant factors. Consistent with the Recovery Implementation Program for
25 Endangered Fish Species in the Upper Colorado River Basin (Upper Colorado Recovery
26 Program),¹² the San Juan River Basin Recovery Implementation Program (San Juan
27 Recovery Program),¹³ Section 7 consultations under the Endangered Species Act (ESA), and
28 other downstream concerns, modifications to monthly operation plans may be based on
29 other factors in addition to changes in streamflow forecasts. Decisions on spring peak
30 releases and downstream habitat target flows may be made midway through the runoff
31 season. Reclamation will initiate meetings with the US Fish & Wildlife Service (Service),
32 representatives of the Basin States, and with public stakeholder work groups to facilitate the
33 discussions necessary to finalize site-specific operations plans.
34

35 In 1995, Reclamation and the Service formed a partnership with other Federal, state, and
36 local public agencies and private organizations to develop the Lower Colorado River Multi-
37 Species conservation program (LCR MSCP). This program permits both non-Federal and
38 Federal parties to participate in and address ESA compliance requirements under Sections 7
39 and 10 of the ESA. In April 2005 the Secretary signed the Record of Decision to begin
40 implementation of the MSCP.^{14, 15}

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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 MSCP can be found at <http://www.usbr.gov/lc/lcrmscp>.

Deleted: At Glen Canyon Dam, the Adaptive Management Work Group (AMWG), a Federal Advisory Committee, was established in 1997.

The following paragraphs discuss the operation of each of the reservoirs with respect to [the requirements of compacts](#), [the Consolidated Decree](#), [contracts](#), statutory water delivery obligations, and instream flow needs for maintaining or improving aquatic resources, where appropriate.

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Fontenelle Reservoir

Hydrologic conditions in water year 2006 in the Upper Green River Basin were near normal when compared to the historic record for the reservoir. The April through July inflow to Fontenelle Reservoir during water year 2006 was 0.620 maf (765 mcm), which was 72 percent of average. Fontenelle Reservoir nearly filled in 2006 and bypass releases were necessary in order to accommodate the spring runoff. Inflow peaked at 7,300 cubic feet per second (cfs), 207 cubic meters per second (cms), on May 24, 2006. Releases from Fontenelle Reservoir reached a maximum of 4,150 cfs (118 cms) between June 1, 2006, and June 5, 2006. These maximum releases were a combination of bypass releases and powerplant releases. The releases through the powerplant during this period were at powerplant capacity, approximately 1,500 cfs (42 cms). The peak elevation of Fontenelle Reservoir during water year 2006 was 6,500.6 feet (1,981.1 meters) [above sea level](#) which occurred on July 20, 2006. This elevation is 5.4 feet (1.6 meters) below the spillway crest elevation.

The most probable April through July inflow to Fontenelle Reservoir during water year 2007 is 0.751 maf (926 mcm). This volume far exceeds 0.345 maf (426 mcm), the storage capacity of Fontenelle Reservoir. For this reason, the most probable and probable maximum inflow scenarios require releases during the spring that exceed the capacity of the powerplant to avoid uncontrolled spills from the reservoir. It is very likely that Fontenelle Reservoir will fill during water year 2007. In order to minimize high spring releases and to maximize downstream water resources and power production, the reservoir will most likely be drawn down to about elevation 6,468 feet (1,971 meters) by early April 2007, which is 5 feet (1.5 meters) above minimum power pool. and corresponds to a volume of 0.111 maf (137 mcm) of live storage.

Flaming Gorge Reservoir

Inflows to Flaming Gorge Reservoir during water year 2006 were [below normal](#). [Unregulated inflow in 2006 was 1.043 maf \(1,286 mcm\), which is 60 percent of average.](#) [Flaming Gorge Reservoir did not fill during water year 2006. On October 1, 2005, the beginning of water year 2006, the reservoir elevation was 6,025.5 feet \(1,836.5 meters\). The reservoir elevation decreased during water year 2006 and ended water year 2006 \(on September 30, 2006\) at an elevation of 6,024.5 feet \(1,836.2 meters\). The water year ending](#)

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¹⁵ [In January 2001, the Service issued a Biological Opinion for "Interim Surplus Criteria, Secretarial Implementation Agreement, and Conservation Measures on the Lower Colorado River, Lake Mead to the Southerly International Boundary Arizona, California, and Nevada." Implementation of the 2001 Biological Opinion conservation and mitigation measures shall be credited towards the requirements of the LCR MSCP in accordance with the MSCP Habitat Conservation Plan.](#)

1 reservoir elevation was 15.5 feet (4.7 meters) below the full pool elevation of 6,040 feet
2 (1,841 meters) which corresponds to an available storage space of 0.606 maf (748 mcm).
3

4 On February 16, 2006, the Regional Director of Reclamation's Upper Colorado Region
5 signed a Record of Decision (Flaming Gorge ROD) for the Operation of Flaming Gorge
6 Dam Final Environmental Impact Statement. The Flaming Gorge ROD adopted the Action
7 Alternative as the Federal Action to modify the operation of Flaming Gorge Dam. Under
8 the ROD, releases from Flaming Gorge Dam are patterned so that the peak flows, durations,
9 and base flows and temperatures, described in the Upper Colorado Recovery Program's
10 "Flow and Temperature Recommendations for Endangered Fishes in the Green River
11 Downstream of Flaming Gorge Dam" (Flow and Temperature Recommendations)
12 (September 2000) are achieved to the extent possible, while maintaining and continuing all
13 authorized purposes of Flaming Gorge Dam.
14

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15 Reclamation convened a technical working group, comprised of, Service, Western Area
16 Power Administration (Western), and Reclamation personnel, which developed three
17 possible flow scenarios for 2006 spring operations which were consistent with the Flaming
18 Gorge ROD. The flow objective of 18,600 cfs (527 cms) for one day in Reach 2 (the Green
19 River below the confluence with the Yampa River) was one of these three scenarios. In
20 early May 2006, Reclamation decided, based on hydrologic conditions, to attempt to achieve
21 the 18,600 cfs (527 cms) objective for one day in Reach 2.
22

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23 Releases from Flaming Gorge Reservoir were increased to powerplant capacity of 4,550 cfs
24 (129 cms) on May 18, 2006, in anticipation of peak flows on the Yampa River. A bypass
25 release of 2,000 cfs (57 cms) from Flaming Gorge Reservoir was made for 24 hours on May
26 22-23, 2006 to match high flows of the Yampa River. Green River flows, measured at
27 Jensen, Utah, reached 18,700 cfs (530 cms) on May 24, 2006, as a result of this bypass
28 release. This peak was followed by a second peak which occurred on May 25, 2006, which
29 reached 18,950 cfs (537 cms). The second peak occurred as a result of a precipitation event
30 in the Yampa River Basin. Powerplant capacity releases were made from May 18 to May
31 30, 2006, to maintain connectivity between the main channel of the Green River and the
32 floodplain depressions where the endangered fish larvae are entrained. Releases were
33 decreased to a base flow level of 1,000 cfs (28 cms) by mid-June.
34

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35 During water year 2007, Flaming Gorge Dam will be operated in accordance with the
36 Flaming Gorge ROD. High spring releases will likely occur in 2007, timed with the Yampa
37 River's spring runoff peak flow, followed by lower summer and autumn base flows. Under
38 the most probable scenario, releases in the winter and early spring during 2007 will be
39 relatively low (approximately 1,200 cfs [34 cms]).
40

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41 The Upper Colorado Recovery Program in coordination with Reclamation, the Service, and
42 Western, will conduct studies associated with flood plain inundation. Such studies will
43 include: improving connectivity of flood plain habitats, identifying ways to improve
44 entrainment of larval razorback suckers into floodplain habitats, maintaining the river
45 channel, restoring natural variability of the river system, and analyzing possibilities for

Deleted: As described in the Flaming Gorge ROD, Reclamation will continue to participate in Upper Colorado Recovery Program efforts.

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1 meeting the goals of the Flow and Temperature Recommendations at lower peak flow levels
2 where feasible.

3
4 **Blue Mesa, Morrow Point, and Crystal Reservoirs (Aspinall Unit)**
5

6 Near average to below average snowpack conditions prevailed in the Gunnison Basin during
7 water year 2006. Most snotel sites in the basin reported near average moisture the first week
8 in April, but a rapid decline in snowpack took place throughout April and May. The April
9 through July unregulated runoff into Blue Mesa Reservoir in 2006 was 0.551 maf (680
10 mcm), or 77 percent of average, and occurred earlier than normal. Water year 2006
11 unregulated inflow into Blue Mesa Reservoir was 0.819 maf (1,010 mcm), or 82 percent of
12 average. Blue Mesa Reservoir filled in 2006 reaching a peak elevation of 7,517.7 feet
13 (2,291.3 meters) on June 17, 2006, only 1.7 feet (0.5 meters) from full pool. Storage in Blue
14 Mesa Reservoir increased during water year 2006 by 0.067 maf (83 mcm). Storage in Blue
15 Mesa Reservoir on September 30, 2006, was 0.655 maf (808 mcm), or 79 percent of
16 capacity.
17

18 Releases from Aspinall Unit reservoirs in 2006 were near normal levels. Releases from the
19 Aspinall Unit provided for a flow of 400 to 500 cfs (11.3 to 14.2 cms) from October 1, 2005,
20 to January 15, 2006, in the Gunnison River through the Black Canyon (below the Gunnison
21 Tunnel). On January 16, 2006, releases were increased to 700 cfs (19.8 cms) in response to
22 slightly above average forecasted inflow. Beginning the last week of March, Crystal
23 releases were increased as the diversions through the Gunnison Tunnel increased. Water
24 year 2006 powerplant bypasses were approximately 0.049 maf (60 mcm) at Crystal Dam.
25 These bypass releases occurred because the powerplant was shut down for a week in
26 November 2005 and 30 days in February and March of 2006 for maintenance and turbine
27 repair.
28

29 On August 16, 1995, Memorandum of Agreement (MOA) No. 95-07-40-R1760 was signed
30 by the Bureau of Reclamation, the Service, and the Colorado Water Conservation Board.
31 The purpose of the MOA was to provide water to the Redlands Fish Ladder, assure at least
32 300 cfs (8.5 cms) of flow in the 2-mile reach of the Gunnison River between the Redlands
33 Fish Ladder and the confluence of the Gunnison and Colorado Rivers (2-mile reach), and to
34 benefit Colorado River endangered fish. This MOA was extended for an additional five
35 years on June 30, 2000. A key provision of the MOA requires that the parties adopt a plan
36 to share water shortages in dry years, when total storage at Blue Mesa Reservoir is projected
37 to drop below 0.4 maf (493 mcm) by the end of the calendar year. However, the MOA was
38 not renewed in 2005. Reclamation intends to operate the Aspinall Unit to meet the intent of
39 the MOA if water supplies are available. While deliveries of 100 cfs (2.8 cms) to the
40 Redlands Fish Ladder can be protected under Colorado water law, absent the MOA, the
41 additional releases for the benefit of the 2-mile reach cannot. Releases from the Aspinall
42 Unit combined with runoff from intervening tributaries resulted in water being available for
43 the fish ladder and 2-mile reach of the Gunnison River in 2006.
44

45 In July 2003, a final report titled, "Flow Recommendations to Benefit Endangered Fishes in
46 the Colorado and Gunnison Rivers" was published by the Upper Colorado Recovery

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1 Program. The report compiled and summarized the results of endangered fish research in
2 the Gunnison and Upper Colorado Rivers under the Upper Colorado Recovery Program.
3 The report presents flow recommendations for two different river reaches: one for the lower
4 Gunnison River between Delta and Grand Junction, Colorado, as measured at Whitewater
5 (Gunnison River near Grand Junction gage); and the other for the Colorado River
6 downstream of the Gunnison River confluence as measured at the Colorado-Utah State line.
7 In January 2004, Reclamation published a Notice of Intent to prepare an environmental
8 impact statement (EIS) on operations to assist with meeting the flow recommendations or a
9 reasonable alternative to them while maintaining authorized project purposes. Public
10 scoping meetings were held in February 2004 and cooperating agency meeting were held in
11 2005 and 2006. A draft EIS is likely to be released in 2008.

13 On January 17, 2001, the United States filed an application to quantify the federal reserved
14 water right decreed to the Black Canyon of the Gunnison National Monument. The water
15 right is for flows in the Gunnison River through the Black Canyon of the Gunnison National
16 Park downstream of the Gunnison Tunnel. On April 2, 2003, the Department of the Interior
17 and the State of Colorado reached agreement regarding water for the Park. Under the 2003
18 agreement, an amended water right application was filed by the United States for the
19 National Park Service for 300 cfs (8.5 cms) with a 1933 priority date. In a separate action,
20 the Colorado Water Conservation Board filed, under the State of Colorado instream flow
21 program, for additional flows in excess of those required to fulfill the purposes of the
22 Aspinall Unit (with a 2003 priority date) to provide for protection of additional water
23 resources for the Park. The 2003 amended federal reserved water right application was
24 challenged in United States District Court in Colorado. On September 11, 2006, the District
25 Court set aside the 2003 agreement. Currently, both water right applications filed in state
26 water court remain stayed. In short, the reserved water right claim for the Black Canyon of
27 the Gunnison National Park remains unquantified.

28
29 For water year 2007, the Aspinall Unit will be operated to conserve storage while meeting
30 downstream delivery requirements, consistent with authorized project purposes. Under
31 normal conditions, the minimum release objectives of the Aspinall Unit are to meet the
32 delivery requirements of the Uncompahgre Valley Project, to meet senior water rights
33 downstream, to the extent possible maintain a year round minimum flow of 300 cfs (8.5
34 cms) in the Gunnison River through the Black Canyon, and to the extent possible maintain a
35 minimum flow of 300 cfs (8.5 cms) in the 2-mile reach below the Redlands Diversion Dam
36 during the months of July through October. In dry years, the 300 cfs (8.5 cms) flow through
37 the canyon and the 2-mile reach can be reduced. In 2007, under the most probable inflow
38 conditions, flows through the Black Canyon of the Gunnison National Park will be above
39 the 300 cfs (8.5 cms) minimum release objective during the summer months. Consideration
40 shall be given to the gold medal trout fishery in the Black Canyon and recreational interests
41 consistent with project purposes. Releases during 2007 will be planned to minimize large
42 fluctuations in the daily and monthly flows in the Gunnison River below the Gunnison
43 Tunnel diversion.
44

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Deleted: Because of this challenge, the Colorado Water Court for Water Division 4 stayed proceedings on the amended Federal claim for the 300 cfs flow pending the outcome of the case before the District Court. The State of Colorado and others challenged the Colorado Water Court stay in the Colorado Supreme Court and in November 2004, the Colorado Supreme Court upheld the water court's decision. No action has been pursued on the Colorado Water Conservation Board's filing for the peak flows (flows in excess of those required to fulfill the purposes of the Aspinall Unit) in the Colorado Water Court for Water Division 4, and no action is anticipated until the amended Federal claim is settled.

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1 Under the probable minimum inflow scenario, Blue Mesa Reservoir would not fill in 2007.
2 Under the most probable and probable maximum inflow scenarios, Blue Mesa Reservoir is
3 expected to fill in 2007.

4 **Navajo Reservoir**

6
7 Inflow to Navajo Reservoir in 2006 was less than the 30-year average, marking the sixth
8 year since 1999 that inflows have been below average. The April through July unregulated
9 inflow into Navajo Reservoir in water year 2006 was 0.377 maf (465 mcm), or 47 percent of
10 average. Water year 2006 unregulated inflow was 0.658 maf (812 mcm), or 59 percent of
11 average. Unregulated inflow to Navajo Reservoir in water years 2000, 2001, 2002, 2003,
12 2004, and 2005 was 42, 93, 11, 44, 72, and 136 percent of average, respectively. Storage in
13 Navajo Reservoir was significantly reduced during the 2000 through 2004 period of extreme
14 drought.

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16 The above average inflow in 2005 resulted in Navajo Reservoir nearly filling in 2005.
17 Carryover storage from 2005 helped maintain storage at Navajo Reservoir at above average
18 levels for most of 2006. The reservoir reached a peak water surface elevation of 6,077.9 feet
19 (1,852 meters) on May 26, 2006, 7.1 feet (2.2 meters) from full pool. The water surface
20 elevation at Navajo Reservoir on September 30, 2006, was 6,063.4 feet (1,848.0 meters),
21 with reservoir storage at 82 percent of capacity.

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

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32
33 Reclamation completed a National Environmental Policy Act (NEPA) process on the
34 implementation of operations at Navajo Dam that meet the San Juan Flow
35 Recommendations, or a reasonable alternative to them in 2006. A Notice of Intent to
36 prepare an EIS was published on October 1, 1999, in the *Federal Register*. In January 2006,
37 the Service issued a non-jeopardy biological opinion for the operations of Navajo Dam to
38 meet the San Juan Flow Recommendations, or a reasonable alternative. The Navajo
39 Reservoir Operations Final EIS was issued on April 20, 2006. The Record of Decision for
40 the Navajo Reservoir Operations Final EIS was signed by the Regional Director of
41 Reclamation's Upper Colorado Region, on July 31, 2006.

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42
43 The San Juan Flow Recommendations called for making the minimum spring peak release
44 from Navajo Reservoir in 2006. The spring release pattern implemented in 2006 followed
45 the ramping rates set forth in the San Juan Flow Recommendations. Releases were
46 increased beginning on May 25, 2006. A release rate of 5,000 cfs (125 cms) was reached on

1 June 1, 2006, and the release remained at that rate until June 8, 2006. Releases were
2 reduced to the base summer release rate of 500 cfs (14 cms) on June 15, 2006. At times
3 during the summer months of 2006, higher than normal base flows were released from
4 Navajo Reservoir. [Releases from Navajo Reservoir from July through September 2006](#)
5 [averaged 650 cfs \(18.4 cms\) and were as high as 756 cfs \(21.4 cms\) in July 2006.](#) The
6 [higher releases in July 2006](#) were necessary due to decreasing flows in the San Juan River
7 endangered fish critical habitat area (Farmington, New Mexico to Lake Powell). The San
8 Juan Flow Recommendations call for an average weekly flow of between 500 cfs (14 cms)
9 and 1,000 cfs (28 cms) in this reach of the river.

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10
11 Once again in 2006, an annual agreement was developed among water users who agreed to
12 limit their water use to the rates/volumes indicated in the agreement. The 2006
13 “Recommendations for Administration and Operation of the San Juan River” was similar to
14 the agreements that were developed in 2003, 2004, and 2005. Ten major water users (the
15 Jicarilla Apache and Navajo Nations, Hammond Conservancy District, Public Service
16 Company of New Mexico, City of Farmington, Arizona Public Service Company, BHP-
17 Billiton, Bloomfield Irrigation District, Farmers Mutual Ditch, and Jewett Valley Ditch),
18 endorsed the recommendations which included limitations on diversions for 2006, criteria
19 for determining a shortage, and shortage-sharing requirements in the event of a water supply
20 shortfall, including sharing of shortages between the water users and the flow demands for
21 endangered fish habitat. In addition to the ten major water users, the New Mexico Interstate
22 Stream Commission, the Bureau of Indian Affairs, the Service, and the San Juan Recovery
23 Program all provided input to the recommendations. The recommendations were accepted
24 for reservoir operation and river administration purposes by Reclamation and the New
25 Mexico State Engineer. Because of a combination of inflow into Navajo Reservoir in 2006
26 and above average carryover storage from 2005, no shortages occurred during the 2006
27 water year.

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29 [During 2007, Navajo Reservoir will be operated in accordance with the Navajo Reservoir](#)
30 [Operations ROD.](#) Navajo Reservoir storage levels are expected to be above average in 2007
31 under the most probable and probable maximum inflow scenarios. Releases from the
32 reservoir will likely be 250 cfs (7 cms) through the fall and winter. Under the probable
33 minimum and most probable inflow conditions in 2007, the minimum spring peak release as
34 [described](#) in the San Juan Flow Recommendations is likely to occur.

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35 36 Lake Powell

37
38 Reservoir storage in Lake Powell remains relatively low (49 percent of capacity on
39 September 30, 2006), due to lingering effects of drought in the Colorado River Basin. Lake
40 Powell storage was 97 percent of capacity in July 1999. Extreme drought conditions were
41 observed in the Colorado River Basin for five consecutive years (water years 2000-2004)
42 with Lake Powell storage declining during this period. Lake Powell storage on September
43 30, 2004, was only 38 percent of capacity. Inflow was above average in 2005 and Lake
44 Powell gained 2.77 maf (3,420 mcm) of storage in water year 2005. The inflow in 2005 was
45 not sufficient to erase the storage deficit from the preceding five years of extreme drought.
46 Lake Powell began water year 2006 with 11.94 maf (14,730 mcm) of water in storage (49

1 percent of capacity). Below average inflow conditions returned in 2006. Water year 2006
2 unregulated inflow to Lake Powell was 8.726 maf (10,760 mcm), or 72 percent of average.
3 As water year 2006 ended on September 30, 2006, Lake Powell storage was 11.94 maf
4 (14,730 mcm), or 49 percent of capacity.

6 ~~Due to continued low reservoir storage at Lake Powell, and storage in Lake Powell being~~
7 ~~less than Lake Mead, releases from Glen Canyon Dam in 2006 were scheduled to maintain~~
8 ~~the minimum release objective from Lake Powell of 8.23 maf (10,150 mcm) in accordance~~
9 ~~with Article II(2) of the Operating Criteria. Forecasted inflow to Lake Powell was near~~
10 ~~average in the early months of 2006 (January through April). However, dry conditions~~
11 ~~prevailed during the spring months and inflow projections were progressively reduced~~
12 ~~during the April through July runoff time period. Reservoir storage in Lake Powell in 2006~~
13 ~~was not sufficient to trigger storage equalization releases from Lake Powell to Lake Mead.~~
14 ~~The total release from Lake Powell in water year 2006 was 8.23 maf (10,150 mcm).~~

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16 April through July unregulated inflow to Lake Powell in water year 2006 was 5.32 maf
17 (6,560 mcm), or 67 percent of average. Lake Powell reached a seasonal peak elevation of
18 3,610.9 feet (1,100.5 meters), 89.1 feet (27.2 meters) from full pool, on June 22, 2006. On
19 September 30, 2006, the water surface elevation of Lake Powell was 3,602.0 feet (1097.8
20 meters), 99.0 feet (29.9 meters) from full pool.

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22 During water year 2007, under the most probable and probable minimum inflow scenario,
23 the objective shall be to maintain a minimum release of water from Lake Powell of 8.23 maf
24 (10,150 mcm) consistent with Article II(2) of the Operating Criteria. Under the probable
25 maximum inflow condition, an annual release of approximately 12.2 maf (15,000 mcm)
26 would be required to equalize storage between Lake Powell and Lake Mead on September
27 30, 2007. Releases to equalize storage between Lakes Powell and Mead will be made in
28 2007, if storage in Lake Powell is projected to be greater than 14.85 maf (elevation 3,630
29 feet) on September 30, 2007, and active storage in Lake Powell is greater than active storage
30 in Lake Mead. Under the most probable inflow in 2007, the projected water surface
31 elevation at Lake Powell on September 30, 2007, will be 3,617.3 feet (1,102.5 meters) with
32 13.48 maf (16,630 mcm) of storage (55 percent of capacity).

34 The Glen Canyon Dam Adaptive Management Program is currently actively evaluating
35 experimental proposals for future operations at Glen Canyon Dam and other related
36 management actions, which may include short-term and/or long-term experimental releases
37 from Glen Canyon Dam. The Science Planning Group, an ad hoc technical committee
38 within the Glen Canyon Dam Adaptive Management Program, is analyzing experimental
39 proposals, and through the Glen Canyon Dam Technical Work Group is in the process of
40 providing information and recommendations to the Glen Canyon Dam Adaptive
41 Management Work Group (AMWG). The AMWG, a FACA committee, has not yet made a
42 recommendation to the Secretary on these experimental proposals. Implementation of
43 experimental releases is subject to consistency with the AOP, approval by the Secretary, and
44 completion of appropriate environmental compliance.

1 [On September 6, 2006 the AMWG approved a budget and work plan for 2007. Included in](#)
2 [the work plan is a recommendation to return to operations consistent with the parameters of](#)
3 [the Glen Canyon Operating Criteria \(the ROD for the Glen Canyon Dam Final](#)
4 [Environmental Impact Statement\) in water year 2007. Pending consideration by the](#)
5 [Secretary of this recommendation, experimental flows are not anticipated in 2007. While](#)
6 [experimental releases are not anticipated in 2007, any experimental release conducted](#)
7 [during water year 2007 would not alter the total volume of water to be released from Lake](#)
8 [Powell.](#)
9

10 In 2007, scheduled maintenance activities at Glen Canyon Dam powerplant will require that
11 one or more of the eight generating units periodically be offline. Coordination between
12 Reclamation offices in Salt Lake City, Utah, and Page, Arizona, will take place in the
13 scheduling of maintenance activities to minimize impacts, including those on potential
14 experimental releases.
15

16 Because of less than full storage conditions in Lake Powell resulting from drought in the
17 Colorado River Basin, releases for dam safety purposes are highly unlikely in 2007. If
18 implemented, releases greater than powerplant capacity would be made consistent with the
19 1956 Colorado River Storage Project Act, the 1968 Colorado River Basin Project Act, and
20 the 1992 Grand Canyon Protection Act. Reservoir releases in excess of powerplant capacity
21 required for dam safety purposes during high reservoir conditions may be used to
22 accomplish the objectives of the beach/habitat-building flow according to the terms
23 contained in the Glen Canyon Dam Record of Decision (ROD) and as published in the Glen
24 Canyon Dam Operating Criteria (62 Federal Register 9447, Mar. 3, 1997).
25

1 Daily and hourly releases in 2007 will be made according to the parameters of the ROD for
 2 the Glen Canyon Dam Final Environmental Impact Statement (GCDFEIS) and the Glen
 3 Canyon Dam Operating Criteria, as shown in Table 5. Exceptions to these parameters may
 4 be made during power system emergencies, during experimental releases, or for purposes of
 5 humanitarian search and rescue.

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

<u>Parameter</u>	(cfs)	(cms)	<u>Conditions</u>
Maximum Flow ¹⁶	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 ¹⁷	5,000 / 8,000	141.6 / 226.6	

9
 10 Releases from Lake Powell in water year 2007 will continue to reflect consideration of the
 11 uses and purposes identified in the authorizing legislation for Glen Canyon Dam.
 12 Powerplant releases will reflect criteria based on the findings, conclusions, and
 13 recommendations made in the ROD for the GCDFEIS pursuant to the Grand Canyon
 14 Protection Act of 1992 and appropriate NEPA documentation regarding experimental flows.

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¹⁶ May be exceeded during beach/habitat-building flows, habitat maintenance flows, or when necessary to manage above average hydrologic conditions.

¹⁷ 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 volumes over 0.800 maf (990 mcm).

1 The schedule of monthly releases under the most probable inflow scenario for water year
 2 2007 is displayed in Table 6.

3
 4 **Table 6. Scheduled Monthly Releases from Lake Powell in Water Year 2007**
 5 **Under Most Probable Inflow Conditions¹⁸**
 6

Month	Monthly Release (maf)	Monthly Release (mcm)
October 2006	0.600 maf	740 mcm
November 2006	0.600 maf	740 mcm
December 2006	0.800 maf	987 mcm
January 2007	0.800 maf	987 mcm
February 2007	0.630 maf	777 mcm
March 2007	0.600 maf	740 mcm
April 2007	0.600 maf	740 mcm
May 2007	0.600 maf	740 mcm
June 2007	0.800 maf	987 mcm
July 2007	0.800 maf	987 mcm
August 2007	0.800 maf	987 mcm
September 2007	0.600 maf	740 mcm

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7
 8
 9 [The ten-year total flow of the Colorado River at Lee Ferry¹⁹ for water years 1997 through](#)
 10 [2006 is 98.6 maf \(122,000 mcm\). This total is computed as the sum of the flow of the](#)
 11 [Colorado River at Lees Ferry, Arizona and the Paria River at Lees Ferry, Arizona surface-](#)
 12 [water discharge stations, which are operated and maintained by the United States Geological](#)
 13 [Survey.](#)

14
 15 **Lake Mead**

16
 17 For calendar year 2006, [the Partial Domestic Surplus](#) condition was the criterion governing
 18 the operation of Lake Mead in accordance with Article III(3)(b) of the Operating Criteria,
 19 Article II(B)(2) of the [Consolidated Decree](#), and Section 2(B)(1) of the Interim Surplus
 20 Guidelines. A volume of 1.5 maf (1,850 mcm) of water was scheduled for delivery to
 21 Mexico in accordance with Article 15 of the 1944 United States-Mexico Treaty and Minutes
 22 No. 242 and 310 of the International Boundary and Water Commission.
 23

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24 Lake Mead began water year 2006 at elevation 1,138.4 feet (347.1 meters), with 15.2 maf
 25 (18,750 mcm) in storage, which is 59 percent of the conservation capacity of 25.9 maf
 26 (31,920 mcm). Lake Mead's elevation increased to elevation 1,139.5 [feet](#) (347.4 meters) by
 27 the end of March 2006. After March 2006, Lake Mead steadily declined and ended the

¹⁸ Modifications to scheduled monthly releases from Lake Powell would be made based on changes in forecast conditions or other relevant factors.

¹⁹ [A point in the main stream of the Colorado River one mile below the mouth of the Paria River.](#)

1 | water year at an elevation of 1,125.27 feet (343 meters), with 13.878 maf (17,118 mcm) in
2 | storage (54 percent of capacity).

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4 | The total release from Lake Mead through Hoover Dam during water year 2006 was 9.409
5 | maf (11,606 mcm). The total release from Lake Mead through Hoover Dam during calendar
6 | year 2006 is projected to be 9.266 maf (11,429 mcm). Consumptive use from Lake Mead
7 | during calendar year 2006 diverted through the Robert Griffith Water Project is projected to
8 | be 0.286 maf (353 mcm).

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10 | The total inflow into Lake Mead is a combination of water released from Glen Canyon Dam
11 | plus inflows from the tributaries in the reach. In water year 2006, inflow into Lake Mead
12 | was 9.097 maf (11,221 mcm). For water year 2007, total inflow into Lake Mead is
13 | anticipated to be 9.081 maf (11,201 mcm).

15 | Under the most probable inflow conditions during water year 2007, Lake Mead will be at its
16 | maximum elevation of 1,128.86 feet (344 meters), with 14.238 maf (17,562 mcm) in
17 | storage, at the end of January, 2007^{20,21}. Lake Mead will likely decline during water year
18 | 2007 to reach its minimum elevation of approximately 1,113.38 feet (339 meters), with
19 | approximately 12.724 maf (15,695 mcm) in storage, at the end of September 2007.

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21 | Based on the August 2006 24-Month Study, Lake Mead's elevation on January 1, 2007, is
22 | projected to be 1127.48 feet (344 meters). Therefore, in accordance with Section 7 of the
23 | Interim Surplus Guidelines, the Partial Domestic Surplus Condition will govern the releases
24 | from Lake Mead in calendar year 2007. It should be noted, however, that the projected
25 | releases in 2007 currently reflect demands under the Normal Condition for the Metropolitan
26 | Water District of Southern California (MWD), the Central Arizona Project (CAP), and the
27 | Southern Nevada Water Authority (SNWA), per their request. This does not, however,
28 | preclude MWD, CAP, and SNWA from requesting Partial Domestic Surplus water in
29 | calendar year 2007. Releases from Lake Mead through Hoover Dam for water year and
30 | calendar year 2007 are anticipated to be approximately the same as 2006 releases. Some
31 | variability between the 2006 and 2007 releases may result from the two demonstration
32 | programs to create Intentionally Created Surplus (ICS) Water in Lake Mead and to achieve
33 | System Conservation (SC).

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35 | The Interim Surplus Guidelines ROD included ESA conservation measures. One such
36 | conservation measure specified in Article X(4)(1) includes provisions for spawning
37 | razorback suckers in Lake Mead. Reclamation continues to provide funding and support for
38 | the ongoing Lake Mead Razorback Sucker study. The focus of the study has been on
39 | locating populations of razorbacks in Lake Mead, documenting use and availability of
40 | spawning areas at various water elevations, continuing aging studies, and confirming

²⁰ Projected Lake Mead elevations reflected in the August, 2006 24-month study incorporated the latest estimates for ICS Water in calendar years 2006 and 2007. In calendar year 2006, it was assumed that 50,000 acre-feet and 1,000 acre-feet would be conserved by MWD and IID, respectively. In calendar year 2007, it was assumed that 89,000 acre-feet and 1,000 acre-feet would be conserved by MWD and IID, respectively.

²¹ Projected Lake Mead elevations reflected in the August, 2006 24-month study incorporated the latest estimates for SC Water in calendar years 2006 and 2007. In calendar year 2006, it was assumed that 3,000 acre-feet would be conserved. In calendar year 2007, it was assumed that 7,000 acre-feet would be conserved.

1 recruitment events. Based on the anticipated operation of Lake Powell for water year 2007,
2 no changes in operations to provide rising elevations in Lake Mead are expected in the
3 spring of 2007.

4
5 In a letter to the Governors of the seven Colorado River Basin States (May 2, 2005), the
6 Secretary directed Reclamation to develop Colorado River Lower Basin shortage guidelines
7 and coordinated reservoir management strategies for Lake Powell and Lake Mead under low
8 reservoir conditions. A notice to solicit comments and hold public meetings on the
9 development of the guidelines and strategies was issued on June 15, 2005 (70 Fed. Reg.
10 34,794). A Notice of Intent was issued on September 30, 2005 (70 Fed.Reg. 57,322) to
11 prepare an EIS and hold public scoping meetings on the proposed action. Key milestones in
12 the EIS process include: (1) the Scoping Summary Report, published March 31, 2006 (71
13 Fed. Reg. 16,341); (2) draft alternatives published June 30, 2006; (3) a Draft EIS targeted in
14 December 2006; (4) a Final EIS targeted in September 2007; and (5) a Record of Decision
15 targeted in December 2007.²²

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17 Lakes Mohave and Havasu

18
19 At the beginning of water year 2006, Lake Mohave was at an elevation of 638.3 feet (194.6
20 meters), with an active storage of 1.57 maf (1,940 mcm). The water level of Lake Mohave
21 was regulated between elevation 636.0 feet (193.8 meters) and 643.0 feet (196.0 meters)
22 throughout the water year, ending at an elevation of 638.50 feet (194.6 meters) with 1.58
23 maf (1,950 mcm) in storage. The total release from Lake Mohave through Davis Dam for
24 water year 2006 was 9.132 maf (11, 264 mcm) for downstream water use requirements. The
25 Calendar year 2006 total release is projected to be 9.037 maf (11,147 mcm).

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27 For water year and calendar year 2007, Davis Dam is expected to release approximately the
28 same amount of water as in 2006. The water level in Lake Mohave will be regulated
29 between an elevation of 630 feet (192.0 meters) and 645 feet (196.1 meters).

30
31 Lake Havasu started water year 2006 at an elevation of 446.6 feet (136 meters) with 0.55
32 maf (680 mcm) in storage. The water level of Lake Havasu was regulated between
33 elevation 446 feet (136 meters) and 449 feet (137 meters). During water year 2006, 6.702
34 maf (8,267 mcm) were released from Parker Dam. The calendar year 2006 total release is
35 projected to be 6.766 maf (8,346 mcm). Diversions from Lake Havasu during calendar year
36 2006 by the CAP and the MWD are projected to be 1.611 maf (1,987 mcm) and 0.615 maf
37 (759 mcm), respectively.

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39 For water year 2007, Parker Dam is expected to release approximately the same amount of
40 water as in 2006. Diversions from Lake Havasu in calendar year 2007 by the CAP and the
41 MWD are expected to be 1.601 maf (1,975 mcm) and 0.584 maf (720 mcm), respectively.

²² Additional information on the EIS for the "Development of Lower Colorado River Basin Shortage Guidelines & Coordinated Management Strategies for Lakes Powell and Mead Under Low Reservoir Conditions" may be found at <http://www.usbr.gov/lc/region/programs/strategies.html>

1
2 Lakes Mohave and Havasu are scheduled to be drawn down in the late summer and fall
3 months to provide storage space for local storm runoff and will be filled in the winter to
4 meet higher summer water needs. This drawdown will also correspond with normal
5 maintenance at both Davis and Parker powerplants which is scheduled for September
6 through February.

7
8 At Davis Dam, a major overhaul of Unit No. 3 is scheduled for October 2, 2006, through
9 February 16, 2007. This overhaul will include removal and maintenance of the fixed wheel
10 gate and hydraulic cylinder, as well as testing the generator windings and station service
11 transformer. Rehabilitation of Units 1, 2, 4, and 5 has yet to be decided by both
12 Reclamation and funding board customers.

13
14 No major overhauls at Parker Dam have been scheduled for water year 2007.

15
16 During 2007, Lake Mohave will continue to be operated under the constraints as described
17 in the Interim Surplus Guidelines' Biological and Conference Opinion on Lower Colorado
18 River Operations and Maintenance, as extended through the LCR MSCP Biological and
19 Conference Opinion²³. Reclamation, as provided in the LCR MSCP ROD, will continue
20 these existing operations in Lake Mohave that benefit native fish and will explore additional
21 ways to provide benefits to native fish. The normal filling and drawdown pattern of Lake
22 Mohave coincides well with the fishery spawning period. Since lake elevations for Lake
23 Mohave and Lake Havasu will be typical of previous years, normal conditions are expected
24 for boating and other recreational uses.

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

35
36 In 2005, 12,203 razorback suckers (325 mm minimum size) were repatriated into Lake
37 Mohave from all sources, a 29% decrease compared to 2004. In 2006, 63,749 wild
38 razorback suckers were captured from natural spawning congregations on Lake Mohave and
39 delivered to Willow Beach National Fish Hatchery, a 5% increase compared to 2005.

40

²³In January 2001, the Service issued a Biological Opinion for "Interim Surplus Criteria, Secretarial Implementation Agreement, and Conservation Measures on the Lower Colorado River, Lake Mead to the Southerly International Boundary Arizona, California, and Nevada." Implementation of the 2001 Biological Opinion conservation and mitigation measures shall be credited towards the requirements of the LCR MSCP in accordance with the MSCP Habitat Conservation Plan.

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1 **Bill Williams River**

2
3 Although tributary inflows from the Bill Williams River were exceptionally high during
4 water year 2005, tributary inflows were below average for water year 2006. Moderate to
5 severe drought conditions persisted for water year 2006 throughout western Arizona,
6 including the Bill Williams River watershed. Tributary inflow from the Bill Williams River
7 into the mainstem of the Colorado River totaled 0.056 maf (69 mcm) for water year 2006,
8 approximately 53 percent of the long-term²⁴ average of 109,000 af.

9
10 Above average flood control releases from USACE’s Alamo Dam during water year 2005
11 enhanced riparian habitat along the Bill Williams River corridor. Releases in water year
12 2006 from USACE’s Alamo Dam were coordinated with the Service and the Bill Williams
13 steering committee to maintain riparian habitat established in water year 2005. Although
14 standing operating procedures target an Alamo Lake elevation of 1,125 feet (343 meters),
15 the elevation was maintained at 1,130 feet (344 meters) after October 1, 2005. A storage
16 volume of 0.019 maf (24.0 mcm), equivalent to the storage between elevations 1,130 ft (344
17 meters) and 1,125 ft (343 meters), was released beginning March 13, 2006. The purpose of
18 the release was to lower the Alamo Lake elevation to 1,125 feet (343 meters), and maintain
19 downstream riparian habitat. The March 13, 2006, release from Alamo Dam increased from
20 40 cfs (1.1 cms) to approximately 2,000 cfs (57 cms) for a two day period, tapering to 40 cfs
21 (1.1 cms) over the following two weeks. Data collection associated with Alamo Dam
22 releases supports ongoing studies conducted by the Bill Williams Steering Committee. The
23 Bill Williams Steering Committee is chaired by the Service and is comprised of other
24 stakeholders, including, but not limited to, Reclamation, the USACE, the Bureau of Land
25 Management (BLM), and other governmental and non-governmental organizations.

26
27 **Senator Wash and Laguna Reservoirs**

28
29 Operations at Senator Wash Reservoir allow regulation of water deliveries to United States
30 water users upstream and downstream of Imperial Dam and Mexican water users
31 downstream of Imperial Dam. The reservoir is utilized as an off-stream storage facility to
32 meet downstream water demands and to conserve water for future uses in the United States
33 and the scheduled uses of Mexico in accordance with Treaty obligations. Senator Wash
34 Reservoir is the only major storage facility below Parker Dam (approximately 142 river
35 miles downstream) and has a storage capacity of 13,840 acre-feet (17.1 mcm) at full pool
36 elevation of 251 feet (76.5 meters). Operational objectives are to store excess flows from
37 the river caused by water user cutbacks and side wash inflows due to rain. Stored waters are
38 utilized to meet the United States’ and Mexico’s demands.

39
40 Since 1992, elevation restrictions have been placed on Senator Wash due to potential piping
41 and liquefaction of foundation and embankment materials at West Squaw Lake Dike and
42 Senator Wash Dam. Currently, Senator Wash is restricted to an elevation of 240 feet (73

²⁴ The basis for the long-term average is natural flow data from 1906 to 1995. Additional information regarding natural flows may be found at www.usbr.gov/lc/region/g4000/NaturalFlow. Future references to long-term averages will utilize the most recent natural flow database, currently 1906 to 2004.

1 meters) with 9,144 acre-feet (11.3 mcm) of storage, a loss of about 4,700 acre-feet (5.8
2 mcm) of storage from its original capacity. Senator Wash elevation must not exceed
3 elevation 240 feet (73 meters) for more than 10 consecutive days. This reservoir restriction
4 is expected to continue in 2007.

5
6 Laguna Reservoir is a regulating storage facility located approximately five river miles
7 downstream of Imperial Dam. Operational objectives are similar to those for Senator Wash
8 Reservoir and are primarily used to capture sluicing flows from Imperial Dam. The storage
9 capability of Laguna Reservoir has diminished from about 1,500 acre-feet (1.9 mcm) to
10 about 400 acre-feet (0.5 mcm) due to sediment accumulation and vegetation growth.
11 Sediment accumulation in the reservoir has occurred primarily due to flood releases that
12 occurred in 1983 and 1984, and flood control or space building releases that occurred
13 between 1985 and 1988 and from 1997 through 1999. Action to restore the lost capacity at
14 the Laguna Reservoir is ongoing. It is anticipated that dredging to restore its capacity will
15 begin in the early 2007 and be completed within a 3 year period, subject to the availability
16 of funds. The environmental compliance process is in progress.

17 **Imperial Dam**

18
19
20 Imperial Dam is the last diversion dam on the Colorado River for United States water users.
21 From the head works at Imperial Dam, the diversions of flows for the United States' and
22 Mexico's water users occur into the All-American Canal on the California side, and into the
23 Gila Gravity Main Canal on the Arizona side of the dam. These diversions supply all the
24 irrigation districts in the Yuma area, in Wellton-Mohawk, in the Imperial and Coachella
25 Valleys, and through Siphon Drop and Pilot Knob to the Northerly International Boundary
26 (NIB) to the Mexicali Valley in Mexico. The diversions also supply much of the domestic
27 and industrial water needs in the Yuma area. Flows arriving at Imperial Dam for calendar
28 year 2006 are expected to be 5.72 maf (7,050 mcm). The flows arriving at Imperial Dam for
29 calendar year 2007 are anticipated to be approximately the same as calendar year 2006.

30
31 Dredging of Imperial Reservoir was completed in June 1, 2006, resulting in the removal of
32 1.2 million cubic yards of material from the reservoir. This dredging is done periodically to
33 remove sediment that might impede diversions to water users from Imperial Dam. This
34 dredging also temporarily increases the storage behind Imperial Dam by about 500 acre-feet.

35 **Gila River Flows**

36
37
38 Severe to extreme drought conditions persisted for water year 2006 throughout the State of
39 Arizona. Exceptional drought conditions persisted throughout southeastern Arizona,
40 contributing to 76 percent of average precipitation being recorded in the Gila River Basin.
41 During water year 2006 no tributary inflow from the Gila River reached the main stem of
42 the Colorado River. By contrast, for water year 2005, tributary inflow from the Gila River
43 Basin that reached the mainstem totaled 0.264 maf (326 mcm).

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1
2 **Additional Regulatory Storage**
3

4 In 2004, Reclamation completed a study that evaluated the needs and developed options for
5 additional water storage facilities on the mainstem of the Colorado River below Parker Dam.
6 The study, developed in cooperation with the Imperial Irrigation District, Coachella Valley
7 Water District, San Diego County Water Authority, and the MWD, recommended that
8 additional storage be constructed at a site north of Drop 2 along the All-American Canal.

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9
10 The proposed Drop 2 reservoir is in the engineering design and environmental compliance
11 and permitting stage. The purpose of the planned 0.008 maf (9.87 mcm) reservoir is the
12 same as Senator Wash and it will be operated similar to Senator Wash to capture extra water
13 in the system, especially during storm events. The reservoir will make up for the loss of
14 water storage at Senator Wash because of the operational restrictions and allow for
15 additional regulatory storage. Additional storage will allow for more efficient management
16 of water below Parker Dam.

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18 Construction of the first phase of the Drop 2 reservoir is scheduled to start in calendar year
19 2007 and be completed in late calendar year 2009, resulting in 0.004 maf (4.9 mcm) of
20 storage. This schedule is subject to the availability of funds and obtaining the necessary
21 permits to perform the work.

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22
23 **Yuma Desalting Plant**
24

25 The Yuma Desalting Plant (YDP) was not operated in calendar year 2006 and is being
26 maintained in a ready reserve status. In calendar year 2006 the amount of water discharged
27 through the Main Outlet Drain (bypass flows) is anticipated to be 0.11 maf (138 mcm) at an
28 approximate concentration of total dissolved solids of 2,430 parts per million (ppm). Water
29 users in the Colorado River Basin have raised concerns over the continued bypass of
30 Wellton-Mohawk agricultural return flow around Morelos Dam to the Cienega de Santa
31 Clara, a wetland of approximately 40,000 acres that is within a Biosphere Reserve in
32 Mexico. These flows do not count as part of Mexico's 1.5 maf (1,850 mcm) allotment under
33 the Treaty of 1944.

34
35 On October 26, 2005, Reclamation submitted to Congress a report that describes activities
36 required to operate the YDP, provides an estimate of how long those activities would take,
37 and presents a current estimate of their anticipated cost. In addition, this report explores
38 interim and/or supplemental opportunities for replacement of water that is bypassed into
39 Mexico, including options that do not potentially have an adverse impact on the Cienega de
40 Santa Clara. Reclamation initiated a public process on September 22, 2005 to investigate
41 options to replace or recover the bypass flows.

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42
43 In January 2005, Commissioner John Keys announced the United States' commitment to
44 demonstrate operation of the YDP at a bi-national meeting of the IBWC. Preparations for
45 the demonstration are well underway and this operation is scheduled to begin in March
46 2007. For the demonstration, the YDP will operate at about 10 percent of full capacity for a

1 | period of 90 days. It is anticipated that about 0.003 maf (3.7 mcm) will be stored in Lake
2 | Mead as a result of recovered bypass flows in calendar year 2007.

3 |
4 | **Lower Basin Demonstration Programs: Intentionally Created Surplus (ICS)**
5 | **and System Conservation (SC) Water**

6 |
7 | **Intentionally Created Surplus (ICS) Water** Reclamation has entered into agreements with
8 | MWD and IID for the creation of Intentionally Created Surplus (ICS) water in 2006 and
9 | 2007^{26,27}. In addition to MWD and IID, other California entities may also participate in this
10 | demonstration program. Through this program the California entities may undertake
11 | extraordinary conservation measures (i.e., land fallowing) to create up to 276,000 acre-feet
12 | (340 mcm) of ICS water that will be stored in Lake Mead in calendar years 2006 and 2007²⁸.
13 | The demonstration program does not provide for the release or use of ICS Water until the
14 | necessary environmental compliance and forbearance agreements have been completed.
15 | Reclamation has received written concurrence from CAP (May 13, 2006) and SNWA (July
16 | 28, 2006) that both entities will not request water apportioned to but unused in California
17 | resulting from the creation of ICS Water pursuant to Article II(B)(6) of the Consolidated
18 | Decree.

19 |
20 | **System Conservation Water.** Reclamation has implemented a System Conservation
21 | Demonstration Program that provides for Reclamation to enter into voluntary arrangements
22 | with entitlement holders in the Lower Basin whereby Reclamation pays the entitlement
23 | holders to fallow land. Water conserved from the land fallowing would remain in Lake
24 | Mead and help mitigate the impacts to Colorado River system storage resulting from the
25 | bypassing of drainage water from the Wellton-Mohawk Irrigation and Drainage District to
26 | the Cienega de Santa Clara. As part of the Demonstration Program, junior water entitlement
27 | holders in the state of the proposed fallowing must not order the conserved water before
28 | Reclamation pays for the fallowing.

29 |
30 | Reclamation has entered into an agreement with MWD for the creation of SC Water in 2006
31 | and 2007^{29,30}. In addition to MWD other entities may also participate in this demonstration
32 | program; however, no other SC Water was considered in this demonstration program, as no
33 | other system conservation agreements have been executed by Reclamation.

34 |
²⁶ “Implement a Demonstration Program to Create Intentionally Created Surplus Water,” between Reclamation and the Metropolitan Water District of Southern California (MWD), dated May 18, 2006.

²⁷ “Implement a Demonstration Program to Create Intentionally Created Surplus Water,” between Reclamation and the Imperial Irrigation District (IID), dated June 26, 2006.

²⁸ In calendar year 2006, it is assumed that 50,000 acre-feet and 1,000 acre-feet would be conserved by MWD and IID, respectively. In calendar year 2007, it was assumed that 89,000 acre-feet and 1,000 acre-feet would be conserved by MWD and IID, respectively.

²⁹ “Implement a Demonstration Program for System Conservation of Colorado River Water,” between Reclamation and the Metropolitan Water District of Southern California (MWD), dated August 15, 2006.

³⁰ In calendar year 2006, it was assumed that 3,000 acre-feet would be conserved. In calendar year 2007, it was assumed that 7,000 acre-feet would be conserved.

³² “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 calendar year 2008.

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

4 Total delivery to Mexico for calendar year 2006 is projected to be approximately 1.530 maf
5 (1,887 mcm), an over-delivery of approximately 0.030 maf (37 mcm). Of the total delivery,
6 approximately 0.140 maf (173 mcm) is projected to be delivered at the Southerly
7 International Boundary (SIB) and 1.390 maf (1,715 mcm) is projected to be delivered at the
8 NIB. The over-deliveries in 2006 resulted from a combination of rejected water from water
9 users after rain storms, side-wash inflow into the Gila and Colorado Rivers, and spills from
10 irrigation facilities below Imperial Dam to the river. It is anticipated that 210 acre-feet will
11 be delivered to Tijuana at the request of the Mexican section of the USIBWC in calendar
12 year 2006.

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13 In 2007, it is anticipated that 0.140 maf (173 mcm) will be delivered to Mexico at the SIB.
14 In accordance with Minute No. 310 and the Emergency Delivery Agreement³², up to 1,200
15 acre-feet per month (1.48 mcm) may be delivered for Tijuana, Baja California. The
16 remainder of Mexico's available water will be delivered at NIB.
17

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18 To further improve control of the deliveries of water from Parker Dam, Senator Wash
19 Reservoir and the reservoirs behind Imperial Dam and Laguna Dam will continue to be
20 operated at lower elevations during periods of potential rain storms to capture flows in
21 excess of water demand at Imperial Dam. Improvements to the river routing software used
22 to schedule the releases from Parker Dam have also reduced the uncertainty in estimating
23 the flows arriving at Imperial Dam, further helping to reduce non-storable flows arriving at
24 Imperial Dam. As mentioned previously, the Drop 2 Reservoir will improve control of
25 water deliveries below Parker Dam once construction is complete.

Deleted: other storage options are also being investigated which will improve the control of deliveries below Parker Dam, when constructed.¶

26
27 Drainage flows to the Colorado River from the Yuma Mesa Conduit and South Gila Conduit
28 are projected to be 0.043 maf (53 mcm) and 0.067 maf (83 mcm), respectively, for calendar
29 year 2006. As stated in Minute 242, the maximum allowable salinity differential is 145 ppm
30 by the United States' measurement or count and 151 ppm by the Mexican count. The
31 salinity differential for calendar year 2006 is projected to be 143 ppm by the United States'
32 count.
33

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34 Mexico has identified four critical months, October through January, regarding improving
35 the quality of water delivered at the SIB. As a matter of comity, the United States has
36 agreed to reduce the salinity of water delivered at SIB. To accomplish the reduction in
37 salinity, the United States constructed a diversion channel to bypass up to 0.008 maf (10
38 mcm) of Yuma Valley drainage water during the four critical months identified by Mexico.
39 This water will be replaced by better quality water from the Minute 242 well field to reduce
40 the salinity at SIB. Currently, the facilities required for real time monitoring and control of
41 the flow and salinity of water delivered to SIB will be fully operational in Fiscal Year 2007.
42 In 2006 and 2007, about 0.008 maf (10 mcm) of water is expected to be spilled to the
43 diversion channel each year for salinity control.
44

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1 **2007 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 2007 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, Deleted: is
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 2007. Under the maximum probable inflow scenario, storage
18 equalization would control the release of water from Lake Powell in water year 2007.
19

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

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

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

1 2007, 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, 2007, is projected to be greater than 14.85 maf (water surface
7 elevation 3,630 feet) and active storage in Lake Powell is greater than active storage in Lake
8 Mead.

9 **Lower Basin Reservoirs**

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

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

22
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 (9,251 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 (9,251 mcm) consumptive use in accordance with Article III(3)(b) of the Operating Criteria
34 and Article II(B)(2) of the Consolidated Decree.

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35
36 The Interim Surplus Guidelines, which became effective February 26, 2001, and were first
37 utilized in calendar year 2002, serve to implement the narrative provisions of Article
38 III(3)(b) of the Operating Criteria and Article II(B)(2) of the Consolidated Decree for the
39 period through 2016. These specific interim surplus guidelines will be used annually by the
40 Secretary to determine the quantity of water available for use within the Lower Division
41 States.

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42
43 Consistent with Section 7 of the Interim Surplus Guidelines, the August 2006 24-Month
44 Study was used to forecast the system storage as of January 1, 2007. Based on this projected
45 elevation, the Partial Domestic Surplus condition will govern releases for use in the states
46 of Arizona, Nevada, and California during calendar year 2007 in accordance with Article

1 | III(3)(b) of the Operating Criteria and Article II(B)(2) of the Consolidated Decree. It should
2 | be noted, however, that the projected releases in 2007 currently reflect demands under
3 | Normal conditions for the Metropolitan Water District of Southern California (MWD),
4 | Central Arizona Project (CAP), and the Southern Nevada Water Authority (SNWA), per
5 | their request. This does not, however, preclude MWD, CAP and SNWA from requesting
6 | Partial Domestic Surplus water in calendar year 2007.

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9 | Article II(B)(6) of the Consolidated Decree allows the Secretary to allocate water that is
10 | apportioned to one Lower Division State but is for any reason unused in that state to another
11 | Lower Division State. This determination is made for one year only, and no rights to
12 | recurrent use of the water accrue to the state that receives the allocated water. Reclamation
13 | does not anticipate any available unused state apportionment for calendar year 2007 at this
14 | time. However, if any unused apportionment is available the Secretary shall allocate any
15 | available unused apportionment for calendar year 2007 in accordance with Article II(B)(6)
16 | of the Consolidated Decree and Section 1(B) of the Interim Surplus Guidelines.

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18 | Water may be made available for diversion pursuant to 43 CFR Part 414³³ to contractors
19 | within the Lower Division States. The Secretary shall make Intentionally Created Unused
20 | Apportionment (ICUA) available to contractors in Arizona, California, or Nevada for the
21 | off-stream storage or consumptive use of water pursuant to individual SIRA agreements and
22 | 43 CFR Part 414. On October 10, 2003, the Secretary approved the ROD for the Inadvertent
23 | Overrun and Payback Policy (IOPP) which became effective January 1, 2004. The IOPP is
24 | in effect during calendar year 2007 with calendar year 2005 paybacks to begin in calendar
25 | year 2007.

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26 | The Colorado River Water Delivery Agreement also requires payback of 2001 and 2002
27 | overruns as noted in Exhibit C of that document. Each district with a payback obligation
28 | under Exhibit C may, at its own discretion, elect to accelerate paybacks in calendar year
29 | 2007. It is anticipated that calendar year paybacks for calendar years 2006 and 2007 will
30 | total 0.073 maf (90 mcm), and 0.075 maf (93 mcm), respectively.

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

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37 | As provided in Section 3 of the Interim Surplus Guidelines, the Secretary shall undertake a
38 | “mid-year review” pursuant to Article I(2) of the Operating Criteria, allowing for the
39 | revision of the current AOP, as appropriate, based on actual runoff conditions which are
40 | greater than projected or demands which are lower than projected. The Secretary shall
41 | revise the determination for the current year only to allow for additional deliveries. Any

³³ 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).

1 revision to the AOP may occur only through the AOP consultation process as required by
2 applicable Federal law.

3
4
5
6 **1944 United States—Mexico Water Treaty**

7
8 Under the most probable, probable minimum, and probable maximum inflow scenarios,
9 water in excess of that required to supply uses in the United States will not be available.
10 Vacant storage space in main stem reservoirs is substantially greater than that required by
11 flood control regulations. Therefore, a volume of 1.5 maf (1,850 mcm) of water will be
12 available to be scheduled for delivery to Mexico during calendar year 2007 in accordance
13 with Article 15 of the 1944 United States-Mexico Water Treaty and Minutes 242 and 310 of
14 the IBWC.

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15
16 Calendar year schedules of the monthly deliveries of Colorado River water are formulated
17 by the Mexican Section of the IBWC and presented to the United States Section before the
18 beginning of each calendar year. The monthly quantity prescribed by those schedules may
19 be increased or decreased by not more than 20 percent of the monthly quantity, upon 30
20 days notice in advance to the United States Section. Any change in a monthly quantity is
21 offset in another month so that the total delivery for the calendar year is unchanged.
22

1 **DISCLAIMER**

2
3 Nothing in this AOP is intended to interpret the provisions of the Colorado River Compact
4 (45 Stat. 1057); the Upper Colorado River Basin Compact (63 Stat. 31); the Utilization of
5 Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Treaty Between the
6 United States of America and Mexico (Treaty Series 994, 59 Stat. 1219); the United
7 States/Mexico agreement in Minute No. 242 of August 30, 1973, (Treaty Series 7708; 24
8 UST 1968); the Consolidated Decree entered by the Supreme Court of the United States in
9 Arizona v. California (547 U.S. (2006)); the Boulder Canyon Project Act (45 Stat. 1057);
10 the Boulder Canyon Project Adjustment Act (54 Stat. 774; 43 U.S.C. 618a); the Colorado
11 River Storage Project Act (70 Stat. 105; 43 U.S.C. 620); the Colorado River Basin Project
12 Act (82 Stat. 885; 43 U.S.C. 1501); the Colorado River Basin Salinity Control Act (88 Stat.
13 266; 43 U.S.C. 1951); the Hoover Power Plant Act of 1984 (98 Stat. 1333); the Colorado
14 River Floodway Protection Act (100 Stat. 1129; 43 U.S.C. 1600); or the Grand Canyon
15 Protection Act of 1992 (Title XVIII of Public Law 102-575, 106 Stat. 4669).

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Deleted: 376 U.S. 340, as amended and supplemented

1 **ATTACHMENT 1**

2

3 Monthly inflow, monthly release, and end of month contents for Colorado River reservoirs
4 (October 2004 through September 2006) under the probable maximum, most probable, and
5 probable minimum inflow scenarios, and historic end of month contents.