

RECLAMATION

Managing Water in the West

DRAFT Annual Operating Plan for Colorado River Reservoirs 2009



U.S. Department of the Interior
Bureau of Reclamation

TABLE OF CONTENTS

INTRODUCTION1
 Authority.....1
 Purpose1
 Summary2
 Upper Basin Delivery2
 Lower Basin Delivery2
 1944 United States-Mexico Water Treaty Delivery4

2008 HYDROLOGY SUMMARY AND RESERVOIR STATUS5

2009 WATER SUPPLY ASSUMPTIONS8

**SUMMARY OF RESERVOIR OPERATIONS IN 2008 AND PROJECTED
2009 RESERVOIR OPERATIONS10**
 Fontenelle Reservoir.....11
 Flaming Gorge Reservoir.....11
 Blue Mesa, Morrow Point, and Crystal Reservoirs (Aspinall Unit)13
 Navajo Reservoir14
 Lake Powell16
 Lake Mead20
 Lakes Mohave and Havasu21
 Bill Williams River22
 Senator Wash and Laguna Reservoirs22
 Imperial Dam23
 Gila River Flows.....23
 Additional Regulatory Storage (Drop 2 Storage Reservoir)23
 Yuma Desalting Plant24
 Intentionally Created Surplus.....25
 Demonstration Program.....25
 System Efficiency ICS.....25
 Tributary Conservation ICS.....26
 System Conservation of Colorado River Water Demonstration
 Program.....26
 Delivery of Water to Mexico.....26

2009 DETERMINATIONS.....28
 Upper Basin Reservoirs28
 Lower Basin Reservoirs29
 1944 United States-Mexico Water Treaty31

DISCLAIMER32

ATTACHMENT I.....33

LIST OF TABLES

Table 1. Reservoir Conditions on October 1, 2008 (English Units)	7
Table 2. Reservoir Conditions on October 1, 2008 (Metric Units)	7
Table 3. Projected Unregulated Inflow into Lake Powell for Water Year 2009 (English Units: maf).....	9
Table 4. Projected Unregulated Inflow into Lake Powell for Water Year 2009 (Metric Units: mcm).....	9
Table 5. Glen Canyon Dam Release Restrictions (Glen Canyon Dam Operating Criteria)	18
Table 6. Projected Monthly Releases from Lake Powell in Water Year 2009 Under Most Probable Inflow Conditions (English Units).....	19
Table 7. Projected Monthly Releases from Lake Powell in Water Year 2009 Under Most Probable Inflow Conditions (Metric Units).....	19

1 **INTRODUCTION**

2
3 **Authority**

4
5 This 2009 Annual Operating Plan (AOP) was developed in accordance with Section 602 of
6 the Colorado River Basin Project Act (Public Law 90-537); the Criteria for Coordinated
7 Long-Range Operation of Colorado River Reservoirs Pursuant to the Colorado River Basin
8 Project Act of September 30, 1968 (Operating Criteria), as amended, promulgated by the
9 Secretary of the Interior (Secretary); and Section 1804(C)(3) of the Grand Canyon
10 Protection Act (Public Law 102-575). Section 602(b) of the Colorado River Basin Project
11 Act requires that the Secretary annually prepare “a report describing the actual operation
12 under the adopted criteria [i.e., the Operating Criteria] for the preceding compact water year
13 [i.e., from October 1 to September 30] and the projected operation of the current year.”
14

15 | In accordance with the Operating Criteria, the AOP must be developed and administered
16 consistent with applicable Federal laws; the Utilization of Waters of the Colorado and
17 Tijuana Rivers and of the Rio Grande, the Treaty Between the United States of America and
18 Mexico, signed February 3, 1944 (1944 United States-Mexico Water Treaty); interstate
19 compacts; court decrees; the Colorado River Water Delivery Agreement (69 *Federal*
20 *Register* 12202, March 15, 2004); the Record of Decision¹ for Colorado River Interim
21 Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and
22 Lake Mead (Interim Guidelines) (73 *Federal Register* 19873, April 11, 2008); and other
23 documents relating to the use of the waters of the Colorado River, which are commonly and
24 collectively known as the “Law of the River.”
25

Deleted: the Colorado River Basin Project Act and

26 The 2009 AOP was prepared by the Bureau of Reclamation (Reclamation) in consultation
27 with the seven Basin States Governors’ representatives; the Upper Colorado River
28 Commission; Native American tribes; appropriate Federal agencies; representatives of the
29 academic and scientific communities, environmental organizations, and the recreation
30 industry; water delivery contractors; contractors for the purchase of Federal power; others
31 interested in Colorado River operations; and the general public, through the Colorado River
32 Management Work Group (CRMWG).
33

34 Article I(2) of the Operating Criteria allows for revision of this 2009 AOP by June of 2009
35 to reflect the current hydrologic conditions. This process for revision is further described in
36 Section 7.C of the Interim Guidelines. Any revision to the AOP may occur only through the
37 AOP consultation process as required by applicable Federal law.
38

39 **Purpose**

40
41 The purposes of the AOP are to determine or address: (1) the projected operation of the
42 Colorado River reservoirs to satisfy project purposes under varying hydrologic and climatic
43 conditions; (2) the quantity of water considered necessary to be in storage in the Upper
44 Basin reservoirs as of September 30, 2009, pursuant to Section 602(a) of the Colorado River
45 Basin Project Act; (3) water available for delivery pursuant to the 1944 United States-

¹ A Record of Decision (ROD) adopting the Interim Guidelines was signed by the Secretary on December 13, 2007.

1 Mexico Water Treaty and Minutes No. 242 and 310 of the International Boundary and
2 Water Commission, United States and Mexico (IBWC); (4) whether the reasonable
3 consumptive use requirements of mainstream users in the Lower Division States will be met
4 under a “Normal,” “Surplus,” or “Shortage” Condition as outlined in Article III of the
5 Operating Criteria and as implemented by the Interim Guidelines; and (5) whether water
6 apportioned to, but unused by one or more Lower Division States, exists and can be used to
7 satisfy beneficial consumptive use requests of mainstream users in other Lower Division
8 States as provided in the Consolidated Decree of the Supreme Court of the United States in
9 *Arizona v. California*, 547 U.S. 150 (2006) (Consolidated Decree).

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

15
16 Since the hydrologic conditions of the Colorado River Basin can never be completely known
17 in advance, the AOP addresses the operations resulting from three different hydrologic
18 scenarios: the probable maximum, most probable, and probable minimum reservoir inflow
19 conditions. River operations under the plan are modified during the year as runoff
20 predictions are adjusted to reflect existing snowpack, basin storage, and flow conditions.
21
22

23 Summary

24
25 **Upper Basin Delivery.** Annual releases from Lake Powell during water year 2009 shall be
26 made consistent with Section 6.B (Upper Elevation Balancing Tier) of the Interim
27 Guidelines. Consistent with Section 6.B.1, the water year release from Lake Powell in 2009
28 shall be 8.23 million acre-feet (maf) (10,150 million cubic meters [mcm]) unless provisions
29 in Section 6.B.3 occur. Consistent with Section 6.B.3 of the Interim Guidelines, if the April
30 2009 24-Month Study projects the September 30, 2009, Lake Powell elevation to be greater
31 than elevation 3,639 feet ([1,109.2 meters](#)), Section 6.A (Equalization Tier) of the Interim
32 Guidelines will govern the release of water from Lake Powell for the remainder of water
33 year 2009 (through September 2009).
34

Deleted: R

35 **Lower Basin Delivery.** Under the most probable inflow scenario, downstream deliveries
36 are expected to control the releases from Hoover Dam. Taking into account (1) the existing
37 water storage conditions in the basin, (2) the most probable near-term water supply
38 conditions in the basin, and (3) Section 2.B.5 of the Interim Guidelines, the Intentionally
39 Created Surplus (ICS) Surplus Condition is the criterion governing the operation of Lake
40 Mead for calendar year 2009 in accordance with Article III(3)(b) of the Operating Criteria
41 and Article II(B)(2) of the Consolidated Decree.
42

43 No unused apportionment for calendar year 2009 is anticipated. If any unused
44 apportionment becomes available after adoption of this AOP, Reclamation, on behalf of the
45 Secretary, shall allocate any such available unused apportionment for calendar year 2009 in
46 accordance with Article II(B)(6) of the Consolidated Decree.
47

1 Water may be made available for diversion pursuant to 43 CFR Part 414² to contractors
2 within the Lower Division States. The Secretary shall make Intentionally Created Unused
3 Apportionment (ICUA) available to contractors in Arizona, California, or Nevada for the
4 off-stream storage or consumptive use of water pursuant to individual Storage and Interstate
5 Release Agreements (SIRA) and 43 CFR Part 414. In calendar year 2008, approximately
6 0.025 maf (30.84 mcm) of ICUA water stored in Arizona is anticipated to be recovered for
7 use in California³ by the Metropolitan Water District of Southern California (MWD). In
8 calendar year 2008, approximately 0.015 maf (18.50 mcm) of ICUA water from Nevada is
9 anticipated to be stored in California by MWD.⁴ In calendar year 2009, up to 0.035 maf
10 (43.17 mcm) of ICUA water stored in Arizona is anticipated to be recovered for use in
11 California by MWD. The Southern Nevada Water Authority (SNWA) may propose to make
12 additional unused Nevada basic apportionment available for storage by MWD in 2009.

Deleted: from 0.015 to 0.025 maf
(18.50 to 30.84 mcm) of

14 The Inadvertent Overrun and Payback Policy (IOPP), which became effective January 1,
15 2004, will be in effect during calendar year 2009.⁵

16 The Colorado River Water Delivery Agreement⁶ requires payback of California overruns
17 occurring in 2001 and 2002 as noted in Exhibit C of that document. Each district with a
18 payback obligation under Exhibit C may at its own discretion elect to accelerate paybacks.

19 In calendar years 2008 and 2009, paybacks occurring in California result from Exhibit C
20 obligations and IOPP overruns. During calendar year 2008, the California paybacks are
21 projected to total 0.044 maf (54.27 mcm). In calendar year 2009, California paybacks are
22 projected to total 0.004 maf (4.689 mcm).

Deleted: acre-fee

23 During calendar year 2008, the Arizona paybacks are projected to total 0.0006 maf (0.678
24 mcm). In calendar year 2009, Arizona paybacks are projected to total 0.0003 maf (0.370
25 mcm).

Deleted: acre-fee

Deleted: acre-fee

26 Nevada incurred no payback obligation for 2008. In calendar year 2009, Nevada paybacks
27 are projected to total 0.00013 maf (0.160 mcm).

Deleted: acre-fee

28 The Interim Guidelines adopted the ICS mechanism that among other things encourages the
29 efficient use and management of Colorado River water in the Lower Basin. ICS may be
30 created and delivered in 2009 pursuant to the Interim Guidelines and appropriate delivery
31 and forbearance agreements.

² Off-stream Storage of Colorado River Water; Development and Release of Intentionally Created Unused Apportionment in the Lower Division States: Final Rule (43 CFR Part 414; 64 *Federal Register* 59006, November 1, 1999).

³ Amendatory Agreement to Agreement between the Central Arizona Water Conservation District and the Metropolitan Water District of Southern California for a Demonstration Project on Underground Storage of Colorado River Water, December 1, 1994.

⁴ Storage and Interstate Release Agreement among The United States of America, acting through the Secretary of the Interior; The Metropolitan Water District of Southern California; the Southern Nevada Water Authority; and the Colorado River Commission of Nevada, October 21, 2004.

⁵ Record of Decision for Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions, Final Environmental Impact Statement, October 10, 2003.

⁶ Colorado River Water Delivery Agreement: Federal Quantification Settlement Agreement for Purposes of Section 5(B) of Interim Surplus Guidelines, October 10, 2003.

1 In 2006, Reclamation implemented an ICS Demonstration Program in the Lower Basin. The
2 ICS Demonstration Program allowed entitlement holders to undertake extraordinary
3 conservation activities in 2006 and 2007 to reduce their approved annual consumptive use of
4 Colorado River water and account for that conserved water in Lake Mead. The ICS credits
5 created and accounted for under the ICS Demonstration Program becomes available for
6 delivery pursuant to the Interim Guidelines and appropriate delivery and forbearance
7 agreements. In calendar year 2008, MWD is anticipated to recover the balance of ICS
8 credits created under the ICS Demonstration Program.⁷

9 In 2006, Reclamation implemented the System Conservation of Colorado River Water
10 Demonstration Program (SC Demonstration Program) in the Lower Basin which allows
11 entitlement holders to participate in voluntary conservation to conserve a portion of their
12 approved annual consumptive use of Colorado River water in exchange for appropriate
13 compensation provided by Reclamation. The water conserved (SC Water) is retained in
14 Lake Mead to assist in providing an interim, supplemental source of water to replace the
15 drainage water from the Wellton-Mohawk Irrigation and Drainage District (WMIDD) that is
16 bypassed to the Cienega de Santa Clara and the reject stream from operation of the Yuma
17 Desalting Plant. In calendar year 2008, approximately 0.003 maf (3.701 mcm) of SC Water
18 is projected to be created by Yuma Mesa Irrigation and Drainage District (YMIDD) and
19 retained in Lake Mead.⁸

Deleted: 0.004

21 In 2007, Reclamation signed a funding agreement for the construction of the Drop 2 Storage
22 Reservoir. In exchange for project funding, SNWA has received 0.40 maf (493.4 mcm) and
23 MWD and the Central Arizona Water Conservation District (CAWCD) have each received
24 0.100 maf (123.3 mcm) of System Efficiency ICS credits. In calendar year 2008, MWD is
25 anticipated to take delivery of 0.034 maf (41.94 mcm) of its System Efficiency ICS credits,
26 and may request delivery of up to 0.034 maf (41.94 mcm) of these credits in 2009.

Deleted: 0,000

Deleted: acre-feet

Inserted: acre-feet

Deleted: 0,000

Inserted: 0,000

Deleted: acre-feet

Inserted: acre-feet

Deleted: these

28 Upon approval by the Secretary of an ICS creation plan, SNWA anticipates creating and
29 taking delivery of Tributary Conservation ICS credits from projects on the Muddy and
30 Virgin Rivers. SNWA anticipates creating 0.015 maf (18.50 mcm) of Tributary
31 Conservation ICS credits in 2008, and 0.030 maf (37.01 mcm) in 2009.

Formatted: Font color: Blue, Highlight

33 **1944 United States-Mexico Water Treaty Delivery.** A volume of 1.500 maf (1,850 mcm)
34 of water will be available to be scheduled for delivery to Mexico during calendar year 2009
35 in accordance with Article 15 of the 1944 United States-Mexico Water Treaty and Minutes
36 No. 242 and 310 of the IBWC.

⁷ Agreement between the Bureau of Reclamation and MWD to Implement a Demonstration Program to Create Intentionally Created Surplus Water, May 18, 2006.

⁸ Agreement between the Bureau of Reclamation and the Yuma Mesa Irrigation and Drainage District to Implement a Demonstration Program for System Conservation of Colorado River Water, February 4, 2008.

2008 HYDROLOGY SUMMARY AND RESERVOIR STATUS

Above average streamflows were observed in the Colorado River Basin during 2008. Unregulated⁹ inflow to Lake Powell in water year 2008 was 12,938 maf (15,959 mcm), or 107 percent of the 30-year average¹⁰ which is 12.06 maf (14,880 mcm). Unregulated inflow to Flaming Gorge, Blue Mesa, and Navajo Reservoirs was 61, 140, and 125 percent of average, respectively.

Basin-wide precipitation during water year 2008 initially trended drier with near average conditions occurring in October 2007 followed by well below average conditions in November. In December, however, precipitation rebounded and was well above average in the basin during December, January, and February. Snowpack conditions on March 1, 2008, were 124 percent of average. By mid-April, the snowpack was 122 percent of average.

Snowpack conditions trended drier in water year 2008 in the Upper Green River Basin in comparison to the Upper Colorado River, Gunnison River, and San Juan River basins. On April 1, 2008, the Upper Green River Basin snowpack measured 95 percent of average while the Upper Colorado, Gunnison, and San Juan Basins measured 119 percent, 137 percent, and 125 percent of average, respectively.

Inflows to Lake Powell during April and May were below forecasted levels due to below average temperatures. By late May, however, inflows increased to more than 75,000 cubic feet per second (cfs) (2,123.8 cms) with Lake Powell elevations increasing by more than 1 foot per day. The observed unregulated inflow volume to Lake Powell during the April through July period was 8.84 maf (10,900 mcm), 111 percent of average.

Inflow to Lake Powell has been below average in seven out of the past nine years. While drought conditions eased in 2005 and 2008, and the inflow in 2006 and 2007 was not as low as what occurred in 2000 through 2004, drought conditions in the Colorado River Basin persist. Provisional calculations of natural flow for the Colorado River at Lees Ferry, Arizona, show that the average natural flow since calendar year 2000 (2000-2008, inclusive) is the lowest nine-year average in over 100 years of record keeping on the Colorado River.

Tributary inflows in the Lower Basin were below average for water year 2008 except for the Little Colorado River. Although drought conditions eased for central Arizona, drought conditions persisted for water year 2008 throughout the Lower Basin and the southwestern United States.¹¹ Abnormally dry to moderate drought conditions persisted throughout western and southern Arizona, southern California, and southern Nevada. However, because of above average snowpack on the Gila, Salt, and Verde River watersheds, the Gila River Basin experienced 112 percent of average precipitation for water year 2008. During

Comment: Change "Headwater Basin" to "headwater" and then add Basins at the end of the sentence.
Deleted: Headwater Basin

Comment: Change "resulting from" to "due to"
Deleted: resulting from
Comment: J. Shields suggested change. Change word 'by' to 'to'.
Deleted: by
Deleted: nine

Comment: Suggested that this sentence should incorporate provisional 2008 Natural Flows. If we do this then it would NOT be the lowest 9 year average. It would be the 2nd lowest 9 year average because 2008 was above average. The lowest 9 year average would be 1999-2007 at 11.68 maf with 2000-2008 coming in 2nd at 11.77 maf.
Deleted: eight

Deleted: b
Formatted: Font color: Blue

⁹ 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.

¹⁰ Inflow statistics throughout this document will be compared to the 30-year average, 1971-2000, unless otherwise noted.

¹¹ From the U.S. Drought Monitor website: <http://drought.unl.edu/dm/monitor.html>, August 26, 2008

Deleted: .
Formatted: Hyperlink

1 water year 2008 no tributary inflow from the Gila River reached the mainstream of the
2 Colorado River.¹²

3
4 Tributary inflow from the Little Colorado River for water year 2008 reflected above average
5 conditions in northern Arizona. Tributary inflow from the Little Colorado for water year
6 2008 totaled 0.218 maf (268.9 mcm), or 121 percent of the long-term average.¹³ By
7 contrast, tributary inflow from the Bill Williams River into the mainstream totaled 0.037
8 maf (45.64 mcm) for water year 2008, or 36 percent of the long-term average. Tributary
9 inflow from the Virgin River for water year 2008 experienced below average conditions,
10 totaling 0.123 maf (152.0 mcm), or 71 percent of the long-term average.

Comment: Suggested that footnote should be behind period here.

Deleted: .

11
12 Above average inflow to Colorado River reservoirs in 2008 resulted in a net gain in the
13 Colorado River total system storage in the amount of 3.032 maf (3,740 mcm). Reservoir
14 storage in Lake Powell experienced an increase during water year 2008, increasing by 3.513
15 maf (4,333 mcm). Reservoir storage in Lake Mead declined during water year 2008 by
16 0.562 maf (693 mcm). At the beginning of water year 2008, Colorado River total system
17 storage was 56 percent of capacity. As of September 30, 2008, total system storage was 57
18 percent of capacity.

19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35

¹² Tributary inflow from the Gila River to the mainstream is very sporadic. These flows occur very seldom and when they do they are typically of high magnitude.

¹³ The basis for the long-term average of tributary inflows in the Lower Basin is natural flow data from 1906 to 2005. Additional information regarding natural flows may be found at <http://www.usbr.gov/lc/region/g4000/NaturalFlow/current.html>.

Deleted: average

1 Tables 1 and 2 list the October 1, 2008, reservoir vacant space, live storage, water elevation,
 2 percent of capacity, change in storage, and change in water elevation during water year
 3 2008.

4 **Table 1. Reservoir Conditions on October 1, 2008 (English Units)**

Reservoir	Vacant Space (maf)	Live Storage (maf)	Water Elevation (ft)	Percent of Capacity (%)	Change in Storage* (maf)	Change in Elevation* (ft)
Fontenelle	0.064	0.281	6,497.6	81	0.095	14.2
Flaming Gorge	0.717	3.033	6,021.5	81	-0.030	-0.8
Blue Mesa	0.149	0.680	7,502.3	82	-0.007	-0.8
Navajo	0.338	1.357	6,060.7	80	-0.153	-11.4
Lake Powell	9.42	14.90	3,630.4	61	2.969	28.54
Lake Mead	13.94	11.94	1,105.0	46	-0.561	-6.1
Lake Mohave	0.246	1.564	638.0	86	0.019	0.7
Lake Havasu	0.063	0.557	446.8	90	-0.18	-1.0
-----	-----	-----	-----	-----	-----	-----
Totals	24.94	34.31		57.9	2.314	

5 * From October 1, 2007, to September 30, 2008.

6 **Table 2. Reservoir Conditions on October 1, 2008 (Metric Units)**

Reservoir	Vacant Space (mcm)	Live Storage (mcm)	Water Elevation (m)	Percent of Capacity (%)	Change in Storage* (mcm)	Change in Elevation* (m)
Fontenelle	79	347	1,980.5	81	117	4.3
Flaming Gorge	884	3,742	1,835.4	81	-37	-0.3
Blue Mesa	184	839	2,286.7	82	-8	-0.2
Navajo	417	1,673	1,847.3	80	-189	-3.5
Lake Powell	11,621	18,377	1,106.5	61	3,662	8.7
Lake Mead	17,191	14,732	336.8	46	-692	-1.8
Lake Mohave	303	1,929	194.5	86	24	0.2
Lake Havasu	77	687	136.2	90	-23	-0.3
-----	-----	-----	-----	-----	-----	-----
Totals	30,757	42,326		57.9	2,854	

7 * From October 1, 2007, to September 30, 2008.

8
 9
 10

2009 WATER SUPPLY ASSUMPTIONS

For 2009 operations, three reservoir unregulated inflow scenarios were developed and analyzed and are labeled as probable maximum, most probable, and probable minimum. The attached graphs show these inflow scenarios with associated release patterns and end-of-month contents for each reservoir.

There is considerable uncertainty associated with streamflow forecasts and reservoir operating plans made a year in advance. The National Weather Service's Colorado Basin River Forecast Center developed the inflow for the probable maximum (10 percent exceedance), most probable (50 percent exceedance), and probable minimum (90 percent exceedance) inflow scenarios in 2009 using the Ensemble Streamflow Prediction (ESP) model. The ESP model accounts for antecedent streamflows as well as current soil moisture levels with a continuous soil moisture accounting model known as the Sacramento Soil Moisture Accounting Model. The most probable unregulated inflow for Lake Powell in water year 2009 is 11.00 maf (13,570 mcm), or 91 percent of average. The probable minimum unregulated inflow to Lake Powell in water year 2009 is 4.00 maf (4,930 mcm), or 30 percent of average. The probable maximum unregulated inflow is 18.00 maf (22,200 mcm), or 143 percent of average. The three inflow scenarios for Lake Powell are shown in Tables 3 and 4.

Inflows to the mainstream from Lake Powell to Lake Mead, Lake Mead to Lake Mohave, and Lake Mohave to Lake Havasu are forecasted using historic data over the five-year period of January 2003 through December 2007, inclusive. The last five years of historic data are being used to best represent most recent hydrologic conditions for operational forecasts. Most probable forecasted side inflows into each reach are the arithmetic mean of the five-year record. The probable maximum and probable minimum forecasts for the reach between Lake Powell and Lake Mead are the 10 percent exceedance and 90 percent exceedance, respectively, of the five-year record. The most probable side inflow into Lake Mead during water year 2009 is 0.931 maf (1,148 mcm). The probable minimum side inflow into Lake Mead is 0.494 maf (609 mcm). The probable maximum side inflow is 1.598 maf (1,971 mcm).

The monthly volumes of inflow resulting from these assumptions were input into Reclamation's monthly reservoir simulation model and used to plan reservoir operations for 2009. Starting with October 1, 2008, reservoir storage conditions, the monthly releases for each reservoir were adjusted until release and storage levels best accomplished project purposes.

Graphs of the projected 2009 inflows, releases, and storages for each hydrologic scenario are presented in Attachment I.

Deleted: Although t

Deleted: , these projections are valuable in analyzing probable impacts on project uses and purposes

Comment: Insert the word "model" here.

Comment: Suggested that this number should be closer to 100%. Should remind workgroup that average is 1971-2000 average which does not include drought years. Our projections in AOP are 1976 to 2005 which does include drought conditions. Actually 93% of the 1971-2000 numbers is about right.

Deleted: Side i

1
2
3

**Table 3. Projected Unregulated Inflow into Lake Powell for Water Year 2009
(English Units: maf)¹⁴**

Comment: Footnote below should be updated. The years should be marched forward by 1 year to be correct. Also remove the extra '-'.

Time Period	Probable Minimum	Most Probable	Probable Maximum
10/08–12/08	0.73	1.46	1.98
1/09 – 3/09	0.79	1.41	1.75
4/09– 7/09	2.15	7.18	12.61
8/09 – 9/09	0.33	0.94	1.66
10/09 – 12/09	1.55	1.55	1.55
WY 2009	4.00	11.00	18.00
CY 2009	4.81	11.00	17.56

4
5
6
7
8
9
10
11

**Table 4. Projected Unregulated Inflow into Lake Powell for Water Year 2009
(Metric Units: mcm)**

Time Period	Probable Minimum	Most Probable	Probable Maximum
10/08 –12/08	910	1,800	2,450
1/09–3/09	970	1,740	2,160
4/09 –7/09	2,650	8,860	15,550
8/09 –9/09	410	1,160	2,040
10/09 –12/09	1,910	1,910	1,910
WY 2009	4,930	13,570	22,200
CY 2009	5,940	13,680	21,660

¹⁴ All values in Tables 3 and 4 are forecasted inflows with the exception of the values for 10/09 – 12/09. The values for this period are the average unregulated inflow from 1976-2005. The calendar year totals in Tables 3 and 4 also reflect the average values for the 10/09-12/09 time period.

1 **SUMMARY OF RESERVOIR OPERATIONS IN 2008 AND**
2 **PROJECTED 2009 RESERVOIR OPERATIONS**
3

4 The regulation of the Colorado River has had effects on aquatic and riparian resources.
5 Controlled releases from dams have modified temperature, sediment load, and flow patterns,
6 resulting in increased productivity of some introduced aquatic resources and the
7 development of economically significant sport fisheries. However, these same releases have
8 detrimental effects on endangered and other native species. Operating strategies designed to
9 protect and enhance aquatic and riparian resources have been established through the
10 National Environmental Policy Act (NEPA) compliance at several locations in the Colorado
11 River Basin.
12

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

23 Modifications to planned operations may be made based on changes in forecast conditions
24 or other relevant factors. Consistent with the Upper Colorado River Endangered Fish
25 Recovery Program (Upper Colorado Recovery Program),¹⁶ the San Juan River Basin
26 Recovery Implementation Program (San Juan Recovery Program),¹⁷ Section 7 consultations
27 under the Endangered Species Act (ESA), and other downstream concerns, modifications to
28 monthly operation plans may be based on other factors in addition to changes in stream flow
29 forecasts. Decisions on spring peak releases and downstream habitat target flows may be
30 made midway through the runoff season. Reclamation will conduct meetings with the U.S.
31 Fish and Wildlife Service (Service), other Federal agencies, representatives of the Basin
32 States, and with public stakeholder work groups to facilitate the discussions necessary to
33 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 (ROD) to
40 begin implementation of the LCR MSCP.¹⁸ Reclamation, in consultation and partnership
41 with a Steering Committee made up of representatives from 56 participating entities, is the

¹⁵ Additional information on the AMWG can be found at www.usbr.gov/uc/rm/amp.

¹⁶ Additional information on the Upper Colorado Recovery Program can be found at <http://coloradoriverrecovery.fws.gov>.

¹⁷ Additional information on the San Juan Recovery Program can be found at www.fws.gov/southwest/sjrip.

¹⁸ Additional information on the LCR MSCP can be found at <http://www.lcrmscp.gov>.

1 primary implementing agency. The LCR MSCP is currently meeting the goals outlined in
2 the habitat conservation plan.

3
4 The following paragraphs discuss the 2008 and most probable projected 2009 operation of
5 each of the reservoirs with respect to applicable provisions of compacts, the Consolidated
6 Decree, statutes, regulations, contracts, and instream flow needs for maintaining or
7 improving aquatic resources where appropriate.

9 Fontenelle Reservoir

10 Hydrologic conditions in water year 2008 in the Upper Green River Basin were slightly
11 below average when compared to the historic record for the reservoir. The April through
12 July inflow to Fontenelle Reservoir during water year 2008 was 0.582 maf (712 mcm),
13 which was 68 percent of average. Though conditions were well above average in the rest of
14 the Upper Colorado River Basin, the Upper Green River Basin was below average and was
15 classified as continuing to be in drought. Inflow to Fontenelle Reservoir has been below
16 average for nine consecutive years.

17
18 Fontenelle Reservoir filled in 2008 and bypass releases were necessary in order to safely
19 route the spring runoff. Inflow peaked at 6,225 cfs (176 cubic meters per second [cms]) on
20 June 27, 2008. Releases from Fontenelle Reservoir increased from a baseflow of 700 cfs
21 (19.8 cms) to powerplant capacity (approximately 1,700 cfs, 48 cms) during the spring
22 runoff period. Bypass releases up to 2,500 cfs (70.8 cms) were sustained for a total of 11
23 days in July, including ramping days. The resulting peak releases of 4,191 cfs (119 cms)
24 occurred on July 11, 2008. The peak elevation of Fontenelle Reservoir during water year
25 2008 was 6,505.7 feet (1,982.9 meters) above sea level which occurred on July 31, 2007.
26 This elevation is 0.3 feet (0.1 meters) below the spillway crest elevation.

27
28
29 The most probable April through July inflow to Fontenelle Reservoir during water year 2009
30 is 0.780 maf (962 mcm), or 103 percent of average. This volume far exceeds the 0.345 maf
31 (426 mcm) storage capacity of Fontenelle Reservoir. For this reason, the most probable and
32 probable maximum inflow scenarios require releases during the spring that exceed the
33 capacity of the powerplant to avoid uncontrolled spills from the reservoir. It is very likely
34 that Fontenelle Reservoir will fill during water year 2009. In order to minimize high spring
35 releases and to maximize downstream water resources and power production, the reservoir
36 will most likely be drawn down to about elevation 6,468 feet (1,971 meters) by early April
37 2009, which is five feet (1.5 meters) above minimum power pool, and corresponds to a
38 volume of 0.111 maf (137 mcm) of live storage.

40 Flaming Gorge Reservoir

41 Inflow to Flaming Gorge Reservoir during water year 2008 was below average. Unregulated
42 inflow in water year 2008 was 1.061 maf (1,308 mcm), which is 61 percent of average.
43 Flaming Gorge Reservoir did not fill during water year 2008. On October 1, 2007, the
44 beginning of water year 2008, the reservoir elevation was 6,022.3 feet (1,835.6 meters). The
45 reservoir elevation showed an overall decrease during water year 2008 with an ending water
46 year (September 30, 2008) reservoir elevation of 6,021.49 feet (1,835.35 meters). The
47 water year ending reservoir elevation was 18.51 feet (5.64 meters) below the full pool
48

Comment: Suggested change:

Remove "was below average and" from previous line.

Replace "being in" with "continuing to be in"

Deleted: being

Comment: Remove comma and the word "the" here.

Deleted: , the sto

Comment: Change "during" to "coinciding with"

Deleted: increased

Deleted: and ended water year 2008 (on September 30, 2008) at an elevation of

1 elevation of 6,040.0 feet (1,841.0 meters) which corresponds to an available storage space of
2 0.716 maf (884 mcm).

3
4 Reclamation operated Flaming Gorge Dam in compliance with the Flaming Gorge Record
5 of Decision (Flaming Gorge ROD) in 2008. The hydrologic conditions during the spring of
6 2008 were designated as average. Reclamation convened the Flaming Gorge Technical
7 Working Group (FGTWG), comprised of the Service, Western Area Power Administration
8 (Western), and Reclamation personnel. The FGTWG proposed to Reclamation that the
9 Green River measured at the Jensen, Utah, stream gauge be managed to maintain flows at or
10 above 15,000 cfs (425 cms) for a minimum of five consecutive days during the peak flows
11 of the Yampa River. The Yampa River Basin received significant amounts of moisture and
12 the FGTWG agreed that if flows at Jensen, Utah, were at or above 18,600 cfs (526.7 cms)
13 for at least 10 days, Reclamation should consider managing river flows to achieve the
14 18,600 cfs (526.7 cms) target at Jensen, Utah, for 14 days if reasonably possible.

Deleted: a technical working group

Deleted: which proposed

Deleted: technical working group

Deleted: w

Deleted: using the bypass tubes

15
16 Releases from Flaming Gorge Reservoir were increased to powerplant capacity of 4,300 cfs
17 (121.8 cms) on May 17, 2008, in anticipation of peak flows on the Yampa River. On June 6,
18 2008, as a result of releases from Flaming Gorge Dam and flows on the Yampa River, the
19 flows in the Green River at Jensen reached 23,875 cfs (676 cms). Releases were maintained
20 at powerplant capacity until June 15, 2008, when the flows in the Green River at Jensen
21 dropped below 14,000 cfs (396 cms). Flows in the Green River at Jensen remained above
22 15,000 cfs (425 cms) from May 21, 2008, to June 14, 2008 (24 days), with 14 days of flows
23 greater than 18,600 cfs. The use of the bypass tubes was not required to meet these flow
24 objectives. Releases from Flaming Gorge Reservoir were reduced by 500 cfs (14 cms) per
25 day beginning on June 15, 2008.

Comment: The following sentence was unclear to the group. When were these releases (1225 cfs) reached and maintained?

Comment: J. Shields suggested:

State here what is planned in more detail.

Deleted: Releases were maintained at 1,225 cfs (35 cms) during June 2008. Releases were scheduled from July through September according to the constraints of the Flaming Gorge ROD.

26
27 In June 2008, hydrologic conditions deteriorated from average to a moderately dry.
28 Reclamation convened the FGTWG to develop a flow proposal for the Green River during
29 the base flow period. The FGTWG proposed to Reclamation that flows in the Green River,
30 during the base flow period, should fall within the average range, as described in the
31 Flaming gorge Final Impact Statement for the Action Alternative to better match the flow
32 conditions that occurred during the spring peak when average targets were achieved.
33 Additionally, the Upper Colorado River Endangered Species Recovery Program requested
34 research flows of 1,500 cfs (42.48 cms) in the Green River below Flaming Gorge Dam
35 during the base flow period through September 30, 2008. Releases reached 1,500 cfs (42.48
36 cms) on June 25, 2008, and were maintained at the level through September 30, 2008.

37
38 During water year 2009, Flaming Gorge Dam will continue to be operated in accordance
39 with the Flaming Gorge ROD. High spring releases are scheduled to occur in 2009, timed
40 with the Yampa River's spring runoff peak flow, followed by lower summer and autumn
41 base flows. Under the most probable scenario, releases of 1,300 cfs (36.8 cms) will begin
42 on October 1, 2008, and continue through February 28, 2009. Beginning March 1, 2009,
43 releases will decrease to 800 cfs (22.65 cms) and will likely remain at that level until the
44 beginning of the 2009 high spring peak release. Western is working with the Utah
45 Department of Wildlife Resources to study effects downstream of a double-peak fluctuating
46 flow pattern. Reclamation will be considering an operation regime that includes double
47 peaks during the winter months of water year 2009 depending on water availability.
48

Deleted: in the winter and early spring

1 | The Upper Colorado River Endangered Species Recovery Program, in coordination with
2 | Reclamation, the Service, and Western, is conducting studies associated with floodplain
3 | inundation. Such studies include: improving connectivity of floodplain habitats, identifying
4 | ways to improve entrainment of larval razorback suckers into floodplain habitats,
5 | maintaining the river channel, restoring natural variability of the river system, and analyzing
6 | possibilities for meeting the goals of the Flow and Temperature Recommendations for
7 | Endangered Fishes in the Green River downstream of Flaming Gorge Dam at lower peak
8 | flow levels where feasible.

Comment: Suggested change:

"which includes" replaces "in coordination with".

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

11 |
12 | Above average snowpack conditions prevailed in the Gunnison Basin during water year
13 | 2008. Snow measurement sites in the basin reported above average moisture throughout the
14 | winter and into the spring of 2008. The April through July unregulated runoff into Blue
15 | Mesa Reservoir in 2008 was 1,006 maf (1,241 mcm), which was 140 percent of average.
16 | Water year 2008 unregulated inflow into Blue Mesa Reservoir was 1,348 maf (1,663 mcm),
17 | which was 147 percent of average. Blue Mesa Reservoir came close to filling in 2008
18 | reaching a peak elevation of 7,511.87 feet (2,289.6 meters) on July 31, 2008, 7.5 feet (2.3
19 | meters) from full pool. Storage in Blue Mesa Reservoir increased during water year 2008
20 | by 0.680 maf (839 mcm). Storage in Blue Mesa Reservoir on September 30, 2008, was 0.735
21 | maf (839 mcm), or 82 percent of capacity.

Deleted: essentially filled

22 |
23 | Releases from Aspinall Unit reservoirs in 2008 were much above normal levels. Releases
24 | from the Aspinall Unit provided for a flow of 650 to 1,100 cfs (18.4 to 31.1 cms) from
25 | October 1, 2007, to January 9, 2008, in the Gunnison River through the Black Canyon
26 | (below the Gunnison Tunnel). On January 19, 2008, releases were increased to 1,800 cfs
27 | (51.0 cms) in response to above average forecasted inflow. Beginning the first week of
28 | March, Crystal releases were decreased to accomplish planned maintenance activities for
29 | inspection of the Crystal stilling basin and later in the month for rock removal from Blue
30 | Mesa's stilling basin. During the month of March, flows ranged from a low of no flow (very
31 | short duration) up to 1,900 cfs (53.8 cms). Starting the first of April, after all maintenance
32 | activities were accomplished, Crystal Dam releases were increased to maximum powerplant
33 | capacity of 2,100 cfs (59.5 cms). Later in April, the releases were again increased and the
34 | river bypass valves were opened. Maximum bypass at Crystal was realized on April 29,
35 | 2008, at 4,200 cfs (118.9 cms). Crystal started to spill on May 21, 2008, and achieved a
36 | maximum release of 7,921 cfs (224 cms) on May 31, 2008. Water year 2008 powerplant
37 | bypasses were approximately 1.95 maf (487 mcm) at Crystal Dam. These bypass releases
38 | occurred due to the large spring runoff and to a lesser extent due to maintenance activities
39 | during March.

40 |
41 | On August 16, 1995, Memorandum of Agreement (MOA) No. 95-07-40-R1760 was signed
42 | by Reclamation, the Service, and the Colorado Water Conservation Board. The purpose of
43 | the MOA was to provide water to the Redlands Fish Ladder, assure at least 300 cfs (8.5 cms)
44 | of flow in the 2-mile reach of the Gunnison River between the Redlands Fish Ladder and the
45 | confluence of the Gunnison and Colorado Rivers (2-mile reach), and to benefit Colorado River
46 | Basin endangered fish. This MOA was extended for an additional five years on June 30,
47 | 2000. A key provision of the MOA requires that the parties adopt a plan to share water
48 | shortages in dry years, when total storage at Blue Mesa Reservoir is projected to drop below

1 0.40 maf (493 mcm) by the end of calendar year 2008. However, the MOA was not
2 renewed in 2005. To the extent possible, Reclamation will continue to meet the intent of the
3 MOA as it falls within the scope of normal operations.

4
5 For water year 2009, the Aspinall Unit will be operated to conserve storage while meeting
6 downstream delivery requirements, consistent with authorized project purposes. Under
7 normal conditions, the minimum release objectives of the Aspinall Unit are to honor the
8 delivery requirements of the Uncompahgre Valley Project, and other senior water rights
9 downstream, to the extent possible to maintain a year round minimum flow of at least 300
10 cfs (8.5 cms) in the Gunnison River through the Black Canyon, and to the extent possible
11 maintain a minimum flow of 300 cfs (8.5 cms) in the 2-mile reach below the Redlands
12 Diversion Dam during the months of July through October. In dry years, the 300 cfs (8.5
13 cms) flow through the canyon and the 2-mile reach may be reduced. In 2009, under the
14 most probable inflow conditions, flows through the Black Canyon of the Gunnison National
15 Park will be above the 300 cfs (8.5 cms) minimum release objective during the summer
16 months. Consideration shall be given to the trout fishery in the Black Canyon and Gunnison
17 Gorge and recreational interests consistent with Project purposes. Releases during 2009 will
18 be planned to minimize fluctuations in the daily and monthly flows in the Gunnison River
19 below the Gunnison Tunnel diversion.

Deleted: can

20
21 Under the probable minimum inflow scenario, Blue Mesa Reservoir would not fill in 2009.
22 Under the most probable and probable maximum inflow scenarios, Blue Mesa Reservoir is
23 expected to fill in 2009.

24 Navajo Reservoir

25
26
27 Inflow to Navajo Reservoir in 2008 was above the 30-year average. Water year 2008
28 unregulated inflow was 1,336 maf (1,686 mcm), or 125 percent of average. The April
29 through July unregulated inflow into Navajo Reservoir in water year 2008 was 0,960 maf
30 (1,186 mcm), or 124 percent of average. Unregulated inflow to Navajo Reservoir has been
31 below average for all water years from 2000 through 2007, except for 2005 which was 136
32 percent of average.

Comment: Suggested that this statement is incorrect. Should say 136 percent of average NOT above average.

Deleted: above

33
34 Navajo Reservoir reached a peak water surface elevation of 6,066.8 feet (1,849.2 meters) on
35 May 25, 2008, 18.2 feet (5.5 meters) from full pool. The water surface elevation at Navajo
36 Reservoir on September 30, 2008, was 6,060.7 feet (1,847.3 meters), with reservoir storage
37 at 80 percent of capacity.

38
39 The final report titled, "Flow Recommendations for the San Juan River" (San Juan Flow
40 Recommendations), which outlines flow recommendations for the San Juan River below
41 Navajo Dam, was completed by the San Juan Recovery Program in May 1999 after a seven-
42 year research period. The purpose of the report was to provide flow recommendations for
43 the San Juan River that promote the recovery of the endangered Colorado pikeminnow and
44 razorback sucker, maintain important habitat for these two species as well as the other native
45 species, and provide information for the evaluation of continued water development in the
46 basin.

Deleted: is

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

5
6 The San Juan Flow Recommendations called for a 21-day spring peak release of 5,000 cfs
7 (142 cms) from Navajo Reservoir in 2008. Due to a high inflow forecast received in
8 February, a release of 3,000 cfs (84.9 cms) began on February 12, 2008. The decision was
9 made to begin releases a couple weeks earlier than the March 1st minimum release date
10 identified in the San Juan Flow Recommendations to avoid a potential spill and to avoid
11 triggering mandatory inspections of the outlet works that are required at higher releases.
12 Another increase in the inflow forecast for March led to the decision to release 4,000 cfs
13 (114 cms) beginning March 10, 2008. This release continued until April 7, 2008, when the
14 release was reduced in order to perform a required inspection on the 72-inch main outlet
15 pipe. The April inflow forecast led to the decision to continue releases at 2,200 cfs (62.5
16 cms). A further decrease in releases to 1,000 cfs (28.4 cms) occurred on May 12, 2008, due
17 to a further decrease in the May inflow forecast. The spring peak release began on May 19,
18 2008, with a release of 2,000 cfs (56.8 cms) ramping up to a release rate of 5,000 cfs (142
19 cms) reached on May 28, 2008, and maintained through June 18, 2008. The rampdown
20 began on June 19, 2008 and the base summer release rate of 500 cfs (14.1 cms) was
21 implemented on July 2, 2008.

22
23 In 2007, a two-year agreement, "Recommendations for Administration and Operation of the
24 San Juan River," was developed amongst major users to limit their water use to the
25 rates/volumes indicated in the agreement for the years 2007-2008. The 2007-2008
26 agreement was similar to the agreements that were developed in 2003, 2004, 2005, and
27 2006. Ten major water users (the Jicarilla Apache and Navajo Nations, Hammond
28 Conservancy District, Public Service Company of New Mexico, City of Farmington,
29 Arizona Public Service Company, BHP-Billiton, Bloomfield Irrigation District, Farmers
30 Mutual Ditch, and Jewett Valley Ditch) endorsed the recommendations. The
31 recommendations included limitations on diversions for 2007-2008, criteria for determining
32 a shortage, and shortage-sharing requirements in the event of a water supply shortfall,
33 including sharing of shortages between the water users and the flow demands for
34 endangered fish habitat. In addition to the ten major water users, the New Mexico Interstate
35 Stream Commission, the Bureau of Indian Affairs, the Service, and the San Juan Recovery
36 Program all provided input to the recommendations. The recommendations were
37 acknowledged by Reclamation and the New Mexico State Engineer for reservoir operation
38 and river administration purposes. A new two-year agreement, similar to past years, is
39 expected to be developed for 2009 and 2010.

40
41 During water year 2009, Navajo Reservoir will be operated in accordance with the Navajo
42 Reservoir Operations ROD. Navajo Reservoir storage levels are expected to be near
43 average in 2009 under the most probable inflow scenario. Releases from the reservoir will
44 likely remain at a 500 cfs (14 cms) base release through the winter. Under the most
45 probable inflow condition in 2009, a 21-day spring peak release of 5,000 cfs (142 cms), as
46 described in the San Juan Flow Recommendations, is likely to occur.

Comment: Suggest removing this sentence as it is old news now.

Comment: Suggest inserting "and the ROD" here.

Deleted: A Notice of Intent to prepare an Environmental Impact Statement (EIS) was published on October 1, 1999, in the *Federal Register*. In January 2006, the Service issued a non-jeopardy biological opinion for the operations of Navajo Dam to meet the San Juan Flow Recommendations, or a reasonable alternative. The Navajo Reservoir Operations Final EIS was issued on April 20, 2006.

Comment: Suggested that sentence should read:

"The Decision was made to begin these releases..."

Deleted: make these

Deleted: found

Deleted: they

Comment: suggested that we strike "was performed" here.

Deleted: were

Deleted: was performed

Deleted: until

Deleted: A

Deleted: to slightly above

Deleted: all

Deleted: s

1 **Lake Powell**

2
3 Reservoir storage in Lake Powell increased significantly in water year 2008. On October 1,
4 2007, the beginning of water year 2008, reservoir storage in Lake Powell was 49 percent of
5 capacity or 11.92 maf (14,700 mcm). As a result of inflows to Lake Powell during water
6 year 2008 that were above normal (107 percent of average), Lake Powell storage increased
7 during water year 2008 by 3.0 maf and ended water year 2008 (September 30, 2008) at 51
8 percent of capacity, or 14.78 maf (18,231 mcm).

Comment: Suggested we change September 30 to October 1.

Deleted: September 30

9
10 Due to low reservoir storage at Lake Powell on January 1, 2008, and storage in Lake Powell
11 being less than Lake Mead, and in concurrence with Section 6.B (Upper Elevation
12 Balancing Tier) of the Interim Guidelines, the annual release volume from Glen Canyon
13 Dam in 2008 was initially scheduled to be 8.23 maf (10,015 mcm). In April, consistent with
14 Section 6.B.3 of the Interim Guidelines, forecasted inflows to Lake Powell projected the
15 September 30, 2008, Lake Powell elevation to be above 3,636 feet (1,108.2 meters) (the
16 equalization level for water year 2008) which triggered Section 6.A (Equalization Tier) of
17 the Interim Guidelines to govern the operation of Glen Canyon Dam for the remainder of
18 water year 2008. Under the Equalization Tier, the annual release volume during water year
19 2008 from Glen Canyon Dam was 8.972 maf (11,067 mcm).

20
21 April through July unregulated inflow to Lake Powell in water year 2008 was 8.840 maf
22 (0.900 mcm), or 111 percent of average. Lake Powell reached a seasonal peak elevation of
23 3,633.7 feet (1,107.6 meters), 66.3 feet (20.2 meters) from full pool, on July 16, 2008. On
24 September 30, 2008, the water surface elevation of Lake Powell was 3,630.4 feet (1,106.5
25 meters), 69.6 feet (21.2 meters) from full pool.

26
27 In December 2007, Reclamation proposed a Spring 2008 high flow test as part of
28 experimental releases from Glen Canyon Dam. This proposal was the result of information
29 gathered through scientific monitoring and research activities and discussions within the
30 Glen Canyon Dam Adaptive Management Program. The proposal also included steady flows
31 in September and October to be implemented each year during the next five years (2008-
32 2012) and ROD flows in the other months (November through August). ESA and NEPA
33 compliance for the proposed high flow test and five-year period of steady flows was
34 completed. A Final Biological Opinion on the Operation of Glen Canyon Dam was issued
35 on February 27, 2008, and a final Environmental Assessment (EA) and Finding of No
36 Significant Impact were issued on February 29, 2008.

Comment: Capitalize word "Spring"

Deleted: s

Deleted:

Deleted: as a

Comment: It was suggested that this statement is too broad. NOT all stakeholders were involved with these discussions.

Deleted: from

Deleted: stakeholder

Deleted: ,

Deleted: a

37
38 The high flow test was initiated on March 5, 2008, and completed on March 9, 2008. During
39 the high flow experiment, Reclamation released water through Glen Canyon Dam's
40 powerplant and bypass tubes to a maximum amount of 41,500 cfs (1,175 cms) for 60 hours.
41 As a result of the high flow test, the elevation of Lake Powell dropped by approximately 2.3
42 feet (0.70 m). However, the annual volume of water released from Lake Powell for water
43 year 2008 was not modified as a result of the high flow experiment.

44
45 A test of steady flows (steady daily releases), as described in the EA, was conducted during
46 September and October in 2008. The steady flow test will be repeated through 2012.
47

Deleted: R

1 | Annual releases from Lake Powell during water year 2009 will be made consistent with
2 | Section 6.B (Upper Elevation Balancing Tier) of the Interim Guidelines. Consistent with
3 | Section 6.B.1 of the Interim Guidelines, the water year release from Lake Powell in 2009
4 | will be 8.23 maf (10,150 mcm) unless provisions in Section 6.B.3 occur. Consistent with
5 | Section 6.B.3 of the Interim Guidelines, if the April 2009 24-Month Study projects the
6 | September 30, 2009, Lake Powell elevation to be greater than elevation 3,639 feet (1,109
7 | meters), Section 6.A (Equalization Tier) of the Interim Guidelines will govern the release of
8 | water from Lake Powell for the remainder of water year 2009 (through September 2009).
9

10 | Under the minimum probable inflow scenario, the Upper Elevation Balancing Tier would
11 | govern throughout water year 2009 and the annual release volume from Lake Powell would
12 | be 8.23 maf (10,150 mcm). The projected September 30, 2009, elevation and reservoir
13 | storage would be 3,594.3 feet (1,095.5 meters) and 11.21 maf (13,830 mcm), respectively.
14 | Under the most probable and maximum probable inflow scenarios, the Upper Elevation
15 | Balancing Tier would govern through April 2009. In April 2009, however, the projected
16 | September 30, 2009, elevation of Lake Powell under the most probable and maximum
17 | probable inflow scenarios would likely trigger the Equalization Tier to govern the annual
18 | release volume for the remainder of water year 2009. Under the most probable inflow
19 | scenario the projected annual release volume would be 9.05 maf (11,163 mcm). The
20 | projected September 30, 2009, elevation and reservoir storage would be 3,638.6 feet
21 | (1,109.0 meters) and 15.84 maf (19,540 mcm), respectively. Under the maximum probable
22 | inflow scenario the projected annual release volume would be 13.91 maf (17,160 mcm).
23 | The projected September 30, 2009, elevation and reservoir storage would be 3,651.7 feet
24 | (1,113.0 meters) and 17.42 maf (21,490 mcm), respectively.
25

26 | In 2009, scheduled maintenance activities at Glen Canyon Dam powerplant will require that
27 | one or more of the eight generating units periodically be offline. Coordination between
28 | Reclamation offices in Salt Lake City, Utah, and Page, Arizona, will take place in the
29 | scheduling of maintenance activities to minimize impacts to operations throughout the water
30 | year including potential experimental releases.
31

32 | Because of less than full storage conditions in Lake Powell resulting from drought in the
33 | Colorado River Basin, releases for dam safety purposes are highly unlikely in 2009. If
34 | implemented, releases greater than powerplant capacity would be made consistent with the
35 | 1956 Colorado River Storage Project Act, the Colorado River Basin Project Act, and the
36 | 1992 Grand Canyon Protection Act. Reservoir releases in excess of powerplant capacity
37 | required for dam safety purposes during high reservoir conditions may be used to
38 | accomplish the objectives of the beach/habitat-building flow according to the terms
39 | contained in the Glen Canyon Dam ROD and as published in the Glen Canyon Dam
40 | Operating Criteria (62 *Federal Register* 9447, March 3, 1997).
41

42 | Daily and hourly releases in 2009 will be made according to the parameters of the 1996
43 | ROD for the Glen Canyon Dam Final Environmental Impact Statement (GCDFEIS) and the
44 | Glen Canyon Dam Operating Criteria, as shown in Table 5. Exceptions to these parameters
45 | may be made during power system emergencies, during experimental releases, or for
46 | purposes of humanitarian search and rescue.
47

Comment: Suggest that we be more specific about which ROD applies here. Is this the 1996 ROD for Glen Canyon Dam? Insert dates or years to differentiate what document is being referred to.

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

2

<u>Parameter</u>	(cfs)	(cms)	<u>Conditions</u>
Maximum Flow ¹⁹	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 ²⁰	5,000 / 8,000	141.6 / 226.6	

3 Releases from Lake Powell in water year 2009 will continue to reflect consideration of the
4 uses and purposes identified in the authorizing legislation for Glen Canyon Dam.
5 Powerplant releases will reflect criteria based on the findings, conclusions, and
6 recommendations made in the [1996 ROD](#) for the GCDFEIS pursuant to the Grand Canyon
7 Protection Act of 1992 and appropriate NEPA documentation regarding experimental flows.
8 Consistent with the GCDFEIS [and the 1996 ROD](#), projected monthly releases under the
9 most probable, minimum probable, and maximum probable inflow scenario, for water year
10 2009, are displayed in Table 6 and Table 7.

11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29

¹⁹ May be exceeded during beach/habitat-building flows, habitat maintenance flows, or when necessary to manage above average hydrologic conditions.

²⁰ Daily fluctuations limit is 5,000 cfs (141.6 cms) for months with release volumes less than 0.600 maf (740 mcm); 6,000 cfs (169.9 cms) for monthly release volumes of 0.600 to 0.800 maf (740 to 987 mcm); and 8,000 cfs (226.6 cms) for monthly release volumes over 0.800 maf (990 mcm).

Table 6. Projected Monthly Releases from Lake Powell in Water Year 2009 Under Most Probable Inflow Conditions (English Units)²¹

Month	Most Probable Inflow Scenario Projected Monthly Release Volume (maf)	Minimum Probable Inflow Scenario Projected Monthly Release Volume (maf)	Maximum Probable Inflow Scenario Projected Monthly Release Volume (maf)
October 2008	0.717	0.717	0.717
November 2008	0.600	0.600	0.600
December 2008	0.800	0.800	0.800
January 2009	0.800	0.800	0.800
February 2009	0.700	0.600	1.000
March 2009	0.660	0.600	1.537
April 2009	0.659	0.600	1.487
May 2009	0.800	0.600	1.537
June 2009	0.800	0.650	1.487
July 2009	0.956	0.832	1.537
August 2009	0.956	0.831	1.537
September 2009	0.600	0.600	0.875
Water Year 2009 Total	9.048	8.230	13.914

Table 7. Projected Monthly Releases from Lake Powell in Water Year 2009 Under Most Probable Inflow Conditions (Metric Units)

Month	Most Probable Inflow Scenario Projected Monthly Release Volume (mcm)	Minimum Probable Inflow Scenario Projected Monthly Release Volume (mcm)	Maximum Probable Inflow Scenario Projected Monthly Release Volume (mcm)
October 2008	884	884	884
November 2008	740	740	740
December 2008	987	987	987
January 2009	987	987	987
February 2009	863	740	1,233
March 2009	814	740	1,896
April 2009	813	740	1,834
May 2009	987	740	1,896
June 2009	987	802	1,834
July 2009	1,179	1,026	1,896
August 2009	1,179	1,025	1,896
September 2009	741	740	1,079
Water Year 2009 Total	11,160	10,150	17,160

The ten-year total flow of the Colorado River at Lee Ferry²² for water years 1999 through 2008 is 88.3 maf (110,000 mcm). This total is computed as the sum of the flow of the Colorado River at Lees Ferry, Arizona, and the Paria River at Lees Ferry, Arizona, surface-

²¹ Modifications to projected monthly releases from Lake Powell would be made based on changes in forecast conditions or other relevant factors.

²² A point in the mainstream of the Colorado River one mile below the mouth of the Paria River.

1 water discharge stations which are operated and maintained by the United States Geological
2 Survey.

3
4 **Lake Mead**

5
6 For calendar year 2008, the ICS Surplus Condition was the criterion governing the operation
7 of Lake Mead in accordance with Article III(3)(b) of the Operating Criteria, Article II(B)(2)
8 of the Consolidated Decree, and Section 2.B.5 of the Interim Guidelines. A volume of 1.500
9 maf (1,850 mcm) of water was scheduled for delivery to Mexico in accordance with Article
10 15 of the 1944 United States-Mexico Treaty and Minutes No. 242 and 310 of the IBWC.

Deleted: .2

11
12 Lake Mead began water year 2008 on October 1, 2007, at elevation 1,111.06 feet (338.7
13 meters), with 12.51 maf (15,431 mcm) in storage, which is 48 percent of the conservation
14 capacity of 25.88 maf (31,923 mcm). Lake Mead's elevation increased to an elevation of
15 1,116.93 feet (340.4 meters) by the end of February 2008. After February 2008, Lake Mead
16 steadily declined. The September 30, 2008, end of water year elevation at Lake Mead was
17 1,105.0 feet (336.8 meters), with 11.94 maf (14,728 mcm) in storage (46 percent of
18 capacity).

19
20 The total release from Lake Mead through Hoover Dam during water year 2008 was 9.613
21 maf (11,857 mcm). The total release from Lake Mead through Hoover Dam during calendar
22 year 2008 is projected to be 9.577 maf (11,813 mcm). Consumptive use from Lake Mead
23 during calendar year 2008 resulting from diversions for Nevada above Hoover Dam is
24 projected to be 0.279 maf (344.1 mcm).

25
26 The total inflow into Lake Mead is a combination of water released from Glen Canyon Dam
27 plus inflows in the reach between Glen Canyon and Hoover Dams. In water year 2008,
28 inflow into Lake Mead was 9.90 maf (12,211 mcm). For water year 2009, under the most
29 probable assumptions, total inflow into Lake Mead is anticipated to be 9.98 maf (12,310
30 mcm).

Deleted: from the tributaries

31
32 Under the most probable inflow conditions during water year 2009, Lake Mead will be at its
33 maximum elevation of 1,113.71 feet (339.5 meters), with 12.76 maf (15,739 mcm) in
34 storage, at the end of February 2009. Lake Mead will likely decline during water year 2009
35 to reach its minimum elevation of approximately 1,103.63 feet (336.5 meters), with
36 approximately 11.82 maf (14,580 mcm) in storage, at the end of July 2009.

Deleted: September

Deleted: during the initial two-thirds of the

Deleted: May

37
38 Based on the August 2008 24-Month Study, Lake Mead's elevation on January 1, 2009, is
39 projected to be 1,110.41 feet (338.5 meters). In accordance with Section 2.B.5 of the
40 Interim Guidelines, the ICS Surplus Condition will govern the releases from Lake Mead in
41 calendar year 2009. Releases from Lake Mead through Hoover Dam for water year and
42 calendar year 2009 are anticipated to be approximately the same as 2008 releases.

1
2 **Lakes Mohave and Havasu**
3

4 At the beginning of water year 2008, Lake Mohave was at an elevation of 637.26 feet (194.2
5 meters), with an active storage of 1.545 maf (1,906 mcm). The water level of Lake Mohave
6 was regulated between elevation 634.2 feet (193.3 meters) and 644.0 feet (196.3 meters)
7 throughout the water year, ending at an elevation of 638.0 feet (194.5 meters) with 1.564
8 maf (1,929 mcm) in storage. The total release from Lake Mohave through Davis Dam for
9 water year 2008 was 9,307 maf (11,480 mcm) for downstream water use requirements. The
10 calendar year 2008 total release is projected to be 9,291 maf (11,460 mcm).

11
12 For water year and calendar year 2009, Davis Dam is projected to release approximately the
13 same amount of water as in 2008. The water level in Lake Mohave will be regulated
14 between an elevation of approximately 633 feet (193 meters) and 645 feet (197 meters).
15

16 Lake Havasu started water year 2008 at an elevation of 447.8 feet (136.5 meters) with 0.576
17 maf (710.5 mcm) in storage. The water level of Lake Havasu was regulated between
18 elevation 446.4 feet (136.1 meters) and 448.8 feet (136.8 meters), throughout the water year,
19 ending at an elevation of 446.8 feet (136.2 meters), with 0.557 maf (687 mcm) in storage.
20 During water year 2008, 6,730 maf (8,301 mcm) were released from Parker Dam. The
21 calendar year 2008 total release is projected to be 6,825 maf (8,419 mcm). Diversions from
22 Lake Havasu during calendar year 2008 by the Central Arizona Project (CAP) and MWD
23 are projected to be 1.51 maf (1,863 mcm) and 0.877 maf (1,082 mcm), respectively.
24

25 For water year 2009, Parker Dam is expected to release approximately the same amount of
26 water as in water year 2008. Diversions from Lake Havasu in calendar year 2009 by CAP
27 and MWD are projected to be 1,489 maf (1,837 mcm) and 0,825 maf (1,018 mcm),
28 respectively.
29

30 Lakes Mohave and Havasu are scheduled to be drawn down in the late summer and fall
31 months to provide storage space for local storm runoff and will be filled in the winter to
32 meet higher summer water needs. This drawdown will also correspond with normal
33 maintenance at both Davis and Parker powerplants which is scheduled for September
34 through February.
35

36 At Davis Dam, a major overhaul of Unit No. 2 began on October 1, 2007, and the unit was
37 returned to service on March 17, 2008. This overhaul included removal and maintenance of
38 the fixed wheel gate and hydraulic cylinder, as well as testing the generator windings.
39 Rehabilitation of the fixed wheel gate of Unit 1 is tentatively scheduled for water year 2009.
40

41 At Parker Dam, a major turbine overhaul of Unit 1 began on September 7, 2007, and it
42 returned to service on August 15, 2008. A major turbine overhaul of Unit 2 is scheduled for
43 September 2, 2008, through February 28, 2009.

Deleted: , with an anticipated return to service of July 31, 2008.
Deleted: after the completion of the Unit 1 overhaul.
Inserted: after the completion of the Unit 1 overhaul.
Deleted: 1

1 **Bill Williams River**

2
3 Runoff and precipitation events during December 2007, and January and February 2008,
4 contributed to tributary inflows that increased Lake Alamo’s storage by 0.050 maf (61.67
5 mcm) by mid March 2008. Tributary monthly inflows into Lake Alamo were below average
6 except for January during water year 2008. Abnormally dry to moderate drought conditions
7 persisted for water year 2008 throughout western and southern Arizona, including the Bill
8 Williams River watershed. Tributary inflow from the Bill Williams River into the
9 mainstream of the Colorado River totaled 0.041 maf (50.57 mcm) for water year 2008,
10 approximately 36 percent of the long-term average.

Formatted: Font color: Auto, Not Highlight

Formatted: Font color: Auto, Not Highlight

11
12 Releases in water year 2008 from the United States Army Corp of Engineers’ (USACE’s)
13 Alamo Dam were coordinated with the Service and the Bill Williams Steering Committee to
14 maintain riparian habitat established in water year 2005 and 2006. Alamo Lake elevation
15 was approximately 1,112.01 feet (338.94 meters) after October 1, 2007, and increased to
16 elevation 1,126.15 feet (343.25 meters) by mid March 2008. A storage volume of 0.002 maf
17 (2.47 mcm), equivalent to the storage between approximately elevations 1,125.8 feet (343.1
18 meters) and 1,125.4 feet (343.0 meters), was released on March 31, 2008. The purpose of
19 the release was to maintain downstream riparian habitat. The March 31, 2008, release from
20 Alamo Dam increased from approximately 40 cfs (1 cms) to approximately 2,000 cfs (56.6
21 cms) for a 14-hour period, tapering to approximately 40 cfs (1 cms) on the same day. Data
22 collection associated with Alamo Dam releases supports ongoing studies conducted by the
23 Bill Williams Steering Committee. The Bill Williams Steering Committee is chaired by the
24 Service and is comprised of other stakeholders, including, but not limited to, Reclamation,
25 the USACE, the Bureau of Land Management, and other governmental and non-
26 governmental organizations.

27
28 **Senator Wash and Laguna Reservoirs**

29
30 Operations at Senator Wash Reservoir allow regulation of water deliveries to United States
31 water users upstream and downstream of Imperial Dam and Mexican water users
32 downstream of Imperial Dam. The reservoir is utilized as an off-stream storage facility to
33 meet downstream water demands and to conserve water for future uses in the United States
34 and the scheduled uses of Mexico in accordance with the 1944 United States-Mexico Water
35 Treaty obligations. Senator Wash Reservoir is the only major storage facility below Parker
36 Dam (approximately 142 river miles downstream) and has a storage capacity of 0.014 maf
37 (17.27 mcm) at full pool elevation of 251.0 feet (76.5 meters). Operational objectives are to
38 store excess flows from the river caused by water user cutbacks and side wash inflows due
39 to rain. Stored waters are utilized to meet the United States’ and Mexico’s demands.

40
41 Since 1992, elevation restrictions have been placed on Senator Wash Reservoir due to
42 potential piping and liquefaction of foundation and embankment materials at West Squaw
43 Lake Dike and Senator Wash Dam. Currently, Senator Wash is restricted to an elevation of
44 240.0 feet (73.2 meters) with 0.009 maf (11.10 mcm) of storage, a loss of about 0.005 maf
45 (6.167 mcm) of storage from its original capacity. Senator Wash Reservoir elevation must
46 not exceed an elevation of 238.0 feet (72.5 meters) for more than 10 consecutive days. This
47 reservoir restriction is expected to continue in 2009.

1 Laguna Reservoir is a regulating storage facility located approximately five river miles
2 downstream of Imperial Dam. Operational objectives are similar to those for Senator Wash
3 Reservoir and the reservoir is primarily used to capture sluicing flows from Imperial Dam.
4 The storage capability of Laguna Reservoir has diminished from about 1,500 acre-feet
5 (1.850 mcm) to approximately 400 acre-feet (0.493 mcm) due to sediment accumulation and
6 vegetation growth. Sediment accumulation in the reservoir has occurred primarily due to
7 flood releases that occurred in 1983 and 1984, and flood control or space building releases
8 that occurred between 1985 and 1988 and from 1997 through 1999.

9 10 **Imperial Dam**

11
12 Imperial Dam is the last diversion dam on the Colorado River for United States water users.
13 From the head works at Imperial Dam, the diversions of flows for the United States' and
14 Mexico's water users occur into the All-American Canal on the California side, and into the
15 Gila Gravity Main Canal on the Arizona side of the dam. These diversions supply all the
16 irrigation districts in the Yuma area, in Wellton-Mohawk, in the Imperial and Coachella
17 Valleys, and through Siphon Drop and Pilot Knob to the Northerly International Boundary
18 (NIB) for diversion at Morelos Dam to the Mexicali Valley in Mexico. The diversions also
19 supply much of the domestic water needs in the Yuma area. Flows arriving at Imperial Dam
20 for calendar year 2008 are projected to be 5.669 maf (6,993 mcm). The flows arriving at
21 Imperial Dam for calendar year 2009 are projected to be approximately the same as calendar
22 year 2008.

23 24 **Gila River Flows**

25
26 Although drought conditions eased for central Arizona, drought conditions persisted for
27 water year 2008 throughout the Lower Basin and the southwestern United States.
28 Abnormally dry to moderate drought conditions persisted throughout western and southern
29 Arizona, southern California, and southern Nevada. However, because of above average
30 snowpack on the Gila, Salt, and Verde River watersheds, the Gila River Basin experienced
31 112 percent of average precipitation for water year 2008. During water year 2008 no
32 tributary inflow from the Gila River reached the mainstream of the Colorado River.

Deleted: b

Formatted: Font color: Blue

33 34 **Additional Regulatory Storage (Drop 2 Storage Reservoir)**

35
36 In 2005, Reclamation completed a study²³ that evaluated the needs and developed options
37 for additional water storage facilities on the mainstream of the Colorado River below Parker
38 Dam. The study, developed in cooperation with Imperial Irrigation District (IID), Coachella
39 Valley Water District (CVWD), San Diego County Water Authority (SDCWA), and MWD,
40 recommended the construction of a small reservoir near the All-American Canal in Imperial
41 County, California, as the best option.

42
43 The purpose of the planned 0.008 maf (9.868 mcm) Drop 2 Storage Reservoir is to capture
44 extra water in the system, especially during storm events. The reservoir will make up for the
45 loss of water storage at Senator Wash due to the operational restrictions and provide

²³ Preliminary Study of Lower Colorado River Water Storage Alternatives, February 21, 2005.

1 additional regulatory storage, allowing for more efficient management of water below
2 Parker Dam.

3
4 Final design of the Drop 2 Storage Reservoir was completed in the spring of 2008. The
5 construction contract is scheduled to be awarded in August 2008 and construction of the first
6 phase of the project is scheduled to start in September 2008. Construction is scheduled to be
7 completed in the fall of 2010.

8 9 **Yuma Desalting Plant**

10
11 The Yuma Desalting Plant (YDP) was authorized and constructed to reduce the salinity of
12 drain water from the Wellton-Mohawk Division of the Gila Project, allowing the treated
13 water to be delivered to Mexico as part of its 1.5 maf, (1,850 mcm) 1944 United States-
14 Mexico Water Treaty allotment. The YDP operated at one-third capacity from May 1992
15 through January 1993. Gila River flood flows occurring during 1993 damaged the concrete
16 lining of sections of the Main Outlet Drain Extension (MODE), which carries feed water to
17 the YDP. In January 1993, Reclamation placed the YDP into ready reserve status, and the
18 YDP has continued to be maintained in that status.

19
20 To date, the United States has met salinity requirements, established in Minute 242 of the
21 1944 United States-Mexico Water Treaty, through use of the Main Outlet Drain (MOD) to
22 bypass Wellton-Mohawk drain water to the Cienega de Santa Clara, a wetland of
23 approximately 40,000 acres (16,200 hectares) of open water and vegetation that is within a
24 Biosphere Reserve in Mexico. In calendar year 2008 the amount of water discharged
25 through the MOD is projected to be 0.110 maf (135.7 mcm) at an approximate concentration
26 of total dissolved solids of 2,430 parts per million (ppm).

27
28 Due to the on-going drought in the Southwest, there is concern about continuing to
29 discharge water through the MOD. Reclamation initiated a public process in 2005 to
30 identify, analyze, and evaluate methods to replace or recover the water discharged through
31 the MOD. A report is being prepared and is anticipated to be completed by the end of 2008.

32
33 As part of the public process, Reclamation completed a demonstration run of the YDP in
34 2007, operating the plant at 10 percent capacity for three months. By the conclusion of the
35 three-month run, 4,349 acre-feet (5.364 mcm) had been delivered to the Colorado River and
36 included in water deliveries to Mexico, preserving an equivalent volume in Colorado River
37 system storage. The plant produced 2,632 acre-feet (3.247 mcm) of product water which
38 was blended with 1,717 acre-feet (2.118 mcm) of untreated bypass flow water prior to
39 discharge into the Colorado River.

40
41 In early 2008, the Lower Division States formed a work group to examine reactivation of the
42 YDP as a means to recover a portion of the bypass flows. Work group members include:
43 the Arizona Department of Water Resources (ADWR), the Central Arizona Water
44 Conservation District, the City of Yuma, Environmental Defense Fund, MWD, SNWA, the
45 Colorado River Board of California, Reclamation, and the Yuma County Water Users
46 Association. Reclamation supports this work group with information and analysis.

Deleted: recover most of this bypass flow through desalination,

Deleted: million acre-foot

Deleted: Treaty

Deleted: Due to budget constraints and concerns about potential impacts to the Cienega de Santa Clara, a wetland of approximately 40,000 acres (16,200 hectares) of open water and vegetation that is within a Biosphere Reserve in Mexico, the YDP has not been operated for this purpose.

Deleted: In preparation for plant operation at some point in the future, the facility has been maintained since constructed.

Formatted: Font: Times New Roman, 12 pt

Formatted: Font: Times New Roman, 12 pt

Deleted: Treaty of 1944 (Treaty)

Formatted: Font: Times New Roman, 12 pt

Formatted: Font: Times New Roman, 12 pt

Formatted: Font: Times New Roman, 12 pt

Deleted: with Mexico

Formatted: Font: Times New Roman, 12 pt

Formatted: Font: Times New Roman, 12 pt

Formatted: Font: Times New Roman, 12 pt

Formatted: Font: Times New Roman, 12 pt

Formatted: Font: Times New Roman, 12 pt

Formatted: Font: Times New Roman, 12 pt

Deleted: Main Outlet Drain (

Deleted:)

Deleted: However,

Deleted: d

Deleted: this practice.

Deleted: T

Deleted: the

1 **Intentionally Created Surplus**

2
3 The Interim Guidelines included the adoption of the ICS mechanism that among other things
4 encourages the efficient use and management of Colorado River water in the Lower Basin.
5 ICS may be created through several types of activities that include improvements in system
6 efficiency, extraordinary conservation, tributary conservation, and the importation of non-
7 Colorado River System water into the Colorado River mainstream. Several implementing
8 agreements²⁴ were executed concurrent with the issuance of the ROD for the Interim
9 Guidelines. ICS credits may be created and delivered in 2009 pursuant to the Interim
10 Guidelines and the implementing agreements.

11
12 **Demonstration Program.** In 2006, Reclamation implemented an ICS Demonstration
13 Program in the Lower Basin. This program allowed Colorado River water entitlement
14 holders to undertake extraordinary conservation activities in 2006 and 2007 to reduce their
15 approved annual consumptive use of Colorado River water and account for that conserved
16 water in Lake Mead.

17
18 Reclamation entered into an agreement with MWD for the creation of ICS credits in
19 calendar year 2006 and 2007.²⁵ In calendar year 2008, MWD is anticipated to recover the
20 balance of its ICS credits created under the ICS Demonstration Program. If MWD has not
21 recovered all of its Demonstration Program ICS credits during 2008, MWD may request
22 delivery of those credits during 2009.

23
24 **System Efficiency ICS.** Reclamation, the Colorado River Commission of Nevada (CRCN),
25 and SNWA signed a funding agreement for the construction of the Drop 2 Storage
26 Reservoir on December 13, 2007. In exchange for project funding of \$172 million, the
27 agreement provides for SNWA to receive 0.600 maf (740.1 mcm) of ICS credits at an
28 annual maximum delivery rate of 0.0400 maf (49.34 mcm) until the year 2036. MWD and
29 CAWCD became parties to the Funding Agreement in May, 2008. In exchange for a
30 contribution of 1/6th of the project funding amount, MWD and CAWCD each received 0.100
31 maf (123.3 mcm) of SNWA's ICS credits with a corresponding reduction in SNWA's ICS
32 credits to 0.400 maf (493.4 mcm). In the event that project costs exceed \$172 million but
33 are less than \$206 million, SNWA would receive an additional ICS credit of 1 acre-foot for
34 each \$600 of additional funding provided.

35
36 In calendar year 2008, MWD is anticipated to take delivery of 0.034 maf (41.94 mcm) of
37 System Efficiency ICS credits. In calendar year 2009, MWD may request delivery of up to
38 0.034 maf (41.94 mcm) of System Efficiency ICS credits.

- Deleted: the
- Deleted: 00,0
- Deleted: acre-feet
- Deleted: 0,0
- Deleted: acre-feet
- Deleted: The
- Deleted: the Central Arizona Water Conservation District (
- Deleted:)
- Deleted: both had the option to become
- Deleted: , which they exercised
- Deleted: 100,000 acre-feet
- Deleted: ,000
- Deleted: acre-feet
- Deleted: anticipates to take delivery of

²⁴ Delivery Agreement between the United States and IID; Delivery Agreement between the United States and MWD; Delivery Agreement between the United States, SNWA and the CRCN; Lower Colorado River Basin Intentionally Created Surplus Forbearance Agreement among the Arizona Department of Water Resources, SNWA, CRCN, the Palo Verde Irrigation District (PVID), IID, CVWD, MWD, and the City of Needles; and the California Agreement for the Creation and Delivery of Extraordinary Conservation Intentionally Created Surplus among the PVID, IID, CVWD, MWD and the City of Needles.

²⁵ Agreement between Reclamation and MWD to Implement a Demonstration Program to Create Intentionally Created Surplus Water, May 18, 2006.

1 Extraordinary Conservation ICS. MWD may create Extraordinary Conservation ICS in
2 2009.

3
4 **Tributary Conservation ICS.** Upon approval by the Secretary of an ICS creation plan,
5 SNWA anticipates creating and taking delivery of Tributary Conservation ICS credits from
6 projects on the Muddy and Virgin Rivers. SNWA anticipates creating 0.015 maf (18.50
7 mcm) of Tributary Conservation ICS credits in 2008, and 0.030 maf (37.01 mcm) in 2009.
8 Any Tributary Conservation ICS credits created in a year but not delivered in that year
9 would be converted to Extraordinary Conservation ICS at the beginning of the following
10 year.

Formatted: Font color: Blue,
Highlight

11 System Conservation of Colorado River Water Demonstration Program

12
13
14 In 2006, Reclamation implemented the System Conservation of Colorado River Water
15 Demonstration Program (SC Demonstration Program) in the Lower Basin which allows
16 entitlement holders to participate in voluntary conservation to conserve a portion of their
17 approved annual consumptive use of Colorado River water in exchange for appropriate
18 compensation provided by Reclamation. The water conserved (SC Water) is retained in
19 Lake Mead to assist in providing an interim, supplemental source of water to replace the
20 drainage water from the Wellton-Mohawk Irrigation and Drainage District that is bypassed
21 to the Cienega de Santa Clara and the reject stream from operation of the Yuma Desalting
22 Plant. In calendar year 2008, approximately 0.003 maf (3.701 mcm) SC Water is anticipated
23 to be created by Yuma Mesa Irrigation and Drainage District (YMIDD) and retained in Lake
24 Mead.

25 Delivery of Water to Mexico

26
27
28 Total delivery to Mexico for calendar year 2008 is projected to be approximately 1.536 maf
29 (1,895 mcm), resulting in excess flows of approximately 0.036 maf (44.41 mcm). The
30 excess flows in 2008 resulted from a combination of rejected water from water users after
31 rain storms, inflows into the Colorado River below Parker Dam, and spills from irrigation
32 facilities below Imperial Dam to the river.

33
34 Of the total delivery to Mexico in calendar year 2008, approximately 1.406 maf (1,734
35 mcm) is projected to be delivered at the NIB, approximately 0.125 maf (154.2 mcm) is
36 projected to be delivered at the Southerly International Boundary (SIB), and approximately
37 0.005 maf (6.168 mcm) will be diverted from Lake Havasu and delivered through MWD,
38 SDCWA, and the Otay Water District's respective distribution system facilities to Tijuana,
39 Baja California at the request of the Mexican section of the IBWC.

40
41 Of the delivery to the SIB in calendar year 2008, approximately 0.070 maf (86.34 mcm) is
42 projected to be delivered from the Yuma Project Main Drain and approximately 0.055 maf
43 (67.8 mcm) is expected to be delivered by the Protective and Regulatory Pumping Unit
44 (Minute 242 wells).

45
46 In calendar year 2009, it is anticipated that a volume of 1.500 maf (1,850 mcm) will be
47 delivered to Mexico, of which 0.140 maf (172.7 mcm) is projected to be delivered at the

Deleted: wa

Formatted: Font color: Blue,
Highlight

Deleted: and 1.406 maf (1,734 mcm) is
projected to be delivered at the NIB

Deleted: The excess flows in 2008
resulted from a combination of rejected
water from water users after rain storms,

Deleted: side-wash

Deleted: inflows into the Colorado
River below Parker Dam, and spills from
irrigation facilities below Imperial Dam
to the river.

Inserted: s

Inserted: below Parker Dam

Formatted: Font color: Blue,
Highlight

Formatted: Font color: Blue,
Highlight

Deleted: As part of Mexico's delivery
schedule, it is anticipated that 0.005
acre-foot (6.168 mcm) will be diverted from
Lake Havasu and delivered through
MWD,

Deleted: San Diego County Water
Authority

Deleted: SDCWA, and the Otay Water
District's respective distribution system
facilities to Tijuana, Baja California at the
request of the Mexican section of the
IBWC in calendar year 2008.

Inserted: SDCWA

Comment: is it total capacity? Partial
capacity?

Deleted: will

1 SIB. In accordance with Minute No. 310 and the Emergency Delivery Agreement²⁶ up to
2 | 0.005 maf (6.167 mcm) may be delivered for Tijuana through MWD, SDCWA, and the
3 Otay Water District's respective distribution system facilities in California. The remainder
4 of Mexico's available water will be delivered at NIB.

Deleted: per month

Deleted: San Diego County Water Authority

6 | Drainage flows to the Colorado River from the Yuma Mesa Conduit (YMC) and South Gila
7 Conduit are projected to be 0.042 maf (51.8 mcm) and 0.065 maf (80.18 mcm), respectively,
8 for calendar year 2008. This water is available for delivery at the NIB in satisfaction of the
9 1944 United States-Mexico Water Treaty. Of the total flow in the YMC, groundwater
10 pumped by Reclamation under permit from ADWR to replace water bypassed to the
11 Cienega through the MOD, is projected to be between 0.018 to 0.022 maf (22.20 to 27.14
12 mcm) during calendar year 2008. In 2009, up to 0.025 maf (30.84 mcm) of groundwater is
13 projected to be pumped under this permit.²⁷

Formatted: Highlight

Formatted: Highlight

15 As stated in Minute 242, the maximum allowable salinity differential is 145 ppm by the
16 United States' measurement or count and 151 ppm by the Mexican count. The salinity
17 differential for calendar year 2008 is projected to be 143 ppm by the United States' count.

19 Mexico has identified four critical months, October through January, regarding improving
20 the quality of water delivered at the SIB. As a matter of comity, the United States has
21 agreed to reduce the salinity of water delivered at SIB during this period. To accomplish the
22 reduction in salinity, the United States constructed a diversion channel to bypass up to 0.008
23 maf (9.868 mcm) of Yuma Valley drainage water during the four critical months identified
24 by Mexico. This water will be replaced by better quality water from the Minute 242 well
25 field to reduce the salinity at SIB. Reclamation anticipates bypassing approximately 0.001
26 maf (1233.5 mcm) in calendar year 2008 to the diversion channel for salinity control and up
27 to 0.008 maf (9.868 mcm) in calendar year 2009.

Deleted: 1,000

Deleted: acre-feet

²⁶ "The Agreement for Temporary Emergency Delivery of a Portion of the Mexican Treaty Waters of the Colorado River to the International Boundary in the Vicinity of Tijuana, Baja California, Mexico, and for Operation of the Facilities in the United States," applicable through November 9, 2008. It is anticipated that this agreement will be amended by the end of calendar year 2008.

²⁷ ADWR Transport Permit Number 31-001 entitled "Permit to Transport Groundwater Withdrawn from the Yuma Groundwater Basin"

1 **2009 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 criteria and determinations,
6 specific reservoir releases may be modified within these requirements as forecasted inflows
7 change in response to climatic variability and to provide additional benefits coincident to the
8 projects’ multiple purposes.

Comment: Capitalize word
“Congressionally”.

Deleted: c

9
10 **Upper Basin Reservoirs**

11
12 Releases from Lake Powell during water year 2009 shall be made consistent with Section
13 6.B (Upper Elevation Balancing Tier) of the Interim Guidelines. Consistent with Section
14 6.B.1 of the Interim Guidelines, the water year release from Lake Powell in 2009 shall be
15 8.23 maf (10,150 mcm) unless provisions in Section 6.B.3 occur. Consistent with Section
16 6.B.3 of the Interim Guidelines, if the April 2009 24-Month Study projects the September 30,
17 2009, Lake Powell elevation to be greater than elevation 3,639 feet ([1,109.2 meters](#)), Section
18 6.A (Equalization Tier) of the Interim Guidelines will govern the release of water from Lake
19 Powell for the remainder of water year 2009 (through September 2009).

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

- 31
32 • to the extent it can be reasonably applied in the States of the Lower Division to the
33 uses specified in Article III(e) of the 1922 Colorado River Compact, but these
34 releases will not be made when the active storage in Lake Powell is less than the
35 active storage in Lake Mead;
36
37 • to maintain, as nearly as practicable, active storage in Lake Mead equal to the active
38 storage in Lake Powell; and
39
40 • to avoid anticipated spills from Lake Powell.

41
42 Taking into consideration all relevant factors required by Section 602(a)(3) of the Colorado
43 River Basin Project Act and the Operating Criteria, it is determined that the active storage in
44 Upper Basin reservoirs forecast for September 30, 2009, under the most probable inflow
45 scenario would exceed the storage required under Section 602(a) of the Colorado River
46 Basin Project Act. Consistent with Section 6.B.3 of the Interim Guidelines, if the April
47 2009 24-Month Study projects the September 30, 2009, Lake Powell elevation to be greater

1 | than elevation 3,639 feet ([1,109.2 meters](#)), the Equalization Tier, Section 6.A of the Interim
2 Guidelines, will govern the release of water from Lake Powell for the remainder of water
3 year 2009 (through September 2009).
4

5 **Lower Basin Reservoirs**

6
7 Pursuant to Article III of the Operating Criteria and consistent with the Consolidated
8 Decree, water shall be released or pumped from Lake Mead to meet the following
9 requirements:

- 10 (a) 1944 United States-Mexico Water Treaty obligations;
 - 11 (b) Reasonable beneficial consumptive use requirements of mainstream users in the
12 Lower Division States;
 - 13 (c) Net river losses;
 - 14 (d) Net reservoir losses;
 - 15 (e) Regulatory wastes; and
 - 16 (f) Flood control.
- 17
18

19 The Operating Criteria provide that after the commencement of delivery of mainstream
20 water by means of the CAP, the Secretary will determine the extent to which the reasonable
21 beneficial consumptive use requirements of mainstream users are met in the Lower Division
22 States. Reasonable beneficial consumptive use requirements are met depending on whether
23 a Normal, Surplus, or Shortage Condition has been determined. The Normal Condition is
24 defined as annual pumping and release from Lake Mead sufficient to satisfy 7.500 maf
25 (9,251 mcm) of consumptive use in accordance with Article III(3)(a) of the Operating
26 Criteria and Article II(B)(1) of the Consolidated Decree. The Surplus Condition is defined
27 as annual pumping and release from Lake Mead sufficient to satisfy in excess of 7.500 maf
28 (9,251 mcm) of consumptive use in accordance with Article III(3)(b) of the Operating
29 Criteria and Article II(B)(2) of the Consolidated Decree. An ICS Surplus Condition is
30 defined as a year in which Lake Mead's elevation is projected to be above elevation 1,075
31 | feet ([327.7 meters](#)) on January 1, a Flood Control Surplus has not been determined, and
32 delivery of ICS has been requested. The Secretary may determine an ICS Surplus Condition
33 in lieu of a Normal Condition or in addition to other operating conditions that are based
34 solely on the elevation of Lake Mead. The Shortage Condition is defined as annual
35 pumping and release from Lake Mead insufficient to satisfy 7.500 maf (9,251 mcm) of
36 consumptive use in accordance with Article III(3)(c) of the Operating Criteria and Article
37 II(B)(3) of the Consolidated Decree.
38

39 The Interim Guidelines are being utilized in calendar year 2009 and serve to implement the
40 narrative provisions of Article III(3)(a), Article III(3)(b), and Article III(3)(c) of the
41 Operating Criteria and Article II(B)(1), Article II(B)(2), and Article II(B)(3) of the
42 Consolidated Decree for the period through 2026. The Interim Guidelines will be used
43 annually by the Secretary to determine the quantity of water available for use within the
44 Lower Division States.
45

46 Consistent with the Interim Guidelines, the August 2008 24-Month Study was used to
47 forecast the system storage as of January 1, 2009. Based on this projected elevation of Lake
48 Mead and consistent with Section 2.B.5 of the Interim Guidelines, the ICS Surplus

1 Condition will govern releases for use in the states of Arizona, Nevada, and California
2 during calendar year 2009 in accordance with Article III(3)(b) of the Operating Criteria and
3 Article II(B)(2) of the Consolidated Decree.

4
5 Article II(B)(6) of the Consolidated Decree allows the Secretary to allocate water that is
6 apportioned to one Lower Division State but is for any reason unused in that state to another
7 Lower Division State. This determination is made for one year only, and no rights to
8 recurrent use of the water accrue to the state that receives the allocated water. No unused
9 apportionment for calendar year 2009 is anticipated. If any unused apportionment becomes
10 available after adoption of this AOP, Reclamation, on behalf of the Secretary, shall allocate
11 any such available unused apportionment for calendar year 2009 in accordance with Article
12 II(B)(6) of the Consolidated Decree.

13
14 Water may be made available for diversion pursuant to 43 CFR Part 414² to contractors
15 within the Lower Division States. The Secretary shall make Intentionally Created Unused
16 Apportionment (ICUA) available to contractors in Arizona, California, or Nevada for the
17 off-stream storage or consumptive use of water pursuant to individual Storage and Interstate
18 Release Agreements (SIRA) and 43 CFR Part 414. In calendar year 2008, 0.025 maf (30.84
19 mcm) of ICUA water stored in Arizona is anticipated to be recovered for use in California³
20 by the MWD. In calendar year 2008, 0.015 maf (18.50 mcm) of ICUA water from Nevada
21 is anticipated to be stored in California by MWD.⁴ In calendar year 2009, up to 0.035 maf
22 (43.17 mcm) of ICUA water stored in Arizona is anticipated to be recovered for use in
23 California by MWD. SNWA may propose to make additional unused Nevada basic
24 apportionment available for storage by MWD in 2009.

25
26 The Inadvertent Overrun and Payback Policy (IOPP), which became effective January 1,
27 2004, will be in effect during calendar year 2009.²⁸

28 The Colorado River Water Delivery Agreement²⁹ requires payback of California overruns
29 occurring in 2001 and 2002 as noted in Exhibit C of that document. Each district with a
30 payback obligation under Exhibit C may at its own discretion elect to accelerate paybacks.

31 In calendar years 2008 and 2009, paybacks occurring in California result from Exhibit C
32 obligations and IOPP overruns. During calendar year 2008, the California paybacks are
33 projected to total 0.044 maf (54.27 mcm). In calendar year 2009, California paybacks are
34 projected to total 0.004 maf (4.689 mcm).

35 During calendar year 2008, the Arizona paybacks are projected to total 0.0006 maf (0.678
36 mcm). In calendar year 2009, Arizona paybacks are projected to total 0.0003 maf (0.370
37 mcm).

38 Nevada incurred no payback obligation for 2008. In calendar year 2009, Nevada paybacks
39 are projected to total 0.00013 maf (0.160 mcm).

Deleted: , approximately

Deleted: Metropolitan Water District of Southern California

Deleted: (

Deleted:)

Deleted: approximately

Deleted: The

Deleted: Southern Nevada Water Authority

Deleted: (

Deleted:)

Deleted: from 0.015 to 0.025 maf (18.50 to 30.84 mcm) of

Deleted: acre-fee

Deleted: acre-feet

Deleted: acre-feet

Deleted: acre-feet

²⁸ Record of Decision for Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions, Final Environmental Impact Statement, October 10, 2003.

²⁹ Colorado River Water Delivery Agreement: Federal Quantification Settlement Agreement for Purposes of Section 5(B) of Interim Surplus Guidelines, October 10, 2003.

1 Given the limitation of available supply and the low inflow amounts within the Colorado
2 River Basin **due to the nine-year drought**, the Secretary, through Reclamation, will continue
3 to review Lower Basin operations to assure that all deliveries and diversions of mainstream
4 water are in strict accordance with the Consolidated Decree, applicable statutes, contracts,
5 rules, and agreements.

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

11 **1944 United States-Mexico Water Treaty**

12
13 Under the most probable, probable minimum, and probable maximum inflow scenarios,
14 water in excess of that required to supply uses in the United States will not be available.
15 Vacant storage space in mainstream reservoirs is substantially greater than that required by
16 flood control regulations. Therefore, a volume of 1.500 maf (1,850 mcm) of water will be
17 available to be scheduled for delivery to Mexico during calendar year 2009 in accordance
18 with Article 15 of the 1944 United States-Mexico Water Treaty and Minutes 242 and 310 of
19 the IBWC.

20
21 Calendar year schedules of the monthly deliveries of Colorado River water are formulated
22 by the Mexican Section of the IBWC and presented to the United States Section before the
23 beginning of each calendar year. Pursuant to the 1944 United States-Mexico Water Treaty,
24 the monthly quantity prescribed by those schedules may be increased or decreased by not
25 more than 20 percent of the monthly quantity, upon 30 days notice in advance to the United
26 States Section. Any change in a monthly quantity is offset in another month so that the total
27 delivery for the calendar year is unchanged.
28

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 150 (2006)); the Boulder Canyon Project Act (45 Stat.
10 1057); the Boulder Canyon Project Adjustment Act (54 Stat. 774; 43 U.S.C. 618a); the
11 Colorado River Storage Project Act (70 Stat. 105; 43 U.S.C. 620); the Colorado River Basin
12 Project Act (82 Stat. 885; 43 U.S.C. 1501); the Colorado River Basin Salinity Control Act
13 (88 Stat. 266; 43 U.S.C. 1951); the Hoover Power Plant Act of 1984 (98 Stat. 1333); the
14 Colorado River Floodway Protection Act (100 Stat. 1129; 43 U.S.C. 1600); or the Grand
15 Canyon Protection Act of 1992 (Title XVIII of Public Law 102-575, 106 Stat. 4669).

16
17
18
19
20
21

1 **ATTACHMENT I**

2

3 Monthly inflow, monthly release, and end-of-month contents for Colorado River reservoirs
4 (October 2008 through December 2009) under the probable maximum, most probable, and
5 probable minimum inflow scenarios, and historic end-of-month contents.