



— BUREAU OF —  
RECLAMATION

# DRAFT Annual Operating Plan for Colorado River Reservoirs 2021

Edits, in red, indicate changes from the Draft 2021 AOP reviewed during the Second Consultation.

Hydrologic projections in this draft document of the 2021 AOP are based on the **August 2020 24-Month Study**. Subsequent drafts will be updated with contemporary projections of hydrology.

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



# TABLE OF CONTENTS

|  |           |
|--|-----------|
| <b>INTRODUCTION .....</b>  | <b>1</b>  |
| Background .....   | 1         |
| Authority .....  | 2         |
| Purpose.....   | 3         |
| Summary of Projected 2021 Operations .....   | 4         |
| Upper Basin.....   | 4         |
| Lower Basin .....  | 4         |
| 1944 United States-Mexico Water Treaty .....   | 5         |
| <b>2020 HYDROLOGY SUMMARY AND RESERVOIR STATUS .....</b>   | <b>6</b>  |
| <b>2021 WATER SUPPLY ASSUMPTIONS .....</b>   | <b>8</b>  |
| <b>SUMMARY OF RESERVOIR OPERATIONS IN 2020 AND PROJECTED 2021<br/>RESERVOIR OPERATIONS .....</b> | <b>10</b> |
| Fontenelle Reservoir .....   | 11        |
| Flaming Gorge Reservoir .....  | 11        |
| Blue Mesa, Morrow Point, and Crystal Reservoirs (Aspinall Unit) .....                            | 14        |
| Navajo Reservoir.....  | 15        |
| Lake Powell.....   | 16        |
| Lake Mead .....  | 19        |
| Lakes Mohave and Havasu.....   | 20        |
| Bill Williams River.....   | 21        |
| Senator Wash and Laguna Reservoirs.....  | 22        |
| Imperial Dam.....  | 23        |
| Gila River Flows .....   | 23        |
| Warren H. Brock Reservoir .....  | 23        |
| Yuma Desalting Plant.....  | 23        |
| Off-stream Storage Agreements .....  | 24        |
| Intentionally Created Surplus .....  | 24        |
| Extraordinary Conservation ICS .....   | 25        |
| System Efficiency ICS.....   | 25        |
| Tributary Conservation ICS.....  | 25        |
| Imported ICS .....   | 25        |
| Binational ICS. ....   | 26        |
| DCP ICS. ....  | 26        |
| System Conservation .....  | 26        |
| Delivery of Water to Mexico .....  | 26        |
| <b>2021 DETERMINATIONS.....</b>  | <b>29</b> |
| Upper Basin .....  | 29        |
| Lower Basin .....  | 30        |
| 1944 United States-Mexico Water Treaty.....  | 32        |
| <b>DISCLAIMER .....</b>  | <b>33</b> |
| <b>ACRONYMS AND ABBREVIATIONS.....</b>   | <b>34</b> |

## LIST OF TABLES

|   |    |
|---|----|
| Table 1. Reservoir Conditions on October 1, 2020 (English Units) .....  | 7  |
| Table 2. Reservoir Conditions on October 1, 2020 (Metric Units).....  | 7  |
| Table 3. Projected Unregulated Inflow into Lake Powell for Water Year 2021<br>(English Units) .....           | 9  |
| Table 4. Projected Unregulated Inflow into Lake Powell for Water Year 2021<br>(Metric Units).....             | 9  |
| Table 5. Summary of Extraordinary Conservation ICS Plans of Creation in<br>Calendar Years 2020 and 2021 ..... | 25 |

DRAFT

# 1 INTRODUCTION

## 3 Background

4  
5 Each year's Annual Operating Plan (AOP) for Colorado River Reservoirs reports on both the  
6 past operations of the Colorado River reservoirs for the completed year as well as projected  
7 operations and releases from these reservoirs for the current (i.e., upcoming) year.  
8 Accordingly, this 2021 AOP reports on 2020 operations as well as projected operations for  
9 2021. In recent years, additions to the Law of the River such as operational rules, guidelines,  
10 and decisions have been put into place for Colorado River reservoirs including the 1996 Glen  
11 Canyon Dam Record of Decision<sup>1</sup> (ROD), the Operating Criteria for Glen Canyon Dam,<sup>2</sup> the  
12 1999 Off-stream Storage of Colorado River Water Rule (43 CFR Part 414),<sup>3</sup> the 2001 Interim  
13 Surplus Guidelines<sup>4</sup> addressing operation of Hoover Dam, the 2006 Flaming Gorge Dam  
14 ROD,<sup>5</sup> the 2006 Navajo Dam ROD<sup>6</sup> to implement recommended flows for endangered fish, the  
15 2007 Interim Guidelines for the operations of Lake Powell and Lake Mead,<sup>7</sup> the 2012 Aspinall  
16 ROD,<sup>8</sup> the 2016 Glen Canyon Dam Long-Term Experimental and Management Plan (LTEMP)  
17 ROD,<sup>9</sup> Minute No. 323 of the International Boundary and Water Commission (IBWC),<sup>10</sup> and  
18 the agreements related to the 2019 Colorado River Drought Contingency Plans (DCPs)<sup>11</sup> as

---

<sup>1</sup> ROD for the Operation of Glen Canyon Dam, October 9, 1996. Available online at:  
[https://www.usbr.gov/uc/envdocs/rod/Oct1996\\_OperationGCD\\_ROD.pdf](https://www.usbr.gov/uc/envdocs/rod/Oct1996_OperationGCD_ROD.pdf).

<sup>2</sup> Following the implementation of the LTEMP ROD, the Glen Canyon Dam operating criteria were revised and are in effect in water years 2019 and 2020 and available online at:  
<https://www.usbr.gov/uc/water/crsp/studies/GCOC.pdf>.

<sup>3</sup> Off-stream Storage of Colorado River Water; Development and Release of Intentionally Created Unused Apportionment in the Lower Division States: Final Rule (43 CFR Part 414; 64 *Federal Register* 59006, November 1, 1999). Available online at: <https://www.usbr.gov/lc/region/g4000/contracts/FinalRule43cfr414.pdf>.

<sup>4</sup> ROD for the Colorado River Interim Surplus Guidelines, January 16, 2001 (67 *Federal Register* 7772, January 25, 2001). Available online at: [https://www.usbr.gov/lc/region/g4000/surplus/surplus\\_rod\\_final.pdf](https://www.usbr.gov/lc/region/g4000/surplus/surplus_rod_final.pdf).

<sup>5</sup> ROD for the Operation of Flaming Gorge Dam, February 16, 2006. Available online at:  
<https://www.usbr.gov/uc/envdocs/rod/fgFEIS/final-ROD-15feb06.pdf>.

<sup>6</sup> ROD for Navajo Reservoir Operations, Navajo Unit – San Juan River, New Mexico, Colorado, Utah, July 31, 2006. Available online at: <https://www.usbr.gov/uc/envdocs/eis/navajo/pdfs/NavWaterOpsROD2006.pdf>.

<sup>7</sup> ROD for Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead (73 *Federal Register* 19873, April 11, 2008). The ROD adopting the 2007 Interim Guidelines was signed by the Secretary on December 13, 2007. Available online at:  
<https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf>.

<sup>8</sup> ROD for the Aspinall Unit Operations, Final Environmental Impact Statement, April 2012. Available online at:  
<https://www.usbr.gov/uc/envdocs/eis/AspinallEIS/ROD.pdf>.

<sup>9</sup> ROD for the Glen Canyon Dam Long-Term Experimental and Management Plan Final Environmental Impact Statement, December 2016. Available online at: [http://ltempis.anl.gov/documents/docs/LTEMP\\_ROD.pdf](http://ltempis.anl.gov/documents/docs/LTEMP_ROD.pdf).

<sup>10</sup> IBWC Minute No. 323, Extension of Cooperative Measures and Adoption of a Binational Water Scarcity Contingency Plan in the Colorado River Basin dated September 21, 2017. Available online at:  
<https://www.ibwc.gov/Files/Minutes/Min323.pdf>.

<sup>11</sup> The agreements related to the 2019 Colorado River DCPs, as authorized by Public Law 116-14, were executed on May 20, 2019 and consist of an Upper Basin DCP (Drought Response Operations and Demand Management Storage) and a Lower Basin DCP including Lower Basin Drought Operations. Available online at:  
<https://www.usbr.gov/lc/region/programs/dcp.html>.

1 authorized by Public Law 116-14.<sup>12</sup> Each AOP incorporates these and other rules, guidelines,  
2 and decisions, and reports on how the criteria contained in the applicable decision document or  
3 documents are implemented. Thus, the AOP makes projections and reports on how the Bureau  
4 of Reclamation (Reclamation) will implement these decisions in response to changing water  
5 supply conditions as they unfold during the upcoming year, when conditions become known.  
6 Congress has charged the Secretary of the Interior (Secretary) with stewardship and  
7 responsibility for a wide range of natural, cultural, recreational, and tribal resources within the  
8 Colorado River Basin. The Secretary has the authority to operate and maintain Reclamation  
9 facilities within the Colorado River Basin addressed in this AOP to help manage these  
10 resources and accomplish their protection and enhancement in a manner fully consistent with  
11 applicable provisions of Federal law including the Law of the River, applicable provisions of  
12 State law, and other project-specific operational limitations.

13  
14 The Secretary recognized in the 2007 Interim Guidelines that the AOP provides an integrated  
15 report on reservoir operations affected by numerous federal policies: *"The AOP is used to*  
16 *memorialize operational decisions that are made pursuant to individual federal actions (e.g.,*  
17 *ISG [the 2001 Interim Surplus Guidelines], 1996 Glen Canyon Dam ROD, this [2007 Interim*  
18 *Guidelines] ROD). Thus, the AOP serves as a single, integrated reference document required*  
19 *by section 602(b) of the CRBPA of 1968 [Colorado River Basin Project Act of September 30,*  
20 *1968 (Public Law 90-537)]<sup>13</sup> regarding past and anticipated operations."*

## 22 Authority

23  
24 This 2021 AOP was developed in accordance with the processes set forth in: Section 602 of  
25 the CRBPA; the Criteria for Coordinated Long-Range Operation of Colorado River  
26 Reservoirs Pursuant to the Colorado River Basin Project Act of September 30, 1968  
27 (Public Law 90-537) (Operating Criteria), as amended, promulgated by the Secretary;<sup>14</sup> and  
28 Section 1804(c)(3) of the Grand Canyon Protection Act of 1992 (Public Law 102-575).<sup>15</sup>

29  
30 Section 602(b) of the CRBPA requires the Secretary to prepare and *"transmit to the Congress*  
31 *and to the Governors of the Colorado River Basin States a report describing the actual*  
32 *operation under the adopted criteria [i.e., the Operating Criteria] for the preceding compact*  
33 *water year and the projected operation for the current year."*

34  
35 This AOP has been developed consistent with: the Operating Criteria; applicable Federal laws;  
36 the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, the Treaty  
37 Between the United States of America and Mexico, signed February 3, 1944 (1944 United  
38 States-Mexico Water Treaty);<sup>16</sup> interstate compacts; court decrees; the Colorado River Water

---

<sup>12</sup> The Colorado River Drought Contingency Plan Authorization Act (Public Law 116-14) was signed into law on April 16, 2019. Available online at: <https://www.congress.gov/116/bills/hr2030/BILLS-116hr2030enr.pdf>.

<sup>13</sup> Available online at: <https://www.usbr.gov/lc/region/pao/pdf/crbproj.pdf>.

<sup>14</sup> Available online at: <https://www.usbr.gov/lc/region/g4000/lroc/frmar2905.pdf>.

<sup>15</sup> Available online at: <https://www.usbr.gov/uc/legal/gcpa1992.pdf>.

<sup>16</sup> Available online at: <https://www.ibwc.gov/Files/1944Treaty.pdf>.

1 Delivery Agreement;<sup>17</sup> the 2007 Interim Guidelines; the 2019 Colorado River DCP agreements;  
2 and other documents relating to the use of the waters of the Colorado River, which are  
3 commonly and collectively known as the Law of the River.  
4

5 The 2021 AOP was prepared by Reclamation on behalf of the Secretary, working with other  
6 Interior agencies and the Western Area Power Administration (WAPA). Reclamation  
7 consulted with the seven Colorado River Basin States Governors' representatives,  
8 representatives from Mexico, the Upper Colorado River Commission (UCRC), Native  
9 American tribes, other appropriate Federal agencies, representatives of academic and scientific  
10 communities, environmental organizations, representatives of the recreation industry, water  
11 delivery contractors, contractors for the purchase of Federal power, others interested in  
12 Colorado River operations, and the general public through the Colorado River Management  
13 Work Group.  
14

15 Article I(2) of the Operating Criteria allows for revision of the projected plan of operation to  
16 reflect current hydrologic conditions with notification to the Congress and the Governors of the  
17 Colorado River Basin States of any changes by June of each year. The process for revision of  
18 the AOP is further described in Section 7.C of the 2007 Interim Guidelines. Any revision to  
19 the final AOP may occur only through the AOP consultation process as required by applicable  
20 Federal law.  
21

## 22 Purpose

23  
24 The purpose of the AOP is to report on the past year's operations and illustrate the potential  
25 range of reservoir operations that might be expected in the upcoming year, and to determine or  
26 address: (1) the quantity of water considered necessary to be in storage in the Upper Basin  
27 reservoirs as of September 30, 2021, pursuant to Section 602(a) of the CRBPA; (2) water  
28 available for delivery pursuant to the 1944 United States-Mexico Water Treaty and Minutes  
29 No. 242,<sup>18</sup> 322,<sup>19</sup> and 323 of the IBWC; (3) whether the reasonable consumptive use  
30 requirements of mainstream users in the Lower Division States will be met under a "Normal,"  
31 "Surplus," or "Shortage" Condition as outlined in Article III of the Operating Criteria and as  
32 implemented by the 2007 Interim Guidelines; (4) whether management and/or operational  
33 regimes will be required or considered as described in the 2019 Colorado River DCP; and (5)  
34 whether water apportioned to, but unused by one or more Lower Division States, exists and can  
35 be used to satisfy beneficial consumptive use requests of mainstream users in other Lower  
36 Division States as provided in the Consolidated Decree of the Supreme Court of the United  
37 States in *Arizona v. California*, 547 U.S. 150 (2006) (Consolidated Decree).<sup>20</sup>  
38

---

<sup>17</sup> Colorado River Water Delivery Agreement: Federal Quantification Settlement Agreement for Purposes of Section 5(B) of Interim Surplus Guidelines, October 10, 2003 (69 *Federal Register* 12202, March 15, 2004). Available online at: <https://www.usbr.gov/lc/region/g4000/crwda/crwda.pdf>.

<sup>18</sup> IBWC Minute No. 242, Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River dated August 30, 1973. Available online at: <https://www.ibwc.gov/Files/Minutes/Min242.pdf>.

<sup>19</sup> IBWC Minute No. 322, Extension of the Temporary Emergency Delivery of Colorado River Water for use in Tijuana, Baja California dated January 19, 2017. Available online at: [https://www.ibwc.gov/Files/Minutes/Minute\\_322\\_1.pdf](https://www.ibwc.gov/Files/Minutes/Minute_322_1.pdf).

<sup>20</sup> Available online at: <https://www.usbr.gov/lc/region/pao/pdf/files/scconsolidateddecree2006.pdf>.

1 Consistent with the above determinations and in accordance with other applicable provisions of  
2 the Law of the River, the AOP was developed with “appropriate consideration of the uses of  
3 the reservoirs for all purposes, including flood control, river regulation, beneficial consumptive  
4 uses, power production, water quality control, recreation, enhancement of fish and wildlife, and  
5 other environmental factors” (Operating Criteria, Article I(2)).  
6

7 Since the hydrologic conditions of the Colorado River Basin can never be completely known in  
8 advance, the AOP presents projected operations resulting from three different hydrologic  
9 scenarios: the minimum probable, most probable, and maximum probable reservoir inflow  
10 conditions. Projected reservoir operations are modified during the water year as runoff  
11 forecasts are adjusted to reflect existing snowpack, basin storage, flow conditions, and as  
12 changes occur in projected water deliveries.  
13

## 14 **Summary of Projected 2021 Operations**

15  
16 **Upper Basin.** Taking into account (1) the existing water storage conditions in the basin, (2)  
17 the August 2020 24-Month Study<sup>21</sup> projection of the most probable near-term water supply  
18 conditions in the basin, and (3) Section 6.B of the 2007 Interim Guidelines, the Upper  
19 Elevation Balancing Tier will govern the operation of Lake Powell for water year 2021. The  
20 August 2020 24-Month Study of the most probable inflow scenario projects the water year  
21 2021 release from Glen Canyon Dam to be 9.00 million acre-feet (maf) (11,100 million cubic  
22 meters [mcm]). Given the hydrologic variability of the Colorado River System and based on  
23 actual 2020 water year operations, the projected water year release from Lake Powell in 2021 is  
24 likely to be in the estimated range of 8.23 maf (10,150 mcm) to 9.00 maf (11,100 mcm) or  
25 greater.  
26

27 For further information about the variability of projected inflow into Lake Powell, see the 2021  
28 Water Supply Assumptions section and the Lake Powell section within the Summary of  
29 Reservoir Operations in 2020 and Projected 2021 Reservoir Operations, and Tables 3 and 4.  
30

31 **Lower Basin.** Taking into account (1) the existing water storage conditions in the basin, (2)  
32 the most probable near-term water supply conditions in the basin, and (3) Section 2.B.5 of the  
33 2007 Interim Guidelines, the Intentionally Created Surplus (ICS) Surplus Condition will govern  
34 the operation of Lake Mead for calendar year 2021 in accordance with Article III(3)(b) of the  
35 Operating Criteria and Article II(B)(2) of the Consolidated Decree. In addition, the Lower  
36 Basin Drought Contingency Plan Agreement (LB DCP Agreement) will also govern the  
37 operation of Lake Mead for calendar year 2021. Consistent with Sections III.B.1.a and  
38 III.B.2.a of Exhibit 1 to the LB DCP Agreement, DCP contributions will be required by  
39 Arizona and Nevada, respectively, in calendar year 2021.  
40

---

<sup>21</sup> The 24-Month Study refers to the operational study conducted by Reclamation to project future reservoir operations. The most recent 24-Month Study report is available on Reclamation’s Water Operations websites and is updated each month. Available online at: <https://www.usbr.gov/uc/water/crsp/studies/index.html> and <https://www.usbr.gov/lc/region/g4000/24mo/index.html>.

1 No unused apportionment for calendar year 2021 is anticipated. If any unused apportionment  
2 becomes available after adoption of this AOP, Reclamation, on behalf of the Secretary, may  
3 allocate any such available unused apportionment for calendar year 2021. Any such allocation  
4 shall be made in accordance with Article II(B)(6) of the Consolidated Decree, the Lower  
5 Colorado Region Policy for Apportioned but Unused Water<sup>22</sup> (Unused Water Policy), and  
6 giving further consideration to the water conservation objectives of the July 30, 2014  
7 agreement for a pilot system conservation program (PSCP)<sup>23</sup> and as specified in Section 4.b of  
8 the LB DCP Agreement.

9  
10 In calendar year 2021, Colorado River water may be stored off-stream pursuant to individual  
11 Storage and Interstate Release Agreements (SIRAs) and 43 CFR Part 414 within the Lower  
12 Division States. The Secretary shall make Intentionally Created Unused Apportionment  
13 (ICUA) available to contractors in Arizona, California, or Nevada pursuant to individual SIRAs  
14 and 43 CFR Part 414.

15  
16 The Inadvertent Overrun and Payback Policy (IOPP),<sup>24</sup> which became effective January 1,  
17 2004, will be in effect during calendar year 2021.

18  
19 Conserved Colorado River water, created through the PSCP<sup>25</sup> and other voluntary agreements,  
20 is anticipated to be added to Lower Basin reservoirs pursuant to system conservation  
21 agreements in the Lower Basin in calendar year 2021.

22  
23 The 2007 Interim Guidelines adopted the ICS mechanism, which was expanded upon in the LB  
24 DCP Agreement, that among other things encourages the efficient use and management of  
25 Colorado River water in the Lower Basin. ICS may be created and delivered in calendar year  
26 2021 pursuant to the 2007 Interim Guidelines, applicable forbearance and delivery agreements,  
27 and the LB DCP Agreement.

28  
29 **1944 United States-Mexico Water Treaty.** A volume of 1.50 maf (1,850 mcm) of water will  
30 be available to be scheduled for delivery to Mexico during calendar year 2021 in accordance  
31 with Article 15 of the 1944 United States-Mexico Water Treaty and Minutes No. 242 and 322  
32 of the IBWC. The volume delivered will be adjusted for water savings contributions as  
33 required under Section IV of IBWC Minute No. 323. In accordance with IBWC Minute No.  
34 323, Mexico may create water for or take delivery of water from Mexico's Water Reserve  
35 pursuant to Section V of IBWC Minute No. 323.

---

<sup>22</sup> Lower Colorado Region Policy for Apportioned but Unused Water, February 11, 2010. Available online at:  
<https://www.usbr.gov/lc/region/g4000/UnusedWaterPolicy.pdf>.

<sup>23</sup> Available online at:  
<https://www.usbr.gov/lc/region/programs/PilotSysConsProg/PilotSCPFundingAgreement7-30-2014.pdf>.

<sup>24</sup> ROD for Implementation Agreement, Inadvertent Overrun and Payback Policy, and Related Federal Actions,  
Final Environmental Impact Statement, October 10, 2003 (69 *Federal Register* 12202, March 15, 2004).  
Available online at: [https://www.usbr.gov/lc/region/g4000/crwda/crwda\\_rod.pdf](https://www.usbr.gov/lc/region/g4000/crwda/crwda_rod.pdf).

<sup>25</sup> More information about the PSCP in the Lower Basin can be found at:  
<https://www.usbr.gov/lc/region/programs/PilotSysConsProg/pilotsystem.html>.



## 2020 HYDROLOGY SUMMARY AND RESERVOIR STATUS

Below average stream flows were observed throughout much of the Colorado River Basin during water year 2020. Unregulated<sup>26</sup> inflow to Lake Powell in water year 2020 was 6.36 maf (7,840 mcm), or 59 percent of the 30-year average<sup>27</sup> which is 10.83 maf (13,360 mcm). Unregulated inflow to Flaming Gorge, Blue Mesa, and Navajo Reservoirs was 84, 65, and 45 percent of average, respectively.

Precipitation in the Upper Colorado River Basin was below average<sup>28</sup> during water year 2020. On September 30, 2020, the cumulative precipitation received within the Upper Colorado River Basin for water year 2020 was 81 percent of average.

Snowpack conditions trended near average<sup>29</sup> across most of the Colorado River Basin throughout the snow accumulation season. The basin-wide snow water equivalent measured 107 percent of median on April 1, 2020, which is the same date the total seasonal accumulation peaked. On April 1, 2020, the snow water equivalents for the Green River, Upper Colorado River Headwaters, and San Juan River Basins were 110, 115, and 96 percent of median, respectively.

During the 2020 spring runoff period, inflows to Lake Powell peaked on June 5, 2020 at approximately 42,500 cubic feet per second (cfs) (1,200 cubic meters per second [cms]). The April through July unregulated inflow volume for Lake Powell was 3.76 maf (4,640 mcm) which was 52 percent of average.

Lower Basin tributary inflows above Lake Mead were below average for water year 2020. Tributary inflow measured at the Little Colorado River near Cameron gage for water year 2020 totaled 0.126 maf (155 mcm), or 88 percent of average. Tributary inflow measured at the Virgin River at Littlefield gage for water year 2020 totaled 0.144 maf (178 mcm), or 80 percent of average.

Below Hoover Dam, tributary inflow for water year 2020 measured at the Bill Williams River below Alamo Dam gage totaled 0.088 maf (109 mcm), and tributary inflow measured at the Gila River near Dome gage totaled 0.020 maf (25 mcm).<sup>30</sup>

The Colorado River total system storage experienced a net decrease of 2.16 maf (2,660 mcm) in water year 2020. Reservoir storage in Lake Powell decreased during water year 2020 by

---

<sup>26</sup> 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.

<sup>27</sup> Inflow statistics throughout this document will be compared to the mean of the 30-year period 1981-2010, unless otherwise noted.

<sup>28</sup> Precipitation statistics throughout this document are provided by the National Weather Service's Colorado Basin River Forecast Center and are based on the mean for the 30-year period 1981-2010, unless otherwise noted.

<sup>29</sup> Snowpack and snow water equivalent statistics throughout this document are provided by the Natural Resources Conservation Service and are based on the median for the 30-year period 1981-2010, unless otherwise noted.

<sup>30</sup> Tributary inflows from the Bill Williams River and Gila River to the mainstream are very sporadic. These flows occur very seldom and when they do they are typically of high magnitude.

1 1.55 maf (1,910 mcm). Reservoir storage in Lake Mead increased during water year 2020 by  
 2 0.099 maf (122 mcm). At the beginning of water year 2020 (October 1, 2019), Colorado River  
 3 total system storage was 53 percent of capacity. As of September 30, 2020, total system  
 4 storage was 49 percent of capacity.

5  
 6  
 7  
 8

Tables 1 and 2 list the October 1, 2020, reservoir vacant space, live storage, water elevation, percent of capacity, change in storage, and change in water elevation during water year 2020.

9 **Table 1. Reservoir Conditions on October 1, 2020 (English Units)**

| Reservoir     | Vacant Space | Live Storage | Water Elevation | Percent of Capacity | Change in Storage* | Change in Elevation* |
|---------------|--------------|--------------|-----------------|---------------------|--------------------|----------------------|
|               | (maf)        | (maf)        | (ft)            | (%)                 | (maf)              | (ft)                 |
| Fontenelle    | 0.050        | 0.295        | 6,499.5         | 86                  | 0.024              | 3.1                  |
| Flaming Gorge | 0.551        | 3.20         | 6,026.0         | 85                  | -0.211             | -5.5                 |
| Blue Mesa     | 0.345        | 0.484        | 7,476.9         | 58                  | -0.252             | -31.9                |
| Navajo        | 0.485        | 1.21         | 6,048.6         | 71                  | -0.178             | -14.5                |
| Lake Powell   | 12.59        | 11.73        | 3,599.8         | 48                  | -1.55              | -15.6                |
| Lake Mead     | 15.76        | 10.36        | 1,084.2         | 40                  | 0.099              | 1.2                  |
| Lake Mohave   | 0.298        | 1.51         | 636.0           | 84                  | -0.062             | -2.4                 |
| Lake Havasu   | 0.050        | 0.570        | 447.5           | 92                  | -0.029             | -1.5                 |
| Totals        | 30.13        | 29.36        |                 | 49                  | -2.16              |                      |

10 \* From October 1, 2019, to September 30, 2020.

11  
 12

**Table 2. Reservoir Conditions on October 1, 2020 (Metric Units)**

| Reservoir     | Vacant Space | Live Storage | Water Elevation | Percent of Capacity | Change in Storage* | Change in Elevation* |
|---------------|--------------|--------------|-----------------|---------------------|--------------------|----------------------|
|               | (mcm)        | (mcm)        | (m)             | (%)                 | (mcm)              | (m)                  |
| Fontenelle    | 62           | 364          | 1,981.0         | 86                  | 30                 | 0.9                  |
| Flaming Gorge | 680          | 3,950        | 1,836.7         | 85                  | -260               | -1.7                 |
| Blue Mesa     | 426          | 597          | 2,279.0         | 58                  | -311               | -9.7                 |
| Navajo        | 598          | 1,490        | 1,843.6         | 71                  | -220               | -4.4                 |
| Lake Powell   | 15,530       | 14,470       | 1,097.2         | 48                  | -1,910             | -4.8                 |
| Lake Mead     | 19,440       | 12,780       | 330.5           | 40                  | 122                | 0.4                  |
| Lake Mohave   | 368          | 1,860        | 193.9           | 84                  | -76                | -0.7                 |
| Lake Havasu   | 62           | 703          | 136.4           | 92                  | -36                | -0.5                 |
| Totals        | 37,160       | 36,210       |                 | 49                  | -2,660             |                      |

13 \* From October 1, 2019, to September 30, 2020.

## 2021 WATER SUPPLY ASSUMPTIONS

For 2021 operations, three reservoir unregulated inflow scenarios were developed and analyzed: minimum probable, most probable, and maximum probable.

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

- The forecasted minimum probable unregulated inflow to Lake Powell in water year 2021 is 5.20 maf (6,410 mcm), or 48 percent of average.
- The forecasted most probable unregulated inflow to Lake Powell in water year 2021 is 8.70 maf (10,730 mcm), or 80 percent of average.
- The forecasted maximum probable unregulated inflow to Lake Powell in water year 2021 is 16.50 maf (20,350 mcm), or 152 percent of average.

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

Inflows to the mainstream from Lake Powell to Lake Mead, Lake Mead to Lake Mohave, Lake Mohave to Lake Havasu, and below Lake Havasu are projected using historic data over the five-year period of January 2015 through December 2019, inclusive. These five years of historic data are representative of the most recent hydrologic conditions in the Lower Basin. The most probable side inflows into each reach are estimated as the arithmetic mean of the five-year record. The maximum probable and minimum probable projections for each reach are the 10 percent and 90 percent exceedance values, respectively, of the five-year record. For the reach from Lake Powell to Lake Mead, the minimum probable inflow during water year 2021 is 0.766 maf (945 mcm), the most probable inflow is 0.878 maf (1,080 mcm), and the maximum probable inflow is 1.04 maf (1,280 mcm).

The projected monthly volumes of inflow were input into the 24-Month Study and used to project potential reservoir operations for 2021. Starting with the August 2020 24-Month Study projection of the October 1, 2021 reservoir storage conditions, the projected monthly releases for each reservoir were adjusted until release and storage levels best accomplished project purposes and applicable operational objectives.

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

<https://www.usbr.gov/uc/water/crsp/studies/index.html>, or  
<https://www.usbr.gov/lc/region/g4000/24mo/index.html>.

1  
2

**Table 3. Projected Unregulated Inflow into Lake Powell for Water Year 2021  
(English Units)<sup>31</sup>**

| Time Period       | Minimum Probable (maf) | Most Probable (maf) | Maximum Probable (maf) |
|-------------------|------------------------|---------------------|------------------------|
| 10/2020 – 12/2020 | 1.07                   | 1.13                | 1.41                   |
| 1/2021 – 3/2021   | 1.12                   | 1.12                | 1.71                   |
| 4/2021 – 7/2021   | 2.70                   | 5.74                | 11.91                  |
| 8/2021 – 9/2021   | 0.314                  | 0.710               | 1.46                   |
| 10/2021 – 12/2021 | 1.03                   | 1.25                | 1.71                   |
| WY 2021           | 5.20                   | 8.70                | 16.49                  |
| CY 2021           | 5.16                   | 8.82                | 16.79                  |

3  
4  
5

**Table 4. Projected Unregulated Inflow into Lake Powell for Water Year 2021  
(Metric Units)**

| Time Period       | Minimum Probable (mcm) | Most Probable (mcm) | Maximum Probable (mcm) |
|-------------------|------------------------|---------------------|------------------------|
| 10/2020 – 12/2020 | 1,320                  | 1,390               | 1,740                  |
| 1/2021 – 3/2021   | 1,380                  | 1,380               | 2,110                  |
| 4/2021 – 7/2021   | 3,330                  | 7,080               | 14,690                 |
| 8/2021 – 9/2021   | 382                    | 876                 | 1,800                  |
| 10/2021 – 12/2021 | 1,270                  | 1,540               | 2,110                  |
| WY 2021           | 6,410                  | 10,730              | 20,340                 |
| CY 2021           | 6,360                  | 10,880              | 20,710                 |

6  
7

<sup>31</sup> All values in Tables 3 and 4 are projected inflows based upon the August 2020 CBRFC forecast. The CBRFC Most Probable forecast is issued as monthly values. The CBRFC Minimum and Maximum Probable forecasts are issued as water year totals, which Reclamation disaggregates to monthly values using monthly proportions of the 10<sup>th</sup> and 90<sup>th</sup> percentiles, respectively, of the 1981-2010 unregulated inflow.

# SUMMARY OF RESERVOIR OPERATIONS IN 2020 AND PROJECTED 2021 RESERVOIR OPERATIONS

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

In the Upper Basin, public stakeholder work groups have been established at Fontenelle Dam, Flaming Gorge Dam, the Aspinall Unit, and Navajo Dam. These work groups provide a public forum for dissemination of information regarding ongoing and projected reservoir operations throughout the year and allow stakeholders the opportunity to provide information and feedback with respect to ongoing reservoir operations. Additionally, the Glen Canyon Dam Adaptive Management Work Group (AMWG)<sup>32</sup> was established in 1997 as a chartered committee under the Federal Advisory Committee Act of 1972 (Public Law 92-463).

Modifications to projected operations are routinely made based on changes in forecasted conditions or other relevant factors. Within the parameters set forth in the Law of the River and consistent with the Upper Colorado River Endangered Fish Recovery Program (UCRIP),<sup>33</sup> the San Juan River Basin Recovery Implementation Program (SJRIP),<sup>34</sup> Section 7 consultations under the Endangered Species Act, and other downstream concerns, modifications to projected monthly operations may be based on other factors in addition to changes in streamflow forecasts. Decisions on spring peak releases and downstream habitat target flows may be made midway through the runoff season. Reclamation will conduct meetings with Recovery Program participants, the U.S. Fish and Wildlife Service (Service), other Federal agencies, representatives of the Basin States, and with public stakeholder work groups to facilitate the discussions necessary to finalize site-specific projected operations.

The following paragraphs discuss reservoir operations in 2020 and the range of probable projected 2021 operations of each of the reservoirs with respect to applicable provisions of compacts, the Consolidated Decree, statutes, regulations, contracts, and instream flow needs for maintaining or improving aquatic and riparian resources where appropriate.

---

<sup>32</sup> Information on the AMWG can be found at:

<https://www.usbr.gov/uc/progact/amp/amwg.html> <https://www.usbr.gov/uc/rm/amp/index.html>.

<sup>33</sup> Information on the UCRIP can be found at: <http://coloradoriverrecovery.org>.

<sup>34</sup> Information on the SJRIP can be found at: <https://www.fws.gov/southwest/sjrip>.

1 **Fontenelle Reservoir**

2  
3 Reservoir storage in Fontenelle **increased** during water year 2020. At the beginning of water  
4 year 2020, Fontenelle storage was 79 percent of live capacity at elevation 6,496.36 feet  
5 (1,980.09 meters), with 0.271 maf (334 mcm) in storage. The unregulated inflow to Fontenelle  
6 during water year 2020 was **1.03** maf (**1,270** mcm) which is **95** percent of average. At the end  
7 of the water year, September 30, 2020, Fontenelle storage was at **86** percent of live capacity at  
8 elevation **6,499.50** feet (**1,981.05** meters), with a storage of **0.295** maf (**364** mcm) resulting in a  
9 net **increase** during water year 2020 of **0.024** maf (**30** mcm).

10  
11 Hydrologic conditions in the Upper Green River Basin above Fontenelle were below average in  
12 water year 2020. Snowpack development tracked above median with average fall conditions  
13 maintaining soil moisture resulting in near average runoff forecasts. Peak snow water  
14 equivalent reached **1163** percent of seasonal median on April 18, 2020. ~~The June forecast for~~  
15 ~~the April through July inflow into Fontenelle Reservoir was 0.590 maf (728 mcm), or 81~~  
16 ~~percent of average.~~ The observed inflow during the April to July season was 0.677 maf (835  
17 mcm), or 93 percent of average.

18  
19 Fontenelle Reservoir filled in water year 2020. The reservoir elevation peaked at 6,504.20 feet  
20 (1,982.48 meters) on July 18, 2020, which was 2.40 feet (0.73 meters) below the spillway crest.  
21 Daily inflow peaked at 9,140 cfs (259 cms) on June 9, 2020. Reservoir releases were made to  
22 balance downstream water resources needs and power production, while also allowing for  
23 filling the reservoir to maintain sufficient water in storage for use through the fall and winter  
24 months. Releases peaked at 4,060 cfs (115 cms) on June 16, 2020 and were reduced to **1,100**  
25 cfs (**31.1** cms) in September.

26  
27 Based on the August 2020 24-Month Study, the most probable April through July inflow  
28 scenario for Fontenelle Reservoir during water year 2021 is 0.645 maf (796 mcm) or 89 percent  
29 of average. This volume exceeds the 0.295 maf (364 mcm) storage capacity of Fontenelle  
30 Reservoir. For this reason, the most probable and maximum probable inflow scenarios would  
31 require releases during the spring that exceed the capacity of the powerplant to avoid  
32 uncontrolled spills from the reservoir. It is likely that Fontenelle Reservoir will fill during  
33 water year 2021. In order to minimize high spring releases and to maximize downstream water  
34 resources and power production, the reservoir will most likely be drawn down to about  
35 elevation 6,468.35 feet (1,971.55 meters) by early March 2021, which is 5.35 feet (1.63 meters)  
36 above the minimum operating level for power generation, and corresponds to a volume of  
37 0.112 maf (138 mcm) of live storage.

38 **Flaming Gorge Reservoir**

39  
40 Reservoir storage in Flaming Gorge **decreased** during water year 2020. At the beginning of  
41 water year 2020, Flaming Gorge storage was 91 percent of live capacity at elevation 6,031.57  
42 feet (1,838.42 meters), with 3.41 maf (4,210 mcm) in storage. The unregulated inflow to  
43 Flaming Gorge during water year 2020 was **1.30** maf (**1,600** mcm) which is **90** percent of  
44 average. At the end of the water year, Flaming Gorge storage was at **85** percent of live capacity  
45 at elevation **6,026.04** feet (**1,836.74** meters), with **3.20** maf (**3,950** mcm) resulting in a net  
46 **decrease** during water year 2020 of **0.211** maf (**260** mcm).

1 Flaming Gorge Dam operations in 2020 were conducted in compliance with the 2006 Flaming  
2 Gorge ROD. Reclamation convened the Flaming Gorge Technical Working Group (FGTWG)  
3 comprised of Service, WAPA, and Reclamation personnel. The FGTWG proposed that  
4 Reclamation manage releases to the Green River to meet the commitments of the 2006 Flaming  
5 Gorge ROD and, to the extent possible, meet the experimental design parameters outlined in  
6 the UCRIP Larval Trigger Study Plan (LTSP) for the benefit of endangered razorback sucker.<sup>35</sup>  
7 Larvae were detected on May 19, 2020. After public notification, releases from Flaming Gorge  
8 Dam were increased to full powerplant capacity on May 26, 2020. Bypass releases were  
9 utilized to bring the total release from Flaming Gorge Dam to 8,600 cfs (243 cms) for 4 days,  
10 starting on May 27, 2020, to enhance floodplain operations in the middle Green River for the  
11 benefit of endangered species.

12  
13 In total, Flaming Gorge Dam released at or above powerplant capacity releases of 4,600 cfs  
14 (130 cms) for 13 days during the April through July runoff period. ~~Yampa River flows at the~~  
15 ~~Deerlodge gage peaked at 12,800 cfs (342 cms) on May 5, 2020.~~ Yampa River flows at the  
16 Deerlodge gage during the LTSP peaked at 11,400 cfs (323 cms) on June 3, 2020. The peak  
17 release from Flaming Gorge Dam occurred before the Yampa River peak to support larval  
18 entrainment and reservoir management during the high spring inflows. Flows measured on the  
19 Green River at the Jensen, Utah gage reached levels at or above 14,000 cfs (396 cms) for 12  
20 days between May 29 and June 9, 2020 with a peak of 17,600 cfs (498 cms) on June 4, 2020.  
21 The LTSP target for this hydrologic classification is greater than or equal to 14,000 cfs (396  
22 cms) and a peak magnitude of up to 18,600 cfs (526 cms) for 7 or more days.

23  
24 Hydrologic conditions in the Upper Green River Basin above Flaming Gorge were below  
25 average in water year 2020 even though. ~~S~~ snowpack development tracked just above median  
26 with average fall conditions maintaining soil moisture resulting in near average runoff  
27 forecasts. Peak snow water equivalent reached 113 percent of seasonal median on April 18,  
28 2020. The May forecast for the April through July inflow into Flaming Gorge Reservoir was  
29 0.880 maf (1,090 mcm), or 85 percent of average. The observed inflow during the April to July  
30 season was 0.833 maf (1,030 mcm), or 85 percent of average.

31  
32 Observed flow volumes from the Yampa River Basin were significantly different than  
33 projected flow volumes from the Upper Green River Basin and fell into the average hydrologic  
34 ~~classification condition~~. The 2006 Flaming Gorge ROD hydrologic classification for the Upper  
35 Green was characterized as average. The flexibility in the ROD allows for a change in  
36 hydrology classification two higher and one lower than that designated by the forecasted  
37 unregulated inflow volume on May 1 depending upon Yampa River conditions. It was  
38 determined that, ~~with the wetter conditions in the Yampa River Basin,~~ the hydrologic  
39 classification was average and the LTSP hydrologic classification was average (below median)  
40 based on the May forecast. Flows at Jensen met 2006 Flaming Gorge ROD flow targets in  
41 Reach 2 for the ROD Flow Recommendation of at least 14,000 cfs (396 cms) for 7-12 days.

42  
43 Consistent with the 2006 Flaming Gorge ROD, considering information provided to the  
44 FGTWG, average hydrologic conditions and in response to the Recovery Program's request,

---

<sup>35</sup> The LTSP's primary objective is to determine the effects of timing of Flaming Gorge spring release on razorback sucker larvae in the reach below the confluence of the Green and Yampa Rivers. The LTSP Report is available online at: <https://www.usbr.gov/uc/water/crsp/wg/fg/twg/twgSummaries.html>.

1 Reclamation operated Flaming Gorge Dam to produce flows in Reach 2 to assist in the  
2 recovery of Colorado Pikeminnow during the summer of 2020. The 2006 Flaming Gorge ROD  
3 base flow period hydrologic classification was average as of July 2020. Daily base flows  
4 fluctuated during the summer to meet 2,000 to 2,600 cfs (56.6 to 73.6 cms) on the Green River  
5 at Jensen, Utah through September 30, 2020.  
6

7 The Flaming Gorge Operation Plan for May 2020 through April 2021 (FG-Ops) has been  
8 developed and approved by Reclamation. The FG-Ops outlines the UCRIP request that  
9 includes the LTSP<sup>36</sup> experiments for the razorback sucker (spring peak period), and Colorado  
10 pikeminnow<sup>37</sup> proposed flows within the confines of the 2000 Flow and Temperature  
11 Recommendations (summer base flow period). The FG-Ops includes a plan release schedule  
12 for moderately dry, average (below and above median) and moderately wet scenarios for the  
13 spring peak flows, summer-autumn base flows, and winter base flow periods. The summer-  
14 autumn and winter base flows periods followed the 2000 Flow and Temperature  
15 Recommendations.<sup>38</sup>  
16

17 Under the August 2020 most probable inflow scenario, winter base flow releases are projected  
18 to be in the average classification range with a 25 percent increase above the average daily base  
19 flows calculated through the base flow period. Winter releases are projected to be  
20 approximately 1,150 cfs (32.5 cms). Daily base flows will likely fluctuate during the winter in  
21 response to hydropower needs during December through February and meet the average-year  
22 reservoir upper level drawdown elevation target of 6,027.00 feet (1,837.03 meters) by May 1,  
23 2021. A spring peak release is projected to occur in May or June 2021 and will be timed to  
24 coincide with either the peak flows of the Yampa River or emergence of razorback sucker  
25 larvae. Reclamation is considering long-term implementation strategies for the Recovery  
26 Program LTSP.  
27

28 Based on the August 2020 24-Month Study, the most probable April through July unregulated  
29 inflow scenario for Flaming Gorge Reservoir during water year 2021 is 0.845 maf (1,040 mcm)  
30 or 86 percent of average. The peak elevation is expected to be approximately 6,029.63 feet  
31 (1,837.83 meters) near mid-July 2021. By the end of water year 2021, Flaming Gorge  
32 Reservoir is projected to be at elevation 6,028.19 feet (1,837.39 meters), with a storage of 3.28  
33 maf (4,050 mcm), or 87 percent of capacity.  
34

35 The UCRIP, in coordination with Reclamation, the Service, and WAPA, will continue  
36 conducting studies associated with floodplain inundation. Such studies may result in  
37 alternatives for meeting flow and temperature recommendations at lower peak flow levels  
38 where feasible.

---

<sup>36</sup> Available online at: <http://www.coloradoriverrecovery.org/documents-publications/technical-reports/isf/BestgenHillFR-BWtopoGreenRiverpikeminnowreportFinalFebruary2016.pdf>.

<sup>37</sup> Colorado pikeminnow study does not have an approved study plan, and is implemented within the confines of 2000 Flow and Temperature. Bestgen, K.R. and A. Hill. 2016. Reproduction, abundance, and recruitment dynamics of young Colorado pikeminnow in the Green and Yampa rivers, Utah and Colorado, 1979-2012. Larval Fish Laboratory Contribution 183. <https://www.coloradoriverrecovery.org/documents-publications/technical-reports/isf/BestgenHillFR-BWtopoGreenRiverpikeminnowreportFinalFebruary2016.pdf>

<sup>38</sup> Flow and Temperature Recommendations for Endangered Fishes in the Green River Downstream of Flaming Gorge Dam, September 2000. Available online at: <http://www.coloradoriverrecovery.org/documents-publications/technical-reports/isf/flaminggorgeflowrecs.pdf>.



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

2  
3 Reservoir storage content in Blue Mesa decreased during water year 2020. At the beginning of  
4 water year 2020, Blue Mesa storage content was 89 percent of live capacity at elevation  
5 7,508.84 feet (2,288.69 meters), with 0.736 maf (908 mcm) in storage content. The  
6 unregulated inflow to Blue Mesa during water year 2020 was 0.621 maf (766 mcm) which was  
7 65 percent of average. At the end of the water year, Blue Mesa storage content was 58 percent  
8 of live capacity at elevation 7,476.94 feet (2,278.97 meters), with 0.484 maf (597 mcm)  
9 resulting in a net decrease during water year 2020 of 0.252 maf (311 mcm).

10  
11 Near average snowpack conditions occurred during the winter months of water year 2020 in the  
12 Gunnison River Basin. Snow measurement sites in the basin reported near average seasonal  
13 snow water equivalent levels throughout the winter and into the spring of 2020 resulting in an  
14 April 1, 2020 snow water equivalent for the Gunnison River Basin that was 97 percent of  
15 average.

16  
17 The fall through winter releases from Crystal Dam varied between approximately 1,450 cfs  
18 (41.0 cms) in November 2019 to 600 cfs (17.0 cms) in February 2020. On March 19,  
19 2020, releases from Crystal Dam were increased for operation of the Gunnison Tunnel. Flows  
20 through the Black Canyon were maintained within the range of approximately 450 cfs (12.7  
21 cms) to approximately 1,412 cfs (40.0 cms) until May 15, 2020.

22  
23 The May 2020 final forecast for the unregulated inflow to Blue Mesa for the April through July  
24 runoff period was 0.450 maf (555 mcm) which was 67 percent of average. This forecast was  
25 used to establish the hydrologic category for water year 2020 as Moderately Dry with a peak  
26 flow target established for the Whitewater reach of the Gunnison River of 5,396 cfs (153 cms)  
27 for 1 day.

28  
29 On May 15, 2020, releases from Crystal, Morrow Point and Blue Mesa were increased to target  
30 downstream flow levels and durations described in the Aspinall ROD and the Black Canyon  
31 Water Right Decree.<sup>39</sup> On May 18, 2020, while releases from Aspinall were being increased to  
32 meet the downstream peak flow target, the mid-month forecast was issued and the April  
33 through July unregulated inflow forecast for Blue Mesa was reduced to 0.395 maf (487 mcm)  
34 which was 59 percent of average. Based on the updated forecast the peak flow target was  
35 reduced to 3,167 cfs (89.6 cms) for 1 day. During spring peak operations, flows measured in  
36 the Whitewater Reach of the Gunnison River achieved an average daily peak flow of 4,510 cfs  
37 (128 cms) on May 20, 2020. Releases from Crystal Dam on May 20, 2020 resulted in a 24-  
38 hour average peak flow through the Black Canyon and the Gunnison River Gorge of 2,840 cfs  
39 (80.4 cms) as measured at the streamgauge located on the Gunnison River below the Gunnison  
40 Tunnel. Gunnison River flows in the Black Canyon met or exceeded the flows described in the  
41 Black Canyon Water Right Decree.

42  

---

<sup>39</sup> Decree quantifying the Federal Reserved Water Right for Black Canyon of the Gunnison National Park (State of Colorado District Court, Water Division Four, Case Number 01CW05), signed on December 31, 2008.

1 For water year 2021, the Aspinall Unit will be operated in compliance with the 2012 Aspinall  
2 ROD, including all required consultations and consistent with applicable law, while  
3 maintaining and continuing to meet its Congressionally-authorized purposes.  
4

5 Based on the August 2020 24-Month Study, the projected most probable unregulated inflow for  
6 water year 2021 into Blue Mesa Reservoir is 0.820 maf (1,010 mcm), or 86 percent of average.  
7 The reservoir is expected to reach a seasonal low elevation of 7,470.55 feet (2,277.02 meters)  
8 by February 2021. The peak elevation is expected to be approximately 7,506.61 feet (2,288.01  
9 meters) near the end of July 2021. By the end of water year 2021, Blue Mesa Reservoir is  
10 projected to be at elevation 7,500.02 feet (2,286.01 meters), with a storage content of 0.662 maf  
11 (817 mcm), or 80 percent of capacity.  
12

### 13 **Navajo Reservoir**

14  
15 Storage in Navajo Reservoir **decreased** during water year 2020. At the beginning of water year  
16 2020, Navajo storage was 81 percent of live capacity at elevation 6,063.01 feet (1,848.01  
17 meters), with 1.39 maf (1,710 mcm) in storage. The modified unregulated inflow<sup>40</sup> to Navajo  
18 during water year 2020 was **0.478** maf (**590** mcm) which is **44** percent of average. At the end  
19 of the water year, Navajo storage was at **71** percent of live capacity at elevation **6,048.65** feet  
20 (**1,843.63** meters), with **1.21** maf (**1,490** mcm) resulting in a net **decrease** during water year  
21 2020 of **0.178** maf (**220** mcm).  
22

23 Reservoir storage in Navajo **decreased** throughout water year 2020 peaking at an elevation of  
24 6,062.60 feet (1,847.88 meters) on June 7, 2020. This was 22.40 feet (6.83 meters) below full  
25 pool. The April through July modified unregulated inflow into Navajo Reservoir in water year  
26 2020 was 0.348 maf (429 mcm), or 47 percent of average.  
27

28 The San Juan Flow Recommendations,<sup>41</sup> completed by the SJRIP in May 1999, provide flow  
29 recommendations that promote the recovery of the endangered Colorado pikeminnow and  
30 razorback sucker, maintain important habitat for these two species as well as the other native  
31 species, and provide information for the evaluation of continued water development in the  
32 basin. In water year 2020, Navajo Reservoir operated under the SJRIP and Reclamation's  
33 interim operations. Under the interim operations, releases for SJRIP recovery purposes are  
34 dependent on annual hydrology and available water may be released as a spring peak release,  
35 an augmentation of existing target base flows, or for some other SJRIP purposes. The interim  
36 operations specify that the reservoir releases will be calculated to target an End of Water Year  
37 Storage Target elevation of 6,063.00 feet (1,848.00 meters). The interim operations also  
38 specify a minimum elevation of 6,050.00 feet (1,844.04 meters) for the purposes of calculating  
39 water available to release as a spring peak release. All available water over this target, minus  
40 the water required for minimum releases and contracts, will be available to be released as a  
41 spring peak hydrograph if the SJRIP requests. The available water must equate to at least 21  
42 days at 5,000 cfs (142 cms) to be released.

---

<sup>40</sup> Modified unregulated inflow into Navajo Reservoir is calculated as the observed inflow adjusted for the San Juan Chama diversions and change in storage at Vallecito Reservoir.

<sup>41</sup> Flow Recommendations for the San Juan River, May 1999. Available online at:  
[https://www.fws.gov/southwest/sjrip/pdf/DOC\\_Flow\\_recommendations\\_San\\_Juan\\_River.pdf](https://www.fws.gov/southwest/sjrip/pdf/DOC_Flow_recommendations_San_Juan_River.pdf).

1 Navajo Reservoir was operated in compliance with the 2006 Navajo Reservoir ROD in 2020,  
2 including the SJRIP's target base flows. Compliance with the target base flow was calculated  
3 using the weekly average of gaged flows throughout the critical habitat area from Farmington  
4 to Lake Powell. Based on the SJRIP and Reclamation's interim operations for water year 2020,  
5 there was no spring peak release at Navajo Reservoir.

6  
7 During water year 2021, Navajo Reservoir will be operated in accordance with the 2006  
8 Navajo Reservoir ROD. Navajo Reservoir storage levels are expected to be **below average** in  
9 2021 under the most probable inflow forecast. Base releases from the reservoir will likely  
10 range from **250** cfs (**7.1** cms) to **600** cfs (**17.0** cms) through the winter. Based on the August  
11 2020 most probable April through July modified unregulated inflow forecast of **0.600** maf (**740**  
12 mcm) in 2021, the August 2020 24-Month Study projects **no** spring peak release would be  
13 recommended by the SJRIP and Reclamation's interim operations for water year 2021. The  
14 reservoir is projected to reach a peak elevation of **6,068.38** feet (**1,849.64** meters) in **June** 2021.  
15 The reservoir is projected to reach a minimum elevation of **6,048.37** feet (**1,843.54** meters) in  
16 **February 2021**.

17  
18 Under the minimum probable 2021 April through July inflow forecast of **0.307** maf (**379** mcm),  
19 there will be **no** spring peak release during the spring of 2021. Under the maximum probable  
20 2021 April through July inflow forecast of **0.956** maf (**1,180** mcm), a **60**-day spring peak  
21 release will be recommended as described by the anticipated SJRIP and Reclamation's interim  
22 operations for water year 2021.

23  
24 In 2016, a four-year agreement on recommendations for San Juan River operations and  
25 administration was developed among major users to limit their water use in years 2017-2020 to  
26 the rates and volumes indicated in the agreement. The agreement includes limitations on  
27 diversions for 2017-2020, criteria for determining a shortage, and shortage-sharing  
28 requirements in the event of a water supply shortfall, including sharing of shortages between  
29 the water users and the flows for endangered fish habitat. This agreement has received  
30 endorsements from all participating parties, and is awaiting as well as the final signatures from  
31 the New Mexico State Engineer's office.

## 32 33 **Lake Powell**

34  
35 Reservoir storage in Lake Powell **decreased** during water year 2020. At the beginning of water  
36 year 2020, Lake Powell storage was 55 percent of live capacity at elevation 3,615.36 feet  
37 (1,101.96 meters), with 13.28 maf (16,380 mcm) in storage. The unregulated inflow to Lake  
38 Powell during water year 2020 was **6.36** maf (**7,840** mcm) which is **59** percent of average. At  
39 the end of the water year, Lake Powell storage was at **48** percent of live capacity at elevation  
40 **3,599.76** feet (**1,097.21** meters), with **11.73** maf (**14,470** mcm) resulting in a net **decrease**  
41 during water year 2020 of **1.55** maf (**1,910** mcm).

42  
43 The August 2019 24-Month Study was run to project the January 1, 2020, elevations of Lake  
44 Powell and Lake Mead and determine the water year 2020 operating tier for Lake Powell.  
45 Using the most probable inflow scenario, and with an 8.23 maf (10,150 mcm) annual release  
46 pattern for Lake Powell, the January 1, 2020, reservoir elevations of Lake Powell and Lake

1 Mead were projected to be 3,618.56 feet (1,102.94 meters) and 1,089.40 feet (332.05 meters),  
2 respectively. Given these projections, the annual release volume from Lake Powell during  
3 water year 2020 was consistent with the Upper Elevation Balancing Tier (Section 6.B of the  
4 2007 Interim Guidelines) and under Section 6.B.1, the annual release would be 8.23 maf  
5 (10,150 mcm).  
6

7 The Upper Elevation Balancing Tier provides for the possibility of adjustments to the operation  
8 of Lake Powell based on the projected end of water year condition of Lake Powell and Lake  
9 Mead from the April 24-Month Study. The April 2020 24-Month Study was run with an 8.23  
10 maf (10,150 mcm) annual release volume to project the September 30, 2020, elevations of Lake  
11 Powell and Lake Mead. Under the most probable inflow scenario, and with an 8.23 maf  
12 (10,150 mcm) annual release volume, the projected end of water year elevation at Lake Powell  
13 was 3,614.87 feet (1,101.81 meters) and Lake Mead was 1,084.17 feet (330.46 meters). Since  
14 the projected end of water year elevation at Lake Powell was below the 2020 Equalization  
15 elevation of 3,657.00 feet (1,114.65 meters) and above 3,575.00 feet (1,089.66 meters) and the  
16 projected Lake Mead elevation was above 1,075.00 feet (327.66 meters), Section 6.B.1 of the  
17 2007 Interim Guidelines governed for the remainder of water year 2020. Under Section 6.B.1,  
18 the Secretary shall release 8.23 maf (10,150 mcm) from Lake Powell. The annual release  
19 volume during water year 2020 was 8.23 maf (10,150 mcm).  
20

21 The April through July unregulated inflow to Lake Powell in water year 2020 was 3.76 maf  
22 (4,640 mcm) which was 52 percent of average. During the 2020 April through July runoff  
23 period, Lake Powell's water surface elevation peaked increased throughout most of water year  
24 2020 on June 22, 2020, starting the year at 3,611.02 feet (1,100.64 meters), which was 88.98  
25 feet (27.12 meters) below full pool. This elevation corresponds to a live storage content of  
26 12.83 maf (15,830 mcm).  
27

28 In water year 2020, Glen Canyon Dam was operated in compliance with the LTEMP ROD.  
29 The third Macroinvertebrate Production Flow (bug flow) experiment under the LTEMP was  
30 designed and conducted during May through August 2020. During these experiments, releases  
31 were held steady during Saturday and Sunday in an attempt to increase production of aquatic  
32 insects. The total annual release from Glen Canyon Dam in water year 2020 did not change as a  
33 result of the experimental releases.  
34

35 The ten-year total flow of the Colorado River at Lee Ferry<sup>42</sup> for water years 2011 through  
36 2020 is 92.65 maf (114,280 mcm). This total is computed as the sum of the flow of the  
37 Colorado River at Lees Ferry Arizona, and the Paria River at Lees Ferry, Arizona, surface  
38 water discharge stations which are operated and maintained by the United States Geological  
39 Survey.  
40

41 **2021 Operating Tier and Projected Operations for Glen Canyon Dam.** The January 1,  
42 2021 reservoir elevations of Lake Powell and Lake Mead are projected under the most probable  
43 inflow scenario to be 3,591.60 feet (1,094.72 meters) and 1,085.28 feet (330.79 meters),  
44 respectively, based on the August 2020 24-Month Study. Given these projections, the  
45 operating tier and annual release volume from Lake Powell during water year 2021 will be

---

<sup>42</sup> A point in the mainstream of the Colorado River one mile below the mouth of the Paria River.

1 consistent with the Upper Elevation Balancing Tier (Section 6.B of the 2007 Interim  
2 Guidelines) and, under Section 6.B.1, the annual release would be 8.23 maf (10,150 mcm).  
3 The Upper Elevation Balancing Tier provides for the possibility of adjustments to the operation  
4 of Lake Powell based on the projected end of water year conditions of Lake Powell and Lake  
5 Mead from the April 24-Month Study.

6  
7 If the April 2021 24-Month Study, with a water year release volume of 8.23 maf (10,150 mcm)  
8 projects the September 30, 2021, Lake Powell elevation to be greater than 3,659.00 feet  
9 (1,115.26 meters), operations will be adjusted and the Equalization Tier will govern the  
10 operation of Lake Powell for the remainder of the water year consistent with Section 6.B.3. If  
11 this condition occurs, and an adjustment is made, the water year release volume will likely be  
12 greater than 8.23 maf (10,150 mcm) and will be determined based on the Equalization Tier as  
13 described in Section 6.A of the 2007 Interim Guidelines.

14  
15 If the April 2021 24-Month Study, with a water year release volume of 8.23 maf (10,150 mcm),  
16 projects the September 30, 2021, Lake Powell elevation to be at or above 3,575.00 feet  
17 (1,089.66 meters) and below the 2021 Equalization level of 3,659.00 feet (1,115.26 meters),  
18 and the September 30, 2021, Lake Mead elevation to be below 1,075.00 feet (327.66 meters),  
19 the Secretary shall balance the contents of Lake Mead and Lake Powell, but shall release not  
20 more than 9.00 maf (11,100 mcm) and not less than 8.23 maf (10,150 mcm) from Lake Powell  
21 in water year 2021 consistent with Section 6.B.4 of the 2007 Interim Guidelines.

22  
23 Under the minimum probable inflow scenario, the August 2020 24-Month Study, with a  
24 projected water year release volume of 8.23 maf (10,150 mcm) in water year 2021, projects that  
25 the elevations of Lake Powell and Lake Mead on September 30, 2021, would be 3,567.54 feet  
26 (1,087.39 meters) and 1,069.22 feet (325.90 meters), respectively. Based on these projections,  
27 there would be no April adjustment to Lake Powell operations under the minimum probable  
28 inflow scenario and the water year release for 2021 is projected to be 8.23 maf (10,150 mcm).

29 ~~The end of water year elevation and storage of Lake Powell is projected to be XXXX.XX feet~~  
30 ~~(XXXX.XX meters) and XX.XX maf (XX,XXX mem), respectively, based on the minimum~~  
31 ~~probable inflow scenario.~~

32  
33 Under the most probable inflow scenario, the August 2020 24-Month Study, with a projected  
34 water year release volume of 8.23 maf (10,150 mcm) in water year 2021, projects that the  
35 elevations of Lake Powell and Lake Mead on September 30, 2021, would be 3,595.30 feet  
36 (1,095.85 meters) and 1,073.82 feet (327.30 meters), respectively. Based on these projections,  
37 under the most probable inflow scenario, an April adjustment to balancing is projected to occur  
38 during water year 2021. Consistent with Section 6.B.4, the 2021 water year release volume  
39 projected under the most probable inflow scenario is 9.00 maf (11,100 mcm) and the end of  
40 water year elevation and storage of Lake Powell is projected to be 3,587.57 feet (1,093.49  
41 meters) and 10.60 maf (13,070 mcm), respectively.

42  
43 Under the maximum probable inflow scenario, the August 2020 24-Month Study, with a  
44 projected water year release volume of 8.23 maf (10,150 mcm) in water year 2021, projects that  
45 the elevation of Lake Powell and Lake Mead on September 30, 2021, would be 3,656.19 feet  
46 (1,114.41 meters) and 1,077.95 feet (328.56 meters), respectively. Based on this projection  
47 there would be no adjustment to Powell operations under the maximum probable inflow

1 scenario and the water year release for 2021 is projected to be 8.23 maf (10,150 mcm). ~~The~~  
2 ~~end of water year elevation and storage of Lake Powell is projected to be X,XXX.XX feet~~  
3 ~~(X,XXX.XX meters) and X.XX maf (XX,XXX mem), respectively, based on the maximum~~  
4 ~~probable inflow scenario.~~

5  
6 Maintenance of the eight generating units at Glen Canyon Dam requires them to be taken out of  
7 service, in pairs, once each year for approximately one month. Additionally, in water years  
8 2020 and 2021, all four transformers will be replaced, requiring the units to be taken out of  
9 service, in pairs, and should be completed by the end of calendar year 2021. Outages for  
10 annual maintenance and unit replacements are coordinated between Reclamation offices in Salt  
11 Lake City, Utah, and Page, Arizona, and WAPA to minimize impacts to operations.

12  
13 Because of less than full storage conditions in Lake Powell resulting from drought in the  
14 Colorado River Basin, releases from Glen Canyon Dam for dam safety purposes are highly  
15 unlikely in 2021. If implemented, releases greater than powerplant capacity would be made  
16 consistent with the 1956 Colorado River Storage Project Act,<sup>43</sup> the CRBPA, the LTEMP ROD,  
17 and the Glen Canyon Dam Operating Criteria.

18  
19 Releases from Lake Powell in water year 2021 will continue to reflect consideration of the uses  
20 and purposes identified in the authorizing legislation for Glen Canyon Dam. Monthly releases  
21 will also be consistent with the LTEMP ROD and applicable Secretarial decisions, and are  
22 updated to be consistent with annual volumes determined pursuant to the 2007 Interim  
23 Guidelines.

24  
25 For the latest monthly projections for Lake Powell, please see the most recent 24-Month Study  
26 report available on Reclamation's Upper Colorado Region Water Operations website:  
27 <https://www.usbr.gov/uc/water/crsp/studies/index.html>.

28  
29 Daily and hourly releases in 2021 will be made according to the parameters of the Glen Canyon  
30 Dam Operating Criteria. These parameters set the maximum and minimum flows and ramp  
31 rates within which reservoir releases must be made. Exceptions to these parameters will be  
32 made in accordance with the Emergency Exception Criteria as described in the Glen Canyon  
33 Dam Operating Criteria. WAPA and Reclamation invoked the emergency exception criteria in  
34 August 2020 to assist California as it was experiencing rolling blackouts. There was no change  
35 to the annual release volume from Glen Canyon Dam in WY 2020.

36  
37 During water year 2021, the Department of the Interior will coordinate planning for  
38 experimental flows from Glen Canyon Dam in accordance with the 2016 Glen Canyon Dam  
39 LTEMP ROD.

## 40 41 **Lake Mead**

42  
43 For calendar year 2020, the ICS Surplus Condition was the criterion governing the operation of  
44 Lake Mead in accordance with Article III(3)(b) of the Operating Criteria, Article II(B)(2) of the

---

<sup>43</sup> Available online at: <https://www.usbr.gov/lc/region/pao/pdf/crspuc.pdf>.

1 Consolidated Decree, Section 2.B.5 of the 2007 Interim Guidelines, applicable provisions of  
2 the LB DCP Agreement, and Sections III.B.1.a, III.B.2.a, and III.E.3 of Exhibit 1 to the LB  
3 DCP Agreement. Delivery of water to Mexico was scheduled in accordance with Article 15 of  
4 the 1944 United States-Mexico Treaty and Minutes No. 242, 322, and 323 of the IBWC.  
5

6 Lake Mead began water year 2020 on October 1, 2019, at elevation 1,083.00 feet (330.10  
7 meters), with 10.26 maf (12,660 mcm) in storage, which is 39 percent of the conservation  
8 capacity<sup>44</sup> of 26.12 maf (32,220 mcm). Lake Mead ended water year 2020 at elevation  
9 1,084.18 feet (330.46 meters) with 10.36 maf (12,780 mcm) in storage (40 percent of capacity)  
10 on September 30, 2020.  
11

12 The total release from Lake Mead through Hoover Dam during water year 2020 was 8.23 maf  
13 (10,150 mcm). The total release from Lake Mead through Hoover Dam during calendar year  
14 2020 is projected to be 8.75 maf (10,790 mcm).  
15

16 The total inflow into Lake Mead is a combination of water released from Glen Canyon Dam  
17 plus inflows in the reach between Glen Canyon and Hoover Dams. In water year 2020, inflow  
18 into Lake Mead was 9.13 maf (11,260 mcm), consisting of 8.23 maf (10,150 mcm) of water  
19 released from Glen Canyon Dam and 0.902 maf (1,110 mcm) of inflows between Glen Canyon  
20 and Hoover Dams. For water year 2021, under the most probable inflow scenario, total inflow  
21 into Lake Mead is projected to be 9.88 maf (12,190 mcm).  
22

23 Based on the August 2020 24-Month Study, Lake Mead's elevation on January 1, 2021, is  
24 projected to be 1,085.28 feet (330.79 meters). In accordance with Section 2.B.5 of the 2007  
25 Interim Guidelines and the applicable provisions of the LB DCP Agreement, the ICS Surplus  
26 Condition and Sections III.B.1.a and III.B.2.a of Exhibit 1 to the LB DCP Agreement,  
27 respectively, will govern the releases and diversions from Lake Mead in calendar year 2021.  
28 Releases from Lake Mead through Hoover Dam will be adjusted for DCP and water savings  
29 contributions in calendar year 2021.  
30

31 Under the most probable inflow scenario, Lake Mead is projected to end water year 2021 at  
32 elevation 1,082.52 feet (329.95 meters), with 10.22 maf (12,610 mcm) in storage (39 percent of  
33 capacity). Lake Mead is projected to increase to elevation 1,086.90 feet (331.29 meters) with  
34 10.59 maf (13,060 mcm) in storage (41 percent of capacity) at the end of calendar year 2021.  
35 For the latest monthly projections for Lake Mead, please see the most recent 24-Month Study  
36 report available on Reclamation's Lower Colorado Region Water Operations website:  
37 <https://www.usbr.gov/lc/region/g4000/24mo/index.html>.  
38

## 39 **Lakes Mohave and Havasu**

40

---

<sup>44</sup> Conservation capacity is the amount of space available for water storage between Lake Mead's water surface elevations 895 feet (272.8 meters) and 1,219.6 feet (371.7 meters), the start of the exclusive flood control space as defined in the Field Working Agreement Between Department of the Interior, Bureau of Reclamation and Department of the Army, Corps of Engineers for Flood Control of Hoover Dam and Lake Mead, Colorado River, Nevada-Arizona, February 8, 1984.

1 Lake Mohave started water year 2020 at an elevation of 638.35 feet (194.57 meters) with 1.57  
2 maf (1,940 mcm) in storage. The water level of Lake Mohave was regulated between elevation  
3 638.28 feet (194.55 meters) and 643.34 feet (196.09 meters) during the water year, ending at an  
4 elevation of 636.00 feet (193.85 meters), with 1.51 maf (1,860 mcm) in storage. During water  
5 year 2020, 8.02 maf (9,890 mcm) was released from Davis Dam. The calendar year 2020 total  
6 release is projected to be 8.50 maf (10,480 mcm).

7  
8 For water and calendar years 2021, Davis Dam is projected to release approximately the same  
9 amount of water as in 2020, and the water level in Lake Mohave will be regulated between an  
10 elevation of approximately 633.00 feet (192.94 meters) and 645.00 feet (196.60 meters).

11  
12 Lake Havasu started water year 2020 at an elevation of 449.03 feet (136.86 meters) with 0.600  
13 maf (740 mcm) in storage. The water level of Lake Havasu was regulated between elevation  
14 446.04 feet (135.95 meters) and 449.10 feet (136.89 meters) during the water year, ending at an  
15 elevation of 447.50 feet (136.40 meters), with 0.570 maf (703 mcm) in storage. During water  
16 year 2020, 6.02 maf (7,430 mcm) was released from Parker Dam. The calendar year 2020 total  
17 release is projected to be 6.21 maf (7,660 mcm).

18  
19 For water and calendar years 2021, Parker Dam is expected to release approximately the same  
20 amount of water as in 2020, and the water level in Lake Havasu will be regulated between an  
21 elevation of approximately 446.00 feet (135.94 meters) and 450.00 feet (137.16 meters).

22  
23 Lakes Mohave and Havasu are scheduled to be drawn down in the late summer and fall months  
24 to provide storage space for local storm runoff and will be filled in the winter to meet higher  
25 summer water needs. This drawdown also corresponds with normal maintenance at both Davis  
26 and Parker powerplants scheduled for October through May.

## 27 28 **Bill Williams River**

29  
30 Alamo Lake elevation and storage increased during water year 2020. Alamo Lake started  
31 water year 2020 at elevation 1,116.29 feet (340.25 meters) with 0.129 maf (159 mcm) in  
32 storage, and ended water year 2020 at elevation 1,123.63 feet (342.48 meters) with 0.134 maf  
33 (165 mcm) in storage. Alamo Lake reached a maximum elevation of 1,139.22 feet (347.23  
34 meters) on March 26, 2020.

35  
36 In coordination with Reclamation, the U.S. Army Corps of Engineers (USACE) released  
37 additional water to lower the elevation of Alamo Lake in January and during March through  
38 May to reach a target elevation of 1,125.00 feet (342.90 meters). Approximately 0.0037 maf  
39 (4.6 mcm) of water was released from Alamo Lake from January 28 to January 31, 2020 with  
40 releases peaking at approximately 1,250 cfs (35.4 cms). Due to dry antecedent conditions, no  
41 water reached Lake Havasu. The January release resulted in a water surface elevation decrease  
42 of approximately 0.86 feet (0.26 meters) in Alamo Lake.

43  
44 Approximately 0.059 maf (73 mcm) of water was released from Alamo Lake from March 17 to  
45 May 4, 2020 with releases peaking at approximately 1,020 cfs (28.9 cms) on April 17, 2020.  
46 Of this volume, approximately 0.049 maf (60 mcm) reached Lake Havasu and became system



1 water available to meet downstream water demands. The March to May release resulted in a  
2 water surface elevation decrease of approximately 7.35 feet (2.24 meters) in Alamo Lake.  
3 The USACE began repair work on the sill of the outlet works at Alamo Dam in late July 2020.  
4 Between July 23 and late August, releases from Alamo Dam fluctuated between 3.0 cfs (0.08  
5 cms) and 600 cfs (17.0 cms).

6  
7 Other than the periods from January 28 through January 31, 2020, ~~and~~ from March 17 through  
8 May 4, 2020, and from July to late August noted above, average daily releases from Alamo  
9 Lake ranged from about 1.5 to 25 cfs (0.04 to 0.71 cms). Water released from Alamo Lake  
10 totaled 0.088 maf (109 mcm) for water year 2020.  
11

## 12 **Senator Wash and Laguna Reservoirs**

13  
14 Senator Wash Reservoir is an off-stream regulating storage facility below Parker Dam  
15 (approximately 142 river miles downstream) and has a storage capacity of 0.014 maf (17 mcm)  
16 at full pool elevation of 251.00 feet (76.50 meters). The reservoir is used to store excess flows  
17 from the river caused by water user cutbacks, side wash inflows due to rain, and other factors.  
18 Stored waters are utilized to meet the water demands in Arizona and California and the delivery  
19 obligation to Mexico.  
20

21 Since 1992, elevation restrictions have been in place on Senator Wash Reservoir due to  
22 potential piping and liquefaction of foundation and embankment materials at West Squaw Lake  
23 Dike and Senator Wash Dam. Senator Wash Reservoir is restricted to an elevation of 240.00  
24 feet (73.15 meters) with 0.0090 maf (11 mcm) of storage, a loss of about 0.0050 maf (6.2 mcm)  
25 of storage from its original capacity. Senator Wash Reservoir must not exceed an elevation of  
26 238.00 feet (72.54 meters) for more than 10 consecutive days. This reservoir restriction is  
27 expected to continue in 2021.  
28

29 Laguna Reservoir is a regulating storage facility located approximately five river miles  
30 downstream of Imperial Dam and is primarily used to capture sluicing flows from Imperial  
31 Dam. The storage capability of Laguna Reservoir has diminished from about 0.0015 maf (1.9  
32 mcm) to approximately 0.0004 maf (0.5 mcm) due to sediment accumulation and vegetation  
33 growth. Sediment accumulation in the reservoir has occurred primarily due to flood releases  
34 that occurred in 1983 and 1984, and flood control or space building releases that occurred  
35 between 1985 and 1988 and from 1997 through 1999.  
36

37 Sediment removal at Laguna Reservoir to reestablish operational sluicing began in 2013 and  
38 the estimated completion date is 2022. In total, the Laguna Basin Dredging project will dredge  
39 approximately 3.55 million cubic yards (2.7 mcm) of sediment, reestablishing 140 acres (0.57  
40 square kilometers) of open water. As of August 2020, approximately 2.95 million cubic yards  
41 (2.3 mcm) of material have been removed. All dredged material has been disposed of in a  
42 designated area adjacent to the project site. The project has incorporated the use of both land-  
43 based and waterborne heavy equipment. The project permit was obtained from the USACE in  
44 May 2013 and was valid through May 2020. Reclamation received approval from the USACE  
45 for a new permit with a completion date of May 2022.  
46

1 **Imperial Dam**

2  
3 Imperial Dam is the last major diversion dam on the Colorado River in the United States. From  
4 the head works at Imperial Dam, water is diverted into the All-American Canal on the  
5 California side of the dam and into the Gila Gravity Main Canal on the Arizona side of the  
6 dam. These diversions provide water to the Gila Project, the Yuma Project, the Imperial  
7 Irrigation District (IID), the Coachella Valley Water District, and the City of Yuma, and  
8 through Siphon Drop and Pilot Knob to the Northerly International Boundary (NIB) for  
9 diversion at Morelos Dam by Mexico. Flows arriving at Imperial Dam for calendar year 2020  
10 are projected to be 5.23 maf (6,450 mcm). The flows arriving at Imperial Dam for calendar  
11 year 2021 are projected to be 5.38 maf (6,640 mcm).  
12

13 **Gila River Flows**

14  
15 During water year 2020, there was above average snowfall in the Gila River Basin, including  
16 the Salt and Verde River watersheds. Runoff in the Verde River watershed resulted in Salt  
17 River Project releases in excess of diversion requirements at Granite Reef Diversion Dam from  
18 March 23 through March 30, 2020. The excess releases totaled approximately 0.030 maf (37  
19 mcm). Despite these releases, no water reached or was released from Painted Rock Dam by the  
20 USACE in water year 2020.  
21

22 **Warren H. Brock Reservoir**

23  
24 The Warren H. Brock (Brock) Reservoir is located near the All-American Canal in Imperial  
25 County, California. The purpose of the 0.0080 maf (9.9 mcm) Brock Reservoir is to reduce  
26 nonstorable flows and to enhance beneficial use of Colorado River water within the United  
27 States. The reservoir reduces the impact of loss of water storage at Senator Wash due to  
28 operational restrictions and provides additional regulatory storage, allowing for more efficient  
29 management of water below Parker Dam.  
30

31 **Yuma Desalting Plant**

32  
33 The Yuma Desalting Plant (YDP) was authorized in 1974 under the Colorado River Basin  
34 Salinity Control Act (Public Law 93-320)<sup>45</sup> which authorized the federal government to  
35 construct the YDP to desalt the drainage flows from the Wellton-Mohawk Division of the Gila  
36 Project. This would allow the treated water to be delivered to Mexico as part of its 1944  
37 United States-Mexico Water Treaty allotment. The United States has met salinity requirements  
38 established in IBWC Minute No. 242 primarily through use of a canal to bypass Wellton-  
39 Mohawk drain water to the Ciénega de Santa Clara (Ciénega), a wetland of open water,  
40 vegetation, and mudflats within a Biosphere Reserve in Mexico. In calendar year 2020, the  
41 amount of water discharged from the Wellton-Mohawk Division through the bypass canal is  
42 anticipated to be 0.104 maf (128 mcm) measured at gaging station 0+00 and 0.120 maf (148

---

<sup>45</sup> Available online at: <https://www.usbr.gov/lc/region/pao/pdffiles/crbsalct.pdf>.

1 mcm) measured at the gaging station near the Southerly International Boundary (SIB), at an  
2 approximate concentration of total dissolved solids of 2,390 parts per million (ppm).  
3

#### 4 **Off-stream Storage Agreements**

5

6 Colorado River water may be stored off-stream pursuant to individual SIRAs and 43 CFR Part  
7 414 within the Lower Division States. The Secretary shall make ICUA available to contractors  
8 in Arizona, California, or Nevada pursuant to individual SIRAs and 43 CFR Part 414. SNWA  
9 may propose to make unused Nevada basic apportionment available for storage by MWD<sup>46</sup>  
10 and/or Arizona Water Banking Authority (AWBA)<sup>47</sup> in calendar years 2020 and 2021.  
11

#### 12 **Intentionally Created Surplus**

13

14 The 2007 Interim Guidelines included the adoption of the ICS mechanism that, among other  
15 things, encourages the efficient use and management of Colorado River water in the Lower  
16 Basin. ICS may be created through several types of activities that include improvements in  
17 system efficiency, extraordinary conservation, tributary conservation, and the importation of  
18 non-Colorado River System water into the Colorado River mainstream over the course of a  
19 calendar year. Several implementing agreements<sup>48</sup> were executed concurrent with the issuance  
20 of the ROD for the 2007 Interim Guidelines. The LB DCP Agreement, as authorized by Public  
21 Law 116-14 through the 2019 Colorado River DCP, expanded upon the ICS concept, including  
22 the execution of additional implementation agreements<sup>49</sup> and establishment of a DCP ICS  
23 category. ICS credits may be created and delivered in calendar years 2020 and 2021 pursuant  
24 to the 2007 Interim Guidelines, the LB DCP Agreement, and the implementing agreements.  
25 ICS balances by state, user, and type of ICS may be found in the annual Colorado River  
26 Accounting and Water Use Report, Arizona, California, and Nevada.<sup>50</sup>  
27

28 IBWC Minute No. 323 identified cooperative measures that the United States and Mexico will  
29 take through December 31, 2026, including water conservation projects in Mexico. Consistent  
30 with Section IX.A of IBWC Minute No. 323, these water conservation projects will generate or  
31 conserve a volume of water of which 0.109 maf (134 mcm) will be converted to Binational ICS  
32 for use in the United States and 0.050 maf (62 mcm) will be allocated to the system for the  
33 benefit of all users.

---

<sup>46</sup> Storage and Interstate Release Agreement among The United States of America, acting through the Secretary of the Interior; The Metropolitan Water District of Southern California; the Southern Nevada Water Authority; and the Colorado River Commission of Nevada, October 21, 2004. Available online at: [https://www.usbr.gov/lc/region/g4000/contracts/SNWA\\_MWDSIRAFinal.pdf](https://www.usbr.gov/lc/region/g4000/contracts/SNWA_MWDSIRAFinal.pdf).

<sup>47</sup> Storage and Interstate Release Agreement among The United States of America, acting through the Secretary of the Interior; The Arizona Water Banking Authority; the Southern Nevada Water Authority; and the Colorado River Commission of Nevada, December 18, 2002. Available online at: <https://www.usbr.gov/lc/region/g4000/contracts/SIRAFinal.pdf>.

<sup>48</sup> Information on forbearance and delivery agreements related to the creation and delivery of ICS can be found at: <https://www.usbr.gov/lc/region/programs/strategies/documents.html>.

<sup>49</sup> Information on the agreements related to the creation of ICS under the LB DCP Agreement can be found at: <https://www.usbr.gov/lc/region/programs/dcp.html>.

<sup>50</sup> Available online at: <https://www.usbr.gov/lc/region/g4000/wtracct.html>.

**Extraordinary Conservation ICS.** Entities with approved plans may create Extraordinary Conservation ICS in 2020 and/or 2021. Table 5 provides a summary of anticipated, submitted, or approved Extraordinary Conservation ICS plans of creation in 2020 and 2021. Entities with available Extraordinary Conservation ICS may request delivery of ICS credits in 2020 and 2021.

**Table 5. Summary of Extraordinary Conservation ICS Plans of Creation in Calendar Years 2020 and 2021**

| Entity   | 2020 Plan of Creation      | Status of 2020 Plan | 2021 Plan of Creation      | Status of 2021 Plan |
|--|----------------------------|---------------------|----------------------------|---------------------|
| CAWCD  | up to 0.060 maf (74 mcm)   | approved            | up to 0.061 maf (75 mcm)   | submitted           |
| Colorado River Indian Tribes                   | up to 0.0037 maf (4.9 mcm) | approved            | up to 0.0047 maf (5.8 mcm) | submitted           |
| Gila River Indian Community                    | up to 0.083 maf (102 mcm)  | approved            | up to 0.041 maf (51 mcm)   | submitted           |
| Mohave Valley Irrigation and Drainage District | up to 0.0061 maf (8.6 mcm) | approved            | up to 0.0070 maf (8.6 mcm) | submitted           |
| IID  | up to 0.062 maf (76 mcm)   | approved            | up to 0.062 maf (76 mcm)   | submitted           |
| MWD  | up to 0.450 maf (555 mcm)  | approved            | up to 0.450 maf (555 mcm)  | submitted           |
| SNWA   | up to 0.100 maf (123 mcm)  | approved            | up to 0.100 maf (123 mcm)  | submitted           |

**System Efficiency ICS.** In 2020 and 2021, CAWCD, MWD, and SNWA may request delivery of Brock Reservoir System Efficiency ICS credits. The annual maximum delivery of Brock Reservoir System Efficiency ICS is 0.065 maf (80 mcm). In 2020 and 2021, CAWCD, MWD, and SNWA may request delivery of YDP Pilot Run System Efficiency ICS credits.

**Tributary Conservation ICS.** SNWA has an approved plan to create up to 0.043 maf (53 mcm) of Tributary Conservation ICS in 2020 and has submitted a plan to create up to 0.043 maf (53 mcm) in 2021. Any Tributary Conservation ICS not delivered for use by SNWA in the calendar year created will, at the beginning of the following year, be converted to Extraordinary Conservation ICS pursuant to the 2007 Interim Guidelines.

**Imported ICS.** SNWA may submit plans to create Imported ICS in 2020 and 2021. Any Imported ICS not delivered for use by SNWA in the calendar year created will, at the

1 beginning of the following year, be converted to Extraordinary Conservation ICS pursuant to  
2 the 2007 Interim Guidelines.

3  
4 **Binational ICS.** In 2020 and 2021, CAWCD, IID, MWD, and SNWA may request delivery  
5 of Binational ICS subject to any applicable provisions in the delivery agreements.

6  
7 **DCP ICS.** DCP ICS may be created in 2021 by entities making DCP contributions consistent  
8 with Section III of Exhibit 1 to the LB DCP Agreement. Following creation, DCP ICS may be  
9 delivered in a subsequent year in accordance with Section III.F of Exhibit 1 to the LB DCP  
10 Agreement.

## 11 12 **System Conservation**

13  
14 System conservation agreements have allowed water users to participate in projects designed to  
15 determine whether voluntary, temporary, and compensated programs to conserve or reduce  
16 consumptive use of Colorado River water can benefit the entire Colorado River system by  
17 mitigating the effect on declining storage levels in Colorado River reservoirs.<sup>51,52</sup> Agreements  
18 previously executed under the PSCP in the Lower Basin continue to be implemented in 2020  
19 and 2021.<sup>53</sup>

20  
21 Under the LB DCP Agreement and subject to availability of appropriations, the Secretary is  
22 committed to taking affirmative actions to implement programs or projects to create or  
23 conserve 0.100 maf (123 mcm) or more of Colorado River system water annually in the Lower  
24 Basin. An agreement to create 0.010 maf (12.3 mcm) of system water in the Lower Basin to  
25 help meet this commitment is being implemented in 2020.<sup>54</sup> Additional projects or agreements  
26 to create or conserve system water in the Lower Basin may be implemented in 2020 and/or  
27 2021.

## 28 29 **Delivery of Water to Mexico**

30  
31 Delivery to Mexico pursuant to the 1944 United States-Mexico Water Treaty and IBWC  
32 Minute No. 323 is anticipated to be 1.433 maf (1,770 mcm) in calendar year 2020, reflecting  
33 the creation of approximately 0.067 maf (83 mcm) of water for Mexico's Water Reserve

---

<sup>51</sup> For the period from 2015 through 2018, the Upper Colorado River Commission (UCRC) acted as the contracting entity for the System Conservation Pilot Program (SCPP) in the Upper Basin. In June 2018, the UCRC passed a resolution to temporarily cease to act as the contracting entity for the SCPP after fulfilling its commitments for 2018. The June 20, 2018 Resolution of the UCRC is available online at:  
<http://www.ucrccommission.com/RepDoc/SCPPDocuments/DemandMgmtResolution062018.pdf>.

<sup>52</sup> Pursuant to Public Law 113-235, a report from the Secretary evaluating the effectiveness of the water conservation pilot projects is under development and will be submitted to Congress, including a recommendation on whether the activities undertaken by the pilot projects should be continued.

<sup>53</sup> More information on the PSCP in the Lower Basin can be found at:

<https://www.usbr.gov/lc/region/programs/PilotSysConsProg/pilotsystem.html>.

<sup>54</sup> [An agreement with the Fort McDowell-Yavapai Nation is in place for 2020 to create 10,000 af \(12.3 mcm\) of system water.](#)

1 pursuant to Section V of IBWC Minute No. 323, of which 0.041 maf (51 mcm) originated from  
2 water savings contributions required by Mexico under Section IV of IBWC Minute No. 323.  
3 This volume shall be accounted for and remain as Mexico's Water Reserve as described in the  
4 Joint Report of the Principal Engineers with the Implementing Details of the Binational Water  
5 Scarcity Contingency Plan in the Colorado River Basin (2019 Joint Engineers' Report).<sup>55</sup>  
6 Balances of Mexico's Water Reserve in previous years may be found in the annual Colorado  
7 River Accounting and Water Use Report, Arizona, California, and Nevada.<sup>56</sup>

8  
9 Of the scheduled delivery to Mexico in calendar year 2020, approximately 1.293 maf (1,590  
10 mcm) is projected to be delivered at NIB and approximately 0.140 maf (173 mcm) is projected  
11 to be delivered at SIB. Under IBWC Minute No. 322 and the Emergency Delivery  
12 Agreement,<sup>57</sup> water may be delivered to Tijuana, Baja California through MWD, the San Diego  
13 County Water Authority, and the Otay Water District's respective distribution system facilities  
14 in California. In calendar year 2020, approximately 921 acre-feet (1.1 mcm) is scheduled to be  
15 delivered to Tijuana, Baja California.

16  
17 Of the total delivery at SIB projected in calendar year 2020, approximately 0.097 maf (120  
18 mcm) is projected to be delivered from the Yuma Project Main Drain and approximately 0.034  
19 maf (42 mcm) is expected to be delivered by the Protective and Regulatory Pumping Unit (242  
20 well field).

21  
22 Excess flows arriving at the NIB are anticipated to be approximately 0.058 maf (72 mcm) in  
23 calendar year 2020. Excess flows result from a combination of factors, including heavy rain  
24 from seasonal storms, water ordered but not delivered to United States users downstream of  
25 Parker Dam, inflows into the Colorado River below Parker Dam, and spills from irrigation  
26 facilities below Imperial Dam.

27  
28 Pursuant to the 1944 United States-Mexico Water Treaty, a volume of 1.500 maf (1,850 mcm)  
29 will be available to be scheduled for delivery to Mexico, adjusted for water savings  
30 contributions as required under Section IV of IBWC Minute No. 323, in calendar year 2021. In  
31 accordance with IBWC Minute No. 323, Mexico may create water for or take delivery of water  
32 from Mexico's Water Reserve pursuant to Section V of IBWC Minute No. 323.  
33 Approximately 0.140 maf (173 mcm) is projected to be delivered at SIB and the remainder of  
34 the water to be scheduled for delivery to Mexico in 2021 will be delivered at NIB. Mexico,  
35 through IBWC, may request water to be delivered to Tijuana in calendar year 2021, consistent  
36 with IBWC Minute No. 322 and the Emergency Delivery Agreement.

37  
38 Drainage flows to the Colorado River from the Yuma Mesa Conduit and South Gila Drain  
39 Pump Outlet Channels are projected to be XXX maf (XX mcm) and 0.023 maf (28 mcm),

---

<sup>55</sup> Joint Report of the Principal Engineers with the Implementing Details of the Binational Water Scarcity Contingency Plan in the Colorado River Basin. Available online at: [https://www.ibwc.gov/Files/joint\\_report\\_min323\\_bi\\_water\\_scarcity\\_contingency\\_plan\\_final.pdf](https://www.ibwc.gov/Files/joint_report_min323_bi_water_scarcity_contingency_plan_final.pdf).

<sup>56</sup> Available online at: <https://www.usbr.gov/lc/region/g4000/wtracct.html>.

<sup>57</sup> 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 Facilities in the United States, dated January 18, 2017.

1 respectively, for calendar year 2020. This water is available for delivery at NIB in satisfaction  
2 of the 1944 United States-Mexico Water Treaty.

3 As stated in IBWC Minute No. 242, water delivered to Mexico upstream of Morelos Dam shall  
4 have an annual average salinity of no more than 115 ppm ± 30 ppm United States' count (121  
5 ppm ± 30 ppm Mexican count) over the annual average salinity of Colorado River waters  
6 which arrive at Imperial Dam. This difference, known as the salinity differential, is projected  
7 to be 135 ppm by the United States' count for calendar year 2020.

8

9 Mexico has identified four critical months for agriculture, September through December,  
10 regarding improving the quality of water delivered at SIB. Consistent with Section VI.B of  
11 IBWC Minute No. 323, the United States has improved the water quality delivered at the SIB  
12 to approximately 1,200 ppm during this four-month period.

DRAFT

1 **2021 DETERMINATIONS**

2  
3 The AOP provides projections 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, specific  
6 reservoir releases may be modified within these requirements as forecasted inflows change in  
7 response to climatic variability and to provide additional benefits coincident to the projects’  
8 multiple purposes.  
9

10 **Upper Basin**

11  
12 Section 602(a) of the CRBPA provides for the storage of Colorado River water in Upper Basin  
13 reservoirs and the release of water from Lake Powell that the Secretary finds reasonably  
14 necessary to assure deliveries to comply with Articles III(c), III(d), and III(e) of the 1922  
15 Colorado River Compact without impairment to the annual consumptive use in the Upper  
16 Basin. The Operating Criteria provide that the annual plan of operation shall include a  
17 determination of the quantity of water considered necessary to be in Upper Basin storage at the  
18 end of the water year after taking into consideration all relevant factors including historic  
19 streamflows, the most critical period of record, the probabilities of water supply, and estimated  
20 future depletions. Water not required to be so stored will be released from Lake Powell:  
21

- 22 • to the extent it can be reasonably applied in the States of the Lower Division to the uses  
23 specified in Article III(e) of the 1922 Colorado River Compact, but these releases will  
24 not be made when the active storage in Lake Powell is less than the active storage in  
25 Lake Mead;
- 26  
27 • to maintain, as nearly as practicable, active storage in Lake Mead equal to the active  
28 storage in Lake Powell; and
- 29  
30 • to avoid anticipated spills from Lake Powell.

31  
32 Taking into consideration all relevant factors required by Section 602(a)(3) of the CRBPA and  
33 the Operating Criteria, it is determined that the active storage in Upper Basin reservoirs  
34 projected for September 30, 2021, under the most probable inflow scenario would be below the  
35 threshold required under Section 602(a) of the CRBPA.  
36

37 Taking into account (1) the existing water storage conditions in the basin, (2) the August 2020  
38 24-Month Study projection of the most probable near-term water supply conditions in the  
39 basin, and (3) Section 6.B of the 2007 Interim Guidelines, the Upper Elevation Balancing Tier  
40 will govern the operation of Lake Powell for water year 2021. The August 2020 24-Month  
41 Study of the most probable inflow scenario projects the water year 2021 release from Glen  
42 Canyon Dam to be 8.23 maf (10,150 mcm). Given the hydrologic variability of the Colorado  
43 River System and based on actual 2020 water year operations, the projected water year release  
44 from Lake Powell in 2021 is likely to be in the estimated range of 8.23 maf (10,150 mcm) to  
45 9.0 maf (11,100 mcm) or greater.



1 **Lower Basin**

2  
3 Pursuant to Article III of the Operating Criteria and consistent with the Consolidated Decree,  
4 water shall be released or pumped from Lake Mead to meet the following requirements:  
5

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

13  
14 The Operating Criteria provide that after the commencement of delivery of mainstream water  
15 by means of the Central Arizona Project, the Secretary will determine the extent to which the  
16 reasonable beneficial consumptive use requirements of mainstream users are met in the Lower  
17 Division States. Reasonable beneficial consumptive use requirements are met depending on  
18 whether a Normal, Surplus, or Shortage Condition has been determined. The Normal  
19 Condition is defined as annual pumping and release from Lake Mead sufficient to satisfy 7.500  
20 maf (9,250 mcm) of consumptive use in accordance with Article III(3)(a) of the Operating  
21 Criteria and Article II(B)(1) of the Consolidated Decree. The Surplus Condition is defined as  
22 annual pumping and release from Lake Mead sufficient to satisfy in excess of 7.500 maf (9,250  
23 mcm) of consumptive use in accordance with Article III(3)(b) of the Operating Criteria and  
24 Article II(B)(2) of the Consolidated Decree. An ICS Surplus Condition is defined as a year in  
25 which Lake Mead’s elevation is projected to be above elevation 1,075.0 feet (327.7 meters) on  
26 January 1, a Flood Control Surplus has not been determined, and delivery of ICS has been  
27 requested. The Secretary may determine an ICS Surplus Condition in lieu of a Normal  
28 Condition or in addition to other operating conditions that are based solely on the elevation of  
29 Lake Mead. The Shortage Condition is defined as annual pumping and release from Lake  
30 Mead insufficient to satisfy 7.500 maf (9,250 mcm) of consumptive use in accordance with  
31 Article III(3)(c) of the Operating Criteria and Article II(B)(3) of the Consolidated Decree.  
32

33 The 2007 Interim Guidelines are being utilized in calendar year 2021 and serve to implement  
34 the narrative provisions of Article III(3)(a), Article III(3)(b), and Article III(3)(c) of the  
35 Operating Criteria and Article II(B)(1), Article II(B)(2), and Article II(B)(3) of the  
36 Consolidated Decree for the period through 2026. The 2007 Interim Guidelines will be used  
37 annually by the Secretary to determine the quantity of water available for use within the Lower  
38 Division States.  
39

40 Consistent with the 2007 Interim Guidelines and the LB DCP Agreement, the August 2020 24-  
41 Month Study was used to forecast the system storage as of January 1, 2021. Based on a  
42 projected January 1, 2021 Lake Mead elevation of 1,085.28 feet (330.79 meters) and consistent  
43 with Section 2.B.5 of the 2007 Interim Guidelines, the ICS Surplus Condition will govern  
44 releases for use in the states of Arizona, Nevada, and California during calendar year 2021 in  
45 accordance with Article III(3)(b) of the Operating Criteria and Article II(B)(2) of the  
46 Consolidated Decree. In addition, consistent with Sections III.B.1.a and III.B.2.a of Exhibit 1  
47 to the LB DCP Agreement, DCP contributions will be required by Arizona and Nevada,

1 respectively, in calendar year 2021. Water deliveries in the Lower Basin during calendar year  
2 2021 will be limited to 7.500 maf (9,250 mcm), and will be adjusted for DCP contributions and  
3 creation and/or delivery of ICS credits.

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 recurrent  
8 use of the water accrue to the state that receives the allocated water. No unused apportionment  
9 for calendar year 2021 is anticipated. If any unused apportionment becomes available after  
10 adoption of this AOP, Reclamation, on behalf of the Secretary, may allocate any such available  
11 unused apportionment for calendar year 2021 in accordance with Article II(B)(6) of the  
12 Consolidated Decree, the Unused Water Policy, and giving further consideration to the water  
13 conservation objectives of the July 30, 2014 agreement for the PSCP and as specified in  
14 Section 4.b of the LB DCP Agreement.

15  
16 In calendar year 2021, water may be stored off-stream pursuant to individual SIRAs and 43  
17 CFR Part 414 within the Lower Division States. The Secretary shall make ICUA available to  
18 contractors in Arizona, California, or Nevada pursuant to individual SIRAs and 43 CFR Part  
19 414. SNWA may propose to make unused Nevada basic apportionment available for storage  
20 by MWD and/or AWBA in calendar year 2021.

21  
22 The IOPP, which became effective January 1, 2004, will be in effect during calendar year 2021.  
23 Payback balances by state and user may be found in the annual Colorado River Accounting and  
24 Water Use Report, Arizona, California, and Nevada.<sup>58</sup>

25  
26 In calendar year 2021, conserved Colorado River water, created through the PSCP and other  
27 voluntary agreements, is anticipated to be added to system reservoirs in the Lower Basin  
28 pursuant to system conservation agreements.

29  
30 The 2007 Interim Guidelines included the adoption of the ICS mechanism, which was  
31 expanded upon in the LB DCP Agreement, that among other things encourages the efficient use  
32 and management of Colorado River water in the Lower Basin. The ICS Surplus Condition will  
33 govern Lower Basin operations in calendar year 2021 and ICS credits will be created and  
34 delivered pursuant to the 2007 Interim Guidelines, appropriate forbearance and delivery  
35 agreements, and the LB DCP Agreement.

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

41  
42 As provided in Section 7.C of the 2007 Interim Guidelines, the Secretary may undertake a mid-  
43 year review to consider revisions of the current AOP. For Lake Mead, the Secretary shall  
44 revise the determination in any mid-year review for the current year only to allow for additional  
45 deliveries from Lake Mead pursuant to Section 7.C of the 2007 Interim Guidelines.

---

<sup>58</sup> Available online at: <https://www.usbr.gov/lc/region/g4000/wtracct.html>.

1 **1944 United States-Mexico Water Treaty**

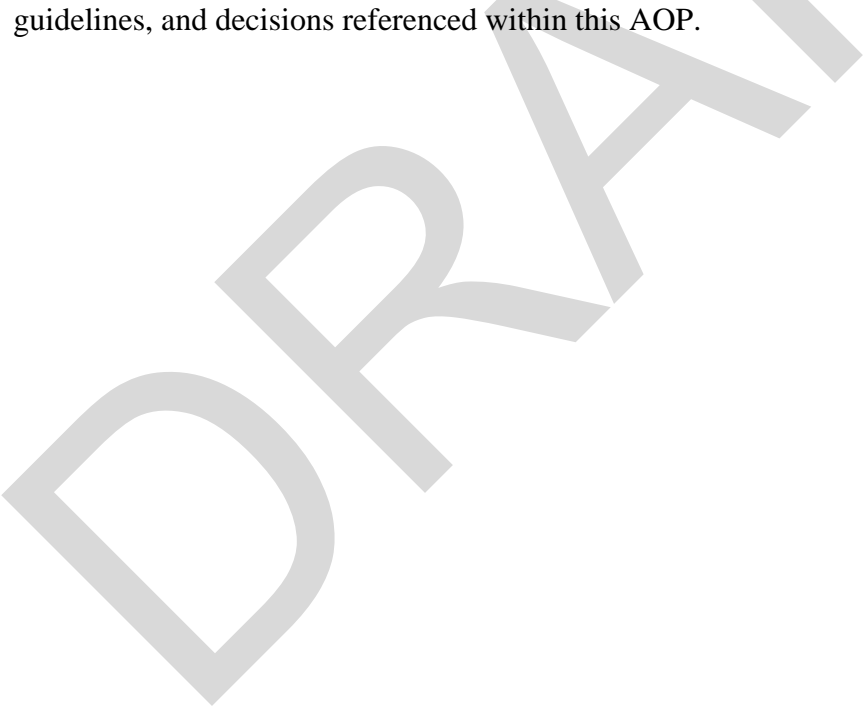
2  
3 Under the minimum probable, most probable, and maximum probable inflow scenarios, water  
4 in excess of that required to supply uses in the United States and the guaranteed quantity of  
5 1.500 maf (1,850 mcm) allotted to Mexico will not be available, subject to any increased  
6 amounts delivered consistent with Section V of IBWC Minute No. 323. Vacant storage space  
7 in mainstream reservoirs is substantially greater than that required by flood control regulations.  
8 Therefore, a volume of 1.500 maf (1,850 mcm) of water will be available to be scheduled for  
9 delivery to Mexico during calendar year 2021 subject to and in accordance with Article 15 of  
10 the 1944 United States-Mexico Water Treaty and Minutes No. 242 and 322 of the IBWC, as  
11 further adjusted for water savings contributions as required under Section IV of IBWC Minute  
12 No. 323, as detailed in the 2019 Joint Engineers' Report In accordance with Section V of  
13 IBWC Minute No. 323, Mexico may create water for or take delivery of water from Mexico's  
14 Water Reserve.

15  
16 Calendar year schedules of the monthly deliveries of Colorado River water are formulated by  
17 the Mexican Section of the IBWC and presented to the United States Section before the  
18 beginning of each calendar year. Changes to these delivery schedules are coordinated between  
19 the United States and Mexican Sections of the IBWC pursuant to Article 15 of the 1944 United  
20 States-Mexico Water Treaty and consistent with other applicable agreements.

1 **DISCLAIMER**

2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20

Nothing in this AOP is intended to interpret the provisions of the Colorado River Compact (45 Stat. 1057); the Upper Colorado River Basin Compact (63 Stat. 31); the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, Treaty Between the United States of America and Mexico (Treaty Series 994, 59 Stat. 1219); the United States/Mexico agreements in Minute No. 242 of August 30, 1973 (Treaty Series 7708; 24 UST 1968), Minute No. 322 of January 19, 2017, or Minute No. 323 of September 21, 2017; the Consolidated Decree entered by the Supreme Court of the United States in *Arizona v. California* (547 U.S 150 (2006)); the Boulder Canyon Project Act (45 Stat. 1057; 43 U.S.C. 617); the Boulder Canyon Project Adjustment Act (54 Stat. 774; 43 U.S.C. 618a); the Colorado River Storage Project Act (70 Stat. 105; 43 U.S.C. 620); the Colorado River Basin Project Act (82 Stat. 885; 43 U.S.C. 1501); the Colorado River Basin Salinity Control Act (88 Stat. 266; 43 U.S.C. 1951); the Hoover Power Plant Act of 1984 (98 Stat. 1333); the Hoover Power Allocation Act of 2011 (125 Stat. 777); the Colorado River Floodway Protection Act (100 Stat. 1129; 43 U.S.C. 1600); the Grand Canyon Protection Act of 1992 (Title XVIII of Public Law 102-575, 106 Stat. 4669); the Decree Quantifying the Federal Reserved Right for Black Canyon of the Gunnison National Park (Case No. 01CW05, District Court, Colorado Water Division No. 4, 2008); the Colorado River Drought Contingency Plan Authorization Act (Public Law 116-14); or the rules, criteria, guidelines, and decisions referenced within this AOP.



## ACRONYMS AND ABBREVIATIONS

|    |                  |   |
|----|------------------|---|
| 1  | AMWG             | Glen Canyon Dam Adaptive Management Work Group                  |
| 2  | AOP              | Annual Operating Plan   |
| 3  | AWBA             | Arizona Water Banking Authority                                 |
| 4  | bug flow         | Macroinvertebrate Production Flow                               |
| 5  | CAWCD            | Central Arizona Water Conservation District                     |
| 6  | CBRFC            | National Weather Service's Colorado Basin River Forecast Center |
| 7  | cfs              | cubic feet per second   |
| 8  | cms              | cubic meters per second   |
| 9  | CRBPA            | Colorado River Basin Project Act of 1968                        |
| 10 | DCP              | Drought Contingency Plan  |
| 11 | FG-Ops           | Flaming Gorge Operation Plan                                    |
| 12 | FGTWG            | Flaming Gorge Technical Working Group                           |
| 13 | IBWC             | International Boundary and Water Commission                     |
| 14 | ICMA             | Intentionally Created Mexican Allocation                        |
| 15 | ICS              | Intentionally Created Surplus                                   |
| 16 | ICUA             | Intentionally Created Unused Apportionment                      |
| 17 | IID              | Imperial Irrigation District                                    |
| 18 | IOPP             | Inadvertent Overrun and Payback Policy                          |
| 19 | LB DCP Agreement | Lower Basin Drought Contingency Plan Agreement                  |
| 20 | LTEMP            | Long-Term Experimental and Management Plan                      |
| 21 | LTSP             | Larval Trigger Study Plan                                       |
| 22 | maf              | million acre-feet   |
| 23 | mcm              | million cubic meters  |
| 24 | MWD              | The Metropolitan Water District of Southern California          |
| 25 | NIB              | Northerly International Boundary                                |
| 26 | ppm              | parts per million   |
| 27 | PSCP             | Pilot System Conservation Program                               |
| 28 | Reclamation      | Bureau of Reclamation   |
| 29 | ROD              | Record of Decision  |
| 30 | SCPP             | System Conservation Pilot Program                               |
| 31 | Secretary        | Secretary of the U.S. Department of the Interior                |
| 32 | Service          | U.S. Fish and Wildlife Service                                  |
| 33 | SIB              | Southerly International Boundary                                |
| 34 | SIRA             | Storage and Interstate Release Agreement                        |
| 35 | SJRIP            | San Juan River Basin Recovery Implementation Program            |
| 36 | SNWA             | Southern Nevada Water Authority                                 |
| 37 | UCRC             | Upper Colorado River Commission                                 |
| 38 | UCRIP            | Upper Colorado River Endangered Fish Recovery Program           |
| 39 | USACE            | U.S. Army Corps of Engineers                                    |
| 40 | USGS             | United States Geological Survey                                 |
| 41 | WAPA             | Western Area Power Administration                               |
| 42 | YDP              | Yuma Desalting Plant  |

3