

**BUREAU OF RECLAMATION  
LOWER COLORADO REGION  
Environmental Assessment**

**EA Number:** LC-08-002

**Proposed Action Title:** Regulating the Use of Lower Colorado River Water without an Entitlement.

**Location of Proposed Action:**

The location of the action is the geographic area within the Lower Colorado River Basin beginning at Lee Ferry in the northern part of the Lower Basin and extending downstream to the Southerly International Boundary (SIB) between the United States and Mexico. The area of direct impact extends laterally from the river corridor to the exterior boundaries of the Colorado River Aquifer.

Figure 1 is a large-scale map showing the proposed action area; maps with specific data and well information are in Attachment 1 (CD).

**I. Introduction**

A. Background

The Colorado River originates in the mountains of central Colorado and flows southwesterly for approximately 1,440 miles through Colorado, Utah, and Arizona, and along the Arizona-Nevada and Arizona-California boundaries, after which it flows into Mexico and empties into the Gulf of California. The Colorado River drains approximately 250,000 square miles from portions of seven states: Wyoming, Colorado, Utah, New Mexico, Nevada, Arizona, and California. The Colorado River basin is an area of approximately 900 miles long from north to south and 300 to 500 miles wide from east to west - practically one-twelfth the area of the continental United States excluding Alaska. Over 170,000 square miles of the watershed are above Hoover Dam. The Upper Colorado River Basin, which ranges in elevation from 3,000 to over 14,000 feet, supplies most of the water for the entire basin. Most of the discharge occurs from April through July when the winter snowpack melts. The Lower Colorado River Basin is arid with very little tributary runoff reaching the mainstream of the Colorado River except during occasional storms. The Lower Basin is largely dependent upon managed use of the Colorado River system to make its lands productive and inhabitable.

The Colorado River is one of the primary sources of water for irrigation, municipal, and industrial uses in Arizona, California, and Nevada. As authorized by the Boulder Canyon Project Act of 1928, Colorado River water is stored behind Hoover Dam for use in the Lower Division States of Arizona, California, and Nevada. The Boulder Canyon Project Act and the Consolidated Decree entered by

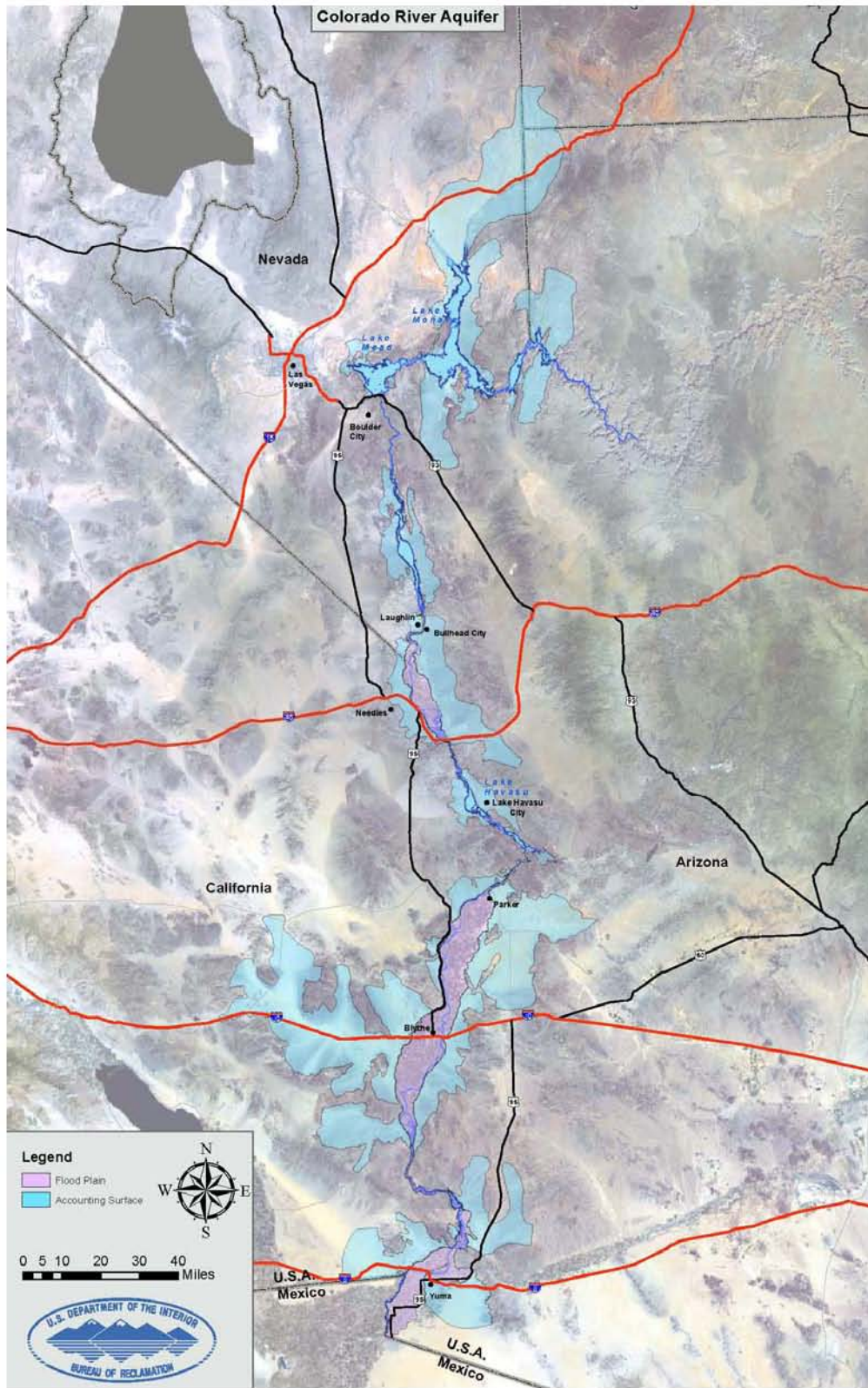


Figure 1. Map of Lower Colorado River showing Flood Plain and Accounting Surface.

the United States Supreme Court in *Arizona v. California*, 547 U.S. 150 (2006) (Supreme Court Decree) require a Colorado River water user in the Lower Basin to have a contract with the Secretary of the Interior (Secretary) for the storage, delivery, and use of the water. The Regional Director of Reclamation's Lower Colorado Region enters into water delivery contracts with water users in Arizona, California, and Nevada on behalf of the Secretary. The Boulder Canyon Project Act and the Reclamation Act of 1902 authorize the Secretary to prescribe rules and regulations necessary to carry out provisions of law.

The rule developed by Reclamation will help ensure the long-term sustainability of the lower Colorado River and protect water rights of lower Colorado River water entitlement holders. The rule establishes procedures that Reclamation will follow in making determinations of unlawful use of lower Colorado River water.

To lawfully use water from the mainstream of the lower Colorado River a person or entity must have an entitlement. An entitlement, which authorizes a person, or entity, to use water from the lower Colorado River for beneficial use, can exist in one of three forms: (1) a decreed right as described in the Supreme Court Decree; (2) a contract with the Secretary; or, (3) a Secretarial Reservation of Colorado River water. A lower Colorado River entitlement specifies the quantity of water which may be used, the purpose for which the water may be used, and the location where the use may occur. Any diversion or consumptive use of lower Colorado River water without an entitlement is unlawful.

Water lost due to the use of Colorado River water in the lower Colorado River region without an entitlement ranges from 9,000 to 15,000 acre-feet per year. The largest amount of water being unlawfully used from the Colorado River in the Lower Basin occurs via underground pumping for irrigation from wells located on the floodplain. The majority of water users who are using lower Colorado River water without an entitlement consist of households which pump small amounts of water for domestic use from wells located on the floodplain.

## B. Purpose and Need for Proposed Action

One of Reclamation's legal obligations and administrative priorities is to ensure that all use of Colorado River water is covered by an entitlement and is accurately accounted for within each Lower Division States' apportionment. Each Lower Division States' apportionment of Colorado River water is limited. Unlawful use harms entitlement holders by using water that entitlement holders could legally use otherwise. Currently, each Lower Division State is fully using its apportionment; the prolonged period of drought in the Colorado River Basin has reduced the amount of water stored in Colorado River reservoirs. Thus, Reclamation concludes that rulemaking is necessary and appropriate.

## II. Description of Proposed Action and Alternatives

### A. No Action Alternative

The alternative to rulemaking is to take no action. Reclamation believes the no action is undesirable because:

1. Each Lower Division State is fully utilizing its respective apportionment;
2. The current prolonged drought in the Colorado River Basin has reduced water stored in Colorado River reservoirs;
3. Reclamation would fail to ensure that water users, other than those users of Colorado River water with a Secretarial reservation or decreed rights identified by the Consolidated Decree, use Colorado River water in the Lower Basin through a contract with the Secretary;
4. Unlawful use of Colorado River water in the Lower Basin may escalate.

### B. Proposed Action/Preferred Alternative

Reclamation will establish a rule that will help ensure the long-term sustainability of the lower Colorado River and protect the water rights of lower Colorado River water entitlement holders. The rule establishes procedures that Reclamation will follow in making determinations of unlawful use of lower Colorado River water. The rule includes notice and appeal procedures for those persons or entities whose use of lower Colorado River water is identified as an unlawful use. An Advanced Notice of Proposed Rulemaking, published in the *Federal Register* on August 18, 2006 (71 FR 47763), preceded publication of the proposed rule.

Reclamation's primary goal in its management of the lower Colorado River is to ensure that all Colorado River water use in the Lower Basin is covered by an entitlement and correctly accounted for within each Lower Division State's apportionment. Each Lower Division State's apportionment of Colorado River water is a limited amount, thus, unlawful use harms that state's entitlement holders by using water the entitlement holders otherwise could legally use. The lower Colorado River is a resource that is characterized by high subtractability, which means that one person's use of a resource reduces the availability of that resource for others.

Reclamation has requested the United States Geological Survey (USGS) to conduct an inventory of wells and river pumps (well inventory) along the lower Colorado River and in adjacent hydraulically connected valleys in the Lower Division States.<sup>1</sup> Wells and river pumps within the scope of this rule are those that pump water that originates from the Colorado River or pump water that may be replaced in the underlying aquifer by Colorado River water. The well inventory provides Reclamation with an accurate record of the locations of wells and river pumps, type of water use, and ownership. The well inventory data provided by the USGS is the information that Reclamation

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<sup>1</sup> River pumps either divert surface water for use directly from the Colorado River or from a structure, canal, or drainage ditch that is connected to the Colorado River. In the well inventory, any pump that is placed on a well is not designated as a river pump.

uses to determine whether or not a well pumps water that originated from the Colorado River or is replaced by water from the Colorado River. Reclamation is comparing information collected from the well inventory with a list of water entitlements to ensure compliance with BCPA and the Supreme Court Decree.

### River Aquifer and Accounting Surface

The method to identify wells that yield water that originated from the Colorado River or yield water that will be replaced by Colorado River water identifies a River Aquifer and a theoretical accounting surface within the River Aquifer. The methodology used to determine the status of a well is published in two USGS Water-Resources Investigations Reports (see Owen-Joyce, Wilson, Carpenter, and Fink 2000; Wilson and Owen-Joyce 1994).

#### River Aquifer

Colorado River water is stored in surface reservoirs and in an aquifer of permeable sediments and sedimentary rocks that fill the structural basins of the lower Colorado River valley and adjacent tributary valleys. Geophysical gravity studies, well logs, and previous hydrologic and geologic studies provided data on the extent and thickness of the sediments and sedimentary rocks. The total thickness ranges from 0 to more than 5,000 feet. The subsurface limits of the River Aquifer are the nearly impermeable bedrock of the bottom and sides of the basin. Most of the Colorado River water in the aquifer originated from the mainstream because of the hydraulic connection between the river and the aquifer and overbank flow prior to dam construction. Precipitation in surrounding mountains and inflow from tributary valleys contribute some water to the aquifer. The water table in the River Aquifer extends from the Colorado River, beneath the floodplain, and beneath the alluvial slopes until it intersects bedrock.

#### Accounting Surface

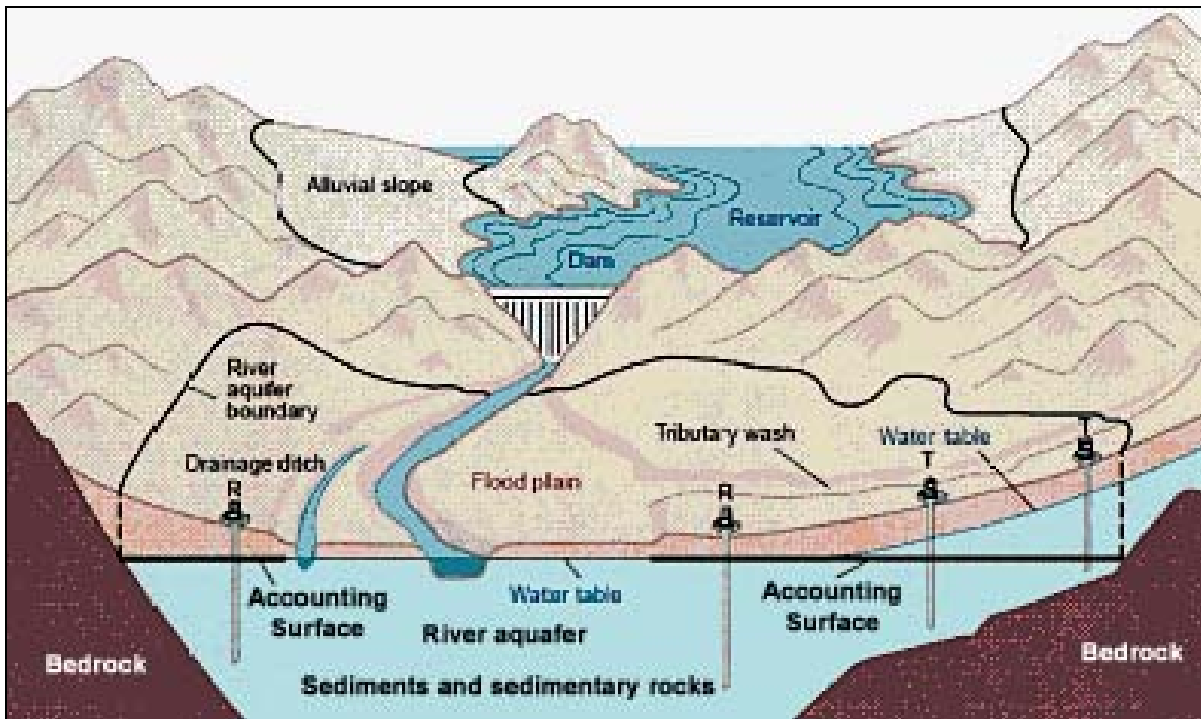
The term “accounting surface” is defined as the elevation and slope of the unconfined static water table in the River Aquifer outside the floodplain and the reservoirs of the lower Colorado River that would exist if the lower Colorado River were the only source of water to the River Aquifer. The accounting surface extends outward from the edges of the floodplain or a reservoir to the subsurface boundary of the River Aquifer from the mouth of the Grand Canyon to just north of the SIB between the United States and Mexico.<sup>2</sup> Use of an accounting surface provides a uniform criterion based on hydrologic principles for all users pumping water from wells.

Wells that tap the River Aquifer outside of the floodplain with a static (nonpumping) water level indistinguishable from or below the accounting surface are presumed to yield water that originated from the Colorado River or will be replaced by water drawn from the Colorado River. Wells with static water level above the accounting surface are presumed to yield water that originated from precipitation and inflow from tributary valleys.

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<sup>2</sup>In the Yuma, Arizona accounting area, the use of the accounting surface is superseded as determined by Reclamation.

The accounting surface was generated by using river profiles of the Colorado River and water-level elevations of the reservoirs, lakes, marshes, wetlands, and drainage ditches. River profiles were computed for the highest median monthly projected discharge required to meet annual downstream requirements of 7.5 maf of consumptive use by the Lower Division States plus an annual delivery to Mexico of 1.5 maf. Near reservoirs, the elevation of the accounting surface is defined by the annual high water-surface elevation used to operate the reservoir under normal flow conditions (Wilson and Owen-Joyce 1993). Figure 2 is a conceptual diagram showing the relationships between the Colorado River Aquifer, the accounting surface, the floodplain, tributary inflow, the Colorado River, surrounding bedrock and wells drilled within the Colorado River Aquifer.



**Figure 2. Colorado River Water Accounting Surface**

Field data collection related to the unlawful use of lower Colorado River water will be a continuous process. This ensures that all wells are identified and inventoried, including those established after the initial field data collection was completed. The frequency for field data collection for an area will be determined by Reclamation, and will be based upon a variety of parameters such as significant changes in river conditions, development, population, political considerations, and availability of funding and staff.

Several thousand wells are within the boundary of the River Aquifer. Within the area of the

floodplain, it is assumed that all wells pump water directly from the Colorado River. Within the area of the accounting surface, Reclamation will apply the method developed by the USGS to determine whether water pumped from a well is replaced with water drawn from the lower Colorado River. Reclamation will also evaluate whether unique hydrologic circumstances in some areas along the lower Colorado River would merit an exception to the USGS methodology.

An area Reclamation currently considers unique enough to warrant exemption from the River Aquifer/accounting surface method is the Yuma, Arizona area near the City of Yuma and south to the southerly United States-Mexican border. A unique set of criteria governing this area is included in the rule. Should unique hydrological circumstances be identified elsewhere within the River Aquifer, Reclamation will likewise consider whether these circumstances would merit an exception to the USGS methodology.

Reclamation will inform unlawful users about the existence of various options to bring their use of Colorado River water in the Lower Basin into compliance with Federal law. Below are several options that Reclamation will consider:

- Some water may be available under the three Lower Division States' apportionments.
  1. Arizona: Some lower Colorado River water may be available for allocation in Arizona. Reclamation intends to consult with Arizona Department of Water Resources (ADWR) to determine if some of Arizona's Colorado River water could be committed for use by persons or entities in Arizona whose Colorado River water use is found to be unlawful. For the purposes of this rule, a contract between ADWR and Reclamation may satisfy the contract requirement for multiple individual water users and eliminate the need for contracts between the United States and the individual water users.
  2. California: All Colorado River water apportioned for use in California is already under permanent contract. However, a small amount of water is available for domestic use in California through the Lower Colorado Water Supply Project (LCWSP). Unlawful users in California who are eligible for domestic use in California and who wish to participate under the LCWSP must enter into a water delivery subcontract with the City of Needles. The City of Needles is the only entity authorized to enter into a standard form subcontract for delivery of this water supply to LCWSP beneficiaries.
  3. Nevada: All Colorado River water apportioned for use in Nevada is already under permanent contract. Any commitment to recognize new uses of Colorado River water in Nevada would be subject to terms established by the Southern Nevada Water Authority (SNWA). SNWA has an existing entitlement to the delivery and use of any Colorado River water not previously committed for use by other Nevada water users.

- A water user may be able to obtain an entitlement through an assignment, transfer, or lease from an existing entitlement holder within that state. An assignment, transfer, or lease must be approved by Reclamation.
- A water user may be able to obtain a right to use water as a customer of an existing entitlement holder. The place of water use must be included within the entitlement holder's service area and the inclusion must be approved by Reclamation.
- A water user may be able to obtain a different source of water that is not hydraulically connected to the lower Colorado River.

Under the rule, individuals or entities who continue to use lower Colorado River water without an entitlement will be reported to the United States Supreme Court by the Regional Director. The Regional Director will work with the United States Department of Justice to seek Federal court orders requiring these users to cease using water from the lower Colorado River without an entitlement.

### III. Affected Environment/Environmental Impacts

Following is a list of critical elements of the human environment that may or may not be affected by the proposed action or alternatives.

<b>Critical Element Affected</b>			<b>Critical Element Affected</b>		
	<b>Yes</b>	<b>No</b>		<b>Yes</b>	<b>No</b>
Air Quality		X	Indian Sacred Sites		X
Cultural Resources		X	Indian Trust Assets		X
Environmental Justice		X	T & E Species		X
Farmlands, Prime/Unique		X	Water Quality		X
Floodplains		X	Wetlands/Riparian Zones		X
Hazardous Materials		X	Wild & Scenic Rivers		X

Under the proposed action, there would be no new construction, water diversion, delivery, treatment, or storage facilities, and thus no construction-related environmental impacts are evaluated in this Environmental Assessment. The Federal Action being considered:

- Provides for public review and comment on the River Aquifer/accounting surface methodology
- Adopts the River Aquifer/accounting surface methodology
- Establishes procedures for determining unlawful use
- Develops notice and administrative appeal procedures
- Provides options for unlawful users to legalize their lower Colorado River water use.



The proposed action would not affect Reclamation's obligation or ability to meet water delivery requirements.

A. No Action Alternative

The alternative to the rulemaking is to take no action. Section II. A. explains why the No Action Alternative is undesirable.

B. Proposed Action/Preferred Alternative

No threatened or endangered species will be impacted by the accounting of water from wells and pumps within the Colorado River Aquifer.

No cultural resources will be impacted by the accounting of water from wells and pumps within the Colorado River Aquifer. If the well or pump is of historic construction, there will be no modification or impact to the feature.

C. Cumulative Impacts

There are no cumulative impacts. Adoption and implementation of the rule will address and eliminate the use of Colorado River water in the Lower Basin without an entitlement. The impact is administrative in nature, and will cause no physical changes in the management of the lower Colorado River.

**IV. Consultation and Coordination**

A. Persons/Agencies Consulted

Persons, agencies, and groups consulted include the Colorado River Commission of Nevada, the Arizona Department of Water Resources, and the Colorado River Board of California. In addition, three Native American tribes were consulted; these included the Colorado River Indian Tribes, the Fort Mojave Indian Tribe, and the Chemehuevi Indian Tribe. The Cocopah and Quechan Tribes were invited to meetings but did not attend.

B. Scoping/Public Involvement

Reclamation conducted four meetings. These included public meetings at:

- Riverside County (Blythe), California – September 25, 2001
- Needles, California – September 9, 2001
- Bouse, Arizona – December 13, 2004
- Parker, Arizona – December 14, 2004

## V. List of Preparers

Mark C. Slaughter, Natural Resource Specialist  
 Margot Selig, Team Leader, Water Administration Group  
 Ruth Thayer, Manager, Water Conservation and Accounting

## VI. Distribution List

## VII. References

Bureau of Reclamation

2008 *Benefit-Cost Analysis/Unfunded Mandates Reform Act Analysis For Proposed Rulemaking: Regulating the Use of Lower Colorado River Water Without an Entitlement*, RIN1006-AA50, Boulder City, Nevada.

2008 *Proposed Rule: Regulating the Use of Lower Colorado River Water Without an Entitlement*, RIN 1006-AA50, Boulder City, Nevada.

Owen-Joyce, S.J., Wilson, R.P., Carpenter, M.C., and Fink, J.B.

2000 *Method to Identify Wells that Yield Water that will be Replaced by Water from the Colorado River Downstream from Laguna Dam in Arizona and California*, 00-4085, (Laguna Dam to Mexico)

Wilson, R.P., and Owen-Joyce, S.J.

1993 *Water Fact Sheet US Geological Survey, Department of the Interior Determining the Source of Water Pumped from Wells Along the Lower Colorado River*.

1994 *Method to Identify Wells that Yield Water that will be Replaced by Colorado River Water in Arizona, California, Nevada, and Utah*, 94-4005, (Lake Mead to Laguna Dam)

## **APPENDIX A**

### **The Law of the River**

The Secretary is vested with the responsibility of managing the mainstream waters of the Lower Basin pursuant to applicable Federal law. The responsibility is carried out in a manner consistent with a body of documents referred to as the Law of the River. The Law of the River comprises, but is not limited to, numerous operating criteria, regulations, and administrative decisions included in Federal and state statutes, interstate compacts, court decisions and decrees, an international treaty, and contracts with the Secretary. Particularly notable among these documents are:

- 1) The Colorado River Compact of 1922 (Compact): Apportioned beneficial consumptive use of water between the upper basin and lower basin;
- 2) BCPA: Authorized construction of Hoover Dam and the All-American Canal, required that water users in the Lower Basin have a contract with the Secretary, and established the responsibilities of the Secretary to direct, manage and coordinate the operation of Colorado River dams and related works in the Lower Basin;
- 3) The California Seven Party Water Agreement of 1931: Through regulations adopted by the Secretary, established the relative priorities of rights among major users of Colorado River water in California;
- 4) The 1944 Mexican Treaty (and subsequent minutes of the International Boundary and Water Commission): Provides for the quantity and quality of Colorado River water delivered to Mexico;
- 5) The Upper Colorado River Basin Compact of 1948: Apportioned the Upper Basin water supply among the upper basin states;
- 6) The Colorado River Storage Project Act of 1956 (CRSPA): Authorized a comprehensive water development plan for the Upper Basin that included the construction of Glen Canyon Dam and other facilities;
- 7) The 1963 United States Supreme Court Decision in *Arizona v. California*: Confirmed that the apportionment of the Lower Basin tributaries was reserved for the exclusive use of the states in which the tributaries are located; confirmed the Lower Basin mainstream apportionments of 4.4 maf for use in California, 2.8 maf for use in Arizona and 0.3 maf for use in Nevada; provided water for Indian reservations and other Federal reservations in California, Arizona and Nevada; and confirmed the significant role of the Secretary in managing the mainstream Colorado River within the Lower Basin;
- 8) The 1964 United States Supreme Court Decree in *Arizona v. California*: Implemented the Court's 1963 decision; the Decree was supplemented over time

after its adoption and the Supreme Court entered a Consolidated Decree in 2006 which incorporates all applicable provisions of the earlier-issued Decrees;

9) The Colorado River Basin Project Act of 1968: Authorized construction of a number of water development projects including the Central Arizona Project and required the Secretary to develop the Long Range Operating Criteria and issue an Annual Operating Plan for mainstream reservoirs;

10) The Colorado River Basin Salinity Control Act of 1974: Authorized a number of salinity control projects and provided a framework to improve and meet salinity standards for the Colorado River in the United States and Mexico; and

11) The Grand Canyon Protection Act of 1992: Addressed the protection of resources in Grand Canyon National Park and in Grand Canyon National Recreation Area, consistent with applicable Federal law.

Documents which are generally considered as part of the Law of the River include, but are not limited to, those listed below. Other provisions of applicable Federal law, such as the National Environmental Policy Act of 1969, as amended, and the Endangered Species Act of 1973, as amended, provide a statutory overlay on certain actions taken by the Secretary.

#### **Selected Documents Included in the Law of the River**

- The River and Harbor Act of March 3, 1899
- The Reclamation Act of June 17, 1902
- Reclamation of Indian Lands in Yuma, Colorado River and Pyramid Lake Indian Reservations Act of April 21, 1904
- Yuma Project authorized by the Secretary on May 10, 1904, pursuant to Section 4 of the Reclamation Act of June 17, 1902
- Warren Act of February 21, 1910
- Protection of Property Along the Colorado River Act of June 25, 1910
- Patents and Water-Right Certificates Acts of August 9, 1912 and August 26, 1912
- Yuma Auxiliary Project Act of January 25, 1917
- Availability of Money for Yuma Auxiliary Project Act of February 11, 1918
- Sale of Water for Miscellaneous Purposes Act of February 25, 1920
- Federal Power Act of June 10, 1920
- The Colorado River Compact of November 24, 1922
- The Colorado River Front Work and Levee System Acts of March 3, 1925 and January 21, 1927-June 28, 1946
- The Boulder Canyon Project Act of December 21, 1928
- The California Limitation Act of March 4, 1929
- The California Seven Party Agreement of August 18, 1931

- The Parker and Grand Coulee Dams Authorization of August 30, 1935
- The Parker Dam Power Project Appropriation Act of May 2, 1939
- The Reclamation Project Act of August 4, 1939
- The Boulder Canyon Project Adjustment Act of July 19, 1940
- The Flood Control Act of December 22, 1944
- Treaty between the United States and Mexico Relating to the Utilization of the Waters of the Colorado and Tijuana Rivers and of the Rio Grande of February 3, 1944
- The Colorado River Storage Project Act of April 11, 1956
- Water Supply Act of July 3, 1958
- Boulder City Act of September 2, 1958
- Report of the Special Master, Simon H. Rifkind, *Arizona v. California*, et. al., December 5, 1960
- The Consolidated Decree entered by the United States Supreme Court in the case of *Arizona v. California*, 547 U.S. 150 (2006)
- International Flood Control Measures, Lower Colorado River Act of August 10, 1964
- Southern Nevada (Robert B. Griffith) Water Project Act of October 22, 1965
- The Colorado River Basin Project Act of September 30, 1968
- Criteria for the Coordinated Long Range Operation of Colorado River Reservoirs, June 8, 1970
- Supplemental Irrigation Facilities, Yuma Division Act of September 25, 1970
- 43 C.F.R. Part 417 Lower Basin Water Conservation Measures, September 7, 1972
- Minute 218, March 22, 1965; Minute 241, July 14, 1972, (replaced 218); and Minute 242, August 30, 1973, (replaced 241) of the International Boundary and Water Commission
- The Colorado River Basin Salinity Control Act of June 24, 1974
- Hoover Power Plant Act of August 17, 1984
- The Numerous Colorado River Water Delivery and Project Repayment Contracts with the States of Arizona and Nevada, cities, water districts and individuals
- Hoover and Parker-Davis Power Marketing Contracts
- Reclamation States Emergency Drought Relief Act of 1991
- Grand Canyon Protection Act of October 30, 1992
- Operation of Glen Canyon Dam, Record of Decision (1996)
- Interim Surplus Guidelines Record of Decision, January 17, 2001 (66 Fed. Reg. 7772).
- Gila Project Act of July 30, 1947
- The Upper Colorado River Basin Compact of October 11, 1948
- Consolidated Parker Dam Power Project and Davis Dam Project Act of May 28, 1954
- Palo Verde Diversion Dam Act of August 31, 1954
- Change Boundaries, Yuma Auxiliary Project Act of February 15, 1956
- Interim 602(a) Storage Guidelines, May 19, 2004 (69 Fed. Reg. 28945)
- Colorado River Water Delivery Agreement of October 10, 2003 (69 Fed. Reg. 12202)