

October 28, 2016

**NOTICE OF REGULAR MEETING OF THE  
COLORADO RIVER BOARD**

**NOTICE IS HEREBY GIVEN** pursuant to the call of the Chairperson, Dana B. Fisher, Jr., by the undersigned Executive Director of the Colorado River Board of California that a regular meeting of the Board Members is to be held as follows:

Date: Wednesday, November 9, 2016
Time: 10:00 a.m.
Place: Vineyard Room Holliday Inn Ontario Airport 2155 East Convention Center Way Ontario, CA 91764-4452 Tel: 909-212-8000

The Colorado River Board of California welcomes any comments from members of the public pertaining to items included on this agenda and related topics. Oral comments can be provided at the beginning of each Board meeting; while written comments may be sent to Mr. Dana B. Fisher, Jr., Chairperson, Colorado River Board of California, 770 Fairmont Avenue, Suite 100, Glendale, California, 91203-1068.

An Executive Session may be held in accordance with provisions of Article 9 (commencing with Section 11120) of Chapter 1 of Part 1 of Division 3 of Title 2 of the Government Code and in accordance with Sections 12516 and 12519 of the Water Code to discuss matters concerning interstate claims to the use of Colorado River System waters in judicial proceedings, administrative proceedings, and/or negotiations with representatives from other states or the federal government.

Requests for additional information may be directed to: Ms. Tanya M. Trujillo, Executive Director, Colorado River Board of California, 770 Fairmont Avenue, Suite 100, Glendale, CA 91203-1068, or 818-500-1625. A copy of this Notice and Agenda may be found on the Colorado River Board's web page at [www.crb.ca.gov](http://www.crb.ca.gov).

A copy of the meeting agenda, showing the matters to be considered and transacted, is attached

Tanya M. Trujillo  
Executive Director

Regular Meeting  
COLORADO RIVER BOARD OF CALIFORNIA  
Wednesday, November 9, 2016  
10:00 a.m.

Holliday Inn Ontario Airport  
Vineyard Room  
2115 East Convention Center Way  
Ontario, CA 91764-4452

At the discretion of the Board, all items appearing on this agenda, whether or not expressly listed for action, may be deliberated upon and may be subject to action by the Board. Items may not necessarily be taken up in the order shown.

1. Call to Order
2. Opportunity for the Public to Address the Board (Limited to 5 minutes)  
In accordance with California Government Code, Section 54954.3(a)
3. Administration
  - a. Consideration and approval of the Minutes of the Meeting held October 12, 2016  
**(Action)**
  - b. Selection of Vice Chairman pursuant to Board Rules **(Action)**
  - c. Review of draft schedule for 2017 Colorado River Board meetings
4. Colorado River Basin Water Reports
  - a. Reports on current reservoir storage, reservoir releases, projected water use, and forecasted river flows
  - b. State and Local Water Reports
5. Staff reports regarding Colorado River Basin Programs
  - a. Review status of Basin States drought contingency planning
  - b. Review status of the Colorado River Basin Water Supply and Demand Study
  - c. Review status of Minute 319 and Minute 32x
  - d. Review status of the Salinity Control Forum, Workgroup, and Advisory Council
  - e. Review status of the Glen Canyon Dam Adaptive Management Work Group and Long-Term Experimental Management Plan EIS
  - f. Review status of the Lower Colorado River Multi-Species Conservation Program
6. Announcements/Notices
7. Executive Session  
An Executive Session may be held by the Board pursuant to provisions of Article 9 (commencing with Section 11120) of Chapter 1 of Part 1 of Division 3 of Title 2 of the Government Code and Sections 12516 and 12519 of the Water Code to discuss matters



Minutes of Meeting  
COLORADO RIVER BOARD OF CALIFORNIA  
Wednesday, October 12, 2016

A meeting of the Colorado River Board of California was held on Wednesday, October 12, 2016.

Committee Members and Alternates Present

Stephen Benson	Glen D. Peterson
Brian Brady	David R. Pettijohn
Dana Bart Fisher, Jr., Chairman	Michael Touhey
Jeanine Jones	David Vigil
Hank Kuiper	Doug Wilson, Vice-Chairman
Peter Nelson	

Committee Members and Alternates Absent

James Hanks	Jack Seiler
Christopher Hayes	John Powell, Jr.

Others Present

Steve Abbott	Lori Jones
Melissa Baum-Haley	Kara Mathews
Javier Carlos	Jan Matusak
Robert Cheng	Jessica Neuwerth
Dan Denham	Vic Nguyen
Karen Donovan	Autumn Plourd
Chuck Dumars	Angela Rashid
Christopher Harris	Tina Shields
Bill Hasencamp	Alina Tishchenko
Ned Hyduke	Tanya Trujillo
Michael Hughes	Donnell Wilcox
Eric Katz	Gerald Zimmerman

## **CALL TO ORDER**

Chairman Fisher announced the presence of a quorum and called the meeting to order at 10:04 A.M.

## **OPPORTUNITY FOR THE PUBLIC TO ADDRESS THE BOARD**

Chairman Fisher invited anyone in the audience to address the Board on items on the agenda or matters related to the Board. Ms. Trujillo introduced new Colorado River Board employee, Ms. Alina Tishchenko.

## **Consideration and Approval of the Minutes**

Chairman Fisher asked for a motion to approve the September 14, 2016 meeting minutes. Mr. Pettijohn moved that the minutes be approved, seconded by Ms. Jones, and by unanimous support, the September 14, 2016 meeting minutes were approved.

## **Resolution in recognition of service of Joseph Vanderhorst**

The next item on the agenda was approval of a resolution in recognition of the service of Mr. Joseph A. Vanderhorst. Mr. Peterson moved that the Resolution be approved, seconded by Mr. Kuiper, and by unanimous support, the Resolution was approved.

## **COLORADO RIVER BASIN WATER REPORTS**

### **Colorado River Basin Water Reports and State and Local Water Reports**

Ms. Trujillo reported that as of October 3, Basin storage was at 51% of capacity, similar to storage levels at this same time last year. Lake Mead was at 37% of capacity, while storage at Lake Powell was 53% of capacity. Ms. Trujillo stated that October 1, 2016 marked the start of Water Year 2017. The Preliminary Observed Water Year for 2016 was 9.62 million acre-feet. Ms. Trujillo reported that in August, precipitation conditions in the Colorado River Basin were dry in the northern areas and wet in the southern areas. In September, the Basin saw wetter conditions in the western areas and dry conditions in the eastern areas. Ms. Trujillo remarked that the precipitation that occurred in September produced inflows to Lake Mead. Ms. Trujillo reported that reservoir storage in the Upper Basin was full and continued this trend throughout the season. As of October 6, the Lower Basin regulatory storage reservoirs, Brock and Senator Wash have captured up to 120,818 acre-feet and 57,252 acre-feet, respectively. As of September 29, bypass flows to the Cienega de Santa Clara were 70,703 acre-feet. As of October 10, excess flows to Mexico were only 3,271 acre-feet. This time last year, excess flows to Mexico were 13,947 acre-feet.

Ms. Trujillo reported that California is still experiencing drought conditions and noted that the Drought Monitor maps are just one indicator of drought conditions in California. Ms. Jones reported that at the end of September the Department of Water Resources released a pamphlet entitled “Drought and Water Year 2016: Hot and Dry Conditions Continue”. Ms. Jones stated that the precipitation was slightly above average in some areas of Northern California, but the runoff produced was below average due to the long-term dry soil conditions caused by the multi-year drought. Ms. Jones reported on the storage levels of the State Water Project reservoirs, noting that among the larger reservoirs, Shasta’s level was close to average, partly due to operational decisions to hold water for salmon releases.

### State and Local Reports

Board Member Peterson reported that Metropolitan Water District (MWD) of Southern California combined reservoir storage levels have increased, including levels at Castaic Lake. Mr. Peterson stated the Southern California region is continuing its water conservation activities and programs.

Board Member Wilson reported that since June 2015, San Diego’s cumulative water conservation programs had reduced water use by 21%. Mr. Wilson noted that although the State’s mandatory conservation targets were lifted, San Diego County Water Authority is still communicating with its customers about the importance of conservation.

Board Member Pettijohn reiterated that although the Los Angeles Water and Power (LADWP) passed the State’s stress test it has not changed the agency’s mission to conserve water and improve water use efficiency. Mr. Pettijohn reported that LADWP is still operating under Phase 2 of the Emergency Water Conservation Ordinance which mandates landscape watering to three days a week. Mr. Pettijohn reported that LADWP customers have conserved 16% and per capita water use in Los Angeles is 104 gpcd. Mr. Pettijohn explained that LADWP went to a four-tier rate structure with the highest rate at \$8.00 per 100 cubic feet at Tier 4. The LADWP Board is also considering an Implementation Plan for excessive use designed to target users using more than needed on their outdoor vegetation. Depending on the severity of the drought and amount of time the user is in violation, fines can range from \$1,000 a month to \$40,000 a month, which would be levied against the user during Phase 5. Mr. Pettijohn added that LADWP will work with their highest use customers by putting them on a budget and create a schedule for them to comply with the Model Water Efficient Landscape Ordinances.

Board Member Nelson reported that Coachella Valley Water District also passed the State’s stress test and is no longer subject to conservation mandates. Mr. Nelson noted that CVWD is still conserving and has conserved an average of 25%. Mr. Nelson reported that CVWD has performed a cost of service study and has realigned how it bills for landscape and domestic meters.

Board Member Benson reported that the Imperial Irrigation District (IID) continues to meet its targets for the Quantification Settlement Agreement (QSA). Mr. Benson stated that IID is not subject to the State's conservation mandates but the cities in its service area have been affected. Mr. Benson reported that the State Board will be holding a meeting to discuss the status of the Salton Sea, noting that budget issues between the State and IID have delayed construction efforts. Mr. Benson reported that IID's underrun is currently over 100,000 acre-feet. Mr. Benson reported that IID is considering doubling its reservoir capacity to 4,000 acre-feet, which would increase operational management. IID has identified the site for the first reservoir and budgeted between \$80 million to \$100 million for construction. Five additional reservoirs are planned to capture water throughout its system. Mr. Benson added that IID has also invested \$25 million to automate the district's lateral canals and headings. Mr. Benson reported that IID's on-farm efficiency program is progressing with a 50% participation rate. The current program is targeted to create 80,000 acre-feet. By 2020, IID hopes to create 160,000 acre-feet of water annually with the program and continue to generate this amount throughout the life of the QSA. Mr. Benson explained that in previous years the program was oversubscribed, conserving more water than was required.

Mr. Benson reported that on October 20, IID will participate in a meeting with the Department of Energy (DOE) regarding geothermal development of the Salton Sea. Mr. Benson added that the federal government is interested in developing 250 megawatts of renewable power for its military bases and government facilities. He noted that the Salton Sea area has over 500 megawatts of identified projects, half of which have already been permitted, while the other half are currently in the permitting process.

Mr. Hyduke reported that he has been working with Chris Harris to evaluate water use and management of a Lower Colorado Multi-Species Conservation Program (LCR MSCP) conservation areas located in the Palo Verde Valley. Mr. Hyduke stated that PVID is working to recover and refurbish flumes to improve the determination of measured return flows. Mr. Fisher added that evaluating the amount of water moving through PVID is not only important to the agency but also MWD, noting that over the last several years of the MWD-PVID fallowing program there has been an increase in water use within PVID that may be attributed to over-irrigation of LCRMSCP lands within PVID. Mr. Harris added that MWD, PVID, Reclamation and the CRB are working closely to examine the accounting over the entire ten-year period of the fallowing program. Mr. Harris reported that they are also investigating PVID's unmeasured return flow. Mr. Vigil reported that Department of Fish and Wildlife staff have been busy hauling water to big game drinkers due to low rainfall in the area.

#### Presentation regarding Colorado River ongoing and emergency water quality issues

Angela Rashid and Jessica Neuwerth reported on various water quality issues in the Basin. Ms. Neuwerth reported that there were various agencies along the Colorado River that provide data and information regarding baseline and routine water quality monitoring.. She stated that the Colorado River Water Quality Database hosted by the Southern Nevada Water

Authority housed the one of the most comprehensive sources of water quality data in the Basin dating back to 1961.

Ms. Neuwerth reported on three larger scale remediation projects in the Basin. The Uranium Mill Tailings Remediation Project consist of the removal and containment of 16 million tons of radioactive mill tailing left at the site near the Colorado River, near Moab, Utah. In 2000, Congress passed a law authorizing the removal and containment of the waste. As of late, 50% of the waste has been cleaned up at a cost of \$400 million. It is estimated that removal and containment of the waste will continue for 20 more years. The Las Vegas Wash Perchlorate Remediation Project consists of the cleanup of perchlorate used in manufacturing rocket fuel that leached into the groundwater throughout the 20th century. A groundwater interception system was installed to pump up and treat the contaminated groundwater, which has reduced the contamination by 90%. The Topock Hexavalent Chromium Remediation Project consist of the cleanup of hexavalent chromium discharged into a dry wash in the 1950s and 1960 located near I-40 bridge outside of Needles, California. The groundwater and soil has been contaminated, but the contamination has not yet been found in the Colorado River. A collaborative cleanup process is underway between Pacific Gas & Electric, the California Department of Toxic Substances Control and the Department of the Interior. Treatment methods are being finalized including an in-ground filtration system to neutralize the contaminants.

Ms. Rashid reported on the events that led up to the Environmental Protection Agency (EPA) release of waste water from the Gold King Mine on August 5, 2016, and the agency's subsequent efforts to mitigate the situation. The EPA estimates that 80% of the metals released in the from the mine remain in the Animas River sediments and will be washed downstream over time. Ms. Rashid noted that this incident was of great importance to all Colorado River users as the Animas River is tributary to the San Juan, which terminates in Lake Powell. Ms. Rashid reported that the Gold Kind Mine, as well 47 other mines located in the region have been declared Superfund sites and are now eligible to receive federal funding for mitigation efforts. Ms. Rashid noted that the 5.5 million gallons of mine waste drain into the Animas watershed daily. The EPA has dedicated \$29 million to respond to the incident with \$5 million available to State, Local, and Tribal entities for reimbursements, long-term monitoring and support. Ms. Rashid explained that the State response to the spill was also robust. Colorado, New Mexico, and Utah responded to the spill by conducting their own sampling and development of long-term monitoring plans. Ms. Rashid also presented on the Lower Colorado Emergency Geographic Response Plan, which outlines the multi-agency response plan for emergency events that may occur in the Lower Basin along the Colorado River. The plan outlines the policies, responsibilities, and procedures required to protect the health and safety of the environment and the public. Ms. Neuwerth added that water quality issues to all Colorado River water users and that CRB staff are available to share additional water quality resources management and emergency plan.

## Drought Contingency Planning

Ms. Trujillo reported that the drought contingency planning efforts are still underway. Ms. Trujillo stated that in October, Bill Hasencamp gave a detailed presentation to the MWD Board about the current drought contingency plan concepts under development and consideration. Ms. Trujillo reported that there are two main goals of the drought contingency planning process which are to encourage additional flexibility for operations at lower reservoir elevation and encourage more storage in Lake Mead to avoid critically low reservoir elevations. Ms. Trujillo stated that the plan is to develop a supplemental contingency plan that would run in parallel to the existing Guidelines through 2026. Ms. Trujillo reported more information about planning efforts may be presented to the California agencies in November and December. Ms. Trujillo noted that Arizona continues to work with Reclamation and the Department of the Interior to resolve certain issues associated with elements of the proposed drought contingency plan before they can finalize the plan. Chairman Fisher added that the proposed plan requires California to contribute water to Lake Mead if the reservoir reached the elevation of 1,045 feet, but modeling indicates that there is a 70% probability that California would not have to contribute water. Ms. Trujillo noted that there is not a firm date to finalize the drought contingency plan but stated that the change of the federal administration may affect the schedule.

## Colorado River Basin Salinity Control Program

The Colorado River Basin Salinity Control Forum will be meeting in Moab, Utah, on October 26-27, 2016 and will be held in conjunction with a tour of the Paradox Valley Unit salinity control project. The Paradox Valley Unit EIS is ongoing and alternatives are being evaluated including a second injection well, evaporation ponds, and brine crystallization process. The Forum's work group has also initiated preparation of the 2017 Triennial Review and Reclamation's modeling results for the Reviews will be presented at the Forum meeting. Finally, a trailer video on the Salinity Control Program will be shown at next month's Board meeting.

Board Member Peterson expressed concern about the Paradox Unit second injection well alternative and the need to have a pilot project that demonstrates the potential for long-term operation for more than ten years. Ms. Trujillo noted that a pilot project related to the surface disposal options is being considered in the EIS process. With respect to the second injection well alternative, Reclamation is aware of concerns that have been expressed including the potential to induce seismicity due to operations as well as having a limited operational period.

Board Member Benson asked if lining a section of the Dolores River has been evaluated. Deputy Director Harris replied that lining the Dolores River or channeling the flows through a pipeline has been considered, and noted that other approaches such as constructing small regulating reservoirs on the Dolores River to flush out salts has also been studied. However, constructing barriers on the Dolores River may have associated environmental impacts. Deputy Director Harris added that evaporation pond alternatives have issues related to hyper-saline water and potential impacts on migratory birds, but that there are mitigation measures available.

Ms. Trujillo referred to a graph depicting the success of various projects and their control levels within the basinwide Salinity Control Program over the last several decades. Ms. Trujillo stated that it is important to try to achieve a balance between salinity control improvements and potential increases in consumptive use in the Upper Basin.

#### Minute 319/32x

Ms. Trujillo noted that the negotiations with Mexico regarding Minute 32x have continued at a slow pace and that the existing Minute 319, expires at the end of 2017. She attended a negotiation meeting at the end of September in Tijuana and another meeting is scheduled in October. She noted that the Mexican delegation has been having a lot of internal discussion about how to bring the next Minute together. One of the topics that is still under discussion is a binational drought contingency plan to run in parallel with the plan under development among the Lower Basin States.

Ms. Trujillo noted that the International Boundary Water Commission held its Citizen's Forum meeting on September 3 in El Centro which focused on a discussion about projects associated with the New River in the U.S. and Mexico, which is an important source of approximately 90-100,000 acre-feet of flow per year into the Salton Sea. The flow rate has previously been approximately 140,000 acre-feet per year, but Mexico has been able to reuse some of the water discharged from a water treatment facility.

#### Glen Canyon Dam Adaptive Management Program

Ms. Neuwerth reported that the Final Long-Term Experimental and Management Plan (LTEMP) EIS was released October 7. The EIS will guide Glen Canyon dam operations for 20 years and includes a number of experimental actions designed to benefit resources of interest, while maintaining as much hydropower generation value as possible. Ms. Neuwerth also noted that the EIS includes a decision-making framework that includes stakeholder participation. A Record of Decision and Biological Opinion are expected in November or December.

Ms. Neuwerth reported that sediment conditions in the Grand Canyon are currently adequate to support a High Flow Experiment (HFE) this fall. Ms. Neuwerth noted that a newly established population of invasive green sunfish below Glen Canyon Dam was the main barrier to carrying out the HFE, but that plans were in place to try to remove that population in time to approve the high flow. The primary purpose of HFEs is to combat the erosion of beaches used for recreation in the Grand Canyon. In response to a question from Board Member Peterson, Ms. Neuwerth reported that although HFEs can impact hydropower revenues by approximately \$1-2 million, this loss is not expected to significantly impact the Upper Colorado River Basin Development Fund, which provides funding to the Glen Canyon Dam Adaptive Management Program and other environmental and water quality programs in the Upper Basin. Finally, Ms.

Neuwerth and Deputy Director Harris noted that experiments such as HFEs could always be discontinued under the LTEMP EIS if they were not proving to be successful.

### Lower Colorado River Multi-Species Conservation Program

Mr. Harris reported that the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) is considering adding a new species, the northern Mexican gartersnake, to the program as a covered species. The species was recently federally listed as threatened and has been detected in the Havasu National Wildlife Refuge and lower Bill Williams River. Mr. Harris reported that it seems that no additional mitigation habitat acreage will be required to receive ESA coverage for the snake through the LCR MSCP. Mr. Harris noted that inquiries were being made into the NEPA or CEQA compliance actions that might be needed to amend the program permits. The LCR MSCP Steering Committee plans to make a decision at its meeting in late October.

### ANNOUNCEMENTS

Ms. Trujillo reported that on November 15, 2016 the State Water Resources Control Board will hold a workshop on the status of the Salton Sea Management Program.

Ms. Trujillo reported that she and Ms. Rashid participated in a follow-up meeting regarding the Colorado River traveling museum exhibit. The traveling exhibit would be available throughout the Colorado River Basin and in Chicago, New York and Washington D.C. A preliminary plan will be completed by the end of the year that can be used as a tool to develop fundraising for the larger project.

Ms. Trujillo provided details on Reclamation's WaterSMART notice of modification to its grant funding evaluation criteria. Comments on the drought evaluation criteria are due October 28, 2016. Ms. Trujillo reported that the Colorado Basin River Forecast Center will be holding a stakeholder forum on October 10-18, 2016 to orient the public again to its forecasting process. The stakeholder forum is available in person and via website.

Ms. Trujillo reported that planning for the Colorado River Water Users Association (CRWUA) conference is in the final stages and the conference is scheduled to be held on December 14-16, 2016. A Colorado River Board meeting will be held in conjunction with the conference on December 14, 2016.

### ADJOURNMENT

With no further items to be brought before the Board, Chairman Fisher asked for a motion to adjourn the meeting. Upon the motion of Mr. Pettijohn, seconded Mr. Fisher, and unanimously carried, the meeting was adjourned at 11:38 A.M.



Oct 31, 2016

**LOWER COLORADO WATER SUPPLY REPORT**  
 River Operations  
 Bureau of Reclamation

Questions: [BCOOWaterops@usbr.gov](mailto:BCOOWaterops@usbr.gov)

(702)293-8373

<http://www.usbr.gov/lc/region/g4000/weekly.pdf>

	PERCENT	Content 1000 ac-ft (kaf)	Elev. (Feet above mean sea level)	7-Day Release (CFS)
CURRENT STORAGE	FULL			
LAKE POWELL	52%	12,681	3609.51	9,800
* LAKE MEAD	37%	9,701	1076.23	8,700
LAKE MOHAVE	82%	1,483	634.89	8,300
LAKE HAVASU	92%	568	447.34	6,800
TOTAL SYSTEM CONTENTS **	50%	29,873		
As of 10/30/2016				
SYSTEM CONTENT LAST YEAR	51%	30,188		
* Percent based on capacity of 26,120 kaf or elevation 1219.6 feet.				
** TOTAL SYSTEM CONTENTS includes Upper & Lower Colorado River Reservoirs, less Lake Mead exclusive flood control space.				
Salt/Verde System	45%	1,025		
Painted Rock Dam	0%	0	535.10	0
Alamo Dam	4%	36	1078.58	15
Forecasted Water Use for Calendar Year 2016 (as of 10/31/2016) (values in kaf)				
NEVADA			244	
SOUTHERN NEVADA WATER SYSTEM				218
OTHERS				26
CALIFORNIA			4,265	
METROPOLITAN WATER DISTRICT OF CALIFORNIA				852
IRRIGATION DISTRICTS				3,268
OTHERS				145
ARIZONA			2,552	
CENTRAL ARIZONA PROJECT				1,426
OTHERS				1,126
TOTAL LOWER BASIN USE				7,061
DELIVERY TO MEXICO - 2016 (Mexico Scheduled Delivery + Preliminary Yearly Excess <sup>1</sup> )				1,508
OTHER SIGNIFICANT INFORMATION				
UNREGULATED INFLOW INTO LAKE POWELL - OCTOBER MID-MONTH FORECAST DATED 10/17/2016				
		MILLION ACRE-FEET	% of Normal	
PRELIMINARY OBSERVED WATER YEAR 2016		9.616	89%	
OBSERVED APRIL-JULY 2016		6.610	92%	
SEPTEMBER OBSERVED INFLOW		0.281	69%	
OCTOBER INFLOW FORECAST		0.420	82%	
		Upper Colorado Basin	Salt/Verde Basin	
WATER YEAR 2017 PRECIP TO DATE <sup>2</sup>		70% (1.8")	32% (0.6")	
CURRENT BASIN SNOWPACK		NA% (NA)	NA% (NA)	

<sup>1</sup> Delivery to Mexico forecasted yearly excess calculated using year-to-date observed and projected excess.

<sup>2</sup> Precipitation values vary significantly from week-to-week this early in the water year.

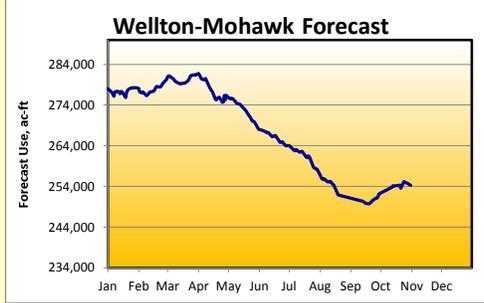
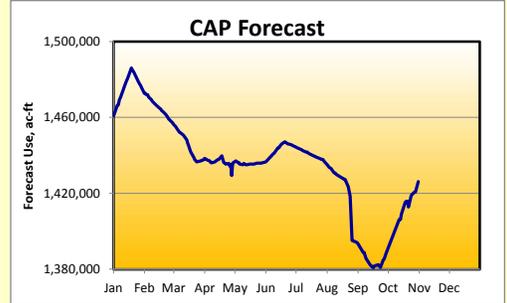
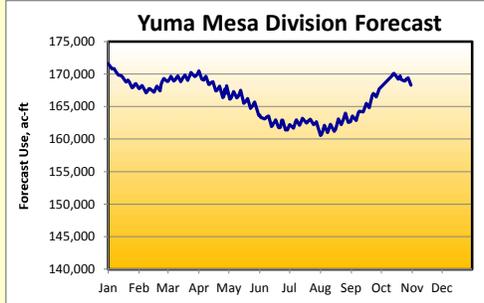
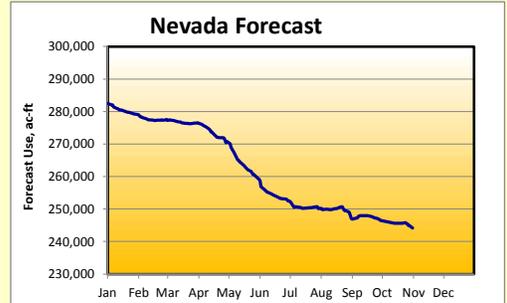
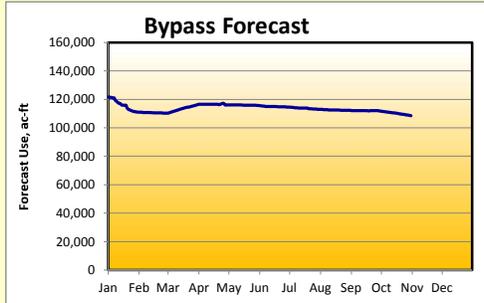
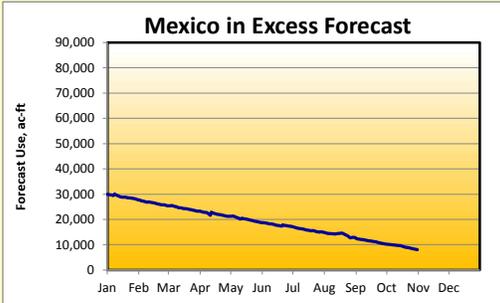
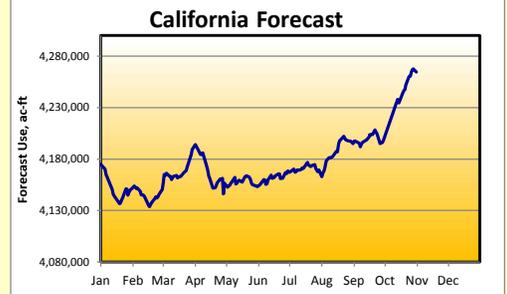
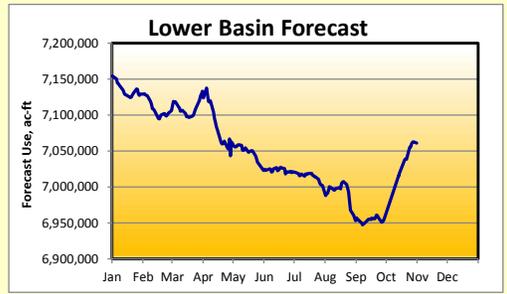
**U.S. BUREAU OF RECLAMATION  
LOWER COLORADO REGION  
CY 2016**

ARIZONA, CALIFORNIA, NEVADA, MEXICO  
FORECAST OF END OF YEAR CONSUMPTIVE USE  
FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS <sup>1</sup>  
(ACRE-FEET)

**WATER USE SUMMARY**

	Use To Date CY2016	Forecast Use CY2016	Approved Use <sup>2</sup> CY2016	Excess to Approval CY2016
ARIZONA	2,259,037	2,552,374	2,625,942	-73,568
CALIFORNIA	3,856,217	4,264,599	4,175,000	89,599
NEVADA	213,027	244,120	282,500	-38,380
<b>STATES TOTAL <sup>3</sup></b>	<b>6,328,281</b>	<b>7,061,093</b>	<b>7,083,442</b>	<b>-22,349</b>
MEXICO IN SATISFACTION OF TREATY (Including downward delivery) TO MEXICO AS SCHEDULED	1,282,422 1,279,400	1,508,102 1,500,000	1,500,000	<b>8,102</b>
MEXICO IN EXCESS OF TREATY BYPASS PURSUANT TO MINUTE 242	3,022 80,846	8,102 108,506		
<b>TOTAL LOWER BASIN &amp; MEXICO</b>	<b>7,691,549</b>	<b>8,677,701</b>		

1/ Incorporates January through July USGS monthly data and 80 daily reporting stations which may be revised after provisional data reports are distributed by the USGS. Use to date estimated for users reporting monthly and annually.  
2/ These values reflect adjusted apportionments. See Adjusted Apportionment calculation on each state page.  
3/ Includes unmeasured returns based on estimated consumptive use/diversion ratios by user from studies provided by Arizona Department of Water Resources, Colorado River Board of California, and Reclamation.



Graph notes: Jan 1 forecast use is scheduled use in accordance with the Annual Operating Plan's state entitlements, available unused entitlements, and over-run paybacks. A downward sloping line indicates use at a lower rate than scheduled, upward sloping is above schedule, and a flat line indicates a use rate equal to schedule. Lower priority users such as CAP, MWD, and Robt.B.Griffith may adjust use rates to meet state entitlements as higher priority use deviates from schedule. Abrupt changes in the forecast use line may be due to a diversion schedule change or monthly updating of provisional realtime diversions.

**U.S. BUREAU OF RECLAMATION  
LOWER COLORADO REGION  
CY 2016**

**NOTE:**  
 • Diversions and uses that are pending approval are noted in *red italics*.  
 • Water users with a consumptive use entitlement - **Excess to Estimated Use** column indicates overrun/underrun of entitlement. Dash in this column indicates water user has a diversion entitlement.  
 • Water user with a diversion entitlement - **Excess to Approved Diversion** column indicates overrun/underrun of entitlement. Dash in this column indicates water user has a consumptive use entitlement.

ARIZONA WATER USERS  
 FORECAST OF END OF YEAR CONSUMPTIVE USE  
 FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS  
[Arizona Schedules and Approvals](#)  
[Historic Use Records \(Water Accounting Reports\)](#)

WATER USER	Use	Forecast	Estimated	Excess to	Diversion	Forecast	Approved	Excess to
	To Date	Use	Use	Use		To Date	Diversion	Diversion
	CY2016	CY2016	CY2016	CY2016	CY2016	CY2016	CY2016	CY2016
ARIZONA PUMPERS	13,113	14,539	14,539	---	20,320	22,530	22,530	0
LAKE MEAD NRA, AZ - Diversions from Lake Mead	103	128	128	---	103	128	128	0
LAKE MEAD NRA, AZ - Diversions from Lake Mohave	145	169	169	---	145	169	169	0
DAVIS DAM PROJECT	2	2	2	---	51	56	56	0
BULLHEAD CITY	5,603	6,979	8,523	---	8,361	10,414	12,720	-2,306
MOHAVE WATER CONSERVATION DISTRICT	534	592	592	---	795	881	881	0
BROOKE WATER LLC	189	210	210	---	283	314	314	0
MOHAVE VALLEY IDD	17,634	20,595	21,549	---	32,656	38,139	39,905	-1,766
FORT MOJAVE INDIAN RESERVATION, AZ	30,903	34,195	47,790	---	57,228	63,325	88,500	-25,175
GOLDEN SHORES WATER CONSERVATION DISTRICT	285	316	316	---	426	472	472	0
HAVASU NATIONAL WILDLIFE REFUGE	3,919	4,124	3,563	---	32,652	35,047	41,820	-6,773
LAKE HAVASU CITY	6,651	7,853	8,370	---	10,727	12,666	13,500	-834
CENTRAL ARIZONA PROJECT	1,230,376	1,426,152	---	---	1,230,376	1,426,152	---	---
TOWN OF PARKER	334	380	392	---	721	850	916	-66
COLORADO RIVER INDIAN RESERVATION, AZ	292,857	308,720	341,393	---	513,702	582,216	662,402	-80,186
EHRENBURG IMPROVEMENT ASSOCIATION	204	226	226	---	287	318	318	0
CIBOLA VALLEY IRRIGATION DISTRICT	15,529	17,218	17,218	---	21,712	24,074	24,074	0
CIBOLA NATIONAL WILDLIFE REFUGE	11,388	12,035	12,741	-706	18,367	19,411	20,550	-1,139
IMPERIAL NATIONAL WILDLIFE REFUGE	1,763	2,265	3,019	-754	2,845	3,654	4,868	-1,214
BLM PERMITEES (PARKER DAM to IMPERIAL DAM)	887	984	984	---	1,367	1,516	1,516	---
CHA CHA, LLC	854	951	1,225	---	1,821	1,970	1,884	86
BEATTIE FARMS	291	374	723	---	446	574	1,110	-536
YUMA PROVING GROUND	415	473	550	---	415	473	550	-77
GILA MONSTER FARMS	3,123	3,721	5,271	---	5,456	6,547	9,156	-2,609
WELLTON-MOHAWK IDD	236,180	254,237	278,000	-23,763	339,563	387,251	424,350	-37,099
BLM PERMITEES (BELOW IMPERIAL DAM)	78	86	86	0	119	132	132	0
CITY OF YUMA	11,857	14,463	16,036	-1,573	20,185	24,900	27,583	-2,683
MARINE CORPS AIR STATION YUMA	1,223	1,400	1,407	---	1,223	1,400	1,407	-7
UNION PACIFIC RAILROAD	20	24	24	---	40	48	48	0
UNIVERSITY OF ARIZONA	809	900	900	---	809	900	900	0
YUMA UNION HIGH SCHOOL DISTRICT	128	150	151	---	171	200	200	0
DESERT LAWN MEMORIAL	78	87	87	---	111	123	123	0
NORTH GILA VALLEY IRRIGATION DISTRICT	10,371	10,809	10,929	---	36,064	41,519	44,000	-2,481
YUMA IRRIGATION DISTRICT	33,947	38,234	40,822	---	61,397	70,103	75,100	-4,997
YUMA MESA IDD	104,689	119,256	119,859	---	170,728	194,346	202,464	-8,118
UNIT "B" IRRIGATION DISTRICT	18,780	20,944	21,037	---	25,222	27,996	29,800	-1,804
FORT YUMA INDIAN RESERVATION	1,255	1,392	1,392	---	1,930	2,140	2,140	0
YUMA COUNTY WATER USERS' ASSOCIATION	200,968	224,809	250,443	---	303,987	355,310	386,000	-30,690
COCOPA INDIAN RESERVATION	1,529	2,356	5,778	---	1,776	3,050	8,960	-5,910
RECLAMATION-YUMA AREA OFFICE	23	26	26	---	23	26	26	0
RETURN FROM SOUTH GILA WELLS	---	---	---	---	---	---	---	---
<b>TOTAL ARIZONA</b>	<b>2,259,037</b>	<b>2,552,374</b>	<b>2,625,900</b>		<b>2,924,610</b>	<b>3,361,340</b>	<b>3,541,002</b>	
CAP	1,230,376	1,426,152	---	---	---	1,426,152	---	---
ALL OTHERS	1,028,661	1,126,222	1,236,470	---	---	1,935,188	2,151,572	---
YUMA MESA DIVISION, GILA PROJECT	149,007	168,299	171,610	-3,311	---	305,968	---	---

**ARIZONA ADJUSTED APPORTIONMENT CALCULATION**

Arizona Basic Apportionment	2,800,000
Creation of Protection Volume - CAWCD <sup>1</sup>	-134,860
Creation of Protection Volume - Reclamation <sup>2</sup>	-13,933
System Conservation Water - CAWCD <sup>3</sup>	-25,265
Total State Adjusted Apportionment	2,625,942
Excess to Total State Adjusted Apportionment	-73,568
Estimated Allowable Use for CAP	1,499,720

1/ In 2016, CAWCD intends to conserve no less than 134,860 AF of Colorado River water as part of its commitment under the 2014 Memorandum of Understanding for Pilot Drought Response Actions (MOU).

2/ On October 6, 2015, the Fort McDowell Yavapai Nation (Nation) and Reclamation entered into a Drought Response Agreement in which the Nation agreed to forego delivery of 13,933 AF of the Nation's CAP water entitlement in 2016. Reclamation intends to apply this volume of water toward its commitment under the MOU.

3/ On March 17, 2016, Reclamation and CAWCD entered into a System Conservation Implementation Agreement (SCIA) under the Pilot System Conservation Program. In accordance with the SCIA, CAWCD agreed to create System Conservation Water by forbearing from remarketing 25,265 AF of CAP water within the CAP service area for delivery in 2016.

NOTES: Click on Arizona Schedules and Approvals above for incoming diversion schedules and approvals.

**U.S. BUREAU OF RECLAMATION  
LOWER COLORADO REGION  
CY 2016**

**NOTE:**  
 • Diversions and uses that are pending approval are noted in *red italics*.  
 • Water users with a consumptive use entitlement - **Excess to Estimated Use** column indicates overrun/underrun of entitlement. Dash in this column indicates water user has a diversion entitlement.  
 • Water user with a diversion entitlement - **Excess to Approved Diversion** column indicates overrun/underrun of entitlement. Dash in this column indicates water user has a consumptive use entitlement.

**CALIFORNIA WATER USERS  
FORECAST OF END OF YEAR CONSUMPTIVE USE  
FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS**

[California Schedules and Approvals](#)  
[Historic Use Records \(Water Accounting Reports\)](#)

WATER USER	Use	Forecast	Estimated	Excess to	Diversion	Forecast	Approved	Excess to
	To Date	Use	Use	Use	To Date	Diversion	Diversion	Approved
	CY2016	CY2016	CY2016	CY2016	CY2016	CY2016	CY2016	CY2016
CALIFORNIA PUMPERS	1,588	1,761	1,761	---	2,878	3,191	3,191	0
FORT MOJAVE INDIAN RESERVATION, CA	6,100	6,659	8,995	---	11,337	12,376	16,720	-4,344
CITY OF NEEDLES (includes LCWSP use)	1,104	1,375	1,931	-556	1,606	1,988	2,720	-732
METROPOLITAN WATER DISTRICT	828,350	851,802	591,360	---	830,670	854,664	594,451	---
COLORADO RIVER INDIAN RESERVATION, CA	2,919	3,237	3,237	---	4,836	5,362	5,362	0
PALO VERDE IRRIGATION DISTRICT	333,779	355,399	400,192	---	700,326	793,520	868,000	-74,480
YUMA PROJECT RESERVATION DIVISION	42,007	47,814	57,009	---	80,738	94,388	107,359	-12,971
YUMA PROJECT RESERVATION DIVISION - INDIAN UNIT	---	---	---	---	40,041	46,675	52,359	-5,684
YUMA PROJECT RESERVATION DIVISION - BARD UNIT	---	---	---	---	40,697	47,713	55,000	-7,287
YUMA ISLAND PUMPERS	4,095	4,540	4,540	---	7,409	8,215	8,215	0
FORT YUMA INDIAN RESERVATION - RANCH 5	598	663	663	---	1,083	1,201	1,201	0
IMPERIAL IRRIGATION DISTRICT	2,232,435	2,501,987	2,612,400	-110,413	2,219,344	2,506,787	2,727,875	---
SALTON SEA SALINITY MANAGEMENT	89,872	130,000	130,000	0	92,640	136,420	136,420	---
COACHELLA VALLEY WATER DISTRICT	312,548	358,451	362,000	-3,549	326,928	375,981	378,869	---
OTHER LCWSP CONTRACTORS	657	728	728	---	1,039	1,152	1,152	0
CITY OF WINTERHAVEN	61	68	68	---	88	98	98	0
CHEMEHUEVI INDIAN RESERVATION	104	115	115	---	10,227	11,340	11,340	0
<b>TOTAL CALIFORNIA</b>	<b>3,856,217</b>	<b>4,264,599</b>			<b>4,291,149</b>	<b>4,806,683</b>	<b>4,862,973</b>	

**CALIFORNIA ADJUSTED APPORTIONMENT CALCULATION**

California Basic Apportionment	4,400,000
Conservation for Salton Sea Restoration - 2010 <sup>1</sup>	-25,000
Creation of Extraordinary Conservation ICS (IID)	-200,000
Creation of Extraordinary Conservation ICS (MWD)	
<b>Total State Adjusted Apportionment</b>	<b>4,175,000</b>
Excess to Total State Adjusted Apportionment	89,599

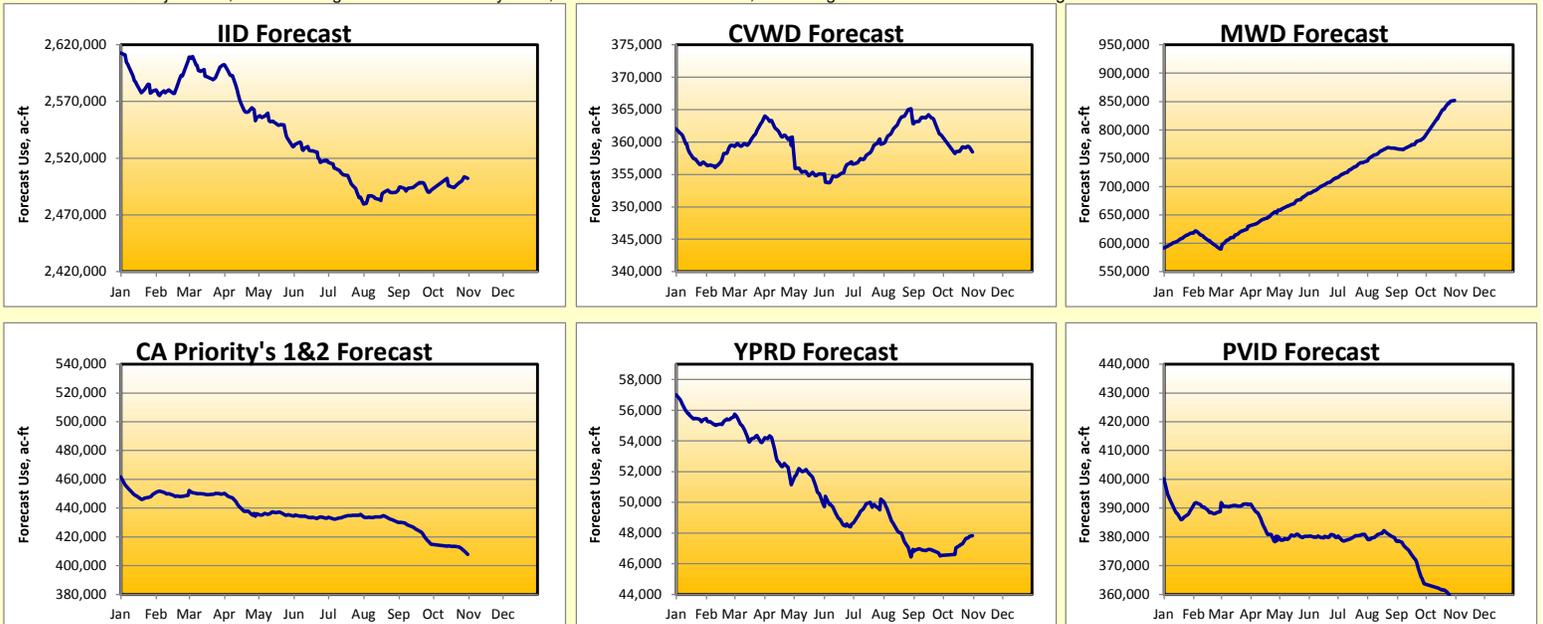
**ISG ANNUAL TARGET COMPARISON CALCULATION**

Priorities 1, 2, 3b Use (PVID+YPRD+Island+PVID Mesa)	407,753
MWD Adjustment	0
Total California Agricultural Use (PVID+YPRD+Island+IID+CVWD)	3,268,191
California Agricultural Paybacks	0
Misc. PPRs Covered by IID and CVWD	14,500
California ICS Creation (IID ICS)	25,000
<b>Total Use for Target Comparison <sup>2</sup></b>	<b>3,307,691</b>
ISG Annual Target (Exhibit B)	3,440,000
Amount over/(under) ISG Annual Target	-132,309

NOTES: Click on California Schedules and Approvals above for incoming diversion schedules and approvals.

1/ Pending approval by Imperial Irrigation District's Board of Directors.

2/ Includes MWD Adjustment, California Agricultural Use and Paybacks, IID-CVWD covered PPRs, and taking out the MWD-CVWD Exchange



**U.S. BUREAU OF RECLAMATION  
LOWER COLORADO REGION  
CY 2016**

**NOTE:**

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NEVADA WATER USERS  
FORECAST OF END OF YEAR CONSUMPTIVE USE  
FORECAST BASED ON USE TO DATE AND APPROVED ANNUAL WATER ORDERS

[Nevada Schedules and Approvals](#)  
[Historic Use Records \(Water Accounting Reports\)](#)

<b>WATER USER</b>	<b>Use To Date CY2016</b>	<b>Forecast Use CY2016</b>	<b>Estimated Use CY2016</b>	<b>Excess to Estimated Use CY2016</b>	<b>Diversion To Date CY2016</b>	<b>Forecast Diversion CY2016</b>	<b>Approved Diversion CY2016</b>	<b>Excess to Approved Diversion CY2016</b>
ROBERT B. GRIFFITH WATER PROJECT (SNWS)	368,983	426,971	438,176	-11,205	368,969	426,957	438,176	-11,219
LAKE MEAD NRA, NV - Diversions from Lake Mead	309	363	403	---	309	363	403	-40
LAKE MEAD NRA, NV - Diversions from Lake Mohave	134	158	152	---	134	158	152	6
BASIC MANAGEMENT INC.	5,052	6,317	8,208	---	5,052	6,317	8,208	-1,891
CITY OF HENDERSON (BMI DELIVERY)	10,951	13,317	15,878	---	10,951	13,317	15,878	-2,561
NEVADA DEPARTMENT OF WILDLIFE	9	11	12	-1	469	530	405	---
PACIFIC COAST BUILDING PRODUCTS INC.	763	920	928	---	763	920	928	-8
BOULDER CANYON PROJECT	156	173	173	---	271	300	300	0
BIG BEND WATER DISTRICT	2,103	2,755	5,355	---	4,336	5,650	10,000	-4,350
FORT MOJAVE INDIAN TRIBE	1,861	2,272	3,886	---	2,779	3,392	5,800	-2,408
LAS VEGAS WASH RETURN FLOWS	-177,294	-209,137	-190,671	---				
<b>TOTAL NEVADA</b>	<b>213,027</b>	<b>244,120</b>	<b>282,500</b>	<b>-11,206</b>	<b>394,033</b>	<b>457,904</b>	<b>480,250</b>	<b>-22,471</b>
SOUTHERN NEVADA WATER SYSTEM (SNWS)	191,689	217,834				426,957		
ALL OTHERS	21,338	26,286				30,947		
NEVADA USES ABOVE HOOVER	209,063	239,093				448,862		
NEVADA USES BELOW HOOVER	3,964	5,027				9,042		

**Tributary Conservation & Imported Intentionally Created Surplus**

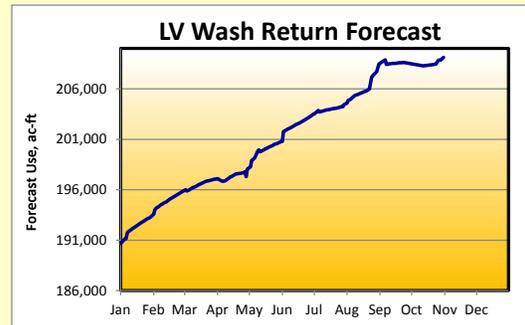
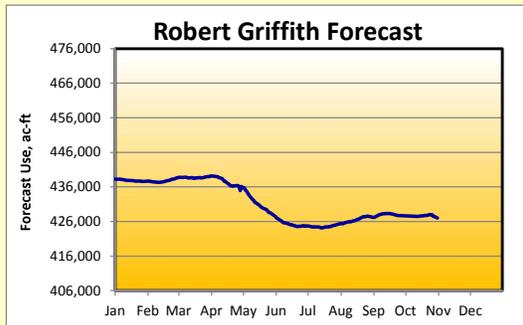
Total Requested Tributary Conservation Intentionally Created Surplus	29,500
Total Requested Imported Conservation Intentionally Created Surplus	9,000
5% System Cut for Creation of Intentionally Created Surplus	-1,925
<b>Total Intentionally Created Surplus Left in Lake Mead</b>	<b>36,575</b>

**Pilot System Conservation Program**

Tributary Conservation - Left in Lake Mead <sup>1</sup>	7,500
---	-------

**NEVADA ADJUSTED APPORTIONMENT CALCULATION**

Nevada Basic Apportionment	300,000
Creation of Protection Volume <sup>2</sup>	-17,500
<b>Total State Adjusted Apportionment</b>	<b>282,500</b>
Excess to Total State Adjusted Apportionment	-38,380



1/ On June 4, 2015, Reclamation and SNWA entered into a System Conservation Implementation Agreement in which SNWA agreed to conserve 7,500 AF of Colorado River water from its Tributary Conservation projects to create System Conservation Water.

2/ In 2016, Nevada anticipates leaving 17,500 AF of its basic apportionment in Lake Mead by forgoing off-stream storage as part of SNWA's commitment under the 2014 Memorandum of Understanding for Pilot Drought Response Actions.

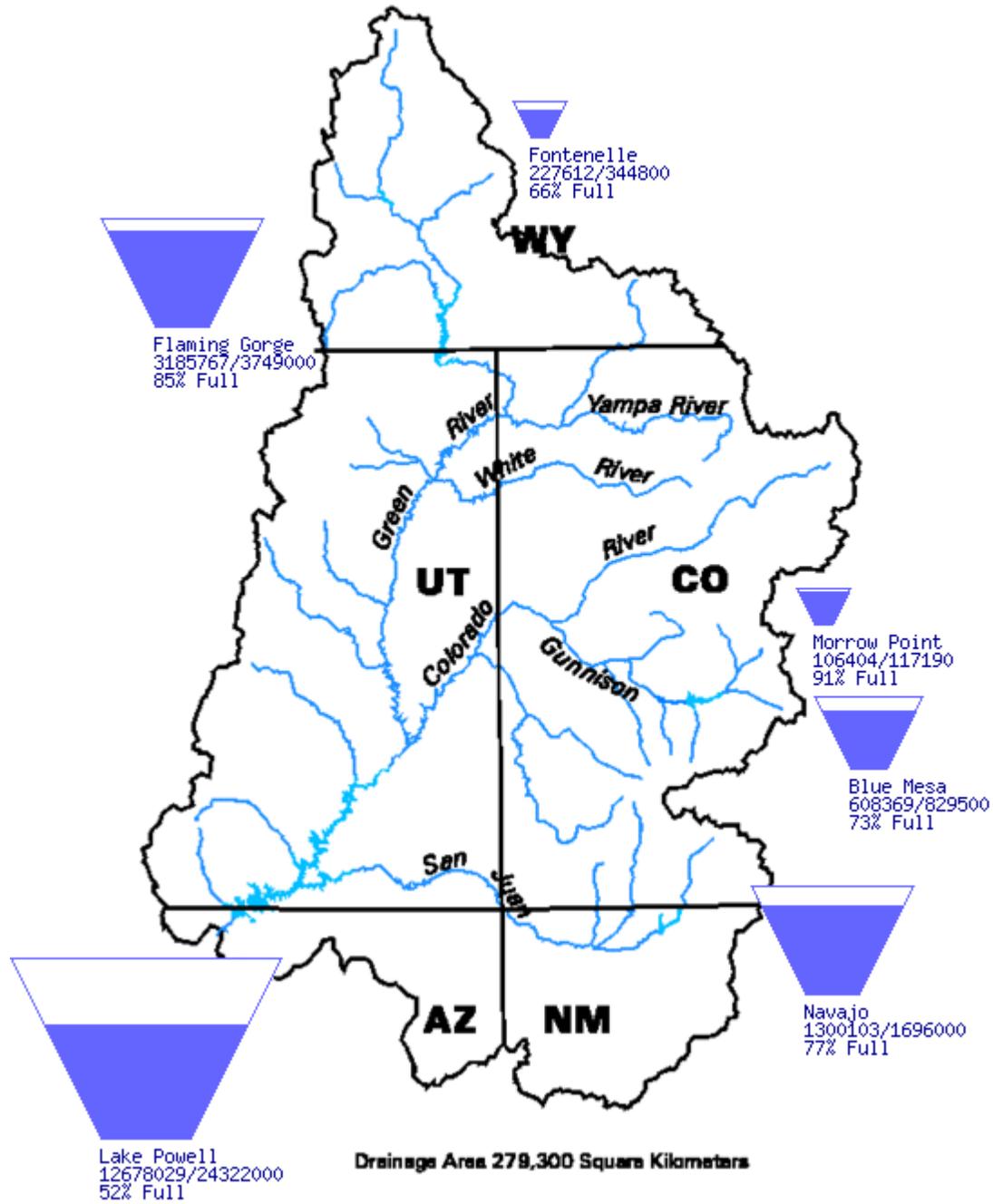
NOTES: Click on Nevada Schedules and Approvals above for incoming diversion schedules and approvals.

# Upper Colorado Region Water Resources Group

## River Basin Tea-Cup Diagrams

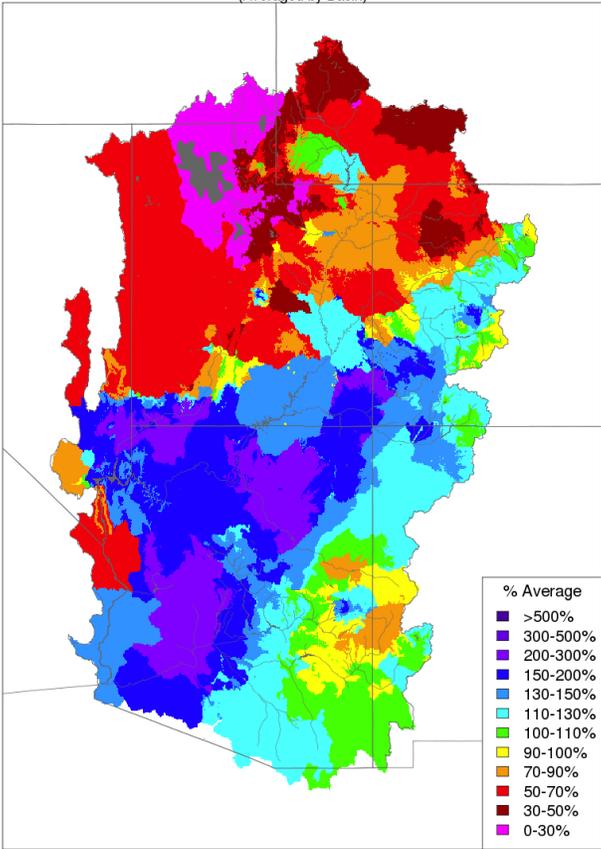
Data Current as of:  
10/31/2016

### Upper Colorado River Drainage Basin

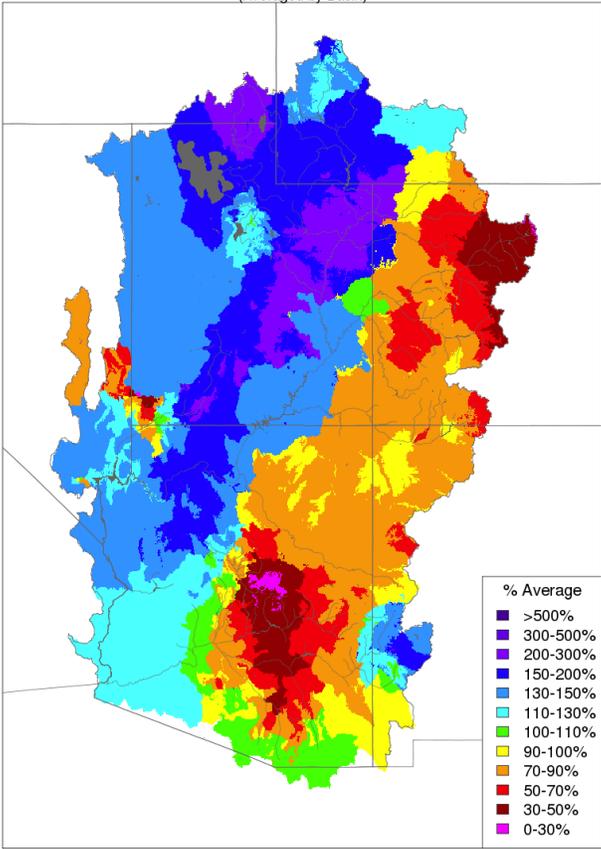


NOAA National Weather Service Monthly Precipitation Maps for August and September 2016

Monthly Precipitation - August 2016  
(Averaged by Basin)



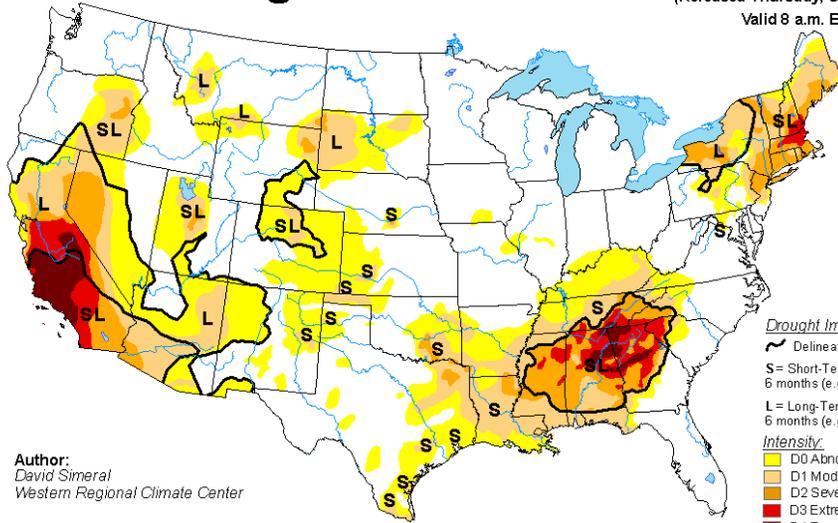
Monthly Precipitation - September 2016  
(Averaged by Basin)



USDA United States Drought Monitor Map

# U.S. Drought Monitor

**October 25, 2016**  
 (Released Thursday, Oct. 27, 2016)  
 Valid 8 a.m. EDT



Author:  
 David Simeral  
 Western Regional Climate Center

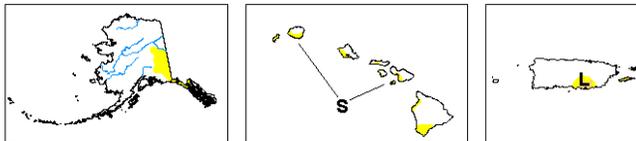
**Drought Impact Types:**

- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

**Intensity:**

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

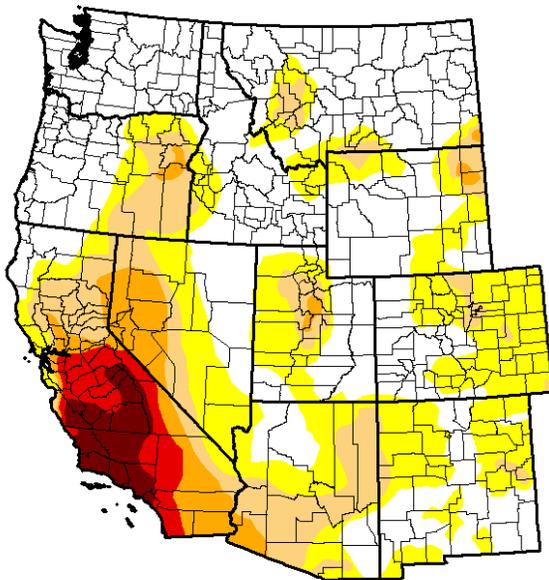
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



<http://droughtmonitor.unl.edu/>

## U.S. Drought Monitor West

**October 25, 2016**  
 (Released Thursday, Oct. 27, 2016)  
 Valid 8 a.m. EDT



**Drought Conditions (Percent Area)**

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	48.25	51.75	24.46	11.24	5.73	2.81
<b>Last Week</b> 10/19/2016	47.36	52.64	24.76	11.24	5.73	2.81
<b>3 Months Ago</b> 7/26/2016	27.68	72.32	31.64	11.60	6.18	2.81
<b>Start of Calendar Year</b> 1/2/2015	33.17	66.83	45.07	29.30	15.92	6.85
<b>Start of Water Year</b> 9/27/2015	27.78	72.22	30.95	13.45	5.77	2.81
<b>One Year Ago</b> 10/27/2015	26.79	73.21	55.42	41.21	26.23	7.62

**Intensity:**

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

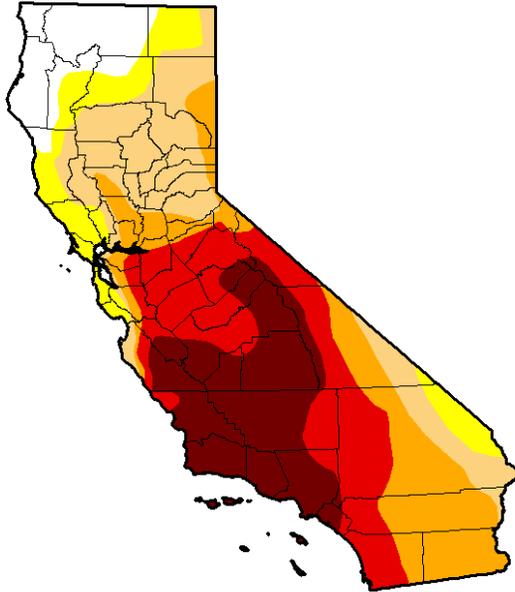
Author:  
 David Simeral  
 Western Regional Climate Center



<http://droughtmonitor.unl.edu/>

# U.S. Drought Monitor California

**October 25, 2016**  
(Released Thursday, Oct. 27, 2016)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	8.96	91.04	81.12	61.80	42.80	21.04
<b>Last Week</b> <small>10/18/2016</small>	7.77	92.23	81.12	61.80	42.80	21.04
<b>3 Months Ago</b> <small>7/26/2016</small>	0.00	100.00	83.59	59.02	42.80	21.04
<b>Start of Calendar Year</b> <small>1/23/2015</small>	0.00	100.00	97.33	87.55	69.07	44.84
<b>Start of Water Year</b> <small>8/27/2016</small>	0.00	100.00	83.59	62.27	42.80	21.04
<b>One Year Ago</b> <small>10/27/2015</small>	0.14	99.86	97.33	92.27	71.08	46.00

**Intensity:**

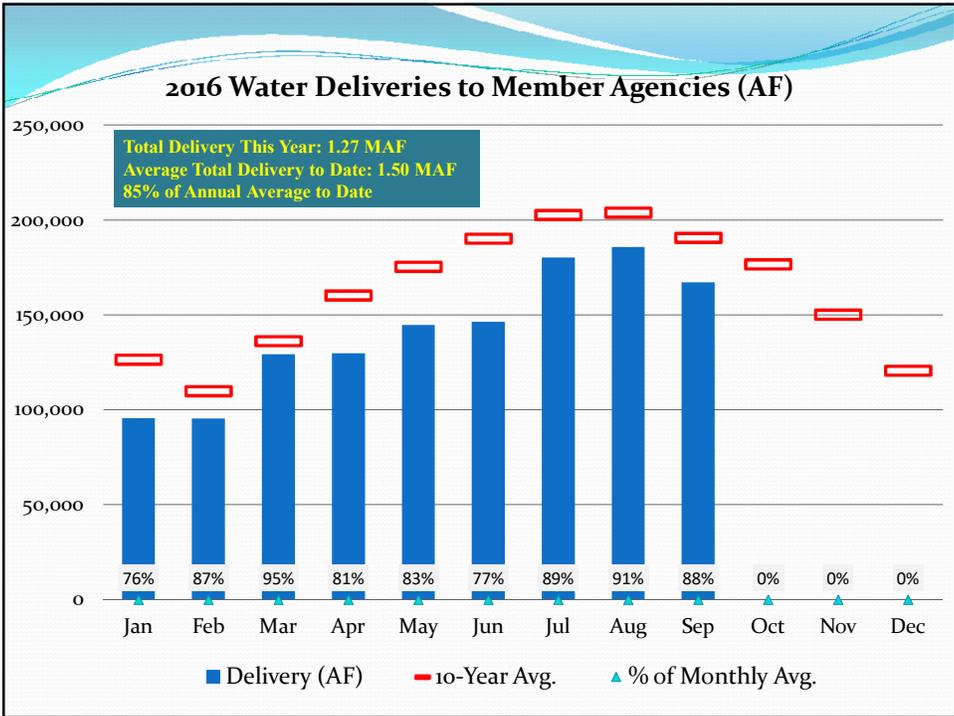
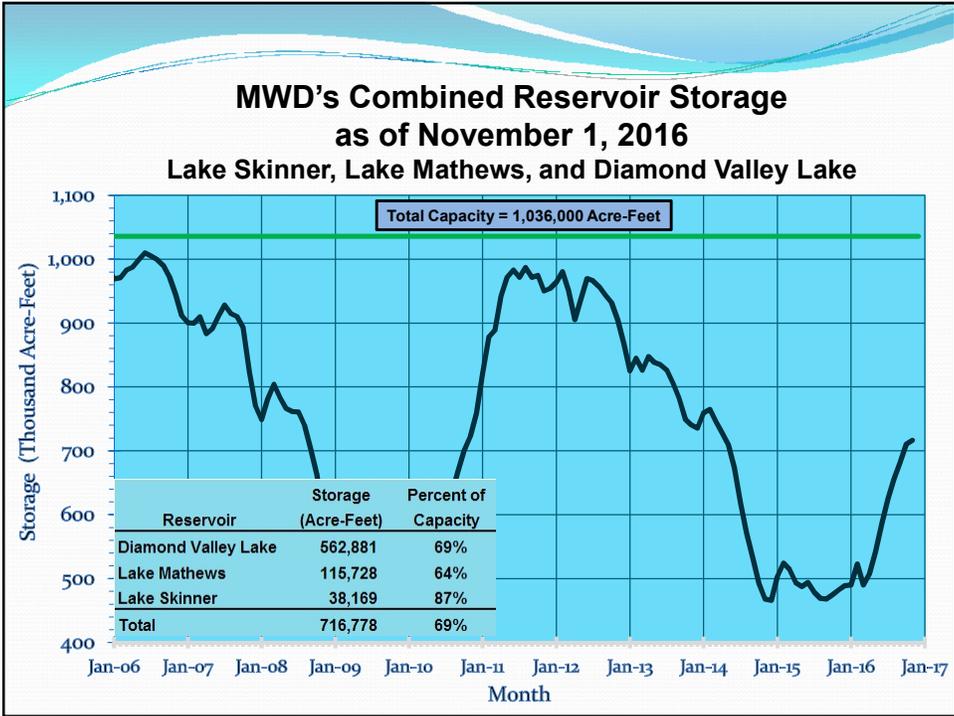
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

*The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.*

**Author:**  
David Simeral  
Western Regional Climate Center



<http://droughtmonitor.unl.edu/>







# United States Department of the Interior

OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240

## MEMORANDUM

To: Brent Rhees, Regional Director  
Upper Colorado Region, Bureau of Reclamation

From: Thomas Iseman, Chair, Glen Canyon Leadership Team  
Principal Deputy Assistant Secretary – Water & Science

Subject: Approval of Recommendation for Experimental High-Flow release from Glen Canyon Dam, November 7-12, 2016

OCT 26 2016

*Thomas M Iseman*

On October 20, 2016, the Glen Canyon Technical Team (Technical Team) recommended a high-flow experimental (HFE) release from Glen Canyon Dam (Attachment 1, Technical Team Recommendation to Implement a Fall 2016 High Flow Experiment at Glen Canyon Dam). This recommendation was developed in accordance with the *Development and Implementation of a Protocol for High-Flow Experimental Releases from Glen Canyon Dam, Arizona, 2011 through 2020* (HFE Protocol), and the associated Environmental Assessment (EA) and Finding of No Significant Impact (FONSI).

In accordance with the HFE Protocol, The Glen Canyon Leadership Team (Leadership Team) carefully reviewed and considered the Technical Committee's recommendation. The Leadership Team also considered the assessment of key resources that may be impacted or affected by a 2016 HFE based on the most recent information, and in particular, information collected since the fall 2012, 2013 and 2014 HFEs.

On an October 20, 2016 conference call, the Leadership Team unanimously recommended to the Principal Deputy Assistant Secretary for Water and Science to proceed with the HFE release, contingent on two conditions relating to non-native fish species. First, the Leadership Team required that the risk associated with a small population of green sunfish in a backwater slough be effectively addressed. This was satisfied by chemical ammonia treatment of the population on October 20, 2016, per a report from USGS. Second, the Leadership Team sought a Department of Interior commitment to prioritizing the development and implementation of non-native species monitoring and mitigation to be in place within the next year. These efforts will be implemented by USGS Grand Canyon Monitoring and Research Center, Reclamation, and National Park Service, in collaboration with partner agencies. In particular, more targeted monitoring for potentially harmful nonnative fishes at sites with suitable habitat in Glen and Grand Canyons as well as an analysis of possible mitigation options for the backwater slough in Glen Canyon will be conducted over the next year.

As a result of these conditions being satisfied, the Leadership Team unanimously recommended the HFE release for 2016. The Principal Deputy Assistant Secretary for Water and Science concurs and has decided to proceed with this recommendation.

This HFE will be the fourth conducted under the HFE Protocol and demonstrates the utility of the HFE Protocol to allow for HFEs when conditions warrant and the HFE would not cause undue harm to other resources. The recommended HFE will provide resource benefits in the near term and will also provide scientific information to be used in future decision making. The HFE will satisfy the Department's goal to ensure effective and coordinated implementation of important research that the Department of the Interior is undertaking through the Glen Canyon Dam Adaptive Management Program.

The Leadership Team would like to thank the Technical Team for the sustained hard work that has led to this recommendation. The individual efforts from members of the Technical Team and coordination of the team as a whole has made this process a success that will ensure benefits to the incomparable resources of Grand Canyon National Park and Glen Canyon National Recreation Area and effective and coordinated research to benefit the adaptive management process.

Attachment



cc:

**Glen Canyon Leadership Team**

Thomas Iseman, Department of Interior  
Camille Touton, Department of the Interior  
Rod Smith, Office of the Solicitor  
Brent Rhees, Bureau of Reclamation  
Daniel Picard, Bureau of Reclamation  
Sue Masica, National Park Service  
Rob Billerbeck, National Park Service  
Christine Lehnertz, National Park Service  
Billy Shott, National Park Service  
David Lytle, U.S. Geological Survey  
Scott VanderKooi, U.S. Geological Survey  
Steve Spangle, U.S. Fish and Wildlife Service  
Chip Lewis, Bureau of Indian Affairs  
Lynn Jeka, Western Area Power Administration

**Glen Canyon Technical Team**

Camille Touton, Department of the Interior  
Katrina Grantz, Bureau of Reclamation  
Marlon Duke, Bureau of Reclamation  
Paul Davidson, Bureau of Reclamation  
Roger Williams, Bureau of Reclamation  
Kerri Stout, Bureau of Reclamation  
Ronda Newton, National Park Service  
Jan Balsom, National Park Service  
Rob Billerbeck, National Park Service  
Kenneth Hyde, National Park Service  
Melissa Trammell, National Park Service  
Kirby Lynn Shedlowski, National Park Service  
Scott VanderKooi, U.S. Geological Survey  
David Topping, U.S. Geological Survey  
Jessica Gwinn, U.S. Fish and Wildlife Service  
Chip Lewis, Bureau of Indian Affairs  
Shane Capron, Western Area Power Administration  
Chrystal Dean, Western Area Power Administration  
Colby Pellegrino, Southern Nevada Water Authority  
Carlee Brown, Colorado Water Conservation Board  
Steve Wolff, Wyoming State Engineer's Office  
Robert King, Utah Division of Water Resources  
Don Ostler, Upper Colorado River Commission  
Paul Harms, New Mexico Interstate Stream Commission  
Jessica Neuwerth, Colorado River Board of California  
Vineetha Kartha, Arizona Department of Water Resources

# Bureau of Reclamation Releases Two Title XVI Funding Opportunity Announcements

*Title XVI Authorized Projects FOA provides funding for entities with congressionally authorized water reclamation and reuse projects and Title XVI Feasibility Studies FOA provides funding for entities seeking to develop new water reuse feasibility studies*

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For Release: October 27, 2016

WASHINGTON - The Bureau of Reclamation is seeking applications for two funding opportunity announcements, one for Title XVI Authorized Projects and the other for Title XVI Feasibility Studies. The Title XVI Authorized Projects FOA is for entities that have a congressionally authorized Title XVI water reclamation and reuse project. The Title XVI Feasibility Studies FOA is for entities that would like to develop a new water reclamation and reuse feasibility study.

The Title XVI Authorized Projects FOA is available at [www.grants.gov](http://www.grants.gov) by searching for funding opportunity number BOR-DO-17-F002. Applicants must have a congressionally authorized Title XVI water reclamation and reuse project. It is estimated that funding will be provided for between 5 to 10 projects. Proposals must be submitted as indicated in the application packet by 4 p.m. MST on Dec. 15, 2016.

The Title XVI Feasibility Study FOA is available at [www.grants.gov](http://www.grants.gov) by searching for funding opportunity number BOR-DO-17-F003. Eligible applicants include state, regional or local authorities, Indian tribes or tribal organizations, or other entities such as a water district, wastewater district, or rural water district. Applicants must provide a minimum 50-percent cost-share for the proposed feasibility study. Proposals must be submitted as indicated in the application packet by 4 p.m. MST on Jan. 5, 2017.

Reclamation provides funding through the Title XVI Water Reclamation and Reuse Program for projects that reclaim and reuse municipal, industrial, domestic or agricultural wastewater and naturally impaired ground or surface waters. Reclaimed water can be used for a variety of purposes, such as environmental restoration, fish and wildlife, groundwater recharge, municipal, domestic, industrial, agricultural, power generation or recreation. Water reuse is a drought resistant water supply and is an essential tool for stretching limited water supplies in the Western United States.

Title XVI projects provide communities with a new source of clean water while promoting water and energy efficiency and environmental stewardship. The program is part of the Department of the Interior's WaterSMART initiative. It is Interior's sustainable water initiative that uses the best available science to improve water conservation and help water resource managers identify strategies to narrow the gap between supply and demand.

Since 1992, Title XVI funding has been used to provide communities with new sources of clean water, while promoting water and energy efficiency and environmental stewardship. In that time, approximately \$667 million in federal funding has been leveraged with nonfederal funding to implement more than \$3.3 billion in water reuse improvements.

Title XVI has become an important part of Interior's implementation of the President's June 2013, [Climate Action Plan](#) and the Nov. 1, 2013, Executive Order, Preparing the United States for the Impacts of Climate Change.

To learn more about Title XVI and WaterSMART, please visit <http://www.usbr.gov/WaterSMART>.

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