

February 27, 2020

NOTICE OF REGULAR MEETING OF THE COLORADO RIVER BOARD

NOTICE IS HEREBY GIVEN pursuant to the call of the Chairperson, Peter Nelson, 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:

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. Peter Nelson, Chairperson, Colorado River Board of California, 770 Fairmont Avenue, Suite 100, Glendale, California, 91203-1068.

Requests for additional information may be directed to: Mr. Christopher S. Harris, 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 <u>www.crb.ca.gov</u>.

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

cyllally

Christopher S. Harris Executive Director

770 Fairmont Avenue, Suite 100 · Glendale, California 91203-1068 · Telephone: (818) 500-1625 · crb.ca.gov

Regular Meeting COLORADO RIVER BOARD OF CALIFORNIA Wednesday, March 11, 2020 1:30 p.m.

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 February 12, 2020 (Action)

4. Water Supply and Operations Reports

- a. Colorado River Basin Report
- b. State and Local Reports

5. Staff Reports Regarding Colorado River Basin Programs

- a. Minute No. 323 Implementation
- b. Glen Canyon Dam Adaptive Management Program
- c. Lower Colorado River Multi-Species Conservation Program
- d. Salinity Control Program
- e. General Announcements

6. 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 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.

7. Other Business

8. Future Agenda Items/Announcements

Next Scheduled Board Meeting:

April 15, 2020 10:00 a.m. Sheraton Ontario Airport Hotel Orchid Room 429 North Vineyard Avenue Ontario, CA 91764

Minutes of Meeting COLORADO RIVER BOARD OF CALIFORNIA Wednesday, February 12, 2020

A meeting of the Colorado River Board of California (Board) was held on Wednesday, February 12, 2020 at the Sheraton Ontario Airport Hotel, 429 North Vineyard Avenue, Ontario, California 91764.

Board Members and Alternates Present:

David DeJesus (MWD Alternate) Dana B. Fisher, Jr. (PVID) James Hanks (IID) Jeanine Jones (DWR Designee) Henry Kuiper (Public Member) Jim Madaffer (SDCWA) Peter Nelson, Chairman (CVWD) Glen D. Peterson (MWD) Jack Seiler (PVID Alternate) Mark Watton (SDCWA Alternate)

Board Members and Alternates Absent:

Evelyn Cortez-Davis (LADWP Alternate) Norma Sierra Galindo (IID Alternate) Christopher Hayes (DFW Designee) David R. Pettijohn (LADWP) John Powell, Jr. (CVWD Alternate) David Vigil (DFW Alternate)

Others Present:

Steve Abbott Brian Alvarez Melissa Baum-Haley Christopher Harris Michael Hughes Ned Hyduke Sarai Jimenez Lisa Johansen Rich Juricich Tom Levy Kara Mathews Aaron Mead Dylan Mohamed Anisa Patch Ivory Reyburn Kelly Rogers Shanti Rosset Tom Ryan Zach Stevens Gary Tavetian Jerry Zimmerman

CALL TO ORDER

Chairman Nelson announced the presence of a quorum and called the meeting to order at 10:02 a.m.

OPPORTUNITY FOR THE PUBLIC TO ADDRESS THE BOARD

Chairman Nelson invited members of the audience to address the Board on items on the agenda or matters related to the Board. Hearing none, Chairman Nelson moved to the next item on the agenda.

ADMINISTRATION

Chairman Nelson asked for a motion to approve the December 11, 2019, meeting minutes. Mr. Fisher moved that the minutes be approved, seconded by Mr. Peterson. By roll-call vote, the minutes were unanimously approved.

Chairman Nelson asked for a motion to approve the Final Calendar-Year 2020 Board meeting schedule. Mr. Peterson moved that the Final Calendar-Year 2020 Board meeting schedule be approved, seconded by Mr. Kuiper. By roll-call vote, the Final Calendar-Year 2020 Board meeting schedule was unanimously approved.

COLORADO RIVER BASIN WATER REPORTS

Colorado River Basin Report

Mr. Harris reported that as of February 10th, the water level at Lake Powell was 3,604.67 feet with 12.20 million-acre feet (MAF) of storage, or 50% of capacity. The water level at Lake Mead was 1,095.09 feet with 11.30 MAF of storage, or 43% of capacity. Mr. Harris reported that the total system storage was 31.13 MAF, or 52% of capacity, which is about 4.3 MAF more than system storage at this same time last year.

Mr. Harris reported that the Water Year-2020 forecasted inflow to Lake Powell is 8.64 MAF, or 80% of normal and the Water Year-2020 forecasted April to July inflow to Lake Powell is 5.70 MAF, or 80% of normal. For Water Year-2020, the observed January inflow to Lake Powell was 0.28 MAF, or 77% of normal and the forecasted February inflow to Lake Powell is 0.34 MAF, or 87% of normal. Mr. Harris reported that the Water Year-2020 precipitation to date is 96% of normal and the current Basin snowpack is 117% of normal. Mr. Harris reported that precipitation conditions in the Basin were slightly above average in December, while conditions in January were below average throughout most of the basin.

Mr. Harris reported that as of February 2nd, the Upper Colorado River basin reservoirs, excluding Lake Powell, ranged from 51% of capacity at Fontenelle Reservoir in Wyoming; 87% of capacity at Flaming Gorge Reservoir in Wyoming and Utah; 91% of capacity at Morrow Point and 67% of capacity at Blue Mesa Reservoir in Colorado; and 67% of capacity at Navajo Reservoir in New Mexico.

Mr. Harris reported that as of February 1st, Brock and Senator Wash Reservoirs captured 15,864 AF and 7,702 AF, respectively. He also reported that the excess deliveries to Mexico through February 2nd, were 282 AF. As of January 31st, the total bypassed to the Cienega de Santa Clara in Mexico was 8,384 AF.

State and Local Report

Ms. Jones, representing the California Department of Water Resources (DWR), reported that the State is continuing its efforts to improve precipitation forecasting. She noted that one of the State's forecasting projects is an experimental forecast of sub-season timescales for California and the Colorado River Bain. She explained that the forecast timeframes are zero to two weeks, three to four weeks and five to six weeks. The project's current experimental forecast shows prolonged ridging in the northern part of California in the three to four-week time frame. She explained that although conventional weather models suggest dry conditions over the next few weeks, the experimental forecast did not signal prolonged ridging, indicating dryness. Ms. Jones reported that the experimental seasonal forecast for winter precipitation in California suggest dry conditions persisting in California. She added that two-thirds of the winter season is complete and California's winter precipitation will likely be below average.

Mr. Peterson, representing the Metropolitan Water District of Southern California (MWD), reported that the Colorado River aqueduct has been shut down for maintenance and MWD has not been receiving water for a few weeks. Mr. Peterson also noted that the Bard Water District fallowing program has been renewed.

Mr. Harris, reporting for Board member Pettijohn of the Los Angeles Department of Water and Power (LADWP), reported that the current precipitation condition in the Eastern Sierra is 69% of normal with 10.7 inches of water content, adding that conditions have leveled off significantly since the end of January.

STATUS OF COLORADO RIVER BASIN PROGRAMS

Status of the Salinity Control Program

Mr. Juricich reported on the previous week's Salinity Work Group meeting in El Segundo, California. On the Paradox Valley Unit EIS, Mr. Juricich reported that the Forum is in support of the evaporation pond alternative, which the Forum feels has the most certainty. The Forum feels that a new injection well has a lot of uncertainty surrounding geology and its long-term operation. The other alternative of zero-liquid discharge technology requires a much higher cost. Reclamation provided an extension on the comments schedule, pushing the due date from February 4th to the 19th, giving the Forum enough time to finalize its comments. Mr. Juricich plans to send a draft California letter from the Board supporting the Forum's position and hopes to get California agencies to write similar letters supporting the evaporation pond alternative. The draft Final EIS is scheduled for release in April. The cooperating agencies will have a chance to review the draft Final EIS before the Final EIS is released in July. A ROD is expected by August.

Mr. Juricich reported that the Basin States have met a few times to discuss salinity control funding, which is cost-shared between Lower and Upper Basins. The Lower Basin's share comes from power revenues generated from the Lower Basin reservoirs (i.e. Hoover and Parker-Davis projects), whose low elevations over the last couple of decades have not generated the revenue needed to support the salinity control program desired levels. The states recognize that funding shortfall must be addressed, particularly to support a new salinity control project at Paradox, and will work over the next few years to identify and implement options to solve the issue. With a letter to Reclamation addressing this long-term funding issue, the states are more comfortable supporting a proposed Paradox salinity control alternative. Mr. Harris added that the other part of the funding issue has to do with Arizona not paying into the Lower Colorado Basin Development Fund. All their power revenues go towards Central Arizona Project repayment. This Basin States letter to Reclamation is to put everyone on notice to come up with some options to develop a long-term fix for the program whose funding may get folded into the legislation that may be needed for the next set of Interim Guidelines. Mr. Harris reported that the Upper Basin states are also willing to revisit the cost-share ratio between the two basins.

There Board discussed the cost-share ratio between the two basins, with some of the Board members asking about its role in regards to the imminent closure of the Paradox injection well. Mr. Harris explained that the Forum is working to determine the potential cost obligations associated with a new repayment obligation. This process may take a few years. The Board motioned for Chairman Nelson to sign the letter to Reclamation addressing the funding issue.

Status of the Glen Canyon Dam Adaptive Management Program

Mr. Harris reported that the Glen Canyon Dam Adaptive Management Program held its Annual Reporting meeting in conjunction with a Technical Work Group meeting January 12-14 in Phoenix, Arizona. Mr. Harris noted that researchers have determined, through implementation of eleven high flow releases (HFEs) over the past several decades, that the flows appear to sufficiently maintain sandbars in the Grand Canyon. However, HFEs do not appear to have any biological impacts or progressively increase the size of sandbars.

Mr. Harris reported that the low, steady weekend flows known as "bug flows" conducted at Glen Canyon Dam in summer 2018 and 2019 have yielded inconclusive results. Researchers suggested conducting the flows for a third year to better understand how they impact the ecosystem. Mr. Harris noted that, under the Long-Term Experimental and Management Plan (LTEMP), 2020 is the first opportunity to conduct a spring HFE. However, sediment conditions were currently insufficient to support one. Mr. Harris also reported that the number of nonnative brown trout below Glen Canyon Dam has increased significantly in the last several years, although downstream populations of native fish appear to be stable or slightly increasing.

Finally, Mr. Harris noted that the Glen Canyon Dam Adaptive Management Program was currently meeting in Phoenix, Arizona and starting discussions on the next triennial budget and work plan for FY21-23.

Status of the Lower Colorado River Multi-Species Conservation Program

Mr. Harris reported that the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) will be conducting a tour on March 24-26 to celebrate the 15-year anniversary of the Program. The tour will begin on the morning of March 24th in Yuma, Arizona and travel north along the river, stopping at LCR MSCP conservation areas and other sites before ending near Las Vegas on the afternoon of March 26th.

ANNOUNCEMENTS

Proposed Downlisting of the Humpback Chub

Mr. Harris reported that the U.S. Fish and Wildlife Service (USFWS) had recently proposed to reclassify the humpback chub from endangered to threatened. There are six core populations across the Colorado River Basin, the largest of which is found in the Grand Canyon in the Lower Basin. Mr. Harris noted that recovery efforts in the both Basins have helped to stabilize the species, and the USFWS is also considering proposing to downlist the razorback sucker from endangered to threatened.

Lake Powell Pipeline

Mr. Harris reported on the Lake Powell Pipeline proposed by the Utah Division of Water Resources. Mr. Harris noted that Board staff had submitted a scoping comments letter to Reclamation on January 10, 2020.

Washington, D.C. Updates

Mr. Harris reported that the President's FY-2021 budget was released on February 10th with \$1.13B for Reclamation. Mr. Harris also reported that the House unveiled a \$760B infrastructure proposal with most funding going to transportation, but \$50.5B set aside for wastewater treatment, and \$25B for drinking water.

Mr. Harris reported that the United States Environmental Protection Agency (EPA) finalized its update to the Water of the United States Clean Water Act Rule that will reduce protections for streams and wetlands.

Next Scheduled Board Meeting

Finally, Mr. Harris noted that the next meeting of the Colorado River Board would be March 11th and would be held in El Centro, California, at the Imperial Irrigation District (IID).

ADJOURNMENT

With no further items to be brought before the Board, Chairman Nelson adjourned the meeting at 10:52 a.m.

3/2/2020

LOWER COLORADO WATER SUPPLY REPORT

River Operations

Bureau of Reclamation

Questions:	BCOOWaterops@usbr.gov

(702) 293-8373

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

		Content	Elev. (Feet	7-Day
	PERCENT	1000	above mean	Release
CURRENT STORAGE	FULL	ac-ft (kaf)	sea level)	(CFS)
LAKE POWELL	49 %	12,009	3,602.69	11,800
* LAKE MEAD	44%	11,414	1,096.38	10,200
LAKE MOHAVE	93%	1,674	642.10	12,000
LAKE HAVASU	94%	582	448.09	8,700
TOTAL SYSTEM CONTENTS **	52%	31,003		
As of 3/1/2020				
SYSTEM CONTENT LAST YEAR	45%	26,713		

* Percent based on capacity of 26,120 kaf or elevation 1,219.6 feet.

** TOTAL SYSTEM CONTENTS includes Upper & Lower Colorado River Reservoirs, less Lake Mead exclusive flood control space.

Salt/Verde System	82 %	1,871		
Painted Rock Dam	0%	0	530.00	0
Alamo Dam	14%	136	1,124.26	25
Forecasted Water Use for Calendar Year 20)20 (as of 2/2	4/2020) (values	in kaf)	
NEVADA			251	
SOUTHERN NEVADA WATER SYSTEM				215
OTHERS				36
CALIFORNIA			4,224	
METROPOLITAN WATER DISTRICT OF CALL	FORNIA			699
IRRIGATION DISTRICTS				3,508
OTHERS				16
ARIZONA			2,478	
CENTRAL ARIZONA PROJECT				1,383
OTHERS				1,095
TOTAL LOWER BASIN USE				6,953
DELIVERY TO MEXICO - 2020 (Mexico Sche	eduled Delivery	+ Preliminary Year	ly Excess ¹)	1,522
OTHER SIGNIFICANT INFORMATION				
UNREGULATED INFLOW INTO LAKE POWELL - FE	BRUARY MID-MO	NTH FORECAST DAT	TED 2/18/2020	
		MILLION	ACRE-FEET	<pre>% of Normal</pre>
FORECASTED WATER YEAR 2020			8.564	79%
FORECASTED APRIL-JULY 2020			5.700	80%
JANUARY OBSERVED INFLOW			0.277	77%
FEBRUARY INFLOW FORECAST			0.310	79%
		Upper Colorad	o Basin Sal	t/Verde Basin
WATER YEAR 2020 PRECIP TO DATE		90% (13	.5")	99% (13.6")
CURRENT BASIN SNOWPACK		106% (13	.8")	59% (3.4")

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



Graph notes: January 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 Robert 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.



CY 2020

NOTE: • Diversions and uses that are pending approval are noted in *red italic*: • Water users with a consumptive use entitlement - Excess to Estimated Use column indicates overrun/underrun of entitlement. Das 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)

Use Forcast Estimated Estimated Estimated Estimated Descip Approved Approved Approved Approved Approved Approved Approved Approved Approved CP 2020 CP 2020 <th></th> <th></th> <th></th> <th></th> <th>Excess to</th> <th></th> <th></th> <th></th> <th>Excess to</th>					Excess to				Excess to
To bate Use		Use	Forecast	Estimated	Estimated	Diversion	Forecast	Approved	Approved
WATER USER CY 2000 CY 2020		To Date	Use	Use	Use	To Date	Diversion	Diversion	Diversion
ARIZON PLANERS 1,862 14,074 14,074 2,850 21,654 21,654 0 LARE MAP, NRA, AZ, Diversions from Lake Media 6 86 65	WATER USER	CY 2020	CY 2020	CY 2020	CY 2020	CY 2020	CY 2020	CY 2020	<u>CY 2020</u>
LAKE MAD NRA, AZ - Durension from Lake Metad 6 8 6 6 86 -0 1048 MATE AZ - Durension from Lake Metad 2 197 197 22 197 197 0 201 201 201 201 201 201 201 201 201 20	ARIZONA PUMPERS	1,852	14,074	14,074		2,850	21,654	21,654	0
LAKE MAQ NRA, A2 - Durenions from Lake Mohave 24 197 197 24 197 197 197 0 DULLADO CITY 1.068 6,122 1,682 12,720 12,720 0 DULLADO CITY 1.068 6,122 1,682 12,720 12,720 0 DEVONE WATER NERVATION DISTRICT 1.064 16,516 1 5,641 74,775 55,500 2,750 2,750 2,720 2,809 30,635 30,635 30,635 4,820 2,711 43,084 4,820 3,77 77,755 52,417 4,177 0 PARSE MARE CONSERVATION LAZ 1,163 8,334 3,33 1,808 1,44,00 1,460 76 COLORADOR TYPE INDIAN RESERVATION AZ 1,164 1,328,34 1,279 2,1270 1,210 1,210 1,221 1,279 2,1270 1,210 1,210 1,210 1,210 1,210 1,210 1,210 1,210 1,210 1,210 1,210 1,210 1,210 1,100 1,100 1,100 1,10	LAKE MEAD NRA, AZ - Diversions from Lake Mead	6	86	86		6	86	86	0
DAVIS DAVI PROJECT 0 2 2 2 15 15 0 MOUNCE WATER OLD CONCENTOR INSTRUCT 86 653 653	LAKE MEAD NRA, AZ - Diversions from Lake Mohave	24	197	197		24	197	197	0
BULLEAD CITY 1,068 6,122 6,122 1,682 12,20 12,11 14,20 14,20 14,20 14,20 14,20 14,00 14,00 14,00 14,00 12,00 13,0 13,0 13,0 13,0 13,0 12,120 <t< td=""><td>DAVIS DAM PROJECT</td><td>0</td><td>2</td><td>2</td><td></td><td>2</td><td>15</td><td>15</td><td>0</td></t<>	DAVIS DAM PROJECT	0	2	2		2	15	15	0
MOHAK WATER CONSERVATION DISTRICT 86 666 656 129 979 979 0 MOHAK WALLEY IDD 1.004 16.516 16.516 2.269 30.585<	BULLHEAD CITY	1,068	8,122	8,122		1,692	12,720	12,720	0
BROCKK WATER LLC 43 323 323 65 484 484 0 OWANEY SULLY IDD 1,064 10.564 16.516 16.516	MOHAVE WATER CONSERVATION DISTRICT	86	656	656		129	979	979	0
MOHAY VALLEY IDD 1,604 16,516 2,889 30,855 30,715 30,	BROOKE WATER LLC	43	323	323		65	484	484	0
FORT MOLAVE INDIAN RESERVATION, AZ 2,711 4.3.080 44.550	MOHAVE VALLEY IDD	1,604	16,516	16,516		2,969	30,585	30,585	0
GOLDEN SHORES WATER CONSERVATION DISTRICT 37 278 278 55 417 417 0 2 AVASU NATIONAL WILDLIFE REFUGE 38 3.342 3.344 3	FORT MOJAVE INDIAN RESERVATION, AZ	2,711	43,089	44,550		5,021	79,795	82,500	-2,705
HAVASU NATIONAL, WILDLEF REFUGE 38 3,342 3,563 380 39,103 41,820 2,717 LACE HAVASU CUTV 1,159 8,28 8,282 380 39,103 41,820 2,717 CENTRAL ARIZONA PROLECT (CAP) 155,182 1,382,284 155,182 1,382,284 155,182 1,382,284 155,182 1,382,284 155,182 1,382,284 120,103 105,101 105,101 100 105,101 100 100 100 100 100 100 100 100 100	GOLDEN SHORES WATER CONSERVATION DISTRICT	37	278	278		55	417	417	0
LAKE HAVASU CITY 1,159 8,828 8,288 1,868 14,400 14,400 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	HAVASU NATIONAL WILDLIFE REFUGE	38	3,342	3,563		320	39,103	41,820	-2,717
CENTRAL ARIZONA PROJECT (CAP) 115,182 1.382,924 115,182 1.382,924 COLORADO RIVER INDUM RESERVATION, AZ 14,168 228,282 246,346 48,348 512,102 -1,305 DERCABURG MRNOVEMENT ASSOCIATION 30 228 228 42 319 512,102 -1,305 DERCABURG MRNOVEMENT ASSOCIATION 30 228 228 42 319 0 CIBOLA VALLEY' 915 15,219 42 310 0 64 36 6,163 6,163 6,163 0 163 6,163 6,163 0 163 6,163 0 0 0 0 0 164 727 21,270 110 0 0 0 0 164 726 0 163 163 6,03 164 144 40 0 0 0 0 0 0 164 262 25,557 7,500 1,942 1102 102 102 102 102 102 102 102 102 102	LAKE HAVASU CITY	1,159	8,928	8,928		1,869	14,400	14,400	0
TOWN OF PARKER 41 433 433 110 916 916 0 COURADO RIVE NIDAN RESERVATION, AZ 14,166 252,252 22,64,346 42,319 319 00 CIBOLA VALLEY ¹ 915 52,19 42,4319 319 00 CIBOLA NATIONAL WILDLIFE REFUGE 470 14,244 14,244 0 758 22,005 23,005 0 DELM FERLAL NATIONAL WILDLIFE REFUGE 614 3,799 0 690 6,128 6,128 0 153 1,163 1,163 1,163 1,163 0 0 1,163 1,163 0 0 1,163 1,163 1,163 0 0 1,164 0 0 1,164 0 0 1,126 0 0 0 1,163 1,163 1,163 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <td>CENTRAL ARIZONA PROJECT (CAP)</td> <td>155,182</td> <td>1,382,924</td> <td></td> <td></td> <td>155,182</td> <td>1,382,924</td> <td></td> <td></td>	CENTRAL ARIZONA PROJECT (CAP)	155,182	1,382,924			155,182	1,382,924		
CULCMADO RIVEL NUMA RESERVATION, A2 14,166 252,929 242,86 48,594 510,793 512,102 -1,309 ERRENBURG INFROVEMENT ASSOCIATION 30 222 8 42 319 319 0 CIBOLA NATIONAL WILDLIFE REFUGE 470 12,279 11,270 21,270 0 IMPERIAL NATIONAL WILDLIFE REFUGE 641 3,799 3,799 0 990 6,128 6,128 0 IMPERIAL NATIONAL WILDLIFE REFUGE 641 3,799 3,799 0 990 6,128 6,128 0 IMPERIAL NATIONAL WILDLIFE REFUGE 641 3,799 3,799 0 990 6,128 6,128 0 IMPERIAL NATIONAL WILDLIFE REFUGE 641 3,799 3,799 0 990 6,128 6,128 0 IMPERIAL NATIONAL WILDLIFE REFUGE 641 3,799 3,799 0 990 6,128 6,128 0,163 0 IMPERIAL NATIONAL WILDLIFE REFUGE 641 3,799 3,799 0 990 6,128 6,128 0,163 0 CHA CHA, LLC 841 0,101 16 1,365 1,365 177 2,100 2,100 0 PEATTIE FARMS 011 10 0 YUMA PROVING EQUAD 30 474 474 30 474 474 0 CHA CHA, LLC 84 0,900 8,906 3,227 0, 601 8,521 9,156 4-535 WELLTONMOHAVIK IDD 8,368 401,703 412,8651,250 2,555 2,75 601 8,521 9,156 4-535 WELLTONMOHAVIK IDD 8,368 401,703 412,8661,26 0 1,3 1,03 1,03 0 474 412,861,26 0 1,3 2,105 1,02 0 CHARING CORPS AR STATION YUMA 1,39 16,33 1,61 6,406 -0 1,3 0,588 401,703 412,8651,260 0 CHARING CORPS AR STATION YUMA 143 1,333 1,90 44 2,26 2,555 2,75 50 -1,942 0 UNIVERSITY OF ARIZONA 85 896 896 85 886 896 0 DESERT JAWN MEMORIAL 33 2,0 20 44 2,28 2,80 0 ONETH GLA VALLEY IRRIGATION DISTRICT 571 11,831 12,165 412 4,3186 442,00 -1,014 YUMA UNION HARESERVATION 166 (1,299 243 32,93,280 -7,167 TUNA UNION HARESERVATION 164 (14,3870 44,338 2,877 2,39,400 -628 FOT YUMA NUEMORIAL FURRIGATION DISTRICT 1,172 21,439 20,884 1,43 328 2,49 0 CORPH IGLA VILLEY IRRIGATION DISTRICT 1,172 21,439 20,884 1,44 3,280 2,49,300 1,44 3,280 2,49,300 1,44 3,280 2,49,300 1,44 3,280 2,49,300 1,44 3,103 103 0 RECLAMATION YUMATER USERVATION 1565 44 2,386 2,93,24 0 7,453 7,454 4,42,386 2,93,34 2,2000 7,453 7,454 1,173 1,2165 1,47 4,3186 4,4200 1,014 1,172 2,14,39 2,984 1,183 2,82,44 1,183 2,82,44 1,144 1,03 103 0 RECLAMATION	TOWN OF PARKER	41	433	433		110	916	916	0
EHRCHBURG IMPROVEMENT ASSUCIATION 30 228 228 42 319 319 0 CIBOLA VALLEY '	COLORADO RIVER INDIAN RESERVATION, AZ	14,166	252,929	246,946		48,594	510,793	512,102	-1,309
CIBOLA NATIONAL WILDLIFE REFUGE 470 13,264 40 758 23,005 23,005 0 IMPERIAL NATIONAL WILDLIFE REFUGE 470 14,264 41,4264 0 758 23,005 23,005 0 IMPERIAL NATIONAL WILDLIFE REFUGE 641 3,799 3,799 0 999 6,128 6,128 6,128 0 IMPERIAL NATIONAL WILDLIFE REFUGE 641 3,799 3,799 0 999 6,128 6,128 6,128 0 IMPERIAL RATIONAL WILDLIFE REFUGE 741 41 41 41 41 41 41 41 41 41 41 41 41 4	EHRENBURG IMPROVEMENT ASSOCIATION	30	228	228		42	319	319	0
CIBOLA NATIONAL WILDLIFE REFUGE 470 14,264 14,264 0 758 23,005 23,005 20,005 0 0 0 6,28 6,128 0 0 0 0 6,28 6,128 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CIBOLA VALLEY 1	915	15,219	15,219		1,279	21,270	21,270	0
IMPERALL NATIONAL WILDLIFE REFUGE 614 3.799 0. 990 6,123 6,123 6,123 0 EMD PERMITES (PARKER DAM to IMPERIAL DAM) 99 756 0. 153 1,163 0 CHA CHA, LIC 116 1,365 777 2,100 2,100 0 DEATTIE FARMS 161 722 722 92 1,110 1,110 0 QILA MONSTER FARMS 326 4,892 5,257 601 8,521 9,156 6,555 WELLTON-MORHAWK IDD 18,249 289,906 278,000 -8,094 36,588 401,709 41,265 11,265 11,265 11,265 11,265 11,265 11,265 11,265 11,265 11,265 143 1,333 1,360 143 1,333 1,360 14 200 200 0<	CIBOLA NATIONAL WILDLIFE REFUGE	470	14,264	14,264	0	758	23,005	23,005	0
BLM PERMITEES (PARKER DAM to IMPERIAL DAM) 99 756 756 0 153 1,163 1,163 1,163 0 CHA CHA, LLC CHA CHA, LC CHA CHA, LLC CHA CHA, LC CHA CHA CHA, LC CHA CHA CHA CHA CHA CHA CHA CHA CHA CHA	IMPERIAL NATIONAL WILDLIFE REFUGE	614	3,799	3,799	0	990	6,128	6,128	0
CHA CHA, LLC 116 1.365 177 2.100 0 BEATTIE FARMS 61 722 722 32 1.110 0 VIMA PROVING GROUND 30 474 474 30 474 474 474 GILA MONSTER FARMS 30 474 474 30 474 474 474 GILA MONSTER FARMS 30 474 474 30 474 474 0 GILA MONSTER FARMS 30 473 473 13.35 13.06 12.2 0 0 GILA PORSTERS (BLCW IMPERIAL DAM) 1.939 14.935 16.401 -1.466 2.529 25.558 27.500 -1.942 MRINE CORPS AR STATION YUMA 143 13.33 1.360 143 133 1.350 -27 UNIVERSITY OF ARIZONA 85 896 896 144 200 200 0 DESERT LAWN MEMORIAL 3 20 20 4 428 28 0	BLM PERMITEES (PARKER DAM to IMPERIAL DAM)	99	756	756	0	153	1,163	1,163	0
BEATTLE FARMS 61 722 722 92 1,110 1,110 0 OllA MONSTER FARMS 326 4,922 5,257 601 8,521 9,156 -535 BLM PERMITES (BELOW IMPERIAL DAM) 9 66 66 0 13 102 102 102 0 CITY OF VUMA 1,339 14,345 1,330 143 1,333 1,360 143 1,333 1,360 -27 UNION PACIFIC RAILROAD 4 29 29 8 48 48 0	CHA CHA, LLC	116	1,365	1,365		177	2,100	2,100	0
YUMA PROVING GROUND 30 474 474 30 474 474 GOLA MONSTER FARMS 326 4.892 5.257 601 8.521 9.156 6.635 WELLTON-MOHAWK (ID 18.249 269,906 25.257 601 31 102 102 00 CITY OF YUMA 1.039 14.33 1.330 1.330 143 1.333 1.360 143 1.333 1.360 143 1.333 1.360 143 1.333 1.360 227 00 00 00 00 00 20 143 1.333 1.360 227 0 0 00 <	BEATTIE FARMS	61	722	722		92	1,110	1,110	0
GLA MONSTER FARMS 326 4,992 5,257 601 8,521 9,156 605 BLM PERMITES (BELOW IMPERIAL DAM) 9 66 66 0 13 102 102 102 OLTY OF YUMA 1,033 14,335 16,401 8 48 48 0 UNION PACIFIC FALEXDA 43 1,333 1,360 8 48 48 0 UNION PACIFIC FALEXDA 45 896 896 8 48 48 0 UNION PACIFIC FALEXDA 85 896 896 8 88 896 0 UNINERSTIY OF ARIZONA 85 896 896 4 28 28 0 DESERT LAWN MEMORIAL 3 20 20 4 42 8 49 0 UNIA RESA IDD 11631 148,370 11,331 1.461 17,700 -239 71,461 17,700 -239 1,452 1,453 23,262,89 342,82,72 24,900 -628 1,9	YUMA PROVING GROUND	30	474	474		30	474	474	0
WELTON-MOHAWK IDD 18.249 289,000 -8,094 36,588 401,709 412,965 -11.256 CITY OF YUMA 1,039 14,335 16,401 -1.466 2.529 25,558 27,500 -1.942 VARINE CORPS AIR STATION YUMA 143 1.333 1.360 143 1.333 1.360 143 1.333 1.360 8 48 48 00 200 00 00 100 PARINE CORPS AIR STATION YUMA 143 1.333 1.360 143 1.333 1.360 144 200 200 00	GILA MONSTER FARMS	326	4,892	5,257		601	8,521	9,156	-635
BLM PERMITEES (BELOW IMPERIAL DAM) 9 66 66 0 13 102 102 0 CTY OF YUMA 143 1335 16,401 -11,466 2.529 25,558 27,500 -1.942 MARINE CORPS AIR STATION YUMA 143 1333 1,360 143 1,333 1,360 -27 UNION PACIFIC RAILROAD 44 29 29 88 48 48 80 UNIVERSITY OF ARIZONA 85 896 896 85 896 896 00 YUMA UNION HIGH SCHOOL DISTRICT 10 150 150 14 220 20 0 0 DESERT LAWN MEMORIAL 3 20 20 4 28 28 0 NORTH GLA VALLEY IRRNIGATION DISTRICT 571 11,831 12,165 41,121 43,186 44,200 -1,014 YUMA RISA TON DISTRICT 45,10 3,9,336 38,701 7,403 71,461 71,700 -239 YUMA SUNON MESA IDD 1157 11,831 12,165 11,95,02 22,093 229,280 -7,157 YUMA MESA IDD 1157 11,731 12,165 11,95,02 22,093 229,280 -7,157 YUMA MESA IDD 1157 11,737 148,803 11,95,02 22,093 229,280 -7,157 YUMA SESR VATION 157 11,572 21,439 20,888 18,83 28,772 29,400 -628 FORT YUMA INDIAN RESERVATION 166 12,59 1,259 255 1,937 1,937 0 YUMA CONTRY INFRIGATION DISTRICT 552 1,837 1,651 44,386 289,354 282,000 7,354 COCOPAH INDIAN RESERVATION 552 1,837 1,651 44,386 289,354 282,000 7,354 COCOPAH INDIAN RESERVATION 552 1,837 1,651 44,386 289,354 282,000 7,354 COCOPAH INDIAN RESERVATION 552 1,937 1,96,57 42,386 289,354 282,000 7,354 COCOPAH INDIAN RESERVATION 552 1,937 1,96,57 42,386 3,258,558 3,282,849 119,719 119,719 119,719 114 103 103 114 103 1	WELLTON-MOHAWK IDD	18,249	269,906	278,000	-8,094	36,588	401,709	412,965	-11,256
CITY OF YUMA 1,039 14,435 16,401 -1,466 2,529 25,558 27,500 -1,942 MARINE CORPS AIR STATION YUMA 143 1,333 1,360 143 1,333 1,360 UNION PACIFIC RALROAD 4 29 29 8 48 48 0 UNIVERSITY OF CARZONA 65 896 896 14 200 200 0 DESERT LAWN MENORIAL 3 20 4 28 28 0 NORTH GILA VALLEY IRRIGATION DISTRICT 571 11,831 11,2165 4,121 43,168 44,200 -1,014 YUMA MESA DID 14,618 148,300 143,833 7,403 71,461 71,700 -239 YUMA MESA DID 14,618 148,300 143,833 658 280,200 7,354 COCOPAH INDIAN RESERVATION 250,65 193,217 186,507 42,366 280,354 282,000 7 COCOPAH INDIAN RESERVATION 250,65 193,217 186,507<	BLM PERMITEES (BELOW IMPERIAL DAM)	9	66	66	0	13	102	102	0
MARINE CORPS AIR STATION YUMA 143 1,333 1,360 143 1,333 1,360 -27 UNION PACIFIC RAILCOAD 4 29 29 8 48 48 0 UNIVERSITY OF ARIZONA 85 896 896 85 896 896 0 VUMA UNION HIGH SCHOOLDISTRICT 10 150 150 14 200 200 0 DESERT LAWN MEMORIAL 3 20 20 4 28 20 NORTH GILA VALLEY IRREGATION DISTRICT 571 11,831 12,165 4,121 43,186 44,200 -1,014 VUMA REGATION DISTRICT 1,572 21,439 20,888 18,83 28,772 29,400 -628 FOR TVUMA NDIAN RESERVATION 2566 193,217 186,507 42,386 283,54 282,000 7,354 COCOPAH INDIAN RESERVATION 2565 1,327 1651 658 2,620 2,53 90 RETURN FROM SOUTH GILA WELLS 1,382,924 1,	CITY OF YUMA	1,039	14,935	16,401	-1,466	2,529	25,558	27,500	-1,942
UNION PACIFIC RAILROAD 4 29 29 8 48 48 0 UNIVERSITY OF ARIZONA 85 896 896 0 0 0 00 00 0 0 00 <td< td=""><td>MARINE CORPS AIR STATION YUMA</td><td>143</td><td>1,333</td><td>1,360</td><td></td><td>143</td><td>1,333</td><td>1,360</td><td>-27</td></td<>	MARINE CORPS AIR STATION YUMA	143	1,333	1,360		143	1,333	1,360	-27
UNIVERSITY OF ARIZONA 164 School DISTRICT 10 150 150 85 896 896 85 896 896 00 00 00 00 00 00 00 00 00 00 00 00 00	UNION PACIFIC RAILROAD	4	29	29		8	48	48	0
YUMA UNION HIGH SCHOOL DISTRICT 10 150 150 14 200 200 0 DESERT LAWN MEMORIAL 3 20 20 4 28 28 0 NORTH GILA VALLEY IRRRIGATION DISTRICT 571 11,831 12,165 7,403 71,461 71,700 -239 YUMA RESA IDD 114,618 148,370 143,893 19,502 232,093 239,280 -7,167 YUMA COUNTY WATER USERS'ASSOCIATION 166 1,259 255 1,937 0 YUMA COUNTY WATER USERS'ASSOCIATION 25,065 193,217 186,507 42,386 289,354 282,000 7,354 COCOPAH INDIAN RESERVATION 2552 1,387 1,651 658 2,620 2,530 90 RECLAMATION-YUMA AREA OFFICE 14 103 103 14 103 103 14 103 103 0 CAP 155,182 1,382,924 1,382,924 1,382,924 1,375,634 1,897,849 1,875,634 1,897,8	UNIVERSITY OF ARIZONA	85	896	896		85	896	896	0
DESERT LAWN MEMORIAL 3 20 20 4 28 28 0 NORTH GLA VALLEY IRRIGATION DISTRICT 571 11,831 12,165 4,121 43,166 44,200 -1,014 YUMA IRRIGATION DISTRICT 14,618 148,370 143,893 7,403 7,1461 71,700 -239 YUMA NESA IDD 11,618 148,370 143,893 19,502 232,093 239,280 -7,187 UNIT 'B' IRRIGATION DISTRICT 1,572 21,499 2,088 1255 1,937 1,937 0 YUMA COUNTY WATER USERS' ASSOCIATION 25,665 193,217 186,507 44 103 103 14 103 103 0 RECLAMATION YUMA RESERVATION 25,655 133,217 186,507 44 28 28,354 2,620 2,530 90 RECLAMATION YUMA RESERVATION 25,658 3,282,849 14 103 103 14 103 103 0 RETURN FROM SOUTH GLA WELLS	YUMA UNION HIGH SCHOOL DISTRICT	10	150	150		14	200	200	0
NORTH GILA VALLEY IRRIGATION DISTRICT 571 11.831 12.165 4.121 43.186 44.200 -1.014 YUMA RESA IDD 14.618 148,370 143,893 7.403 71.461 71.700 -239 YUMA MESA IDD 14.618 148,370 143,893 1,852 232,093 239,280 -7.187 UNIT "B" IRRIGATION DISTRICT 1,572 21.439 20.888 1,883 28,772 29.400 -628 COCOPAH INDIAN RESERVATION 166 1,259 255 1,937 1,937 0 YUMA COUNTY WATER USERS' ASSOCIATION 25,065 193,217 186,507 42.386 289,354 282,000 7,354 COCOPAH INDIAN RESERVATION 552 1,837 1,651 658 2,620 2,53 90 RECLAMATION-YUMA AREA OFFICE 14 103 103 14 103 103 0 TOTAL ARIZONA 247,308 2,478,345 2,473,847 338,616 3,258,558 3,282,849 1,382,924 1,382,924	DESERT LAWN MEMORIAL	3	20	20		4	28	28	0
YUMA IRRIGATION DISTRICT 4,530 39,336 38,701	NORTH GILA VALLEY IRRRIGATION DISTRICT	571	11,831	12,165		4,121	43,186	44,200	-1,014
YUMA MESA IDD 14,618 148,370 143,893 19,502 232,093 239,280 -7,187 UNIT 'B' IRRGATION DISTRICT 1,572 21,439 20,888 1,883 28,772 29,400 -628 FORT YUMA INDIAN RESERVATION 25,065 193,217 186,507 42,386 289,354 282,000 7,354 COCOPAH INDIAN RESERVATION 25,065 193,217 186,507 42,386 289,354 282,000 7,354 COCOPAH INDIAN RESERVATION 552 1,387 1,651 658 2,620 2,530 90 RETURN FROM SOUTH GILA WELLS 14 103 103 14 103 103 0 CAP 155,182 1,382,924 1,382,924 1,382,924 1,382,924 1,382,924 1,387,634 1,897,849 143,576,634 1,897,849 143,576,634 1,897,849 143,576,634 1,897,849 143,576,634 1,897,849 143,576,634 1,897,849 1,576,634 1,897,849 1,556,586 3,282,840 1,556,586 3,282,846 1,576,534	YUMA IRRIGATION DISTRICT	4,530	39,336	38,701		7,403	71,461	71,700	-239
UNIT B* IRRIGATION DISTRCT 1,57 21,439 20,888 1,883 28,7/2 29,400 -628 FORT YUMA INDIAN RESERVATION 166 1,259 1,259 255 1,937 103 YUMA COUNTY WATER USERS' ASSOCIATION 25,065 193,217 186,507 42,386 289,354 282,000 7,354 COCOPAH INDIAN RESERVATION 552 1,837 1,651 658 2,620 2,530 90 RECLAMATION-YUMA AREA OFFICE 14 103 103 14 103 103 0 RETURN FROM SOUTH GILA WELLS 247,308 2,478,445 2,478,847 338,616 3,258,558 3,282,849 CAP 155,182 1,382,924 1,875,634 1,897,849 YUMA MESA DIVISION, GILA PROJECT 19,719 199,537 171,610 27,927 346,740 ARIZONA ADJUSTED APPORTIONMENT CALCULATION 2,800,000 (400) 2,800,000 (400) 2,800,000 (400) 59 tem Conservation Water - Folt McDowell Yavapai Nation (FMYN) ⁴ (10,000) (50,000) (3,736) 57,927<		14,618	148,370	143,893		19,502	232,093	239,280	-7,187
FOR TOMA INDIAN RESERVATION 105 1,259 255 1,937 1,937 1,937 VUMA COUNTY WATER USERS'ASSOCIATION 25,065 193,217 186,507 42,386 289,324 28,200 7,354 COCOPAH INDIAN RESERVATION 25,065 193,217 186,507 42,386 289,324 28,200 7,354 COCOPAH INDIAN RESERVATION 25,065 193,217 186,507 42,386 289,324 28,200 7,354 COCOPAH INDIAN RESERVATION 25 1,837 1,651 658 2,620 2,530 90 RETURN FROM SOUTH GILA WELLS 14 103 103 14 103 103 0 CAP 155,182 1,382,924 1,382,924 1,382,924 1,897,849 1,897,849 YUMA MESA DIVISION, GILA PROJECT 19,719 199,537 171,610 27,927 346,740 1,897,849 System Conservation Water - Piot System Conservation Program ² (400) (400) (50,000) (400) (50,000) (50,000) (50,000) (50,000) (50,000) <td></td> <td>1,572</td> <td>21,439</td> <td>20,888</td> <td></td> <td>1,883</td> <td>28,772</td> <td>29,400</td> <td>-628</td>		1,572	21,439	20,888		1,883	28,772	29,400	-628
YOMA COUNTY WATER USER'ASOCIATION 22,065 193,217 186,507 42,366 289,354 222,000 7,354 RECLAMATION-YUMA AREA OFFICE 14 103 103 658 2,620 2,530 90 RECLAMATION-YUMA AREA OFFICE 14 103 103 14 103 103 0 RETURN FROM SOUTH GILA WELLS 14 103 103 14 103 103 0 TOTAL ARIZONA 247,308 2,478,345 2,473,847 338,616 3,258,558 3,282,849 CAP 155,182 1,382,924 1,382,924 1,382,924 1,382,924 ALL OTHERS 92,126 1,095,421 1,088,847 1,875,634 1,897,849 YUMA MESA DIVISION, GILA PROJECT 19,719 199,537 171,610 27,927 346,740 346,740 ARIZONA ADJUSTED APPORTIONMENT CALCULATION 2,800,000 2,800,000 (400) 59,550,000 (400) 59,550,000 (400) 59,550,000 (50,000) (50,000) (50,000) (50,000) (50,000) (50,000) (50,000)		166	1,259	1,259		255	1,937	1,937	
COCOMAR INDIAN RESERVATION 552 1,837 1,651 658 2,620 2,530 90 RECLAMATION-YUMA AREA OFFICE 14 103 103 14 103 103 0 RETURN FROM SOUTH GILA WELLS 14 103 103 14 103 103 0 CAP 155,182 1,382,924 1,382,924 1,382,924 1,382,924 1,387,634 1,897,849 YUMA MESA DIVISION, GILA PROJECT 19,719 199,537 171,610 27,927 346,740 346,740 ARIZONA ADJUSTED APPORTIONMENT CALCULATION 2,800,000 2,800,000 2,800,000 346,740 346,740 346,740 Arizona Basic Apportionment 2,800,000 2,800,000 27,927 346,740 34	YUMA COUNTY WATER USERS' ASSOCIATION	25,065	193,217	186,507		42,386	289,354	282,000	7,354
RECLAMA ITON-YUMA AREA OFFICE 14 103 103 14 103 103 0 RETURN FROM SOUTH GILA WELLS 103 103 103 14 103 103 0 TOTAL ARIZONA 247,308 2,478,345 2,473,847 338,616 3,258,558 3,282,849 CAP 155,182 1,382,924 1,382,924 1,382,924 ALL OTHERS 92,126 1,095,421 1,088,847 1,875,634 1,897,849 YUMA MESA DIVISION, GILA PROJECT 19,719 199,537 171,610 27,927 346,740 ARIZONA ADJUSTED APPORTIONMENT CALCULATION 2,800,000 4(400) 50,000 346,740 System Conservation Water - Pilot System Conservation Program ² 2,800,000 (400) 55,000 346,740 System Conservation Water - Fort McDowell Yavapai Nation (FMYN) ⁴ (10,000) (50,000) (400) 50,000 37,360 Creation of Extraordinary Conservation ICS - CRIT (Estimated) ^{5,7} (3,736) (51,37) (51,200) 40,376 40,376 Creation of Extraordinary Conservation ICS - MVIDD (Estimated) ^{6,7} (6,137) (192,000)	COCOPAH INDIAN RESERVATION	552	1,837	1,651		658	2,620	2,530	90
RETORN FROM SOUTH GILA WELLS TOTAL ARIZONA 247,308 2,478,345 2,473,847 338,616 3,258,558 3,282,849 CAP 155,182 1,382,924 1,382,924 1,382,924 ALL OTHERS 92,126 1,095,421 1,088,847 1,875,634 1,897,849 YUMA MESA DIVISION, GILA PROJECT 19,719 199,537 171,610 27,927 346,740 ARIZONA ADJUSTED APPORTIONMENT CALCULATION 2,800,000 2,800,000 346,740 346,740 System Conservation Water - Pilot System Conservation Program ² (400) 2,800,000 346,740 346,740 System Conservation Water - Fort McDowell Yavapai Nation (FMYN) ⁴ (10,000) (50,000) 346,740 1,875,634 1,897,849 System Conservation Vater - Fort McDowell Yavapai Nation (FMYN) ⁴ (10,000) (50,000) (50,000) 346,740 1,875,634 1,875,634 1,875,634 1,897,849 CAP (400) (50,000) (400) (50,000) (50,000) (50,000) (50,000) (50,000) (50,000) (50,000) (50,000) (50,000) (50,000) (50,000) (50,000) (50,000)		14	103	103		14	103	103	0
TOTAL ARIZONA247,3082,478,3452,473,847338,6163,258,5583,282,849CAP155,1821,382,9241,088,8471,382,924ALL OTHERS92,1261,095,4211,088,8471,875,6341,897,849YUMA MESA DIVISION, GILA PROJECT19,719199,537171,61027,927346,740ARIZONA ADJUSTED APPORTIONMENT CALCULATIONArizona Basic Apportionment2,800,000System Conservation Water - Pilot System Conservation Program 2(400)System Conservation Water - Colorado River Indian Tribes (CRIT) 3(50,000)System Conservation Water - Fort McDowell Yavapai Nation (FMYN) 4(10,000)Creation of Extraordinary Conservation ICS - MVIDD (Estimated) ^{6,7} (3,736)Creation of Extraordinary Conservation ICS - MVIDD (Estimated) ^{6,7} (6,137)Arizona DCP Contribution *(192,000)CAWCD - Voluntary Contribution *2,471,449Excess to Total State Adjusted Apportionment2,471,449Excess to Total State Adjusted Aportionment2,471,449Excess to Total State Adjusted Aportionment6,896	RETURN FROM SOUTH GILA WELLS								
CAP 155,182 1,382,924 1,382,924 ALL OTHERS 92,126 1,095,421 1,088,847 1,875,634 1,897,849 YUMA MESA DIVISION, GILA PROJECT 19,719 199,537 171,610 27,927 346,740 ARIZONA ADJUSTED APPORTIONMENT CALCULATION 2,800,000 2,800,000 2,800,000 2,800,000 System Conservation Water - Pilot System Conservation Program ² 2,800,000 (400) 27,927 346,740 System Conservation Water - Colorado River Indian Tribes (CRIT) ³ (50,000) (50,000) (10,000) (10,000) (10,000) System Conservation Water - Fort McDowell Yavapai Nation (FMYN) ⁴ (3,736) (6,137) (192,000) Creation of Extraordinary Conservation ICS - MVIDD (Estimated) ^{6,7} (6,278) (192,000) (192,000) CAWCD - Voluntary Contribution ⁶ 2,471,449 6,896 4,414,449 4,414,449		247 200	0 470 045	0 470 0 47		220.040	2 250 550	2 202 040	
CAP155,1821,382,9241,382,924ALL OTHERS92,1261,095,4211,088,8471,875,6341,875,634YUMA MESA DIVISION, GILA PROJECT19,719199,537171,61027,927346,740ARIZONA ADJUSTED APPORTIONMENT CALCULATIONArizona Basic Apportionment2,800,000System Conservation Water - Pilot System Conservation Program 2(400)System Conservation Water - Colorado River Indian Tribes (CRIT) 3(50,000)System Conservation Water - Fort McDowell Yavapai Nation (FMYN) 4(10,000)Creation of Extraordinary Conservation ICS - CRIT (Estimated) 5.7(6,137)Arizona DCP Contribution *(192,000)CAWCD - Voluntary Contribution to Lake Mead (Estimated)(66,278)Total State Adjusted Apportionment2,471,449Excess to Total State Adjusted Apportionment6,896	TOTAL ARIZONA	247,308	2,478,345	2,473,847		338,616	3,258,558	3,282,849	
CAP155,1821,382,9241,362,924ALL OTHERS92,1261,095,4211,088,8471,875,6341,897,849YUMA MESA DIVISION, GILA PROJECT19,719199,537171,61027,927346,740ARIZONA ADJUSTED APPORTIONMENT CALCULATIONArizona Basic Apportionment2,800,000System Conservation Water - Pilot System Conservation Program 2(400)System Conservation Water - Colorado River Indian Tribes (CRIT) 3(50,000)System Conservation Water - Fort McDowell Yavapai Nation (FMYN) 4(10,000)Creation of Extraordinary Conservation ICS - CRIT (Estimated) 5,7 (3,736)Creation of Extraordinary Conservation ICS - MVIDD (Estimated) 6,7 (6,137)Arizona DCP Contribution 8(192,000)CAWCD - Voluntary Contribution 10 Lake Mead (Estimated)(66,278)Total State Adjusted Apportionment2,471,449Excess to Total State Adjusted Apportionment6,896	CAR	455 400	4 000 004				4 000 004		
ALL DIFIERS 92,126 1,095,821 1,085,847 1,875,634 1,897,849 YUMA MESA DIVISION, GILA PROJECT 19,719 199,537 171,610 27,927 346,740 ARIZONA ADJUSTED APPORTIONMENT CALCULATION 2,800,000 27,927 346,740 Arizona Basic Apportionment 2,800,000 27,927 346,740 System Conservation Water - Pilot System Conservation Program ² (400) 4400 4400 System Conservation Water - Colorado River Indian Tribes (CRIT) ³ (50,000) (50,000) 57 Creation of Extraordinary Conservation ICS - CRIT (Estimated) ^{5,7} (3,736) (192,000) (192,000) CAVED - Voluntary Contribution ⁸ (192,000) (66,278) 4,71,449 5,471,449 Total State Adjusted Apportionment 2,471,449 6,896 5,896 5,896		155,182	1,382,924	4 000 047			1,382,924	4 007 040	
ARIZONA ADJUSTED APPORTIONMENT CALCULATION 19,719 199,537 171,610 27,927 346,740 ARIZONA ADJUSTED APPORTIONMENT CALCULATION 2,800,000 2,800,000 2,800,000 2,800,000 System Conservation Water - Pilot System Conservation Program 2 (400) 2,800,000 2,800,000 System Conservation Water - Colorado River Indian Tribes (CRIT) 3 (50,000) (10,000) 2,736 Creation of Extraordinary Conservation ICS - CRIT (Estimated) 5.7 (3,736) (192,000) 2,800,000 Creation of Extraordinary Conservation ICS - MVIDD (Estimated) 6.7 (6,137) (192,000) 2,471,449 CAVED - Voluntary Contribution 6 2,471,449 2,471,449 2,471,449 Total State Adjusted Apportionment 2,471,449 2,471,449 4,401		92,126	1,095,421	1,088,847	07.007		1,875,634	1,897,849	
ARIZONA ADJUSTED APPORTIONMENT CALCULATION 2,800,000 Arizona Basic Apportionment 2,800,000 System Conservation Water - Pilot System Conservation Program ² (400) System Conservation Water - Colorado River Indian Tribes (CRIT) ³ (50,000) System Conservation Water - Fort McDowell Yavapai Nation (FMYN) ⁴ (10,000) Creation of Extraordinary Conservation ICS - CRIT (Estimated) ^{5,7} (3,736) Creation of Extraordinary Conservation ICS - MVIDD (Estimated) ^{6,7} (6,137) Arizona DCP Contribution ⁸ (192,000) CAWCD - Voluntary Contribution to Lake Mead (Estimated) (66,278) Total State Adjusted Apportionment 2,471,449 Excess to Total State Adjusted Apportionment 6,896	YUMA MESA DIVISION, GILA PROJECT	19,719	199,537	171,610	21,921		346,740		
ARIZONA ADJUSTED APPORTIONMENT CALCULATION Arizona Basic Apportionment 2,800,000 System Conservation Water - Pilot System Conservation Program ² (400) System Conservation Water - Colorado River Indian Tribes (CRIT) ³ (50,000) System Conservation Water - Fort McDowell Yavapai Nation (FMYN) ⁴ (10,000) Creation of Extraordinary Conservation ICS - CRIT (Estimated) ^{5.7} (3,736) Creation of Extraordinary Conservation ICS - MVIDD (Estimated) ^{6.7} (6,137) Arizona DCP Contribution ⁸ (192,000) CAWCD - Voluntary Contribution to Lake Mead (Estimated) (66,278) Total State Adjusted Apportionment 6,896									
Arizona Basic Apportionment 2,800,000 System Conservation Water - Pilot System Conservation Program ² (400) System Conservation Water - Colorado River Indian Tribes (CRIT) ³ (50,000) System Conservation Water - Fort McDowell Yavapai Nation (FMYN) ⁴ (10,000) Creation of Extraordinary Conservation ICS - CRIT (Estimated) ^{5,7} (3,736) Creation of Extraordinary Conservation ICS - MVIDD (Estimated) ^{6,7} (6,137) Arizona DCP Contribution ⁸ (192,000) CAWCD - Voluntary Contribution to Lake Mead (Estimated) (66,278) Total State Adjusted Apportionment 2,471,449 Excess to Total State Adjusted Apportionment 6,896	ARIZONA ADJUSTED APPORTIONMENT CALCULATION								
System Conservation Water - Pilot System Conservation Program * (400) System Conservation Water - Colorado River Indian Tribes (CRIT) ³ (50,000) System Conservation Water - Fort McDowell Yavapai Nation (FMYN) ⁴ (10,000) Creation of Extraordinary Conservation ICS - CRIT (Estimated) ^{5,7} (3,736) Creation of Extraordinary Conservation ICS - MVIDD (Estimated) ^{6,7} (6,137) Arizona DCP Contribution ⁶ (192,000) CAWCD - Voluntary Contribution to Lake Mead (Estimated) (66,278) Total State Adjusted Apportionment 2,471,449 Excess to Total State Adjusted Apportionment 6,896	Arizona Basic Apportionment		2,800,000						
System Conservation Water - Colorado River Indian Tribes (CRIT) ⁵ (50,000) System Conservation Water - Fort McDowell Yavapai Nation (FMYN) ⁴ (10,000) Creation of Extraordinary Conservation ICS - CRIT (Estimated) ^{5,7} (3,736) Creation of Extraordinary Conservation ICS - MVIDD (Estimated) ^{6,7} (6,137) Arizona DCP Contribution ⁸ (192,000) CAWCD - Voluntary Contribution to Lake Mead (Estimated) (66,278) Total State Adjusted Apportionment 2,471,449 Excess to Total State Adjusted Apportionment 6,896	System Conservation Water - Pilot System Conservation Program		(400)						
System Conservation Water - Fort McDowell Yavapai Nation (FMYN) 4 (10,000) Creation of Extraordinary Conservation ICS - CRIT (Estimated) 5.7 (3,736) Creation of Extraordinary Conservation ICS - MVIDD (Estimated) 6.7 (6,137) Arizona DCP Contribution 8 (192,000) CAWCD - Voluntary Contribution to Lake Mead (Estimated) (6,278) Total State Adjusted Apportionment 2,471,449 Excess to Total State Adjusted Apportionment 6,896	System Conservation Water - Colorado River Indian Tribes (CRIT) 3		(50,000)						
Creation of Extraordinary Conservation ICS - CRIT (Estimated) ^{5.7} (3,736) Creation of Extraordinary Conservation ICS - MVIDD (Estimated) ^{6.7} (6,137) Arizona DCP Contribution ⁸ (192,000) CAWCD - Voluntary Contribution to Lake Mead (Estimated) (6,278) Total State Adjusted Apportionment 6,896	System Conservation Water - Fort McDowell Yavapai Nation (FMYN) 4		(10,000)						
Creation of Extraordinary Conservation ICS - MVIDD (Estimated) ^{6,7} (6,137) Arizona DCP Contribution ⁸ (192,000) CAWCD - Voluntary Contribution to Lake Mead (Estimated) (66,278) Total State Adjusted Apportionment 2,471,449 Excess to Total State Adjusted Apportionment 6,896	Creation of Extraordinary Conservation ICS - CRIT (Estimated) 5,7		(3,736)						
Arizona DCP Contribution ⁸ (192,000) CAWCD -Voluntary Contribution to Lake Mead (Estimated) (66,278) Total State Adjusted Apportionment 2,471,449 Excess to Total State Adjusted Apportionment 6,896	Creation of Extraordinary Conservation ICS - MVIDD (Estimated) 6,7		(6,137)						
CAWCD -Voluntary Contribution to Lake Mead (Estimated) (66,278) Total State Adjusted Apportionment 2,471,449 Excess to Total State Adjusted Apportionment 6896	Arizona DCP Contribution 8		(192.000)						
Total State Adjusted Apportionment 2,471,449 Excess to Total State Adjusted Apportionment 6,896	CAWCD -Voluntary Contribution to Lake Mead (Estimated)		(66,278)						
Excess to Total State Adjusted Apportionment 6896	Total State Adjusted Apportionment		2 471 4/9						
MAAAA	Excess to Total State Adjusted Apportionment		6.896						

Estimated Allowable Use for CAP

¹ Includes the following water users within the Cibola Valley: Cibola Valley IDD, Arizona Game and Fish Commission, GSC Farm, LLC, Red River Land Company, LLC, Western Water, LLC, and the Hopi Tribe.

1.449.202

² The estimated amount of System Conservation Water that will be created by the City of Bullhead City pursuant to System Conservation Implementation Agreement (SCIA) No. 15-XX-30-W0587, as amended. This System Conservation Water will remain in Lake Mead to benefit system storage.

³ System Conservation Water to be created by CRIT pursuant to the Agreement Among the United States of America, Through the Department of the Interior, Bureau of Reclamation, the State of Arizona, Through the Arizona Department of Water Resources, the Central Arizona Water Conservation District, and the Colorado River Indian Tribes to Fund the Creation of Colorado River System Water Through Voluntary Water Conservation and Reductions in use During Calendar Years 2020-2022. This System Conservation Water Water Volusters Water Volusters Water Volusters Water Volusters Water Volusters Water Volusters Volusters Volusters Volusters Volusters Voluster Voluster Volusters Voluster Volusters Volusters Voluster Volusters Voluster Volusters Volu

⁴ CAP water being conserved by FMYN pursuant to SCIA No. 19-XX-30-W0658, which will remain in Lake Mead to benefit system storage. In accordance with this SCIA and Section 3.b of the *Lower Basin* Drought Contingency Plan Agreement, the Bureau of Reclamation intends to apply this water towards the Secretary of the Interior's commitment to create or conserve 100,000 AF per annum or more of Colorado River System water to contribute to conservation of water supplies in Lake Mead and other Colorado River reservoirs in the Lower Basin.

⁵ CRIT has been approved to create up to 3,736 AF of Extraordinary Conservation (EC) ICS in 2020. The actual amount of EC ICS created by CRIT will be based on final accounting and verification. ⁶ MVIDD has been approved to create up to 6,137 AF of EC ICS in 2020. The actual amount of EC ICS created by MVIDD will be based on final accounting and verification.

⁷ When combined with the approved EC ICS creation amounts of other ICS creators in the state of Arizona, the total amount of EC ICS approved for creation in the state of Arizona is approximately 153,000 AF, which exceeds the state's annual creation limit set forth in Section XI.G.3.B.4 of the 2007 Interim Guidelines. In accordance with Section XI.G.3.B.4 and Section IV.B of the Lower Basin Drought Contingency Operations (LBOps), the total amount of EC ICS that may be created by the states of Arizona, California, and Nevada in 2020 will be limited to 625,000 AF.

⁸ In accordance with Section III.B.1.a of LBOps, the state of Arizona shall make an annual DCP Contribution in the total amount of 192,000 AF. In accordance with the Agreement Regarding Lower Basin Drought Contingency Plan Obligations, it is currently anticipated that the required DCP Contribution will be made through reductions in consumptive use by the Central Arizona Water Conservation District.



NOTE: Diversions and uses that are pending approval are noted in red italia • Water users with a consumptive use entitlement - Excess to Estimated Use column indicates overrun/underrun of entitlement. Dasi 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.

LOWER COLORADO BASIN REGION CY 2020

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)

				Excess to				Excess to
	Use	Forecast	Estimated	Estimated	Diversion	Forecast	Approved	Approved
	To Date	Use	Use	Use	To Date	Diversion	Diversion	Diversion
WATER USER	CY 2020	CY 2020	CY 2020	CY 2020	CY 2020	CY 2020	<u>CY 2020</u>	CY 2020
CALIFORNIA PUMPERS	224	1,704	1,704		405	3,080	3,080	0
FORT MOJAVE INDIAN RESERVATION, CA	636	8,413	8,996		1,183	15,639	16,720	-1,081
CITY OF NEEDLES (includes LCWSP use)	181	1,605	1,605	0	256	2,261	2,261	0
METROPOLITAN WATER DISTRICT	19,530	699,129			20,038	701,904		
COLORADO RIVER INDIAN RESERVATION, CA	425	3,233	3,233		705	5,355	5,355	0
PALO VERDE IRRIGATION DISTRICT	21,660	417,645	419,768		81,278	852,859	856,000	-3,141
YUMA PROJECT RESERVATION DIVISION	3,276	49,725	50,562		8,489	95,217	96,819	-1,602
YUMA PROJECT RESERVATION DIVISION - INDIAN UNIT					4,058	45,180	46,019	-839
YUMA PROJECT RESERVATION DIVISION - BARD UNIT					4,431	50,037	50,800	-763
YUMA ISLAND PUMPERS	288	2,188	2,188		520	3,954	3,954	0
FORT YUMA INDIAN RESERVATION - RANCH 5	45	547	547		83	990	990	0
IMPERIAL IRRIGATION DISTRICT ¹	257,242	2,644,839	2,640,300	4,539	266,170	2,715,204	2,715,352	
SALTON SEA SALINITY MANAGEMENT	0	0	0	0	0	0	0	
COACHELLA VALLEY WATER DISTRICT	42,929	393,897	394,000	-103	44,427	405,526	406,654	
OTHER LCWSP CONTRACTORS	84	642	642		139	1,054	1,054	0
CITY OF WINTERHAVEN	8	63	63		13	97	97	0
CHEMEHUEVI INDIAN RESERVATION	26	197	197		1,492	11,340	11,340	0
	040.554	4 000 007			405 400	1 0 1 1 100	1.040.540	
TOTAL CALIFORNIA	346,554	4,223,827			425,198	4,814,480	4,818,519	
CALIFORNIA AD ILISTED APPORTIONMENT CALICULATION								
CALIFORNIA ADJUSTED AFFORTIONWENT CALCULATION		4 400 000						
		4,400,000						
System Conservation Water - Pilot System Conservation Program ²	2	(145)						
IID Creation of Extraordinary Conservation ICS - Stored in Lake Mead (Est	timated) ³	0						
IID Creation of Additional Conserved Water (Estimated) ⁴		0						
MWD Creation of Extraordinary Conservation ICS (Estimated) ⁵		(180,567)						
Total State Adjusted Apportionment		4,219,288						
Excess to Total State Adjusted Apportionment		4,539						
		,						
Estimated Allowable Use for MWD		879,696						

d Allowable Use for MWD

¹As shown here, IID's Approved Diversion and Estimated Use values reflect the maximum amount of Colorado River water available to IID in 2020.

² System Consevation Water to be conserved by the City of Needles pursuant to System Conservation Implementation Agreement No. 15-XX-30-W0596, executed under the Pilot System Conservation Program. This water will remain in Lake Mead to benefit system storage.

³ IID has been approved to create up to 62,000 AF of Extraordinary Conservation (EC) ICS in 2020; however, due to limitations set forth in the California ICS Agreement, may only store up to 1,579 AF in its Lake Mead ICS Account. Creation and storage of EC ICS by IID in excess of 1,579 AF will require an executed amendment to the California ICS Agreement, which has not occurred as of the date of this forecast. The actual amount of EC ICS created by IID and stored in its Lake Mead ICS Account will be based on final accounting and verification.

⁴ In its CY 2020 water order, IID has indicated that it intends to create up to a total of 25,000 AF of "Additional Conserved Water" for purposes including, but not limited to, the creation of ICS for storage in Lake Mead. As noted above, IID may only use up to 1,579 AF of "Additional Conserved Water" for the creation and storage of EC ICS in its Lake Mead ICS Account. Storage of "Additional Conserved Water" as EC ICS in excess of this amount will require an executed amendment to the California ICS Agreement, which has not occurred as of the date of this forecast. The actual amount of "Additional Conserved Water" created by IID in 2020 will be based on final accounting and verification.

⁵ MWD has been approved to create up to 450,000 AF of EC ICS in 2020, less the amount of EC ICS created by IID, and further limited to the amount that, when added to the EC ICS created by the states of Arizona and Nevada, does not exceed 625,000 AF. The actual amount of EC ICS created by MWD will be based on final accounting and verification.

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

2 660 0	IID Forecast		CVWD Forecast	750.000	MWD Forecast
2,640,0 2,620,0 2,620,0 2,580,0 2,550,0 2,540,0 2,520,0 2,500,0	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec	Forecast Use, ac-ft	398,000 399,000 392,000 392,000 388,000 388,000 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec	700,000 700,000 e 650,000 e 600,000 550,000 450,000 400,000	Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
480,0 470,0 460,0 450,0 440,0 30,0 440,0 430,0 420,0 400,0 390,0 380,0	CA Priorities 1, 2 & 3b Forecast	For ecast Use, ac-ft	52,000 51,000 50,000 49,000 48,000 47,000 46,000 45,000 40,000 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec	440,000 430,000 420,000 400,000 57 390,000 380,000 360,000	PVID Forecast



CY 2020

NOTE:

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.

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)

				Excess to				Excess to
	Use	Forecast	Estimated	Estimated	Diversion	Forecast	Approved	Approved
	To Date	Use	Use	Use	To Date	Diversion	Diversion	Diversion
WATER USER	CY 2020	<u>CY 2020</u>	<u>CY 2020</u>	<u>CY 2020</u>	CY 2020	CY 2020	CY 2020	CY 2020
ROBERT B. GRIFFITH WATER PROJECT (SNWS)	55,935	441,361			55,935	441,361		
LAKE MEAD NRA, NV - Diversions from Lake Mead	87	1,500	1,500		87	1,500	1,500	0
LAKE MEAD NRA, NV - Diversions from Lake Mohave	45	500	500		45	500	500	0
BASIC MANAGEMENT INC.	572	8,208	8,208		572	8,208	8,208	0
CITY OF HENDERSON (BMI DELIVERY)	1,066	15,878	15,878		1,066	15,878	15,878	0
NEVADA DEPARTMENT OF WILDLIFE	1	12	12	0	47	1,000	1,000	
PACIFIC COAST BUILDING PRODUCTS INC.	64	928	928		64	928	928	0
BOULDER CANYON PROJECT	23	172	172		39	300	300	0
BIG BEND WATER DISTRICT	265	4,822	4,822		662	10,000	10,000	0
FORT MOJAVE INDIAN TRIBE	79	3,686	4,020		118	5,502	6,000	-498
LAS VEGAS WASH RETURN FLOWS	-42,021	-226,228	-221,726					
TOTAL NEVADA	16,116	250,839	251,500	0	58,635	485,177	481,500	-498
SOUTHERN NEVADA WATER SYSTEM (SNWS)	13.914	215.133				441.361		
ALL OTHERS	2.202	35,706				43.816		
NEVADA USES ABOVE HOOVER	15,772	242,331				469,675		
NEVADA USES BELOW HOOVER	344	8,508				15,502		
Tributary Conservation Intentionally Created Surplus (ICS)								
Southern Nevada Water Authority (SNWA) Creation of Tributary Conservation	tion ICS (Approve	ed) ¹	43,000					
NEVADA ADJUSTED APPORTIONMENT CALCULATION								
Nevada Basic Apportionment			300,000					
SNWA Creation of Extraordinary Conservation (EC) ICS (Estimated) ²			(49,161)					
Total State Adjusted Apportionment		-	250.839					
Excess to Total State Adjusted Apportionment			200,000					
			0					

SNWA has been approved to create up to 43,000 AF of TC ICS in 2020. The actual amount of TC ICS created by SNWA will be based on final accounting and verification. ² SNWA has been approved to create up to 100,000 AF of EC ICS in 2020. The actual amount of EC ICS created by SNWA will be based on final accounting and verification.

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: 03/02/2020 Upper Colorado River Drainage Basin Fontenelle 146292/344800 42% Full as of 03/01 Flaming Gorge 3223847/3749000 86% Full as of (03/01 RINO Yampa River White River Ś Piver UT CO colorado Gunnison Morrow Point 107422/117025 92% Full as of 03/01 Blue Mesa 536596/829500 65% Full San AZ Navajo 1294191/1696000 76% Full NM Lake Powell D 12008573/24322000 49% Full as of 03/01 Drainage Area 107,838 Square Miles

Lower Colorado River Teacup Diagram



NOAA National Weather Service Monthly Precipitation Map January and February 2020



Monthly Precipitation - January 2020

Prepared by NOAA, Colorado Basin River Forecast Center Salt Lake City, Utah, www.cbrfc.noaa.gov

Monthly Precipitation - February 2020 Averaged by Basin



Prepared by NOAA, Colorado Basin River Forecast Center Salt Lake City, Utah, www.cbrfc.noaa.gov



Snow Pack Conditions Map Upper Colorado Region



U.S. Drought Monitor West



February 25, 2020

(Released Thursday, Feb. 27, 2020) Valid 7 a.m. EST

	Drought Conditions (Percent Area)									
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4				
Current	53.17	46.83	20.48	3.02	0.00	0.00				
Last Week 02-18-2020	54.96	45.04	17.80	3.00	0.00	0.00				
3 Month s Ago 11-26-2019	44.19	55.81	23.84	11.57	0.24	0.00				
Start of Calendar Year 12-31-2019	59.17	40.83	18.17	7.12	0.00	0.00				
Start of Water Year 10-01-2019	68.40	31.60	16.32	3.16	0.00	0.00				
One Year Ago 02-26-2019	47.01	52.99	26.50	9.76	1.40	0.09				

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

<u>Author:</u> David Miskus NOAA/NWS/NCEP/CPC



droughtmonitor.unl.edu













From Oc	tober 1,	2019 to Februa	ry 29, 20	20					
Precipitation in inches									
Station	Feb	Oct 1 to Feb 29	Average to Date	Average					
Station									
San Luis Obispo	0.00	5.36	16.69	32%					
Santa Barbara	0.03	6.09	12.91	47%					
Los Angeles	0.04	7.38	10.88	68%					
San Diego	0.38	7.61	7.23	105%					
Blythe	0.00	1.18	2.08	57%					
Imperial	0.00	1.61	1.81	89 %					









		0040.5		0000 5/		
		2019 Sto (acre-fe	orage eet)	2020 Storage (acre-feet)		
		As of	% of	As of	% of	
Reservoir	Capacity	Mar 1	Cap.	Mar 1	Cap.	
Frenchman	55,475	44,692	81%	45,401	82%	
Lake Davis	84,371	68,080	81%	62,027	74%	
Antelope	22,564	16,352	72%	17,125	76%	
Oroville	3,553,405	2,231,018	63%	2,225,634	63%	
TOTAL North	3,715,815	2,360,142	64%	2,350,187	63%	
Del Valle	39,914	39,491	99 %	25,518	64%	
San Luis	2,027,835	1,987,190	98 %	1,405,526	69 %	
Pyramid	169,901	154,636	9 1%	155,793	92 %	
Castaic	319,247	259,419	81%	252,811	79 %	
Silverwood	74,970	62,446	83%	61,899	83%	
Perris	126,841	114,012	90%	103,002	81%	
TOTAL South	2,758,708	2,617,194	95%	2,004,549	73%	
TOTAL SWP	6,474,523	4,977,336	77%	4,354,736	67%	







EASTERN SIERRA CURRENT PRECIPITATION CONDITIONS March 5, 2020



Measurement as Inches Water Content; Precipitation totals are cumulative for water year beginning Oct 1



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106 West 500 South, Ste. 101 Bountiful, UT 84010 (801) 292-4663 dbarnett@barnettwater.com www.coloradoriversalinity.org February 19, 2020

Ed Warner Area Manager, Bureau of Reclamation 445 West Gunnison Avenue, Suite 221 Grand Junction, Colorado 81501

Re: Comments of the Colorado River Basin Salinity Control Forum on the Paradox Valley Unit Draft Environmental Impact Statement

Dear Mr. Warner:

The Colorado River Basin Salinity Control Forum (Forum) has reviewed the U.S. Bureau of Reclamation's (Reclamation) Draft Environmental Impact Statement (DEIS) dated December 6, 2019, for the Paradox Valley Unit (PVU) of the Colorado River Basin Salinity Control Program¹ (Program). The Forum previously commented on the Notice of Intent to Prepare an EIS. The Forum expresses appreciation for the fifteen-day extension to provide comments on the DEIS – it was time well spent by the Forum in reviewing the DEIS and building consensus on a preferred alternative. It is also with appreciation for Reclamation's significant efforts over a number of years that the Forum submits its comments on the PVU DEIS.

Role of the Forum:

The Forum plays a unique role in the coordination, development, implementation and funding of salinity control projects throughout the Colorado River Basin. The Forum was created by the seven Colorado River Basin States in 1973 to act as a common voice for the states on salinity matters and to coordinate with federal agencies in the implementation of the Program.

¹ The Forum's comment letter is not intended to waive or preclude any future comments or recommendations on the operation of the PVU or PVU alternatives.

The Forum is comprised of representatives appointed by the governors of the seven Basin States. Given this unique role, the Forum looks forward to working collaboratively with Reclamation to develop and implement a successful brine disposal replacement alternative for the existing PVU salinity control project facility.

Salinity Control Program:

The fundamental objective of the Colorado River Basin Salinity Control Program is to achieve basin-wide salinity control consistent with Title II of the Colorado River Basin Salinity Control Act. The Program has been implemented to meet water quality standards, mandated under the Clean Water Act, which have been developed by the Basin States and approved by EPA.

In addition to meeting water quality standards, reducing salinity levels is important to the Basin States and Colorado River water users because use of high salinity water causes damages including increased scaling potential, reduced agricultural crop yields, constraints on groundwater recharge, and potential reductions in the usability and marketability of recycled water. Additionally, high salinity water contributes to corrosion and increased maintenance of water treatment and distribution systems, including pipelines, pumps, valves, and other equipment. The PVU and other salinity control projects implemented under the Program have combined to reduce the downstream salinity levels in the Colorado River by more than 100 mg/L, thereby reducing economic damages, which damages Reclamation currently estimates at over \$454 million per year.

The Goals and Objectives identified in the PVU DEIS include removing approximately 100,000 tons of salt that would otherwise enter the Dolores River and the downstream Colorado River and optimizing the annual cost per ton of salt removed. Reductions in salinity concentrations in both the Dolores River and the Colorado River downstream of the Dolores benefit downstream Colorado River Basin States, Mexico, and the Program as a whole. In that regard, the final EIS should describe more thoroughly the basin-wide context and benefits achieved from salinity control at the PVU.

Continued Operation of the Existing PVU Injection Well: The status of the continued operation of the existing PVU injection well is unclear in the DEIS. The Forum understands the current and future operations of the existing injection well are governed by existing authorization. Nothing in the final EIS should preclude the continued operation of the existing PVU injection well, pending Reclamation's ongoing seismic investigation. The final EIS should assume for its analysis the continued operation of the existing PVU injection well at least until the Preferred Alternative is operational. Continued operation of the existing PVU injection well is necessary to protect water quality and water supplies during design and construction of the Preferred Alternative, and possibly beyond, as appropriate. The Forum urges Reclamation to edit language in the DEIS such that in the final EIS it is very clear that operation of the existing PVU injection well is authorized and governed under other environmental documents and that nothing associated with the present EIS effort changes this authorization or precludes continued operations of the existing PVU injection well.

Description of the No Action alternative:

The National Environmental Policy Act requires that a No Action alternative be described and analyzed in an EIS. A No Action alternative provides a benchmark to allow decisionmakers and the public to compare the environmental effects of the alternatives to the current baseline or status quo. If the PVU were operating without issues or concerns, then the No Action alternative would assume continued operation of the PVU brine capture wells and the injection well as currently authorized, budgeted for and maintained. In other words, there would be no change in the current operations and maintenance of the existing PVU facilities. The No Action alternative, as described in the DEIS, contemplates shutting down the existing operations at the PVU. If this were to occur, approximately 100,000 tons of salt that have been disposed of annually would flow into the Colorado River System, leading to an increase in downstream salinity levels of 9-10 mg/L causing an additional \$23 million in annual damages. The Forum understands there are at least three reasons for formulating the No Action alternative in this way: 1) as of the release date of the DEIS PVU brine capture and disposal activities had been temporarily suspended; 2) due to seismic concerns, there is concern that the existing injection well is nearing the end of its useful life; and 3) it allows the salinity control impacts of each action alternative to be stated as the total salt removal capacity of each alternative rather than as incremental changes relative to the capacity of the existing injection well. Accordingly, in order to strengthen the integrity of the final EIS, the Forum recommends that Reclamation fully explain the justification for the definition of the No Action alternative in this EIS.

Support for Action Alternative:

The Forum believes action is required to meet the purposes and needs described in the DEIS for the following reasons:

- The PVU is a particularly effective salinity control project among the 1974 Colorado River Basin Salinity Control Act (P.L. 93-320, as amended) Title II projects as it has consistently eliminated approximately 100,000 tons of salt annually from the Colorado River and provides verifiable reductions to salt load in the Dolores River and salinity concentrations downstream in the Colorado River. Implementing an action alternative at PVU is consistent with the mandate of the Colorado River Basin Salinity Control Act.
- The PVU provides an estimated 7% of the current total salinity control in the Colorado River System and is the largest single point-source control project for the Program. No other single project or group of projects with equivalent salinity reduction benefits to those provided by the PVU (i.e., removal of approximately 100,000 tons of salt annually) has been identified or is ready for implementation.
- Implementing an action alternative for the PVU is necessary to avoid significant basinwide economic damages. Modeling indicates that the PVU reduces salinity-related quantifiable economic damages to water users in the Lower Basin States by at least \$23 million per year.

Preferred Alternative:

Based on the available information and our understanding of the alternatives as presented in the DEIS, and after significant review and discussion among the Basin States, the Forum supports selecting Alternative C (the evaporation pond alternative) as the Preferred Alternative in the forthcoming PVU final EIS, with appropriate mitigation to wildlife impacts. It is imperative that Reclamation work closely with the Basin States and the Forum through design, implementation, and operation of this selected alternative, including review of appropriate sizing of the evaporation pond facilities.

Based on the Forum's understanding, the evaporation pond alternative, Alternative C, has the following advantages, as compared to the other action alternatives, and best meets the EIS goals and objectives for the following reasons:

The evaporation pond alternative has the greatest certainty of achieving the EIS goals and objectives. In contrast, we believe that the new injection well alternative (Alternative B) entails the greatest risk of potential failure, either during the construction phase or in the future during operations.

<u>The technology associated with the construction and operation of evaporation ponds is</u> <u>well established with little risk of not successfully functioning as designed</u>, whereas, though the technology associated with the zero liquid discharge (ZLD, Alternative D) alternative is certainly improving, it is not as certain as evaporation pond technology. Though a pilot ZLD unit was deployed to the PVU several years ago and successfully treated the PVU brine, there was a lot of "learning" occurring during the month-long operation, including greater-than-expected scaling of the ZLD equipment. It is anticipated that additional "learning" would be required if this alternative were selected, making successful operations less certain.

Given its more certain technology, <u>the evaporation pond alternative has the least risk of construction and operational cost overruns.</u> Anytime one drills more than 10,000 feet into the earth there is the potential for a number of unforeseen issues which could dramatically increase the costs. This is particularly true because there are no nearby analogous wells and, due to cost concerns, the injection well alternative does not include the drilling of a test well during the design phase. Separately, given the proprietary nature of the ZLD technology, Reclamation would be left with a relatively short list of vendors from which to choose, thereby creating a greater potential for unanticipated or undisclosed costs if the ZLD alternative were selected.

<u>Operation of evaporation ponds will require less energy than other alternatives</u>, thereby leading to a lower carbon footprint. The injection well alternative would require about three times as much electricity as the evaporation ponds and the ZLD technology would require 8,000 – 9,000 times as much electricity. Moreover, the DEIS assumes the average energy prices over the past ten years will persist for the next fifty years. Given the high energy consumption associated with the ZLD alternative, if energy prices were to increase then the OM&R costs of this alternative could increase significantly over those projected in the DEIS.

<u>Evaporation ponds generate no seismic risk</u>. Seismic activity is the reason for the need to select and build a new brine disposal alternative at PVU. The seismic risk potential was not fully appreciated when an injection well was selected over an evaporation pond alternative 25 years ago. Evaporation ponds do not create seismic risk, whereas in contrast Alternative B would result in the continuing risk of seismic activity in the Paradox Valley.

<u>Evaporation ponds provide the most certain project life span</u>, with the potential for operations beyond the 50 years stated in the DEIS. Given recent experience with the existing PVU injection well, the Forum is concerned with the assumption in the DEIS that a new injection well (Alternative B) could be continuously operated at the full design rate of 200 gpm for 50 years. Obviously, if the second injection well could not operate continuously for 50 years at this rate, then either brine disposal would need to be incrementally decreased (as has been the case with the existing injection well) or a new well would need to be drilled. In either case, these contingencies would make the injection well alternative dramatically more costly than the evaporation pond alternative. Similarly, despite efforts in the EIS to estimate costs associated with replacing worn components and systems as part of maintaining the ZLD alternative, given the relatively novel and proprietary nature of ZLD technology, it is hard to reliably estimate the life span of that alternative.

Given the uncertainty associated with a second injection well, <u>the evaporation pond</u> <u>alternative provides the most clear and cost-effective option for salinity control in the</u> <u>Paradox Valley.</u> Though holding the future hope of improved efficiencies with attendant reduced costs, as presently understood and arrayed in the DEIS, the ZLD alternative is currently <u>one and a half times more expensive</u> than the evaporation pond alternative. Accordingly, the ZLD alternative would make a more dramatic impact on required future appropriations and draws from the Basin Funds.

• Finally, <u>the Forum understands that there is the potential to work with industry</u> <u>partners on an evaporation pond alternative and the potential for the marketing of</u> <u>salts, thereby reducing the costs</u> below those shown in the DEIS.

In totality, an evaporation pond alternative most completely meets the purpose and need for action and has the greatest certainty in fulfilling the goals and objectives of the EIS. Further, it provides the most certain and cost-effective alternative for meeting the broader goal of improving the water quality in the Colorado River System.

Future Involvement of the Forum:

The Basin States represent the beneficiaries of the improved water quality of the Colorado River System. The Forum strongly recommends that Reclamation develop a process to work closely with the Basin States, through the Forum, to design, fund, implement and operate the selected alternative.

The Forum wishes to express its appreciation to Reclamation for the significant effort expended in evaluating potential replacement alternatives for brine disposal at its PVU facility and in completing the EIS process. The Forum looks forward to working closely with Reclamation in the development and implementation of the Preferred Alternative.

Respectfully submitted,

Colorado River Basin Salinity Control Forum

Bill Haver Bill Hasencamp, Chair

cc: Forum Members Mr. Brent Esplin, Regional Director, UC Region Dr. Terry Fulp, Regional Director, LC Region Mr. Kib Jacobson, Salinity Control Program Manager Ms. Lesley McWhirter, Environmental & Planning Group Chief February 19, 2020

Secretary David Bernhardt U.S. Department of the Interior 1849 C Street, NW, MS 5311 Washington, DC 20240

Re: Comments of the Colorado River Basin Salinity Control Advisory Council on the Paradox Valley Unit Draft Environmental Impact Statement

Dear Secretary Bernhardt:

The Colorado River Basin Salinity Control Advisory Council (Council) has reviewed the U.S. Bureau of Reclamation's (Reclamation) Draft Environmental Impact Statement (DEIS) dated December 6, 2019, for the Paradox Valley Unit (PVU) of the Colorado River Basin Salinity Control Program (Program)¹. It is with appreciation for Reclamation's significant efforts over a number of years that the Council submits comments to you on the PVU DEIS.

The Council was created in 1974 by the Colorado River Basin Salinity Control Act (Act) and charged with providing recommendations to the Secretary of the Interior on the implementation of the Program. Over the past more than 40 years the Council has worked closely and productively with Interior and Reclamation on the implementation of the Program. The Act provides that 25% of the cost of implementing salinity control at the PVU be provided as cost share from the Upper Colorado River Basin Fund and the Lower Colorado River Basin Development Fund (Basin Funds) and specifically provides that the Secretary shall consult with the Council on the expenditures of such funds. This letter is being provided to you in partial fulfillment of the Council's consultation responsibilities.

The Council is in accord with the recommendations made by the Colorado River Basin Salinity Control Forum (Forum) and sent separately to Reclamation. The Council would like to echo the Forum's concern that the DEIS, as written, potentially confuses the authority for the continued operation of the existing PVU injection well and requests that the final EIS clarify the matter.

¹ The Council's comment letter is not intended to waive or preclude any future comments or recommendations on the operation of the PVU or PVU alternatives.

Arizona	California	Colorado	Nevada	New Mexico	Utah	Wyoming
Clint Chandler Krista Osterberg Suzanne Ticknor	Bill Hasencamp Tanya Trujillo	Rebecca Mitchell Pat Pfaltzgraff David Robbins	Andrew Burns Sara Price	John D'Antonio Rolf Schmidt-Petersen	James Harris Eric Millis Gawain Snow	Chad Espenscheid Patrick Tyrrell David Waterstreet

Specifically, as to a Preferred Alternative, the Council recommends that the Secretary select, and that Reclamation pursue, the evaporation pond alternative as is generally described in the DEIS. Though there are items associated with the other alternatives that are meritorious, particularly the zero liquid discharge alternative, in total the evaporation pond alternative best meets the purpose and need specified in the EIS with the least risk and for the least cost.

As specified in the DEIS, both the evaporation pond and zero liquid discharge alternative can provide up to 171,000 tons of annual salinity control, thereby reducing downstream salinity levels by 16.7 mg/L and reducing damages to downstream Colorado River water users by approximately \$42 million per year. However, implementation of any alternative comes with a cost. As projected in the DEIS, the evaporation pond alternative would cost \$10.7 million per year and the zero liquid discharge alternative would cost \$16 million dollars per year, or 1.5 times as much to achieve the same benefit. Twenty-five percent (25%) of the total costs of the project would come from the Basin Funds. Over the 50-year life of the project the zero liquid discharge alternative would cost \$265 million more in total dollars or \$66 million more from the Basin Funds, or approximately \$1.3 million more on average per year. Given the meaningful cost difference and other benefits, the Council urges that the Secretary select the evaporation pond alternative as the brine disposal replacement alternative at the PVU.

Respectfully submitted,

Colorado River Basin Salinity Control Advisory Council

Bill Hanny

Bill Hasencamp, Chair

cc: Advisory Council Members

Dr. Timothy Petit, Assistant Secretary, Department of the Interior Ms. Brenda Burman, Commissioner, Bureau of Reclamation Mr. Brent Esplin, Regional Director, UC Region Dr. Terry Fulp, Regional Director, LC Region Mr. Kib Jacobson, Salinity Control Program Manager Mr. Ed Warner, Western Colorado Area Manager Ms. Lesley McWhirter, Environmental & Planning Group Chief



February 19, 2020

Mr. Ed Warner Area Manager, Bureau of Reclamation 445 West Gunnison Avenue, Suite 221 Grand Junction, Colorado 81501

Re: Comments of the Colorado River Board of California on the Paradox Valley Unit Draft Environmental Impact Statement

Dear Mr. Warner:

The Colorado River Board of California (Board) appreciates the opportunity to provide its comments on the Draft Environmental Impact Statement (DEIS) for the Paradox Valley Unit (PVU) to evaluate brine disposal alternatives to replace the existing brine injection well. The Board also appreciates Reclamation's extension of the comment period to February 19, 2020. The extra time allowed the Board to coordinate its comments with the Colorado River Basin Salinity Control Forum (Forum) and California agencies to ensure consistency and consensus in preparation of the comments. The Board fully supports the forthcoming comments from the Forum as part of its comments on the PVU DEIS. The Board is providing the following additional comments with respect to the PVU DEIS.

Salinity Control Program:

The Board strongly supports the ongoing implementation of the Colorado River Basin Salinity Control Program (Program), and in particular continued salinity control through the PVU. The PVU is an extremely effective salinity control project among the 1974 Colorado River Basin Salinity Control Act (P.L. 93-320, as amended) Title II projects as it has consistently resulted in eliminating approximately 100,000 tons of salt annually from entering the Dolores River upstream of the Colorado River and provides specific and verifiable improvements to the salinity concentrations in the Colorado River. The PVU is an important component of the Program developed by the Basin States and approved by the U.S. EPA and is necessary to meet water quality standards mandated under the Clean Water Act.

The Board works very closely with and supports the unique role that the Forum plays in the coordination, development, implementation and funding of salinity control projects throughout the Basin. The Board looks forward to working with the Forum and Reclamation to implement a successful replacement for the existing PVU salinity control project facility.

Continued Operation of the Existing PVU Brine Injection Well:

The Board believes the existing PVU brine injection well is a cost effective and valuable facility that should remain in place while a replacement alternative is developed and implemented. The current language in the DEIS is unclear about the future status of the existing PVU brine injection well. Nothing in the FEIS or Record of Decision should preclude continued operation of the existing PVU brine injection well, pending Reclamation's ongoing seismic investigations.

"No Action" alternative:

As one of the primary sources of salinity control in the Program, the Board supports continued salinity control at the PVU, and therefore does not support the "No Action" alternative described in the DEIS. Failure to identify a replacement alternative at the PVU would result in approximately 100,000 tons per year of salt, currently being controlled, to reach the Colorado River System leading to an increase in downstream salinity levels of 9-10 mg/L and causing an estimated additional \$23 million dollars in annual economic damages.

Preferred Alternative:

The Board, in coordination with the Forum, supports selecting the evaporation pond alternative (Alternative C) as the preferred alternative in the forthcoming PVU FEIS, with appropriate mitigation for wildlife impacts, to provide a long-term method for replacing the existing brine injection well. The Board believes Alternative C meets the purpose and need of the project and provides the greatest certainty of achieving the EIS goals and objectives. Specifically, Alternative C does not have the construction and operational risk associated with a new deep injection well (Alternative B), and does not have the higher annual maintenance and operational costs associated with the Zero Liquid Discharge (Alternative D).

Thank you for your consideration of these comments on the PVU DEIS. Please feel free to contact Mr. Rich Juricich, at (818) 500-1625, or myself, if you have any questions or require additional information regarding these comments.

Sincerely,

Christopher Harris Executive Director



Colorado River Basin States Representatives of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming

February 25, 2020

Terrance J. Fulp, Ph. D. Bureau of Reclamation Lower Colorado Region Office PO Box 61470 Boulder City, NV 89006-1470 Brent Esplin Bureau of Reclamation Upper Colorado Regional Office 125 South State Street, Room 8100 Salt Lake City, UT 84138-1147

Re: Basin States Interest in Addressing Available Funding for the Colorado River Basin Salinity Control Forum in light of the Paradox Valley Unit Draft Environmental Impact Statement.

Dear Dr. Fulp and Mr. Esplin,

This letter is written on behalf of the principals of the seven Colorado River Basin States of Arizona, California, Colorado, New Mexico, Nevada, Utah, and Wyoming to address funding for the salinity control project that may be implemented as a result of the Paradox Valley Unit Draft Environmental Impact Statement. The Colorado River Basin States all have representation on the Colorado River Basin Salinity Control Forum (Forum). The Forum is responsible for the coordination, development, implementation, and funding of the Colorado River Basin Salinity Control Program (Salinity Control Program or Program). Through continued operation of several large, congressionally authorized, salt removal projects, including the Paradox Valley Unit, and the implementation of on-farm and off-farm projects, the Salinity Control Program has been notably successful at meeting its responsibilities. The Salinity Control Program strives to maintain salinity concentrations below numeric criteria referenced in Title II of the Colorado River Basin Salinity Control Act¹ and minimize economic damages caused by high-salinity levels in the Colorado River in the United States. The Program has yielded the ancillary effect of improving water quality at the international boundary, which has facilitated efforts of the United States to meet its Treaty obligations with Mexico to deliver better-quality water across the border.

The Salinity Control Program is funded by federal appropriations and by Basin States cost-sharing. The cost-share amount is a percentage of the federal appropriations amount. The cost-share funds come from hydropower revenues. In recent years, higher federal appropriations have triggered higher cost-share requirements, while lower reservoirs have resulted in reduced hydropower generation and revenues. As a result, maintaining the solvency of the cost-share portion of the

¹ Numerical criteria are identified for three stations: Below Hoover Dam, Below Parker Dam, and At Imperial Dam. These standards are reviewed every three years in accordance with Section 303 of the Clean Water Act amendments to the Federal Water Pollution Control Act.

Program has become challenging. For several years, this portion of the Program has suffered a growing accrual deficit (now over \$13M). If further changes are not made to the current funding structure, this accrual deficit could grow to as high as \$20M by 2025. The Basin States note that, under the Paradox Valley Unit Draft Environment Impact Statement (DEIS), the cost estimates for the alternatives analyzed are large, ranging from \$99M to \$132M. The Paradox Valley Unit offers one of the best opportunities for controlling salt loading to the Colorado River. However, implementing any of the action alternatives would create a cost-share obligation for the Basin States of such magnitude as to compound already existing funding issues associated with the Salinity Control Program. In addition to the construction costs for the new project and the remaining repayment obligations for the original Paradox Valley project (which continue even though the project currently is not operating), the Basin States would be obligated to an increased annual cost-share for operation and maintenance of the replacement project and/or reduce salinity control efforts in other areas of the Program.

The Basin States unquestionably remain committed to the Program as a whole and support the Forum's position in recommending a preferred alternative. However, the long-term success of the Program is dependent on finding solutions to the problems that currently persist and extend beyond the scope of the DEIS. To that end, it is our intent to work cooperatively over the next several years to identify and explore options and implement changes to address the long-term financial stability of the Program. Some of the solutions we envision may require federal legislation. Others may require making administrative changes to the operations of the Program. These solutions, which may take several years to develop are necessary prior to seeking appropriations for the preferred alternative identified for the Paradox Valley Unit.

The Basin States look forward to working with Reclamation to ensure the Salinity Control Program finds long-term fiscal solvency to continue meeting salinity numeric criteria, and the needs of U.S. and Mexican water users while continuing to provide the significant economic benefits generated since the Program began.

Sincerely,

Thomas Buschatzke, Director Arizona Department of Water Resources

mitchell hoara

Rebecca Mitchell, Director Colorado Water Conservation Board

Peter Nelson, Chairman Colorado River Board of California

John R. D'Antonio Jr., P.E. New Mexico Office of the State Engineer

John J. Entsminger, General Manager Southern Nevada Water Authority

Todd Adams, Director Utah Division of Water Resources

Eric Witkoski, Executive Director Colorado River Commission of Nevada

ull Patrick Tyrell

State of Wyoming

WATERNEWSNETWORK SAN DIEGO COUNTY WATER AUTHORITY



Features



Otay Water District General Manager Mark Watton was honored February 27 for his 37 years of public service in the water industry by the San Diego County Water Authority Board of Directors. (L-to-R: Board Chair Jim Madaffer, Watton, Otay Water District Board President Mark Croucher, Water Authority Board Secretary Christy Guerin). Photo: San Diego County Water Authority

Water Authority Board Honors **Retiring Otay Water District GM** Mark Watton

February 27, 2020

The San Diego County Water Authority's Board of Directors on Thursday honored Otay Water District General Manager Mark Watton for 37 years of public service in the water industry.

The Board issued a proclamation

[https://www.waternewsnetwork.com/wp-

content/uploads/2020/02/Mark-Watton-Proclamation.pdf]

congratulating Watton on "his long and distinguished service to San Diego County upon his upcoming retirement from the Otay Water District" and commended him "for a lifetime of service that has improved the quality of life in our region."

ACHIEVEMENTS



Jose Martinez

Appointed General Manager of the Otay

Water District February 7, 2020



Atkins

Receives Safe Drinking Water

Champion Award

January 27, 2020

Escondido Water Quality Lab Leads Bv

Example January 21, 2020



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December 9, 2019

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"A wonderful career" - Mark Watton

Watton's water industry career began in 1983, when he was elected to Otay's Board of Directors. He served in that role for 18 years. Watton was then hired as Otay general manager in 2004.He currently manages the district's \$106 million annual operating budget and 138 employees.

"I'm completely satisfied. It's been a wonderful career," said soon-toretire General Manager Mark Watton. "It's so gratifying to retire in this industry, knowing there is a new generation coming in, like our new general manager, to continue doing a great job."

Watton was referring to Otay's Assistant Chief of Water Operations, Jose Martinez [https://www.waternewsnetwork.com/jose-martinezappointed-general-manager-of-the-otay-water-district/], a U.S. Navy veteran, who was recently hired to be Otay's new general manager.

Watton also was instrumental in securing high-priority Colorado River water for San Diego County through the <u>Quantification Settlement</u> <u>Agreement [https://www.waternewsnetwork.com/imperial-valley-conservation-efforts-benefit-san-diego-southwest/]</u>.

"Mark was a key player in diversifying the region's water supply by securing highly reliable supplies from the Colorado River that will continue to benefit our region for decades," said Water Authority Board Chair Jim Madaffer [https://www.waternewsnetwork.com/water-news-network-top-3-stories-of-2019/]. "If we had a hall of fame for water pioneers in the San Diego region, Mark Watton would definitely be a member."



Otay Water District @OtayWater

Today @sdcwa honored @OtayWater GM Mark Watton with a proclamation for "his long distinguished service to SD County upon his retirement from the Otay Water District." Chair @JimMadaffer commended him for a lifetime of service that has improved the quality of life in the region.



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Innovative leadership

The <u>Otay Water District [https://otaywater.gov/]</u> provides water, recycled water, and sewer service to approximately 224,000 customers within roughly 125 square miles of southeastern San Diego County, including the communities of Chula Vista, Jamul, Spring Valley, Rancho San Diego, and unincorporated areas of El Cajon and La Mesa, as well as Otay Mesa along the international border with Mexico.

Under Watton's leadership, Otay has enlisted the use of <u>drones</u> [https://www.waternewsnetwork.com/drones-offer-water-agencies-<u>cost-safety-benefits/]</u> to modernize preliminary inspections of the district's 40 potable water reservoirs, four recycled water reservoirs, 20 pump stations, and a recycled water treatment plant. Drone technology saves employee time, improves the safety of workers performing inspections, and ultimately delivers greater value to Otay's customers.

Watton has also presided over Otay's deployment of its state-of-the-art leak detection and repair program that has reduced water loss 43% over seven years. In 2018, a 3.3% reduction in water loss saved Otay customers \$1.3 million, helping to keep rates low.

"Not only has Mark made a significant impact locally for Otay's service area, but also regionally and statewide," said Otay Board President Gary Croucher. "He is an influential thought leader in the water industry and his commitment to our region is unmatched."

Prudent financial manager

Watton's leadership has maintained Otay's AA credit rating from Standard & Poor's for more than a decade. While many public agencies struggle to keep up with their pension obligations, Watton's prudent management of Otay's finances made it possible to fully fund the District's Other Post-Employment Benefit plan and substantially fund its pension plan in upcoming years.



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Cloud seeding study validates ski industry staple

Innovative field study in Idaho uses supercomputing technology to simulate cloud seeding, as well as new measurement capabilities

News | February 24, 2020



David O. Williams



In winter 2017, the National Science Foundation, which sponsors NCAR, teamed up with the Idaho Power Company to conduct a field study called SNOWIE (Seeded and Natural Orographic Wintertime Clouds – the Idaho Experiment). Joshua Aikins photo

Editor's note: Aspen Journalism collaborates with the Vail Daily and other Swift Communications newspapers on coverage of water and rivers. For more, go to <u>aspenjournalism.org</u>.

An innovative new study conducted in Idaho and <u>published on Monday</u> seems to confirm what Vail and other Colorado ski resorts have believed for decades — that "cloud seeding can boost snowfall across a wide area if the atmospheric conditions are favorable."

"This is a revelation. We can definitely say that cloud seeding enhances snowfall under the right conditions," said Sarah Tessendorf, a scientist at the National Center for Atmospheric Research in Boulder and co-author of a new paper on the research conducted by

scientists from the University of Colorado Boulder and University of Wyoming, among others.

Cloud seeding uses ground-based generators to disperse dust-sized silver iodide particles into clouds so that ice crystals can form on those particles and fall to the ground in the form of snow. Scientists, water managers and ski industry executives say it's precipitation that would otherwise stay in the clouds, so cloud seeding is an environmentally safe way to enhance snowfall.

But the efficiency of cloud seeding has so far been hard to prove. Tessendorf said previous cloud seeding studies were unable to achieve statistically significant results because the natural variability of the weather was too great and demanded a larger sample size than could be reasonably obtained, for financial reasons.



Cloud seeding uses ground-based generators to disperse dust-sized silver iodide particles into clouds so that ice crystals can form on those particles and fall to the ground in the form of snow.

Joshua Aikins photo

Inside the study

In winter 2017, the National Science Foundation, which sponsors NCAR, teamed up with the Idaho Power Company to conduct a field study called SNOWIE (Seeded and Natural Orographic Wintertime Clouds — the Idaho Experiment).

SNOWIE used supercomputing technology to develop a new computer model to simulate cloud seeding, as well as new measurement capabilities, such as a high-resolution cloud radar on a Wyoming research aircraft that can see previously invisible cloud features. Researchers also located mobile radars on mountain ridges north of Boise to see clouds not visible to stationary National Weather Service radars that are blocked by the mountains themselves.



Scenes from the SNOWIE project, which was undertaken in Idaho's Payette Basin in winter 2017. *Joshua Aikins photo*

The scientists then used airborne seeding instead of ground-based generators because the silver iodide dispersed downwind from the aircraft in a zig-zag pattern, which is a very unnatural pattern for precipitation to form.

That allowed the scientists "to unambiguously detect the impact of cloud seeding in these clouds using the mobile and airborne radars," Tessendorf said. "This had never been done before. In the three cases we report on, there was negligible natural snow falling, so the zig-zag pattern was able to be detected very clearly and tracked to the ground to quantify the snow reaching the ground due to seeding."

One of the examples cited in a press release accompanying the study was a cloud-seeding flight on Jan. 19, 2017, that generated snow for 67 minutes, dusting about 900 square miles with a tenth of a millimeter of snow beyond what was falling naturally.

"This was barely enough snow to cling to the researchers' eyelashes," the release reads, 'but it would have stayed in the air if not for cloud seeding."

"We tracked the seeding plume from the time we put it into the cloud until it generated snow that actually fell onto the ground," said Katja Friedrich, a University of Colorado Boulder professor and lead author of the new study.

Finding the ideal storms

Dave Kanzer, deputy chief engineer for the Colorado River District, helps oversee a system of 25 ground-based cloud-seeding generators in the central Colorado region that includes Grand, Summit, Eagle and parts of Pitkin County. Nearby generators include one atop Arrowhead and another above Camp Hale.

Kanzer said storms from the north and northwest, which tend to be colder, are ideal for cloud seeding, with temperatures in the clouds no higher than 21 degrees Fahrenheit and no lower than 5 degrees Fahrenheit. If the clouds have the right temperature range and the right moisture levels but lack sufficient particles for ice crystals to form, that's where cloud seeding comes in.

"We take advantage of the first two and we add the proper amount of particulate matter to enhance the snowfall and precipitation ... and that accumulates in the snowpack somewhere in the range of between 5 and 15% on a per storm basis when those conditions are met," Kanzer said. "And that helps to increase the water yield of the snow sheds in the range of 1 to, 4% of water on a seasonal basis."



SNOWIE used supercomputing technology to develop a new computer model to simulate cloud seeding, as well as new measurement capabilities, such as a highresolution cloud radar on a Wyoming research aircraft that can see previously invisible cloud features. Joshua Aikins photo

A tool to maintain snowpack

The Colorado Department of Natural Resources regulates cloud seeding, permitting operations in nine different parts of the state. The operations in the central zone, at the headwaters of the Colorado River, are funded by a wide range of groups, including Front Range utilities and water districts that divert Western Slope water, including Denver Water and Northern Water.

https://www.vaildaily.com/news/cloud-seeding-study-validates-ski-industry-staple/



The <u>Colorado River District</u> spends around a \$150,000 a year contracting with <u>Western Weather Group</u> to run the program, which Kanzer said is about the same amount Vail Resorts spends on the program for its four Colorado ski areas – Vail, Beaver Creek, Breckenridge and Keystone.

Vail Resorts declined to comment for this story.

Kanzer presented on cloud seeding at a November Eagle River Watershed Council meeting in Avon, where a few of the 50 or so participants <u>got heated in their questioning</u> of the environmental safety of the process.

Kanzer said cloud seeding is safe, using inert silver iodide that cannot be detected in the environment after it's released into clouds. He added the process could become increasingly critical to maintaining mountain snowpack as the climate changes.

"It's one tool that we can use to mitigate or adapt to the changes that we have not only predicted but are starting to experience with shorter snow-covered seasons," Kanzer said. "And so (cloud seeding) helps us extend that time or at least forestall the reduction."

https://www.vaildaily.com/news/cloud-seeding-study-validates-ski-industry-staple/