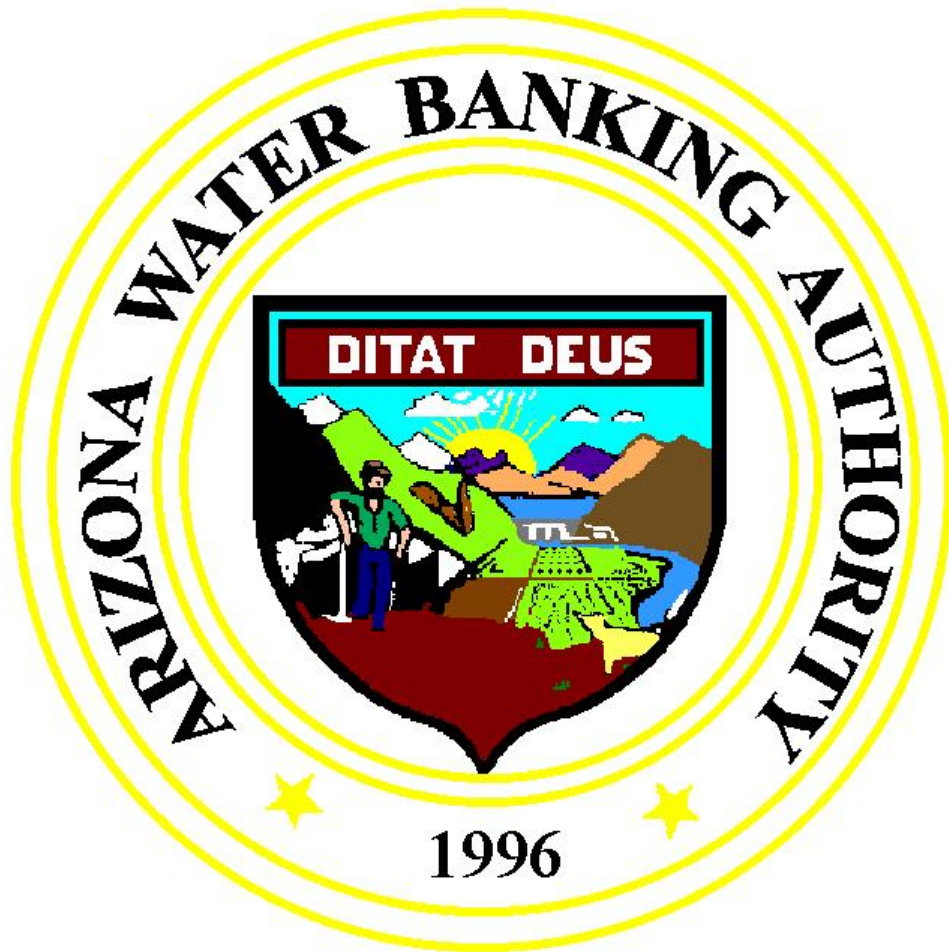


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ARIZONA WATER BANKING AUTHORITY

ANNUAL REPORT
2016



Submitted

July 1, 2017

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Arizona Water Banking Authority

Annual Report 2016

Honorable Douglas A. Ducey
Governor of Arizona

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Chair

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Vice-chair

Kathryn A. Sorensen
Secretary

Pamela Pickard
Member

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Member

Ex officio
Senate President Steve Yarbrough
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Acronyms and Abbreviations

ADWR	Arizona Department of Water Resources
Agreement to Firm	Agreement to Firm Future Supplies executed February 4, 2005 between the Arizona Water Banking Authority and the Mohave County Water Authority
Amended Agreement to Firm	Amended Agreement to Firm Future Supplies executed March 17, 2010.
AMA	Active Management Area
APO	Annual Plan of Operation
AWBA	Arizona Water Banking Authority
AWB Fund	Arizona Water Banking Fund
AWSA	Arizona Water Settlements Act
CAGR D	Central Arizona Groundwater Replenishment District
CAP	Central Arizona Project
CAWCD	Central Arizona Water Conservation District
Credits	Long-term storage credits
CRSS	Colorado River Simulation System Model
Decree	Consolidated Decree of the U.S. Supreme Court in <i>Arizona v. California</i>
GRIC	Gila River Indian Community
GRIIDD	Gila River Indian Irrigation and Drainage District
GSF	Groundwater Savings Facility
ICUA	Intentionally Created Unused Apportionment
Interagency Group	Interagency Recovery Planning Group
IGA	Intergovernmental Agreement
M&I	Municipal and Industrial
MAF	Million Acre-feet
MCWA	Mohave County Water Authority
NIA	Non-Indian Agricultural
Plan	Ten-Year Plan
Quantification Agreement	White Mountain Apache Tribe Water Rights Settlement Agreement
Reclamation	U.S. Bureau of Reclamation
SNWA	Southern Nevada Water Authority
SSRB	Southside Replenishment Bank
USF	Underground Storage Facility

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Summary

The role of the AWBA has changed considerably since it was first established in 1996. The primary objective of the AWBA was to store Excess CAP water to mitigate the effects of future Colorado River shortages on municipal and industrial water users, provide groundwater management benefits, assist the State in the settlement of Indian water rights claims, and assist both California and Nevada through interstate banking arrangements. In time, what began as opportunities to beneficially utilize the State's full entitlement of Colorado River water ultimately grew in certain cases into obligations the AWBA must fulfill.

Since inception, the AWBA has accrued over 4.1 million acre-feet (MAF) of long-term storage credits (credits) toward achieving its various goals. Of this amount, over 3.5 MAF are for Arizona uses and 0.6 MAF are for interstate banking with the State of Nevada. While this has been a major accomplishment, the AWBA has not yet met all its goals and will be challenged to do so in the years ahead, given the future projections of little to no excess CAP water supplies available for AWBA storage.

In 2016, the AWBA stored 65,708 acre-feet of excess Central Arizona Project (CAP) water within the Phoenix, Pinal, and Tucson Active Management Areas. In addition, the AWBA developed 12,000 acre-feet of firming credits with the Gila River Indian Community through reimbursement of the Community's full-priced water costs as described in the AWBA's intergovernmental agreement (IGA) with the Community executed in June of 2016. The agreement has a three-year term and is an extension of the letter agreement executed in 2015 that allowed for the development of 16,000 acre-feet of firming credits. To date, the AWBA has accrued a total of 28,000 acre-feet of firming credits on Community lands.

In May of 2014, CAWCD, AWBA, and ADWR staff completed the Joint Recovery Plan that provides the framework for how the recovery of AWBA credits will be accomplished in the future. The agencies continue to work cooperatively on the future steps outlined in the plan to ensure recovery can be implemented when the time comes. These activities include updates to hydrologic modeling analyses, the development of a CAP system use agreement that describes how the system can be used to deliver AWBA supplies, and the development of agreements for recovery partnerships. While not yet enforceable, AWBA staff has also initiated firming discussions with Maricopa County cities that intend to lease water pursuant to Mountain Apache Tribe Water Rights Quantification Agreement of 2010.

Colorado River water supply projections indicate a moderate to high with probabilities increasing to 56% by 2027 that a shortage could be declared in the Lower Basin within the AWBA's ten-year planning period. Conditions on the Colorado remain fragile, and the AWBA will need to rely on a nimble strategy that includes both traditional water storage and credit purchases, given the efforts of the state to balance how much water should be left in Lake Mead. The Ten-Year Plan also shows a modest probability that the AWBA will have its first firming requirement in the last two years of the planning period but volumes are manageable. This firming requirement would only affect the AWBA's obligation to firm Indian supplies and the AWBA has credits in place for this purpose.

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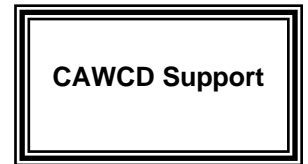
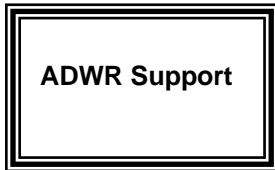
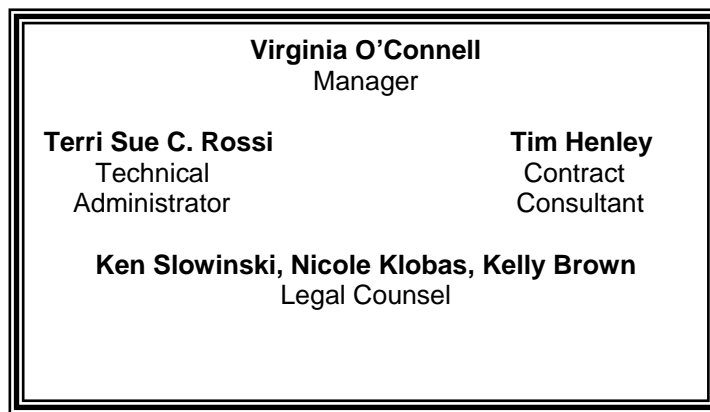
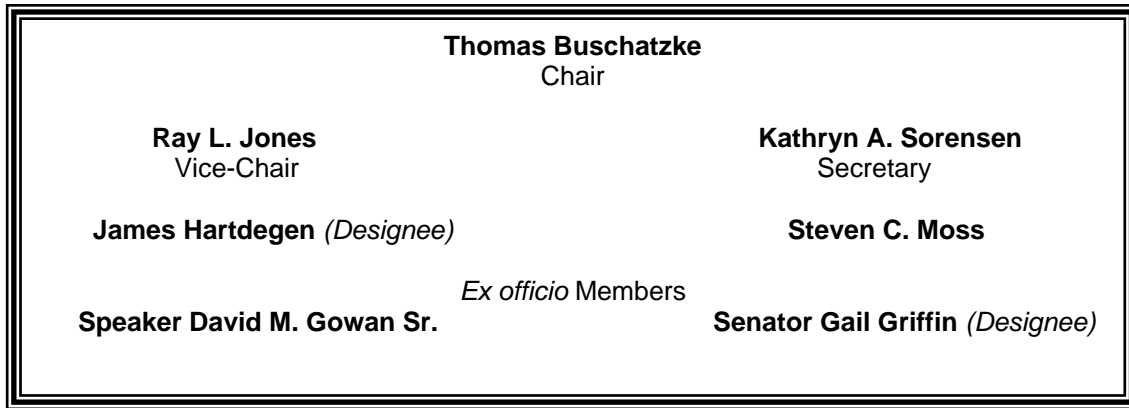
Annual Report Requirements

Arizona Revised Statutes § 45-2426 mandates that the AWBA file an annual report with the Governor, President of the Senate, and Speaker of the House of Representatives on or before July 1 of each year for the previous calendar year. The report is required to be a full and complete account of the AWBA's transactions and proceedings and must include the following:

1. An accounting of all monies expended from the banking fund.
2. An accounting of all monies in the banking fund remaining available to the AWBA.
3. The amount of water stored by the AWBA.
4. The number of long-term storage credits distributed or extinguished by the AWBA.
5. The purposes for which long-term storage credits were distributed or extinguished by the AWBA.
6. A description of the water banking services and interstate water banking to be undertaken by the AWBA during the following ten-year period and a projection of the capacity of the AWBA during that period to undertake those activities in addition to storing Colorado River water brought into the State through the CAP for all the following purposes:
 - a. Protecting this State's municipal and industrial (M&I) water users against future water shortages on the Colorado River and disruptions of operation of the CAP.
 - b. Fulfilling the water management objectives of the State.
 - c. Making water available to implement the settlement of water rights claims by Indian communities within Arizona.
7. Any other matter determined by the authority to be relevant to the policy and purposes of the AWBA.

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AWBA 2016 Organizational Chart



There was one membership change to the AWBA Commission in 2016. In January, Governor Doug Ducey appointed Kathryn A. Sorensen as the member who represents an entity that holds a Central Arizona Project Municipal and Industrial subcontract, thus replacing Clifford A. Neal who resigned from his position effective January 2, 2016. Ms. Sorensen was also elected Secretary of the Commission, the position vacated by Mr. Neal. There were no changes to AWBA staff.

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2016 Activities

The AWBA continued its quarterly meeting schedule in 2016 with meetings on March 16, June 22, September 29, and December 7. A special meeting was also held on April 27 regarding approval of an agreement for meeting AWBA Tribal obligations.

AWBA 2016 Water Deliveries

The AWBA Plan of Operation for 2016 identified 65,708 acre-feet of water available for delivery under CAWCD's Access to Excess policy adopted in 2014. No additional water was made available to the AWBA during the year. The volume of water delivered to each storage facility is described in Appendix A and totaled 33,988 acre-feet for the Phoenix AMA, 17,520 acre-feet for the Pinal AMA, and 14,200 acre-feet for the Tucson AMA. The Plan did not include an interstate water banking component.

Based on the Decree accounting data, total consumptive use of Colorado River water by Arizona in 2016 was 2.61 million acre-feet (MAF) and accounted for approximately 1.12 MAF of direct uses along the Colorado River and 1.49 MAF in CAP diversions (Calendar Year 2016 U.S. Bureau of Reclamation, Lower Colorado River Operations, Colorado River Accounting and Water Use Report Arizona, California, Nevada, dated May 2017). Efforts to mitigate declining water elevations in Lake Mead continued in 2016 with Arizona conserving 187,167 acre-feet of water in Lake Mead (i.e. Protection Volume). Of this amount, 127,015 acre-feet is part of Arizona's 3-year 345,000 acre-feet commitment under the Memorandum of Understanding among the Lower Basin States and Reclamation (MOU) and 13,933 will be applied towards Reclamation's commitment under the MOU. The remaining 46,219 acre-feet was conserved as part of the Pilot System Conservation Program (PSCP) and developed through individual System Conservation Implementation Agreements with CAWCD, the Tohono O'odham Nation, the Gila River Indian Community, and the Colorado River Indian Tribes. In addition, CAWCD has been given credit for 14,000 acre-feet of conservation from its participation in PSCP. With this credit, Arizona has both satisfied and exceeded its commitment under the MOU, conserving a total of 351,155 acre-feet.

Long-term Storage Credit Purchases

Purchases Pursuant to A.R.S. § 45-841.01

The Tohono O'odham Nation (Nation) must offer the AWBA ten percent of any credits deemed accruable by ADWR from water stored at the Mission Mine Complex before a final volume of credits can be issued to the Nation by ADWR. The price for each credit is equal to the AWBA's per acre-foot cost to deliver and store water at a state demonstration project located within ten miles of the Nation's storage (i.e. Pima Mine Road Recharge Project) at the time of sale. These credits may be used for M&I firming or for water management purposes, however, there is a restriction that they cannot be recovered within five miles of the exterior boundary of the reservation. The AWBA was not offered credits for purchase in 2016 though a credit purchase transaction is anticipated for 2017 and was therefore included in the AWBA's 2017 Plan of Operation adopted in December of 2016.

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Other Credit Purchases

The AWBA's governing statutes were amended in 2014 to allow the AWBA to purchase long-term storage credits in addition to credit purchases already allowed under 45-841.01. Credits may be purchased after all available excess CAP water supplies have been scheduled for storage for the year. Because all funds available in the Pinal and Tucson AMAs in 2016 were used to purchase and store excess CAP water credits were not purchased in these AMAs. In the Phoenix AMA, while \$3 million in Maricopa County *ad valorem* tax monies were reserved by the CAWCD Board for AWBA credit purchases for CAP M&I firming, the funds were not expended. In December however, the AWBA executed an agreement for the purchase of 50,000 acre-feet of credits using \$12.5 million in Maricopa County *ad valorem* tax monies reserved by the CAWCD Board for the AWBA 2017 Plan of Operation.

Indian Firming Program

Colorado River modeling projections have shown that non-Indian agricultural (NIA) Priority CAP water will be the first supplies the AWBA may need to firm. To prepare, the AWBA has focused on accomplishing the steps necessary to ensure the state's Indian firming obligations will be met when the need arises. Significant progress continues to be made in this area. Staff also kept apprised of the status of other ongoing settlement discussions, particularly the need to firm water supplies that may result from those settlements.

Gila River Indian Community

Under the Arizona Water Settlements Act (AWSA), the AWBA, as agent for the State, has a 100-year requirement (until 2108) to firm up to 15,000 acre-feet per year of NIA Priority CAP water for the GRIC when supplies are insufficient to meet demand. The *Agreement between the Secretary and the State of Arizona for the Firming of CAP Indian Water*, executed on November 15, 2007, defines the AWBA's firming responsibilities, but also includes a provision that allows the AWBA to enter into a separate agreement with the Community to carry out its firming obligation. Discussions on developing such an agreement were initiated in mid-2013 and an intergovernmental agreement (IGA) for firming was subsequently executed on June 16, 2015. The IGA uses the AWBA Ten-Year Plan as the basis for evaluating potential future shortages and outlines the steps that must be taken by each party as the potential for shortage draws nearer. By offering alternative firming options, the IGA provides flexibility in how a firming obligation can be satisfied during a shortage year.

Concurrent with the execution of the IGA, the AWBA and the GRIC executed a separate letter agreement to implement one of the firming options identified under the IGA. Under the letter agreement, the AWBA agreed to reimburse the GRIC for payment of the delivery of 16,000 acre-feet of water to the Community for which the Community paid full cost and for which the AWBA in turn received "firming credits". The AWBA and the Community subsequently executed a three-year agreement that formalizes the process for using this firming method.¹ Thus, the AWBA accrued an additional 12,000 acre-feet of firming credits on Community lands in 2016, bringing the total to 28,000 acre-feet (See Appendix B). These firming

¹ *Agreement between the Arizona Water Banking Authority and the Gila River Indian Community for the Development of Firming Credits*, executed June 30, 2016, expires December 31, 2018.

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credits have been registered to a firming account held by the AWBA and may be debited in the future to reduce the state's firming obligation on an acre-foot per acre-foot basis.

Southside Replenishment Bank

In addition to firming requirements, the AWSA required that the AWBA deliver 15,000 acre-feet of water to the GRIC, a minimum of 1,000 acre-feet per year, to establish the Southside Replenishment Bank. The Replenishment Bank can be used to satisfy a replenishment obligation that may be incurred from excess groundwater pumping in the Southside Protection Zones, an area adjacent to the southern portion of the GRIC reservation. This obligation was fully satisfied in 2015. Cumulative expenditures for meeting this obligation total \$2,339,000.

Southside Replenishment Obligations

By memorandum dated September 30, 2016, the AWBA was informed by ADWR that there were no replenishment obligations for the 2015 reporting year. It is not anticipated that there will be replenishment obligations for the 2016 reporting year, but that information will not be available until October of 2017 and will be reported in the 2017 Annual Report.

White Mountain Apache Tribe

The Claims Resolution Act of 2010, which includes the White Mountain Apache Tribe Water Rights Quantification Agreement (Quantification Agreement), was signed by President Barack Obama on December 8, 2010. The agreement requires that the AWBA firm up to 3,750 acre-feet per year of NIA Priority CAP water until 2108. This obligation is part of the 8,724 acre-feet per year firming requirement identified for future settlements under the AWSA. In 2012, the Arizona Legislature appropriated \$2 million toward the construction of the White Mountain Apache Tribe Rural Water System (RWS Project), fulfilling one of the activities necessary to meet the enforceability date of April 30, 2021. Additionally, an application to approve the amended and restated Quantification Agreement was filed with the Gila River and Little Colorado River adjudication courts on April 29, 2014. A final Judgement and Decree approving the agreement was entered on December 18, 2014. For the agreement to become enforceable, the federal requirements must also be met, which include the completion of an Environmental Impact Statement on the construction and operation of the RWS Project.

Navajo Nation/Hopi Tribe

There was no activity on this settlement discussion in 2016 as it relates to firming Navajo/Hopi Colorado River supplies. Staff continues to monitor any activities associated with this settlement.

In 2012, Councils for the Navajo Nation and Hopi Tribe voted to reject a settlement agreement for the Little Colorado River and its authorizing legislation, respectively. The settlement included an allocation of NIA Priority CAP water to the Navajo Nation for use at Window Rock that would have had an AWBA firming obligation of up to 3,205.5 acre-feet per year. Final efforts among the parties to continue negotiations to try to resolve the outstanding issues were unsuccessful. The Navajo Nation decided it would not request another stay, opting instead to litigate the lawsuit it filed against the Secretary of

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Interior in 2003. On June 3, 2013, the Nation filed an amended complaint with the U.S. District Court for the District of Arizona that asserts the Department of the Interior breached its fiduciary duty to the Nation by failing to determine the Nation's rights to the waters of the Lower Colorado River. The Nation requested the court hold unlawful and set aside certain operations of the Lower Colorado River, including the guidelines for shortage and surplus conditions, interstate banking regulations and the Storage and Interstate Release Agreement (SIRA) because the Secretary failed to consider the needs of the Nation for Colorado River water. ADWR intervened as a defendant in the lawsuit on behalf of the State of Arizona. Other interveners include CAWCD and SRP, the Arizona Power Authority, Nevada, Metropolitan Water District of Southern California, Imperial Irrigation District, and the Coachella Valley Water District. In 2014, ruling in favor of the parties, the Federal District Court Judge dismissed the lawsuit. The Nation appealed to the 9th Circuit Court of Appeals, but did not include the dismissal of their claim challenging interstate banking regulations and the SIRA. Briefs have been submitted by all parties and the parties are awaiting the scheduling of an oral argument. [Oral arguments were held in February of 2017. The parties are currently awaiting a decision by the 9th Circuit Court.]

Hualapai Tribe

Legislation approving and authorizing the settlement of the Hualapai Indian Tribe's claims to the Colorado River was introduced in 2016. Although the legislation did not move out of committee, it is anticipated to be reintroduced in 2017. If enacted, the AWBA would have an obligation to firm 557.5 acre-feet per year through 2107. The federal government would have an equivalent firming obligation.

Recovery Planning

In preparation of needing to meet a firming requirement for the first time, AWBA, CAWCD and ADWR staff, in cooperation with stakeholders, released a joint recovery plan in 2014 that provides a framework for the recovery of AWBA credits and the delivery of that water during future shortages or for interstate purposes. The agencies continue to work cooperatively on annual modeling updates based on current hydrologic conditions and on the next steps of the plan needed to ensure implementation is achievable when the time comes. Essential to this, AWBA staff assisted CAWCD and Reclamation with the development of a draft CAP system use agreement that addresses among many things, how the system could be used to carry out delivery of AWBA firming supplies. A public workshop on the principles of the draft agreement was held in February of 2016. Upon further refinement in consideration of stakeholder feedback on key elements of the agreement, a final agreement was executed in February of 2017.

Additionally, as the AWBA's primary recovery agent, CAWCD has also been moving forward on evaluating the potential for recovery infrastructure at some of the key sites identified in the plan, such as the Tonopah Desert Recharge Project, and the development of recovery agreements with recovery partners. Updates are provided quarterly at both CAWCD Board and AWBA meetings.

2017 Plan of Operation

The AWBA 2017 Annual Plan of Operation (APO) was adopted on December 7, 2016. Water availability continues to be the primary limiting factor in developing the APO. The volume of water available to the excess CAP pool that is shared by the AWBA, CAGR, and Federal government is 18,630 acre-feet. The

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portion available for use by the AWBA is 17,630 acre-feet. Of this amount, 5,230 acre-feet will be delivered for storage in the Phoenix AMA, 11,400 acre-feet in the Pinal AMA, and 1,000 acre-feet in the Tucson AMA. Because of the low volume of supplies, storage in all three AMAs was limited to groundwater savings facilities since storage at these facilities allows for the continued use of renewal supplies in lieu of groundwater for agricultural irrigation. Water delivery and storage costs are estimated to be approximately \$2.8 million.

To compensate for the decrease in water supplies and to continue making progress on the firming goals, the 2017 APO also includes a component to develop an estimated 87,770 acre-feet of credits. Potential credit purchases for CAP M&I firming include up to 65,920 acre-feet in the Phoenix AMA and up to 12,570 in the Tucson AMA. The AWBA's request to reserve *ad valorem* tax funds for this purpose was approved by the CAWCD Board at its December 2016 meeting and includes \$14.7 million in Maricopa County funds and \$2.86 million in Pima County funds. The AWBA also anticipates purchasing up to 2,280 acre-feet of credits in the Tucson AMA using \$463,000 in withdrawal fees collected in the AMA. These credits would be used to provide water management benefits, which could include CAP M&I firming. Lastly, the APO estimates developing an additional 7,000 acre-feet of firming credit equivalents with the Gila River Indian Community at a cost of \$1.15 million. The total estimated cost for developing credits is \$19.2 million.

Website

Staff continues to utilize the AWBA website in an effort to provide timely and accurate information to the water community regarding the AWBA's activities: www.azwaterbank.gov . The web page contains information about the AWBA, its Commission members and staff, announcements, meetings, storage facilities, water deliveries and long-term storage credits accrued. The webpage also contains documents that may be downloaded and provides links to other water-related websites.

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Monies Collected and Expended from the Banking Fund

Arizona Revised Statutes §45-2425 mandates the various sources of monies for the Arizona Water Banking (AWB) Fund. The AWB Fund is administered by the AWBA. In 2016, the AWBA obtained its funding from the following sources:

1. Fees for groundwater pumping are collected within the Phoenix, Pinal and Tucson AMAs. Fees for water banking purposes are charged at \$2.50 per acre-foot. Legislative changes allow for groundwater withdrawal fees to be collected and available to the AWBA beyond 2016 (A.R.S. §45-611(c)(3)). Long-term storage credits accrued with these monies must be used to benefit the AMA in which the monies were collected.
2. The CAWCD Board resolved to retain the water storage *ad valorem* taxes levied and collected for the 2015-2016 tax year and to use the funds for meeting operating, maintenance and replacement and/or repayment costs of the Central Arizona Project. CAWCD continues to use the *ad valorem* tax funds to offset AWBA water delivery and storage costs as part of CAP O&M costs. The CAWCD Board also agreed to reserve \$3 million in revenues collected in Maricopa County to support the purchase of long-term storage credits by the AWBA. Because the AWBA did not purchase credits in 2016, the reserved funds were not deposited to the AWB Fund. Credits accrued using *ad valorem* tax funds must be used to benefit the county in which the funds were collected.
3. No general fund appropriation money was deposited in the AWB Fund in 2016.
4. Pursuant to the Agreement to Firm Future Supplies (Agreement to Firm), Mohave County Water Authority (MCWA) agreed to prepay the AWBA to set aside 230,280 acre-feet of credits that were transferred to the MCWA sub-account. Once the credits were identified for use by an entity outside of the three-county service area, CAWCD was required to charge the AWBA a fee in lieu of the 4¢ *ad valorem* tax. Monies collected from MCWA are used to offset the CAWCD fees which are charged at the same rate and on the same quarterly schedule as MCWA's prepayments to the AWBA. The final payment due under the Amended Agreement to Firm was made by MCWA in November of 2010 for the first quarter of 2011. The first prepayment under the Amended Agreement to Firm that sets aside an additional 25,894 acre-feet of credits was made in September of 2011 for the quarter beginning on October 1. The twentieth and final payment was made in May of 2016.

Table 1 shows the money the AWBA collected and the money that was expended for delivery and storage of water in 2016 by source of funds. **Table 2** shows the total money received, expended and remaining through December 2016 by source of funds.

Table 1. Monies Collected, Made Available, and Expended in 2016 by Source of Funds

Source of Funds	Carryover ¹	Collected	Expended
General Funds	\$0	\$0	\$0
In-Lieu Fund – MCWA Prepayments	\$0	\$71,952	\$71,952
State Indian FIRMING	\$0	\$0	\$0
4¢ Ad valorem Tax²			
Maricopa County ³	\$68,621,599	\$26,468	\$5,924,030
Pinal County	\$471,011	\$861,869	\$1,328,250
Pima County ⁴	(\$602,878)	\$3,029,274	\$2,591,910
Subtotal for Ad valorem	\$68,489,733	\$3,917,611	\$9,844,190
Groundwater Withdrawal Fees			
Phoenix AMA	\$853,988	\$2,254,783	\$2,386,174
Pinal AMA	\$308,129	\$1,218,698	\$1,299,750
Tucson AMA	\$74,917	\$368,212	\$154,060
Subtotal for Withdrawal Fees	\$1,237,035	\$3,841,693	\$3,839,984
TOTAL	\$69,726,767	\$7,831,255	\$13,756,126

¹ Monies made available or committed for the 2016 Plan of Operation.

² Monies made available from the 2015-2016 tax year (Oct. – Sept.) and expended by CAWCD to offset AWBA delivery and storage costs as part of CAP O&M costs. Includes recovered Lehman Brothers funds: Maricopa County \$26,468, Pinal County \$439, Pima County \$2,367.

³ Remaining funds dedicated for AWBA water storage for M&I subcontract firming pursuant to CAWCD Board of Directors Resolutions adopted for tax years 2003 through 2010.

⁴ Expenditures for Pima County includes \$165,514 in monies collected in calendar year 2016 for the 2016-2017 tax year.

Table 2. Cumulative Monies Collected, Made Available, and Expended through 2016 for Water Banking Activities and Monies Remaining Available

Source of Funds	Collected	Expended	Available ¹
General Funds	\$11,100,865	\$11,100,865	\$0
In-Lieu Fund - MCWA Pre-payments	\$5,123,480	\$5,123,480	\$0
State Indian FIRMING	\$2,338,171	\$2,338,171	\$0
Interstate Water Banking-NV²	\$109,328,332	\$109,328,040	\$292
Shortage Reparations – NV	\$8,001,948	\$8,001,948	\$0
4¢ Ad valorem Tax³			
Maricopa County	\$170,378,598	\$107,722,056	\$62,656,542
Pinal County	\$13,097,241	\$13,092,611	\$4,630
Pima County ⁴	\$53,422,418	\$53,587,932	(\$165,514)
Subtotal for Ad valorem	\$236,898,257	\$174,402,599	\$62,495,658
Groundwater Withdrawal Fees⁵			
Phoenix AMA	\$27,480,442	\$26,757,845	\$722,597
Pinal AMA	\$21,698,004	\$21,470,927	\$227,077
Tucson AMA	\$9,543,326	\$9,254,257	\$289,069
Subtotal for Withdrawal Fees	\$58,721,772	\$57,483,028	\$1,238,743
TOTAL	\$431,753,042	\$368,018,349	\$63,734,693

¹ Money remaining in AWB Fund or made available by CAWCD; includes monies committed for the 2017 Plan of Operation.

² Pursuant to the Third Amended and Restated Interstate Banking Agreement, monies remaining available are non-reconcilable for interstate purposes and subject to legislative authorization prior to use by the AWBA.

³ Monies collected by CAWCD made available to AWBA through direct deposit into the AWB Fund or as an expenditure by CAWCD to offset AWBA delivery and storage costs as part of CAP O&M costs. Represents tax year revenues (Oct. – Sept.).

⁴ Balance reflects monies collected for the 2016-2017 tax year during Oct. through Dec. that were expended during Calendar year 2016.

⁵ Money collected reflects an increase for calendar year 2016 of \$1,209,700 in legislative transfers unused by ADWR for FY 2016 and a decrease of \$200,000 in legislative transfers to the AZ Navigable Stream Adjudication Commission for FY 2017.

Long-term Storage Credits

The AWBA has established long-term storage credit accounts with ADWR for each AMA. After receiving the AWBA's annual reports, ADWR calculates and issues credits to the appropriate accounts. The AWBA receives credit for 95 percent of the stored water after losses are taken into account. After credits are issued to the account, AWBA staff allocates the credits to the appropriate sub-accounts based on source of funding. The number and distribution of credits for 2016 are listed in **Table 3**. Cumulative credits accrued by the AWBA through December 2016 are listed in **Table 4**.

Table 3. Number and Location of Long-term Storage Credits Accrued in 2016 (AF)

Funding Source	Phoenix AMA	Pinal AMA ¹	Tucson AMA	Total
4-Cent Ad Valorem Tax	29,551	8,202	12,652	50,404
Withdrawal Fees	2,526	8,041	721	11,288
General Fund	-	-	-	-
Intrastate TOTAL	32,077	16,243	13,372	61,692
Interstate - Nevada	-	-	-	-
TOTAL	32,077	16,243	13,372	61,692

¹ Additional credits may be issued upon resolution of annual reporting issues associated with GSF participants.

Table 4. Cumulative Long-term Storage Credits Accrued through December 2016 (AF)¹

Funding Source	Phoenix AMA	Pinal AMA	Tucson AMA	Total
4-Cent Ad Valorem Tax	1,419,558	215,882	459,842	2,095,283
Withdrawal Fees	332,063	421,560	105,734	859,357
General Fund	42,316	306,968 ²	54,546	403,830
Other Intrastate:				
Indian Firming Appropriation	-	-	28,481	28,481
Shortage Reparation	20,642	60,507	28,340	109,489
GSF Operator Full Cost Share	-	14,125	-	14,125
Intrastate TOTAL	1,814,579	1,019,042	676,943	3,510,565
Interstate - Nevada	51,009	440,241 ³	109,791	601,041
TOTAL	1,865,588	1,459,283	786,734	4,111,606

¹ Includes purchased long-term storage credits.

² By resolution passed in 2002, the AWBA established on-River firming as the highest priority of use for credits accrued through expenditure of general fund appropriations. Pursuant to the AWBA Agreement to Firm with MCWA dated February 4, 2005, a total of 230,280 acre-feet of credits were transferred to the AWBA long-term storage subaccount for the MCWA in 2005. An additional 25,894 acre-feet of credits have been reserved under Exhibit C the Amended Agreement to Firm, dated December 8, 2010, for a total of 256,174 acre-feet. By resolution passed in 2008, the AWBA established a replacement account for 4th priority Colorado River M&I users.

³ Includes 50,000 acre-feet of credits transferred from CAWCD pursuant to Amended Agreement for Interstate Water Banking.

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Since inception, the AWBA has focused its efforts on developing long-term storage credits for firming purposes. The AWBA has identified 2,700,000 acre-feet of credits as a reasonable amount of credits to firm the CAP M&I subcontracts for 100 years. This volume is divided based on a pro-rata distribution by county based on CAP M&I subcontracts as follows: 58% Maricopa County, 32% Pima County, and 9% Pinal County.

The AWBA has also identified 420,000 acre-feet of credits as a reasonable amount of credits to firm the on-River communities over the next 100 years. In 2002, the AWBA adopted a resolution that identified on-River firming as the highest priority of use for the general fund credits and established priorities for other uses (Indian settlements, etc.). Consequently, all or part of the general fund credits could be utilized to firm on-River M&I users. If used for this purpose, the AWBA will collect reimbursement for the replacement cost of the credits used. In 2008, the AWBA executed Resolution 2008-1 that established a long-term storage credit replacement account for 4th priority Colorado River M&I users. As credits are used and replaced, these replacement credits will be placed in a separate replacement subaccount and earmarked for the entity that reimburses the AWBA for the replacement of those credits.

Furthermore, with enforceability of the Arizona Water Settlements Act (AWSA) of 2004 in December of 2007, the AWBA, as agent for the State, assumed the obligation to firm up to 23,724 acre-feet per year of CAP NIA Priority water supplies. This water will be made available to Indian tribes as follows: 15,000 acre-feet for the Gila River Indian Community and 8,724 acre-feet for future settlements. The AWBA must firm these supplies for a 100-year period and ensure that the water is delivered to the same priority that water with an M&I priority is delivered during water shortages. In 2005, the Arizona State Legislature created an Indian Firming Study Commission (Study Commission) to develop a Firming Program for Arizona. The analysis performed by the Study Commission estimated a firming target of approximately 550,000 acre-feet: 350,000 acre-feet for the GRIC and 200,000 acre-feet for future settlements. The AWBA periodically re-evaluates these targets to ensure they are still applicable. While the AWBA has focused its efforts on the accrual of long-term storage credits, the AWBA may also use other methods to meet this obligation including contracting for delivery of water supplies other than excess CAP water, engaging in water exchanges, and/or entering into lease agreements with Indian communities and others.

In addition to firming, the AWSA also required that the state contribute \$3 million in cash or in-kind services to assist the Secretary in meeting the Federal obligation to the Tohono O'odham Nation. Pursuant to the AWBA's firming agreement with the Secretary, the parties agreed to accomplish this requirement through the accrual of an equivalent amount of long-term storage credits that would be distributed to the Secretary during shortages. Lastly, as discussed earlier, the AWBA is required to directly deliver 15,000 acre-feet of water to the GRIC to establish the Southside Replenishment Bank. This obligation was fully satisfied in 2015.

Table 5 illustrates the progress made by the AWBA towards meeting its established goals and obligations. Progress on individual goals varies due to the availability of funds, limitations of how each funding source may be used, and storage capacity that has been available in each AMA historically. It also includes purchased credits and firming credits developed in accordance with the IGA between the AWBA and the Gila River Indian Community.

Table 5. Identified Uses of Long-term Storage Credits Accrued through December 2016 and Percentage of AWBA Goals Achieved

Location and Objective	Funding Source	Estimated Goal	Non-Credit Goal Achieved	Credits Accrued (AF)	Goal Achieved
CAP M&I Firming	Water Storage Tax (4¢ <i>Ad valorem</i>) collected by County	1,566,000 AF		1,419,558	91%
Phoenix AMA		243,000 AF		215,882	89%
Pinal AMA		864,000 AF		459,842	53%
Tucson AMA					
On-River M&I Firming¹	General Fund	420,000 AF		403,830	96%
Indian Settlement Obligations:					
GRIC Firming - <i>up to 15 KAF/year</i>	General Fund Withdrawal Fees	350,000 AF ²		133,390 ³ 0 133,390	38%
Future Settlements - <i>up to 8.7 KAF/year</i>	General Fund Withdrawal Fees	200,000 AF ²		0 0 0	N/A
Federal Assistance (SAWRSA)- <i>\$3 million</i>	General Fund Tucson W/Fees		\$3,000,000 \$2,338,171 \$630,490	34,102 28,481 5,621	100%
	Cost of Services ⁴		\$31,339	n/a	
Southside Replenishment Bank <i>15 KAF direct delivery</i>	General Fund Pinal W/Fees			15,000 1,342 13,658	100%
Groundwater Management⁵					
Phoenix AMA	Withdrawal Fees collected by AMA			243,750	
Pinal AMA				404,482	
Tucson AMA				99,393	
Other:					
Shortage Reparations	Agreement with Nevada	\$8,000,000	\$8,001,948	109,489	100%
Pinal Redirect Credits ⁶	N/A			14,125	N/A

¹ By resolution passed in 2002, the AWBA established on-river firming as the highest priority for use of credits accrued using general fund appropriations. Pursuant to the Agreement to Firm dated February 4, 2005, a total of 230,280 acre-feet of credits were transferred to the AWBA long-term storage subaccount for MCWA in 2005. An additional 25,894 acre-feet of credits have been reserved under Exhibit C the Amended Agreement to Firm, dated December 8, 2010, for a total of 256,174 acre-feet.

² Based on estimates from the Indian Firming Study Commission Report dated January 6, 2006.

³ Credits accrued from storage at the Gila River Indian Irrigation and Drainage District GSF: Phoenix AMA 88,313 AF, Pinal AMA 17,077. Also includes 28,000 AF of firming credits developed on Community lands.

⁴ Expenditures include \$14,883 and \$16,456 deducted for payment of cost of services for FY 08 and FY 09, respectively.

⁵ Withdrawal fees could be utilized in addition to 4¢ *ad valorem* tax revenues for M&I firming if needed to reach firming goals and for Indian settlement obligations in the absence of general fund appropriations.

⁶ Credits accrued from AWBA water provided to Pinal AMA GSFs at full cost to the GSF operators. These credits are currently identified for use in the Tucson AMA.

The average annual cost for the AWBA to obtain one acre-foot of credit for intrastate storage is presented in **Figure 1** and illustrates that the unit cost per credit is influenced by the type of storage facility used as well as the increase in water delivery costs over time. The significant increase beginning in 2010 reflects CAWCD’s elimination of the incentive recharge rate.

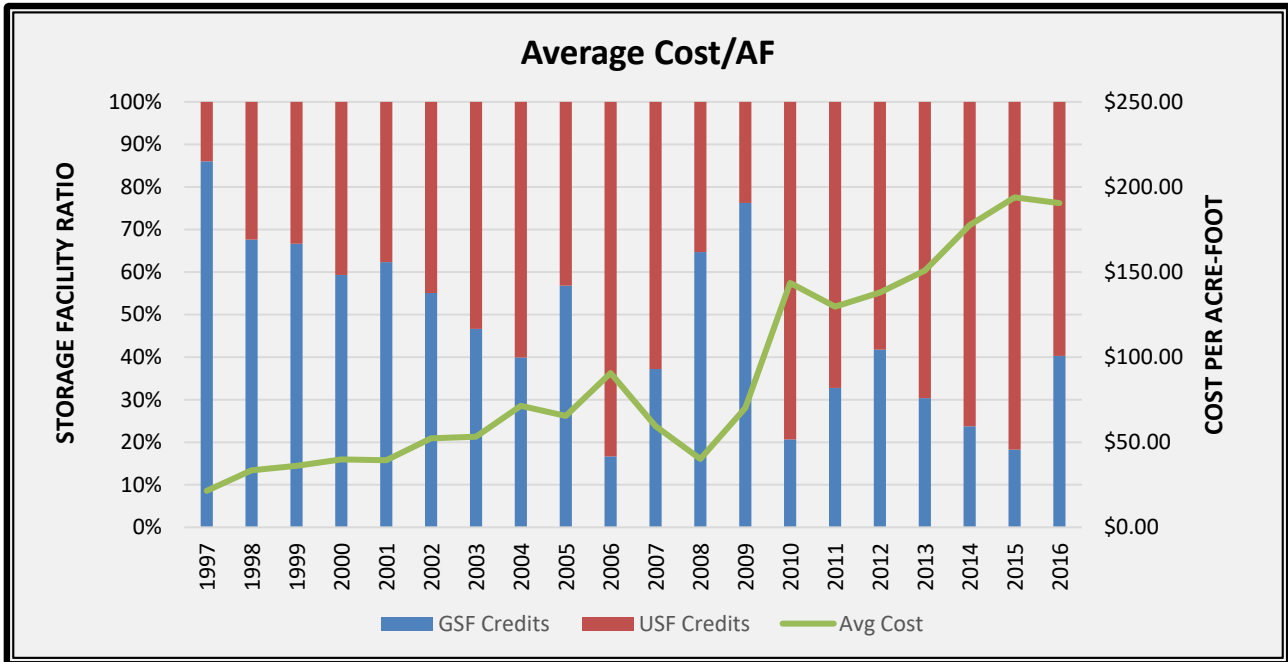


Figure 1. AWBA average cost per acre-foot for accruing one long-term storage credit.

Total annual storage costs since inception are identified in **Figure 2**.

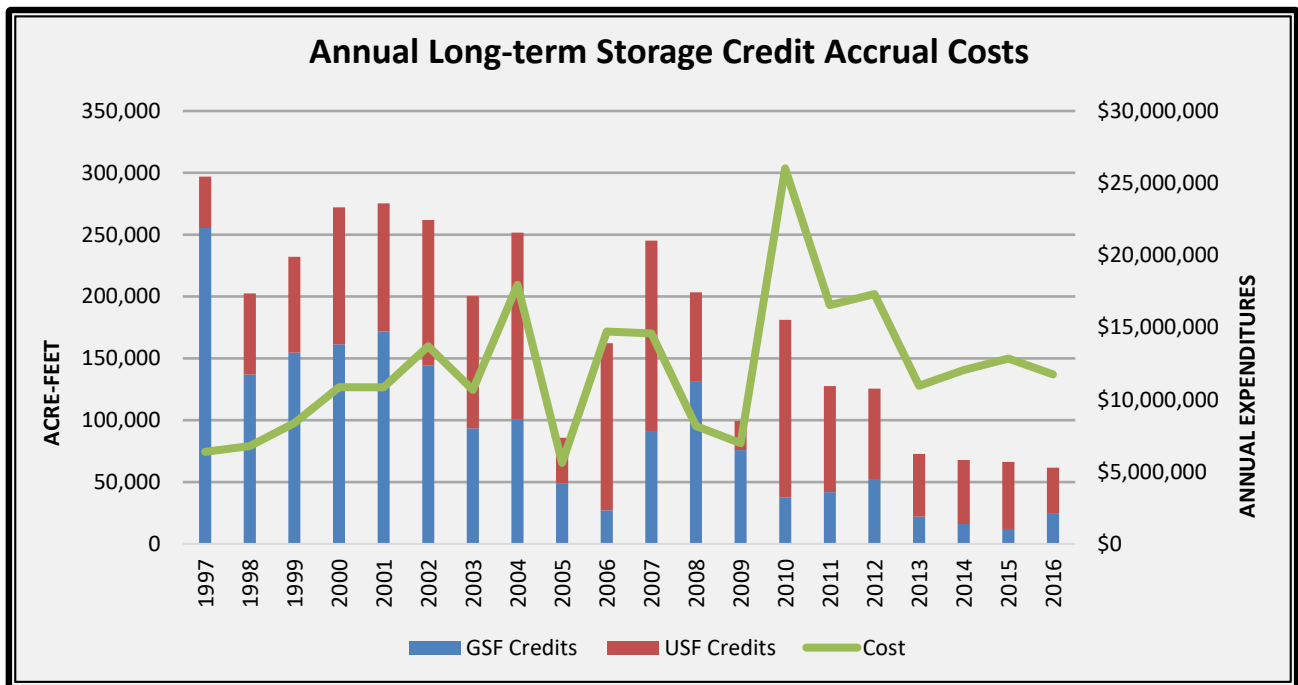


Figure 2. AWBA annual long-term storage credit accrual costs.

Long-term Storage Credits Distributed or Extinguished by the Authority

The long-term storage credits developed by the AWBA to date have been identified for five purposes:

- Firming CAP M&I entitlements;
- Firming the post-1968 M&I entitlements for entities outside the CAP service area;
- Firming for the State's obligation under the AWSA, including the State's Federal obligation;
- Assisting in fulfilling the water management objectives set forth in Chapter 2 of Title 45 (Arizona Revised Statutes); and
- Interstate water banking purposes pursuant to agreements with Nevada.

Credits accrued by the AWBA for firming purposes may be distributed or extinguished when the Colorado River system is declared to be in a shortage and demands exceed supply, if there is a water shortage as defined under the AWSA, or if there is an operational disruption of the CAP. There were no shortages or unplanned CAP outages, therefore, no credits were distributed or extinguished for these purposes in 2016. No credits were distributed or extinguished in 2016 for water management purposes.

Under the 1999 amendments to the AWBA legislation, the AWBA is authorized to develop credits with monies collected pursuant to water banking services agreements. In 2016, no credits were developed or distributed under such agreements. Additionally, there were no credits recovered for interstate purposes.

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Ten-Year Plan

Introduction

Pursuant to A.R.S. §45-2426, the AWBA is required to prepare a Ten-Year Plan. The Ten-Year Plan must include a description of any water banking activities the AWBA intends to undertake in addition to the three primary AWBA functions of firming for M&I supplies, assisting in Indian water rights settlements, and fulfilling State water management objectives. The Ten-Year Plan must also provide an analysis of the AWBA's ability to complete those activities. The Ten-Year Plan is not a guarantee of future credit development or distribution activities and is prepared only for planning purposes. In any given year, the AWBA's specific activities are governed by the Annual Plan of Operation.

This Ten-Year Plan analyzes potential activity for the period 2018-2027 and projects the AWBA could develop approximately 400,000 acre-feet of credits and have a firming requirement of 2,500 acre-feet that would only affect NIA Indian water during the planning period. AWBA accounting for previous years can be found in the 2015 Annual Report and 2017 Plan of Operation. The Ten-Year Plan is an important tool to be utilized in the development of the 2018 Annual Plan of Operation and future policies guiding AWBA activities. The Ten-Year Plan is updated annually based on current information and the priorities of the AWBA.

Historically, the AWBA's primary operating strategy has been to store Excess CAP water. There has typically been a balance between supplies available and financial resources. In recent years, as hydrologic conditions on the Colorado River have changed and demands have increased, supplies available have dwindled becoming the primary limiting factor in the AWBA making progress on its firming goals. Last year, the AWBA's Ten Year Plan projected for the first time that Excess CAP water would not be available for water banking purposes.

Over the last nine months, hydrologic conditions in the Colorado River Basin have been variable. In general, the Basin experienced above average winter precipitation that was followed by a relatively warm and dry spring. These conditions have reduced the probability of a shortage over the next few years as determined in the USBOR April modeling analysis. Still, conditions on the Colorado River are fragile and therefore, Arizona may decide to forgo deliveries to entities like the AWBA in favor of keeping water in Lake Mead. In response, this Ten-Year Plan relies on an agile strategy to respond to changing conditions, toggling with ease between traditional water storage when supplies are available and credit purchase, with target volumes based on the availability of funds not to exceed the volume of numerically defined firming goals.

At the foundation of the Ten-Year Plan, are numerous assumptions. The primary assumptions are presented in **Appendix C**.

Ten-Year Plan Components

A number of components are recognized to be important in developing the Ten-Year Plan. Three are mutually dependent and intrinsic to AWBA water storage activities and are therefore always considered: water availability, funding and storage capacity. The availability of one, or lack thereof, will ultimately

affect the significance of the other two in developing the plan. For example, if no Excess CAP water will be available to the AWBA during the next ten years, the availability of storage capacity will be less relevant. The availability of funding, however, will be of particular importance in showing how the AWBA can meet its objectives using methods other than traditional water storage. The components, as they relate to this Ten-Year Plan, are discussed below:

1. Water Available to the AWBA

The volume of water available to the AWBA has been decreasing since 2010 when over 200,000 acre-feet were available to the AWBA. In 2016, the AWBA stored less than 70,000 acre-feet. Under its 2017 Plan of Operation, the AWBA expects to store just under 18,000 acre-feet. This amount represents less than 10% of the volume stored in 2010 and about 5% of the volume stored in the AWBA’s highest storage year in 2007. While conditions improved on the Colorado River in this last season, the prevailing condition for the planning period is still shortage.

Shortage Conditions.

Due to the hydrology in the winter of 2016/2017, there is a modest probability of shortage through 2021 and gradually returning to higher probabilities of shortage at the end of the planning period. Based on USBOR projections prepared in April 2017 shown in **Table 6**, there is a no probability of any level of shortage in 2018. This probability escalates to 31% in 2019 and then increases gradually until the end of the planning period when probabilities reach 56%. Under a shortage declaration, there would be no Excess CAP water available for AWBA purposes. Another condition where the volume of water available to the AWBA could be affected is from the continued implementation of system conservation activities. It is expected the State will continue existing system conservation activities in 2018, limiting the volume of water available to the AWBA.

Table 6. Probabilities of Supply Conditions on Colorado River²

	Probabilities %		
	Shortage	Surplus	Normal
2018	0%	0%	100%
2019	31%	5%	64%
2020	32%	13%	55%
2021	34%	18%	48%
2022	39%	21%	40%
2023	46%	26%	28%
2024	47%	29%	25%
2025	52%	29%	20%
2026	55%	28%	17%
2027	56%	27%	17%

Assuming the same activities continue beyond 2018, the volume of water available to the AWBA will likely be very small if available at all. Decisions to leave water in Lake Mead occur on a year-to-year basis including the final decision to leave water in Lake Mead in 2018. This Ten-Year Plan assumes we will have a modest volume of Excess CAP water in 2018, but no Excess CAP water starting in 2019 and continuing through the remainder of the Plan.

² United States Bureau of Reclamation: April 2017 CRSS/MTOM Model Projections - 2018 through 2027

Surplus Conditions.

The probabilities of surplus conditions remain relatively low through 2020. From 2024 through 2027, the probability of surplus is higher than the probability of normal conditions.

Normal Conditions.

The probabilities of normal conditions remain relatively high through 2021. In 2022, the probability drops to 40% and then again in 2023 to less than 30%. By 2025, the probability of normal conditions dips below the probability of either shortage or surplus.

This Ten-Year Plan assumes that Excess CAP water will be available in 2018, but not in 2019 and beyond. Should normal water supply conditions prevail, the volume of Excess CAP water available to the AWBA during this Ten-Year Plan could be nearly 555,000 acre-feet (see **Table 7**).

Table 7. CAP Delivery Schedule under Normal Supply Conditions³

Year	Total CAP Deliveries ¹	Federal and M&I Deliveries	Ag Settlement Pool ²	Statutory Firming Pool ³	
				Federal & CAGRDRR	AWBA
2018	1,440,000	1,135,100	255,000	7,100	42,800
2019	1,554,500	1,145,400	300,000	15,600	93,500
2020	1,553,500	1,197,800	300,000	7,900	47,800
2021	1,552,300	1,184,300	300,000	9,700	58,300
2022	1,551,200	1,195,700	300,000	7,900	47,600
2023	1,550,100	1,207,100	300,000	6,100	36,900
2024	1,549,000	1,218,500	300,000	4,400	26,100
2025	1,547,900	1,228,800	225,000	13,400	80,700
2026	1,546,900	1,243,500	225,000	11,200	67,200
2027	1,545,900	1,258,100	225,000	9,000	53,800
Total				92,300	554,700

¹ Based on average deliveries. Assumes non-shortage CAP supply. Assumes 2018 deliveries reduced by 185,000 AF due to forbearance activities. Future forbearance activities could similarly reduce volumes throughout the remainder of the planning period.

² 2018 Ag Pool volume reflects 45,000 AF reduction due to Ag Forbearance III program implementation.

³ Based on extended CAWCD Access to Excess distribution policy (through 2019).

2. Funding

Funding for water storage that benefits Arizona (intrastate storage) comes from three sources: water storage taxes (i.e. 4¢ *ad valorem tax*), groundwater withdrawal fees and general fund appropriations. The availability of revenues from each source varies annually. Additionally, there are restrictions on how each funding source can be used. Funding for interstate banking is received at the time of storage. However, interstate storage is not expected under this Ten-Year Plan.

³ Source: CAWCD Resource Planning & Analysis and ADWR Colorado River Management May 10, 2017.

Water Storage Tax (4¢ ad valorem tax)

Pursuant to A.R.S. § 48-3715.03(B), *ad valorem* taxes for water storage levied and collected by CAWCD, not deposited in the CAWCD fund, shall be deposited into three subaccounts held by the AWBA for each of the three counties in which the taxes are collected. Except for funds used to pay for credit purchases, *ad valorem* tax revenues have not been deposited into the AWBA subaccounts since 2003. CAWCD has, however, used the *ad valorem* tax funds collected to offset AWBA water delivery and storage costs as part of the operation and maintenance (O&M) costs of the Project. Expenditures for AWBA purposes have typically included all monies collected annually in Pinal and Pima counties and a portion of the monies collected in Maricopa County, where a balance remains because of the amount of monies collected exceeds to cost to store the amount of the water available. This Ten-Year Plan relies on the continuation of this practice.

Today, the *ad valorem* tax generates nearly \$19 million a year with approximately \$14.9 million in Maricopa County, \$900,000 in Pinal County and \$3.1 million in Pima County. *Ad valorem* tax projections⁴ show that, during the planning period, the tax will generate on average \$22.9 million annually with approximately \$18.2 million in Maricopa County, \$1.1 in Pinal County and around \$3.6 million in Pima County. CAWCD has the authority to levy the *ad valorem* tax through 2030. Therefore, this Ten-Year Plan assumes the collection of the *ad valorem* tax throughout the planning period. CAWCD is authorized to levy the tax at a rate of up to 4¢ per \$100 of assessed property value through tax year 2024 and up to 3¢ for the remainder of the term. The reduction will affect revenues in the last two years of this Ten-Year Plan. Credits accrued with these funds are used to firm CAP M&I supplies during shortages.

On June 8, 2017, the CAWCD Board adopted its annual resolution regarding use of the Water Storage Tax for tax year 2017/2018. The Board resolved to continue to set the tax rate of 4¢ and to deposit the funds in accounts held by CAWCD. Monies collected will be used for CAP repayment or annual O&M and replacement costs, including CAWCD costs for AWBA CAP M&I firming. For the first time, however, 2¢ of the tax will be deposited into CAWCD's Working Capital Reserve and made available for the Agricultural Consideration Program. Monies for this program have previously come from CAWCD's general *ad valorem* property tax. The purpose of the change is to free up general *ad valorem* tax monies so that the funds can be used for other purposes such as recovery, Colorado River programs and strategic reserves. Because future decisions to use revenues from the water storage tax are made on annual basis and established through resolution, the Ten-Year Plan assumes that revenues will resume at normal levels during the remainder of the Ten-Year Plan. Although the changes under the 2017/2018 resolution are only anticipated for one year, if they continue, the impacts will largely affect the AWBA's ability to make progress on the M&I firming goal for the Tucson AMA and could result in a decrease of up to 60,000 acre-feet of credits if done for the entire ten-year planning period.

⁴ Central Arizona Water Conservation District projections dated April 18, 2017.

Groundwater Withdrawal Fees

Pursuant to A.R.S. § 45-611(3), the Director of Water Resources collects a groundwater withdrawal fee for water banking purposes equal to \$2.50 per acre-foot per year in the Phoenix and Tucson AMAs and up to \$2.50 per acre-foot in the Pinal AMA. This Plan assumes the Director will continue to collect the full \$2.50 per acre-foot in the Pinal AMA throughout the planning period.

The revenues collected annually within the three AMAs total approximately \$4 million with \$2.2 million collected in the Phoenix AMA, \$1.4 million collected in the Pinal AMA and \$400,000 collected in the Tucson AMA⁵. It is important to note however, that these funds have historically been subject to legislative transfer. The approved budget for fiscal year 2018, includes over \$1.6 million in withdrawal fee transfers. Since future legislative transfers cannot be anticipated, the Ten-Year Plan assumes they will not occur going forward.

The AWBA can utilize withdrawal fees to further the water management objectives of the AMAs, including firming for CAP M&I subcontracts and implementing Indian water rights settlements when legislative appropriations are not available. When distributed or extinguished, these credits can only be used for the benefit of the AMA in which the monies were collected.

AWBA General Fund Appropriation

Pursuant to A.R.S. § 45-2423.B.10, the AWBA can submit a request for a General Fund appropriation each year. While the AWBA may request General Fund appropriations during this planning period, receipt of an appropriation cannot be expected. Absent future General Fund appropriations, any credit development for Indian firming would require the use of groundwater withdrawal fees.

3. Targeted Credit Development

Due to the underlying assumption that Excess CAP water supplies will only be available through 2018, the AWBA expects to develop credits to meet firming goals and requirements through credit purchase and direct delivery of other supplies. Pursuant to A.R.S. § 45-2423.B.2.a and 7.b, the AWBA may purchase long-term storage credits or obtain effluent or surface water other than Colorado River water for storage after it has stored or scheduled all available Excess CAP water or when Excess CAP water is unavailable or undeliverable. Pursuant to A.R.S. § 45-2491, the AWBA may also deliver water directly to certain Indian communities for Indian firming purposes.

When the Colorado River operates under normal water supply conditions, the AWBA will continue to operate as it always has storing all Excess CAP water made available consistent with established priorities. For this Ten-Year Plan, the AWBA established target volumes for credit development in each AMA based on principles described in more detail below:

⁵ Withdrawal fee revenues vary from year to year. The assumptions used in this Ten-Year Plan are based on revenues remaining at the same levels as last Ten-Year Plan.

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- a. Projected Indian firming credit development targets in the Phoenix and Pinal AMAs would be based on maximizing withdrawal fee revenues.
- b. Projected M&I firming credit development targets would be based on meeting M&I firming goals in the Phoenix and Pinal AMAs by 2027.
- c. Projected M&I firming and water management credit development targets would be based on maximizing financial resources in the Tucson AMA for both *ad valorem* and withdrawal fee revenues.
- d. Credit development would be conducted through credit purchase, existing and future water services agreements for Indian firming, water supply acquisition and any other tools currently available or made available to the AWBA to develop credits.

If Excess CAP water becomes available during the planning period, the AWBA proposes to operate as it has in recent years accordingly:

- a. If the volume of excess CAP water made available to the AWBA is larger than the targeted development volumes, then the AWBA would store all excess CAP water made available until funds and/or storage capacity are exhausted in a manner consistent with water storage priorities.
- b. Up to 50% of the excess CAP water available would be delivered to storage facilities in the Tucson AMA limited only by funding and storage capacity.
- c. Anything unused in the Tucson AMA would be divided equally between the Pinal and Phoenix AMAs.
- d. Anything unused in the Pinal AMA would cascade to the Phoenix AMA until the remaining volume has been fully utilized.
- e. If the volume of excess CAP water made available to the AWBA is less than the targeted development volumes, then the AWBA will concurrently pursue strategies other than traditional water storage until the targeted volumes are reached.

Through 2017, the AWBA will have accrued approximately 4.2 million acre-feet of credits. **Table 8** identifies the number of credits by fund and location.

Table 8. Existing AWBA Credits through 2017 (acre-feet)

	Phoenix AMA	Pinal AMA	Tucson AMA	Total
M&I Firming¹	1,482,400	220,900	473,200	2,176,500
Indian Firming	123,300	17,100	34,100	174,500
Water Management¹	244,900	410,100	102,600	757,600
Shortage Reparation	20,600	60,500	28,300	109,400
General Fund	42,300	307,000	54,500	403,800
Other	-	14,100	-	14,100
Interstate	51,000	440,200	109,800	601,000
Total	1,964,500	1,469,900	802,500	4,236,900

¹ Credit accrual for 2017 is based on estimates of credits developed in the 2017 Annual Plan of Operation including credits developed through credit purchase.

Because the AWBA does not anticipate receiving a general fund appropriation, the Ten-Year Plan focuses specifically on the use of groundwater withdrawal fees and *ad valorem* tax funds. However, if an appropriation were received it would likely be for meeting a specific objective. This Plan envisions developing nearly 230,000 acre-feet of credits for CAP M&I firming, nearly 160,000 acre-feet for Indian firming and around 14,000 acre-feet for meeting remaining water management objectives. If successful, this would result in the development of approximately 400,000 acre-feet of credits. As shown in **Table 9**, the AWBA is projected to accumulate around 4.6 million acre-feet of credits by the end of the planning period.

Table 9. Projected AWBA Credits in 2027 (acre-feet)

	Phoenix AMA	Pinal AMA	Tucson AMA	Total
M&I Firming	1,565,800	242,700	595,100	2,403,600
Indian Firming	218,600	80,400	34,100	333,100
Water Management	244,900	410,100	116,300	771,300
Shortage Reparation	20,600	60,500	28,300	109,400
General Fund	42,300	307,000	54,500	403,800
Other	-	14,100	-	14,100
Interstate	51,000	440,200	109,800	601,000
Total	2,143,200	1,555,000	938,100	4,636,300

The Ten-Year Plan’s Credit Development Plan is shown in **Table 10** on the following page. The AWBA percentage of goals achieved through 2027 is shown in **Table 11** located on page 24.

Table 10. Credit Development Plan for 2018 through 2027 (acre-feet)

Year	Credit Development Target ¹	Projected Indian Firming Credits			Projected M&I Firming Credits ⁵			Projected Water Management Credits		
		Phoenix AMA ²	Pinal AMA ³	Tucson AMA ⁴	Phoenix AMA ⁶	Pinal AMA	Tucson AMA	Phoenix AMA	Pinal AMA	Tucson AMA ⁷
Pre-Plan		123,300	17,100	34,100	1,482,400	220,900	473,200	244,900	410,100	102,600
2018	47,800	7,700	4,600	-	24,900	2,900	6,700	-	-	1,000
2019	43,800	12,400	7,600	-	6,500	2,100	13,600	-	-	1,600
2020	41,200	10,800	7,100	-	6,500	2,100	13,200	-	-	1,500
2021	39,900	10,000	6,700	-	6,500	2,100	13,100	-	-	1,500
2022	39,700	9,700	6,600	-	6,500	2,100	13,400	-	-	1,400
2023	39,400	9,400	6,400	-	6,500	2,100	13,600	-	-	1,400
2024	39,200	9,200	6,300	-	6,500	2,100	13,700	-	-	1,400
2025	38,700	8,900	6,100	-	6,500	2,100	13,800	-	-	1,300
2026	35,100	8,700	6,000	-	6,500	2,100	10,500	-	-	1,300
2027	34,600	8,500	5,900	-	6,500	2,100	10,300	-	-	1,300
Total	399,400	218,600	80,400	34,100	1,565,800	242,700	595,100	244,900	410,100	116,300

1. Credit Development Target is the sum of all credits developed in a given year.
2. Pre-plan credits include 88,313 acre-feet stored in the Phoenix AMA GRIIDD and 35,000 acre-feet of Indian firming credits developed as described in Exhibit B of the IGA between the AWBA and the GRIC.
3. Pre-plan credits include 17,077 acre-feet stored in the Pinal AMA GRIIDD.
4. Pre-plan credits include 28,481 acre-feet of credits accrued with Indian firming appropriations and 5,621 acre-feet of credits accrued from the Tucson AMA withdrawal fees . These credits will be used to satisfy the AWBA's obligation to the Secretary under the AWSA.
5. Pre-plan credits include actual credits through 2016 and estimated credits in 2017 based on the AWBA's 2017 Plan of Operation.
6. Credits developed in the Phoenix and Pinals AMAs are limited by the remaining volume of credits needed to reach the M&I firming target after 2018 divided by the number of years.
7. Pre-plan credits include 2,514 acre-feet of credits purchased from the Tohono O'odham Nation pursuant to A.R.S. section 45-841.01.

Table 11. AWBA Percentage of Goals Achieved through 2027

Location and Objective	Funding Source	Estimated Goal	Obligation	Non-Credit Goal/Oblig. Achieved	Credits ¹ Accrued (AF)	Percent Goal/Oblig. Achieved	
CAP M&I FIRMING							
Phoenix AMA	Water Storage Tax (4¢ Ad valorem)	1,566,000	AF		1,566,000	100%	
Pinal AMA		243,000	AF		243,000	100%	
Tucson AMA		864,000	AF		595,200	69%	
On-River M&I FIRMING²	General Fund	420,000	AF		403,830	96%	
Indian Settlement Obligations:³							
GRIC FIRMING	Withdrawal Fees	350,000	AF	up to 15,000 AF/YR			
Phoenix AMA					299,100	85%	
Pinal AMA					218,600 80,500		
Future Settlements	Withdrawal Fees	200,000	AF	up to 8,724 AF/YR	0	0%	
Federal Assistance	Appropriation Withdrawal Fees Cost of Services			\$3,000,000	\$3,000,000	34,102	100%
Tucson AMA					\$2,338,171	28,481	
					\$630,490	5,621	
				\$31,339	n/a		
Southside Replenishment Bank	Pinal AMA Withdrawal Fees			15,000 AF Direct Delivery	15,000	100%	
Groundwater Management							
Phoenix AMA ⁴	Withdrawal Fees collected by AMA				244,900		
Pinal AMA ⁴					410,100		
Tucson AMA ⁵					116,300		
Other:							
Shortage Reparations-Nevada ⁶	Agreement with Nevada			\$8,000,000	109,400	100%	
Pinal Redirect Credits ⁷	n/a				14,125		

¹ 1997-2016; actual credits through 2016 and estimated credits for 2017.

² By resolution passed in 2002, AWBA established on-river firming as the highest priority of use for credits accrued through expenditure of general fund appropriations. A total of 256,174 acre-feet of credits have been reserved pursuant to AWBA's contract with MCWA.

³ A.R.S. §45-2491(B)(2) allows for use of withdrawal fees after legislative appropriations for Indian firming have been expended. 105,390 acre-feet of credits stored at GRIIDD are already dedicated through Indian firming agreements. Since 2015, the AWBA has developed 35,000 acre-feet of Indian firming credits pursuant to Exhibit B of the IGA between the AWBA and the GRIC. Additionally, the Ten-Year Plan assumes credits accrued from withdrawal fees in the Pinal and Phoenix AMAs in this Ten-Year Plan are applied to Indian firming. Given this assumption, 85% of the GRIC firming goals are estimated to be met by 2027.

⁴ Volumes reflected include reductions due to assigning credits developed in this planning period to Indian firming.

⁵ Credits currently identified for use in Tucson AMA are expected to be used for M&I firming bringing the percentage of M&I firming goal achieved in the Tucson AMA to 82%. This volume also deducts the 5,621 acre-feet of credits under Federal Assistance stored using Tucson AMA withdrawal fee revenues, but includes 234 acre-feet of credits purchased in 2009 and 2,280 acre-feet in 2017 from the Tohono O'odham Nation pursuant to A.R.S. section 45-841.01.

⁶ Volume reflected includes 3,665 acre-feet of credits purchased in 2015 from the Tohono O'odham nation pursuant to A.R.S. section 45-841.01.

⁷ Credits accrued from AWBA water priced to Pinal AMA GSFs at full cost to the GSF operators. These credits are currently identified for use in the Tucson AMA.

A primary objective of the AWBA is meeting its Indian firming obligations. In this Ten-Year Plan, like last year, the AWBA intends to maximize withdrawal fees in the Phoenix and Pinal AMAs to develop credits for this purpose. This Plan projects that 95,000 acre-feet of credits will be developed in the Phoenix AMA and 64,000 acre-feet in the Pinal AMA. Including 105,000 acre-feet already accrued at the GRIIDD and the 35,000 acre-feet developed between 2015 and 2017 pursuant to existing Indian firming agreements, the AWBA will have approximately 300,000 acre-feet of credits available for meeting Indian firming requirements by the end of this planning period. The AWBA also has 34,100 acre-feet of general fund appropriation and withdrawal fee credits set aside for meeting the State's obligation to the Federal government under the AWSA.

Another primary objective of the AWBA is meeting the numeric M&I firming goals. In the Phoenix and Pinal AMAs, the strategy for this Ten-Year Plan is to develop enough credits to meet 100% of the numeric goals in these AMAs using 4¢ *ad valorem* tax funds. In the Tucson AMA, maximizing the use of the 4¢ *ad valorem tax* would result in achieving nearly 70% of the numeric goal. If Tucson AMA water management credits are included, the AWBA would expect to reach 82% of the numeric M&I firming goal. Achievement of the goal for the Tucson AMA continues to lag behind the other AMAs. Consequently, the AWBA continues to direct staff to focus on developing as many credits as possible in the Tucson area.

It is important to note that while M&I and Indian firming are both identified as water management objectives, Indian firming is an obligation under the AWSA. If this Plan is fully implemented, the AWBA expects to develop roughly 300,000 acre-feet of withdrawal fee credits for Indian firming. Absent general fund appropriations, the AWBA would need to rely on withdrawal fee credits to meet its Indian firming requirements. This Plan projects that Indian firming requirements will be less than 2,300 acre-feet during the planning period. Therefore, meeting a firming requirement during the planning period should not cause concern.

4. Storage Partners and Storage Capacity

Based on recharge permit volumes and discussions with AWBA storage partners, the AWBA is anticipated to have 155,000 acre-feet of storage capacity available at GSFs and over 100,000 acre-feet of capacity available at USFs. In the event there is Excess CAP water available to the AWBA, or if the AWBA acquires other renewable supplies, the AWBA should have sufficient capacity available for storage. Details on storage partners, storage permits, and capacity available for use by the AWBA are further described in Appendix D and in the AWBA's 2016 Water Storage Facility Inventory.

A number of facility permits will expire during this Ten-Year Plan. Any difficulty in obtaining new permits could impact the capacity available to the AWBA. However, because impacts of this nature cannot be predicted and because historically these facilities have proven to be stable, this Ten-Year Plan assumes the permits will be renewed by facility owners. In addition to these facility permits, the AWBA will also need to renew several of its water storage agreements. The AWBA's agreements for water storage at many of its GSFs will expire December 31, 2021. Renewal of these agreements is anticipated therefore storage at these facilities was included for the full ten-year planning period.

5. Intrastate Recovery and Distribution of AWBA Credits

While a declared shortage on the Colorado River would result in the elimination of Excess CAP water, depending on the level of shortage, a firming requirement could also be triggered for the AWBA. A firming requirement, however, would not be triggered until the reduction in supply impacts the deliveries to CAP and on-River water users for which the AWBA has a firming requirement. Based on data jointly prepared by CAWCD and ADWR staff, model projections show that over the next ten years, the AWBA could have a firming requirement ranging from 2,370 acre-feet assuming a Tier 1 shortage to up to 98,085 acre-feet assuming a Tier 3 shortage. The firming requirement would only affect the NIA Indian customer class. In its analysis to determine the most likely firming requirement, the AWBA reviewed the shortage probabilities, selecting the tier representing the highest probability in a given year and the accompanying projected firming volume. For example, in 2020 the AWBA would have 910 acre-foot firming requirement if a Tier 2 shortage materialized. If a Tier 3 shortage materialized, the firming requirement would be 8,667 acre-feet. However, the probability of either a Tier 2 or 3 is less than 1%. Consequently, the AWBA picked Tier 1 as this level of shortage holds the highest probability at 31%. The firming volume assuming a Tier 1 shortage is zero.

As illustrated in **Table 12**, the Tier 1 shortage probability was the highest throughout the planning period. Selecting the accompanying values, the AWBA projects a firming requirement for NIA Indian priority water of just under 2,400 acre-feet over the planning period.

Table 12. Probability of Shortage by Tier and Projected Firming Requirements

Year	Probability of Shortage ¹				NIA Indian Firming ² (af)			Total AWBA Firming Volume (af)
	Any	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3	
2018	0%	0%	0%	0%	-	-	-	-
2019	31%	31%	0%	0%	-	-	4,600	-
2020	32%	31%	1%	0%	-	910	8,667	-
2021	34%	26%	8%	0%	-	2,062	9,585	-
2022	39%	27%	10%	3%	-	3,146	10,448	-
2023	46%	31%	11%	4%	-	4,166	11,261	-
2024	47%	28%	11%	7%	-	5,129	12,027	-
2025	52%	30%	12%	9%	-	5,975	12,720	-
2026	55%	27%	18%	10%	546	7,193	13,840	546
2027	56%	25%	18%	13%	1,824	8,381	14,938	1,824
TOTALS					2,370	36,961	98,085	2,370

1. Derived from US Bureau of Reclamation Colorado River Simulation System April 2017 Model Run, Lake Mead probabilities of shortage for the period 2018 to 2027.

2. CAWCD Resource Planning & Analysis and ADWR Colorado River Management: May 2017.

The AWBA has several options for firming these supplies including entering into an agreement with an entity such as CAWCD for the recovery and delivery of water or by making water available within the area of the affected water users through the extinguishment of credits (e.g. GRIC). The AWBA

has 105,390 acre-feet of water stored at the Gila River Indian Irrigation and Drainage District (GRIIDD) in the Phoenix and Pinal AMAs and since 2015, another 35,000 acre-feet of firming credits developed with the GRIC for a total of nearly 140,000 acre-feet of existing credits that can be used today for Indian firming.

According to its firming agreement with the GRIC, the AWBA and the GRIC are required to initiate discussions about preparing for an Indian firming requirement when the Ten-Year Plan projects a firming requirement in the third year of the Ten-Year Plan’s Projected Firming Plan. Since no firming requirement is projected until 2026, this provision of the IGA is not triggered. Irrespective of what the ultimate firming volume is, there are enough existing, let alone projected credits, to cover the entire range of potential firming requirement (see **Table 13**).

It should also be noted that in addition to the uncertainties regarding hydrologic conditions on the Colorado River, there are also uncertainties within the CAP system that could affect the AWBA’s firming requirements. Increased water delivery costs during shortages, drought-related conservation, or changes in customer ordering patterns could all play a role in the amount of water that is available to the NIA Indian pool and ultimately the volume of water the AWBA will need to firm.

Table 13. Projected Firming Plan (in acre-feet) 2018 through 2027

Year	Projected Firming Requirement	Firming Requirement				Balance of Indian Firming Credits			
		NIA Indian	On-River	M&I	Total	Phoenix AMA	Pinal AMA	Tucson AMA	Total
Pre-Plan						123,300	17,100	-	140,400
2018	0	0	0	0	0	131,000	21,700	0	152,700
2019	0	0	0	0	0	143,400	29,300	0	172,700
2020	0	0	0	0	0	154,200	36,400	0	190,600
2021	0	0	0	0	0	164,200	43,100	0	207,300
2022	0	0	0	0	0	173,900	49,700	0	223,600
2023	0	0	0	0	0	183,300	56,100	0	239,400
2024	0	0	0	0	0	192,500	62,400	0	254,900
2025	0	0	0	0	0	201,400	68,500	0	269,900
2026	546	546	0	0	546	209,554	74,500	0	284,054
2027	1,824	1,824	0	0	1,824	216,230	80,400	0	296,630
Total	2,370	2,370	-	-	2,370	216,230	80,400	-	296,630

6. Interstate Water Storage and Requests for Intentionally Created Unused Apportionment (ICUA)

Pursuant to earlier interstate water banking agreements, 601,041 acre-feet of credits are already held in the Southern Nevada Water Authority (SNWA) subaccount. Under the Third Amended and Restated Agreement for Interstate Water Banking, the AWBA no longer has an obligation to accrue future long-term storage credits to be held in the SNWA subaccount. As in the original agreement, any future delivery and storage costs are born by SNWA and are now on a “pay-as-you-go” basis.

Additionally, this Ten-Year Plan assumes that SNWA will not request ICUA during the planning period⁶. The Third Amended and Restated Agreement for Interstate Water Banking authorizes Nevada to request development of ICUA, as follows: in the initial year, an amount not exceeding 20,000 acre-feet; the second year, an amount not exceeding 30,000 acre-feet and in all subsequent years, an amount not exceeding 40,000 acre-feet. Additional ICUA may be requested during shortage years for an amount up to Nevada's 300,000 acre-feet entitlement, but only to the extent sufficient recovery facilities are available that year. If shortages cause a reduction to CAP M&I subcontract supplies, the development of ICUA will be reduced to equal proportions. Existing credits must be recovered by December 31, 2063. Future credits must be recovered within 50 years of the date of storage with the oldest credits recovered first. The agreement terminates when all credits (i.e. existing and future) have been recovered.

Conclusions and Recommendations

The Ten-Year Plan is intended to serve as a guide to assist the AWBA in the development of its Annual Plan of Operation in which the AWBA is required to plan its activities for the following calendar year. As part of the Annual Report, the Ten-Year Plan is reviewed and updated annually. Therefore, it is possible that the Ten-Year Plan may change significantly depending on the goals set by the AWBA and the funding and water supply available to the AWBA. Several conclusions can be reached given this Ten-Year Plan:

- 1) Hydrologic conditions on the Colorado River have improved as a result of the 2016/2017 winter, but have not improved sufficiently to forecast a clear direction.
- 2) While the probability of shortage during this planning period has reduced, the range of potential recovery volumes projected during this planning period has broadened by around 30,000 acre-feet on the high end.
- 3) The AWBA has sufficient Indian firming credits to meet even the most conservative volume (i.e. 98,000 acre-feet) of projected firming requirement for this planning period.
- 4) The Phoenix and Pinal AMA M&I firming goals are achieved in this planning period and without the use of water management credits.
- 5) The Tucson AMA M&I firming goal will not be met during this planning period even if 100% of water management credits in the Tucson AMA are applied to M&I firming leaving another roughly 150,000 acre-feet of credits to meet the goal.
- 6) *Ad valorem* taxes in Maricopa and Pinal Counties are not fully utilized. Should the CAWCD Board decide to use half of the *ad valorem* taxes in Maricopa and Pinal Counties for other purposes going forward, such action would not affect the AWBA's ability to meet its goals by the end of the planning period, but will limit the AWBA's ability to reduce the cost of meeting its goals by making larger purchases of credits in the early years.
- 7) A decision by the CAWCD Board to reduce by half the water storage tax used by the AWBA throughout the planning period will reduce the volume of credits developed in the Tucson AMA by nearly 60,000 acre-feet.

⁶ Communication with Southern Nevada Water Authority June 2017.

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- 8) Withdrawal fee revenues are expected to be the only source of funding for meeting the State's obligation for Indian firming thus limiting the AWBA's ability to assist in other water management objectives.
- 9) Withdrawal fee revenues in the Phoenix and Pinal AMAs are a limiting factor allowing the AWBA to only develop an average of roughly 16,000 acre-feet of credits per year.
- 10) Interstate storage using Arizona's entitlement is not projected during this planning period.
- 11) Requests for ICUA are also not projected during this planning period.

Based on these conclusions, staff recommends the following potential actions:

- 1) Continue focusing on making progress on Indian firming:
 - a. Implement agreements with GRIC.
 - b. Develop and implement agreements for firming obligations to the White Mountain Apache Tribe.
 - c. Fully utilize withdrawal fees in the Pinal and Phoenix AMA to meet Indian firming obligations.
- 2) Continue focusing on developing credits using strategies that do not rely upon Excess CAP water.
- 3) Meet and confer with CAWCD and ADWR staff to evaluate hydrologic conditions on the Colorado River relative to water available to the AWBA and potential firming requirements and adjust models and plans accordingly.
- 4) Meet and confer with CAWCD and ADWR staff to develop an annual credit purchase plan for incorporation into the AWBA Annual Plan of Operation and to secure a resolution from the CAWCD Board reserving funds to support that plan.
- 5) Continue working with CAWCD and ADWR to implement the next steps in the Joint Recovery Plan.
- 6) Meet with CAWCD and ADWR to renew the IGA supporting the operation of the AWBA.
- 7) To enhance communication, reinstitute quarterly meetings with CAWCD and ADWR regarding AWBA operations and finances.
- 8) Support efforts to retain water in Lake Mead.
- 9) Consider developing a contingency fund in the event surplus conditions emerge during the planning period.

APPENDICES

**APPENDIX A. EXCESS CAP WATER DELIVERIES FOR WATER BANKING PURPOSES FOR
CALENDAR YEAR 2016 BY PARTNER AND ACTIVE MANAGEMENT AREA**

Storage Partner Facilities		Volume of Water (Acre-feet)
PHOENIX AMA	Agua Fria Recharge Project	5,754
	Hieroglyphics Mountain Recharge Project	4,907
	Superstition Mountains Recharge Project	7,174
	Granite Reef Underground Storage Project	10,120
	Queen Creek Irrigation District	6,033
	<i>Phoenix AMA Subtotal</i>	33,988
PINAL AMA	Central Arizona Irrigation & Drainage District	5,840
	Hohokam Irrigation & Drainage District	5,840
	Maricopa-Stanfield Irrigation & Drainage District	5,840
	<i>Pinal AMA Subtotal</i>	17,520
TUCSON AMA	Avra Valley Recharge Project	1,150
	Lower Santa Cruz Recharge Project	1,850
	SAVSARP	8,160
	BKW Farms	1,000
	Cortaro-Marana Irrigation District	1,500
	Kai-Red Rock Farms	540
	<i>Tucson AMA Subtotal</i>	14,200
TOTAL DELIVERIES		65,708

APPENDIX B. AWBA CREDITS DEVELOPED IN CALENDAR YEAR 2016

Table 1A. AWBA Long-Term Storage Credits Purchased by Fund and Location

Funding Source & Transaction	Annual		Cumulative	
	Funds Expended	Credits Accrued	Funds Expended	Credits Accrued
Ad valorem Tax				
Phoenix AMA	\$ -	0	\$ -	0
Pinal AMA	\$ -	0	\$ -	0
Tucson AMA ¹	\$ -	0	\$ 3,041,434	14,570
Withdrawal Fees				
Phoenix AMA	\$ -	0	\$ -	0
Pinal AMA	\$ -	0	\$ -	0
Tucson AMA ²	\$ -	0	\$ 22,698	239
Shortage Reparations				
Phoenix AMA	\$ -	0	\$ -	0
Pinal AMA	\$ -	0	\$ -	0
Tucson AMA ²	\$ -	0	\$ 579,842	3,665
Total	\$ -	0	\$ 3,643,973	18,474

¹ Pursuant to Credit Purchase/Sale Agreement with Tucson Water

² Pursuant to § 45-841.01 (Tohono O’odham Nation)

Table 1B. AWBA Firming Credits Developed with the Gila River Indian Community¹

Firming Credits Developed	Annual	Cumulative
Delivery Reimbursement (AF)	12,000	28,000
Cost of Reimbursement	\$1,932,000	\$4,444,000

¹ Firming credits developed pursuant to Exhibit B of IGA between AWBA and GRIC

APPENDIX C. MAJOR ASSUMPTIONS UNDERLYING THE TEN-YEAR PLAN

1. Water Resources
 - a. Excess CAP water will not be available for AWBA purposes during the Ten-Year Plan except in 2018.
 - b. 2017 credits are estimated by AWBA.
 - c. The White Mountain Apache settlement is enforceable in 2021.
 - d. Firming requirements are based on data jointly produced by CAP and ADWR modelers.
 - e. CAWCD's CAP Recharge Facility Priority Policy adopted May 2, 2013 and CAWCD's Procedure for Distributing Excess CAP Water for the Period of 2015 through 2019 adopted March 6, 2014 continue through 2026.
 - f. Assumes US Bureau of Reclamation Colorado River Simulation System April 2017 Model Run, Lake Mead Probabilities of Shortage for the Period 2018 to 2027 for determining shortage, normal and surplus condition for supply and recovery purposes.
2. Financial
 - a. CAWCD's adopted Base Case 2018 to 2022 rate schedule is utilized; post 2022, CAWCD's projected rates used consistent with CAWCD's current long-range financial plan (G. Given dated June 7, 2017).
 - b. Cost to store at groundwater savings facilities is based on the rates shown in Table 4 of the 2017 Plan of Operation held constant.
 - c. Cost to store at non-CAWCD facilities in Tucson is based on rates established in the water storage agreements with Tucson Water.
 - d. *Ad valorem* revenues are based on projections made available by CAWCD (G. Given dated June 15, 2017).
 - e. Use of *ad valorem* revenues are consistent with the joint CAWCD, ADWR and AWBA intergovernmental agreement.
 - f. Withdrawal fee revenues are based on the three-year average for 2013 through 2015 withdrawal fee collections held constant throughout the plan.
 - g. The Director of Water Resources will continue to assess \$2.50/acre-foot for withdrawal fees in the Pinal AMA.
 - h. Budget is based on the projected cost of developing credits as though the AWBA received Excess CAP water directly.
 - i. No general fund appropriations.
 - j. No legislative transfer of funds during planning period except for \$1.6 million already expected for 2018.
 - k. Assumes half of the water storage tax will not be available for AWBA purposes in 2018, but will be available in 2019 going forward.

**APPENDIX D. STORAGE FACILITIES AVAILABLE TO THE AWBA
(as used in the Ten-Year Plan)**

Name of Facility ¹	Facility Permit Expiration	Facility Permitted Capacity (AF)	Capacity Available to AWBA ² (AF)	Year Water Last Stored	Volume of Water Last Stored (AF)
PHOENIX – GSF³					
Queen Creek Irrigation District ³	Dec-15	28,000	7,000	2016	6,033
Subtotal for Phoenix AMA - GSF		28,000	7,000		
PHOENIX – USF					
Agua Fria Recharge Project	May-19	100,000	15,000	2016	5,754
Granite Reef Underground Storage Project	Mar-32	93,000	15,000	2016	10,120
Hieroglyphic Mountains Recharge Project	Dec-21	35,000	15,000	2016	4,907
Tonopah Desert Recharge Project	Sep-25	150,000	0	2014	13,548
Superstition Mountains Recharge Project	Jan-28	25,000	10,000	2016	7,174
Subtotal for Phoenix AMA - USF		403,000	55,000		
PINAL – GSF					
Central Arizona Irrigation & Drainage District	Dec-17	110,000	60,000	2016	5,840
Hohokam Irrigation & Drainage District	Jul-19	55,000	20,000	2016	5,840
Maricopa-Stanfield Irrigation & Drainage District	Dec-19	120,000	60,000	2016	5,840
Subtotal for Pinal AMA - GSF		285,000	140,000		
TUCSON – GSF					
BKW Farms	Mar-20	14,316	1,000	2016	1000
Cortaro-Marana Irrigation District	Mar-19	20,000	5,000	2016	1,500
Kai-Farms – Red Rock ³	Nov-16	11,231	2,000	2016	540
Subtotal for Tucson AMA - GSF		45,547	8,000		
TUCSON – USF					
Avra Valley Recharge Project	Mar-18	11,000	1,500	2016	1,150
CAVSARP	Dec-28	100,000	0	2012	51
Lower Santa Cruz Recharge Project	Feb-19	50,000	25,000	2016	1,850
Pima Mine Road Recharge Project	Sep-20	30,000	7,000	2015	1300
SAVSARP	Jan-28	60,000	15,000	2016	8,160
Subtotal for Tucson AMA - USF		251,000	48,500		
ALL AMAs - GSF		358,547	155,000		
ALL AMAs - USF		654,000	103,500		

¹ As additional facilities are developed, they will be included in future plans.

² This does not reflect the actual "permitted" volume for these facilities; instead for the purposes of this plan, staff relied on average historical storage volumes and potential for future storage and in some cases constraints provided by the facility operator.

³ Permit renewal application pending with ADWR.