**ANNUAL REPORT**

**2023**

ARIZONA WATER BANKING AUTHORITY





**Prepared**

**May 2024**



Arizona Water Banking Authority

Annual Report

2023

**Honorable Katie M. Hobbs**

**Governor of Arizona**

**Members**

**Thomas Buschatzke**

***Chair***

**Mark Clark**

***Vice-Chair***

**Eric Braun**

***Secretary***

**Joseph Olsen, P.E.**

***Member***

**Mark Taylor, P.E.**

***Member***

***Ex officio***

**Senator Sine Kerr**

**Representative Austin Smith**

Table of Contents

[1 Summary 6](#_Toc164250491)

[2 AWBA Commission Members – Calendar Year 2023 7](#_Toc164250492)

[3 2023 Activities 8](#_Toc164250493)

[3.1 Transitioning From Water Storage to Firming 8](#_Toc164250494)

[3.1.1 Stakeholder and Agency Coordination Meetings 8](#_Toc164250495)

[3.1.2 Tribal Firming Obligations 8](#_Toc164250496)

[3.1.3 Agreement to Exchange Long-Term Storage Credits 9](#_Toc164250497)

[3.2 Recovery Planning 9](#_Toc164250498)

[3.3 Adoption of 2024 Plan of Operation 10](#_Toc164250499)

[4 Revenues and Expenditures 12](#_Toc164250500)

[5 Credit Development 14](#_Toc164250501)

[5.1 Long-term Storage Credit Purchases and Accounting 14](#_Toc164250502)

[5.1.1 Long Term Storage Credit Purchases 14](#_Toc164250503)

[5.1.2 Accounting of LTSCs 15](#_Toc164250504)

[5.2 ICS Firming Credits 16](#_Toc164250505)

[6 Credit Distribution or Extinguishment 18](#_Toc164250506)

[7 Ten-Year Plan 18](#_Toc164250507)

[7.1 Credit Development 19](#_Toc164250508)

[7.1.1 Water Availability 19](#_Toc164250509)

[7.1.2 Storage Capacity 19](#_Toc164250510)

[7.1.3 Funding 20](#_Toc164250511)

[7.1.4 Credit Purchases 21](#_Toc164250512)

[7.2 Credit Distribution or Extinguishment 22](#_Toc164250513)

[7.2.1 Timing, Magnitude and Likelihood of Firming 23](#_Toc164250514)

[7.2.2 Tribal Firming for the Gila River Indian Community 25](#_Toc164250515)

[7.2.3 M&I Firming and Recovery Capacity Required 25](#_Toc164250516)

[7.2.4 Agreement to Exchange LTSCs 28](#_Toc164250517)

[7.2.5 Interstate Storage and Requests for Intentionally Created Unused Apportionment 29](#_Toc164250518)

[7.2.6 Estimated Use of AWBA Credits 29](#_Toc164250519)

[APPENDIX 32](#_Toc164250520)

[*APPENDIX A* 33](#_Toc164250521)

List of Tables

**Table 1. Monies Collected, Made Available, and Expended in 2023 by Source of Funds 13**

**Table 2. Cumulative Monies Collected, Made Available, Expended and Remaining Available through 2023 13**

**Table 3. Annual and Cumulative Long-Term Storage Credit Purchases1 15**

**Table 4. Number and Location of LTSCs Purchased in 2023 (AF) 16**

**Table 5. Cumulative LTSCs Accrued through Storage or Purchased through December 2023 (AF) 16**

**Table 6. Cumulative ICS Firming Credits Accrued 17**

**Table 7. Storage Facilities Available to the AWBA 20**

**Table 8. Projected Lower Basin Supply Conditions 23**

**Table 9. Estimated AWBA Firming Volumes through 2026 24**

**Table 10. Firming Proposal for the Gila River Indian Community for Shortage Year 2025 – Tier 1 25**

**Table 11. Estimated Recovery Capacity Needed by Shortage Tier1 26**

**Table 12. Estimated Recovery Capacity Needed by AMA in Tier 31 26**

**Table 13. CAP’s Maximum Available Recovery Capacity by AMA 27**

**Table 14. Uses of AWBA Credits Through 2026 30**

Acronyms and Abbreviations

|  |  |
| --- | --- |
| ADWR | Arizona Department of Water Resources |
| A.R.S. | Arizona Revised Statutes |
| AF | Acre-feet |
| AFY | Acre-feet per year |
| AMA | Active Management Area |
| APO | Annual Plan of Operation |
| AWBA | Arizona Water Banking Authority |
| AWSA | Arizona Water Settlements Act of 2004 |
| CAGRD | Central Arizona Groundwater Replenishment District |
| CAP | Central Arizona Project |
| CAWCD | Central Arizona Water Conservation District |
| Community | Gila River Indian Community |
| CRMMS-ESP | Colorado River Mid-term Modeling System in Ensemble Mode |
| CY | Calendar Year |
| FY | Fiscal Year |
| GSF | Groundwater Savings Facility |
| ICS | Intentionally Created Surplus |
| ICUA | Intentionally Created Unused Apportionment |
| ID | Irrigation District |
| IDD | Irrigation and Drainage District |
| IGA | Intergovernmental Agreement |
| Implementation Plan | Arizona’s Implementation Plan for the LBDCP |
| JSAM | Joint Shortage Analysis Model |
| LBDCP | Lower Basin Drought Contingency Plan |
| LTSC | Long-term storage credit |
| M&I | Municipal and industrial |
| MAF | Million acre-feet |
| MCWA | Mohave County Water Authority |
| Nation | Tohono O’odham Nation |
| NIA | Non-Indian agricultural |
| Reclamation | U.S. Bureau of Reclamation |
| RPAG | Recovery Planning Advisory Group |
| SNWA | Southern Nevada Water Authority |
| USF | Underground Storage Facility |

# Summary

The operation of the Arizona Water Banking Authority (AWBA) continues to evolve. In its initial phase, the AWBA primarily stored excess Central Arizona Project (CAP) water to create long-term storage credits (LTSCs) to mitigate the effects of future Colorado River shortages on municipal and industrial (M&I) 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 grew in certain cases into obligations the AWBA must fulfill. With reductions in excess CAP water supplies and an increased probability of Colorado River shortages, the AWBA is transitioning to its next phase, focusing on making its credits available to mitigate shortages.

The AWBA had no excess CAP water supplies available for storage in 2023. As a result, the AWBA continued to make progress on its firming goals and obligations through the purchase of 1) LTSCs, and 2) Intentionally Created Surplus (ICS) firming credits. In 2023, the AWBA purchased 1,327 acre-feet (AF) of LTSCs in the Tucson AMA. Cumulatively, the AWBA has accrued or acquired 4.39 million acre-feet (MAF) of LTSCs. Of this amount, 3.78 MAF are for Arizona uses and 0.61 MAF are interstate credits stored on behalf of the State of Nevada. Additionally, in 2023 the AWBA developed 7,470 AF of ICS firming credits pursuant to its 2019 agreement with the Gila River Indian Community (Community). Cumulatively, the AWBA has developed 33,790 AF of ICS firming credits.

Tier 1 shortage reductions in 2022 impacted CAP non-Indian agricultural (NIA) pool supplies. As a result, the AWBA had an obligation to firm 6,429 AF for the Community in 2022. In 2023, Tier 2a shortage reductions again impacted CAP NIA pool supplies, resulting in an obligation for the AWBA to firm 14,575 AF for the Community. The federal Bureau of Reclamation’s (Reclamation) Colorado River water supply projections for May 2024 (CRMMS-ESP) indicate a Tier 1 shortage is most likely to be declared in the Lower Basin in 2025 (100 percent probability) and in 2026 (77 percent probability). These projections also show a small likelihood that a Tier 2a shortage condition could be in effect in 2026 (3 percent probability). As a result, the AWBA is most likely to have a cumulative firming requirement of approximately 19,380 AF during the 2025-2026 period.

# AWBA Commission Members – Calendar Year 2023





**Thomas Buschatzke** **– Chair**

Director of Arizona Department of Water Resources

**Mark Clark – Vice-Chair**

Representing mainstream Colorado River contractors

**Eric Braun – Secretary**

Representing CAP M&I subcontractors

A person with a beard smiling

Description automatically generated with low confidence



**Mark Taylor, P.E.**

Representing CAWCD, designated by CAWCD Board President Terry Goddard



**Joseph Olsen, P.E.**

A person knowledgeable in water resource management

*Ex-officio* Members



**Senator Sine Kerr**

Appointed by Senate President Warren Petersen

**Representative Smith**

Appointed by Speaker of the House of Representatives BenToma

# 2023 Activities

The AWBA continued its quarterly meeting schedule in 2023 with meetings held on March 22nd, June 28th, September 13th, and December 5th.

## Transitioning From Water Storage to Firming

In Calendar Year (CY) 2023 the Colorado River operated under a Tier 2a shortage condition. As a result, Arizona’s Colorado River entitlement was reduced by 592,000 AF. This volume included 400,000 AF in reductions under the 2007 operating guidelines[[1]](#footnote-2) and 192,000 AF in additional contributions to Lake Mead under the Lower Basin Drought Contingency Plan (LBDCP). While these reductions did not impact CAP M&I Priority subcontractors or on-River M&I contractors, they did affect CAP NIA Priority water supplies. As a result, the AWBA had a Tribal firming obligation in 2023.

As the likelihood of deeper Colorado River shortages for 2024 advanced throughout the first quarter of CY 2023, AWBA staff held stakeholder meetings to discuss the distribution of LTSCs. Following the 2022-2023 winter, which resulted in a 164% of average snowpack in the upper basin, as well as executed conservation agreements through Reclamation’s implementation of the Inflation Reduction Act (117 H.R. 5376), Reclamation’s April 2023 projections for Colorado River conditions showed a likelihood of shortages that would not impact CAP M&I subcontractors in 2024 through 2026.

### Stakeholder and Agency Coordination Meetings

The AWBA held stakeholder meetings on April 11th and May 2nd to discuss the distribution of AWBA LTSCs for firming CAP M&I Priority subcontract supplies. The AWBA presented two potential alternatives with multiple scenarios to estimate how long firming supplies would last: a phased approach and an incentive-based approach. AWBA staff then built on feedback submitted by CAP M&I subcontractors and the Arizona Municipal Water Users Association to develop and present additional firming scenarios. AWBA staff followed up with individual meetings to discuss stakeholder concerns. Findings, discussions, and comments received during this stakeholder process were archived for the time being.

The AWBA also initiated meetings with the Southern Nevada Water Authority (SNWA), the Colorado River Commission of Nevada (CRCN) and the Central Arizona Water Conservation District (CAWCD) to discuss the creation of Intentionally Created Unused Apportionment (ICUA). A letter dated December 20th, 2023, was received from SNWA with their updated recovery plan for ICUA for the next ten years. The letter outlined their plan for the recovery of 2,500 AF per year by CAWCD, for the period 2025 to 2050. The letter recognized ongoing discussions among SNWA, CRCN, CAWCD and AWBA to modify the start of SNWA recovery of 2,500 acre-feet per year to 2028.

### Tribal Firming Obligations

The AWBA is the State’s agent for meeting the State’s requirements under the Arizona Water Settlements Act of 2004 (AWSA), which became effective and fully enforceable in December 2007. The AWSA required that the Secretary of the Interior develop a Tribal Firming Program to ensure that CAP NIA Priority water supplies made available to Tribes under the AWSA are firmed for a 100-year period (through 2107) to the equivalent of CAP M&I supplies. The AWBA has an obligation under the Tribal Firming Program to firm up to 15,000 AF per year for the Community and up to 8,724 AF per year for future settlements. Although certain future settlements have been identified, these settlements are not yet enforceable. These include the White Mountain Apache Tribe Water Rights Quantification Agreement and the Hualapai Tribe Water Rights Settlement Agreement. Therefore, the AWBA’s Tribal firming obligation in 2023 is limited to the Community.

The AWBA and the Community executed an Intergovernmental Agreement (IGA) for firming June 16, 2015 (2015 IGA). The 2015 IGA identifies several firming methods that may be used to satisfy a firming obligation during a shortage year. The AWBA entered into subsequent agreements to implement or add agreed-upon firming methods, including an IGA in 2016 for the development of firming credits[[2]](#footnote-3) and an IGA in 2019 for the development of ICS firming credits.[[3]](#footnote-4)

Based on CAWCD’s final accounting of 2023 water orders, the AWBA’s firming volume was 14,575 AF. To satisfy this firming obligation, the AWBA and the Community elected to utilize the same firming method as in 2022 and extinguish an equal volume of firming credits (see Section 7.2.2).

### Agreement to Exchange Long-Term Storage Credits

In addition to meeting its Tribal firming obligations, the AWBA also plays an important role in facilitating wet water mitigation under the Implementation Plan. The AWBA entered into an agreement to exchange LTSCs with Phoenix and Tucson AMA CAP M&I Priority subcontractors that agreed to store water at groundwater savings facilities (GSFs) in the Pinal AMA during Tier 1 and Tier 2a shortages between 2020 and 2022.[[4]](#footnote-5) Under the agreement, the AWBA will exchange its LTSCs accrued in the Phoenix and Tucson AMAs for an equal volume of LTSCs accrued by the storing entities in the Pinal AMA. This allows storing entities the ability to recover and use the water in the AMA where they are located.

The AWBA agreed to exchange up to 43,225 AF of LTSCs per year (from 45,500 AF of storage, less a 5 percent cut to the aquifer) for the three-year period. However, since 2020 and 2021 were non-shortage years, the exchange only applied to water stored in 2022. All parties to the exchange delivered supplies for storage in accordance with the agreement but did not initiate the LTSC exchange in 2023. Therefore, the AWBA anticipates exchanging LTSCs starting in 2024. Pursuant to A.R.S. § 45-2457.01(B), the term of the agreement ends December 31st, 2026. Therefore, all exchanges must be completed by this date.

## Recovery Planning

In 2021, the AWBA, CAWCD, ADWR, and the Recovery Planning Advisory Group (RPAG) updated the 2014 Joint Recovery Plan[[5]](#footnote-6) and improved planning level certainty as the potential for Colorado River shortages approaches. The updated recovery plan[[6]](#footnote-7) was subsequently released in May 2021 ([2021 Recovery Update](chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https:/waterbank.az.gov/sites/default/files/2022-02/2021_Update_Joint_Recovery_Plan_0.pdf)). It serves as a companion document to the 2014 Joint Recovery Plan and includes updated hydrologic modeling as well as an analysis of the AWBA’s firming responsibilities. It also incorporates key recovery concepts developed through the RPAG and summarizes the procedural steps for recovery implementation.

As the designated recovery agent for the AWBA, CAWCD is responsible for the recovery of water stored by the AWBA, both for intrastate firming and interstate banking with Nevada. During RPAG discussions in 2021, many CAP M&I subcontractors indicated a preference for utilizing their infrastructure, or that of a partner, to recover AWBA LTSCs for firming, particularly in the near-term. This concept, referred to as Independent Recovery, resulted in a statutory amendment to allow for the distribution of AWBA LTSCs directly to subcontractors for this purpose.[[7]](#footnote-8) The amended statute stipulates that any LTSCs assigned to a subcontractor by the AWBA cannot be sold; and that the subcontractor is responsible for all recovery costs as well as fees assessed by ADWR for the assignment of the LTSCs. Subcontractors that choose to do Independent Recovery will need to enter into a firming agreement with the AWBA. At the September 13, 2022, AWBA Commission Meeting, the AWBA Standard Template Agreements for Firming CAP M&I Subcontractors were approved. By December 2023, the AWBA had received 29 requests to enter into agreement: 17 agreements had been executed; 12 were still in progress. AWBA staff continued monthly coordination with ADWR and CAWCD.

The 2021 Recovery Update also includes a new timeline to provide clarity on recovery implementation for CAP M&I firming. It provides a three-year planning horizon for recovery implementation activities, with action triggers tied to Reclamation’s April Five-Year Probability Table and April 24-Month Study projections. The triggers are described in detail under the Ten-Year Plan section of this report. The timeline is intended to ensure shortage readiness by highlighting critical decision points and deadlines. Neither Reclamation’s April 2023 projections nor its August 24-Month Study indicated a shortage affecting CAP M&I subcontractors within three years. With no projected reduction to CAP M&I Priority supply, no firming was anticipated from the AWBA, and thus no recovery planning consultations were held.

## Adoption of 2024 Plan of Operation

The AWBA 2024 Annual Plan of Operation (APO) was adopted on December 5, 2023. With no excess CAP water supplies available to the AWBA, the 2024 APO focuses on LTSC purchases and developing ICS firming credits to make progress on its CAP M&I and Tribal firming goals. The 2024 APO provides for the development of an estimated 38,769 AF of credits at a total estimated cost of $13.6 million.

Credit acquisitions are anticipated to occur in the Phoenix and Tucson AMAs. Potential LTSC purchases total 33,131 AF and are estimated to cost $11.9 million. Funds include carryover of about $3.3 million in Maricopa County funds and $7.8 million in Pima County funds. These funds were reserved by CAWCD for LTSC purchases for CAP M&I Firming under its 2021 and 2022 Water Storage Tax Resolutions. They are held by CAWCD and deposited in the AWBA’s accounts when LTSC purchase agreements are secured. Total available funds also include an estimated $764,000 in withdrawal fees collected in the Tucson AMA. Additionally, the AWBA anticipates developing 5,638 AF of ICS firming credits for approximately $1.73 million using withdrawal fee revenues collected in the Phoenix AMA.

The Colorado River is operating under a Tier 1 shortage condition in 2024. While this reduction will not impact supplies for CAP M&I subcontractors or on-River M&I contractors, the reductions will result in a Tribal firming requirement of 6,170 AF. The AWBA’s APO identifies the use of firming credits for this purpose.

# Revenues and Expenditures

Arizona Revised Statutes (A.R.S.) § 45-2425 describes the various sources of monies for the Arizona Water Banking Fund. The Arizona Water Banking Fund is administered by the AWBA. In 2023, the AWBA obtained its funding from the following sources:

1. Fees for groundwater pumping, known as withdrawal fees, are collected within the Phoenix, Pinal and Tucson AMAs and charged for water banking purposes at $2.50 per acre-foot in the Phoenix and Tucson AMAs and up to $2.50 per acre-foot in the Pinal AMA. Withdrawal fees can be used by the AWBA for water management purposes, Tribal firming, and CAP M&I firming. LTSCs accrued with these funds must be used to benefit the AMA in which the monies were collected.

The Arizona Legislature authorized the use of $200,000 in the Arizona Water Banking Fund to support the Arizona Navigable Stream Adjudication Commission for fiscal year 2023. Any unused monies are subsequently redistributed to the AWBA. Additionally, as a component of the Drought Contingency Plan, fees levied in the Pinal AMA during calendar years 2020 through 2026 will not be made available to the AWBA, but will be used instead to support groundwater infrastructure and irrigation efficiency projects in the Pinal AMA.[[8]](#footnote-9)

1. As in previous years, the CAWCD Board resolved to retain the water storage taxes levied and collected for the 2022-2023 tax year and to use the funds for meeting operating, maintenance and replacement, and/or repayment costs of the CAP, which includes water storage by the AWBA. The AWBA did not request that the CAWCD Board reserve funds under its resolution for the 2022-2023 tax year because $11.15 million remains available for use from the previous year’s resolutions. Additionally, the AWBA did not request funds for the 2023-2024 tax year adopted in June 2023.
2. The AWBA did not receive a general fund appropriation in 2023.

**Table 1** shows the monies the AWBA collected, monies made available by CAWCD and the monies expended in 2023 by source of funds. **Table 2** shows the total monies received, expended and remaining through December 2023 by source of funds. Remaining funds are committed to activities identified in the APO adopted for the current year. Details of the AWBA’s expenditures for acquiring firming water resources are described in Section 5.

Table 1. Monies Collected, Made Available, and Expended in 2023 by Source of Funds

|  |  |  |  |
| --- | --- | --- | --- |
| **Source of Funds** | **Carryover** | **Collected/Made Available** | **Expended** |
| **General Fund** | **$0** | **$0** | **$0** |
| **State Tribal Firming Appropriation** | **$0** | **$0** | **$0** |
| **Interstate Water Banking1** | **$24,585** | **$995** | **$0** |
| **Water Storage Tax** |  |  |  |
| Maricopa County | $0 | $0 | $0 |
| Pinal County | $0 | $0 | $0 |
| Pima County | $0 | $0 | $0 |
| **Subtotal** | **$0** | **$0** | **$0** |
| **Groundwater Withdrawal Fees** |  |  |  |
| Phoenix AMA | $393,500 | $2,029,062 | $2,230,502 |
| Pinal AMA | $237 | $410 | $538 |
| Tucson AMA | $424,644 | $360,657 | $321,926 |
| **Subtotal** | **$818,381** | **$2,390,129** | **$2,552,966** |
| **TOTAL2** | **$842,966** | **$2,391,124** | **$2,552,966** |

*1 Includes $985 in interest for 2023 and Lehman Brothers bankruptcy distribution of $10.*

*2 Totals may not sum due to rounding.*

Table 2. Cumulative Monies Collected, Made Available, Expended and Remaining Available through 2023

|  |  |  |  |
| --- | --- | --- | --- |
| **Source of Funds** | **Collected/Made Available** | **Expended** | **Remaining1** |
| **General Fund** | **$11,100,865** | **$11,100,865** | **$0** |
| **State Tribal Firming Appropriation** | **$2,578,389** | **$2,578,389** | **$0** |
| **In-Lieu Fund - Mohave County Water Authority Pre-payments** | **$5,123,480** | **$5,123,480** | **$0** |
| **Interstate Water Banking - Nevada2** | **$112,410,510** | **$112,384,930** | **$25,580** |
| **Shortage Reparations - Nevada** | **$8,001,948** | **$8,001,948** | **$0** |
| **Water Storage Tax3** |  |  |  |
| Maricopa County | $147,086,691 | $147,086,691 | $0 |
| Pinal County | $16,585,741 | $16,585,741 | $0 |
| Pima County | $66,001,209 | $66,001,209 | $0 |
| **Subtotal** | **$229,673,641** | **$229,673,641** | **$0** |
| **Groundwater Withdrawal Fees** |  |  |  |
| Phoenix AMA | $38,343,899 | $38,151,839 | $192,060 |
| Pinal AMA | $26,080,409 | $26,080,300 | $109 |
| Tucson AMA | $11,560,193 | $11,096,818 | $463,375 |
| **Subtotal** | **$73,984,500** | **$75,328,957** | **$655,544** |
| **TOTAL4** | **$444,873,333** | **$441,192,210** | **$681,124** |

*1 Remaining funds include monies committed for the 2023 APO.*

*2 Pursuant to the Third Amended Agreement, remaining funds are non-reconcilable for interstate purposes. They include accrued interest and recovered Lehman Brothers bankruptcy monies and are subject to legislative authorization prior to use by the AWBA.*

*3 Monies collected by CAWCD made available to AWBA through direct deposit into the Arizona Water Banking Fund or as an expenditure by CAWCD to offset AWBA delivery and storage costs as part of CAP operation and maintenance costs.*

*4 Totals may not sum due to rounding.*

# Credit Development

The AWBA’s APO for 2023 did not include storage of excess CAP water since these supplies were conserved in Lake Mead to assist in meeting Arizona’s requirement to contribute 592,000 AF to Lake Mead under a Tier 2a shortage condition. As a result, the AWBA relied on other options to develop credits including the acquisition of LTSCs through purchase and payment of ICS developed in Lake Mead as part of the LBDCP. These volumes are detailed in this section, as well as in Appendix A.

## Long-term Storage Credit Purchases and Accounting

The AWBA purchased 1,327 AF of LTSCs at a cost of $321,926. This amount is less than the target volume of 38,650 AF identified in the AWBA’s 2023 APO. While fewer LTSCs were purchased in 2023, unspent funds, including water storage tax funds reserved for this purpose, remain available for AWBA LTSC purchases in subsequent years.

### Long Term Storage Credit Purchases

In 2023, the AWBA purchased LTSCs pursuant to A.R.S. § 45-841.01. The Tohono O’odham Nation (Nation) must offer the AWBA 10 percent of any LTSCs deemed accruable from water stored at the Mission Mine Complex before ADWR can issue a final volume of LTSCs to the Nation.[[9]](#footnote-10) The price for each LTSC is equal to the AWBA’s per acre-foot cost to deliver and store water at a state demonstration project located within 10 miles of the Nation’s storage (i.e. Pima Mine Road Recharge Project) at the time of storage. These LTSCs may be used by the AWBA 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 Nation offered 657.02 LTSCs accrued in 2020 and 669.75 LTSCs accrued in 2021 for purchase. The AWBA accepted the offer and used withdrawal fees collected in the Tucson AMA to purchase these LTSCs.[[10]](#footnote-11)

The AWBA did not purchase additional LTSCs in 2023. The AWBA’s cumulative LTSC purchases and expenditures are identified in **Table 3**.

Table 3. Annual and Cumulative Long-Term Storage Credit Purchases1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Funding Source** | **2023** | | **Cumulative** | |
| **Funds Expended** | **Credits Accrued2 (AF)** | **Funds Expended** | **Credits Accrued**  **(AF)** |
| **4-cent Tax** |  |  |  |  |
| Phoenix AMA | $0 | - | $27,325,567 | 111,120 |
| Pinal AMA | $0 | - | $0 | - |
| Tucson AMA | $0 | - | $11,168,108 | 48,712 |
| **Withdrawal Fees** |  |  |  |  |
| Phoenix AMA | $0 | - | $834,876 | 3,600 |
| Pinal AMA | - | - | - | - |
| Tucson AMA | $321,926 | 1,327 | $1,422,330 | 6,449 |
| **Shortage Reparations** |  |  |  |  |
| Phoenix AMA | $0 | - | $0 | - |
| Pinal AMA | $0 | - | $0 | - |
| Tucson AMA | $0 | - | $579,842 | 3,665 |
| **TOTAL** | **$321,926** | **1,327** | **$41,330,723** | **173,546** |

***1*** *Information on AWBA annual and cumulative LTSCs accrued from water storage at individual facilities can be found on the AWBA’s website,* [*waterbank.az.gov*](http://waterbank.az.gov/)

*2 LTSC purchases in 2023 include 1,327 AF from the Tohono O’odham Nation.*

### Accounting of LTSCs

The AWBA has a statutory requirement[[11]](#footnote-12) to account for all LTSCs accrued by the funding sources used to develop the credits. The number and location of LTSCs for 2023, which were limited to purchases pursuant to A.R.S. § 45-841.01, are identified in **Table 4.** Cumulative LTSCs accrued through storage or purchased by the AWBA through December 2023 are identified in **Table** **5.**

Table 4. Number and Location of LTSCs Purchased in 2023 (AF)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Funding Source** | **Phoenix AMA** | **Pinal AMA** | **Tucson AMA** | **Total** |
| Water Storage Tax |  | - |  | - |
| Withdrawal Fees | **-** | **-** | 1,327 | 1,327 |
| General Fund | **-** | **-** | **-** | **-** |
| **Intrastate TOTAL** | - | - | - | 1,327 |
| Interstate - Nevada | **-** | **-** | **-** | **-** |
| **TOTAL** | **-** | **-** | **1,327** | **1,327** |

Table 5. Cumulative LTSCs Accrued through Storage or Purchased through December 2023 (AF)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Funding Source** | **Phoenix AMA** | **Pinal AMA** | **Tucson AMA** | **Total** |
| Water Storage Tax | 1,582,453 | 234,791 | 512,213 | 2,329,457 |
| Withdrawal Fees | 339,724 | 434,793 | 114,096 | 888,613 |
| General Fund1 | 42,316 | 306,968 | 54,546 | 403,830 |
| **Other Intrastate:** |  |  |  |  |
| Tribal 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** | **1,985,134** | **1,051,184** | **737,676** | **3,773,995** |
| Interstate - Nevada | 60,021 | 440,2412 | 113,584 | 613,846 |
| **TOTAL3** | **2,045,156** | **1,491,425** | **851,260** | **4,387,841** |

*1 Includes 256,174 AF of LTSCs reserved for Mohave County Water Authority in the Pinal AMA pursuant to firming agreements dated February 4, 2005 and December 8, 2010.*

*2 Includes 50,000 AF of LTSCs transferred from CAWCD pursuant to Amended Agreement for Interstate Water Banking.*

*3 Totals may not sum due to rounding.*

## ICS Firming Credits

As part of Arizona’s Implementation Plan, the AWBA entered into an IGA with the Community to purchase 50,000 AF of firming ICS created by the Community.[[12]](#footnote-13) Due to a one-time ten percent reduction for system and evaporation losses, the 50,000 AF of firming ICS resulted in 45,000 AF of ICS credits, referred to as ICS firming credits under the IGA. These credits will be used to satisfy AWBA firming obligations to the Community after 2026. The AWBA has paid incrementally for the creation of firming ICS, which started at a rate of $240 per acre-foot in 2019. The rate schedule has an annual escalator of three percent.

In 2023, the AWBA purchased 8,300 AF of firming ICS for $2,231,040 which resulted in 7,470 AF of ICS firming credits after the 10 percent deduction. Withdrawal fees were used to purchase the firming ICS, which included $2,230,502.4 collected in the Phoenix AMA and $537.60 collected in the Pinal AMA.[[13]](#footnote-14) **Table 6** identifies purchases of firming ICS since 2019 and the resulting ICS firming credits.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Cost / acre-foot** | **Firming ICS Purchased**  **(AF)** | **Total Cost** | **ICS Firming Credits Accrued (AF)** |
| 2019 | $240.00 | 14,660 | $3,518,400 | 13,194 |
| 2020 | $247.20 | 7,100 | $1,755,120 | 6,390 |
| 2021 | $254.40 | 4,662 | $1,186,013 | 4,196 |
| 2022 | $261.60 | 2,822 | $738,235 | 2,540 |
| 2023 | $268.80 | 8,300 | $2,231,040 | 7,470 |
| **TOTAL** |  | **37,544** | **$9,428,808** | **33,790** |

Table 6. Cumulative ICS Firming Credits Accrued

# Credit Distribution or Extinguishment

The AWBA’s APO for 2023 included the extinguishment of firming credits for the purpose of firming the Community under a Tier 2a shortage condition. This volume is detailed in this section, as well as in Appendix A.

The credits developed by the AWBA, including credits developed through non-storage means, are intended to be used for five purposes:

* Firming CAP M&I Priority subcontracts;
* Firming post-1968 Colorado River domestic use contracts;
* Firming the State’s obligation under the AWSA, including LTSCs accrued specifically for the State’s obligation to the United States;
* 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 under the following circumstances: if a shortage is declared on the Colorado River system and demand exceeds supply, if there is a water shortage as defined under the AWSA, or if there is an operational disruption of the CAP. Since the Tier 2a shortage in 2023 impacted the Community, the AWBA extinguished 14,575 firming credits for this purpose (Appendix A). No LTSCs were distributed or extinguished in 2023 for water management purposes or the development of intentionally created unused apportionment (ICUA) for interstate banking purposes. Finally, there were no unplanned CAP outages in 2023.

# Ten-Year Plan

Pursuant to A.R.S. § 45-2426(B)(6), the AWBA is required to annually prepare a Ten-Year Plan that describes any water banking services and interstate water banking it intends to undertake in addition to storing Colorado River water for its three main purposes: (1) protecting Arizona’s M&I water users against future water shortages on the Colorado River and disruptions of operation of the CAP, (2) fulfilling Arizona’s water management objectives as set forth in the Groundwater Code, and (3) making water available to implement the settlement of water rights claims by Indian communities within the state. An analysis of the capacity of the AWBA to complete those activities is also required by statute.

AWBA’s Ten-Year Plan is prepared only for planning purposes and is updated annually based on current information. While the Ten-Year Plan is an essential tool for evaluating potential near-term firming obligations or commitments, significant uncertainty looms for Colorado River water supplies. The 2007 Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead, as well as the 2019 Drought Contingency Plans, will expire in 2026. The Bureau of Reclamation is in the process of developing new operating guidelines to replace the current framework. The resulting operations will affect water supplies available to the Lower Basin. Therefore, this Ten-Year Plan analyzes potential activity for the planning period January 1st, 2025, through December 31st, 2026, and will be utilized in the development of the 2025 APO. The development and the distribution or extinguishment of credits are discussed. The AWBA will continue to work collaboratively with CAWCD, Tribes, and stakeholders to ensure it is well prepared to meet its firming responsibilities.

With shortage conditions anticipated in the coming years, this Ten-Year Plan focuses on AWBA credit distribution for firming purposes and for the creation of ICUA associated with interstate water banking. It assumes there will be no surplus conditions during the planning period and that there will be no excess CAP water even if normal supply conditions were to resume. Should conditions change dramatically on the Colorado River, this assumption will be revised in the future Ten-Year Plans.

## Credit Development

The ability to develop LTSCs is dependent on the availability of water, storage capacity and funding. When planning to store water, the AWBA must consider the availability of each as they are interdependent. The availability of one, or lack thereof, will ultimately affect the others. Similarly, when purchasing LTSCs or other water supplies, the AWBA is also dependent on the availability of supplies and funding with consideration also given to location and market rates.

### Water Availability

Due to anticipated future hydrologic conditions, the AWBA does not expect to have excess CAP water available during the next 10 years. Consequently, this Ten-Year Plan does not assume a certain volume of supplies that could potentially be stored during this time period. While the AWBA could store CAP water that is turned back during the year, the availability of this water cannot be known in advance and is therefore not a consideration in the Ten-Year Plan. Likewise, the AWBA could store water on behalf of others using supplies made available by those entities, such as Nevada’s unused Colorado River entitlement. However, since that storage would not impact the use of excess CAP supplies, it is also not a consideration in this Ten-Year Plan.

### Storage Capacity

**Table 7** shows the permitted storage capacity for all recharge projects where the AWBA holds a permit to store water. Those facilities have a cumulative permitted storage capacity of more than 1.3 MAF per year. Actual storage capacity volumes available to the AWBA in any given year will depend on storage by other entities. If excess CAP water becomes available to the AWBA, or CAP water is turned back during a year, the AWBA should have sufficient storage capacity available.

Table 7. Storage Facilities Available to the AWBA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **AMA** | **GSF/USF** | **Facility Name** | **Facility Permitted Storage Volume (AFY)** | **Facility Permit Expiration Date** |
| Phoenix | GSF | Maricopa Water District | 40,000 | 6/19/2025 |
| Phoenix | GSF | New Magma Irrigation and Drainage District | 80,000 | 7/24/2028 |
| Phoenix | GSF | Queen Creek Irrigation District GSF | 22,000 | 2/15/2029 |
| Phoenix | GSF | Roosevelt Water Conservation District | 85,000 | 2/1/2031 |
| Phoenix | GSF | Salt River Valley Water Users' Association | 117,000 | 11/4/2024 |
| Phoenix | GSF | Tonopah Irrigation District | 17,059 | 3/6/2028 |
| Phoenix | USF | Agua Fria Recharge Project Managed | 24,000 | 12/22/2040 |
| Phoenix | USF | Aqua Fria Recharge Project Constructed | 24,000 | 12/22/2040 |
| Phoenix | USF | Granite Reef Underground Storage Project | 93,000 | 3/13/2032 |
| Phoenix | USF | Hieroglyphic Mountains Recharge Project | 35,000 | 10/31/2042 |
| Phoenix | USF | Superstition Mountains Recharge Project | 56,500 | 1/15/2028 |
| Phoenix | USF | Tonopah Desert Recharge Project | 87,500 | 9/1/2025 |
| Pinal | GSF | Central Arizona Irrigation and Drainage District | 110,000 | 10/10/2023 |
| Pinal | GSF | Hohokam Irrigation and Drainage District | 82,000 | renewal pending |
| Pinal | GSF | Maricopa-Stanfield Irrigation and Drainage District | 168,114 | 9/22/2025 |
| Tucson | GSF | BKW Farms - Main | 14,324 | 3/2/2026 |
| Tucson | GSF | Cortaro Marana Irrigation District | 20,000 | 10/7/2024 |
| Tucson | GSF | Kai Farms (Red Rock) | 11,401 | 2/5/2026 |
| Tucson | USF | Avra Valley Recharge Project | 11,000 | 1/29/2039 |
| Tucson | USF | Central Avra Valley Storage and Recovery Project | 75,000 | 7/7/2035 |
| Tucson | USF | Lower Santa Cruz Replenishment Project | 50,000 | 1/4/2036 |
| Tucson | USF | Pima Mine Road Full Scale | 30,000 | 2/2/2041 |
| Tucson | USF | Southern Avra Valley Storage and Recovery Project | 115,000 | 12/24/2034 |
| **TOTAL** | | | **1,367,898** |  |

### Funding

As indicated previously in Section 4, funding for water storage that benefits Arizona comes from three sources: water storage taxes (i.e., 4-cent water storagetax), 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.

***Water Storage Taxes***

CAWCD has the authority to levy the water storage tax through 2035. The tax may be levied at a rate of up to 4-cent per $100 of assessed property value through tax year 2029 and up to 3-cent for the remainder of the term. LTSCs accrued with these funds will be used to firm CAP M&I supplies during shortages.

This Ten-Year Plan assumes CAWCD will continue to retain the water storage tax revenues but continue to offset AWBA water delivery and storage costs as part of O&M if water becomes available. In accordance with the 2019 IGA between the AWBA, ADWR and CAWCD, the AWBA must request funds from CAWCD annually for all planned LTSC purchases for the following year. The AWBA did not request water storage tax funds for calendar year 2025, as the AWBA does not have LTSC purchase agreements for that year. If necessary, additional funds could be requested during the year.

***Groundwater Withdrawal Fees***

This Plan assumes an estimated $2.4 million in withdrawal fees is collected annually with approximately $2 million collected in the Phoenix AMA and approximately $400,000 collected in the Tucson AMA. Withdrawal fee revenues vary from year to year. As previously noted, withdrawal fees will not be levied for AWBA purposes in the Pinal AMA through 2026. The AWBA can utilize withdrawal fees to further the water management objectives of the AMAs, including firming for CAP M&I subcontracts and implementing Tribal 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.

***General Fund Appropriations***

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 assured.

***Funding for Interstate Storage***

Pursuant to the Third Amended and Restated Agreement for Interstate Water Banking among the AWBA, SNWA, and CRCN (Third Amended Agreement), the AWBA collects all charges for administrative services and for delivery and storage of water. No interstate water banking is expected to occur during the term of this Ten-Year Plan. If any interstate banking does occur, related costs will be incorporated into the APO.

### Credit Purchases

This Ten-Year Plan assumes the AWBA will continue to develop credits through means other than storage. The AWBA has funding available to purchase credits in the near term. However, due to the uncertainties related to the availability of LTSCs, competitive interests, and future market prices, the amount of LTSCs that can be purchased during the planning period cannot be known in advance. In addition to purchasing LTSCs, the AWBA will continue to fund the development of the remaining 7,873.70 AF of the 45,000 total AF of ICS firming credits identified under its agreement with the Community. Assuming the AWBA has $2 million in withdrawal fees available each year from the Phoenix AMA, all ICS firming credits remaining will be purchased by 2026.

## Credit Distribution or Extinguishment

The Ten-Year Plan is an important tool for providing advance notice of potential near-term firming obligations and developing future policies. AWBA firming occurs when Colorado River water supplies are insufficient to meet demand for CAP users and on-River fourth priority users for which the AWBA has firming responsibilities. Factors affecting AWBA firming obligations include Colorado River system hydrologic conditions, the supply available to Arizona, and Colorado River demands within Arizona. The AWBA estimates firming volumes based on Reclamation’s Probabilistic Projections and an analysis of supply and demand using the Joint Shortage Analysis Model (JSAM), a model developed jointly by CAWCD and ADWR. However, the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead, as well as the 2019 Drought Contingency Plans, will expire in 2026. Current firming projections based on JSAM estimate Colorado River demands within Arizona’s priority system and evaluate the timing, frequency and magnitude of shortages that may result in AWBA firming through 2026.

### Timing, Magnitude and Likelihood of Firming

Reclamation’s January Five-Year Probabilistic Projections are used to determine the most likely operating tier, and the JSAM model is used to estimate the corresponding AWBA firming volume. As identified in **Table 8**, the January 2024 forecast developed based on CRMMS-ESP projected a Tier 1 shortage as the most likely operating condition in 2025 (90 percent probability) and in 2026 (47 percent probability). These projections also show that a Tier 2a shortage condition could be in effect in 2026 (27 percent probability).

Table 8. Projected Lower Basin Supply Conditions

|  |  |  |  |
| --- | --- | --- | --- |
| **Operational Tier** | **Tier Reductions (AF)** | **Shortage Probability1** | |
| **2025** | **2026** |
| **Surplus Condition (≥1,145)** |  | **0%** | **0%** |
| **Normal Year (<1145 and >1075)** |  | **0%** | **20%** |
| Normal (<1145 and >1090) |  | 0% | 0% |
| Tier Zero (≤1090 and >1075) | 192,000 | 0% | 20% |
| **Any Shortage (≤1075)** |  | 100% | 80% |
| **Tier 1 Shortage (≥1050 and ≤1075)** | **512,000** | **100%** | **77%** |
| **Tier 2 Shortage (≥1025 and <1050)** |  | **0%** | **3%** |
| Tier 2a (>1045 and <1050) | 592,000 | 0% | 3% |
| Tier 2b (≥1025 and ≤1045) | 640,000 | 0% | 0% |
| **Tier 3 Shortage (<1025)** | **720,000** | **0%** | **0%** |

*1 Shortage probabilities from Reclamation’s Five-Year table projections of future Colorado River system conditions, May 2024 CRMMS-ESP. These projections do not represent the full range of future possibilities that could occur with different modeling assumptions.*

**Table 9** identifies firming requirements for Tribal contractors (CAP NIA priority supplies), CAP M&I subcontractors and on-River M&I contractors for the 2025-2026 period. The most probable firming volumes are highlighted, corresponding to the most probable operational tier each year. Estimated AWBA firming volumes are derived from JSAM. Significant uncertainty for Colorado River water supplies and the development of new operating guidelines prevent the AWBA from showing shortage probabilities for the remainder of the planning period (2027-2034). Information concerning the remaining years will be updated if the data become available. Over the next two years, the AWBA is most likely to have a cumulative firming requirement of approximately 19,380 AF.

Table 9. Estimated AWBA Firming Volumes through 2026

|  |  |  |
| --- | --- | --- |
|  | **Tribal Firming(AF)** | |
| **Operational Tier** | **2025** | **2026** |
| Normal Year (Tier 0) | 0 | 0 |
| Tier 1 Shortage | 9,545 | 9,835 |
| Tier 2a Shortage | 14,867 | 14,773 |
| Tier 2b Shortage | 13,968 | 13,897 |
| Tier 3 Shortage | 12,642 | 12,562 |
| **Most Probable Firming Volumes** | 9,545 | 9,835 |
|  |  | |
| **M&I Firming(AF)** | |
| **Operational Tier** | **2025** | **2026** |
| Normal Year (Tier 0) | 0 | 0 |
| Tier 1 Shortage | 0 | 0 |
| Tier 2a Shortage | 5,382 | 9,268 |
| Tier 2b Shortage | 41,171 | 45,057 |
| Tier 3 Shortage | 95,737 | 99,623 |
| **Most Probable Firming Volumes** | 0 | 0 |
|  | | |
|  | **On-River Firming (AF)** | |
| **Operational Tier** | **2025** | **2026** |
| Normal Year (Tier 0) | 0 | 0 |
| Tier 1 Shortage | 0 | 0 |
| Tier 2a Shortage | 0 | 0 |
| Tier 2b Shortage | 0 | 0 |
| Tier 3 Shortage | 0 | 0 |
| **Most Probable Firming Volumes** | 0 | 0 |
|  |  | |
| **Total AWBA Firming (AF)** | |
| **Operational Tier** | **2025** | **2026** |
| Normal Year (Tier 0) | 0 | 0 |
| Tier 1 Shortage | 9,545 | 9,835 |
| Tier 2a Shortage | 20,249 | 24,041 |
| Tier 2b Shortage | 55,157 | 58,954 |
| Tier 3 Shortage | 108,379 | 112,185 |
| **Most Probable Firming Volumes** | 9,545 | 9,835 |
| **2-Year Total Volumes** | **19,380** | |

### Tribal Firming for the Gila River Indian Community

Under the AWSA, the AWBA, as an agent for the State, is obligated to firm up to 15,000 AF per year (through 2107) of CAP NIA Priority water for the Community when supplies are insufficient to meet demand. The AWBA and the Community entered into an IGA on June 16, 2015, to establish an annual process to ensure the State’s obligations to the Community are satisfied when shortages occur. **Table 10** identifies the estimated firming volume for calendar year 2025. This volume will be amended to reflect actual 2025 water orders as needed. It is anticipated that the remaining firming credits will be utilized before LTSCs accrued on-Reservation are used to satisfy AWBA firming obligations through 2026, although this decision is made annually. After 2026, both ICS firming credits and LTSCs may be used to satisfy the Community's firming obligation. This decision will also be made annually between the Community and the AWBA, pursuant to their 2015 IGA.

Table 10. Firming Proposal for the Gila River Indian Community for Shortage Year 2025 – Tier 1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Firming Credits Developed** | | | **Firming Credits Utilized** | | **Remaining Balance**  **(AF)** |
| **Firming Credits Developed (AF)** | **Cost / acre-foot** | **Total Cost** | **Through CY 20241**  **(AF)** | **CY 20252**  **(AF)** |
| 2015 | 16,000 | $157 | $2,512,000 | 16,000 | - | 0 |
| 2016 | 12,000 | $161 | $1,932,000 | 11,174 | 826 | 0 |
| 2017 | 7,000 | $164 | $1,148,000 | - | 7,000 | 0 |
| 2018 | 9,000 | $160 | $1,440,000 | - | 2,217 | 6,783 |
| **Total** | **44,000** |  | **$7,032,000** | **27,174** | **10,043** | **6,783** |

*1 Based on CAWCD’s final accounting of 2024 water orders. In 2022, the AWBA extinguished 6,429 AF of firming credits. In 2023, the AWBA extinguished 14,575 AF of firming credits. In 2024, the AWBA will extinguish 6,170 AF of firming credits.*

*2 Estimates for 2025 CAP water availability provided by CAWCD, assuming full water orders placed for NIA contracts in 2024.*

### M&I Firming and Recovery Capacity Required

As discussed in the 2021 Update to the Joint Recovery Plan, the AWBA will initiate firming discussions with CAP M&I subcontractors based on a three-year planning horizon. Recovery implementation triggers for M&I firming are tied to Reclamation’s April Five-Year Probability Table and April 24-Month Study. The first trigger occurs when the April Five-Year Probability Table shows a greater than 15 percent probability of a shortage impacting the M&I Priority pool in the third year. The second trigger occurs when the April 24-Month Study forecasts a shortage impacting the M&I Priority pool in the second year based on the “Min Probable” forecast. The third trigger occurs when the April 24-Month Study forecasts a shortage impacting the M&I Priority pool in the following year based on the “Most Probable” forecast. In addition to these annual triggers to initiate progressive levels of coordination, the M&I firming timeline in the 2021 Update to the Joint Recovery Plan highlights critical decision points, deadlines to finalize firming agreements, and the timing of rate notifications for CAP recovery. While the triggers and planning timeline are linear in nature, actual hydrologic conditions could change the need to either accelerate or maintain the planning process.

The AWBA is responsible for the distribution of credits for firming purposes, consistent with its statutory and contractual responsibilities. However, the AWBA is not authorized to recover stored water and must rely on CAP or other recovery partners. Many CAP M&I subcontractors have indicated a preference for Independent Recovery of AWBA LTSCs using their own infrastructure (with no direct reliance on CAP recovery).

To estimate the portion of AWBA firming volumes that might require recovery well capacity, it is necessary to evaluate how shortage reductions impact individual M&I subcontractors’ annual direct uses. In some cases, the reductions to M&I Priority supplies will only impact the ability of a subcontractor to accrue LTSCs for future use, but in other cases, reductions will impact a subcontractor’s annual direct uses. Shortage impacts to CAP M&I Priority water scheduled for delivery to a treatment plant (or used for annual storage and recovery) is relevant for recovery planning, because these direct use impacts affect the annual volume of recovery capacity required for M&I firming. Understanding the timing of these impacts is particularly important because it requires the use of recovery wells that must be available in the year that the shortage reductions occur.

**Table 11** identifies the estimated volume of recovery capacity that may be needed for M&I firming each year for each shortage tier, and **Table 12** identifies the estimated volume of independent and CAP recovery needed in each AMA during a Tier 3 reduction.

Table 11. Estimated Recovery Capacity Needed by Shortage Tier1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Tier 1**  **(AF)** | **Tier 2a**  **(AF)** | **Tier 2b**  **(AF)** | **Tier 3**  **(AF)** |
| 2025 | 0 | 2,397 | 11,899 | 27,285 |
| 2026 | 0 | 4,412 | 14,034 | 29,669 |

*1 Estimated recovery well capacity incorporates 2022 feedback from impacted M&I subcontractors.*

Table 12. Estimated Recovery Capacity Needed by AMA in Tier 31

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Phoenix Independent Recovery**  **(AF)** | **Phoenix**  **CAP**  **Recovery**  **(AF)** | **Pinal**  **Independent Recovery**  **(AF)** | **Tucson Independent Recovery**  **(AF)** |
| 2025 | 3,301 | 21,528 | 1,875 | 580 |
| 2026 | 3,437 | 23,653 | 1,953 | 627 |

*1 Estimated recovery well capacity incorporates 2022 feedback from impacted M&I subcontractors.*

As the AWBA’s designated recovery agent, CAWCD has secured several recovery partnership agreements and continues to explore additional partnerships to increase the volume of recovery capacity available. Within the Phoenix AMA, CAP recovery capacity will likely be made available through the “CAP Board Policy Allowing the Use of the Central Arizona Groundwater Replenishment District Long-Term Contract to Satisfy the Arizona Water Banking Authority’s Firming or Interstate Obligations.” During this ten-year period, CAP may be able to create sufficient recovery capacity through the Central Arizona Groundwater Replenishment District (CAGRD) policy and/or credit exchange partnerships. However, if additional recovery capacity is needed, direct recovery might be necessary. Direct recovery would require the development of wells and conveyance systems and would increase recovery costs. CAWCD continues to work towards direct recovery in the vicinity of the Tonopah Desert Recharge Project (TDRP).  Results from exploratory well drilling on the TDRP site itself indicated that additional well locations would be necessary to achieve target volumes of 10 to 15 KAF/yr.  Based on geophysical explorations that indicated more favorable aquifer transmissivity to the east of the site, CAWCD acquired a 40-acre parcel, and initiated well drilling in 2023.  Test results from the well on the 40-acre parcel were generally more favorable, but overall productivity and water quality remain challenging for full-scale operations.

**Table 13** identifies the volume, terms and conditions of existing CAP recovery partnership agreements. The recovery agreements with New Magma Irrigation and Drainage District (IDD), Queen Creek Irrigation District (ID), Central Arizona IDD, and Maricopa Stanfield IDD collectively satisfy the $5 million commitment made by the CAWCD Board to support groundwater infrastructure development as part of Arizona's DCP implementation.

Table 13. CAP’s Maximum Available Recovery Capacity by AMA

|  |  |  |  |
| --- | --- | --- | --- |
| **Partner** | **Volume**  **(AFY)** | **Agreement Term** | **Conditions** |
| **Phoenix AMA TOTAL** | **22,363** |  |  |
| CAGRD | 6,426 | Undefined |  |
| New Magma IDD1 | 3,687 | 2024-2049 |  |
| Queen Creek ID | 2,250 | 2024-2049 |  |
| Roosevelt Water Conservation District | 10,000 | 2008-2027 |  |
| **Pinal AMA TOTAL** | **12,750** |  |  |
| Arizona Water Company | 2,500 | 2028-2053 | Priority to interstate recovery |
| Central Arizona IDD | 5,250 | 2027-2051 |  |
| Maricopa-Stanfield IDD | 5,000 | 2027-2051 |  |
| **Tucson AMA TOTAL** | **10,000** |  |  |
| Tucson Water | 10,000 | 2020-2050 | Interstate recovery only |
| **Grand TOTAL** | **45,113** |  |  |

*1 The NMIDD agreement contains a ramp of increasing volumes and as such is represented by an average of these volumes.*

CAWCD has entered into two agreements specifically intended to secure capacity for the recovery of the AWBA’s interstate credits.[[14]](#footnote-15) These agreements will be used to develop ICUA when SNWA makes a request. In the Pinal AMA, CAWCD has entered into an agreement with Arizona Water Company for up to 2,500 AF of annual recovery capacity[[15]](#footnote-16). However, this agreement can also be used for other AWBA recovery needs during a year when interstate recovery is not requested. In the Tucson AMA, CAWCD has entered into an agreement with Tucson Water for the recovery of the AWBA’s interstate LTSCs. The agreement with Tucson Water, for up to 10,000 AF of annual recovery capacity (not to exceed 65,000 AF total) can only be used for interstate recovery on behalf of SNWA.

In September 2023, the CAWCD Board of Directors approved a Standard Form CAWCD Firming Water Delivery Agreement for M&I subcontractors who want to be firmed by CAP or want to have their own firming supplies delivered by CAP. This agreement will serve as a water delivery contract for firming water and covers firming water provided by CAWCD (including AWBA credits) or by the CAP M&I subcontractor.

### Agreement to Exchange LTSCs

In 2019, as a component of Arizona’s Implementation Plan for the LBDCP, the AWBA agreed to exchange LTSCs with Arizona parties who agreed to store a portion of their CAP water at GSFs in the Pinal AMA.[[16]](#footnote-17) This exchange allows these entities storing in the Pinal AMA the ability to recover and use the water in the AMA where they are located. The AWBA agreed to exchange its LTSCs for an equal volume of LTSCs accrued by participants. In 2022, participants stored 45,500 AF in the Pinal AMA. Under the agreement, the AWBA can exchange up to 43,225 AF of LTSCs (45,500 AF of storage, less a 5 percent cut to the aquifer). LTSC exchanges (17,815.39 AF) began in the first quarter of 2024. All exchanges must be completed by December 31, 2026.

### Interstate Storage and Requests for Intentionally Created Unused Apportionment

Pursuant to the interstate storage Third Amended Agreement, there is no obligation to accrue a specified volume of LTSCs on behalf of SNWA. Rather, storage is determined annually through mutual agreement and paid for by SNWA in the year storage occurs. As of 2023, the AWBA had 613,846 AF of LTSCs in a separate interstate subaccount for SNWA. Since decisions to store water for Nevada are made as part of the AWBA’s APO, assumptions for interstate storage are not included in this Ten-Year Plan.

The Third Amended Agreement also authorizes Nevada to request development of ICUA, as follows: in the initial year, an amount not exceeding 20,000 AF; the second year, an amount not exceeding 30,000 AF and in all subsequent years, an amount not exceeding 40,000 AF. However, if sufficient recovery capacity exists, SNWA may request the development of additional ICUA to replace reductions in supply during Colorado River shortages up to its annual entitlement of 300,000 AF. This Ten-Year Plan assumes development of 2,500 AF of ICUA on behalf of SNWA beginning in 2028.[[17]](#footnote-18) There are recovery agreements on behalf of SNWA for the development of ICUA that provide up to 12,500 AF per year of recovery capacity.[[18]](#footnote-19) Credits accrued prior to the Third Amended Agreement must be recovered by December 31, 2063. Credits accrued after, such as those accrued in 2018, must be recovered within 50 years of the date of storage with the oldest credits recovered first. The agreement terminates when all credits have been recovered.

### Estimated Use of AWBA Credits

As illustrated in **Table 14** below, the AWBA anticipates utilizing an estimated 19,380 AF of credits to satisfy potential firming obligations for the Gila River Indian Community through 2026, which correspond to 12.4 percent of the credits available at the beginning of 2025.

Table 14. Uses of AWBA Credits Through 2026

|  |  |  |  |
| --- | --- | --- | --- |
| **Location and Objective** | **Estimated Credits Available as of Dec 31, 2024**  **(AF)** | **Estimated Credits Used/Exchanged through 2026**  **(AF)** | **Estimated Credits Remaining End of 2026**  **(AF)** |
| **CAP M&I Firming** | **2,329,457** | **0** | **2,329,457** |
| Phoenix AMA | 1,582,453 | 0 | 1,582,453 |
| Pinal AMA | 234,791 | 0 | 234,791 |
| Tucson AMA | 512,213 | 0 | 512,213 |
| **On-River M&I Firming** | **403,830** | **0** | **403,830** |
| **Tribal Settlement Obligations:** | **156,006** | **19,380** | **139,962** |
| Community - 15,000 AFY | 156,006 | 19,380 | 139,962 |
| *LTSCs* **1** | *105,390* | *2,554* | *102,836* |
| *Firming Credits* **1** | *16,826* | *16,826* | *0* |
| *ICS Firming Credits* | *37,126* | 0 | *37,126* |
| White Mountain Apache Tribe - 3,750 AFY | 0 | 0 | 0 |
| Hualapai - 557.5 AFY | 0 | 0 | 0 |
| **Future Settlements – 4,416.5 AFY** | **0** | **0** | **0** |
| **Federal Assistance**  **(*Southern Arizona Water Rights Settlement Act*)2** |  |  |  |
| *$3 million provided in LTSCs* | **34,102** | **0** | **34,102** |
| **Groundwater Management 3** | **778,120** | **0** | **778,120** |
| Phoenix AMA | 233,596 | 38,475 | 195,121 |
| Pinal AMA | 435,521 | * 43,225 | 478,746 |
| Tucson AMA | 109,003 | 4,750 | 104,253 |
| **Shortage Reparations** | **109,489** | **0** | **109,489** |
| Phoenix AMA | 20,642 | 0 | 20,642 |
| Pinal AMA | 60,507 | 0 | 60,507 |
| Tucson AMA | 28,340 | 0 | 28,340 |
| **Pinal Redirect Credits** | **14,125** | **0** | **14,125** |
| **Interstate - SNWA** | **613,846** | **0** | **613,846** |
| Phoenix AMA | 60,021 | 0 | 60,021 |
| Pinal AMA | 440,241 | 0 | 440,241 |
| Tucson AMA | 113,584 | 0 | 113,584 |

*1 Assumes the use of firming credits and LTSCs accrued on-Reservation because the Community committed to leave ICS in Lake Mead until December 31, 2026.*

*2 Credits could be requested by Reclamation during this time period.*

*3 Reflects maximum volume of credits that could be exchanged pursuant to LTSC exchange agreement under the Implementation Plan by December 31, 2026.*

# APPENDIX

## *APPENDIX A*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Objective and Location** | **Credits Available as of December 31, 20221** | **Credits Used during 2023** | **Credit Acquisitions during 2023** | **Credits Remaining as of December 31, 2023** |
| **AF** | | |  |
| **CAP M&I Firming (4-cent tax)** |  |  |  |  |
| Phoenix AMA | 1,582,453 | 0 | 0 | 1,582,453 |
| Pinal AMA | 234,791 | 0 | 0 | 234,791 |
| Tucson AMA | 512,213 | 0 | 0 | 512,213 |
| **On-River M&I Firming (general fund)** | 403,830 | 0 | 0 | 403,830 |
| **Tribal Settlement Obligations:2** |  |  |  |  |
| Community - 15,000 AFY | **169,281** | **14,575** | **7,470** | **162,176** |
| LTSCs | 105,390 | 0 | 0 | 105,390 |
| Firming Credits | 37,571 | 14,575 | 0 | 22,996 |
| ICS Firming Credits | 26,320 | 0 | 7,470 | 33,790 |
| White Mountain Apache Tribe - 3,750 AFY | **0** | **0** | **0** | **0** |
| Hualapai - 557.5 AFY | **0** | **0** | **0** | **0** |
| **Future Settlements – 4,416.5 AF** | **0** | **0** | **0** | **0** |
| **Federal Assistance (*Southern Arizona Water Rights Settlement Act*)** | **34,102** | **0** | **0** | **34,102** |
| **Groundwater Management3 (Withdrawal Fees)** | **776,265** | **0** | **1,327** | **777,592** |
| Phoenix AMA | 251,411 | 0 | 0 | 251,411 |
| Pinal AMA | 417,706 | 0 | 0 | 417,706 |
| Tucson AMA | 107,148 | 0 | 1,327 | 108,475 |
| **Shortage Reparations4** | **109,489** | **0** | **0** | **109,489** |
| Phoenix AMA | 20,642 | 0 | 0 | 20,642 |
| Pinal AMA | 60,507 | 0 | 0 | 60,507 |
| Tucson AMA | 28,340 | 0 | 0 | 28,340 |
| **Pinal Redirect Credits5** | **14,125** | **0** | **0** | **14,125** |
| **Interstate - SNWA** | **613,846** | **0** | **0** | **613,846** |
| Phoenix AMA | 60,021 | 0 | 0 | 60,021 |
| Pinal AMA | 440,241 | 0 | 0 | 440,241 |
| Tucson AMA | 113,584 | 0 | 0 | 113,584 |
| *1 Credits accrued or acquired through 2022.*  *2 White Mountain Apache Tribe Water Rights Quantification Act enforceability date is December 30, 2027; Hualapai settlement enforceability date is April 15, 2029.*  *3 Withdrawal Fee LTSCs may be used for CAP M&I firming and/or Tribal settlement obligations if needed.*  *4 LTSCs accrued pursuant to the Arizona-Nevada Shortage-Sharing Agreement executed in 2007.*  *5 Credits accrued from water provided to Pinal AMA GSFs at full cost to the GSF operators.* | | | | | |

***2023 AWBA Credit Activity***

1. Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead. [↑](#footnote-ref-2)
2. Agreement between the AWBA and the Community for the Development of Firming Credits effective June 30, 2016, through December 31, 2018. Firming credits developed under the agreement remain available until utilized to meet a firming obligation. [↑](#footnote-ref-3)
3. Intergovernmental Agreement between the AWBA and the Community for the Development of ICS Firming Credits executed May 20, 2019. [↑](#footnote-ref-4)
4. Arizona’s Implementation Plan for the: Agreement to Exchange Long-Term Storage Credits between AWBA and the City of Avondale; City of Chandler; City of Goodyear; City of Peoria; City of Phoenix; City of Scottsdale; City of Tucson; Freeport Minerals Corporation; and EPCOR Water Arizona Inc. [↑](#footnote-ref-5)
5. Recovery of Water Stored by the Arizona Water Banking Authority: A Joint Plan by AWBA, ADWR and CAP, dated April 14, 2014 (2014 Joint Recovery Plan). [↑](#footnote-ref-6)
6. 2021 Update: Recovery of Water Stored by the Arizona Water Banking Authority: A Joint Plan by AWBA, ADWR and CAP, dated May 6, 2021. [↑](#footnote-ref-7)
7. A.R.S. § 45-2457(B)(7) as amended by Senate Bill 1147. [↑](#footnote-ref-8)
8. A.R.S. § 45-611(C)(3), § 45-611(C)(5), § 45-613(D) and § 45-615.01 [↑](#footnote-ref-9)
9. A.R.S. § 45-841.01(F)(3) [↑](#footnote-ref-10)
10. The purchase price was $228/acre-foot for LTSCs accrued in 2020 and $257/acre-foot for LTSCs accrued in 2021. [↑](#footnote-ref-11)
11. A.R.S. § 45-2457 [↑](#footnote-ref-12)
12. IGA between the AWBA and the Community for the Development of ICS Firming Credits executed May 20, 2019. [↑](#footnote-ref-13)
13. 13 Pinal AMA revenues collected in connection with groundwater use fees levied prior to 2020. [↑](#footnote-ref-14)
14. SNWA is responsible for paying the recovery costs to develop ICUA and has therefore, under separate agreements, provided CAWCD $1 million for advancement to both Arizona Water Company and the City of Tucson for this purpose. [↑](#footnote-ref-15)
15. In April 2024, the First Amendment to the Agreement for Funding the Recovery of Long-Term Storage Credits Stored on Behalf of Southern Nevada Water Authority dated April 3, 2024, between SNWA and CAWCD modified the term of the SNWA recovery capacity of 2,500 acre-feet per year at the Arizona Water Company's Underground Storage Facility to January 1, 2028, to December 31, 2053.  A letter agreement between the AWBA, CAWCD, SNWA and CRCN originally dated May 15, 2017, was also amended to reflect this change in the term of SNWA recovery capacity. [↑](#footnote-ref-16)
16. Lower Basin Drought Contingency Plan (“LBDCP”) Implementation Plan: Agreement to Exchange Long-Term Storage Credits between AWBA and the City of Avondale; City of Chandler; City of Goodyear; City of Peoria; City of Phoenix; City of Scottsdale; City of Tucson; Freeport Minerals Corporation; and EPCOR Water Arizona Inc. [↑](#footnote-ref-17)
17. Recovery Funding Agreement for Arizona Water Company Underground Storage Facility Letter Agreement (2024). [↑](#footnote-ref-18)
18. SNWA has also prepaid CAWCD for the recovery of 50,000 AF of LTSCs that were accrued in the Pinal AMA and transferred to the AWBA under the original interstate water banking agreement. [↑](#footnote-ref-19)