



CENTRAL ARIZONA GROUNDWATER
REPLENISHMENT DISTRICT

2018

ANNUAL OPERATIONS REPORT

Supplement to the 2018 Conservation District Annual Report



www.cagr.org

TABLE OF CONTENTS

LIST OF ABBREVIATIONS	i
BRIEF INTRODUCTION TO CAGRD	1
1. Enrollment and Activation	5
2. Replenishment Obligation Incurred and Replenishment Obligation Completed	8
3. Water Supply Program.....	13
A. Water Supply Activity.....	13
B. Summary of Water Supplies.....	16
4. Replenishment Reserve	17
5. Legislative & Administrative Activities	19
6. Other Activity.....	19

LIST OF ABBREVIATIONS

<i>ABBREVIATION</i>	<i>DESCRIPTION</i>
ADWR	Arizona Department of Water Resources
AF	acre-feet
AF/yr	acre-feet per year
AMA	Active Management Area
A.R.S.	Arizona Revised Statutes
AWS	Assured Water Supply
CAP	Central Arizona Project
CAGRD	Central Arizona Groundwater Replenishment District
CAWCD	Central Arizona Water Conservation District
CAWS	Certificate of Assured Water Supply
CDAR	Conservation District Annual Report
DAWS	Designation of Assured Water Supply
GRIC	Gila River Indian Community
GRWS	Gila River Water Storage, LLC
GSF	Groundwater Savings Facility
HOA	Homeowners Association
LARF	Liberty Aquifer Replenishment Facility
LPSCO	Litchfield Park Service Company
LTSCs	Long-term Storage Credits
M&I	Municipal and Industrial
MDWID	Metropolitan Domestic Water Improvement District
ML	Member Land
MSA	Member Service Area
NIA	Non-Indian Agricultural (CAP Priority Pool)
PSA	Purchase and Sale Agreement
SMCFD	Superstition Mountains Community Facilities District
USF	Underground Storage Facility

BRIEF INTRODUCTION TO CAGRD

The Central Arizona Groundwater Replenishment District (CAGRD) was established in 1993 to provide a method for landowners and water providers to demonstrate one of the requirements necessary to secure a 100-year Assured Water Supply (AWS) under Arizona law. CAGRD recharges Central Arizona Project (CAP) water and other water supplies to replenish groundwater used by its members in excess of the limits established by the Arizona Department of Water Resources (ADWR) AWS Rules.

The AWS Rules limit the quantity of mined groundwater that an applicant may use to demonstrate an AWS. This groundwater use limitation prevents new development from relying solely on mined groundwater to satisfy its water demands. If a landowner or water provider has no direct access to CAP water or other renewable supplies, but has access to sufficient groundwater to demonstrate an AWS, it may use groundwater, provided it becomes a member of CAGRD. As a member, the landowner or water provider must pay CAGRD to replenish any groundwater pumped by the member which exceeds the pumping limitations (referred to as “Excess Groundwater”) imposed by the AWS Rules.

CAGRD is operated by the Central Arizona Water Conservation District (CAWCD) throughout the portion of CAWCD’s three-county service area that is within an Active Management Area (AMA). It is governed by the CAWCD Board of Directors yet CAGRD’s finances are completely separate from the rest of CAWCD's finances and all costs incurred by CAGRD must be paid by CAGRD members.

Membership

Enrollment in CAGRD is voluntary. Any city, town, private water company, subdivision or homeowner’s association located in the Phoenix, Pinal or Tucson AMA may join CAGRD so long as it meets the State’s requirements. CAGRD is comprised of two types of members: Member Service Areas (MSAs) and Member Lands (MLs).

- MSA - The service area of a city, town, district or private water company, including any extensions of the service area. The municipal water provider is required to submit a report to CAGRD annually identifying the volume of total water delivered and the volume of groundwater pumped within the service area and must pay CAGRD replenishment taxes on groundwater volumes pumped in excess of the pumping limitations imposed by the AWS rules. When applying to enroll a service area in CAGRD, the applicant provides a projection of future population, water demands and renewable supplies available to meet those demands. These projections serve as a basis for estimating CAGRD’s long-term replenishment obligation for the service area.

Membership in CAGRD enables the water provider to receive a Designation of Assured Water Supply (DAWS), issued by ADWR, for its service area.

- ML – An individual subdivision with a defined legal description. The water provider agrees to submit annually to CAGRD the water delivery information necessary to calculate the replenishment assessment for each parcel of land enrolled within the subdivision. A ML water provider does not have a DAWS. Instead, each individual subdivision must receive its own, separate Certificate of Assured Water Supply (CAWS) from ADWR, and enrollment in CAGRD enables it to do so.

Replenishment Obligation

CAGRD must replenish in each AMA the amount of Excess Groundwater¹ that has been pumped by or delivered to its members in that AMA. The replenishment may be accomplished through: 1) the operation of underground storage facilities, where water is recharged underground into existing aquifers; 2) through groundwater savings facilities, where water is used directly by irrigation districts in lieu of pumping groundwater; or 3) through the extinguishment of long term storage credits (LTSCs) held by CAGRD. Water used for replenishment may be CAP water or water from any other lawfully available source, except groundwater withdrawn from within an AMA. A.R.S. § 48-3771.A requires CAGRD to “complete” the replenishment of its Parcel Replenishment Obligation within three calendar years after it is incurred. By statute, CAGRD Parcel Replenishment Obligation is fulfilled or “complete” when CAGRD’s conservation district account has been credited to reflect either the storage of replenishment water or the transfer of LTSCs in sufficient volume to meet the parcel replenishment obligation.

Revenue Sources

All operations of CAGRD must be funded completely by its members. These costs are covered by a combination of up-front fees, annual membership dues, and replenishment taxes and assessments. Each type of revenue source is dedicated to specific purposes and helps cover costs associated with replenishment activities, such as development of infrastructure, recharge facility construction, water supply acquisition, operation and maintenance, replenishment reserve accruals and administration. CAGRD also has the authority to issue revenue bonds to

¹ Excess Groundwater is defined in A.R.S. § 48-3701.7 as the amount of groundwater delivered to a member in a calendar year in excess of the amount of groundwater that may be used by the member in that calendar year consistent with the applicable Assured Water Supply rules adopted by ADWR for the AMA where the member is located.

develop infrastructure and acquire water rights necessary to perform its replenishment obligation.

MSAs pay CAGRD for replenishment services performed on behalf of their service area, as well as annual membership dues. Individual property owners in MLs each pay a special assessment to CAGRD based on their excess groundwater use, as well as annual membership dues, collected through the annual property tax assessment.

Planning

Plan of Operation - Every ten years, CAGRD is required to submit a Plan of Operation to the Director of ADWR. The primary purpose of the Plan is to document the actions of CAGRD over the past ten years and to describe the activities that CAGRD proposes to undertake in each AMA during the ten-year and 100-year periods following Plan submission. CAGRD's 2015 Plan of Operation ("2015 Plan") was approved by the Director of ADWR on August 5, 2015 and covers the ten-year period from 2015-2024. CAGRD continues to operate under this Plan until the next plan is submitted by 2025.

Board Strategic Plan - One objective of the CAWCD 2016 Board of Directors Strategic Plan, specific to the management and oversight of CAGRD, involves review of CAGRD status as compared to projections in the Plan of Operation often enough to provide comfort to the Board, staff, stakeholders and legislators. Two action items were identified as part of this review:

1. Perform and document a formal review of CAGRD at least every five years.
2. Prepare an annual report showing membership and corresponding projections of obligations and include it as part of the annual report filed with ADWR.

Mid-Plan Review - The Mid-Plan Review (Item #1 above) is a comprehensive assessment of the mid-term trends in CAGRD operations under the Plan of Operation. The Mid-Plan Review provides indications of where these trends may lead CAGRD over the remaining five years of the Plan. The first Mid-Plan Review was completed in 2011 during the 2005 Plan of Operation period and the next Mid-Plan Review is currently underway and scheduled for completion by early 2020.

Annual Reporting - The Conservation District Annual Report (CDAR) is submitted to ADWR by August 31 of each year for the previous calendar year (A.R.S. § 48-3775.E). The CDAR details numerical information in a series of tables showing water storage amounts, credit transfers, account balances, groundwater replenishment obligations, contract replenishment obligations and contract replenishment credit accounting.

The Board has directed staff to develop an enhanced annual report (Item #2 above), hereafter referred to as the CAGRD Annual Operations Report, that serves to supplement the CDAR with additional information on the status of CAGRD operations. More specifically, the Annual Operations Report provides further details in a narrative format on new enrollment, up-to-date replenishment obligations, water supply and replenishment reserve activities and any new legislation and administrative activities that occurred in the report year.

The first CAGRD Annual Operations Report was completed in late 2015 for calendar year 2014, which was the final year covered under the 2005 Plan of Operation. This fifth CAGRD Annual Operations Report was completed in fall 2019 for calendar year 2018, the fourth year covered under the 2015 Plan of Operation. Completion of the Annual Operations Report will always follow submittal of the CDAR to ADWR. This report was submitted to ADWR in October 2019 and posted on the CAGRD website at www.cagrd.com.

1. Enrollment and Activation

Enrollment

The vast majority of new ML enrollment in 2018 occurred in the Phoenix AMA and was comprised of 31 subdivisions with 8,035 lots with a projected demand of 5,056 acre-feet per year (AF/yr) (see **Table 1.1**). The West Valley encompassed 73% of new membership (6,019 lots) with a projected annual demand of 3,984 AF/yr associated with new enrollment. The East Valley encompassed 25% of new membership (2,016 lots) with a projected annual demand of 1,072 AF/yr. One subdivision, with 151 lots and a projected demand of 64 AF/yr, enrolled in the Pinal AMA. This was the first new enrollment from the Pinal AMA in seven years. Additionally, one subdivision, with 37 lots and a projected demand of 39 AF/yr, enrolled in the Tucson AMA in 2018.

TABLE 1.1

NEW MEMBER LAND (ML) ENROLLMENT IN 2018

AMA	ML Lots*	Projected Demand AF/yr
Phoenix	8,035	5,056
<i>West Phoenix</i>	<i>6,019</i>	<i>3,984</i>
<i>East Phoenix</i>	<i>2,016</i>	<i>1,072</i>
Pinal	151	64
Tucson	37	39
TOTAL	8,223	5,159

TABLE NOTE: *The term Member Land (ML) refers to a subdivision enrolled in CAGR; numbers reflect the number of lots or homes within the subdivisions.

Member land enrollment in 2018 was more than double the enrollment seen in 2017, when just 3,972 lots enrolled. Enrollment in the Tucson AMA increased slightly (one new subdivision in 2018 compared to no enrollment in 2017). Though one subdivision enrolled within the Pinal AMA, it is not likely to receive its Certificate of Assured Water Supply from ADWR soon, since there are ongoing issues with proving physical availability of groundwater supplies in the Pinal AMA. Enrollment in the Phoenix AMA more than doubled in 2018 compared to 2017. There was also a shift in West versus East Phoenix AMA enrollment, with substantially *more* enrollment in the West Valley and *less* enrollment in the East Valley compared to 2017.

No new Member Service Areas enrolled in 2018.

CAGR also experienced continued de-enrollment activity in 2018. Five Phoenix AMA subdivisions representing 188 lots de-enrolled from CAGR membership. Portions of these areas were subsequently re-platted and re-enrolled.

Comparison of Actual ML Enrollment in 2018 to Projected ML Enrollment in 2018 (as projected in 2015 Plan of Operation)

Recovery in the CAGRD service area housing market has not yet occurred to the level projected by the Association of Governments, the assumption used in the 2015 Plan of Operation. This largely explains the discrepancy shown in **Table 1.2**, which shows that actual service area enrollment in 2018 was about 40 percent lower than ML enrollment projected in the Plan.

TABLE 1.2

**COMPARISON OF ACTUAL ML ENROLLMENT IN 2018
TO PROJECTED 2018 ML ENROLLMENT**

AMA	Actual 2018 ML Enrollment^a	Projected 2018 ML Enrollment^b
<i>Phoenix</i>	8,035	11,571
<i>Pinal</i>	151	1,102
<i>Tucson</i>	37	1,154
TOTAL	8,223	13,827

TABLE NOTES:

^a2018 CAGRD Annual Operations Report, Table 1.1.

^b2015 Plan of Operation. For the housing unit projection methodology, refer to the New Demand Section 3.2.2 (pg. 3-2) of the 2015 Plan of Operation.

Activation

The Arizona Department of Real Estate issues a public report allowing the sale of lots within subdivisions. Prior to this report being issued for subdivisions within CAGRDL MLs and MSAs, an Activation Fee must be paid to CAGRDL per residential unit offered for sale. In 2018, the number of lots activated totaled 13,840 (Member Land lots = 6,820; Member Service Area lots = 7,020). **Table 1.3** provides a breakdown by AMA of previously enrolled lots that were activated in 2018.

TABLE 1.3
NUMBER OF LOTS ACTIVATED IN 2018

AMA	MLs	MSAs
Phoenix	6,101	4,149
Pinal	239	302
Tucson	480	2,569
TOTAL	6,820	7,020

Compared to 2017, more member land and member service area lots were activated in 2018 overall. There was an increase of 32 percent in activated ML lots, while MSA activations increased by about 61 percent since the previous year. The only decline in activations, year over year, was in the Tucson AMA MSA lots, which decreased by just 12 percent.

On the MSA side, the Phoenix MSA with the most activated lots in 2018 was Johnson Utilities' Phoenix AMA division, while Pinal MSA activations were mainly sited in Johnson Utilities' Pinal AMA division. And Tucson AMA MSA activations had the greatest share originating in the City of Tucson. Overall the steadily increasing payment of activation fees indicates that housing construction within CAGRDL member lands and service areas continues to make a comeback.

2. Replenishment Obligation Incurred and Replenishment Obligation Completed

A municipal water provider serving MLs is required by statute to file an annual report with CAGRD for each ML subdivision that it serves; this report must indicate the volume of total water and the volume of groundwater delivered to each parcel in the subdivision, as well as a calculation of Excess Groundwater delivered. MSAs also are required by statute to file an annual report with CAGRD indicating the volume of total groundwater and the volume of Excess Groundwater pumped within their service areas. These reports must be submitted to CAGRD by March 31st of each year, and the volumes reported represent pumping or deliveries from the previous year (“the Report Year”). CAGRD must complete its Replenishment Obligation within three calendar years after it is incurred. Therefore, at any given point in time there may be one or more years of obligation unfulfilled.

The replenishment obligation reflects the volume of Excess Groundwater delivered by municipal water providers serving CAGRD ML subdivisions and withdrawn by MSA providers within their service areas. In 2018, CAGRD incurred a replenishment obligation of 28,927 acre-feet (AF). **Table 2.1** shows the distribution of obligation between MLs and MSAs by AMA. Overall, the total obligation was 77% within MLs and 23% within MSAs. The 2018 obligation amounted to a decrease over the 2017 obligation (30,187 AF) with similar contributions by AMA and from MLs versus MSAs.

Table 2.1

EXCESS GROUNDWATER DELIVERIES FOR MLs AND MSAs in 2018 (AF)
By AMA

AMA	MLs	MSAs	TOTAL
Phoenix	20,777	5,027	25,804
Pinal	33	519	552
Tucson	1,410	1,161	2,571
TOTAL	22,220	6,707	28,927

Tables 2.2, 2.3, 2.4, and 2.5 list the volumes of Excess Groundwater delivered/withdrawn from 2015 through 2018 along the top row. The tables also identify the extent to which the replenishment obligation resulting from those deliveries has been completed. Recent activity is shown, specifically for the past four years, showing that CAGRD has met its obligation within the statutory replenishment timeframe. In 2018, CAGRD completed 41,783 AF of replenishment obligation as shown in **Tables 2.2 through 2.5** (refer to 2018 rows).

The following explanation is offered to assist in interpreting these tables. Please refer to **Table 2.2** showing a comparison of the Excess Groundwater Obligation to completion of replenishment obligation for the West Phoenix AMA.

The top row shows the year in which deliveries or withdrawals of Excess Groundwater occurred. For example, the 2015 column illustrates that a total of 13,001 AF of Excess Groundwater was delivered to MLs and/or withdrawn by MSAs in 2015 in the West Phoenix AMA. Fulfillment of this obligation occurred over a one-year period: all 13,001 AF was fulfilled in 2016. The two rows along the bottom of the table showing the “Amount Completed to Date” and “Amount Unmet to Date” reflect ongoing replenishment activities to fulfill or complete the obligation associated with Excess Groundwater deliveries. For example, the 2018 column illustrates a total of 14,200 AF of Excess Groundwater was delivered or withdrawn in 2018; in 2018, all 14,200 AF was replenished, leaving zero remaining obligation in the West Phoenix AMA.

Table 2.2

**EXCESS GROUNDWATER DELIVERIES AND
COMPLETION OF REPLENISHMENT OBLIGATION
For West Phoenix AMA**

WEST PHOENIX AMA		EXCESS GROUNDWATER OBLIGATION BY REPORT YEAR* (AF)			
		2015	2016	2017	2018
		13,001	11,904	11,951**	14,200
YEAR AND VOLUME (AF) OBLIGATION COMPLETED	2015				
	2016	13,001	4,884		
	2017		7,020	9,008	
	2018			2,943	14,200
Amount Completed to Date		13,001	11,904	11,951	14,200
Amount Unmet to Date		0	0	0	0

TABLE NOTE: *Report Year refers to year in which Excess Groundwater was delivered to each ML or withdrawn from each MSA; volumes reported in hundredths have been rounded to whole numbers for this report, resulting in minor discrepancies of 1 AF in some totals.

** Obligation shown differs from 2017 Annual Operations Report by 4.35 AF due to water provider reporting errors following submittal of 2017 CDAR; CDAR is not amended, however, change in obligation is reported the following year.

Table 2.3

**EXCESS GROUNDWATER DELIVERIES AND
COMPLETION OF REPLENISHMENT OBLIGATION**
For East Phoenix AMA

EAST PHOENIX AMA		EXCESS GROUNDWATER OBLIGATION BY REPORT YEAR* (AF)			
		2015	2016	2017	2018
		14,435	15,990	14,691**	11,604
YEAR AND VOLUME (AF) OBLIGATION COMPLETED	2015				
	2016	14,435			
	2017		15,990		
	2018			14,691	7,319
Amount Completed to Date		14,435	15,990	14,691	7,319
Amount Unmet to Date		0	0	0	4,213

TABLE NOTE: *Report Year refers to year in which Excess Groundwater was delivered to each ML or withdrawn from each MSA; volumes reported in hundredths have been rounded to whole numbers for this report, resulting in minor discrepancies of 1 AF in some totals.

** Obligation shown differs from 2017 Annual Operations Report by 14.82 AF due to water provider reporting errors following submittal of 2017 CDAR; CDAR is not amended, however, change in obligation is reported the following year.

Table 2.4

**EXCESS GROUNDWATER DELIVERIES AND
COMPLETION OF REPLENISHMENT OBLIGATION**
For Pinal AMA

PINAL AMA		EXCESS GROUNDWATER OBLIGATION BY REPORT YEAR* (AF)			
		2015	2016	2017	2018
		397	488	674	552
YEAR AND VOLUME (AF) OBLIGATION COMPLETED	2015				
	2016				
	2017	397	488	2	
	2018				
Amount Completed to Date		397	488	2	0
Amount Unmet to Date		0	0	672	552

TABLE NOTE: *Report Year refers to year in which Excess Groundwater was delivered to each ML or withdrawn from each MSA; volumes reported in hundredths have been rounded to whole numbers for this report, resulting in minor discrepancies of 1 AF in some totals.

Table 2.5

**EXCESS GROUNDWATER DELIVERIES AND
COMPLETION OF REPLENISHMENT OBLIGATION
For Tucson AMA**

TUCSON AMA		EXCESS GROUNDWATER OBLIGATION BY REPORT YEAR* (AF)			
		2015	2016	2017	2018
		2,469	2,540	2,852	2,571
YEAR AND VOLUME (AF) OBLIGATION COMPLETED	2015				
	2016	1,153			
	2017	1,316	2,065		
	2018		475	2,083	
Amount Completed to Date		2,469	2,540	2,083	0
Amount Unmet to Date		0	0	768	2,571

TABLE NOTE: *Report Year refers to year in which Excess Groundwater was delivered to each ML or withdrawn from each MSA; volumes reported in hundredths have been rounded to whole numbers for this report, resulting in minor discrepancies of 1 AF in some totals.

Comparison of Actual Obligations in 2018 to Projected Obligations in 2018 (as projected in 2015 Plan of Operation)

The 2015 Plan obligation projections are tied to housing unit growth as well; thus, actual obligations in 2018 (28,927 AF) were lower than the Plan projection of 36,627 AF (**Table 2.6**). However, there were other factors that contributed to lower-than-anticipated obligation. They include obligation avoidance strategies by certain ML water providers (for instance, the Town of Queen Creek is relying more heavily or sometimes completely on the ML groundwater allowances, as permitted), and the elimination of a minimum reporting requirement for MLs enrolled before 2004, per the CAGRD member Agreements. The impact of these factors on CAGRD obligation are discussed in more detail in the Mid-Plan Review.

TABLE 2.6

**COMPARISON OF ACTUAL REPLENISHMENT OBLIGATION IN 2018
TO PROJECTED 2018 REPLENISHMENT OBLIGATION
(Replenishment Obligation Reflected by Excess Groundwater Deliveries)**

AMA	MLs		MSAs	
	Actual 2018 Obligation ^a	Projected 2018 Obligation ^b	Actual 2018 Obligation ^a	Projected 2018 Obligation ^b
<i>Phoenix</i>	20,777	25,570	5,027	5,974
<i>Pinal</i>	33	111	519	799
<i>Tucson</i>	1,410	2,636	1,161	1,537
TOTAL	22,220	28,317	6,707	8,310

TABLE NOTES:

^a2018 CAGRD Annual Operations Report, Table 2.1.^b2015 CAGRD Plan of Operation.

3. Water Supply Program

A description of CAGRD's Water Supply Program for 2018 is provided under two headings: Section A - **Water Supply Activity** and Section B - **Summary of Water Supplies**. Section A describes both new activity in the program for 2018 and on-going activity carried over into 2018. Discussion of new activity in 2018 will identify whether new physical supplies became available during the reporting year or will become available at some future date as specified in the associated contract or agreement. Section B serves to show an overall picture of CAGRD's water supplies for 2018, summarizing the volume of water supplies CAGRD had available going into the year, water accrued or acquired during the year, and the total volume available at the end of the year.

A. Water Supply Activity

New or Amended Agreements

In November 2018, the CAWCD Board approved three water supply acquisition agreements and a \$2.5 million contributed funds agreement (GRIC assistance for Pinal AMA recovery activities) between CAGRD, Gila River Indian Community (GRIC) and Gila River Water Storage, LLC. (GRWS). These acquisitions, excluding potential shortage impacts, provide CAGRD with an annual renewable water supply of 33,185 AF/yr for 25 years (2020 through 2044) plus 70,375 AF of Phoenix AMA LTSCs, for a combined total of 900,000 AF of water over the duration of the agreements. The acquisition is comprised of: 1) CAP Non-Indian Agricultural (NIA) Priority Water Lease for 18,185 AF/yr, 2) Recovery and Exchange Agreement for 15,000 AF/yr (recovered Pinal AMA LTSCs for GRIC Indian Priority water) and 3) the purchase of 375,000 AF of Pinal AMA LTSCs.

On May 20, 2019, the aforementioned water supply agreements were signed and formally executed as part of the Lower Basin Drought Contingency Plan signing ceremony held at Hoover Dam. In 2019, CAGRD will file the appropriate applications with ADWR to implement these agreements, which include two water storage permits at GRIC's Olberg Dam Underground Storage Facility (USF), a Recovery Well Permit in the Pinal AMA and a Notice of Water Exchange. All LTSC purchases associated with these agreements were approved by ADWR in August 2019 and will be reflected in CAGRD's 2019 Annual Operation Report.

Purchase of Long-Term Storage Credits

Single Transaction LTSC Purchase Agreements

In calendar year 2018, CAGRD did not enter into any single transaction LTSC Purchase and Sale Agreements (PSAs).

Multi-Year LTSC Purchase Agreements

In 2018, a total of 30,190 AF of LTSCs were purchased through previously initiated, multi-year purchase agreements. **Table 3.1** lists the LTSC purchases by AMA and the volumes associated with each transaction.

TABLE 3.1

LTSCS PURCHASED IN 2018 THROUGH MULTI-YEAR
PURCHASE AGREEMENTS (AF)

AMA	LTSCs
<i>Phoenix</i>	
Greenstone (prev. Mojave Ventures)	14,311
Liberty Utilities/LARF	4,298
Florence, Town of	1,885
Superstition Mountains CFD	402
<i>Phoenix AMA Subtotal</i>	20,896
<i>Tucson</i>	
City of Tucson	5,000
Greenstone (prev. Mojave Ventures)	4,044
MDWID	250
<i>Tucson AMA Subtotal</i>	9,294
TOTAL	30,190

A description of LTSC purchase and sale agreements executed prior to 2018 are provided below.

Town of Florence Credit Purchase Agreement: In 2016, CAWCD and the Town of Florence (Florence) entered into an agreement where Florence agreed to sell CAGR D all storage credits accrued by delivering its 2,048 AF/yr CAP M&I subcontract entitlement water to Tonopah GSF, located in the Phoenix AMA, from 2018 through 2022. The agreement consists of a 5-year initial term with three successive 5-year rights of renewal for a total term of 20 years. This agreement is expected to add approximately 9,730 AF of LTSCs during the initial term and 38,920 AF of LTSCs over the full 20-year term.

Litchfield Park Service Company Credit Purchase Agreement: A 2013 agreement between CAWCD and Litchfield Park Service Company (LPSCO) resulted in the purchase of nearly 18,500 AF of LTSCs accrued by delivering effluent to Roosevelt Irrigation District from 2013 to 2017. That agreement was superseded in 2017 by the “Agreement for Development of Effluent Recharge Facility, Effluent Disposal and Purchase and Sale of Effluent”, completed in 2014 between CAWCD and Liberty Utilities (owner of LPSCO). This agreement provides a separate framework for purchase of LTSCs that Liberty generates at their effluent recharge facility (the Liberty Aquifer Replenishment Facility) for 100 years, starting in 2017. As part of that agreement CAGR D also acquired a lease of 2,400 AF/yr of effluent produced by Liberty and delivered to the effluent recharge facility.

Mojave Ventures/Greenstone Credit Purchase Agreement: In 2013, CAWCD and Mojave Ventures entered into an agreement where Mojave Ventures agreed to sell and transfer to CAGR D a total of approximately 18,355 AF of LTSCs (14,311 AF from Phoenix AMA and 4,044 AF from Tucson AMA) each year from 2014 through 2020. The total volume of LTSCs to be acquired under this contract is 128,485 AF. In 2017, Greenstone purchased all Mojave Ventures’ assets in Arizona, including the credit purchase agreement. Credit purchases under this agreement will be completed in 2020.

Superstition Mountains Community Facilities District No. 1 Purchase Agreement: In 2015, CAWCD and Superstition Mountains Community Facilities District No. 1 (“SMCFD”) entered into an agreement where SMCFD agreed to sell and transfer a minimum of 1,500 LTSCs over the duration of the agreement. The LTSCs eligible for purchase include LTSCs generated in 2014 through 2019 at the SMCFD USF. Treated effluent is recharged at the Superstition Mountains USF via infiltration basins and recharge wells. The current agreement ends in 2020. Through 2018, CAGR D has acquired 2,500 AF of LTSCs from SMCFD.

City of Tucson Credit Purchase Agreement: In 2013, CAWCD and the City of Tucson (“Tucson”) entered into an agreement where Tucson agreed to sell and transfer 100,000 AF of Tucson AMA LTSCs to CAGR D. CAGR D has committed to purchasing 4,000 AF of credits each year for 25 years and retains an option to purchase up to an additional 1,000 AF of LTSCs in any given year. Through 2018, CAGR D has acquired 25,000 AF of LTSCs through this agreement.

Metro Water Credit Purchase Agreement: CAWCD and Metropolitan Domestic Water Improvement District (Metro) entered into a credit purchase agreement in 2015. Under this Agreement, Metro will sell to CAGR D a minimum of 250 LTSCs, up to a maximum of 1,000 LTSCs, each year. The Agreement was amended in 2017 to change the storage facility at which the credits would be accrued. This agreement will be effective until 2061 if the option for two additional 10-year terms is exercised beyond the initial 25 year term. CAGR D has acquired 500 AF of LTSCs through 2018 under this agreement.

B. Summary of Water Supplies

CAGRD CAP Entitlement

As of March 14, 2016, CAGRD holds an annual entitlement to 8,311 AF of CAP Municipal & Industrial (M&I) Priority water pursuant to the “Supplemental Contract between the U.S. and CAWCD for Delivery of CAP Water, Contract No. 14-06W-245, Exhibit A, Amendment No. 2, Supplement No. 1 as amended,” (“Supplemental Contract”). The Supplemental Contract is for permanent water service.

CAGRD Effluent Entitlement

CAWCD acquired 2,400 AF annually of effluent produced at the Palm Valley Water Reclamation Facility in Goodyear as part of the “Agreement for Development of Effluent Recharge Facility, Effluent Disposal and Purchase and Sale of Effluent” completed with Liberty Utilities in 2014. This 100-year lease of the effluent entitlement became effective in 2017 with the completion of the Liberty Aquifer Replenishment Facility (LARF), where the leased effluent is recharged. Approximately 1,345 AF of this effluent supply was recharged at the LARF in 2018, with the balance being recharged at the Roosevelt Irrigation District Groundwater Savings Facility (GSF).

CAGRD Long-Term Storage Subaccount

In 2018, CAGRD began the year with a balance of 298,659 AF in the Long-Term Storage Subaccount. As discussed previously in the section subtitled **Purchase of Long-Term Storage Credits**, an additional 30,190 AF of LTSCs were purchased bringing the total number of LTSCs in the CAGRD Long-Term Subaccount to 328,849 AF by calendar year’s end. **Table 3.2** provides a summary of the LTSC balances by AMA.

TABLE 3.2

CAGRD LONG-TERM STORAGE SUBACCOUNT IN 2018 (AF)

AMA	Balance of CAGRD LTSCs at end of 2017	LTSCs Transferred to CAGRD in 2018	Balance of CAGRD LTSCs at end of 2018
<i>Phoenix</i>	186,184	20,896	207,080
<i>Pinal</i>	0	0	0
<i>Tucson</i>	112,475	9,294	121,769
TOTAL	298,659	30,190	328,849

TABLE NOTE: The LTSC balances in this table do not include LTSC reserves associated with the City of Scottsdale's Water Availability Status membership in CAGRD.

4. Replenishment Reserve

The Replenishment Reserve consists of LTSCs that CAGR D accrues in a Replenishment Reserve Subaccount established for each AMA where CAGR D operates. The purpose of the Replenishment Reserve is to help ensure that CAGR D will be able to meet its replenishment obligation and to enhance rate stability. During periods of water supply shortage or infrastructure failure, CAGR D may use LTSCs from the Replenishment Reserve to offset its replenishment obligation, rather than purchasing spot-market water which may be more costly during shortage or outage conditions.

CAWCD LTSCs Dedicated for CAGR D Replenishment Reserve

The Board has dedicated LTSCs held by CAWCD for exclusive use by CAGR D to meet its legal requirements to establish and maintain the CAGR D Replenishment Reserve Subaccounts for each AMA or to meet its annual replenishment obligations. CAGR D chose to withhold from purchasing credits in 2018, when they would be priced at a higher cost than the published CAP water rate for 2019 (more detail below). Thus, just under 585,000 AF of CAWCD LTSCs remain reserved for CAGR D purchase and use under CAWCD Board policy.

CAGR D Replenishment Reserve Subaccount

CAGR D accrues LTSCs through a combination of storage in constructed Underground Storage Facilities (USFs), storage at Groundwater Savings Facilities (GSFs), purchases of pre-existing LTSCs, and LTSC transfers from MSAs who wish to off-set the replenishment reserve component of their Replenishment Tax. **Table 4** provides the Replenishment Reserve balance at the end of 2017, the number of credits accrued during 2018, and the resulting balance of LTSCs in the Replenishment Reserve at year end, by AMA. Also shown is the percent of the Reserve Target goal achieved through the end of 2018. The volume of LTSCs to be accrued in the Replenishment Reserve is known as the “Reserve Target”. A Reserve Target must be identified for each AMA based on that AMA’s projected obligation and the water supplies planned to be used to meet that obligation as described in the Plan of Operation (refer to the 2015 Plan for additional explanation and calculation of the Reserve Target; www.cagrd.com).

In 2018, CAGR D began the year with a balance of 218,643 AF in the Replenishment Reserve Subaccounts (2017 CDAR). However, as described above, no LTSCs were purchased for the purpose of the Replenishment Reserve in 2018. CAGR D made the decision to withhold from purchasing credits in 2018 since the published CAP water rate, which it pays to purchase LTSCs held by CAWCD, would be less expensive in 2019. CAGR D is scheduled to purchase twice the amount of credits it normally purchases annually, in 2019, to continue building the Replenishment Reserve. In the Tucson AMA, one MSA transferred 19 AF of credits to the Replenishment Reserve in order to off-set the replenishment reserve component of their

Replenishment Tax. Thus, the 2018 year-end balance increased by only 19 AF, to 218,662 AF, representing 29% of the overall Reserve Target.

TABLE 4

Replenishment Reserve Subaccount Balance and Target Achieved for 2018 (AF)

AMA	Replenishment Reserve Balance 12/31/17	Replenishment Reserve Accruals During 2018	Replenishment Reserve Balance 12/31/18	Reserve Target	% of Reserve Target Achieved 12/31/18
<i>Phoenix</i>	179,738	0	179,738	603,866	30%
<i>Pinal</i>	4,289	0	4,289	48,036	9%
<i>Tucson</i>	34,616	19	34,635	112,600	31%
TOTAL	218,643	19	218,662	764,502	29%

5. Legislative & Administrative Activities

There were no CAGRD-related legislative or administrative activities to report in 2018.

6. Other Activity

Third-Party Marketing of LTSCs to ML Homeowners Associations

First described in the 2015 Annual Operations Report, third-party entities began marketing LTSCs to homeowners associations (HOAs) within CAGRD MLs in 2015 as an alternative to receiving excess groundwater and paying CAGRD assessments. The concept involves individual ML property owners, such as an HOA, obtaining a recovery permit for one of their water provider's wells, purchasing LTSCs from a third-party, and entering into an agreement whereby the water provider would recover the LTSCs on behalf of the property owner and "wheel" the recovered water in lieu of groundwater that would otherwise be delivered to the property. The LTSCs may be used to reduce or eliminate the property's replenishment obligation and thereby reduce the CAGRD assessment for that year.

In 2018, the total amount of credits wheeled and recovered within Member Land subdivisions, in order to reduce or eliminate a property's replenishment obligation, was 542 AF within the Phoenix AMA. No wheeled and recovered LTSCs were reported in the Pinal or Tucson AMAs.