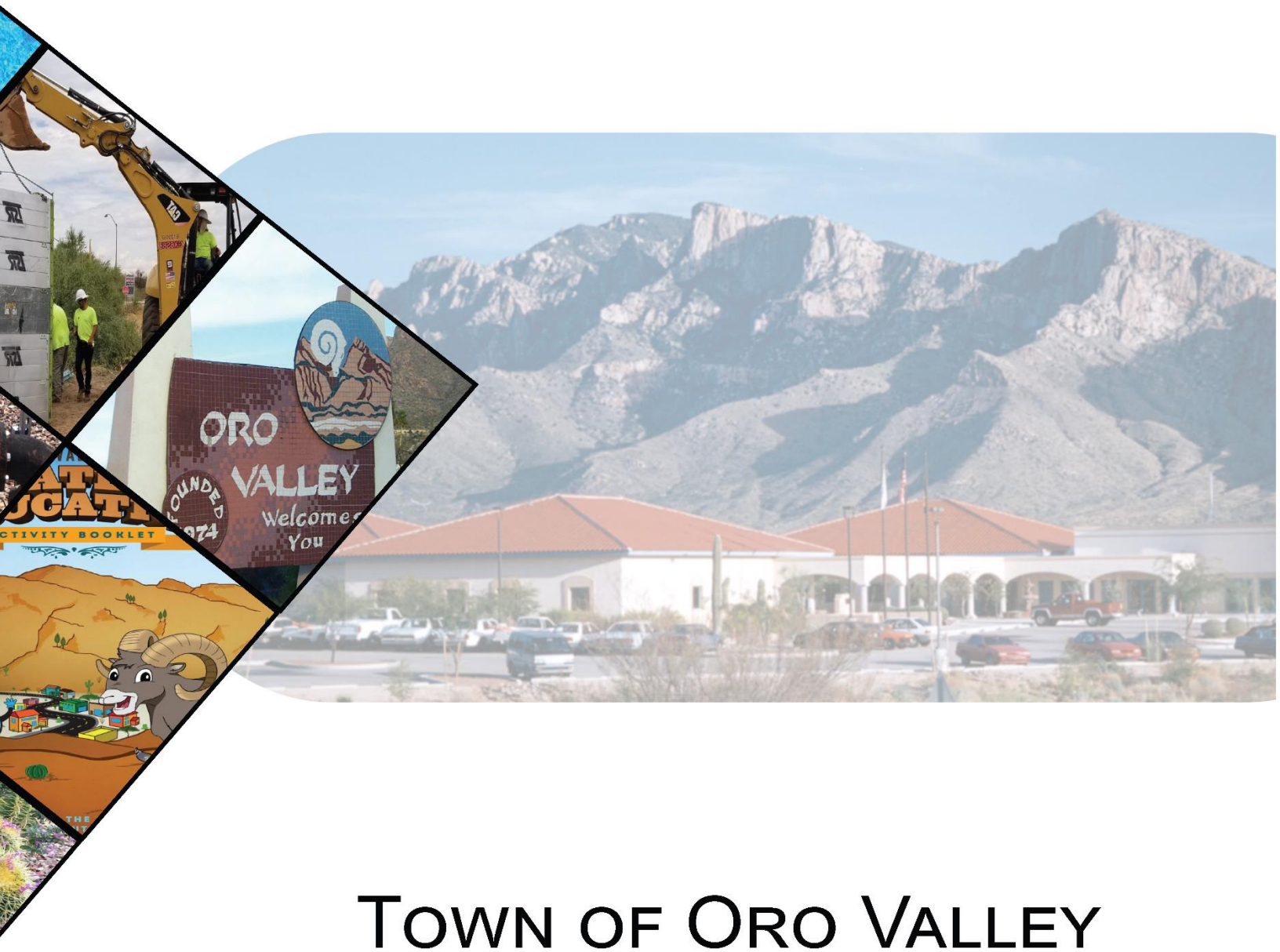
ANNUAL REPORT 2022



Town of Oro Valley Water Utility

TOWN OF ORO VALLEY
WATER UTILITY ANNUAL REPORT
APRIL 2022

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TOWN OF ORO VALLEY
WATER UTILITY
ANNUAL REPORT
APRIL 2022

ORO VALLEY TOWN COUNCIL

Joseph C. Winfield, Mayor
Melanie Barrett, Vice Mayor
Timothy Bohen, Councilmember
Harry "Mo" Greene, II, MD, Councilmember
Joyce Jones-Ivey, Councilmember
Josh Nicolson, Councilmember
Steve Solomon, Councilmember

ORO VALLEY WATER UTILITY COMMISSION

Charlie Hurt, Chair – Resigned January 2022
Tom Marek, Chair
Greg Hitt, Vice Chair
Alan Forrest, Commissioner – Appointed March 2022
Chuck Hollingsworth, Commissioner
Byron McMillan, Commissioner
Robert Milkey, Commissioner
Patricia Olson, Commissioner – Appointed March 2022
Rick Reynolds – Resigned August 2021

TOWN STAFF

Mary Jacobs, Town Manager
Peter A. Abraham, P.E., Water Utility Director
Lee Jacobs, P.E., C.P.M., Engineering Division Manager
Mary Rallis, C.P.A., Water Utility Administrator
Danielle Tanner, Senior Office Specialist

Special thanks to the Utility staff that provided support in the preparation of this report:

David Allred	Gracie Hauvermale	Adam Pence	Christian Swanson	Karn Boyce
Jeffrey Kane	Charles Payne	Eric Reynaga	Irene Swanson	

ABOUT THE WATER UTILITY COMMISSION

The Oro Valley Water Utility Commission is appointed by the Oro Valley Mayor and Council (Mayor and Council). The Mayor and Council have jurisdiction over rates, fees and water management issues. In March of 1996, the Mayor and Council created the Oro Valley Water Utility Commission (commission) to act as their advisory body. Please refer to the Town Water Code, Article 15-4, on the Town website at http://www.codepublishing.com/AZ/OroValley/

The commission is composed of seven members that shall serve terms of three years. The commissioners are selected to give a balanced representation of residential and commercial/turf interests served by the Utility.

The primary responsibility of the commission is to review and make recommendations on Oro Valley Water Utility topics that require Mayor and Council action. These topics may include water system development, long-term water resource planning, rate adjustments, five-year capital improvement program, state and federal legislation regarding water related issues, expansion of service areas and water acquisitions. The commission also supports community programs and education related to the Oro Valley Water Utility.

The commission welcomes the public to attend its meetings. The commission meets the second Monday of each month, unless otherwise posted. All meetings are noticed on the Town's website at https://www.orovalleyaz.gov/Government/Departments/Town-Clerk/Meetings-and-Agendas

In 2021, the commission held 10 Water Utility Commission meetings. Work performed or reviewed by the commission in 2021 included:

Meeting Date	Action Item
January 11, 2021	Election of Commission Chair and Vice Chair Appointments to Subcommittees
February 8, 2021	Recommendation on Water Rates Review of Northwest Recharge, Recovery and Delivery System project
March 8, 2021	Recommendation for acceptance of the Annual Report
April 12, 2021	Guest Speaker on the genesis of the Utility's water resource portfolio: Alan Forrest, Principal Consultant of AF Engineering Consulting
May 10, 2021	Conservation program by Conservation Specialist
June 14, 2021	10-Year Water Resource Strategic Plan 10-Year CAP Water Wheeling Delivery Plan
August 9, 2021	Water Quality program by Water Quality Lead Operator
September 13, 2021	Review and comment on Fiscal Year 2022/23 Cost of Service Study
October 12, 2020	Review and comment on Conservation and Water Quality Sections
November 15, 2021	Facility tour to the Kai Farms Groundwater Savings Facility

Additional notable items on commission agendas in 2021 include:

- Recommendation on Mayor and Council Water Policy A-2a(3)
- Review and comment on groundwater metrics and wellfield condition

Notable issues planned for commission review or action in 2022 include:

- Recommendation for acceptance of the Annual Report
- Recommendation for acceptance of the Water Rates
- Northwest Recharge, Recovery and Delivery System project (NWRRDS) review
- Review of Conservation and Water Quality programs
- Water resource usage
- Capital Improvement Projects
- Utility financial review
- Field trips/guest speakers TBD

In addition to the regular commission meetings, there are meetings conducted by standing subcommittees. The 2021 subcommittee membership is as follows:

Finance Subcommittee
Tom Marek, Chair
Chuck Hollingsworth
Robert Milkey

Water Resources and Conservation Subcommittee:
Byron McMillan, Chair
Greg Hitt
Charlie Hurt

COMMITTEE REPORTS

In accordance with the Town's Water code *Article 15-4-5 Committee Reports* the commission shall render to the Town Council an annual report on or before April 1st. This report is prepared by the Utility staff and reviewed by the commission for completeness and accuracy.

The Water Utility staff would like to thank the commission for their detailed review and contributions to ensure the accuracy of this annual report.

WATER UTILITY COMMISSION 2022

Charlie Hurt
Chair
Resigned January 2022

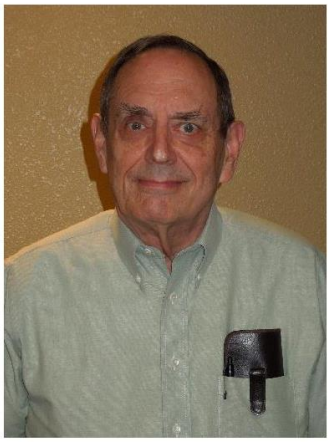
Tom Marek
Chair

Greg Hitt
Vice Chair

Alan Forrest
Commissioner
Appointed March 2022

Chuck Hollingsworth
Commissioner

Byron McMillan
Commissioner



Robert Milkey
Commissioner

Patricia Olson
Commissioner
Appointed March 2022

Rick Reynolds
Commissioner
Resigned August 2021

EXECUTIVE SUMMARY

This section summarizes the activities of the Water Utility Commission, the Utility's operations, capital projects, water resource portfolio and financial management.

WATER RESOURCES

The Utility operates two water systems, the Oro Valley Water Service Area and the Countryside Water Service Area. There are three sources of supply: groundwater, Central Arizona Project water and reclaimed water. Groundwater is pumped from the wells in the aquifer below the water service areas, blended with the Central Arizona Project water and then delivered through the potable drinking water distribution system. Reclaimed water is for non-potable uses and is predominantly used for irrigation on golf courses, parks and athletic fields. The potable drinking water system is completely isolated from the reclaimed water system.

TABLE 1

Total Water Produced in 2021 (Acre Feet)			
Groundwater	**CAP Water**	**Reclaimed Water**	**Total Water Produced**
4,997	2,671	1928	9,596

The Utility uses Central Arizona Project water in the following three ways:

1) Recharge and recover water for delivery to the potable water systems in both Oro Valley and Countryside
2) Recharge for replacement credit to apply to water pumped from the Utility's wells
3) Recharge and store water in recharge facilities for future use

As of December 31, 2021, the Utility has accrued an estimated 29,500 acre feet of long-term storage credits and has a Groundwater Allowance Account balance of approximately 19,230 acre feet.

CUSTOMER SERVICE

At the end of 2021, the Utility had 20,966 customer connections serving a population of approximately 47,000 residents in the service area. Utility water sales revenues totaled $14.7 million for fiscal year 2020-21.

WATER CONSERVATION

The Utility encourages water conservation by informing and educating customers. Specifically, in 2021, the following conservation efforts were accomplished:

- First edition of the quarterly newsletter *Behind the Meter*
- Additional publications: Water Wisdom Video Series and Virtual Welcome Guide
- Over 8,200 automated alerts sent with water savings of over 16.5 million gallons
- 45% of leaks confirmed by customers on WaterSmart were related to irrigation

WATER UTILITY OPERATIONS

Water Operations are a 24 hour per day, seven days per week operation. Staff performed routine maintenance on all production and distribution facilities. Utility personnel inspected new development projects and the Utility's capital projects. In 2021, Water Operations completed the following:

- Commission – La Reserve Reservoir
- Staff cross training – internal and external employees
- Warranty replacement of 2 faulty water reservoir mixing units
- Distribution maintained 1,587 water valves, replaced 3 valves and performed 55 valve adjustments

WATER QUALITY

In 2021, the Utility received 2,704 analytical results for required water sampling and operational data. The water system is in compliance with the Arizona Department of Environmental Quality and the United States Environmental Protection Agency requirements.

FINANCIAL HIGHLIGHTS

The Utility continues to be fiscally sound. The water rate study for FY 2022/23 resulted in a recommendation to increase the base rates and commodity rates for potable water customers. These proposed changes will result in a monthly increase of $1.79 per month for a customer with a 5/8-inch meter using 7,000 gallons month. Customers with a 5/8-inch meter represent 87 percent of the total customer base and include residential, commercial and irrigation classifications with the majority being residential. The proposed changes will be presented to the Town Council in June 2022 and, if adopted, the new potable water changes would become effective in July 2022.

All current water rates, fees and charges including impact fees are available to view on the Town website at https://www.orovalleyaz.gov/town/departments/water-utility/rates-and-fee

TOWN OF ORO VALLEY
WATER UTILITY
ANNUAL REPORT
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INTRODUCTION

This report provides information to the Mayor and Council and the public on the annual work of the Water Utility Commission and updated information on the Oro Valley Water Utility (Utility). The report outlines how the divisions within the Utility work together to provide the community with reliable and safe water supplies. Through partnerships with other professional water agencies, the Utility maintains water quality standards, protects the groundwater supply, and conducts long-term planning for water resources and capital infrastructure. The report details how the Utility maintains financial health through analyzing and initiating responsible water rates and through cost recovery for new development. This report provides information and details activities for calendar year (CY) 2021 with additional financial information reported for the fiscal year (FY) ending June 30, 2021.

WATER RESOURCES

The primary function of the Utility is the production and efficient use of available water resources that meet or exceed water quality standards. To ensure long-term sustainability, the Utility works closely with regional water providers, state agencies and the development community in planning for future water resource requirements. Utility staff closely monitors all water resources in the Utility's water portfolio. The water portfolio includes groundwater, Central Arizona Project (CAP) water entitlement, reclaimed water entitlement, long-term storage credits and groundwater allowance account credits.

Current Water Supply includes groundwater, CAP water and reclaimed water. The Utility operates in two separate water service areas: the Oro Valley Water Service Area (OVWSA) and the Countryside Water Service Area (CSWSA). The CSWSA was acquired by the Town with the acquisition of the private water companies in 1996. This small satellite service area is located approximately two miles from the western boundary of the Town. Data from these two service areas is combined for regulatory reporting purposes. The following table provides the water production in acre feet (AF) for both service areas in 2021.

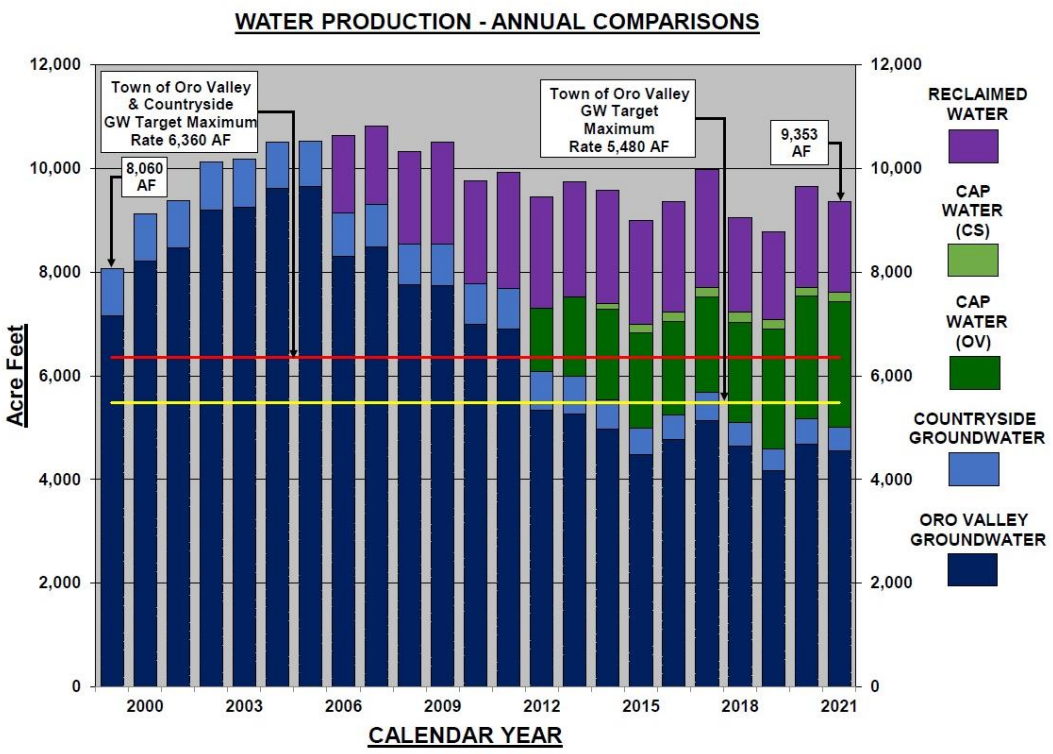
TABLE 2

Total Water Production in 2021			
Water Resources	**OVWSA**	**CSWSA**	**Totals**
Groundwater	4,544 AF	453 AF	4,997 AF
CAP Water	2,494 AF	176 AF	2,670 AF
Reclaimed Water	1,872 AF	----	1,872 AF
Total	**8910 AF**	**629 AF**	**9,539 AF**

Total water production for 2021 was 183 acre feet less than the total water production in 2020. This decrease is due to customer response to a wetter than average summer compared to 2020.

Figure 1 shows total water production in each service area from 2000 through 2021. The components of total water production include 1) groundwater production 2) CAP water utilization and 3) reclaimed water utilization. The graph depicts the decrease in overall water production for 2021 as compared to 2020 as well as the dramatic decrease in groundwater utilization since 2005.

FIGURE 1



Groundwater target maximums are also illustrated on the graph shown in Figure 1. These target amounts were defined in a study entitled *Groundwater Sustainability Evaluation of the Oro Valley Aquifer* dated March 14, 2007. The study concluded that the annual groundwater production flow rate for wells in the OVWSA should be established at 5,480 acre feet and 880 acre feet for wells in the CSWSA. In 2021, Oro Valley pumped 936 acre feet less than the groundwater target maximum production rate for the OVWSA wells and 427 acre feet less than the target maximum production rate for the CSWSA wells. The groundwater production targets have not been exceeded since 2011.

Groundwater remains the primary potable water resource for the Utility. In 2021, the Utility's 18 groundwater production wells produced 53 percent of the Utility's total water production.

Table 3 highlights the production capacity in all wells, the storage capacity in all reservoirs and the average rise or decline in static water levels for the wells in both service areas at the end of CY 2020.

TABLE 3

	Groundwater Production Capacity	Storage Capacity (Gallons)	Average Water Level +Rise/-Decline
OVWSA	13.1 MGD	11 Million	-0.58 Feet
CSWSA	2.2 MGD	1 Million	-2.51 Feet

On an individual basis, groundwater level changes in 2021 for active wells varied from a rise of 4.12 feet to a decline of 7.66 feet. Details on static groundwater levels for individual wells may be found in **Appendix A**.

Central Arizona Project (CAP) Water is the Utility's only other potable water resource. In 2021, the Utility's four CAP wheeling locations delivered 28 percent of the Utility's total water production. The Utility delivers its entire annual CAP entitlement of 10,305 acre feet to several recharge facilities in the Tucson Active Management Area. In 2021, the Utility purchased the entire entitlement for use as follows:

1) Recharge and recover water for delivery to the potable water system
2) Recharge and replace water pumped from the Utility's wells
3) Recharge and store water in recharge facilities for future use

When Oro Valley's CAP water is recharged and recovered for delivery, it is first delivered to Tucson Water's Central Avra Valley Storage and Recovery Project. The recharged CAP water is then recovered and delivered (wheeled) through the Tucson Water system to various connection points on the Oro Valley system for delivery to Utility customers.

The Utility has an Intergovernmental Agreement (IGA) with Tucson Water enabling the delivery of CAP water to customers through four connections to the Tucson Water system. There are three CAP water connection points in the OVWSA. One is located on Vista del Sol, north of Naranja Drive a second connection is on Calle Buena Vista, south of Calle Concordia and a third is located near Oracle and Hardy. CAP water is also delivered to the CSWSA at a connection located on Camino de Oeste, just north of Linda Vista Blvd. The Utility delivered 2,670r acre feet of CAP water in 2021 thus reducing its reliance on groundwater. CAP water deliveries are shown in Table 4.

TABLE 4

CAP Water Deliveries in 2020	
Locations	**Delivery**
Vista Del Sol (OVWSA)	1,618 AF
Calle Buena Vista (OVWSA)	395 AF
Oracle & Hardy (OVWSA)	480 AF
Camino De Oeste (CSWSA)	177 AF
Total	**2,670 AF**

In calendar year 2017, the Town of Oro Valley, Metro Water and the Town of Marana began collaboration on the development of a unique IGA to construct a future project known as the Northwest Recharge, Recovery and Delivery System (NWRRDS). The IGA was unanimously approved by each governing body in March of 2017. This agreement provides another means for the Town to deliver CAP water to the Utility's service areas. The project is estimated to be completed in FY 2024 and will allow for the annual delivery of up to an additional 4,000 acre feet of recovered CAP water.

The reservoirs on the Colorado River supply water to the CAP and other water projects in the lower basin states of Arizona, California and Nevada. In addition, these reservoirs provide required water deliveries to Mexico. This Colorado River water storage decline is due to the extended drought the basin has experienced for over 20 years as a result of decreased precipitation and snowpack. This has decreased flow in the river creating significant water level declines in Lake Mead and Lake Powell, resulting in historically low reservoir levels. Over the last 21 years, water demands have exceeded available inflows for supply driving reservoir levels lower.

Reservoir levels determine supply availability in accordance with shortage sharing guidelines established in 2007 and amended in 2019. Beginning in 2018, The Arizona Department of Water Resources (ADWR) and CAP staff collaborated with CAP water users and the Lower Colorado River Basin states to finalize the Lower Basin States Drought Contingency Plan (LBDCP). The LBDCP modifies the 2007 shortage sharing guidelines so that curtailments in CAP deliveries happen sooner and are larger. The goal of this plan is to close the gap between the over-allocation of the river's natural replenishment capability and water deliveries, thus leaving enough water in Lake Mead to avoid drastic cuts to priority subcontract holders like Municipal and Industrial users. The LBDCP was approved by Governor Doug Ducey on January 31, 2019, and was later approved by the Federal Legislature and went into effect on January 1, 2020.

The LBDCP specifies what the curtailments are to each of the Lower Basin States depending on the water surface elevation of Lake Mead on January 1st of the given year. Near term CAP water delivery curtailments to municipal water providers, such as Oro Valley, are very unlikely because Municipal users have the highest priority within the Central Arizona Project. CAP water deliveries to agricultural users, the Central Arizona Groundwater Replenishment District (CAGRD) and the Arizona Water Banking Authority (AWBA) will be curtailed 100 percent before Municipal users would be affected. If the Utility were to experience

curtailments to CAP water deliveries, the Utility could replace the curtailed volume with CAP water previously stored from various underground storage facilities until the storage balance is depleted.

In accordance with the LBDCP, CAP curtailments on the order of 192,000 acre feet of the CAP's 1.6 million acre feet entitlement begin when the Lake Mead water surface elevation falls below 1,090 feet in the August projections for the following January. Water surface elevations between 1,090 feet and 1,075 feet are considered a "tier 0" shortage. We are currently below water surface elevation 1,075 feet and are in a "tier 1" shortage. Fortunately, because the Oro Valley Water Utility is a municipal water service provider, the Utility is among the highest priority users of the CAP and will not see reductions in CAP water deliveries during a "tier 1" shortage. Unfortunately, the Utility can expect increased delivery costs of the Town's CAP allocation due to the "tier 1" shortage.

The State of Arizona offers a level of protection from potential CAP curtailments for priority CAP users through the creation of the Arizona Water Bank Authority. The AWBA has been storing water underground for municipal and industrial water users to guard against the impacts of potential CAP delivery curtailments. Over 600,000 acre feet of water have been stored underground by the AWBA in the Tucson Active Management Area. This stored water will be made available to municipal water providers to mitigate curtailments of CAP water deliveries to municipal water users. In addition to the AWBA storing water, the CAGRD has stored water for the future to replenish groundwater.

The Utility also continues to store a portion of its CAP water to increase its balance of long-term storage credits. This water will also be available to mitigate curtailments of CAP water deliveries.

The above action plans combined with a diverse water resource portfolio reduces the chances of a water resource shortage in the event of CAP water delivery curtailments. In addition, reducing demands through an increased focus on the efficient use of water resources will help to preserve water supplies for future uses.

Reclaimed Water is produced from wastewater effluent from the sanitary sewer system and then treated for irrigation and other non-potable uses. In 2021, the Utility's reclaimed system produced 19 percent of the Utility's total water production.

Oro Valley owns all the effluent produced by its customers. The Utility has an IGA with Tucson Water to deliver reclaimed water to the OVWSA through their facility at Thornydale and Tangerine. From that location, the Utility independently operates the transmission and water distribution system that delivers the reclaimed water to reclaimed water customers in the OVWSA. No reclaimed water is delivered to the CSWSA.

The Utility supplies reclaimed water for the irrigation of four golf courses, athletic fields at one elementary school and Naranja Park. In 2021, 1,751 acre feet of reclaimed water was delivered. This is a decrease of 209 acre feet compared to the 1,960 acre feet delivered in

2020. For 2021, the Utility utilized all of its estimated 1,600 acre feet of reclaimed entitlement.

REGULATORY

The ADWR requires the Water Utility to replace all the groundwater pumped from wells owned and operated by the Utility. To comply with this requirement, every acre foot of groundwater pumped is replaced through annual aquifer recharge utilizing CAP water. The replacement of pumped groundwater can happen anywhere within the Tucson Active Management Area. Due to the lack of Utility-owned aquifer recharge facilities, the Utility recharges the aquifer outside of the service area to meet this requirement. Long-term storage credits can also be used to replace the groundwater pumped to maintain compliance with ADWR requirements.

The Designation of Assured Water Supply (DAWS) issued by the ADWR requires compliance with the Fourth Management Plan in the Tucson Active Management Area. In 2021, the Utility was in compliance with all requirements under the DAWS and fully expects to meet all requirements in 2022. The ADWR requires the Utility to submit water system information and water usage data in an annual report. The information provided includes service area boundaries, total water use, population, gallons per capita per day, recharge, recovery and system water loss.

Pursuant to the DAWS, the Utility has a right to pump a maximum of 13,384 acre feet per year. However, the 2007 study entitled *Groundwater Sustainability Evaluation of the Oro Valley Aquifer* determined that the Oro Valley aquifer has a sustainable groundwater production rate of approximately 6,360 acre feet per year (5,480 acre feet for the Oro Valley Service Area plus 880 acre feet for the Countryside Service Area). "Sustainable" in this 2007 study refers to the projected volume of water that can be pumped from wells each year as calculated over a 30-year period through 2037. The Utility has established a goal that the “sustainable” value be a groundwater target maximum value by which annual groundwater required beyond this threshold would trigger the utilization of additional renewable water resources. Groundwater levels are assessed annually to determine the impact on the aquifer and well production. Recently, groundwater levels have shown declines less than projected in the 2007 study.

Long-Term Storage Credits are earned when water is recharged and stored underground for more than one year. In 2021, the Utility purchased 10,305 acre feet of CAP water for delivery to recharge facilities. Of that amount, approximately 2,702 acre feet were not used for direct delivery or annual recovery; therefore, increasing the long-term storage credit balance. The water stored will be saved for future use. At the end of 2021, the Utility calculated that it had approximately 29,500 acre feet in long-term storage credits.

Table 5 shows the estimated water storage summary for the end of the 2021 calendar year. The ADWR will make adjustments to the storage balance to account for recharge basin

evaporation and aquifer losses. The final balance will be provided by the ADWR in October of 2022.

TABLE 5

Water Storage Summary Calendar Year 2021 (Acre Feet)			
Groundwater Storage Facility	**2021 CAP Delivery to Storage Facility**	**2021 CAP Recovery from Storage Facility**	**Storage Balance 12/31/21**
Kai Farms	4,000	2,000	17,253
Lower Santa Cruz	2,805	2,297	8,491
Pima Mine Road	---	---	2,868
Central Avra Valley	3,500	3,370	961
Effluent Storage	---	---	65
Total	**10,305**	**7,667**	**29,638**

Note: The 2021 CAP recovery from storage facility column (3rd column) represents the aggregate of CAP water either delivered to customers or used to replace the groundwater that was pumped.

The Groundwater Allowance Account identifies the amount of groundwater that can be pumped, if desired, and still be considered exempt from the state's requirement for replenishment in the Tucson Active Management Area. In general, the balance in the account may be used for any groundwater pumped from a well that has a five-year average annual decline greater than four feet or water pumped from a well that is not permitted as a recovery well. In 2021, the Utility did not use any credits from the Groundwater Allowance Account. All the Utility's wells are permitted as recovery wells; therefore, long-term storage credits were used to meet the replenishment requirements instead of using credits in the Groundwater Allowance Account. The balance in the Groundwater Allowance Account at the end of 2021 was 19,230 acre feet.

ENGINEERING AND PLANNING

The Engineering and Planning Division is responsible for planning and managing the design, construction and inspection of new water infrastructure for the Town of Oro Valley as well as providing engineering support to the Water Operations group.

Engineering and Planning is also responsible for managing and maintaining a Geographic Information System (GIS) database on all existing and new water system infrastructure. Maps produced by GIS staff facilitate Utility operations, planning and engineering. Additionally, Engineering has spearheaded the design and parameters for the Water Utility's asset management system (Cartegraph).

In 2021, the New Development Section within the Engineering and Planning Division completed the following:

- Reviewed and approved water improvement plans for 11 construction projects
- Approved plans and completed 12 as-built plans

CAPITAL PROJECTS

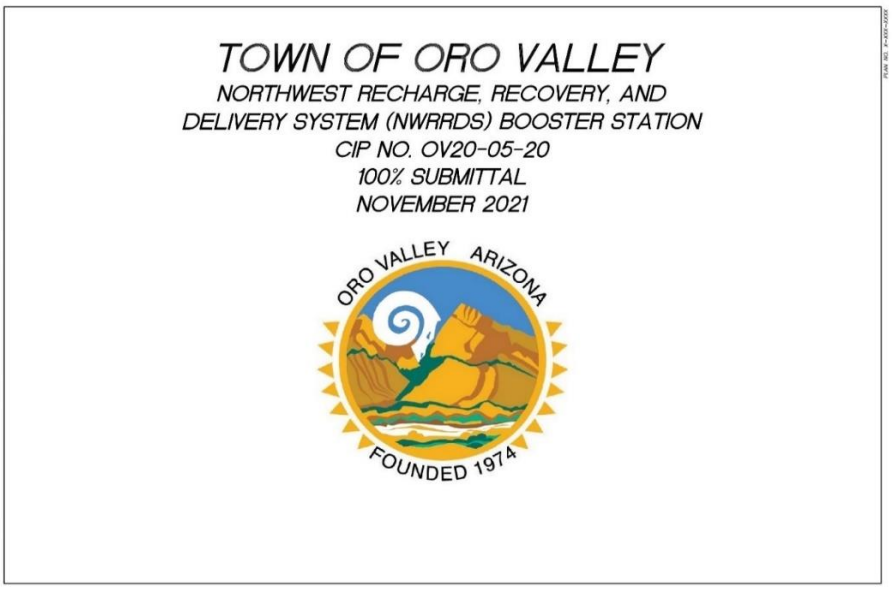
The Engineering and Planning Division manages the design and construction of capital projects identified in the Capital Improvement Program and annual operating budget. These projects are designed to improve efficiencies to existing facilities and improve service levels. Some of the notable capital projects are described below.

FY 2021/22 Capital Projects

- **Steam Pump Water Distribution Loop:** This project is 100% completely designed to loop water through the Steam Pump Ranch to provide fire protection to the existing buildings and create redundant feed at two locations on property. Construction is expected to be complete in second quarter of 2022.

- **Northwest Recharge, Recovery and Delivery System (NWRRDS):** This project is designed to deliver a portion of the Town's recharged CAP water from the Lower Santa Cruz Recharge Facility to the OVWU service area. Once completed, this water infrastructure will allow the Utility to deliver up to an additional 4,000 acre feet of CAP water per year to the Oro Valley water customers.

  Design of the water transmission main is 100% complete from the partnered forebay to the discharge connections into Oro Valley Water Service area at Tangerine and Naranja. All the property acquisitions are secured along with the easements.



- **Wells E1-B, and E5-B rehabilitation**: Well rehabilitation work includes pre and post video logs to assess the well's condition. This work is followed by the brushing and bailing of the well or alternative method of well casing cleaning, repair of the well casing when required, header piping replacement and the installation of new oilers and pads if necessary. Well E1-B and E5-B will also have motor rehabilitation work prior to placing the well back in service. Well E5-B, pictured below, has a capacity to deliver up to 1,290 acre feet of groundwater per year.

Pictured to the right, the well rehabilitation contractor prepares to install column pipe in well E5-B. Perpetual well maintenance is an important part of the Utility's Capital Improvement Program and ensures a reliable water system for the community.

- **Nakoma Sky Well Design and off-site electrical work:** Nakoma Sky offsite electrical is currently in the planning stage with La Posada. Design of well site facility is approaching 100 percent.

- **Replacement of F1 Well HP Tank and High Mesa Booster Tank** The purpose of this multi-year project is to upgrade the Utility's existing pressure tanks to meet current safety requirements based on American Society of Mechanical Engineers (ASME) standards for structural design and integrity of pressure vessels.

Pictured to the right: A contractor prepares to replace a non-ASME certified pressure vessel with a new ASME certified pressure vessel. Work included new pressure vessel above-ground piping and instrumentation.

- **Facility upgrades and improvements to Production/Reclaimed offices:** This project adds additional capacity for staff workstations at the Utility's Production Facility. The scope of work includes earthwork, utilities and the placement of prefabricated modular buildings. Project is completed and is 100% operational for four new workstations.

- **La Cañada offsite electrical design and construction:** This project is the first of a multiyear design and construction project to equip the La Cañada Reservoir with two new booster stations. The first year of work includes the design and construction of the electrical improvements necessary to power the future booster stations at La Cañada. This will ultimately help the Utility with moving water to "F" and "G" zones. This work was completed and in fiscal year 2022/23 we will be designing our two zone booster stations and control panels.

- **Valve Truck Purchase:** The Utility recently purchased a new vehicle with specialized equipment that allows staff to exercise valves more efficiently. Looking forward, distribution system valves that require replacement will be determined based on assessments made by the valve exercising program.

Pictured to the right, the contractor installs a new gate valve and a section of piping distribution main. Capital reinvestments of this type are perpetual in nature.

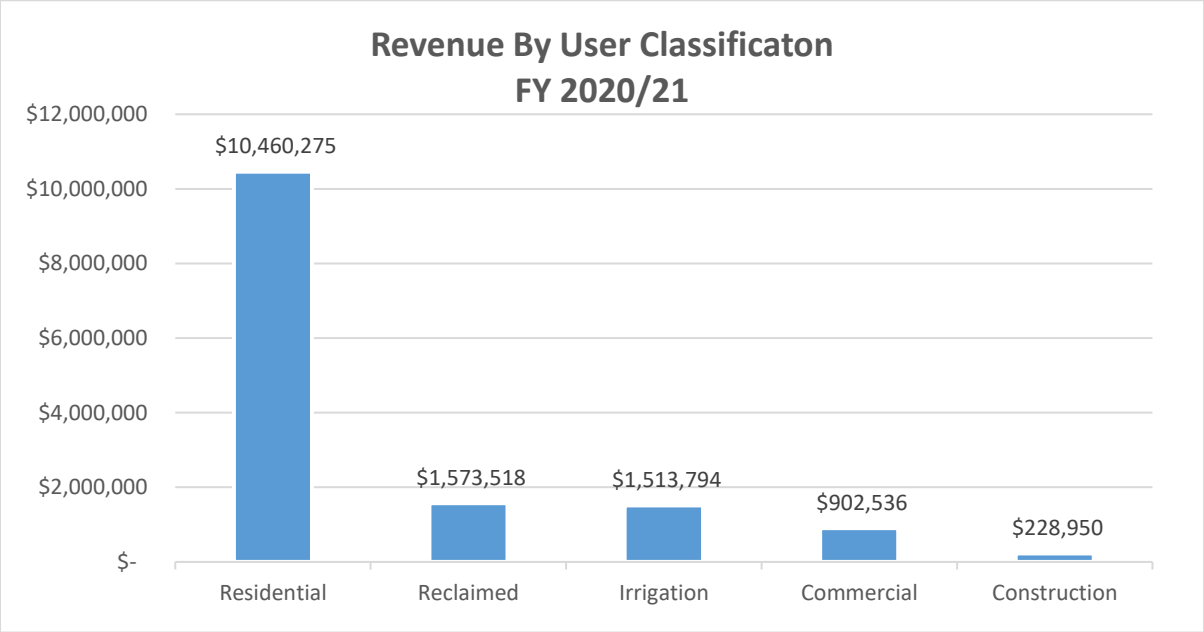
Pictured to the left, an Oro Valley Water Utility Operator provides maintenance on a valve to ensure that it is fit for continued service. If not, the valve will be scheduled for replacement.

CUSTOMER SERVICE

Customer Service is an integral element of the Utility, providing a full range of support to its customers. The Utility's 20,966 metered connections serve a combined population of approximately 49,300 for both water service areas. Customer Service responsibilities include preparing the monthly billing, processing cash receipts, preparing daily deposits and processing new meter applications. Staff also manages new and closed accounts as customers move in and out of the water service areas.

Customer Service staff produced over 262,058 bills in FY 2020/21 generating $14,679,073 in water sales revenue. This revenue does not include sales taxes, groundwater preservation fees or service fees. Water sales revenue by user classification is illustrated in Figure 2.

FIGURE 2



The Utility has an IGA with Pima County Regional Wastewater Reclamation Department to provide their monthly sewer billing. In addition, the Utility provides monthly and quarterly billing for the Town's Stormwater Utility. In FY 2020/21, the Utility processed a total of $29,850,172 in payments for the Utility and the other two organizations as follows:

- Oro Valley Water Utility $ 18,914,915
- Pima County Wastewater Reclamation $ 9,467,943
- Town of Oro Valley Stormwater Utility $ 1,467,314

It is important to note that the total payments handled by the Oro Valley Water Utility are in excess of the water sales billed because the payments processed include sales taxes,

groundwater preservation fees, security deposits and other service fees charged by the Utility.

Of the above payments processed, payments made by credit card or electronically totaled $19 million or 64 percent. These payment methods create efficiencies for customers and customer service staff. Payments are posted to customer accounts in a timely and efficient manner. In addition, this reduces data entry errors and increases time available for staff to perform other job functions.

WaterSmart is a customer portal that provides customers the ability to monitor their own water use on an hourly, daily, weekly or monthly basis. They can also set their individual water use thresholds that will enable the technology to send them high water use alerts. Customer Service staff use the Utility's customer kiosk to assist customers with registering in WaterSmart and to teach them how to establish water use thresholds.

The major accomplishments by Customer Service staff in 2021 include the following:

- Produced over 262,058 water bills
- Processed 5,487 change of service requests
- Issued 3,658 work orders to field staff
- Processed 505 new meter installation applications

Utility statistics, including the billing collection rate for 2021, may be found in **Appendix C**.

WATER CONSERVATION

Water Conservation is a key component of the Utility's overall water resource management efforts. The Water Conservation Program serves customers through community outreach and education. It engages the public with a variety of tools and information to emphasize long-term support for more efficient water use.

The Utility continually looks for new ways to engage and communicate important water information to our customers. Spring of 2021 marked the first edition of our new quarterly newsletter *Behind the Meter*. This publication is mailed as a billing insert to all customers and highlights information on our water resources, services, and programs offered. It is also available electronically on the WaterSmart customer portal and our website.

Additional Publications

- Virtual Welcome Guide
- Water Wisdom Video Series

Community Outreach and Education Programs

Participation in the **WaterSmart Program** continues to increase. This online program provides customers with a self-service tool to view their water use at any time. Early leak detection and high use notifications save water, reduce water waste and reduce the shock of high water bills. Although the program is available to all customers, Single Family Residential (SFR) and Irrigation accounts show the highest average registration rate at 25% over the last year.

- There are over 6,700 registered accounts on the WaterSmart Program
- Approximately 8,200 automated alerts were sent during CY 2021 with water savings of over 16.5 million gallons
- 45% of leaks confirmed by customers on the WaterSmart program were related to irrigation
- There were over 3,700 visits to the WaterSmart customer portal in CY 2021

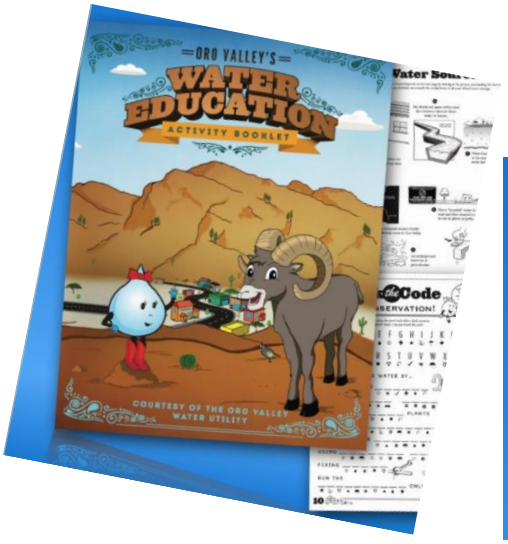
The **Water Audit Program** is a free educational and technical assistance service offered to residential, HOA and commercial customers. Audits are typically conducted onsite and used to evaluate potential water savings for both indoor and outdoor water use. The water use information available through smart meters allows staff to help many of our customers over the phone. Irrigation is one of the most common leak problems reported by customers. Leaks related to irrigation may not be obvious to the customer. Confusion with irrigation timer settings and over watering are significant contributors to high water use complaints.

- Customers saved just under 1 million gallons participating in our Water Audit program (2020 audits)
- 38% of participants had pools
- Over 2,261 audits have been completed since 2003

Break Down of Leaks Reported to WaterSmart

Youth Education Programs

Oro Valley Water Utility partnered with the Environmental Education Exchange in 2013 to develop and manage our Conservation Kids Program (grades 1-3). In 2021, we added Discover Our Water Program to serve grades 4-5. For the current school year to date we have reached over 700 students within Oro Valley and adjacent service areas.



Future Focus Areas

The Utility continually looks for ways to expand opportunities for public education and advocacy regarding water conservation.

- Increase customer participation in the WaterSmart Program across all meter classes through targeted outreach efforts
- Improve our understanding of key water use patterns by leveraging the data from our Automated Metering Infrastructure
- Develop water use benchmarks that are useful and practical to Utility customers as determined by evaluation models

OPERATIONS AND MAINTENANCE

All Production, Distribution and Meter operations personnel are certified operators licensed by the Arizona Department of Environmental Quality (ADEQ).

All operations personnel work together to address water system problems. On-call staff respond to water system problems 24 hours per day, seven days per week. This on-call staffing utilizes a tiered-level after-hours response protocol in accordance with the existing Emergency Response Plan.

Production personnel are responsible for the operation and maintenance of wells, booster pumps and reservoirs on the potable water system. In addition, Production personnel are responsible for the booster pumps, metering stations and the reservoir on the reclaimed water system. These systems are monitored with the use of Supervisory Control and Data Acquisition (SCADA) technology that is managed by the Water Control Systems Department. Production staff performs routine mechanical and assists with electrical maintenance at 45 production sites. They uphold operational balance for CAP water delivery to the potable systems, maintain 21 disinfection injection pumps and disinfection residuals at injection points on the potable and reclaimed water delivery systems. Production staff also perform an annual groundwater level survey of static water levels in all wells.

The following are major activities and accomplishments of Production personnel in 2021:

- After hours - 291 overtime hours
- Cleaned and inspected 6 potable water reservoirs
- Commission – La Reserve Reservoir
- Rehabilitation of Well E1B
- Staff cross training - internal and external employees
- 1 internal employee promoted from production group to Water Control Systems Section
- 1 new employee training in Production Operations
- Warranty replacement of 2 faulty water reservoir mixing units

Distribution personnel are responsible for maintenance and replacement of water distribution system components. Components include water mains, valves, fire hydrants, pressure reducing valves, drain valve assemblies, air relief valves and service lines. Staff updates system mapping installs new assets and performs erosion repairs, asphalt paving and system flushing. These components are tracked by a database under the Utility's preventive maintenance program. Distribution staff is also responsible for the departmental safety program.

Distribution staff has significant direct customer contact and professionally responds to customers regarding water quality and pressure or flow related problems. Distribution staff is responsible for repair of main line and service line breaks. Distribution staff bluestakes underground water mains for all new and existing construction projects throughout the Town's water service area. Arizona law requires that all underground utilities be bluestaked prior to any excavation to ensure the safety and welfare of the community by protecting underground facilities from damage. An inventory of all facility assets may be found in **Appendix D**.

The following are the major activities and accomplishments of Distribution staff in 2021:

- Responded to 171 customer inquiries and 97 after hour call outs
- Maintained 1,587 water valves, replaced 3 valves and performed 55 valve adjustments
- Maintenance performed on 120 fire hydrants and made 120 repairs to fire hydrants

- Performed 124 inspections on 36 pressure reducing valves, and made repairs on 31 pressure reducing valves
- Performed 11,207 bluestakes for potable and reclaimed pipelines
- Repaired 6 main breaks
- Replaced 3 water distribution main line valves: 4”, 6” and 8”

Using Town equipment, the Utility’s distribution staff repaired 6 main line breaks and 8 service line repairs. The Utility realized an estimated savings of $230,000 by performing this work in-house rather than hiring an outside contractor to make these repairs.

METER OPERATIONS

Advanced Metering Infrastructure (AMI) is an integral part of the Oro Valley Water system. The advanced metering technology transformed how the Utility gathers water use data, how staff collaborates with customers, and improved water data management practices. The AMI system has improved customer service by providing historical, on-site water usage data to the customer to explain a problem such as a water leak. This saves customers water, money and promotes continued water conservation efforts. Utility staff has increased their technical knowledge and skills to provide this improved customer service feature. Staff uses analytical and critical thinking skills to analyze and troubleshoot complex metering problems and technical issues within the AMI system. Staff uses AMI network software, Meter Data Management software, field collection and meter reading hardware, GIS software and data collection software to manage water usage data and develop solutions to solve complex problems and mitigate water use issues that impact Utility customers.

AMI technology also increases operational efficiency by eliminating the need for labor intensive manual meter reading and reducing travel time. By increasing operational efficiencies, meter operations staff can focus their time and capabilities on oversight of the AMI system and related software. This includes proactively monitoring and maintaining the AMI system, providing instruction and insight for electronic equipment installations, programming, maintenance, and repairs. Meter operations staff members focus their efforts on improving operational efficiencies to perform additional water system preventive maintenance and commercial meter testing.

The following are major activities and accomplishments of Meter Operations personnel in 2021:

- Installed over 500 meters for new developments

- Completed 110 warranty meter installs
- Repaired more than 20 angle meter stops
- Successfully completed the requirements to take over the AZ811-Bluestaking program
- 1 internal employee promoted
- 3 new employee training

WATER QUALITY

Water quality sampling and testing is essential to providing safe and reliable water. The Town's water system is in full compliance with all state and federal regulations. The Utility is regulated by the ADEQ and provides all required water quality testing results to ADEQ. The Utility works closely with ADEQ to ensure all federal and state standards are met. The website for ADEQ is www.azdeq.gov.

In 2021, the Utility received 2,704 analytical results for required water sampling and operational data for the potable water system and all ADEQ requirements were met. Each year, the Utility collects hundreds of water samples from 15 point of entry sites. Including groundwater wells, reservoirs and pumping stations. The Utility also samples from 58 sampling stations as required by ADEQ. These stations are located in neighborhoods specifically selected to represent the water quality delivered to the customers throughout the water distribution system. The Utility has an additional 101 sampling stations that can be used during emergencies or to meet future testing requirements. Every three years, water samples are taken from 50 private residences within the water service areas and tested for lead and copper. This sampling was completed in June of 2019 and met the EPA's rules for lead and copper. The Utility provides all water quality testing results to ADEQ and works closely with that agency to ensure all federal and state standards are met.

During 2021, the Utility collected 696 samples for analysis of Total Coliform bacteria, all samples were negative for bacteria. This is a direct result of a successful disinfection program through wellhead chlorination, effective system monitoring, proficient sampling methods and routine maintenance.

Testing includes water hardness which is a measurement of the concentration of calcium and magnesium. During 2021, the hardness levels in Oro Valley ranged from 2.1 to 14.6 grains per gallon (36 ppm to 250 ppm). The Utility's water hardness ranges from soft to very hard with the majority of the water testing at moderately hard to hard. The water hardness varies depending on the volume of CAP water that is being blended at any given time in a specific pressure zone.

Due to proposed regulatory changes and requirements, in 2021 the Utility continued preparation to phase in five proposed and pending EPA regulations related to monitoring rules:

- Fifth Unregulated Contaminant Monitoring Rule 2023-2025
- Revised Long-Term Lead and Copper Rule October 2024

- Perchlorate TBD
- Strontium TBD
- Chromium Total/Hexavalent Chromium TBD

In 2022, the Utility will continue to phase in sampling and monitoring of new contaminants in accordance with regulatory requirements.

The Utility produced a 2020 Consumer Confidence Report for each water system in May of 2020. These reports are available electronically. Notices were mailed to customers letting them know the reports could be found on the Town's website at https://www.orovalleyaz.gov/Government/Departments/Water-Utility/Water-Quality#section-1 The 2021 Consumer Confidence Reports will be completed in June of 2022.

In addition to sampling the potable water system, water quality samples are routinely taken on the reclaimed water system for chlorine levels and turbidity to assure compliance with regulatory standards. All ADEQ standards and regulations for reclaimed water were met in 2021.

BACKFLOW PREVENTION

Backflow prevention is an important component of water quality designed to protect the public water system. The purpose of this program is to keep the water supply safe from contaminants that could be introduced into the distribution system through backflow, back siphoning or back pressure from customer's plumbing systems or internal processes.

The Backflow Prevention Program is administered in accordance with the Town of Oro Valley Ordinance (O) 07-21, ADEQ Administrative Code section R18-4-215, and the guidelines of the University of Southern California Foundation for Cross Connection Control and Hydraulic Research.

There are 1,445 backflow prevention assemblies in the program. The following are some of the major activities and accomplishments performed by the Backflow Prevention Division in 2021:

- Tested 236 backflow assemblies
- Repaired 32 in-ground and construction water backflow prevention assemblies
- Issued 41 permits for new and replacement backflow prevention assemblies
- Implemented new cross connection control program software

SECURITY AND EMERGENCY RESPONSE

Under current federal guidelines, Water Operations personnel are considered first responders. Though primarily mandated by state rules with public health responsibilities (Arizona Administrative Code Title 18), water operators also have a public safety responsibility relevant to the water systems they operate which includes support of firefighting tasks. Any water system security situations also directly involve water operations along with the Oro Valley Police Department as a first response action.

In 2020, Utility personnel, with the assistance of a security consultant were mainly focused on finalizing and submitting the Risk and Resilience Assessment Certifications for the America's Water Infrastructure Act (AWIA) of 2018. Certifications for the Oro Valley Water System and the Countryside Water System were submitted, and confirmation received, before the due date of 12/31/2020. Selective training was conducted in 2021 and Water Utility staff participated in an Emergency Simulation Tabletop Exercise. The training was in accordance with the guidelines from the Department of Homeland Security, Federal Emergency Management Agency, and the United States Environmental Protection Agency. The Utility continues to update the Emergency Response Plan and Business Continuity Plan on an annual basis and will continue to mitigate the elements defined in the vulnerability assessments as well as those identified through the course of business.

Security features which include perimeter fencing, security walls, warning signage, motion sensors, and cameras at all active production facilities were inspected to maintain integrity. Hydrants throughout the system are protected by security locking systems.

The Utility is kept abreast of local, regional, and national security issues by the Water Information Sharing and Analysis Center (WaterISAC). WaterISAC has established secure and close contact with partners in government to access sensitive and classified security information. WaterISAC maintains two-way communication with the U.S. Department of Homeland Security, especially its National Cybersecurity and Communications Integration Center, the FBI, the U.S. Environmental Protection Agency, state intelligence fusion centers, and other federal and state agencies.

The Utility is also a member of the Arizona Water/Wastewater Agency Response Network (AZWARN). Members of AZWARN agree to provide aid to other member utilities in the event of an emergency.

FINANCIAL HIGHLIGHTS

The Utility is financially sound and continues to manage its revenues, control expenses, and reduce debt. The Water Utility's outstanding revenue bonds have a rating of "AA+" from Standard and Poor's and "AA+" from Fitch Ratings. Ratings criteria include stable economic base, sufficient water supply for current and long-term needs, a manageable capital improvement plan, timely rate increases, maintaining adequate debt service coverage and cash reserve balances.

Revenues and Expenses

The Utility's revenue consists of potable and reclaimed water sales, groundwater preservation fees, miscellaneous service fees and charges, water development impact fees and interest income. The Utility has two funds:

- **The Operating Fund** is the primary fund for the Utility. Costs for the administration, operations, existing system improvements and debt service are managed in this fund. The sources of revenue are water sales, service-related charges and Groundwater Preservation Fees (GPF). The GPF funds are dedicated to pay for debt or capital costs related to renewable water resources, renewable water supplies and costs to wheel CAP water to the Town.

- **The Water Resource and System Development Impact Fee Fund** (WRSDIF) provides funding for expansion related projects for new growth, development of renewable sources of water supply and infrastructure required for delivery of those resources. The source of revenue for this fund is impact fees collected at the time water meters are purchased.

Table 6 below illustrates actual to budgeted revenues for Fiscal Year 2020/21 for the Operating Fund and Water Resource and System Development Impact Fee Fund:

TABLE 6

Revenue Source	Actuals FY 2020/21 ($)	Budget FY 2020/21 ($)	Over / (Under) Budget ($)	Over / (Under) Budget (%)
Potable Water Sales:				
Residential	$ 10,394,919	$ 9,400,000	$ 994,919	110.6%
Commercial	$ 902,536	$ 920,000	$ (17,464)	98.1%
Irrigation	$ 1,513,518	$ 1,120,000	$ 393,518	135.1%
Turf	$ 65,356	$ 70,000	$ (4,644)	93.4%
Construction	$ 228,950	$ 200,000	$ 28,950	114.5%
Reclaimed Water Sales:				
Turf	$ 1,499,682	$ 1,292,000	$ 207,682	116.1%
Irrigation	$ 65,537	$ 66,000	$ (463)	99.3%
Construction	$ 8,575	$ 10,000	$ (1,425)	85.7%
Subtotal Water Sales:	**$ 14,679,073**	**$ 13,078,000**	**$ 1,601,073**	**112.2%**
Fees, Charges & Interest:				
Service Fees & Charges	$ 916,794	$ 869,500	$ 47,294	105.4%
Groundwater Preservation Fees	$ 2,617,452	$ 2,217,000	$ 400,452	118.1%
Impact Fees	$ 4,100,556	$ 1,889,411	$ 2,211,145	217.0%
Interest Income	$ (1,211)	$ 257,000	$ (258,211)	*(-0.5%)
Subtotal Fees, Charges & Interest	**$ 7,633,591**	**$ 5,232,911**	**$ 2,400,680**	**145.9%**
Total Revenues	**$ 22,312,664**	**$ 18,310,911**	**$ 4,001,753**	**121.9%**

** Note: Interest Income for FY 2020/21 is a negative $1,211 due to the recording of unrecognized losses per the information provided by the Town's finance department*

Revenues from water sales exceeded budget by $1.6 million due to above average water usage directly related to the hot and dry weather conditions at the time. Impact fees exceeded budget by $2.2 million primarily due to higher than anticipated residential meter sales.

Table 7 below illustrates actual expenses for the Operating Fund and Water Resource and System Development Impact Fee Fund compared to budgeted expenses (excluding depreciation and amortization) for FY 2020/21:

TABLE 7

Expenses	Actuals FY 2020/21 ($)	Budget FY 2020/21 ($)	Over / (Under) Budget ($)	Over / (Under) Budget (%)
Personnel	$ 3,410,629	$ 3,495,355	$ (84,726)	97.6%
Operations & Maintenance	$ 8,043,025	$ 8,242,042	$ (199,017)	97.6%
Capital Outlay	$ 5,602,832	$ 9,366,622	$ (3,763,790)	59.8%
Total Expenses	**$ 17,056,486**	**$ 21,104,019**	**$ (4,047,533)**	**80.8%**

Capital outlay was below budget due to unexpected delays with the Northwest Recharge, Recovery, and Delivery System (NWRRDS) project.

Outstanding Debt

Table 8 is a summary of the outstanding debt (principal only) and the annual debt service payments (principal and interest) for all funds within the Utility:

TABLE 8

Debt Service	Bond Series	Outstanding Debt At 6/30/21	Debt Service Payment -Principal FY 2021/22	Debt Service Payment-Interest FY 2021/22	Interest Rate	Maturity
Series 2012 Sr. Lien Bonds-Operating	2012	$ 1,047,242	$ 511,066	$ 63,671	4.0%	2022
Series 2012 Sr. Lien Bonds-GPF	2012	$ 1,908,884	$ 931,557	$ 116,058	4.0%	2022
Series 2012 Sr. Lien Bonds-WRSDIF	2012	$ 588,874	$ 287,377	$ 35,803	4.0%	2022
WIFA Loan-Sr. Lien-Operating	2014	$ 2,713,109	$ 308,895	$ 67,856	2.7%	2028
2015 Excise Tax Bonds-Operating	2015	$ 717,090	$ 137,610	$ 12,382	2.3%	2025
2017 Excise Tax Bonds-Operating	2017	$ 9,154,538	$ 1,435,554	$ 205,013	2.4%	2026
2018 Excise Tax Bonds-Operating	2018	$ 5,529,750	$ 353,250	$ 161,664	3.0%	2033
Series 2021 Sr. Lien Bonds-Operating	2021	$ 1,912,901	$ 135,363	$ 20,930	1.5%	2029
Series 2021 Sr. Lien Bonds-GPF	2021	$ 3,278,610	$ 232,005	$ 35,873	1.5%	2029
Series 2021 Sr. Lien Bonds-WRSDIF	2021	$ 390,489	$ 27,632	$ 4,273	1.5%	2029
TOTAL		$ 27,241,487	$ 4,360,309	$ 723,523		

Water Rates

The functions and duties of the commission include annually reviewing and developing recommendations for water revenue requirements, water rates and fee structures. The commission evaluates staff recommendations based on an annual water rates analysis to ensure the recommendations meet Town policies and bond covenants. The Utility bases its financial analysis on the American Water Works Association Cash Needs Approach.

The water rate study for FY 2022/23 resulted in a recommendation to increase the base rates and commodity rates for potable water customers. These proposed changes will result in a monthly increase of $1.79 per month for a customer with a 5/8-inch meter using 7,000 gallons. Customers with a 5/8-inch meter represent 87 percent of the total customer base and include residential, commercial and irrigation classifications with the majority being residential. The proposed changes will be presented to the Town Council in June 2022 and, if adopted, the new potable water changes would become effective in July 2022.

All current water rates, fees and charges including impact fees are available to view on the Town website at https://www.orovalleyaz.gov/town/departments/water-utility/rates-and-fee

TOWN OF ORO VALLEY
WATER UTILITY

2022 ANNUAL REPORT

APPENDIX A

STATIC GROUNDWATER LEVELS

STATIC GROUNDWATER LEVELS

The following table lists all production wells, the amount of groundwater pumped and the change in depth to groundwater between January of 2020 and 2021 for both the Countryside and Oro Valley Main Water Service areas. To provide context the amount of groundwater pumped and the change in depth to groundwater is also shown for years 2000, 2005, 2010, 2015 and 2020.

Drawdowns highlighted in yellow indicate an aquifer drawdown while "drawdowns" highlighted in blue indicate aquifer recovery.

Countryside Water Service Area													
	Annual Acre-Ft Pumped & Annual Drawdown												2016-2021 5-Year Average Drawdown (Feet)
Well ID	Year 2000 Pumpage (Acre-Ft.)	Year 2000 Drawdown (Feet)	Year 2005 Pumpage (Acre-Ft.)	Year 2005 Drawdown (Feet)	Year 2010 Pumpage (Acre-Ft.)	Year 2010 Drawdown (Feet)	Year 2015 Pumpage (Acre-Ft.)	Year 2015 Drawdown (Feet)	Year 2020 Pumpage (Acre-Ft.)	Year 2020 Drawdown (Feet)	Year 2021 Pumpage (Acre-Ft.)	Year 2021 Drawdown (Feet)	
CS-1	412	-0.20	359	-2.55	398	-0.42	278	-0.59	204	1.58	187	0.38	-0.752
CS-2	495	-2.10	514	-5.02	373	-3.37	305	2.00	298	3.00	266	4.12	-0.416
Average		-1.15		-3.78		-1.89		0.70		2.29		2.25	-0.58
Total	907		873		771		583		502		453		

Oro Valley Main Water Service Area													
	Annual Acre-Ft Pumped & Annual Drawdown												2016-2021 5-Year Average Drawdown (Feet)
Well ID	Year 2000 Pumpage (Acre-Ft.)	Year 2000 Drawdown (Feet)	Year 2005 Pumpage (Acre-Ft.)	Year 2005 Drawdown (Feet)	Year 2010 Pumpage (Acre-Ft.)	Year 2010 Drawdown (Feet)	Year 2015 Pumpage (Acre-Ft.)	Year 2015 Drawdown (Feet)	Year 2020 Pumpage (Acre-Ft.)	Year 2020 Drawdown (Feet)	Year 2021 Pumpage (Acre-Ft.)	Year 2021 Drawdown (Feet)	
C-4	10	-9.00	233	-17.77	87	-2.80	56	-3.42	100	0.84	108	-1.27	-2.12
C-5	1011	0.58	1428	-3.17	258	-1.08	184	4.12	167	0.30	274	-2.22	-2.49
C-6	714	0.00	930	-1.88	823	0.42	334	-1.54	246	-2.00	264	-0.15	-1.48
C-8	67	-7.70	360	-4.31	286	-2.66	225	-2.66	243	-9.09	365	-4.40	-2.85
C-9					318	-9.01	279	-3.42	238	-1.00	240	-0.50	-1.68
D-1			403	-1.77	464	-0.38	71	-1.17	195	-2.59	208	0.58	-2.69
D-6	273	-3.30	356	-2.58	215	5.00	268	-1.25	215	-2.50	181	-0.96	-2.86
D-7	470	-6.90	521	-7.79	330	3.13	210	-2.12	288	-6.84	308	-2.08	-2.52
D-8	341	7.50	181	3.17	235	-17.16	295	-0.66	60	3.66	189	-7.66	-1.65
D-9					627	-8.75	616	1.25	318	-0.42	244	2.83	-1.27
E-1B							345	-0.08	457	-5.08	48	2.53	-2.94
E-2	654	-4.20	551	-6.20	418	-6.83	264	-3.02	399	0.24	391	-1.98	-3.49
E-5B			889	-7.43	464	-5.25	193	0.25	303	2.34	307	-6.54	-3.07
E-6B			1014	-6.16	719	1.17	273	2.67	602	-4.00	560	-0.62	-3.01
E-7B					575	2.17	244	2.58	356	-6.83	377	-0.75	-3.06
F-1	467	-3.70	562	-2.27	436	-5.00	517	-4.55	487	-4.17	479	-0.77	-2.91
Average		-2.97		-4.85		-3.14		-0.81		-2.32		-1.50	-2.51
Total	4007		7428		6255		4374		4674		4544		

TOWN OF ORO VALLEY
WATER UTILITY

2022 ANNUAL REPORT

APPENDIX B

PROPOSED FIVE - YEAR
CAPITAL IMPROVEMENT PROGRAM

Oro Valley Water Utility
Existing System Capital Projects

Colors: Study/Design/Permit | Construct | Purchases

Project No.	Project Name	2022-23	2023-24	2024-25	2025-26	2026-27	Totals Years 1-5
	Operating Fund Projects						
	Wells						
1	Well Rehab. (2-Wells per year)	150,000	150,000	220,000	220,000	220,000	960,000
2	HP Tank Replacement (1-Tank per year)	150,000	150,000	170,000	170,000	170,000	810,000
3	Well D8 Replacement (Design / Permit / Construct / Equip)					100,000	100,000
	Subtotal	**300,000**	**300,000**	**390,000**	**390,000**	**490,000**	**1,870,000**
	Reservoirs						
4	Reservoir Relining	200,000	200,000	200,000	200,000	200,000	1,000,000
	Subtotal	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**1,000,000**
	Booster Stations						
5	Booster Rehab (2-Boosters - Study/Design/Construct)	200,000	200,000	400,000	50,000	50,000	900,000
6	HP Tank Replacement (1-Tank at Booster)	150,000	150,000	150,000	150,000	150,000	750,000
	Subtotal	**350,000**	**350,000**	**550,000**	**200,000**	**200,000**	**1,650,000**
	Mains						
7	Palisades Area Supply Redundancy (Study/Design/Permit/Construct)	50,000	250,000	250,000			550,000
8	El Con/Cmo Diestro main & valve replacement	250,000					250,000
9	Moore road F-Zone Interconnect - (Currently in study phase - May not Construct)						-
	Subtotal	**300,000**	**250,000**	**250,000**	**-**	**-**	**800,000**
	Total Capital Projects	**1,150,000**	**1,100,000**	**1,390,000**	**790,000**	**890,000**	**5,320,000**
11	Water Meters - New Connections (Based on 210 meters per year)	150,000	150,000	150,000	150,000	150,000	750,000
12	Instrumentation Replacement	200,000	200,000	200,000	500,000	500,000	1,600,000
13	SCADA Equipment (IT - Moves to maintenance budget after FY22/23)	300,000	-	-	-	-	300,000
	Subtotal	**650,000**	**350,000**	**350,000**	**650,000**	**650,000**	**2,650,000**
	Vehicles						
14	Replacement Vehicles - Meter Operations		40,000			40,000	80,000
15	Replacement Vehicles - Distribution Operations				40,000		40,000
16	Replacement Vehicles - Production Vehicles				40,000		40,000
17	New Vehicle - Water Control System Operations	60,000				40,000	100,000
18	Replacement Vehicles - Const Inspectors		40,000				40,000
19	Replacement Vehicles - Water Quality			40,000			40,000
20	ADC Truck / Trailer / Tools	75,000					75,000
	Subtotal	**135,000**	**80,000**	**40,000**	**80,000**	**80,000**	**415,000**
	Total for all projects	**1,935,000**	**1,530,000**	**1,780,000**	**1,520,000**	**1,620,000**	**8,385,000**

Oro Valley Water Utility
NWRRDS Projects - Existing Customers Only - 40% of Total Costs

Colors: Study/Design/Permit | Construct | Purchases

Project No.	Project Name	Percent Non-Growth	2022-23	2023-24	2024-25	2025-26	2026-27	Totals Years 1-5
	NWRRDS Growth related projects paid for by GPF							
	NWRRDS Partnered Projects							
1	Recovery well equipping, TRICO power to sites & associated tasks	40%	480,000	160,000				640,000
2	Pipeline construction (recovered water & transmission)	40%	840,000	420,000	400,000			1,660,000
3	NWRRDS forebay reservoir construction	40%	1,200,000	400,000				1,600,000
	Subtotal		**2,520,000**	**980,000**	**400,000**	**-**	**-**	**3,900,000**
	NWRRDS Independent Projects							
4	Booster station at NWRRDS forbay reservoir (2,500 gpm = 4,000 AF/YR)	40%	400,000	400,000				800,000
5	Pipeline from NWRRDS booster station to La Canada reservoir (Construction)	40%	1,600,000	1,600,000	800,000			4,000,000
6a	Forebay reservoir at Shannon & Naranja (**Design/Build** - 1 million gallons)	40%	120,000	240,000	240,000			600,000
6b	Booster station at Shannon & Naranja (**Design/Build** - 2,500 gpm = 4,000 AF/YR)	40%	120,000	240,000	240,000			600,000
	Subtotal		**2,240,000**	**2,480,000**	**1,280,000**	**-**	**-**	**6,000,000**
	Exisitng System Improvements for blending & distribuiton of NWRRDS water							
7	NWRRDS E-zone interconnect to Tangerine	40%		200,000	120,000			320,000
8	NWRRDS E-zone interconnect to Naranja	40%		160,000	40,000			200,000
9	NWRRDS D-Zone blending water Interconnect to Shannon Road Reservoir (Design/Construction)	40%	20,000	80,000				100,000
	Subtotal		**20,000**	**440,000**	**160,000**	**-**	**-**	**620,000**
	Total for all projects		**4,780,000**	**3,900,000**	**1,840,000**	**-**	**-**	**10,520,000**

Oro Valley Water Utility
Funded by Water Resources and System Development Impact Fee Fund
NWRRDS Projects - Growth Related Projects - 60% of Total Costs

Colors: Study/Design/Permit | Construct | Purchases

Project No.	Project Name	Percent Growth	2022-23	2023-24	2024-25	2025-26	2026-27	Totals Years 1-5
	NWRRDS Growth related projects paid for by WRSDIF							
	NWRRDS Partnered Projects							
1	Recovery well equipping, TRICO power to sites & associated tasks	60%	720,000	240,000				960,000
2	Pipeline construction (recovered water & transmission)	60%	1,260,000	630,000	600,000			2,490,000
3	NWRRDS forebay reservoir construction	60%	1,800,000	600,000				2,400,000
	Subtotal		**3,780,000**	**1,470,000**	**600,000**	**-**	**-**	**5,850,000**
	NWRRDS Independent Projects							
4	Booster station at NWRRDS forbay reservoir (2,500 gpm = 4,000 AF/YR)	60%	600,000	600,000				1,200,000
5	Pipeline from NWRRDS booster station to La Canada reservoir (Construction)	60%	2,400,000	2,400,000	1,200,000			6,000,000
6a	Forebay reservoir at Shannon & Naranja (**Design/Build** - 1 million gallons)	60%	180,000	360,000	360,000			900,000
6b	Booster station at Shannon & Naranja (**Design/Build** - 2,500 gpm = 4,000 AF/YR)	60%	180,000	360,000	360,000			900,000
	Subtotal		**3,360,000**	**3,720,000**	**1,920,000**	**-**	**-**	**9,000,000**
	Exisitng System Improvements for blending & distribuiton of NWRRDS water							
7	NWRRDS E-zone interconnect to Tangerine	60%		300,000	180,000			480,000
8	NWRRDS E-zone interconnect to Naranja	60%		240,000	60,000			300,000
9	NWRRDS D-Zone blending water Interconnect to Shannon Road Reservoir (Design/Construction)	60%	30,000	120,000				150,000
	Subtotal		**30,000**	**660,000**	**240,000**	**-**	**-**	**930,000**
	Total for all projects		**7,170,000**	**5,850,000**	**2,760,000**	**-**	**-**	**15,780,000**

Oro Valley Water Utility
Funded by Water Resources and System Development Impact Fee Fund
Miscellaneous Projects - Growth Related Projects - 100%

Colors: Study/Design/Permit | Construct | Purchases

Project No.	Project Name	Percent Growth	2022-23	2023-24	2024-25	2025-26	2026-27	Totals Years 1-5
	Miscellaneous Growth related projects paid for by WRSDIF							
	Wells							
1	Steam Pump D-Zone Well (Design/Permit/Drill/Equip)	100%	300,000					300,000
2	La Posada Well (Design/Permit/Drill/Equip)	100%	600,000					600,000
	Subtotal		**900,000**	**-**	**-**	**-**	**-**	**900,000**
	Reservoirs							
3	Storage Expansion for pressure zone G,H & I **(Years 10+)**	100%						-
4	Storage Expansion for pressure zone G **(Years 10+)**	100%						
	Subtotal		**-**	**-**	**-**	**-**	**-**	**-**
	Booster Stations							
5	La Canada Booster Station Expansion (Design/Construction)	100%	200,000	2,000,000				2,200,000
6	Water Plant 14 Booster Capacity Expansion (Design/Construction)	100%						-
	Subtotal		**200,000**	**2,000,000**	**-**	**-**	**-**	**2,200,000**
	Mains							
7	Moore Rd. F-Zone Interconnect (Being Evaluated)	100%						-
	Subtotal		**-**	**-**	**-**	**-**	**-**	**-**
	Total for all projects		**1,100,000**	**2,000,000**	**-**	**-**	**-**	**3,100,000**

TOWN OF ORO VALLEY

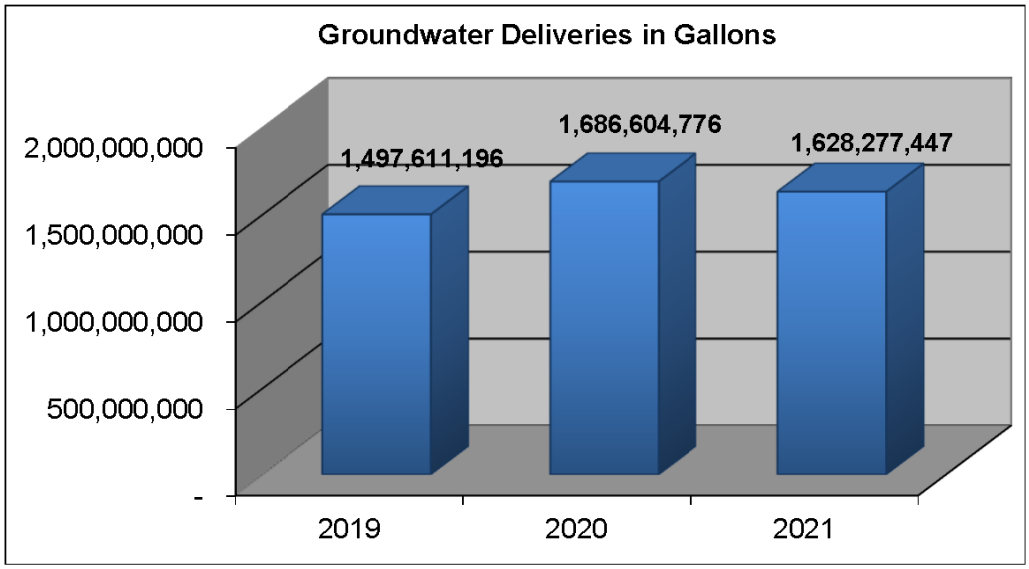
WATER UTILITY

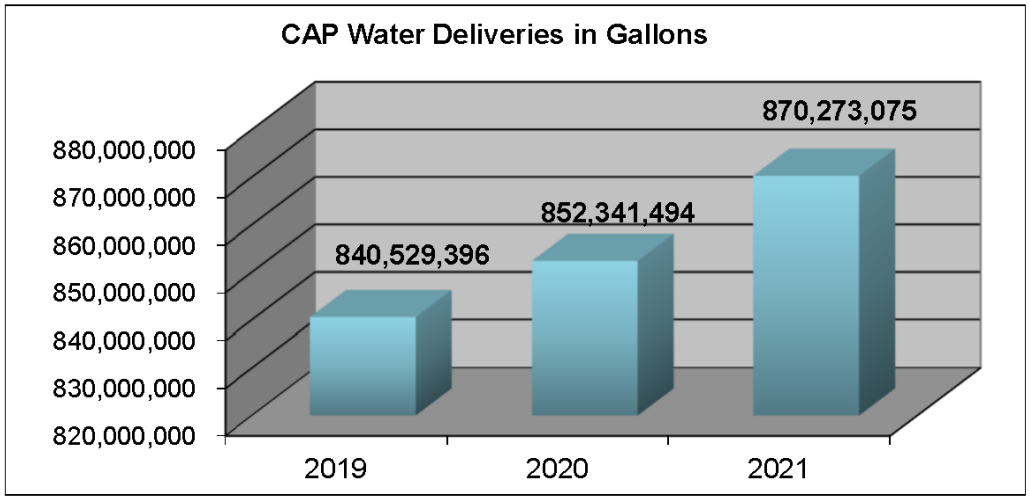
2022 ANNUAL REPORT

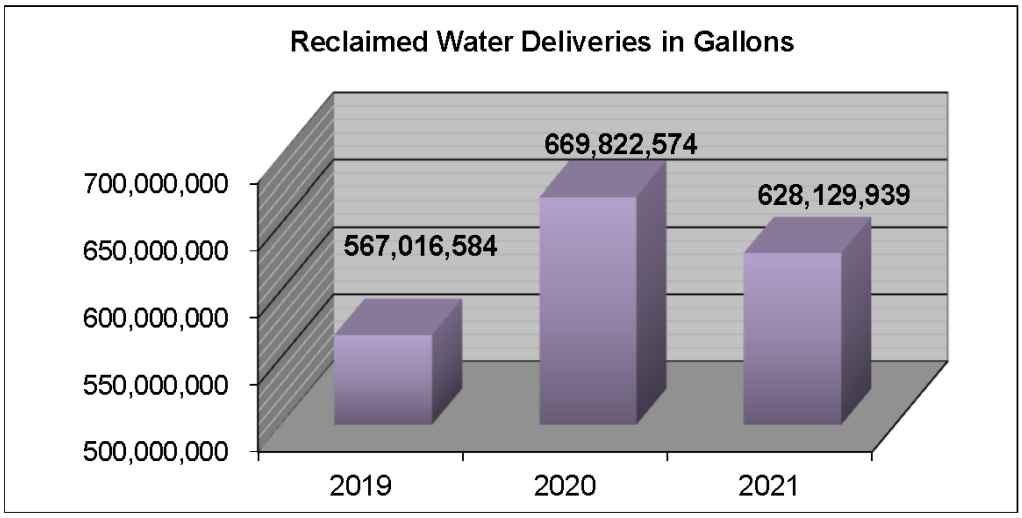
APPENDIX C

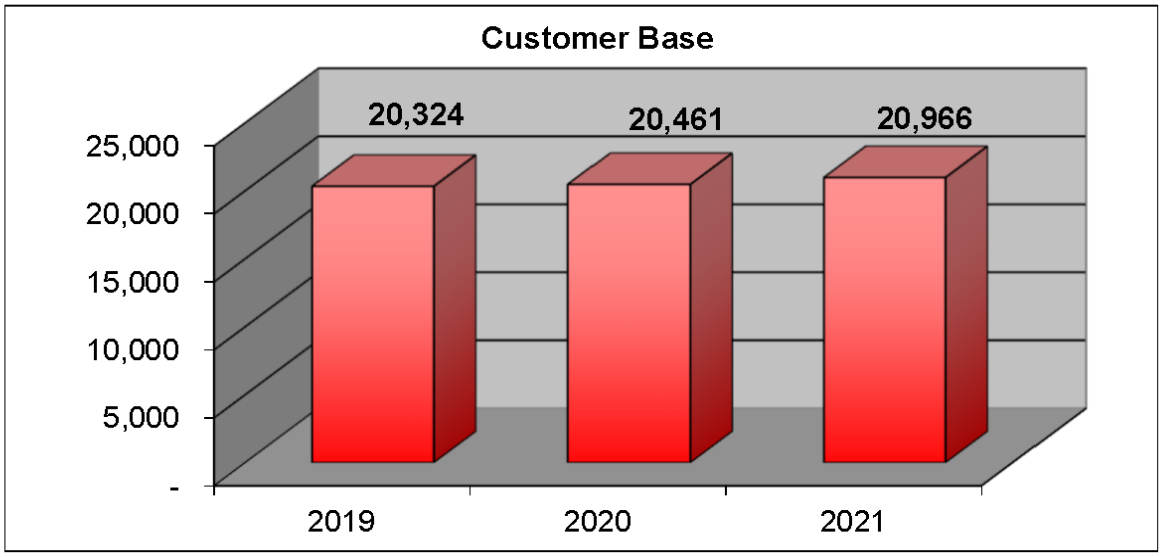
UTILITY STATISTICS

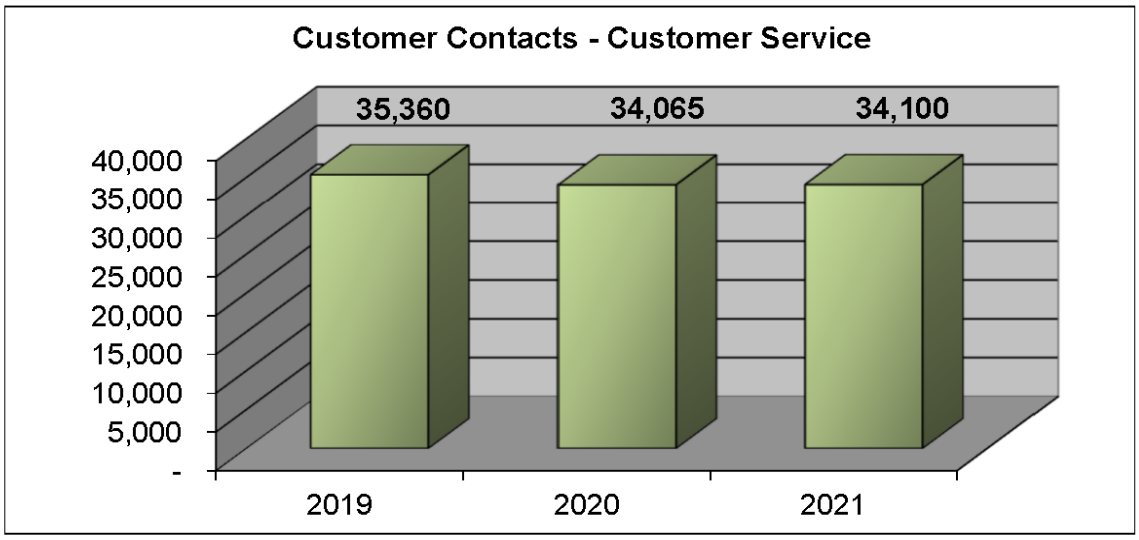
UTILITY STATISTICS

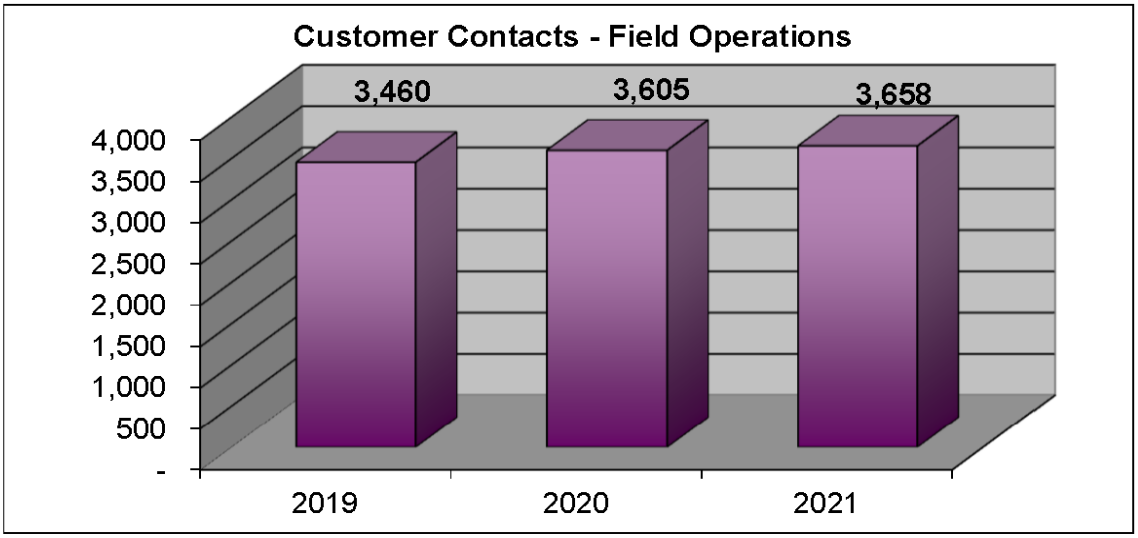


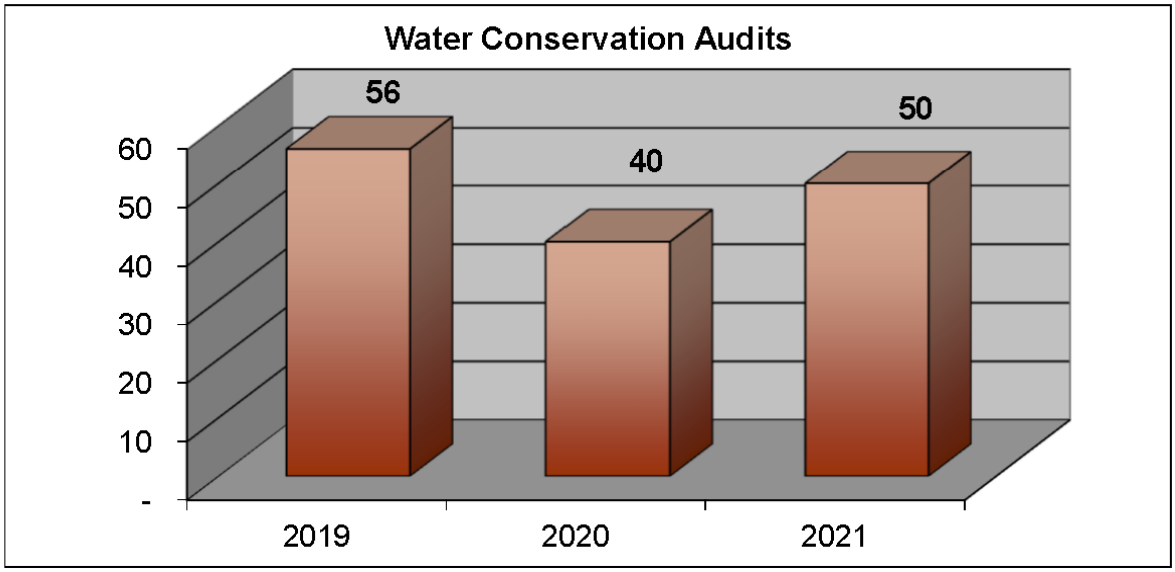


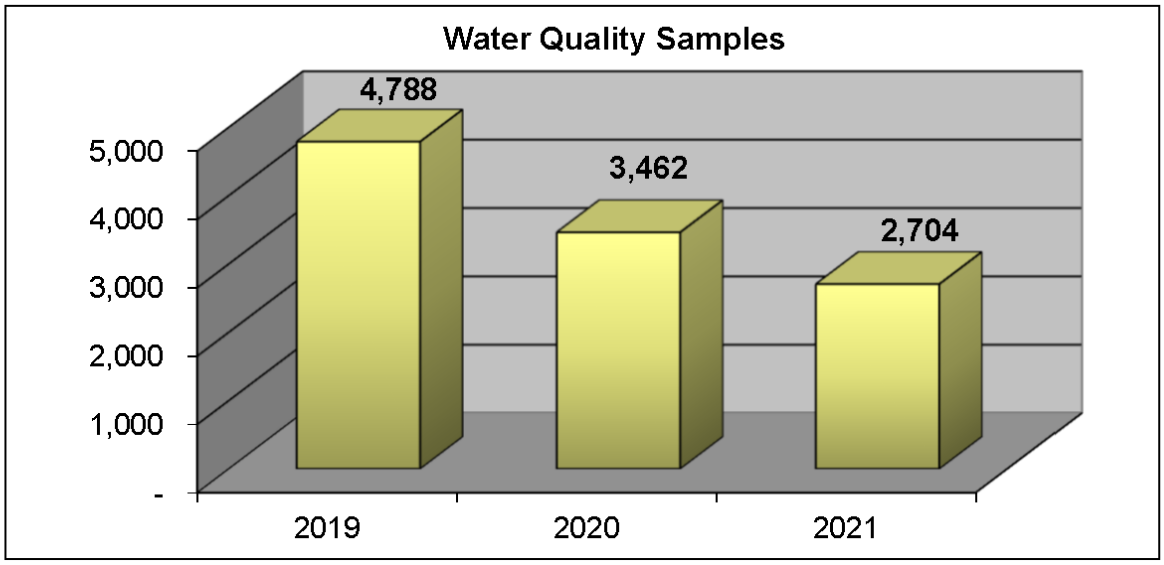



Customer Base
20,324
20,461
20,966
25,000
20,000
15,000
10,000
5,000
-
2019
2020
2021


Customer Contacts - Customer Service
35,360
34,065
34,100
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
-
2019
2020
2021


Customer Contacts - Field Operations
3,460
3,605
3,658
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
-
2019
2020
2021


Water Conservation Audits
56
40
50
60
50
40
30
20
10
-
2019
2020
2021


Water Quality Samples
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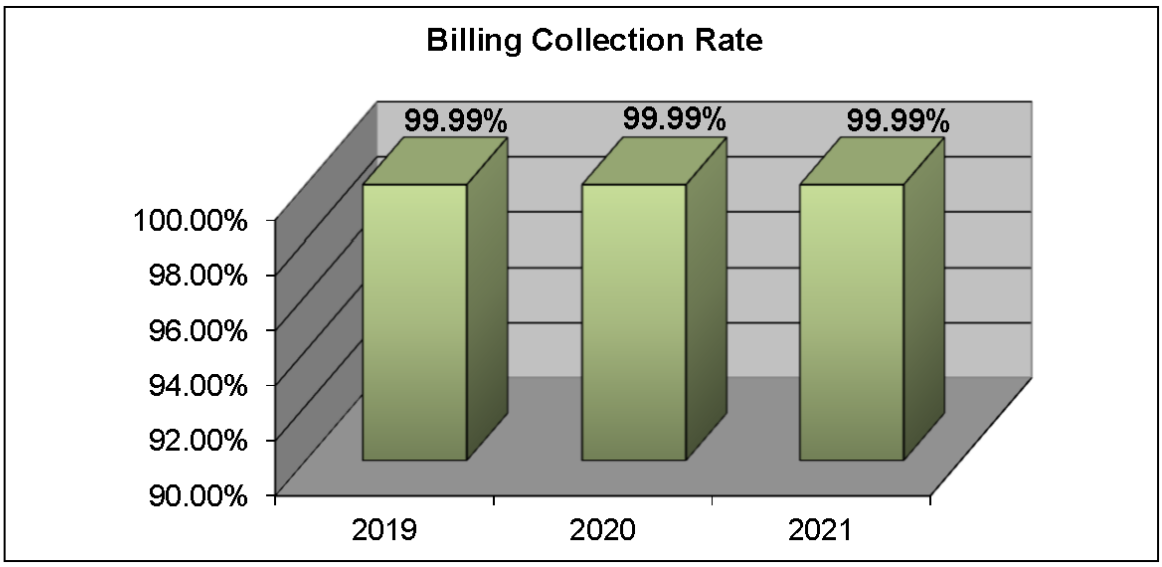
3,462
2,704
5,000
4,000
3,000
2,000
1,000
-
2019
2020
2021


Billing Collection Rate
99.99%
99.99%
99.99%
100.00%
98.00%
96.00%
94.00%
92.00%
90.00%
2019
2020
2021

TOWN OF ORO VALLEY
WATER UTILITY

2022 ANNUAL REPORT

APPENDIX D

ASSET INVENTORY

ASSET INVENTORY

Water Utility Capital Assets at 6/30/21		
Potable Assets		**Value**
CAP Water Rights (allotment in acre feet)	10,305	$ 8,534,490
Land	-	$ 2,189,864
Wells (active & inactive)	33	$ 10,702,058
Booster Stations (active & inactive)	26	$ 5,495,815
Reservoir Capacity (million gallons)	11	$ 12,504,493
Fire Hydrants	2,406	$ 3,595,861
Meters	20,966	$ 9,179,780
Services	22,005	$ 5,889,771
Equipment	-	$ 2,160,025
Structures	-	$ 1,998,819
Vehicles	35	$ 2,056,077
Telemetry	0	$ 451,416
Buildings & Improvement	0	$ 562,421
Water Mains (miles)	376	$ 68,581,140
Construction in Progress	-	$ 7,599,940
Subtotal Value of Potable Assets		$ 141,501,968
Accumulated Depreciation		$ (52,002,416)
Net Value of Potable Assets		**$ 89,499,553**
Reclaimed Assets		
Land	-	$ 220,796
Telemetry	-	$ 29,654
Booster Stations	2	$ 7,478,811
Reservoir Capacity (million gallons)	1	$ 2,494,603
Water mains (miles)	15	$ 14,762,599
Subtotal Value of Reclaimed Assets		$ 24,986,462
Accumulated Depreciation		$ (7,089,510)
Net Value of Reclaimed Assets		**$ 17,896,953**
Total Value of Water Assets Net of Depreciation		**$ 107,396,506**

TOWN OF ORO VALLEY
WATER UTILITY

2022 ANNUAL REPORT

APPENDIX E

ACRONYMS AND GLOSSARY

ACRONYMS

ADEQ	Arizona Department of Environmental Quality
ADWR	Arizona Department of Water Resources
AF	Acre Feet
AMI	Advanced Metering Infrastructure
AWBA	Arizona Water Banking Authority
AZWARN	Arizona Water and Wastewater Agency Response Network
CAGRD	Central Arizona Groundwater Replenishment District
CAP	Central Arizona Project
CAVSRP	Central Avra Valley Storage and Recovery Project
CSWSA	Countryside Water Service Area
CY	Calendar Year
DAWS	Designation of Assured Water Supply
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
FY	Fiscal Year
GIS	Geographic Information System
GPF	Groundwater Preservation Fee
IGA	Intergovernmental Agreement
MGD	Million Gallons per Day
NWRRDS	Northwest Recharge and Recovery Delivery System
OVWSA	Oro Valley Water Service Area
PDEQ	Pima County Department of Environmental Quality
SCADA	Supervisory Control and Data Acquisition
WRSDIF	Water Resource and System Development Impact Fee Fund

GLOSSARY

Acre Foot – The volume of water necessary to cover an area of one acre to the depth of one foot, 43,560 cubic feet. One acre foot is equal to 325,851 US gallons.

Arizona Water/Wastewater Agency Response Network – AzWARN is a statewide mutual assistance program between water and wastewater utilities. This volunteer-based network allows utilities to help one another in times of emergency when the resources of a utility are overwhelmed. The foundation of the network is a signed mutual aid agreement between all participating utilities.

Aquifer – An underground layer of water-bearing permeable rock or unconsolidated materials (gravel, sand, or silt) from which groundwater can be extracted using a water well.

Central Arizona Groundwater Replenishment District (CAGRD) – It was created in 1993 to replenish (or recharge) the amount of groundwater pumped or delivered to its members which exceeds their pumping limitations using any water source available except groundwater.

Central Avra Valley Storage and Recovery Project – An approved Underground Storage Facility operated by Tucson Water located in the Tucson Active Management Area located approximately one mile west of Sandario Road and just south of Mile Wide Road, in the Avra Valley, Pima County, Arizona.

Colorado River Basin – The drainage basin of the Colorado River is located in the southwestern United States and northwest Mexico. The 1,450 mile river drains an expansive, arid watershed that encompasses parts of six U.S. (Wyoming, Colorado, Utah, New Mexico, Arizona and California) and two Mexican states (Sonora and Baja). Rising in the central Rocky Mountains in the U.S., the river flows generally southwest across the Colorado Plateau and through the Grand Canyon before reaching Lake Mead on the Arizona–Nevada line, where it turns south toward the international border at Yuma, Arizona. After entering Mexico, the Colorado approaches the large Colorado River Delta where it naturally empties into the Gulf of California.

Effluent – Generally refers to wastewater that is treated and discharged to a natural water course. Oro Valley Water Utility's effluent is treated at facilities owned and operated by Pima County. This treated wastewater effluent is the source of Oro Valley's reclaimed water.

Five Year Capital Improvement Plan – A long-term plan for development of water related projects to develop and deliver water supply to our community. It includes existing system improvements and expansion related projects to meet future demands.

Groundwater – The water located in an aquifer beneath earth's surface in soil pore spaces and in the fractures of rock formations. The depth at which soil pore spaces or fractures and voids in rock become completely saturated with water is called the water table.

Groundwater Extinguishment Credits – Credits that are generated when a grandfathered groundwater right is extinguished or retired and never used again. The credits are issued as a certificate from the Arizona Department of Water Resources. Ownership of the credits can be transferred from the owner to another entity within the same Active Management Area.

Kai Farms – An approved Groundwater Savings Facility located at a farm near Redrock, Arizona that uses CAP water for irrigation.

Lake Powell – A water storage reservoir on the Colorado River near Page, Arizona with a capacity of 24.3 million acre feet. Glen Canyon Dam forms the lake and provides hydro-electric power.

Lake Mead – The largest water storage reservoir in the United States with a capacity of 25.9 million acre feet. It is located on the Colorado River about 24 miles southeast of Las Vegas, Nevada. Hoover Dam forms the lake and provides hydro-electric power.

Long-Term Groundwater Storage Credit – A credit for storing CAP water or wastewater effluent that is accrued when this water is delivered to and recharged into an approved underground water storage facility. Once the water is recharged and stored and a deduction is taken for losses to the aquifer, it becomes a credit that can be used in the future either by direct delivery or used as credits to replace groundwater pumped from recovery wells.

Lower Santa Cruz Replenishment Project – An approved Underground Storage Facility operated by the Central Arizona Project located in the Tucson Active Management Area near Marana, Arizona.

Northwest Recharge Recovery and Delivery System – Partnership project between The Town of Oro Valley, Metro Water and The Town of Marana to plan, design, construct and operate a recovery and delivery system to facilitate the delivery of recovered CAP water from the Lower Santa Cruz Recharge Project and the Avra Valley Recharge Project to each partner's respective service area.

Pima Mine Road Recharge Project – An approved Underground Storage Facility operated by the Central Arizona Project located in the Tucson Active Management Area near Sahuarita, Arizona.

Recharge – The replenishment of an aquifer's groundwater. An aquifer recharges water that percolates into the ground. Recharge takes advantage of water supplies available now and stores them for future use. Recharge also allows the slow introduction of new water supplies into our drinking water system by blending the new source with existing groundwater.

Tucson Active Management Area – One of five Active Management Areas in Arizona established under the 1980 Groundwater Code to manage groundwater usage through the Assured Water Supply Program.

Turbidity – Turbidity is the cloudiness or haziness of a fluid caused by large numbers of individual particles that are generally invisible to the naked eye similar to smoke in air.

Zones – A "zone", or "pressure zone" is defined as the area bounded by both a lower and upper elevation. Water service areas with elevation changes establish pressure zones to ensure that all customer's water pressure is within a prescribed pressure range regardless of the customers' service elevation.