Phoenix Active Management Area
Water Management Assistance Grant No. 2020-3120

Leak Detection Project Deliverable No. 10

Seventh Semi-Annual and Final Report
May 2022 Through October 2025

Grant Award Recipient:
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Background:

In November 2022, Arizona Water Company (AWC) reported its first results after receiving the new leak detection equipment associated with the Water Management Assistance Grant No. 2020-3120 (Grant). Per the conditions of the Grant, semi-annual reports of results are to be submitted to the Arizona Department of Water Resources (ADWR). This is the seventh and final semi-annual report of the results in the series.

This seventh report provides information on the administration of the approved leak detection program, data related to leak detection efforts in the Phoenix Active Management Area (AMA) service areas, and shows the impact of the use of the equipment related to groundwater pumping in the service areas overall.

Leak Detection Program:

AWC has had a leak detection program in place since 2011. The program was developed to comply with the Modified Non-Per Capita Best Management Practice program laid out in the Third Management Plan. Through time, the leak detection program has identified leak detection equipment and practices that enhance the overall security of distribution systems and offer a structured approach to monitoring and responding to pipe failures.

While the discussion of the program in this report is limited to the grant recipients in the Phoenix AMA, AWC administers the leak detection program in all its water systems regardless of location. AWC purchased leak detection equipment based on the Grant award for the Phoenix AMA , which is listed below.

Equipment Purchased	Quantity
Ecohologic Leakfinder ST Correlator	2
FCS S30 Geophone	9
Z-Corr Correlating Logger w/8 loggers	1
Dell Latitude Rugged Laptops	5

Table 1 - Equipment Purchased

The leak detection equipment is being used in the Apache Junction, Superior, and the White Tank Systems. Table 2 shows the leak detection activity for the three systems from May 2025 to October 2025. The last reporting period showed the activity of AWC staff from November 2024 to April 2025. Because the reporting period covers six months, we included both the most recent six-month period and the preceding one for comparison. Comparing the last two reporting periods, the number of man hours, length of pipe surveyed, and leaks detected are in line with each other. The average leak volume in the most recent six-month period is

approximately 127,051 gallons versus the previous six-month period in which leaks averaged approximately 28,900 gallons. The difference in volumes is due to significant leaks in Superior and Apache Junction systems during this reporting period. Details are listed below. The ability to find and fix leaks before they discharge a significant volume is one of AWC's goals with its water loss reduction program and has been accomplished in the reporting period.

Data	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov to Apr	May to Oct	Total
Length of Pipe Surveyed	49,974	42,941	48,781	42,223	63,680	17,500	7,534	41,482	20,011	84,568	35,751	33,492	265,099	222,838	487,937
Leak Detection Man Hours	75	85	89	86	91	49	18	41	85	99	52	82	475	377	852
Number of Leaks Found	17	12	15	8	11	13	12	11	8	13	12	19	76	75	151
Estimated Loss of Gallons	304,580	837,420	734,790	97,080	233,000	490,440	1,363,920	351,880	686,720	799,350	304,680	6,022,260	2,697,310	9,528,810	12,226,120

Table 2 - Leak Detection Summary Results (Nov. 2024 – October 2025

Data	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May to Oct	Nov to May	Total
Length of Pipe Surveyed	37,971	13,790	12,056	18,049	18,524	10,236	8,078	37,103	70,787	21,829	78,727	59,734	110,626	276,258	386,884
Leak Detection Man Hours	127	74	34	34	78	67	27	90	118	151	142	119	414	647	1,061
Number of Leaks Found	8	10	11	11	5	7	14	16	10	8	12	11	52	71	123
Estimated Loss of Gallons	277,440	399,880	1,224,647	3,985,120	20,700	59,840	1,338,150	2,432,000	237,690	180,090	166,400	191,153	5,967,627	4,545,483	10,513,110

Data	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May to Oct	Nov to Apr	Total
Length of Pipe Surveyed	72,160	73,608	26,314	52,114	19,284	14,666	66,290	76,708	76,708	117,521	71,197	58,329	724,899	466,753	724,899
Leak Detection Man Hours	175	204	64	114	54	86	76	76	73	81	94	181	1,278	581	1,278
Number of Leaks Found	10	10	7	15	20	14	12	15	12	11	9	9	76	68	144
Estimated Loss of Gallons	1,040,000	547,000	136,000	217,000	806,000	508,140	33,060	557,520	104,468	794,760	1,436,580	680,700	3,254,140	3,607,088	6,861,228

Data	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	May to Oct
Length of Pipe Surveyed	75,658	60,004	42,792	80,699	19,683	51,057	329,893
Leak Detection Man Hours	93	86	80	92	68	109	528
Number of Leaks Found	7	10	13	17	20	19	86
Estimated Loss of Gallons	13,860	117,870	1,050,480	595,290	154,140	633,200	2,564,840

Table 3 - Leak Detection Summary Results (May 2022 – October 2024)

Leak Detection Impact:

The overall goal of the Grant is to prove a reduction in groundwater pumping due to the use of the equipment and the leak detection program overall. In the following charts, AWC highlights the production of each system by month, the groundwater production by month, and the number of customers. Additionally, we have added a linear trend line related directly to groundwater production in each system.

Apache Junction:

The Apache Junction water system is in an area with a growing and seasonal population. The seasonality of the population is visible by the blue line on the graph. There are many seasonal residents that come into the service area to spend the winter months and then depart in the summer.

The gray columns show the overall production/delivery from all sources of water to the Apache Junction system. The green columns show the groundwater only production for each of the months in the reporting periods. AWC has a Central Arizona Project (CAP) Municipal and Industrial (M&I) Subcontract and participates in annual storage and recovery for a portion of the 6,285 Acre-Feet (AF) allocation. The 2025 volume that will be stored and recovered is 3,140 AF.

The linear trend for groundwater pumping has slowly increased during the reporting period. As noted above, the weather in Summer 2025 was extreme with 84 consecutive days with temperatures above one hundred degrees. October estimated water loss was extremely higher than typical due to a 12" CA main break during a storm resulting in approximately a loss of 4.5 million gallons, and another 4" CA main break resulting in a loss of 0.5 million gallons. The trendline for groundwater production continues to remain relatively flat during the entire study period so far.

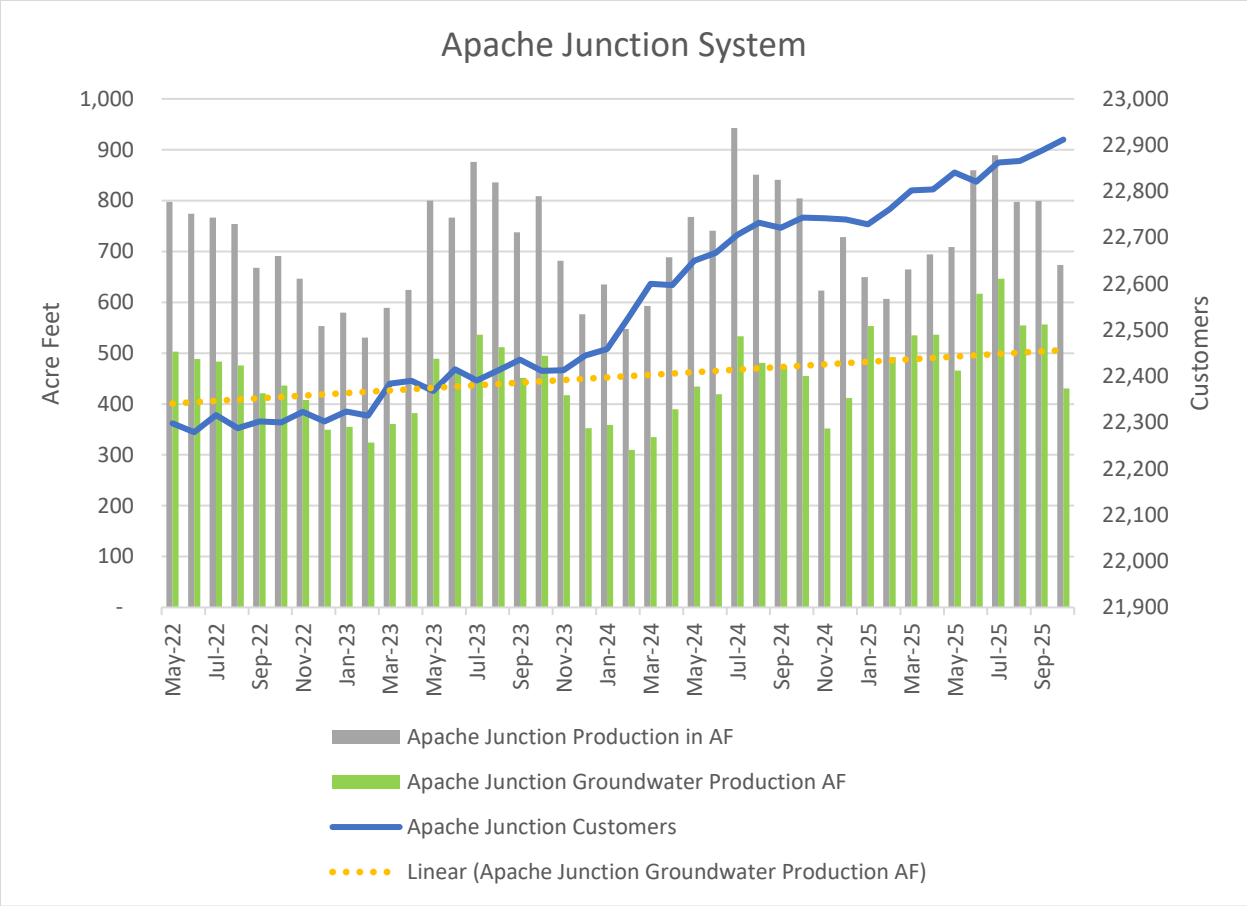

Figure 1 - Apache Junction Production Data

Superior:

The Town of Superior is a mature community with aging infrastructure. AWC continues working through a variety of System Improvement Benefit (SIB) projects that are designed to replace the aged pipe system in this mountainous mining community. The population in the community is stable. In 2011, the Town of Superior transferred its 285 AF of CAP M&I water to AWC. The volume was added to AWC's Superstition System allocation. Each year, the Superior system participates in annual storage and recovery of the 285 AF associated with the Superstition allocation. Through the efforts of the leak detection program and additional system improvement projects have substantially impacted groundwater pumping in a positive way.

It is important to keep in mind that the overall production of this system is relatively small compared with the Apache Junction and White Tank Systems. The Superior system hovers around 468 AF of production, annually. The leak detection program is helpful with this system because even a small leak on the system shows up as an oversized percentage of water lost when compared to other systems in the

AMA. Annual demand from May – September 2025 is 246 AF compared to 209AF from May - September 2024. Production and water loss spiked in August, due to a 6" main break resulting in a loss of 576,000 gallons. Although the customer count remained stable over the past year, the area experienced persistent heat in the summer months causing an increase in the overall demand. Production trends will decrease now that cooler temperatures have arrived. The community remains very conservation oriented and that is visible in the gray columns of the graph.

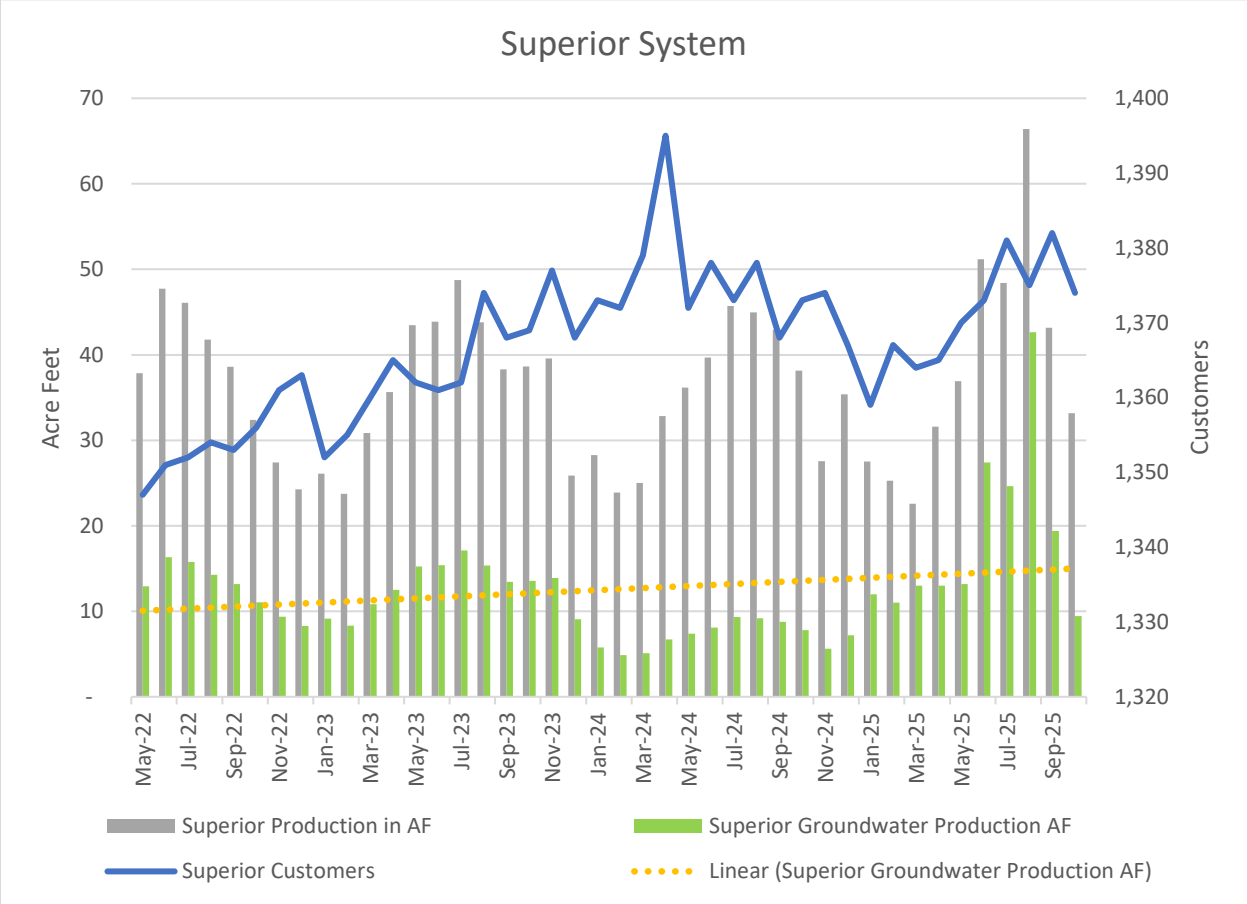

Figure 2- Superior Production Data

White Tank:

The White Tank system is located in the West Valley and the communities served are Buckeye, Goodyear, and Litchfield Park. The area has grown quickly over the past few years. To offset groundwater pumping in the basin, AWC has begun to directly deliver a majority of its treated CAP M&I water to customers over the past two years. The annual delivery of the surface water through the EPCOR treatment plant usually begins in March each year. Additionally, the system acquired another surface water source through its Maricopa Water District (MWD) member

lands. As of March 2025, the system has started to deliver Agua Fria River water to the portion of its customers that reside within the MWD member lands. The new water source is treated along with the CAP water at the EPCOR treatment plant. The heat persisted through the summer months and has impacted the volume of groundwater required to keep up with the system's increased demands and customer growth. The leak detection program has not impacted the groundwater pumping in part due to the system being relatively new, community growth, increased surface water and excessive heat in the summer.

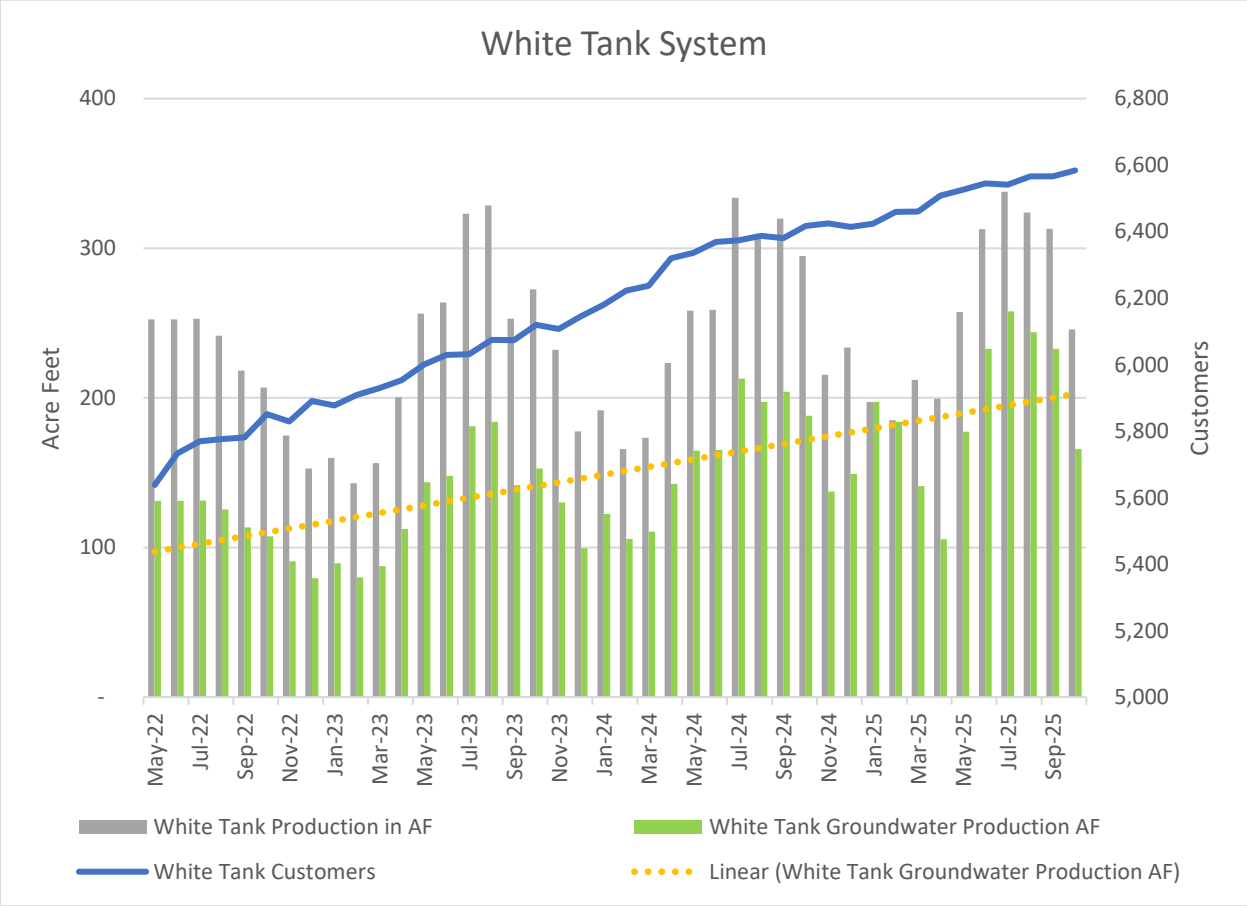

Figure 3 - White Tank Production Data

Conclusion:

In this seventh and last semi-annual report of results, AWC has determined that the leak detection program is invaluable and AWC will continue to use the equipment. AWC staff have been using the equipment that was purchased per the Grant conditions. In this semi-annual report, there is invaluable information since the purchase of the equipment to visualize the growth in communities, the overall water production by month and the total groundwater production by

month. As data is collected from the leak detection program, we have been able to see the interplay between weather, growth, aging infrastructure, water supplies and the leak detection equipment program. Every community is unique, and the volume of groundwater pumped varies during the seasons. The leak detection program is used in all AWC's systems and AWC will continue to monitor the program and provide results internally.