

Water Supply Fee Semiannual Report January-June 2019



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About the cover:

Top left: Vista Ridge Project well pump installation.

Top Right: Landscape transformation in San Antonio is well underway with over 3 million square feet of turf replaced with diverse wildlife and water-friendly landscape.

Bottom: Agua Vista Station will be the distribution point for Vista Ridge water and includes two 10-million gallon tanks, treatment equipment and pipelines in and out of the facility. Agua Vista Station will treat 45 million gallons of water per day, polishing it to match the quality of and ensure compatibility with Edwards Aquifer water.

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Introduction

San Antonio Water System (SAWS) is pleased to present the January – June 2019 Water Supply Fee Semiannual Report to San Antonio City Council. This report is a requirement of Chapter 34 of the Municipal Code, Section 34-1349 and is submitted to City Council twice each year, covering the periods of January through June, and July through December.

SAWS was created by an act of the City Council in May 1992, through Ordinance 75686. SAWS serves approximately 1.86 million people. The service area covers 927 square miles primarily in Bexar County and in portions of Atascosa, Medina and Comal counties.

This report documents the water resources activities pertaining to the implementation of San Antonio Water System’s long-term planning efforts, with focus on activities during the period of January 1 through June 30, 2019. The report will:

- Review the progress on the Water Management Plan,
- Provide a status report on the utility’s water production,
- Recap the water supplies developed and costs during the reporting period,
- Provide an update on the acquisition of additional water supplies,
- Summarize revenues generated from the water supply fee, capital spending on water supply projects, and,
- Summarize the maintenance and operational expenses for completed projects.

SAWS had a total potable demand of 108,790 acre-feet (AF) during the first half of 2019. Included in this total is 81,868 AF of Edwards Aquifer production to distribution. During the first half of 2019, Edwards Aquifer supply accounted for approximately 75 percent of the total potable demand. One AF of water is equal to 325,851 gallons.

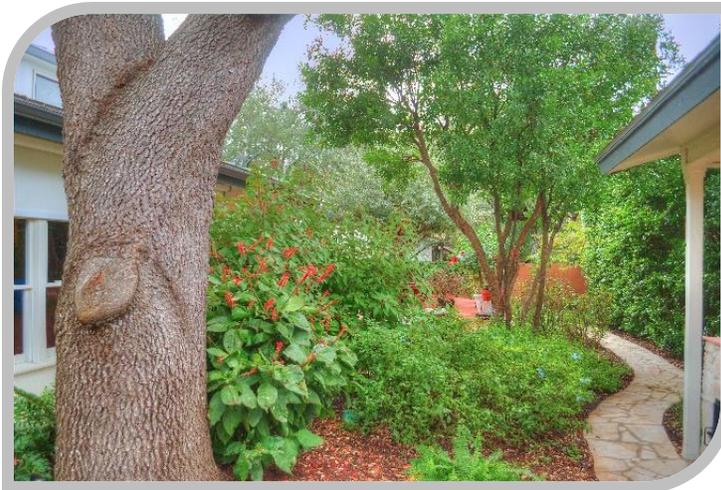
The current groundwater and surface water supply portfolio consists of:

- Edwards Aquifer
- Canyon Lake
- Carrizo Aquifer
- Lake Dunlap
- Lower Wilcox Aquifer
- Medina Lake & River Rights
- Trinity Aquifer

As part of its diversified water supply portfolio, SAWS maintains the largest direct recycled water system and the largest groundwater-based Aquifer Storage & Recovery (ASR) facility in the nation.

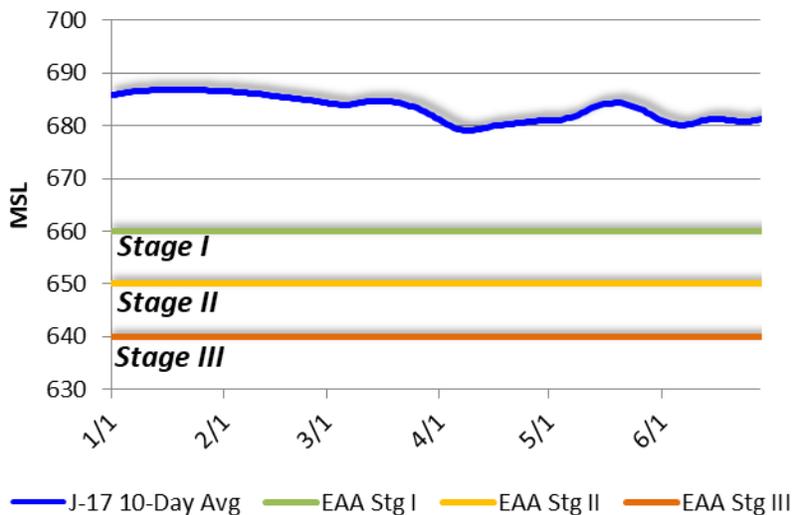
In the U.S., 14 percent of total indoor residential water is attributed to undetected leaks. New flow-sensing devices help catch these leaks before they become costly.

SAWS finished the first half of 2019 with no regulatory cutback to its Edwards Aquifer supply, as the Edwards Aquifer Authority (EAA) did not need to declare critical period due to fairly consistent precipitation for the first six months of the year. The first half of 2019 saw above average aquifer conditions and slightly below average rainfall at 1.27 inches below normal year-to-date as of June 30. SAWS ended June 30 with no regulations and zero days of drought restrictions, which allows customers to use spray irrigation before 11a.m. or after 7 p.m. on any day.



San Antonio J-17 Index well levels for the reporting period are shown in the graph below. Due to the frequency of precipitation events, Edwards Aquifer 10-day average levels have mostly remained above 680 feet mean sea level (msl) for the first six months of 2019.

Edwards



Water Supply Summary

This section summarizes the status for each water resource project for the second half of 2018.

Supply	Acre-Feet Distributed (Jan.-June 2019)	Activity
Edwards Aquifer	81,868	<ul style="list-style-type: none"> • 2019 beginning of year permit was 272,372 AF • No regulatory cutbacks through June 30, 2019 • Available permit of 272,372 AFY
Medina Lake and River System	0	<ul style="list-style-type: none"> • Medina Lake began 2019 at 98 percent of capacity and ended June 30 at 100 percent of capacity due to above average rainfall in the watershed
Direct Recycled Water	3,734 <ul style="list-style-type: none"> • 2,547 (<i>consumptive</i>) • 1,187 (<i>river flow</i>) 	<ul style="list-style-type: none"> • System Supply: 25,000 AF • Contracted consumptive commitments: 12,350 AF (excludes volumes for streamflow augmentation) • Volume available for consumptive use: 12,650 AF
Trinity Aquifer	9,601	<ul style="list-style-type: none"> • Continued timely rainfall has kept Trinity Aquifer levels high allowing for increased production rates

Supply	Acre-Feet Distributed (Jan.-June 2019)	Activity
Canyon Regional Water Authority (CRWA)	2,060	<ul style="list-style-type: none"> SAWS has returned CRWA as the primary water supply serving the NE Service Area
Canyon Lake	4,147	<ul style="list-style-type: none"> Canyon Lake continued to deliver a steady and reliable supply of water
H ₂ Oaks Aquifer Storage and Recovery	ASR storage to distribution system: 2,038 Edwards Water Stored: 8,152	<ul style="list-style-type: none"> Total volume of stored Edwards water on June 30, 2019: 175,328 AF <ul style="list-style-type: none"> Total volume of Edwards water stored on behalf of the EAHCP: 107,527 AF
H ₂ Oaks Carrizo Aquifer (Bexar County)	2,159	<ul style="list-style-type: none"> Local Carrizo Aquifer production through June 30
H ₂ Oaks Brackish Groundwater Desalination Program	1,638	<ul style="list-style-type: none"> Plant returned to production April 2019 after being taken offline September 2018 for maintenance
Regional Carrizo Program	5,460	<ul style="list-style-type: none"> Includes SAWS Buckhorn wellfield production in Gonzales County plus water purchased from Schertz-Seguin Local Government Corporation Lowered well pumps on WG-05, WG-06, WG-7, WG-08, WG-10, and WG-14 60 feet for improved operational efficiency

Planned Projects 2017-2025	Status
<p>Vista Ridge (Construction)</p>	<ul style="list-style-type: none"> • The SAWS Board approved \$167 million in construction contracts for the Central Water Integration Pipeline (CWIP), the consortium of projects that will integrate the Vista Ridge water into the existing SAWS distribution system • Construction began on all 8 CWIP projects by December 2018 to allow SAWS to accept Vista Ridge water in Q1 2020 for the contractual testing period • As of June 30, 2019, approximately 135 miles of pipeline had been constructed across seven counties: Burleson, Lee, Bastrop, Caldwell, Guadalupe, Comal, and Bexar • All 18 wells in Burleson County have been drilled • Construction of 3 pump station facilities delivering the water was approximately 80 percent complete by June 30
<p>Conservation Programming</p>	<p>Program highlights from the first half of 2019 include:</p> <ul style="list-style-type: none"> • Continuing WaterSmart Software Pilot, which is open to all residential customers. Sending over 30,000 personalized reports per month helping customers identify and participate in conservation opportunities. One-third of customers enrolled in the program are customers designated as low-income customers receiving an affordability discount • 313 Plumbers to People and Conservation Makeover visits in the first half of 2019, with proactive efforts to enroll more customers through the WaterSmart pilot and Conservation Makeover Program • 1,185 Irrigation Consultations completed at homes in the first half of 2019, averaging over 1,100 gallons per month in savings at each home • 194 households and 20 businesses used Irrigation Efficiency rebates in the first half of 2019 • Nearly 900 WaterSaver Landscape and 150 WaterSaver PatioScope Coupons redeemed in the second half of 2018 to replace grass with drought-tolerant plants and patioscapes • Over 3,500 customers are signed up for the WaterSaver Rewards program, with 478 rewards coupons redeemed in 2018 • Over 2,500 required accounts are in compliance with the Irrigation Check-Up regulation, resulting in 74 percent compliance by June 30, 2019 • Over 750 customers had devices installed in early 2019 as part of two random control trial pilots to improve understanding of water savings associated with flow sensing devices and app-based irrigation controllers • Conservation initiatives have successfully targeted the need for management of outdoor water demands • Programming to reduce planned average year consumption from 124 gallons per capita per day (GPCD) in 2017 to 111 GPCD in 2025.



Planned Projects 2026-2040 (2017 WMP assumptions)	Status
Conservation Programming	<ul style="list-style-type: none"> • Programming to reduce average year consumption from 110 GPCD in 2026 to 96 GPCD in 2040 • Strategies to achieve reduction will include continued investment in conservation education, incentives, and reasonable regulation • There will be continued development of programs that help residential and commercial customers manage their water usage. This will accelerate adoption of water efficient technology, encourage use of technology and other techniques to monitor leaks and education to encourage adoption of behavioral changes that save water

Planned Projects 2041-2070 (2017 WMP assumptions)	Status
Conservation Programming	<ul style="list-style-type: none"> • Programming to reduce average year consumption from 96 GPCD in 2041 to 88 GPCD in 2070 • Strategies to achieve reduction will include continued investment in conservation education, incentives, and reasonable regulation • There will be continued development of programs that help residential and commercial customers manage their water usage. This will accelerate adoption of water efficient technology, encourage use of technology and other techniques to monitor leaks and education to encourage adoption of behavioral changes that save water
Brackish Groundwater Desalination Program	<ul style="list-style-type: none"> • Future phases will deliver up to an additional 22,400 AFY of water, for a project total of up to 33,600 AFY • All additional phases will be constructed outside Bexar County • Construction is anticipated to begin in the late 2040s depending on demand • Hydrologic modeling has been conducted to determine the amount of additional Wilcox Aquifer production and number of wells that will be needed for future phases
Expanded Carrizo (Bexar County) Project	<ul style="list-style-type: none"> • Future phases are anticipated to provide an additional 7,000 AF annually for each phase for a total of 21,000 AFY • Construction is anticipated to begin in the late 2040s • Project can be designed and constructed quickly, relative to other projects

Featured Projects

Vista Ridge – Regional Water Supply

Project Status: Project approved, contract signed, construction well underway.

Water Supply: Groundwater, Carrizo and Simsboro Aquifers; leases in Burleson and Milam Counties, wells in Burleson County.

Background:

Following SAWS Board approval on September 29, 2014, and San Antonio City Council's approval on October 30, 2014, SAWS Chairman Berto Guerra, SAWS President/CEO Robert R. Puente, and city officials signed a contract with the Vista Ridge Project Company to bring a new water supply of 50,000 AFY (16.3 billion gallons annually) to San Antonio. The agreement calls for the Vista Ridge project company to build and operate wells and a pipeline system to pump groundwater from Burleson County to San Antonio for a period of 30 years. In exchange, SAWS will pay a fixed unit price for water produced and made available plus all operating and maintenance and electrical costs. At the end of the contract term, the wellfield and pipeline system ownership will transfer to SAWS.

A second agreement with the owner of the groundwater leases gives SAWS the right to continue producing water for an additional 30-year term beginning upon the transfer of system ownership to SAWS. In combination, both agreements will provide over 60 years of contracted water supply.

The project is divided into three phases: Development, Construction, and Operations. The contract signing initiated the Development Phase involving permitting, easement acquisition, and other activities required to secure funds necessary to finance construction of the system. After financing was secured, the project envisions slightly under four years for the Vista Ridge project company to complete the Construction Phase. Thereafter, the Operations Phase will begin and continue for 30 years. SAWS will be responsible for the construction of its Central Water Integration Pipeline project (CWIP) to integrate the Vista Ridge water fully into the SAWS distribution system.

The Vista Ridge project construction is expected to be complete in the first quarter of 2020 to begin testing. Commercial operation of the project is expected to begin in April of 2020.

Activities this Period:

The Vista Ridge project company, under the leadership of Garney Construction, continued the construction of the 142-mile long pipeline, pump station facilities, and water wells. As of June 30, 2019, approximately 135 miles of pipeline have been constructed across seven counties which include Burleson, Lee, Bastrop, Caldwell, Guadalupe, Comal, and Bexar Counties. All 18 wells in Burleson County have been drilled, and construction of the three pump station facilities delivering water is approximately 80 percent complete.



Carrizo well CW-1 350 horsepower motor.



138 out of 142 miles of the transmission pipeline is installed.



Crew members being transported inside tunnel access shaft at the Colorado River in Bastrop County.



Pump Station - 4 pumps, 2,000 horsepower, 17 mgd.



This cooling tower in Burlison County cools the incoming Vista Ridge water from 110 degrees to 83 degrees Fahrenheit.

Central Water Integration Pipeline (CWIP)

Project Status: Design completed and construction contracts awarded for all 8 projects included in the CWIP program.

Water Supply: Groundwater, Carrizo and Simsboro Aquifers; leases in Burleson and Milam Counties, wells in Burleson County.

Background:

To receive and effectively distribute the total volume of Vista Ridge water to the SAWS distribution system, the Central Water Integration Pipeline (CWIP) Project was developed. The project includes: design and construction of water storage and conditioning facilities at the water delivery point, a new pump station to serve the Stone Oak area, new sections of transmission pipeline to connect to existing pipeline and facilities, upgrades to major pump stations, new pressure reducing valves, and automation through the SAWS supervisory control and data acquisition (SCADA) system of over 50 facilities that will receive Vista Ridge water.



SAWS Agua Vista Station – water conditioning facility at the point of delivery.



SAWS Bitters Pump Station Improvements – new additional 5 million gallon storage tank at a major pump station.



Pipeline Segment 5-1 will convey Vista Ridge water from Agua Vista Station to the SAWS system through a tunnel.



SAWS Maltsberger Pump Station Improvements – new electrical building to improve system reliability.

Activities This Period:

Construction is underway for all projects, and the status is summarized below. The construction management team consists of:

- Tetra Tech providing engineering services during construction to ensure the projects are delivered in accordance with the contract documents;
- Black & Veatch providing inspection services to ensure quality is maintained; and
- SAWS staff monitoring scope, schedule, and budget.

The following four projects highlights the activities this period with SAWS integration of the Vista Ridge Project water:

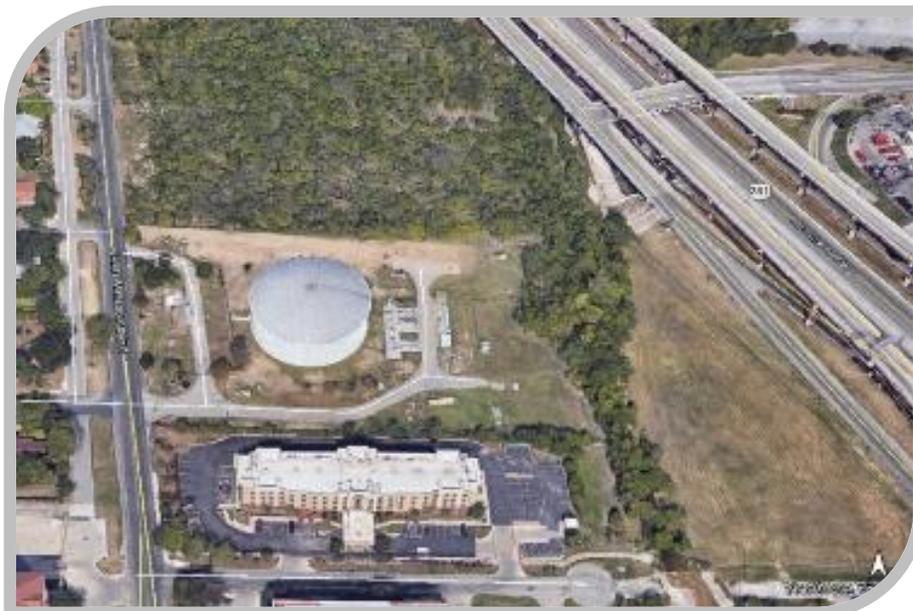
- The Agua Vista Ground Storage Tank is 99 percent complete and consists of a 10 million gallon concrete ground storage tank. This is SAWS' tallest ground storage tank at 145.5 feet in diameter and 81.5 feet high. The contractor will return to the site to leak test and disinfect the completed tank when the Agua Vista Station is ready for commissioning.



- Pipeline Segment to Knights Cross (Project Segment 5-2) is approximately 3,500 linear feet of 36-inch steel water transmission main to serve Stone Oak. Pipe installation is complete. Pending work includes restoration and testing. This project is approximately 84 percent complete.



- Maltzberger Pump Station Improvements consists of a new electrical building and replacement of aging electrical equipment and wiring, two new pressure reducing valves (PRVs). The contractor is maintaining the schedule and has the electrical building foundation complete and masonry wall construction underway. This project is approximately 45 percent complete.



- Pipeline Segment to Basin Pump Station (Segment 5-4) consists of approximately 5,500 linear feet of 24-inch and 30-inch pipe connecting to Basin Pump Station. The contractor is ahead of schedule with pipeline installation completed in residential areas. This project is approximately 60 percent complete.



Brackish Groundwater Desalination Program

Project Status: Operation stage (Phase I)

Water Supply: Brackish groundwater, Lower Wilcox Aquifer, southern Bexar County

Background:

SAWS has developed a Brackish Groundwater Desalination (BGD) program in southern Bexar County, which is designed to help meet the city's water demand while reducing dependence on the Edwards Aquifer. The Texas Water Development Board (TWDB) has confirmed that a vast supply of brackish groundwater exists in our region and has yet to be developed. As directed by legislation that passed in 2015 (HB 30), the TWDB is conducting further studies of brackish groundwater across the State, including the San Antonio region, and has presented the first round of data. The South Central Texas Regional Water Planning Group (Region L) has identified brackish groundwater as a supply source to meet future demand.

SAWS desalination facility is capable of producing up to 10 million gallons of drinking water per day (11,200 AFY) from the Wilcox Aquifer in Phase I. The plant and wells are located at SAWS H₂Oaks Center consisting of approximately 6,000 acres owned by SAWS that is also home to its Aquifer Storage & Recovery program (which is situated on the original 3,200 acres) and Local Carrizo project. Future phases will deliver up to an additional 22,400 AFY of water phased over time to allow for operational flexibility, for a project total of up to 33,600 AFY. However, the timing of additional phases of the brackish desalination program will be considered as part of SAWS' ongoing planning efforts.

The cost per acre-foot for Phase I is estimated at \$1,374 not including the cost to integrate the water into SAWS distribution system. As of June 2019, SAWS has invested approximately \$200 million in capital improvement for the BGD Program. Once treated, the water is compatible with Edwards Aquifer water and blends with the rest of the water in the distribution system. While this supply of water is more expensive than Edwards Aquifer water, it is plentiful and unaffected by prolonged drought.

Activities This Period:

In order to produce 13,440 AFY, the wells have to pump 13 mgd of raw water year round. Water levels demonstrate the Wilcox Aquifer Formation is more resistant to passing water flow to the pump than initially predicted in the modeling.

Brackish Groundwater Desalination Model – Rerun

As a result, the Brackish Hydrologic Model was updated with the following results:

- Calibration of the model was improved based on two years of operating data (water levels and production) from each well within the brackish well field. This allowed SAWS to gain a better understanding of how the brackish well field functioned as a whole when all wells were operating and how the Lower Wilcox Formation responded to pumping.
- The updated model provided guidance that pumping rates should be marginally increased in the southwestern portion of the well field and reduced slightly in the northern portion of the well field to manage water levels.
- The updated model predictions for several plant production rates indicated the pumps in a number of production wells would require lowering sooner than originally anticipated. (Completed March 2019.)
- The model indicated for a consistent 10 mgd plant output, two additional production wells located in Bexar County would be required. (Conversion of Test well 1 to a production well and construction of new well BGB-14 is currently in progress.)

The Wilcox Aquifer has sufficient water to support operation of the Desalination Plant for 50 years or longer.

To optimize production in Bexar County, SAWS is undertaking the following modifications to sustainably produce 11,200 AFY (or 10 mgd) rather than 13,440 AFY:

- 13 total wells needed to produce 11,200 AFY (2 new wells inside Bexar County in addition to the current 11) Total revised estimated cost as of June 2019 \$9.9m.
- One additional well will be drilled and conversion of a test well to a production well will be necessary.
- Pumps in seven (7) wells needed to be lowered.



Programmable Logic Controller for cleaning in place cleaning of concentrators.



Calcite Contactors with delivery of calcite super sacks.

Project Modifications

The brackish plant was idled between September 20, 2018 and April 8, 2019 for maintenance work and modifications to the well field in order to sustain production goals.

- Pump levels have been adjusted and sand/silt filtration has been installed.
- Drilling of the new production well (BGD-14) is in progress. Completion of the well is expected in December 2019.
- Engineering design work is underway for the new portion of the brackish raw water collection pipeline that will convey water from the converted test well (TW-1) and the new well (BGD-14) to the reverse osmosis plant. Construction of the new pipeline is expected to be awarded in the fourth quarter of 2019 with construction completion in late 2020.

Nonrevenue Water (NRW)

Background:

The key to Nonrevenue Water (NRW) is understanding and eliminating instances of it, using practical, cost effective implementation opportunities. SAWS is committed to performing best business practices in efforts to address NRW. SAWS performs state required water balance audits annually and works with loss control professionals to implement the best strategies for SAWS.

NRW is multifaceted and incorporates more than just addressing leaks. NRW is comprised of authorized use, apparent losses and real losses, definitions of which can be found in the glossary.

While SAWS is one of the nation's largest and most complex utilities, it outperforms other water systems when comparing performance benchmarks. Regarding NRW, SAWS has outperformed other utilities by maintaining a low Infrastructure Leakage Index (ILI) which is a performance metric of real water loss in a distribution system.

Activities This Period:

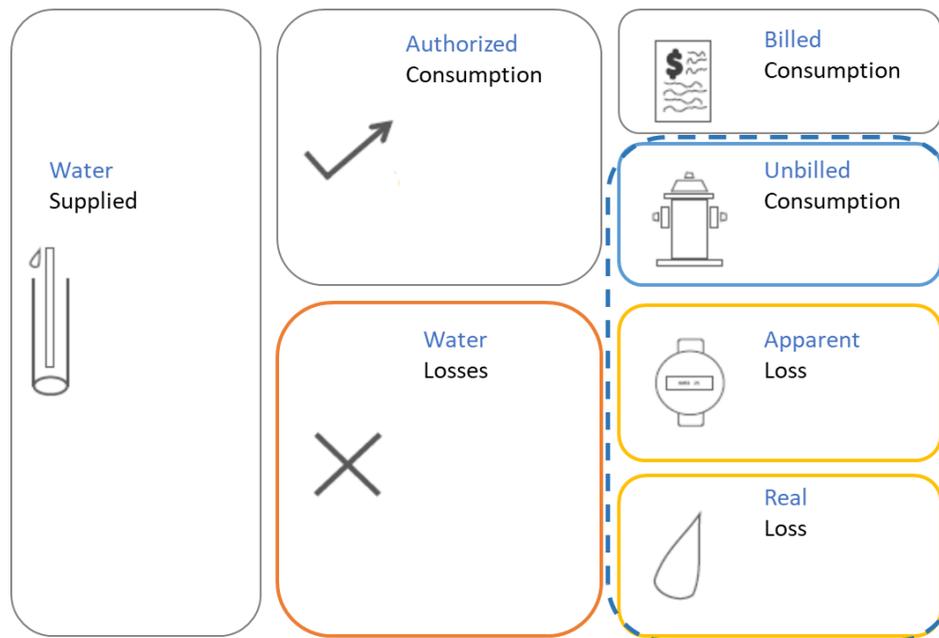
Nonrevenue water was higher than previous years when expressed by percent total volume as required by the State. This increase was identified to be the results of fluctuations of weather and demand, and increased precision of data. Additionally, during this period there was a complex 42-inch transmission pipeline leak which required time for proper repair. As a percent of total volume of production, this incident results in additional real losses for the year.

SAWS looks at other performance measures for insight such as the ILI and differentiates between acute and chronic concerns with regards to water loss. SAWS has a long-term commitment to control and reduce NRW. This commitment is based upon a multi-year implementation strategy that includes: quarterly cross-departmental communication, developing specific cost-effective interventions from NRW control team, and implementing best business practices towards the goal of reducing NRW to 14 percent by 2025 per the *2017 Water Management Plan*.

Highlights during this reporting period include:

- **Water Loss Reporting** – SAWS compiled and submitted its annual standardized water balance as required by the State. The reported 2018 NRW (Unbilled + Apparent Loss + Real Loss) percent by total volume was 19.0.

The graphic below features a breakdown of the major components of a water balance:



- **Production System Input Measures** – Measuring eight (8) water sources and 15 water supply projects requires over two hundred points of critical measurement. All of SAWS water supply measuring devices meet or exceed the regulatory requirements for recording production. SAWS diversified water supply results in operational flexibility to meet system demands which is a strength of SAWS, but causes measuring challenges. The water supplied number is a foundational number in the water balance. Any discrepancies in metering can create skewed production figures. As an improvement in production data, SAWS staff is evaluating potential ways to confirm and address production metering adjustments.

- Agua Vista master meter – The meter at the SAWS point of delivery for the new Vista Ridge Water Supply Project will be a new measurement of supply entering the SAWS distribution system and become part of the water balance in calculating NRW.

This is a proactive critical measurement designed as part of the project. This is in comparison to adding measurement devices to those existing facilities prior to the industry practice of measuring production with a meter.

- SAWS Staff from Water Resources and Production Operations, Instrumentation & Controls Departments observed the laboratory calibration of the 36 inch Venturi meter that will measure the delivery of water from Vista Ridge. The calibration was performed at the Utah Water Research Laboratory, one of very few facilities in the nation that has the ability to conduct a calibration on the flow volume that will be delivered

through this particular meter. Understanding the accuracy, functionality, and actual baseline test was important for monitoring NRW.

SAWS is investigating similar steps of master metering for existing supplies in order to reduce variability of measurements among the various water supply portfolio.

- **Communication and Operational Improvements**

- SAWS Water Loss Control Team, sixteen members across the organization's departments have reviewed unbilled water for the first and second quarter. If current trends continue throughout the year, SAWS will return to lower NRW volumes and remain on track to achieve SAWS goals.
- Roadmap 2020 – 2024 is a five year internal NRW plan that will guide decision makers across various departments. The planning process started in May and is anticipated to be complete in 2020.
- Technology & Innovation - Technology Approval Group (TAG) is a forum that is facilitated by Isle Utilities where SAWS evaluates commercially ready innovations and technology for water and wastewater application.

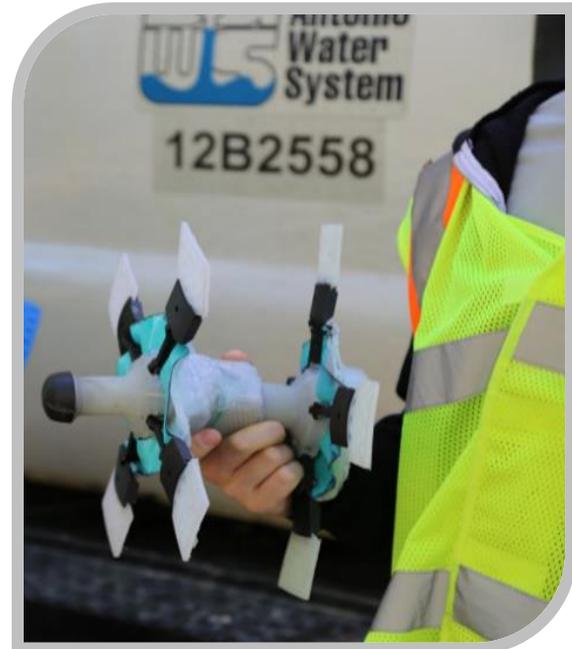
- **Innovation**

- SAWS Distributions and Collections Department (D&C) continues to innovate with the use of a satellite service for deployment and investigation of potable water leaks within the service area. At this time, SAWS is in the process of validating the effectiveness and potential future application for identifying hidden losses.
- D&C continues to expand SAWS' experience with proactive leak detection. A pilot project with Watch Tower Robotics, USA uses a soft bodied robot for leak detection in smaller diameter pipe and is being assessed for its potential as a tool in locating hidden leaks. SAWS is currently assessing the potential application of this technology for use.

Nonrevenue water is a complex challenge for all utilities. One process will not identify all the water loss components of a complex system such as SAWS. NRW improvements will require time and investment. SAWS and Water Systems Optimization (WSO) staff will be comprehensively reflecting on five years of data that will help guide future activities related to cost effectively managing loss control.



36" Venturi pressure differential meter receiving laboratory calibration at Utah Water Research Laboratory, prior to installation at the Agua Vista Pump Station

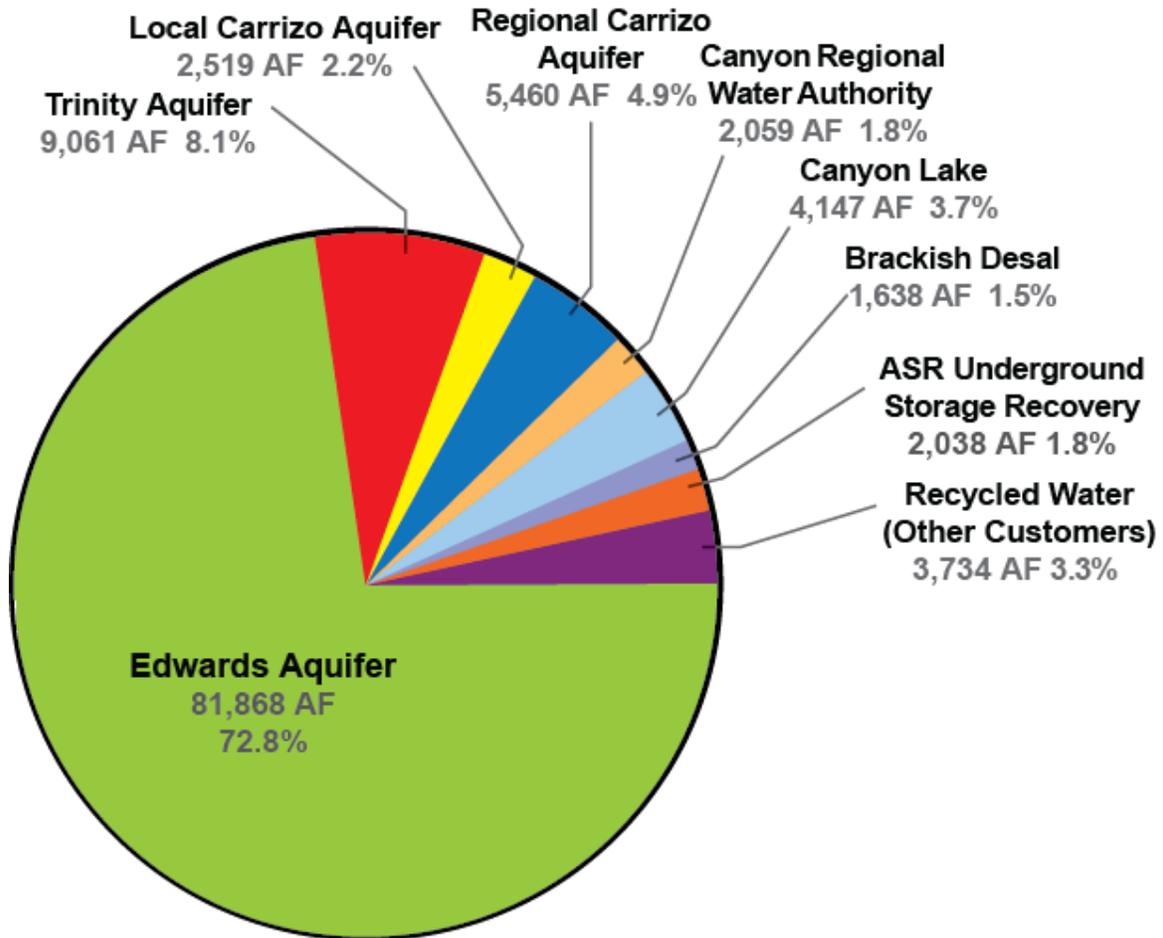


SAWS Distributions & Collections crew member holds a soft plastic robot. The robot enters smaller diameter pipes through a fire hydrant and into SAWS lines and feels for leaks.

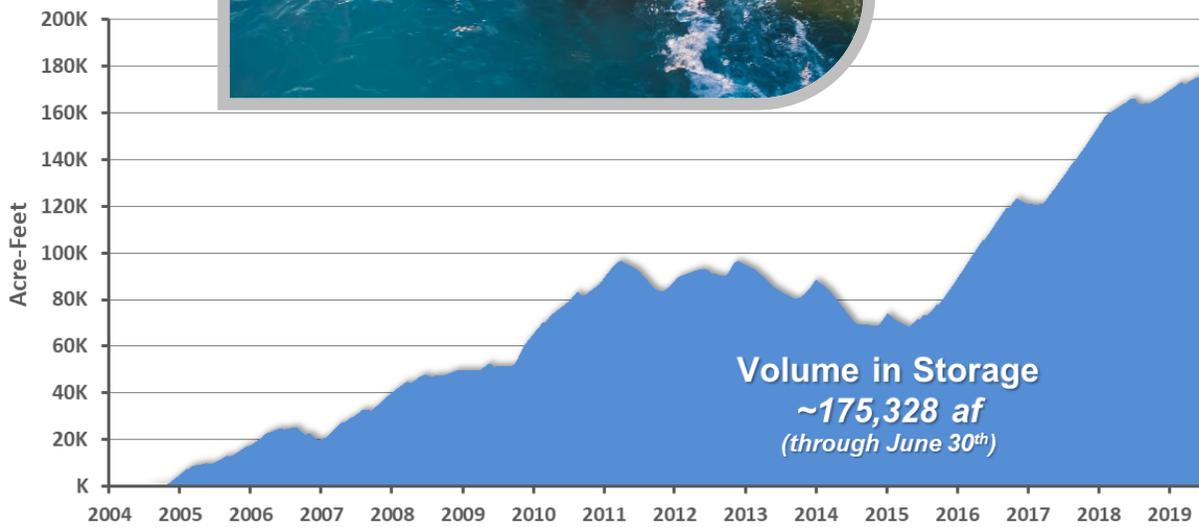
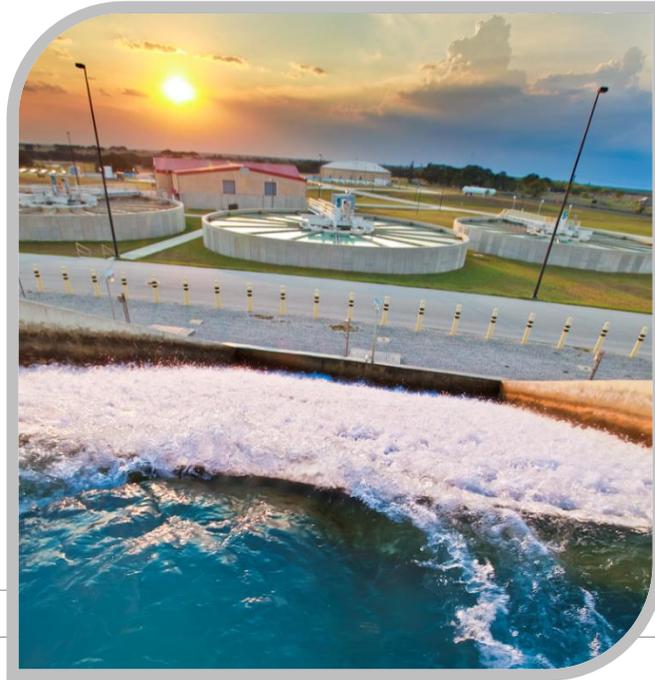
Distribution to Customers

2019 Distribution of Potable and Non Potable Water to Customers

During the first half of 2019, SAWS distributed a total potable water volume of 108,790 AF. This does not include the 8,152 AF of Edwards Aquifer water that was stored in H₂Oaks Aquifer Storage & Recovery facility. In addition, 3,734 AF of recycled water was supplied to our customers in the first six months of 2019. The total water demand was supplied by the following sources:



SAWS stored 8,152 AF of Edwards Aquifer water in ASR during 2019, which brought the total net volume of water stored in ASR to 175,328 AF on June 30, 2019.



Financial Report

Water Supply Fee

On Oct. 19, 2000, the San Antonio City Council via Ordinance #92753 approved a funding mechanism for the construction and development of additional water resources to meet projected water demands for the SAWS service area for the next 50 years.

The Water Supply Fee assists in funding expenditures for the development of new water resources to include all operating, maintenance, research and development, and capital costs (including debt service when capital expenditures are debt funded). As mentioned earlier, SAWS has the largest direct recycled water system in the nation, which moderates the size of the Water Supply Fee by reducing the need for additional water supplies.

The Water Supply Fee per 100 gallons in 2019 for each customer class is summarized on the following page.



Recycled water used for commercial landscape irrigation at Frost operations building.

RATE CLASS	Usage Block Thresholds Gallons	Assessed Fee RATE PER 100 GALLONS
<i>Residential</i>	2,992	\$0.1040
	4,489	\$0.1819
	5,985	\$0.2338
	7,481	\$0.2859
	10,473	\$0.3379
	14,962	\$0.3899
	20,199	\$0.4678
	Over 20,199	\$0.6756
<i>General</i>	Base*	\$0.1961
	125% of Base	\$0.2256
	175% of Base Over	\$0.2941
	175% of Base	\$0.3433
<i>Wholesale</i>	Base**	\$0.2554
	Over Base	\$0.7665
<i>Irrigation</i>	8,229	\$0.2566
	17,954	\$0.3592
	162,316	\$0.4619
	Over 162,316	\$0.5903

* The Base Use for General Class is defined as 100 percent of the Annual Average Consumption.

** The Base Use for the Wholesale Class is defined as 100 percent of the Annual Average Consumption or as agreed to by the wholesale customer and approved by the SAWS Board of Trustees.

Water Supply Fee Financial Reports

The following tables provide an accounting of the collection and uses of the Water Supply Fee since its inception in 2001.

San Antonio Water System Sources and Uses of Funds Water Supply 2001 – 2019 <i>(\$ in Millions)</i>	
Water Supply Fee	\$1,609.26
Operating Transfer from Water Delivery	170.74
Non-operating income & Other	90.82
Recycle Water Revenues	77.49
Water Supply Impact Fees	218.61
Bond Proceeds	871.81
Water Supply O&M	(886.56)
Debt Service ¹	(671.71)
Capital Funding	<u>(1,206.04)</u>
Funds Provided	<u>274.42</u>
Restrictions on Cash	137.90
Designations on Cash	<u>82.31</u>
Unrestricted/Undesignated Funds	<u>\$ 54.21</u>

¹ Includes Principal, Interest and Defeasance Payments.

San Antonio Water System
Operating & Maintenance Expenditures
2001 – 2019
(\$ in Millions)

Operating and Maintenance Costs	
Western Canyon Project - GBRA	\$ 107.15
Oliver Ranch - Lease Payments & Production Costs	28.87
Trinity Stein/Rogers Ranches	44.45
BSR - Lease Payments & Production Costs	6.40
Regional Carrizo - Water Sales Agreements & Other ¹	75.23
Canyon Regional	23.63
Brackish Desalination	10.19
Medina Lake	9.91
Edwards - Lease Expense & Other	75.58
Aquifer Storage & Recovery Project	47.86
Aquifer Protection & Compliance	43.98
Vista Ridge	9.39
Recycled Water Operations	42.94
Conservation Program - net loss/(income)	(5.07)
Stormwater program - net loss	1.93
LCRA - Study Period and Other, Net of Cash Recovery ²	15.17
Lower Guadalupe Water Supply Project	6.26
Simsboro Aquifer	4.41
Recharge Initiative	0.80
Other Water Resources Cost	19.16
Facilities Maintenance	33.79
Communication & Outreach	14.76
Legal - Water Law	8.86
Billing & Collections	61.20
Finance & Information Systems	53.22
Corporate Facilities	13.40
Human Resources, Safety, Other Benefits ³	48.59
Other Support Services ⁴	33.60
Transfer to COSA	50.90
Total Operating & Maintenance	\$ 886.56

¹Includes a 12.4 million write-off of pipeline design costs made obsolete with the agreement with Schertz-Seguin Local Government Corporation to transport water from Gonzales County to SAWS.

²Total program cost net of cash recovered from LCRA settlement.

³Includes workers compensation and dependent and retiree health insurance.

⁴Includes executive management, Board of Trustees, Internal Audit, Legal (corporate) and other miscellaneous.

San Antonio Water System
Water Supply Capital
Spending 2001 – 2019
(\$ in Millions)

	FUNDING		
	Cash Funding	Debt	Total
Water Supplies:			
Non-Edwards Water Supplies			
Western Canyon Project - GBRA	\$ 3.31	\$ 10.87	\$ 14.18
Trinity Aquifer Projects (Oliver Ranch/BSR)	12.49	-	12.49
Local Carrizo	1.31	13.51	14.82
Brackish Desalination	63.20	136.71	199.91
Regional Carrizo	56.00	63.81	119.81
Aquifer Storage & Recovery Project (ASR)	2.41	245.59	248.00
Expanded Carrizo	0.44	0.26	0.70
Recycled Water System	1.34	84.93	86.27
Total Non-Edwards	140.50	555.68	696.18
Edwards Aquifer Water Rights	87.73	153.18	240.91
Total Water Supply Capital Spending	228.23	708.86	937.09
Other Capital Spending:			
Integration	105.13	128.82	233.95
Land, Buildings & Equipment	29.70	5.30	35.00
	134.83	134.12	268.95
Total Capital Spending	\$ 363.06	\$ 842.98	\$ 1,206.04

San Antonio Water System
Cash Restrictions/Designations
Water Supply
2001 – 2019
(\$ in Millions)

Restrictions on Cash:	
Operating Reserve	\$ 21.90
Reserve Fund	10.60
Construction Funds:	
Debt Funds ¹	28.30
Impact Fees ²	<u>77.10</u>
	137.90
Designations on Cash:	
PGA Monitoring/WQEE/Conservation	9.91
Interest Mitigation Fund ³	3.70
2019 & Prior CIP program (cash funds)	<u>68.70</u>
	82.31
Unrestricted/Undesignated Funds	<u>54.21</u>
Total Water Supply Funds Available	<u>\$ 274.42</u>

¹ Represents bond proceeds currently on hand. These proceeds have all been committed to be used on existing projects.

² Represents unspent impact fees. These have all been committed to fund CIP projects in the 2019 & prior CIP program or they will be used to help fund future CIP programs.

³ Represents funds accumulated as a result of favorable variances in debt service. Funds may be used for CIP or to otherwise reduce debt service costs.

Acronyms and Abbreviations

AF	Acre-Foot (325,851 gallons)
AFY	Acre-Feet per Year
ASR	Aquifer Storage & Recovery Facility / underground storage facility
BGDP	Brackish Groundwater Desalination Program
CRWA	Canyon Regional Water Authority
CWIP	Central Water Integration Pipeline
DOR	Drought of Record
EAA	Edwards Aquifer Authority
EAHCP	Edwards Aquifer Habitat Conservation Plan
GBRA	Guadalupe-Blanco River Authority
GPCD	Gallons per Capita per Day
HCP	Habitat Conservation Plan
MGD	Million Gallons per Day
MSL	Mean Sea Level
NRW	Nonrevenue Water
OR	Oliver Ranch
RCP	Regional Carrizo Project
SAWS	San Antonio Water System
SCADA	Supervisory Control and Data Acquisition
SSLGC	Schertz-Seguin Local Government Corporation
TWDB	Texas Water Development Board
WMP	Water Management Plan
WSO	Water Systems Optimization

Glossary

Apparent Losses occur when the water is successfully delivered to a water user but for various reasons are not measured or recorded accurately, thereby introducing a degree of error in the amount of actual customer consumption. The most common example is a mechanical meter aging or wearing out and not registering all of the flow, resulting in the utility not recovering the revenue due for the service. Other examples are theft and computer processing errors when transferring large amounts of data.

Authorized Use is a consumptive use approved by the utility, thereby providing a benefit to the community. Some examples would be water quality line flushing, firefighting, sampling, etc.

Infrastructure Leak Index (ILI) – A performance indicator quantifying how well a distribution system is managed (maintenance, repaired, rehabilitated) for the control of real (leakage) losses at the current operating pressure. (Source: Manual of Water Supply Practices – M36, Water Audits and Loss Control Programs, American Water Works Association, 2016).

Real Losses are physical losses from the distribution system when pipes fail and leakage occurs. Not all leaks are created equal and they are categorized into hidden (some can be leak detected) and visible (reported) occurrences.

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