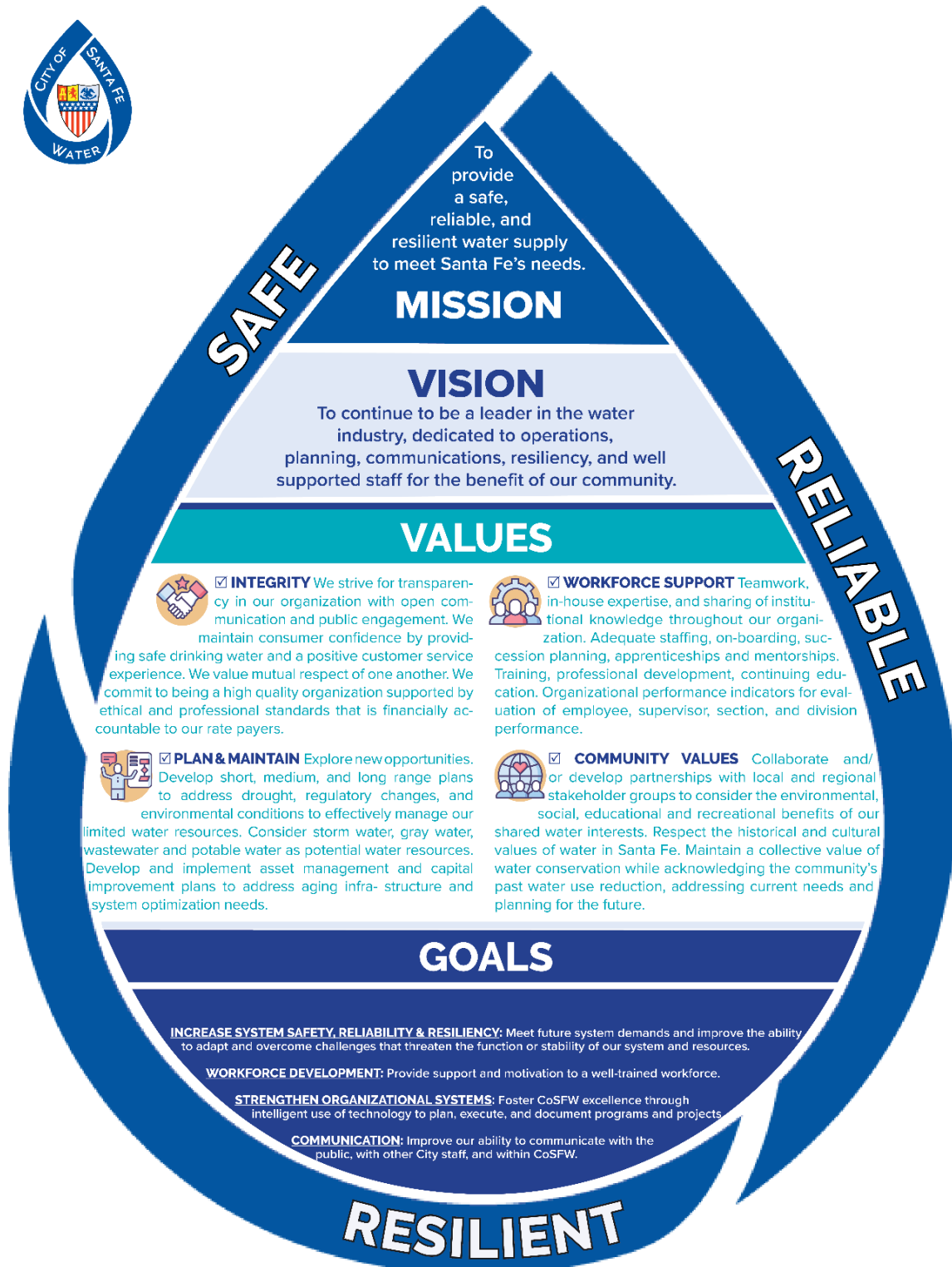


City of Santa Fe Water 2020 Annual Report



City of Santa Fe

Alan Webber, Mayor
Jarel Lapan Hill, City Manager

City Councilors

Signe Lindell, Mayor Pro Tem, District 1
Renee Villareal, District 1
Carol Romero-Wirth, District 2
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Contributing Departments

ITT
Land Use
Affordable Housing
Sustainability
Utility Billing & Customer Service
Water Resources & Conservation
Wastewater Management

Compiled, Written & Edited

City of Santa Fe Water Staff

Cover Image

The “Strategic Drop”, a visual summary of outcomes from the
2020 City of Santa Fe Water Strategic Planning Process

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Executive Summary

Each year City of Santa Fe Water (CSFW) submits a report summarizing operational information from the previous calendar year including: water supply, water demand, system efficiency, non-potable water deliveries, water quality, sustainability and planning. Highlights from this report are provided below including where in the report more information can be found.

- 2020 was a dry year in Santa Fe. Precipitation in the Santa Fe Municipal Watershed was measured at 8", slightly more than half of the 17.4" recorded in 2019 and less than 60% of the ten year average. Dry conditions led to increased demand for outdoor watering and reduced water available to replenish reservoir storage. Pages 5-6.
- Gallons per Capita per Day (GPCD) is a metric for measuring water system efficiency – water use per person per day. In 2020 Santa Fe's system GPCD was 93, up from 87 in 2019. Page 7.
- The COVID-19 pandemic forced a shift in how people live – more time was spent at home and less time at work, and many Santa Fe businesses were forced to shut down. CSFW customer water use reflected the shift as commercial use dropped 22% compared to 2019. Pages 7-8.
- CSFW produced 8,779 Acre-Feet (AF) in 2020, up from 8,268 AF in 2019. Despite low precipitation, with reservoir storage the City was largely (87%) supplied by surface water in 2020. Pages 5, 8.
- CSFW measures and reports on water quality with sampling and reporting schedules that address many potential contaminants. In 2020, CSFW had no exceedances of measured contaminants and therefore no violations. Page 13.
- Treated effluent water from the Paseo Real Water Reclamation Facility (PRWRF) was used to meet over 1200 AF of turf irrigation demands in 2020 and thus reduce the overall use of potable water. Public Utilities acquired the Las Campanas non-potable reuse system and implemented upgrades to create resiliency in the non potable water supply system. In 2020, the PRWRF faced numerous operational challenges exacerbated by slower repair times due to COVID-19 resulting in 47 days when treated water was not delivered for irrigation. Page 18.
- Updated balances for the Water Bank, a mechanism used by the City to ensure adequate water availability to meet the needs of new building stock as it is constructed, reflect the increase in construction in recent years and a shift towards larger construction projects. Pages 17-19.
- The City recently passed the 25-Year Sustainability Plan and CSFW is working to achieve the goals laid out therein. Notable progress has been made toward optimization of reclaimed water and groundwater modelling. Pages 20-22.
- Working with water customers and regional partners to develop plans for the future is another focus for CSFW and 2020 was the first year in a five-year planning process designed to develop the Santa Fe 2100 Water Plan. Page 22.
- CSFW also developed a strategic plan which included an update to the mission statement. The mission of CSFW is to provide a safe, reliable, and resilient water supply to meet Santa Fe's needs. Pages 22-23.
- 2020 was a dry year, but decades of success reducing overall demand paired with access to stored water allowed CSFW to remain largely on surface water allowing continued recovery of groundwater resources from past overuse. 2021 is projected to be a dry year and reservoir levels are low. The extended dry conditions will present challenges, but CSFW has been resting our wells to prepare for situations exactly like this. Page 24.

Acronyms

3BL – Triple Bottom Line, an accounting framework that uses social and environmental criteria, in addition to economic ones, to inform organizational decision making.

AF – Acre-Foot = a unit of measurement for large quantities of water based on irrigation standards. An acre-foot is enough water to cover an acre of land in one foot of water, 325,851 gallons. In Santa Fe, that's enough to support roughly five average single-family homes for one year.

AFY – Acre-Foot per Year. This is the unit of measurement generally used in New Mexico water rights permits including City of Santa Fe Water's water rights portfolio.

BOR – Bureau of Reclamation

BDD – Buckman Direct Diversion

BWF – Buckman Well Field

CoCoRaHS – Community Collaborative Rain, Hail & Snow. This is a network of volunteers with weather stations who report precipitation data.

EPA – United States Environmental Protection Agency

GPCD – gallons per capita per day, an estimate of the amount of water used in a system per resident served that is used to track and compare the effectiveness of water conservation efforts.

CRWTP – Canyon Road Water Treatment Plant, located at the top of Canyon Road, which treats Santa Fe River water.

CSFW – City of Santa Fe Water, previously City of Santa Fe Water Division, previously Sangre de Cristo Water

CWF – City Well Field

NMED – New Mexico Environment Department, a state agency that regulates water quality measures including those by which CSFW operates.

OSE – Office of the State Engineer

PDR – Project Delivery Requirement, the total amount of water permitted by the OSE for diversion at a given acequia headgate.

PRWRF – Paseo Real Water Reclamation Facility, the wastewater treatment plant located on airport road near the airport.

SFMW – Santa Fe Municipal Watershed

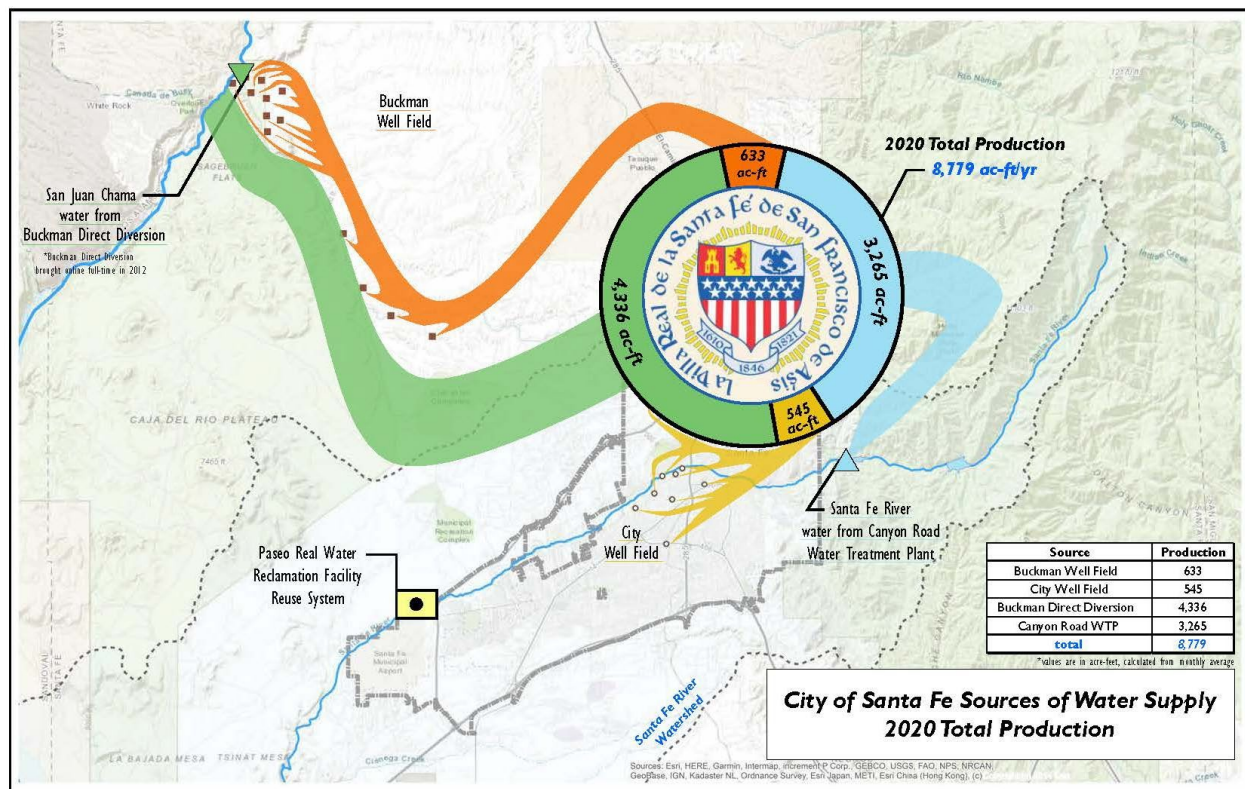
SJCP – San Juan – Chama Project

WCO – Water Conservation Office

WRA – Water Resource Agreement

WRC – Water Rebate Credit

WWM – Wastewater Management



1 - Map of City of Santa Fe Water sources of supply

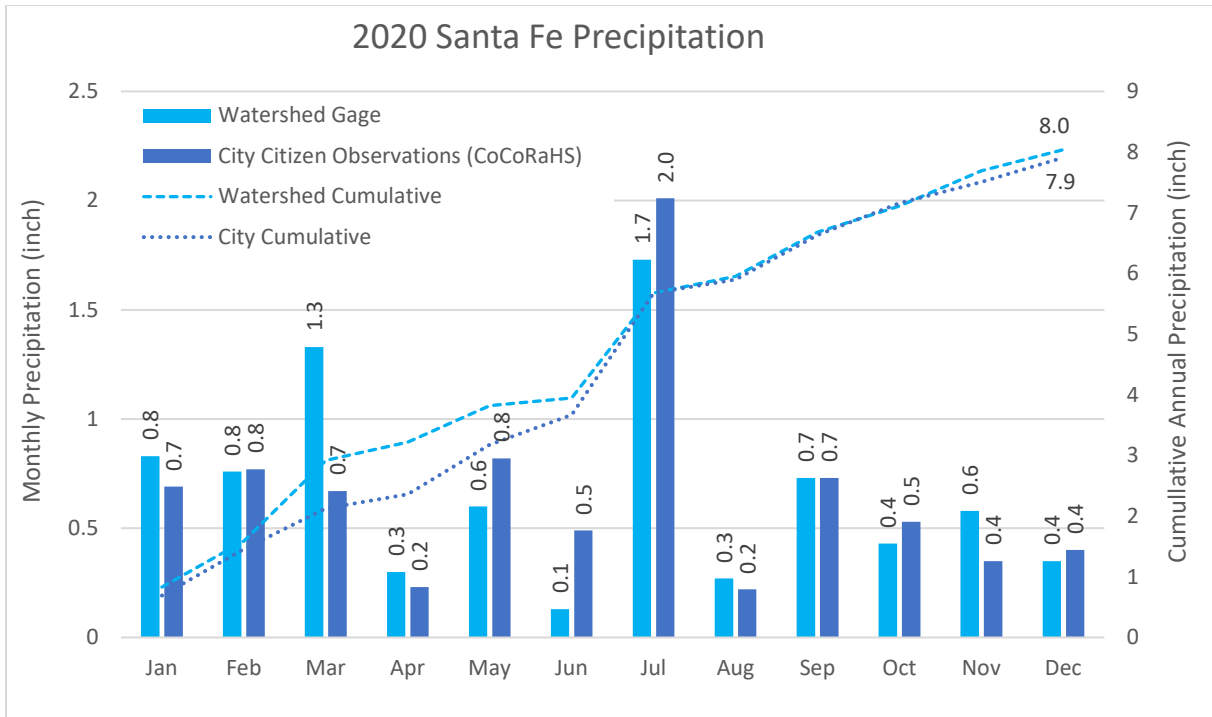
Introduction

Submitted pursuant to City Code, the purpose of this report is to summarize information about City of Santa Fe Water (CSFW) including summaries of: water supply, water demand, efficiency and conservation, non-potable water deliveries, precipitation, and water quality. The report is also used to educate readers about the Santa Fe Water System and to archive the intentions, strategies, and challenges faced by CSFW.

2020 was unprecedented and unforgettable – and the rain stopped in Santa Fe at about the same time the global pandemic closed the stores and sent everyone home. Total water production in 2020 was up 6% at 8,779 Acre-Feet (AF) from 8,268 AF in 2019. Given the extent of drought, and resulting increased outdoor water demand, this is a reasonable – and perhaps small – increase, although the unprecedented nature of 2020 makes it difficult to compare with previous years.

Drought & Precipitation

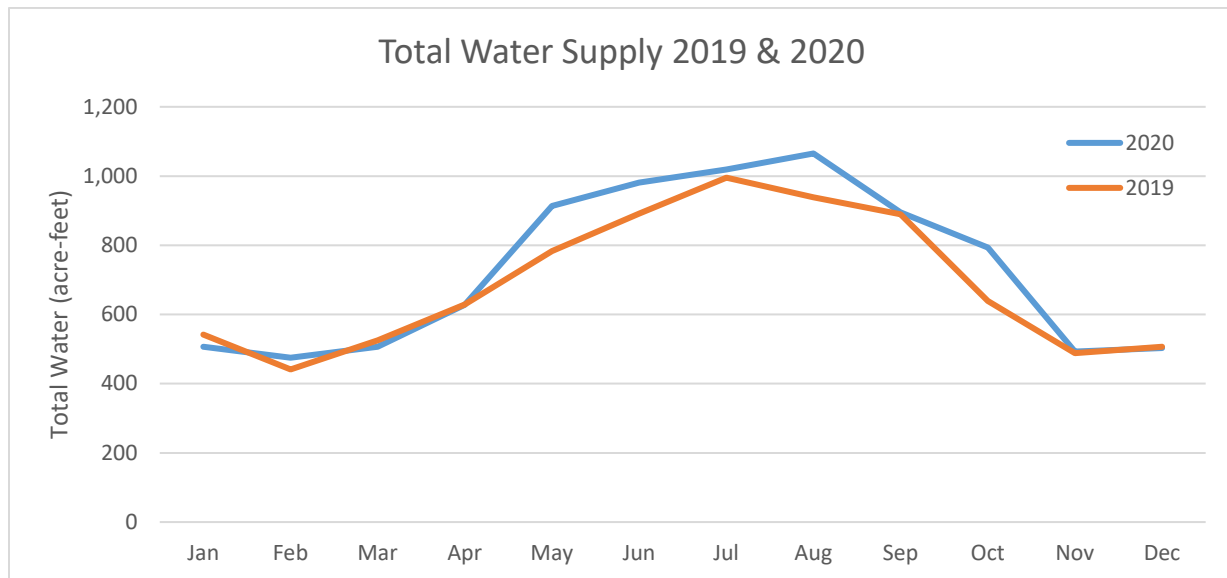
Rain and snowfall was very low in 2020 with 8 inches of annual precipitation in the Santa Fe Municipal Watershed (SFMW) the lowest measured since that gage was installed in 2006. The result of the low precipitation is an increased water demand for irrigation and reduced surface water to refill reservoirs. Reservoir storage going into 2020 helped to mitigate the impact of drought. Precipitation is highly variable across Santa Fe, but one total from the Community Collaborative Rain Hail and Snow (CoCoRaHS) and snow network measured a total of 7.9" distributed as shows in the graph below.



2 – Santa Fe 2020 monthly and annual precipitation

Treated Water Demand

2020 began with decent snowpack and precipitation rate through March. By May, rain was scarce and people were at home and water demand exceeded 2019 levels into the fall. Winter water use was consistent with previous years.



3 - Comparison of total water supplied by month for 2019 & 2020

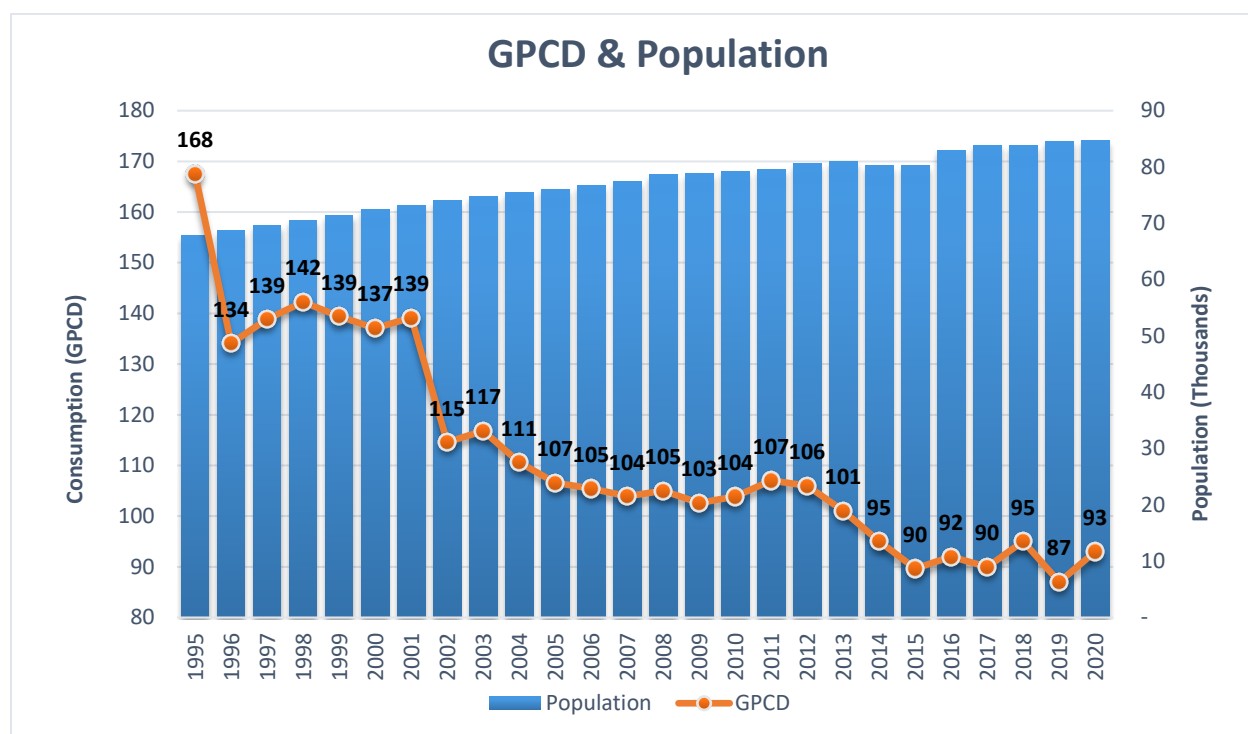
Per Capita Consumption

One measure of conservation effectiveness use by the Water Conservation Office (WCO) is gallons per capita per day (GPCD) which is an estimate of how much water is used on average per resident per day. The measurement is used internally to track program effectiveness over time and it is reported to the New Mexico Office of the State Engineer (OSE) who require submittal of the calculation annually for the City's water right permit compliance.

The City of Santa Fe has lowered the system GPCD by more than 30% since purchasing Sangre de Cristo water from PNM in 1995. The water conservation achieved by Santa Feans makes CSFW more resilient in the face of drought and reduces the impact when groundwater is needed to support the City.

GPCD Calculator Methodology

There are two primary components to the GPCD calculation: water supplied and population. The GPCD calculator uses a combination of US Census/American Community Survey data and CSFW water production data to determine the system GPCD.

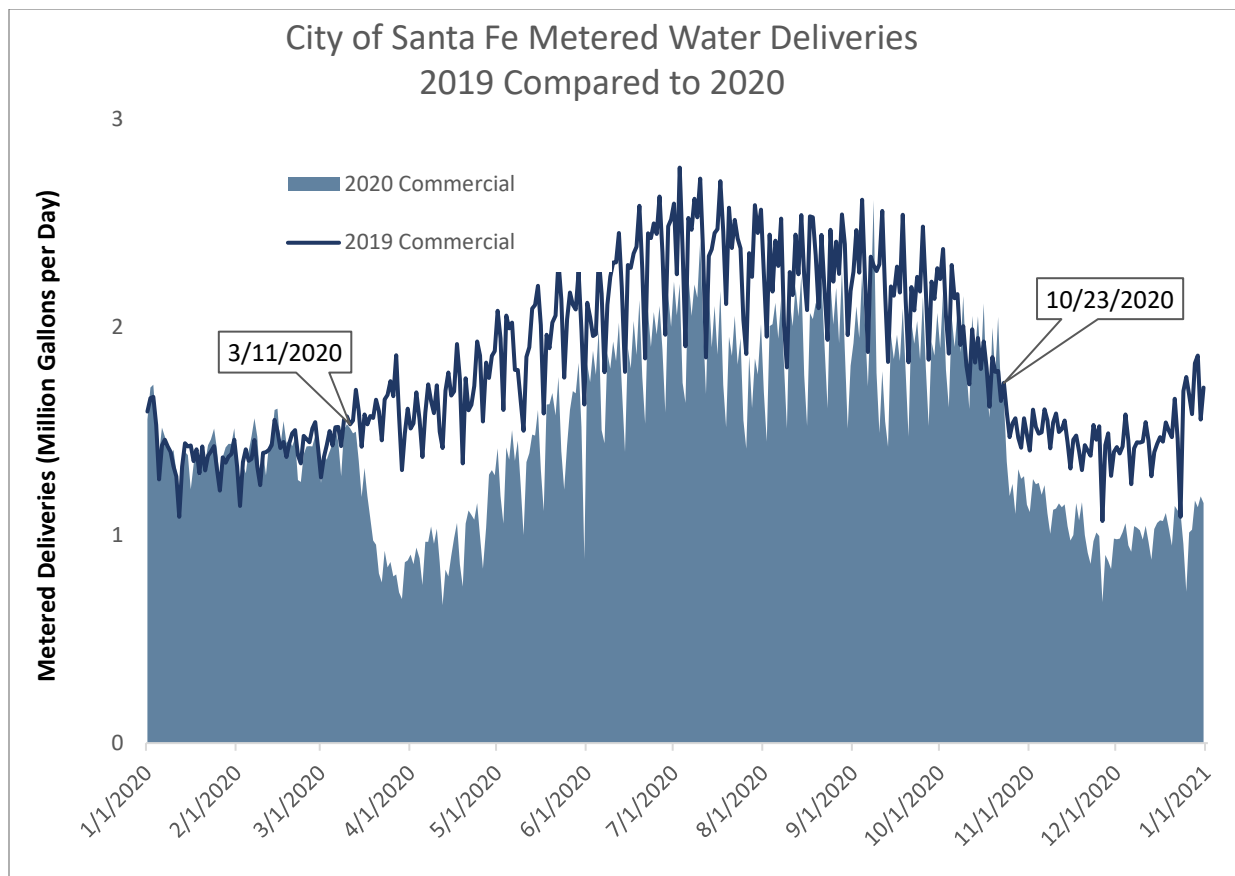


4 - Population and GPCD since 1995

CSFW billing data is used to further differentiate the system GPCD into four categories: Single-Family Residential, Multi-Family Residential, Commercial, and Other including fire hydrants and irrigation meters. In 2020, Single Family Residential GPCD increased and Commercial GPCD decreased reflecting the change to many people working and learning from home.

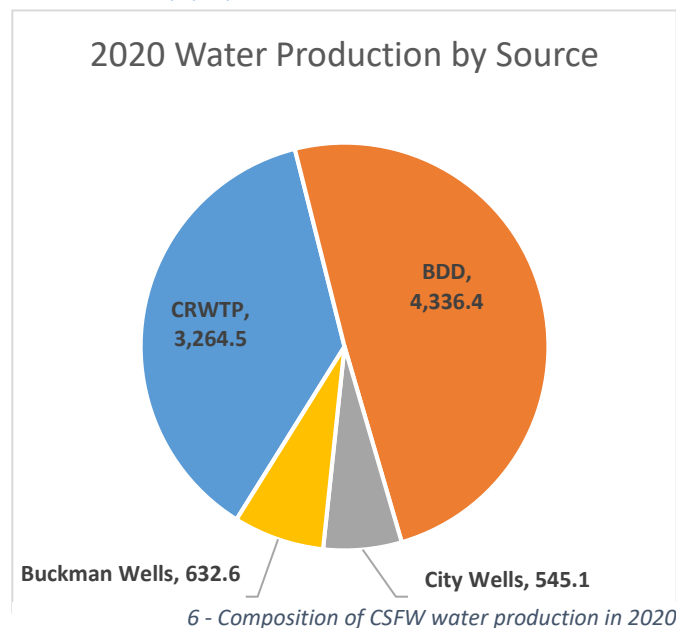
Water Use & the Pandemic

One of the most substantial changes seen in water use during 2020 was a marked decrease in commercial water use tied directly to COVID driven shutdowns in March and October. Commercial use in 2020 was down 22% compared to 2019.



5 – Metered Commercial Water Use in 2020 Compared to 2019

Water Supply Sources

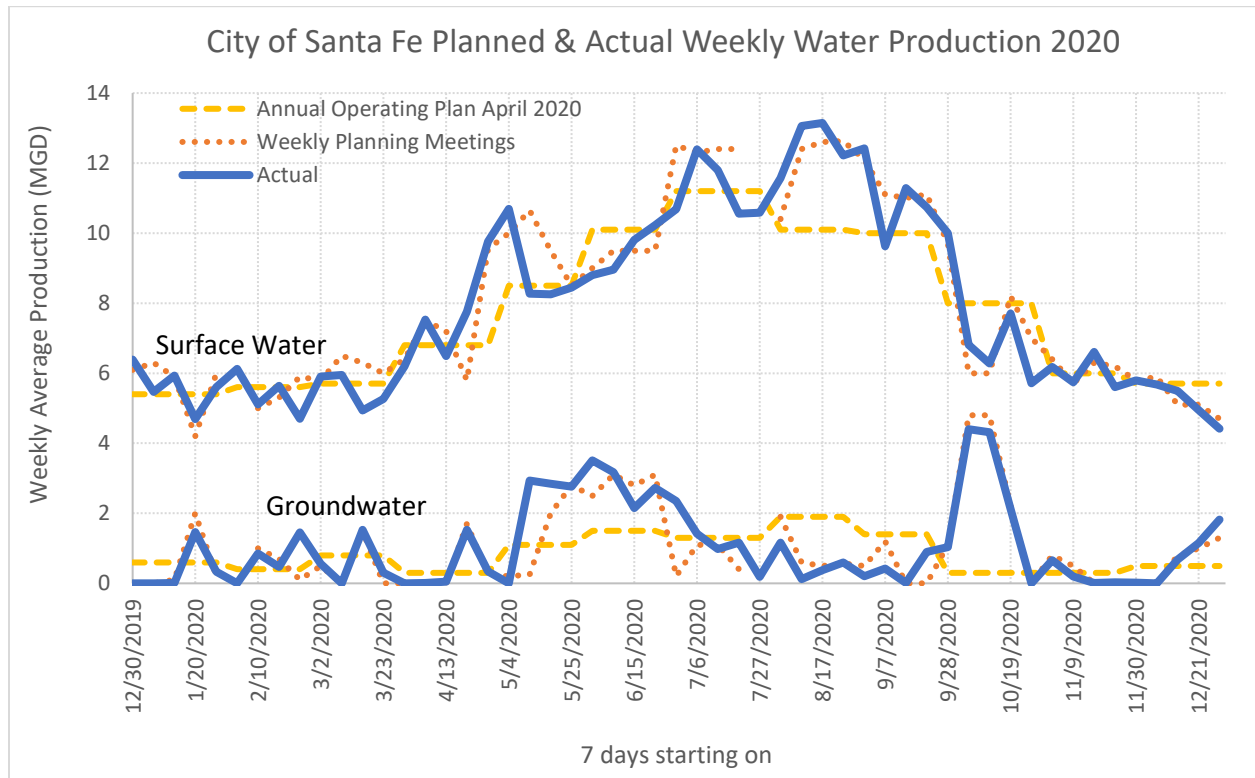


Despite low levels of precipitation, Santa Fe was still able to produce 87% of the water needed to meet customer demand using surface water. High reservoir levels and decent snowpack coming into 2020 mitigated the impacts of drought. The annual plan established in April 2020 for anticipated surface water and groundwater production was followed fairly closely. Reservoir levels at the end of 2020 were substantially lower and groundwater will likely be needed to a greater extent in 2021 than in recent years.

Surface Water

CSFW collects surface water from two watersheds: the Santa Fe River Watershed and the San Juan River Watershed.

The Santa Fe River flows out of a 17,000 acre watershed in the Sangre de Cristo Mountains above Upper Canyon Road. Water availability from the Santa Fe River is mostly determined by snowpack. Santa Fe's water right and storage is limited but there is not usually enough precipitation in the watershed to reach those limits.



7- Weekly CSFW water production in 2020

The San Juan River Watershed is located in Southern Colorado and is part of the larger Colorado River Watershed. The San Juan – Chama Project (SJCP) is a Bureau of Reclamation (BOR) project to deliver water from the San Juan River Watershed into the Rio Chama system where it is stored in Heron reservoir. CSFW stores water in Heron, El Vado, and Abiquiu reservoirs, for release as needed to flow downstream and into the Rio Grande where it can be diverted at the Buckman Direct Diversion (BDD) and treated for use. Santa Fe's water availability from the San Juan – Chama project is 5,230 AFY dependent on water availability in the San Juan watershed.

The Santa Fe River & the Canyon Road Water Treatment Plant

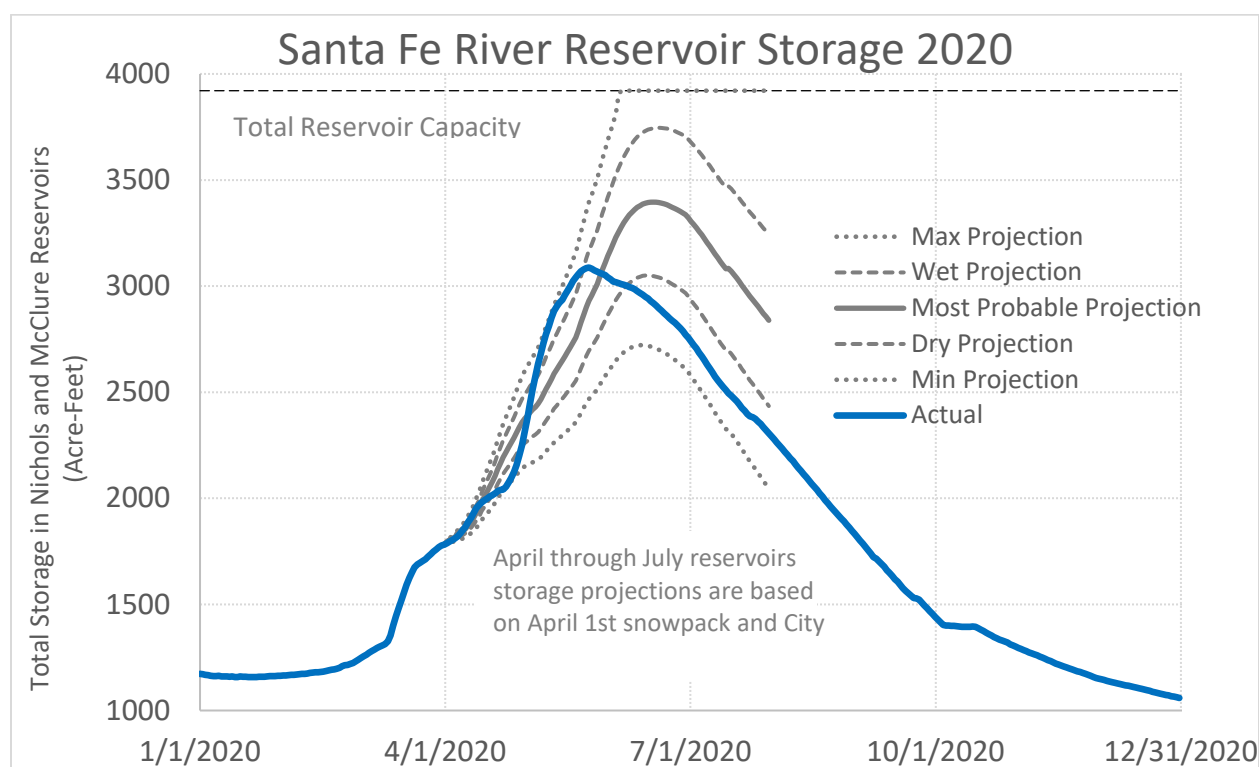
The Santa Fe River has always provided drinking and irrigation water to Santa Fe residents. Prior to the purchase of the water company from PNM in 1995, CSFW was known as the Sangre de Cristo Water Company because of the original source of its water. CSFW is permitted to divert up to 5,040 acre-feet/year (AFY) of water from the Santa Fe River. Santa Fe River water is stored in McClure and Nichols

reservoirs before being treated at the Canyon Road Water Treatment Plant (CRWTP) and delivered – almost entirely through gravity – to customers throughout Santa Fe.

Reservoir	Storage Capacity	Storage as of April 5, 2021	Storage as of April 5, 2020	Storage as of April 5, 2019
Nichols	663 AF	166 AF	515 AF	626 AF
McClure	3257 AF	639 AF	1296 AF	2031 AF
TOTALS	3920 AF	805 AF / 21 %	1811 / 46 %	2657 / 68 %

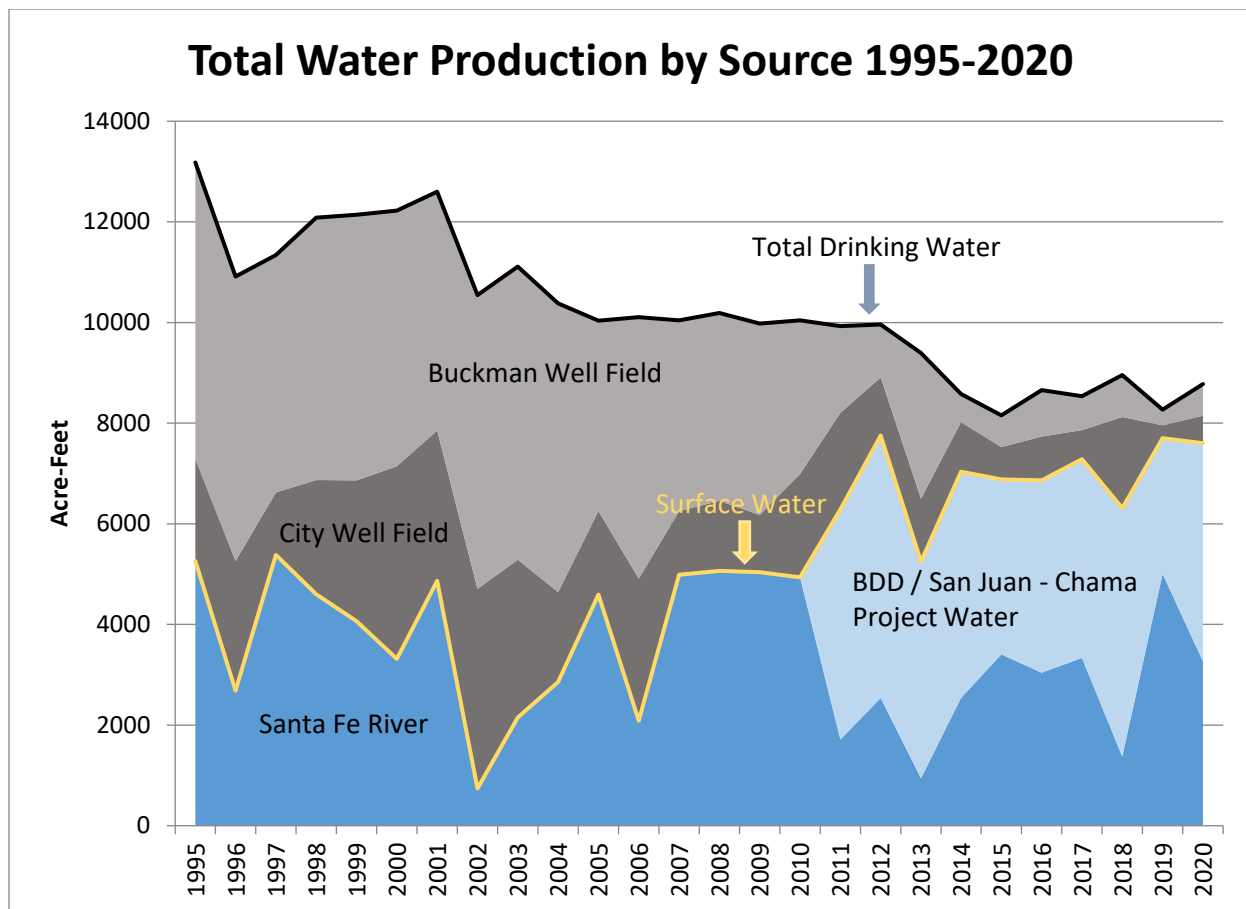
8 – Spring reservoir storage levels in the Santa Fe Municipal Watershed 2019-2021

CSFW uses satellite data to estimate water levels in the watershed and in the spring, plan reservoir operations accordingly. In 2020, the snow melted faster than projected, and the dry spring reduced total volume below projected.



9 – 2020 reservoir storage levels in the Santa Fe Municipal Watershed

2020 began with adequate reservoir levels and relatively deep snowpack allowing CSFW to produce 3,264.5 AF of drinking water from Santa Fe River via the CRWTP, 37% of total water demand for the year. Maximum utilization of stored water to meet demand in 2020 successfully preserved groundwater, but after a dry winter the reservoirs do not have the capacity to produce as much in 2021 as they did in 2020. 2021 will also see substantial construction work in the reservoirs and a resulting planned shutdown of CRWTP at the end of August that will extend into the spring of 2022.



10 - Annual composition of CSFW drinking water since 1995 showing overall reduction and increase in surface water use

[Rio Grande Compact Operations>](#)

The Rio Grande Compact (Compact) which governs sharing of Rio Grande Water between Colorado, New Mexico, and Texas was signed by the 3 states in 1938. After that agreement went into effect, City of Santa Fe Water expanded reservoir storage in the Santa Fe River. Because this expansion occurred after the Compact was signed, and because the Santa Fe River is a tributary to the Rio Grande, this newer storage space is governed by certain provisions in the Compact. In 2020, New Mexico owed water to Texas, and as a result, CSFW had to store 948 AF of “debit” water in this newer storage space for release to the Rio Grande in January of 2021.

In order to maintain local surface water in storage CSFW had the option to release some or all of the debit water in Nichols and McClure “by exchange” by releasing water stored in Abiquiu Reservoir on the Rio Chama instead. CSFW saw release of a portion of the debit water into the Santa Fe River as an opportunity to provide aesthetic and hydrologic benefits to the river system during a dry time and also learn about how much of the release would make it to the Rio Grande. After several downstream communities expressed concerns with a pulse release on the Santa Fe River during the winter, all of the debit water was released from Abiquiu.

[The Santa Fe Municipal Watershed \(SFMW\)](#)

Ensuring the health and resiliency of the Santa Fe River requires managing the Santa Fe Municipal Watershed (SFMW), the land on which the water collected by the reservoirs falls, to protect from

wildfire and protect source water quality. Prescribed burns and tree thinning are the predominant methods used to protect the SFMW from wildfire. In 2020, the USFS did not conduct prescribed burns due to COVID safety concerns and incomplete protocols for Mexican Spotted Owl management. For 2021, the required protocols are in place for owl protection. Some thinning and pile burning was conducted by the Santa Fe Fire Department.

Nichols & McClure Dam Status

Upgrades are planned for Nichols Dam Site in 2021 and 2022 to address required repairs noted by the OSE in 2019. Construction in the municipal reservoir will limit the availability of water storage in Nichols during the winter of 2021-2022 (along with the planned shutdown of CRWTP noted above). Nichols is the smaller of the two Santa Fe River reservoirs, so the water resources impact of this construction is expected to be minimal. Similar repairs are planned for McClure during the winter of 2023-2024.

San Juan – Chama Project Water

The SJCP is operated by the BOR and delivers water from the Upper Colorado River Basin through tunnels into the Rio Grande basin as part of the Colorado River Compact.

CSFW has 5,230 AFY of SJCP contract water rights which is diverted, treated, and delivered into the City via the BDD, a facility co-owned by CSFW, the Santa Fe County Water Utility and the Club at Las Campanas where untreated river water is used for golf course irrigation. CSFW's SJCP water is stored predominantly in Heron and Abiquiu reservoirs, though some is stored in El Vado at times to help with water operations on the Rio Chama.

Reservoir	Storage as of April 5, 2021	Storage as of April 5, 2020	Storage as of April 5, 2019
Heron Reservoir	4790 AF	7355 AF	4676 AF
El Vado Reservoir	0 AF	0 AF	5087 AF
Abiquiu Reservoir	8214 AF	9208 AF	2483 AF
San Juan Chama TOTALS	13,004 AF	16,563 AF	12,237 AF

11 - Reservoir storage levels in the Chama Watershed

The BDD diverts water from the Rio Grande at a point near the terminus of Diablo Canyon, which is also the former Buckman townsite along the historic Chili Line Railroad. The Buckman Direct Diversion, and the Buckman wells, are named for the historic Buckman townsite.

Santa Fe County Water Deliveries

Up until 2012, CSFW served a number of customers located outside of City limits. Following the conclusion of a round of annexations that ended in 2012 – ending a period of annual annexations that began in 1955 – the County began operating its own water utility serving customers outside the City with water derived from the County's portion of the BDD facility and its native Rio Grande water rights.

Negotiations between the City and County over the operational and financial relationship of the two utilities resulted in the 2016 Water Resource Agreement and its subsequent revision in the 2018 Amended and Restated Water Resources Agreement (WRA). The terms of the WRA specify the conditions under which CSFW provides water to Santa Fe County at times when BDD is inadequate to meet demand. In 2020, no WRA water was delivered to Santa Fe County.

The Santa Fe County Commission and the City Council passed a shared pool agreement in 2020 that allows the City and County to cooperate on the release and diversion of Rio Grande water owned by Santa Fe County and City owned SJCP water. Coordinated management of the two sources supplied by the BDD will provide greater flexibility to the BDD and optimize opportunities for total diversion and water treatment.

Groundwater

CSFW pumps groundwater from two aquifers: the City Wellfield (CWF) pumps water from the aquifer beneath Santa Fe and the Buckman Wellfield (BWF) pumps water from an aquifer northwest of Santa Fe near the Rio Grande. For many years Santa Fe relied heavily on groundwater with impacts to groundwater levels. Since the BDD came online in 2011, the City has been able to reduce groundwater use and local aquifers are recovering. Some groundwater use is necessary to keep wells ready for operation at any time and to comply and cooperate on environmental compliance and monitoring. In 2020, groundwater accounted for 13% of total water production.

The City Wellfield (CWF)

The CWF is entirely within the City, mostly along the Santa Fe River, and consists of seven active wells.

St. Mike's well, also in the City limits, is older than the CWF and is permitted separately – as a Supplemental Well associated with the City's Santa Fe River permit. In this report the water pumped from the St. Mike's well is included in the CWF totals to differentiate water sources based on ground- or surface-water.

The Buckman Wellfield (BWF)

The BWF consists of 13 wells located near the Rio Grande at the historic Buckman townsite, approximately 15 miles northwest of Santa Fe, and along the BDD transmission line which also transmits BWF water.

Water Quality

Water quality information is reported in detail in the Annual Water Quality Report, available online at https://www.santafenm.gov/water_quality. In 2020, the City's drinking water met all U.S. Environmental Protection Agency (EPA) and State water quality limits.

As water travels over the land or through the ground, it dissolves naturally occurring minerals and can pick up substances from the presence of animals or from human activity. Contaminants in drinking water may include microbial contaminants, inorganic contaminants, pesticides and herbicides, organic chemical contaminants, and radioactive contaminants. To ensure that tap water is safe to drink, the EPA prescribes regulations that limit the number of certain contaminants in water provided by public drinking systems.

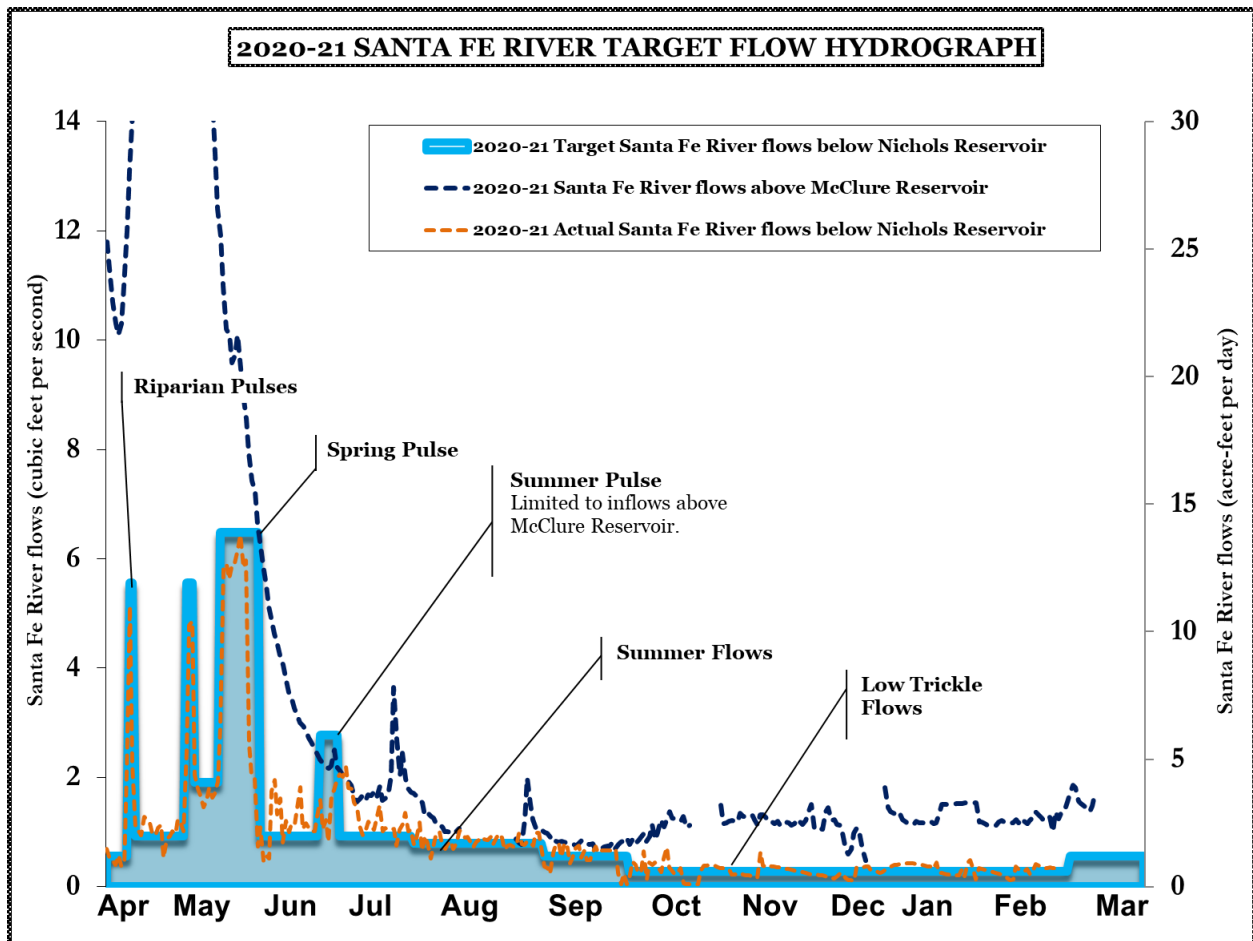
The New Mexico Environment Department (NMED) completed a Source Water Assessment for the City of Santa Fe which includes a determination of source water protection areas of concern. NMED concluded: "The Susceptibility Analysis of the City of Santa Fe water utility is well maintained and operated, and the sources of drinking water are generally protected from potential sources of contamination based on an evaluation of the available information. The susceptibility rank of the entire water system is 'moderately low.'"

Other Water Demands

Water demands in Santa Fe are not met exclusively with treated drinking water and the water utility also delivers untreated Santa Fe River water to acequias for irrigation and to the Santa Fe River channel to comply with the Living River Ordinance. The Wastewater Management (WWM) division of the Public Utilities Department provides reclaimed wastewater for non-potable re-use (turf grass irrigation).

Santa Fe's Living River

Target flows for a 'Living River' support the Santa Fe River's riparian corridor, providing wildlife habitat, and adding the beauty of free-flowing water to the parklands along the Santa Fe River. Other benefits of a green river corridor include shading and cooling of the urban environment, supporting plants that convert carbon dioxide into oxygen, helping to clean stormwater runoff, and controlling erosion. The Living River Ordinance has favorably positioned Santa Fe to participate in newer initiatives such as the 2020 certification of the City as a LEED platinum City, designation as a Bee's City USA, the potential to be the home of the first urban Pollinator Trail, and the Tree Canopy initiative.



12 - 2020 Living River hydrograph

In average years, the Santa Fe River target flows provide up to 1,000 acre-feet of water to the Santa Fe River downstream of Nichols Reservoir, in drier years less. The April 1st 2020 forecast was for 71% of

normal resulting in Santa Fe River target flows of 710 acre-feet. In 2020 these target flows were coordinated with river based community events, and provided water to recently planted vegetation along the Santa Fe River.

Surface Water Diversions

There are a number of diversions from the Santa Fe River – places where the flow of the river is diverted by a managed diversion structure – after it leaves the Santa Fe Municipal Watershed (SFMW). Most of these diversions are for acequias and one is for a nature preserve.

Acequia Deliveries

Acequias are traditional irrigation ditches whose construction, maintenance, and success are intertwined with the history of northern New Mexico. New Mexico water rights, like the water rights in most Western U.S. States, recognize older rights as superior to younger ones. Some the water rights on the Santa Fe River are older than those held by the City and the construction and operation of the municipal reservoirs and the CRWTP have changed the way that those acequias function.

Friction between the operation of the City Water System and the acequias was a source of conflict for decades and resulted in a court ordered set of requirements. CSFW is required to bypass water to Acequia Cerro Gordo and Acequia Madre and to strive to meet the Project Delivery Requirement (PDR) for each. Flows to Acequia del Llano are measured at Nichols Dam, and measurements of the flow in Acequia Madre and Acequia Cerro Gordo are monitored by recently installed gaging stations. There is no gage for Acequia Muralla. Project delivery is the water required at the head of the entire Acequia system, while farm delivery is the sum of water required at each property boundary. The difference represents losses in the Acequia system outside of the farms.

Month	Acequia Diversions (AF)				TOTALS
	Acequia del Llano ¹	Acequia Cerro Gordo ²	Acequia Madre	Acequia Muralla ³	
April	6.40	0.00	3.21	0.59	10.20
May	15.42	1.78	10.87	2.15	30.23
June	10.48	15.25	6.03	3.22	34.98
July	14.23	13.74	3.85	3.71	35.52
August	14.13	8.57	3.22	2.74	28.66
September	11.72	9.44	2.57	1.93	25.66
October	4.10	4.96	0.38	0.72	10.16
November	0.00	0.30	0.00	0.00	0.30
TOTALS	76.48	54.04	30.12	15.07	175.50
Farm Delivery Requirement	46.44			39.23	
Project Delivery Requirement	Not Defined	11.08	82.40	Not Defined	

5 - Annual diversions to acequias from the Santa Fe River

¹ Farm delivery requirement estimated based on 17.2 acres in 1977 Hydrographic Survey multiplied by 2.7 feet.

² Monitoring by the OSE gage on Acequia Cerro Gordo began on May 29, 2020 and does not include water diverted before that date. The Acequia Cerro Gordo diversion utilizes a desagüe to return a portion of the diversion before it reaches the first irrigator and it has the potential to return water to the river at the end of the acequia. Neither return is monitored so the totals listed are higher than the total water used for irrigation.

³ Acequia Muralla is not metered so diversions are estimates only. FDR is based on the 1977 OSE hydrographic survey which has not been adjudicated.

- Acequia del Llano is diverted directly from Nichols reservoir via a pipe and is gaged as it flows through that pipe. The land irrigated by Acequia del Llano is on the south side of the Santa Fe River and above Canyon Road.
- Acequia Cerro Gordo diverts below the bridge where Cerro Gordo Rd. and Upper Canyon Rd meet and irrigates land on the north side of the River between Cerro Gordo Rd. and the Santa Fe River.
- Acequia Madre diverts near the corner of Alameda and Canyon Rd and irrigates land on the south side of the river. The upper portion of this acequia ends well above Railyard Park, but the majority of the water associated with the PDR belongs to a farm near Agua Fria Village. In 2020, releases were made to meet the demand of Upper Acequia Madre but no water was delivered to Lower Acequia Madre.
- Acequia la Muralla, diverts roughly ¼ mile upstream from the Acequia Madre diversion and irrigates land on the north side of the River. The diversion is not gaged and the City does not have a legal obligation to deliver water to this acequia.

The Nature Conservancy Restoration Channel

The only surface water diversion along the Santa Fe River that is not for irrigation is at the Nature Conservancy Restoration Channel in the Santa Fe Canyon Preserve. At the top of Cerro Gordo Road is the Santa Fe Canyon Preserve (Preserve) which is located around and within the former Two Mile Reservoir site. Two Mile Reservoir was used for many decades before being decommissioned in 1993. The reservoir was used to store water for the adjacent CRWTP and its predecessor, a filter plant whose foundations and remnants are still present just north of the Preserve trailhead amid the surviving trees from an old orchard.

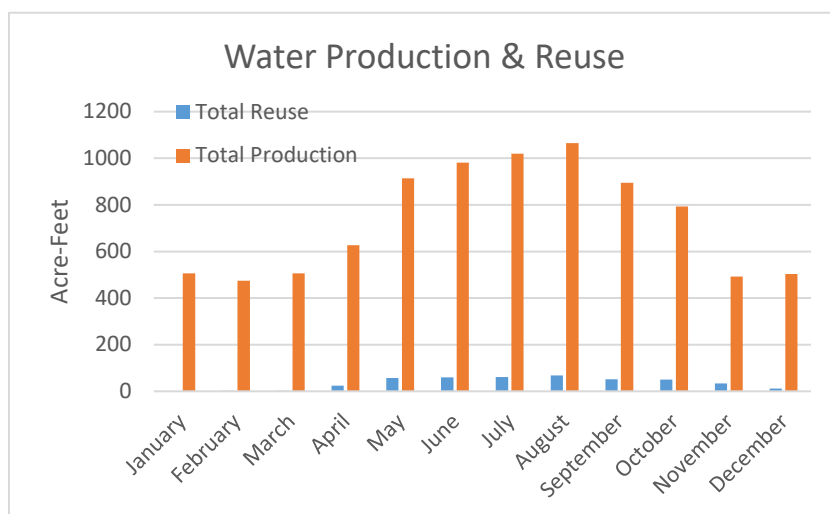
The Restoration Channel is used to divert water from the Santa Fe River, along the south side of the Preserve, to a channel on the north side of the Preserve. The diversion is not permitted by the OSE and has been the source of some controversy regarding the appropriate path of the river through the Preserve.

Treated Effluent Water Deliveries

The City's Public Utilities Division operates the Paseo Real Water Reclamation Facility (PRWRF) on Airport Road which treats all of the City's wastewater. Most of the cleaned water that leaves the facility is returned to the Santa Fe River and some is used to meet non-potable irrigation demands for large facilities including the Marty Sanchez golf course, the soccer fields at the Municipal Recreation Complex, SWAN Park, and the Santa Fe Country Club.

Paseo Real Water Reclamation Facility (PRWRF)

The Paseo Real Water Reclamation Facility (PRWRF) located on Airport Road is operated by Wastewater Management (WWM) and it collects, treats, and releases all of the wastewater collected by Santa Fe's sewer system. Unlike CSFW's Water Treatment Plants which are able to rotate operations and shut down for occasional maintenance, the PRWRF has been operating continually for decades. In 2020 the PRWRF experienced 47 days of reclamation water shut down which disrupted non-potable reuse deliveries due to water quality.



14 - Total water production and treated effluent reuse by month

The PRWRF installed new digesters early in 2020 resulting in temporary process problems that WWM operations crews were able to work through and resolve. An aeration improvement project began in mid-2020 which required taking one of two treatment basins off line. With only one available treatment basin, WWM Treatment staff must be particularly vigilant to changes to the quality of raw wastewater entering the facility. The new basin will be online in early June 2021 and the second basin will then come off line for aeration improvement. While WWM will still have little margin for error with only a single treatment basin, the improved aeration technology basin will allow improved control of process organisms. COVID-19 driven travel restrictions in 2020 delayed both the digester and aeration projects.

Additional projects completed at PRWRF in 2020 included repairs to a disc filter, which helps filter particles out of the water before disinfection, and the refurbishment of two million gallons of onsite storage for reclaimed water and a delivery system for that effluent to service the Club at Las Campanas, Marty Sanchez and the Municipal Recreation Complex when needed.

The Water Bank

City Code connects land use planning directly to available water supply by requiring that developers offset new demand on the water utility system. Residential, mixed, and commercial developments with water demands larger than 10, 7.5, and 5 AFY are considered above threshold developments and must offset their water demand by purchasing an equivalent amount of Middle Rio Grande water rights and transferring them into the CSFW's Buckman Wellfield permit. (Pumping of Buckman Wellfield impacts the Rio Grande, and nearby tributaries and CSFW must have water rights in the wellfield greater than this impact. See Table 17 below.) Sub-threshold developments can purchase water rights, as above, or pay a water offset fee. Water offset fees charged to developers are used to support conservation efforts, for the purchase of Middle Rio Grande water rights by CSFW, and for the purchase of toilet retrofit credits. Toilet retrofit credits could be obtained during a previous initiative to replace older, high-flow toilets with more efficient, low-flow toilets. The Water Bank tracks the water rights and water conservation credits available to support development. The goal of the program is to maintain sufficient

water rights and system capacity to meet increasing water demand associated with new construction. Water rights and water conservation credits in the Water Bank, since its inception in 2009, are shown in Table 15 below. A brief explanation of each balance, acquisition, and dedication type is included below the table.

Year:	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Balance of Water Rights & Credits by Year (acre-feet)												
City Water Rights – Dedicated	0	6	16	33	49	63	77	91	119	144	179	193
City Water Rights – Undedicated	10	76	75	66	56	103	164	191	178	161	132	120
City Affordable Housing Water Rights & Toilet Retrofit Credits	57	51	46	42	38	33	32	30	27	9	2	-24
City Owned - Total	67	133	137	141	143	198	273	312	324	314	313	289
Private Water Rights	456	484	518	499	490	579	657	638	613	660	654	631
Private Toilet Retrofit Credits	218	217	217	217	216	207	199	198	194	185	177	175
Total	741	834	872	857	849	983	1128	1148	1131	1159	1144	1096
Credits and Rights Generated or Acquired by Year (acre-feet)												
City Water Rights Acquired	10	40	0	1	0	54	18	0	0	0	2	0
Water Conservation Credits Generated	0	32	9	7	6	6	3	8	7	3	4	2
City Toilet Retrofit Credits Acquired	0	0	0	0	0	0	54	33	8	5	0	0
Water Rights & Toilet Retrofit Credits Allocated to Affordable Housing	59	0	0	0	0	0	0	0	0	0	0	0
Total City Acquisitions	69	72	9	8	6	60	75	41	15	8	6	2
Private Water Rights Acquired	63	33	42	0	31	95	115	7	0	52	14	9
Total Acquisitions	132	105	51	8	37	155	136	15	7	56	20	11
Credits and Rights Dedicated to Development by Year												
City Water Rights Dedicated	0	6	10	17	17	14	15	13	28	25	35	14
Affordable Housing Dedications	2	6	5	4	4	5	2	2	3	17	8	26
Total City Dedications	2	12	15	21	21	19	17	15	31	42	43	40
Privately Owned Toilet Retrofit Credits Dedicated	39	18	13	18	12	384	318	33	178	350	316	66
Private Water Rights Dedicated	10	6	7	19	40	6	37	25	25	6	21	31
Total Dedications	51	36	35	58	73	409	372	73	234	398	380	137

6 – Water Bank Balances, Acquisitions, and Dedications

Explanation of terms in Table 15:

Balance of Water Rights & Credits

- City Water Rights – Dedicated: These are CSFW water rights in the Buckman Wellfield permit that have been transferred from private owners to CSFW to offset specific development.
- City Water Rights – Undedicated: These are water rights owned by CSFW available to offset sub-threshold development (for which developers pay a water offset fee), to allocate to the Affordable Housing balance or to allocate to any City of Santa Fe public development project.
- City Owned – Affordable Housing: These are CSFW water rights or toilet retrofit credits that have been allocated by City Council to offset affordable housing development.
- Privately Owned – Water Rights: Water rights that have been tendered into the Buckman Wellfield permit and list CSFW as a co-owner, but have not been fully dedicated to a specific

development. These are water rights approved by the NM Office of the State Engineer that are potentially available to offset above threshold development.

- Privately Owned – Toilet Retrofit Credits: These are water conservation credits associated with a previous toilet retrofit program that are available to offset development.

Credits and Rights Generated or Acquired

- City Water Rights Acquired: water rights acquired by CSFW, generally through a purchase from a private party.
- Conservation Credits Generated: water conservation credits generated by the Water Conservation Office through Water Rebate Credits (WRC) to support affordable housing and sub-threshold development. See Water Rebate Credits below.
- City Toilet Retrofit Credits Acquired: toilet retrofit credits purchased by the City from a previous toilet retrofit program which can be used to offset sub-threshold development (for which developers pay a water offset fee), to allocate to the Affordable Housing balance or to allocate to any City of Santa Fe public development project.
- Water Rights & Toilet Retrofit Credits Allocated to Affordable Housing: water rights or toilet retrofit credits allocated by City Council specifically for affordable housing development.

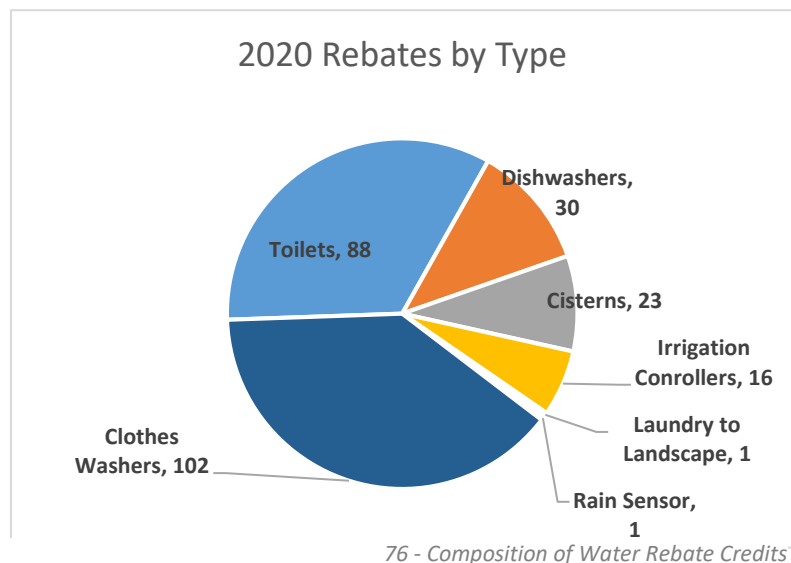
Credits and Rights Dedicated to Development

- City Water Rights Dedicated: CSFW water rights dedicated to the Buckman Wellfield permit to offset added water demand associated with sub-threshold development, or City of Santa Fe public development projects.
- Affordable Housing Dedications: water rights dedicated to the Buckman Wellfield permit, or water conservation credits utilized to offset affordable housing development.
- Privately Owned Toilet Retrofit Credits Dedicated: toilet retrofit credits utilized to offset added water demand associated with private development.
- Private Water Rights Dedicated: water rights dedicated to the Buckman Wellfield permit to offset added water demand associated with (mostly above threshold) development.

Water Rebate Credits

WRCs are a way for CSFW to track water conservation associated with rebates issued by the Water Conservation Office (WCO). The water conserved through the rebate program is quantified and becomes WRC's. WRC's are deposited in the Water Bank as water conservation credits and then sold to builders or homeowners undertaking projects that will increase water demand and CSFW's future water delivery obligations.

The WCO issues rebates for both indoor and outdoor water saving



equipment, but only the savings from the indoor appliances are quantified and deposited in the Water Bank. In 2020, the conservation office issued 161 rebates to City Water customers as distributed in the graph above.

Surface Offsets for Groundwater Pumping

When large developments are built in Santa Fe there is an increased demand on CSFW's water resources. Developers are required to acquire water rights and transfer them to CSFW, and specifically the BWF to meet the increased demand for their project. Pre-1907 Middle Rio Grande Water Rights – water rights established prior to the 1907 creation of the Territorial (now State) Engineer's Office and from the area between Cochiti Reservoir and Elephant Butte Reservoir – are transferred to CSFW in amounts equal to the project water budgets of new developments.

CSFW submits monthly reports to the OSE which are input into a computer model to determine the extent and duration of surface water impacts each year as a result of pumping the BWF. The impacts from a single year of groundwater pumping are spread over many subsequent years – as much as 20 depending on the location of the wells used and quantity of water pumped. The annual offset calculations provided by the OSE include both the new offsets incurred in 2020 as well as the residual offsets owed from previous years of groundwater use.

CSFW holds numerous surface water rights in surrounding basins to satisfy the OSE offset requirements. The table below shows the distribution of offsets for 2019 as calculations for 2020 were not available in time for inclusion here. 2020 offsets should be lower than the numbers in the table as groundwater pumping was light in 2020 and the residual balances from past groundwater use are diminishing.

Basin	Offsets rounded to nearest AF (2019 ⁴)	CSFW rights available rounded to nearest AF
Rio Pojoaque – Nambe	57	112
Rio Tesuque	34	55
Rio Grande above Otowi Gage ⁵	107	0
Rio Grande below Otowi Gage (pre-1907 Rio Grande)	715	1266
La Cienega	3	4
Total	917	1437

87 - Groundwater offsets due to BWF pumping

Sustainability

Santa Fe adopted a 25-Year Sustainability Plan in 2019 and CSFW has a number of sustainability goals identified in that plan. CSFW has a commitment and strong interest in energy efficiency and renewable energy. In 2020, CSFW began managing water pumping operations to optimize off-peak energy use and initiated design on additional photovoltaic opportunities.

⁴ 2020 Offsets had not been calculated and released by the OSE as of April 1, 2021 as this document was prepared.

⁵ San Juan Chama water releases are used to offset pumping impacts to the Rio Grande above Otowi Gage.

25-Year Sustainability Plan: Water

Goal	Progress		
	None	Some	Significant
Optimize Management of Reclaimed Water			X
Enhance Groundwater Modeling & Monitoring			X
Use Triple Bottom Line Criteria for Water Utility Decision Making	X		
Evaluate Water Pricing Structures		X	
Expand Water Conservation Program		X	
Continue Water System Education & Outreach		X	
Enhanced Leak Detection		X	

18 - 25-Year Sustainability Plan goals for CSFW

Optimize Management of Reclaimed Water – Developed in collaboration with the Bureau of Reclamation and Santa Fe County, the 2015 Santa Fe Basin Study identified reclaimed wastewater as the most viable option for new future water supply for Santa Fe. Work has been underway since that time, starting with the 2017 Feasibility Study which evaluated several options for wastewater reuse, to develop a project to optimize Santa Fe’s reclaimed wastewater. The identified project is a return flow pipeline that would enable full consumption of SJCP water.

Enhance Groundwater Modeling and Monitoring – Groundwater monitoring, both quantitative (water levels) and qualitative (contaminants), was improved with the creation of a Wellhead Protection Plan and a Source Water Protection Plan. Both of these plans include evaluation of contaminant vulnerabilities to the CSFW water supply including hydrologic and hydrogeologic assessments of the municipal watershed and the CWF.

Use Triple Bottom Line Criteria for Water Utility Decision Making – Triple Bottom Line (3BL) criteria are intended to evaluate social and environmental considerations, along with economic considerations, for organizational decision making. 3BL criteria were used in the 2017 Santa Fe Water Reuse Feasibility Study, and are slated for use in the City & County long range water resources planning efforts currently underway (see below).

Evaluate Water Pricing Structures – A committee was formed to evaluate pricing structures, seeking ways to balance CSFW’s economic needs against the importance of conservation and the economic hardship of water bills on lower income households. Meetings of the committee were postponed during the COVID-19 shutdown and have not resumed.

Expand Water Conservation Program – The WCO came into 2020 with a focus on restaurant and hotel conservation and with a goal of expanding work in elementary schools. The expansion of the restaurant and hotel projects slowed but continued, and the WCO pivoted to focus on utilizing partnerships and community contacts to identify and promote new projects. Two neighborhood pilot projects were kicked off in 2020 and work with community contacts has blossomed into constructive partnerships on tree canopy and designation of Santa Fe as a Bee’s City USA in which the support of pollinators is a priority.

Continue Water System Education and Outreach – 2020 was the first year of a five-year planning cycle being undertaken to inform the Santa Fe Water 2100 project. Informational webinars and public

meetings were held in October and public input was solicited through a survey available both online and through postcards included in the utility bills. The WCO also conducted an online survey, to replace a promised public input meeting, to collect feedback about WCO projects relative to the 5-Year Water Conservation Plan.

Enhanced Leak Detection – The WCO oversees a leak detection program that continued to send weekly letters to customers whose accounts show continuous flow – 24/7 water running through the meter. Access to hourly flow data is relatively new (since 2016) and the WCO continues to improve in the utilization of the data including working to identify particularly large or long-term leaks. Customer input suggests that some longstanding leaks are left unrepaired because the cost of the repairing the leak is too high. The WCO is working on strategies to improve access to leak repair.

Planning for the Future

In 2020 CSFW and Santa Fe County Utilities initiated a five year planning cycle to develop long range water resource management plans. For CSFW this process will result in a water resources plan extending to 2100. The first cycle, which began in 2020 and is scheduled to be complete by the end of 2024, will be evaluated, refined, and repeated every 10 years or as necessary in future years.

City of Santa Fe Water 2100

Year	Objective	Timeline			
		Spring	Summer	Fall	Winter
2020	Define Process		Draft 5-Year Planning Process	Public Workshops to Define Process	Finalize 5-Year Planning Process
2021	Supply & Demand Scenarios	Public Workshops on Supply and Demand	Draft Supply and Demand Scenarios	Public Comment	
2022	Evaluate Shortages	Public Workshop on Shortages		Public Workshop on Multiple Criteria Ranking	
2023	Evaluate Adaptation Strategies	Public Workshop on Adaptation Strategies	Draft Ranked Project List	Public Comment	Final Ranked Project List
2024	Develop Plan		Draft 80 Year Water Plan	Public Comment	Final 80 Year Water Plan

19 - 5-Year Planning Cycle for Santa Fe Water 2100

Strategic Planning

Strategic planning allows us to occasionally step back, (re)define our core mission and values, (re)vision our desired future, and make a plan to get there. In 2020 CSFW engaged in a strategic planning process. Input from CSFW staff, other City staff, and community stakeholders was used to develop a 3 year plan. The water droplet on the cover of this report is a summary of the key pieces of the strategic plan.

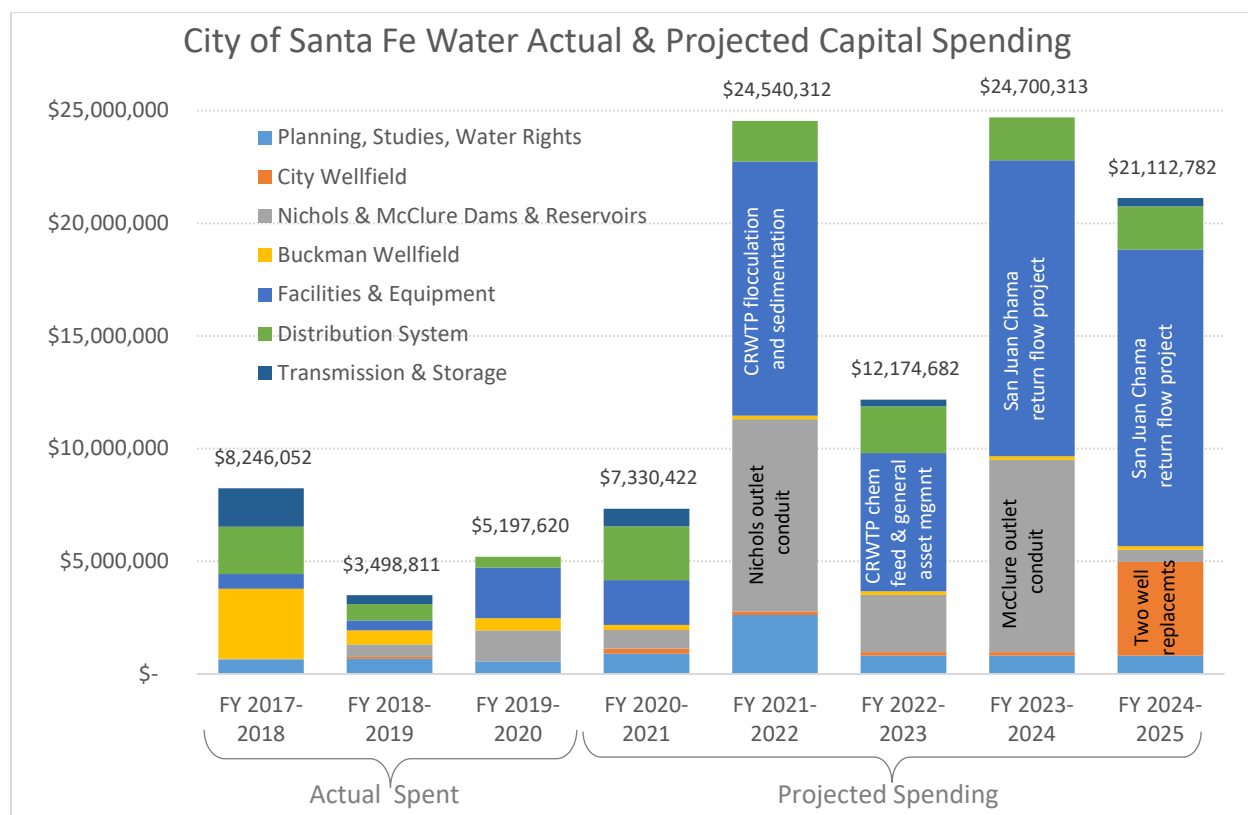
The mission, vision, and values developed in this process feed into four goals for the next 3 years:

- Increase System Safety, Reliability, and Resiliency
- Workforce Development
- Strengthen Organizational Systems
- Improved Communication

These goals were used to develop scored performance measures on a City of Santa Fe Water “Scorecard”, and complementary scorecards for each Section within CSFW. Performance Appraisal and Development Plans are being formulated for staff that are aligned to their Section’s scorecard.

Financials

The most recent audited financial information for CSFW is for the fiscal year ending June 30, 2019. In that year, CSFW had \$34,553,802 operating revenues and \$35,162,241 of operating expenses. Cash, Investments, and Cash Equivalents on June 30, 2019 were \$47,385,017. In future annual reports we hope to provide several years of past actual, and future projected financial performance. Actual capital spending for the past three fiscal years and projected capital spending for the next five including the current fiscal year (July 1, 2020 – June 30, 2021) is shown in the graph below.



20 - CSFW actual and projected capital spending

Major capital projects planned for the next five years include rehabilitation of the Nichols Dam outlet conduit (~\$8,000,000, 2021-2022), a new flocculation and sedimentation system at CRWTP (~\$11,000,000, 2021-2022), an upgraded chemical feed system at CRWTP (~\$3,500,00, 2022-2023) rehabilitation of the McClure Dam outlet conduit (~\$8,000,000, 2023-2024), and the San Juan Chama return flow pipeline project (~\$21,700,000, 2023-2025). It is likely that a bond will be taken to pay for the San Juan Chama return flow pipeline project.

Facing Drought

New Mexico is in a severe drought and CSFW has been preparing. Since the purchase of the water company in 1995, CSFW has prioritized water conservation and reduced annual water use from over 13,000 AFY in 1995 to present levels below 9,000 AFY. Water conservation has proved to be a resilient and cost effective method for drought vulnerability mitigation

While conservation reduced the City's reliance on groundwater, investment in surface water resources simultaneously increased the resiliency of CSFW's water supply portfolio. Utilization of surface water has increased sharply since the BDD went online in 2011 and groundwater levels are recovering.

In the municipal watershed, snowpack is low and flows are projected to be about 1/3rd of average in 2021. Planned dam construction projects will remove CRWTP as a water source in September. Acequia deliveries may be curtailed in 2021. Despite ample storage of SJCP water for diversion at the BDD, potential low flows in the Rio Grande in 2021 could test the operational parameters of the intake structure and water treatment facility.

CSFW is planning for the possibility that, for some periods of time in 2021, Santa Fe water demand may be met entirely with groundwater for the first time in many years. Reduction in demand since 1995 and the long-term resting of groundwater resources leave the CSFW system well prepared for this situation.

The existing drought preparedness plan has been in place over 20 years and was written at a time when the City's water security was more tenuous. The implementation stages in the existing plan call for extreme measures, and the triggers for determining when those stages are implemented assume much higher annual use of water. Development of a new series of triggers that are more sensitive to the Santa Fe's current level of water security, and new implementation stages that allow for gradual increasing of restrictions, are underway. Led by the WCO, drought response triggers and measures are being developed through a collaboration of the CSFW Water Conservation Committee and Santa Fe County's Water Policy Advisory Committee. The goal of this collaboration is to create a unified drought response plan for the Santa Fe region.

The Hazard Mitigation Plan, which includes drought preparedness strategies, was recently approved by FEMA and the governing body.

Closing

Thank you for taking the time to read through CSFW's 2020 Annual Report. 2020 was a year of unprecedented, rapid change in the way that Santa Feans led their lives and CSFW was able to meet the changes in demand, despite dry conditions, while continuing to preserve groundwater for future emergency. 2021 may be the emergency that CSFW has been preparing for and the foundation of reduced demand and increased water supply resilience should help Santa Fe thrive.