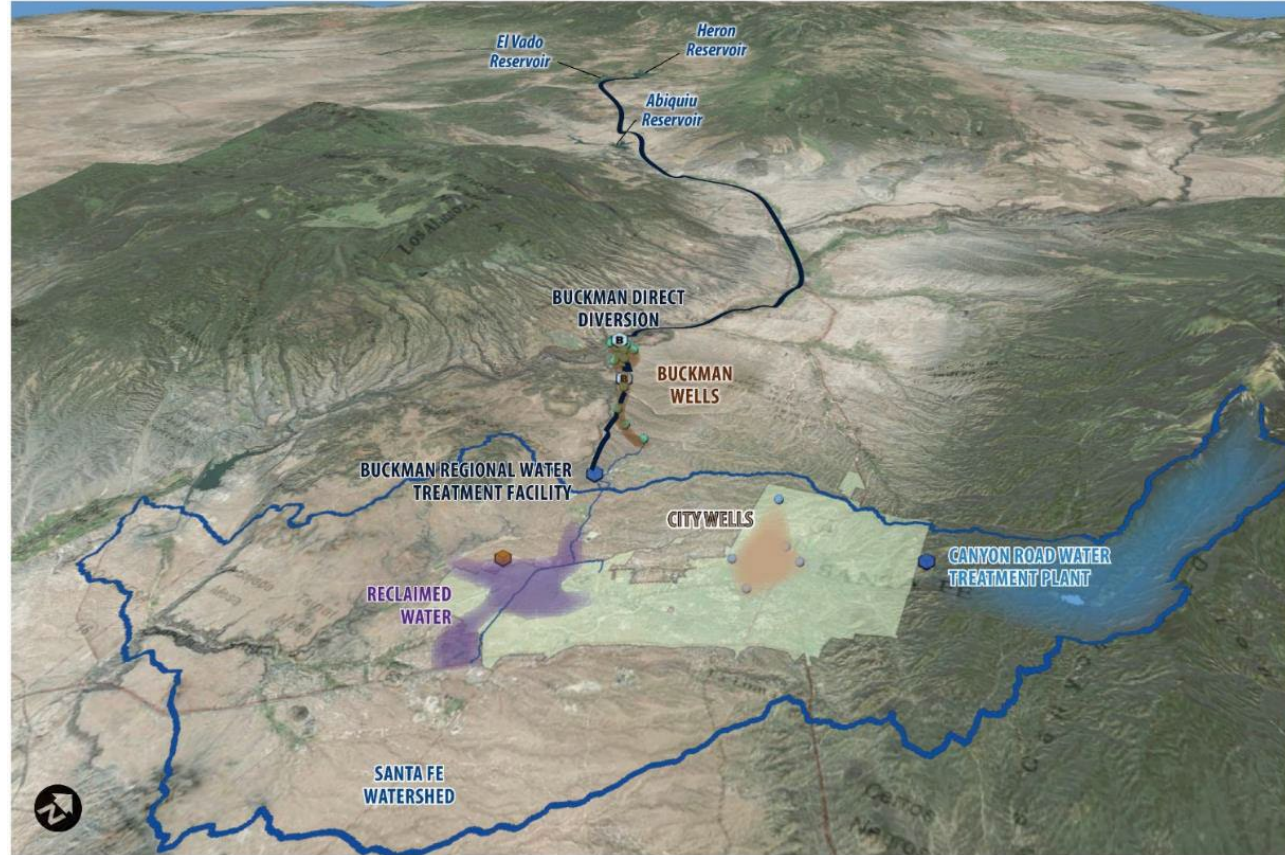


What's Up With Water? 2023 Edition

April 2023

Outline

- System Overview
 - 3 slides #4-6
- Santa Fe Water Past
 - 5 slides #8-12
- Santa Fe Water Present
 - 9 slides #14-22
- San Juan Chama Return Flow Project
 - 9 slides #24-32
- Long Range Planning
 - 4 slides #34-37
- Other Activities
 - 10 slides #39-48



Outline to System Overview Transition Slide

- System Overview

- 3 slides #4-6

- Santa Fe Water Past

- 5 slides #8-12

- Santa Fe Water Present

- 9 slides #14-22

- San Juan Chama Return Flow Project

- 9 slides #24-32

- Long Range Planning

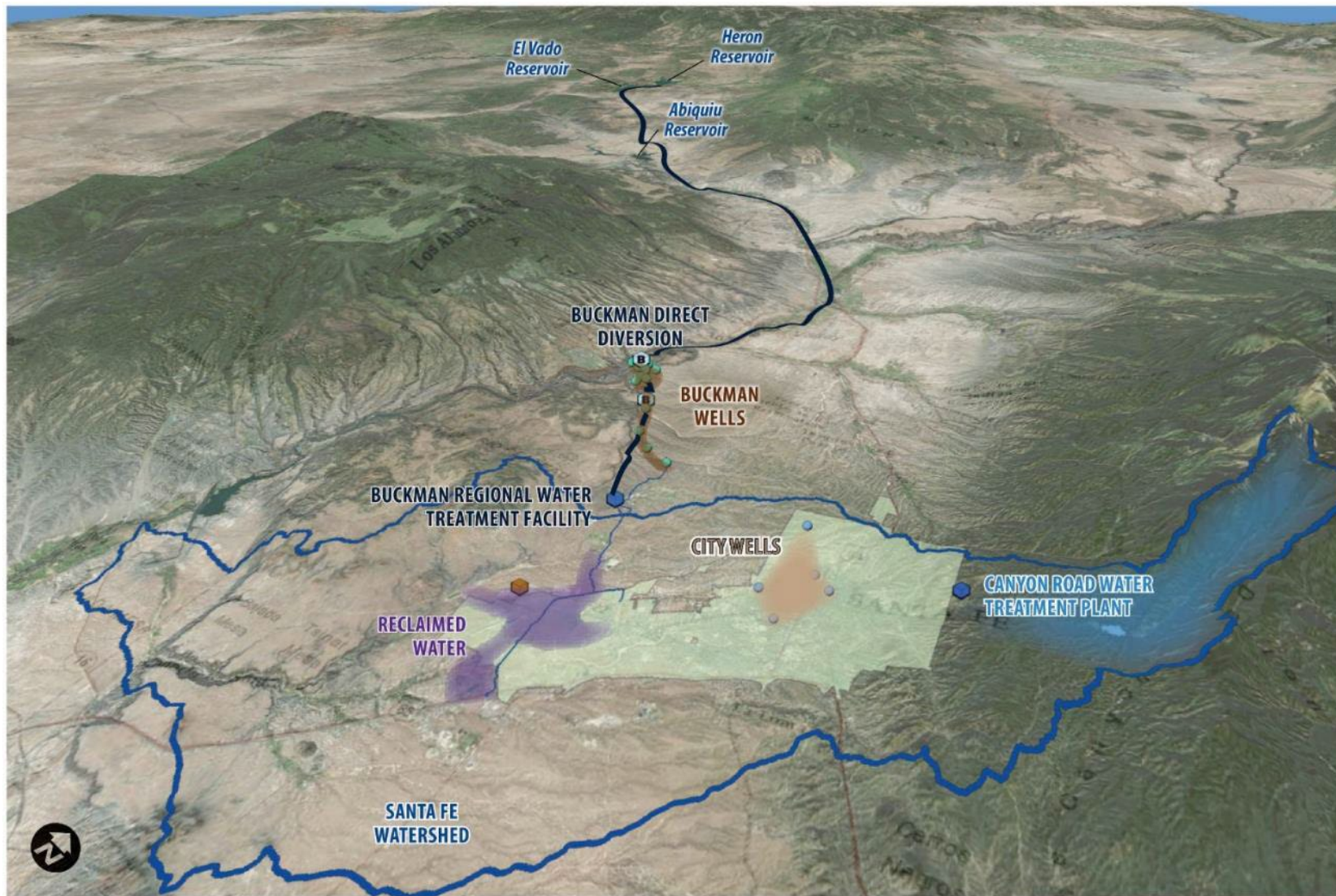
- 4 slides #34-37

- Other Activities

- 7 slides #39-48

The System

- 4 Potable Sources
 - SF River
 - City Wells
 - Buckman Wells
 - BDD
- BDD jointly owned
 - City
 - County
 - Las Campanas
- City diverts SJC water at BDD
- Non-potable resource
- Santa Fe River watershed

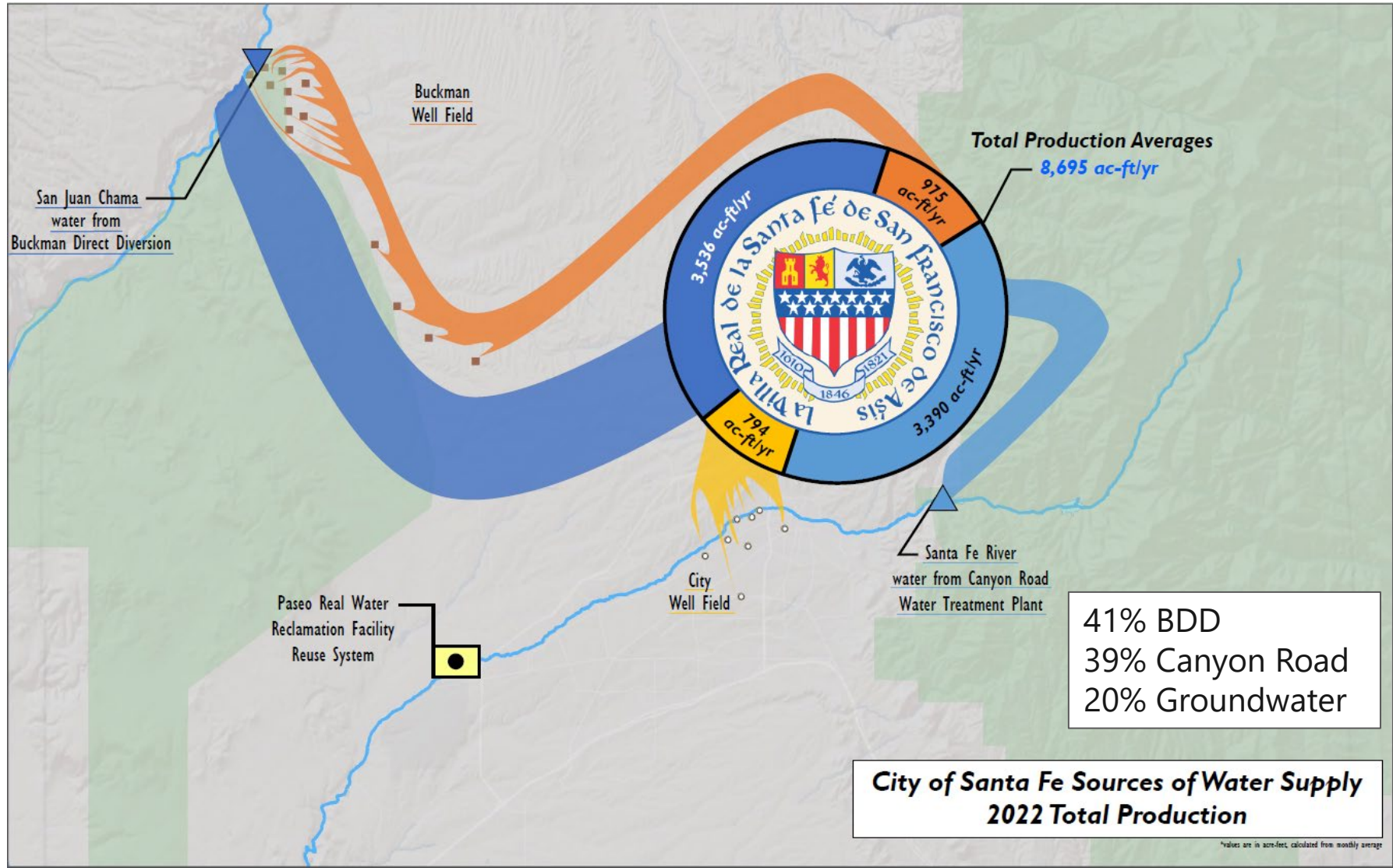


San Juan Chama (SJC) Water

- Portion of NM's share of Colorado River water under the Upper Colorado River Compact
- Diversion from three tributaries to the San Juan, gravity flow through tunnels into Chama system.
- City of Santa Fe full allocation 5230 AF/yr



2022:

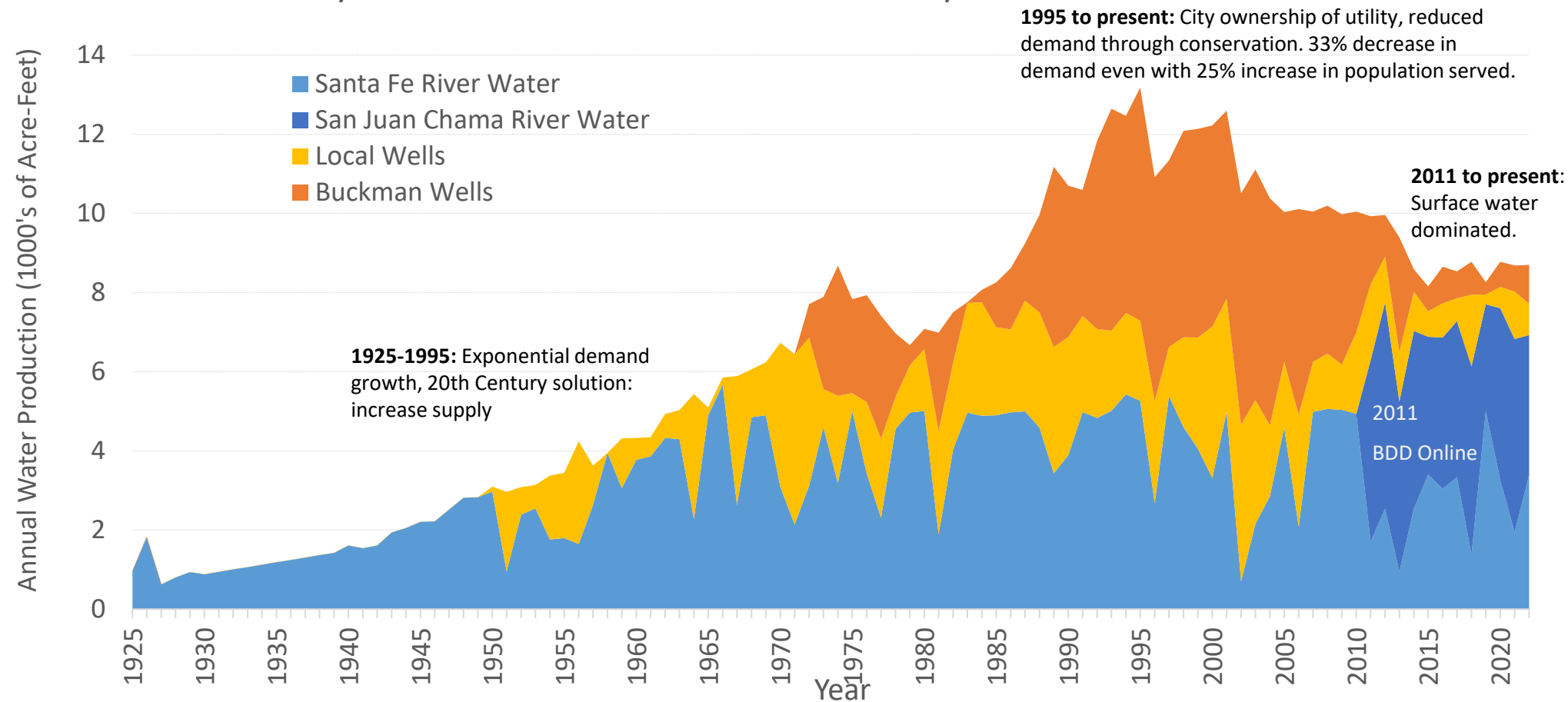


System Overview to SF Water Past Transition Slide

- System Overview
 - 3 slides #4-6
- Santa Fe Water Past
 - 5 slides #8-12
- Santa Fe Water Present
 - 9 slides #14-22
- San Juan Chama Return Flow Project
 - 9 slides #24-32
- Long Range Planning
 - 4 slides #34-37
- Other Activities
 - 7 slides #39-48

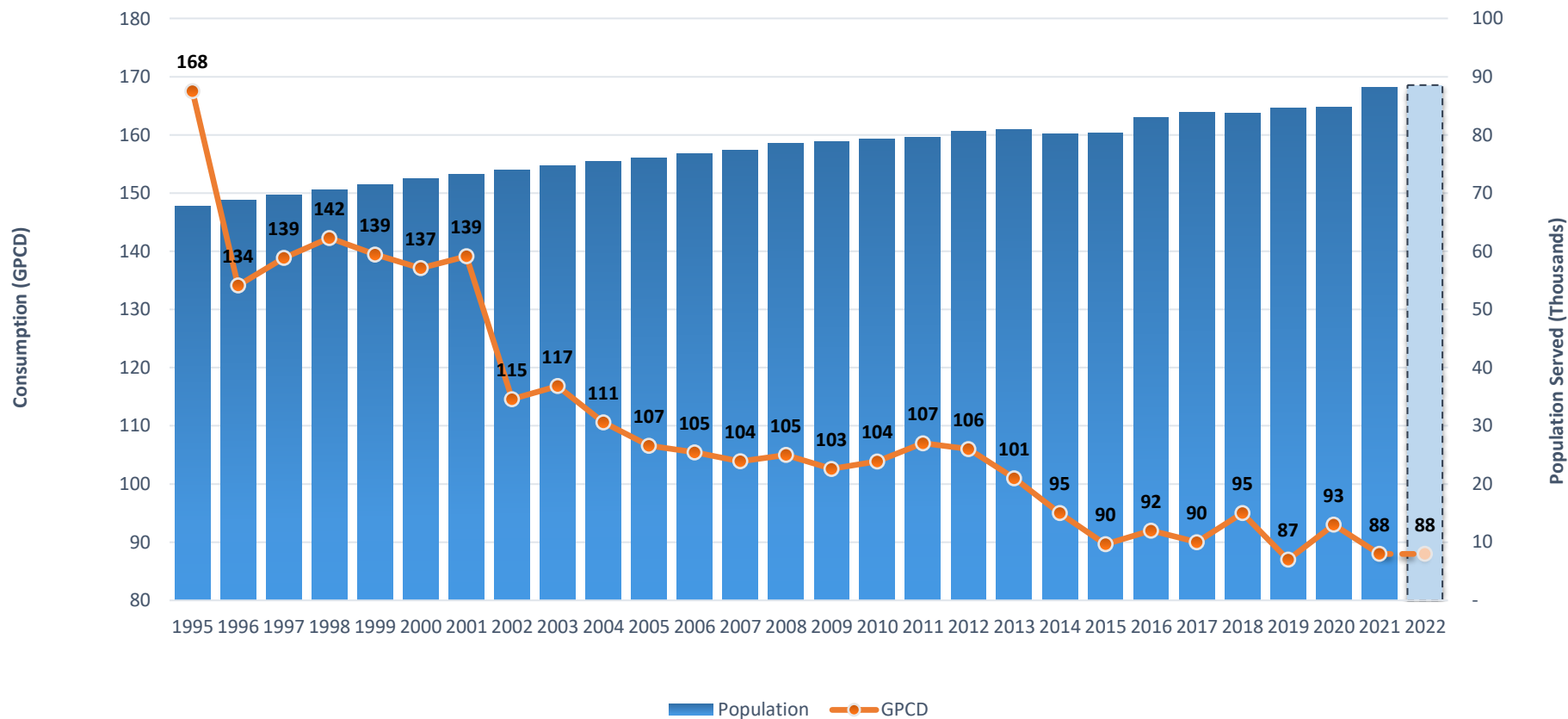
CoSF Water Past: A Picture Is Worth...

City of Santa Fe Annual Water Production by Source 1925 - 2022



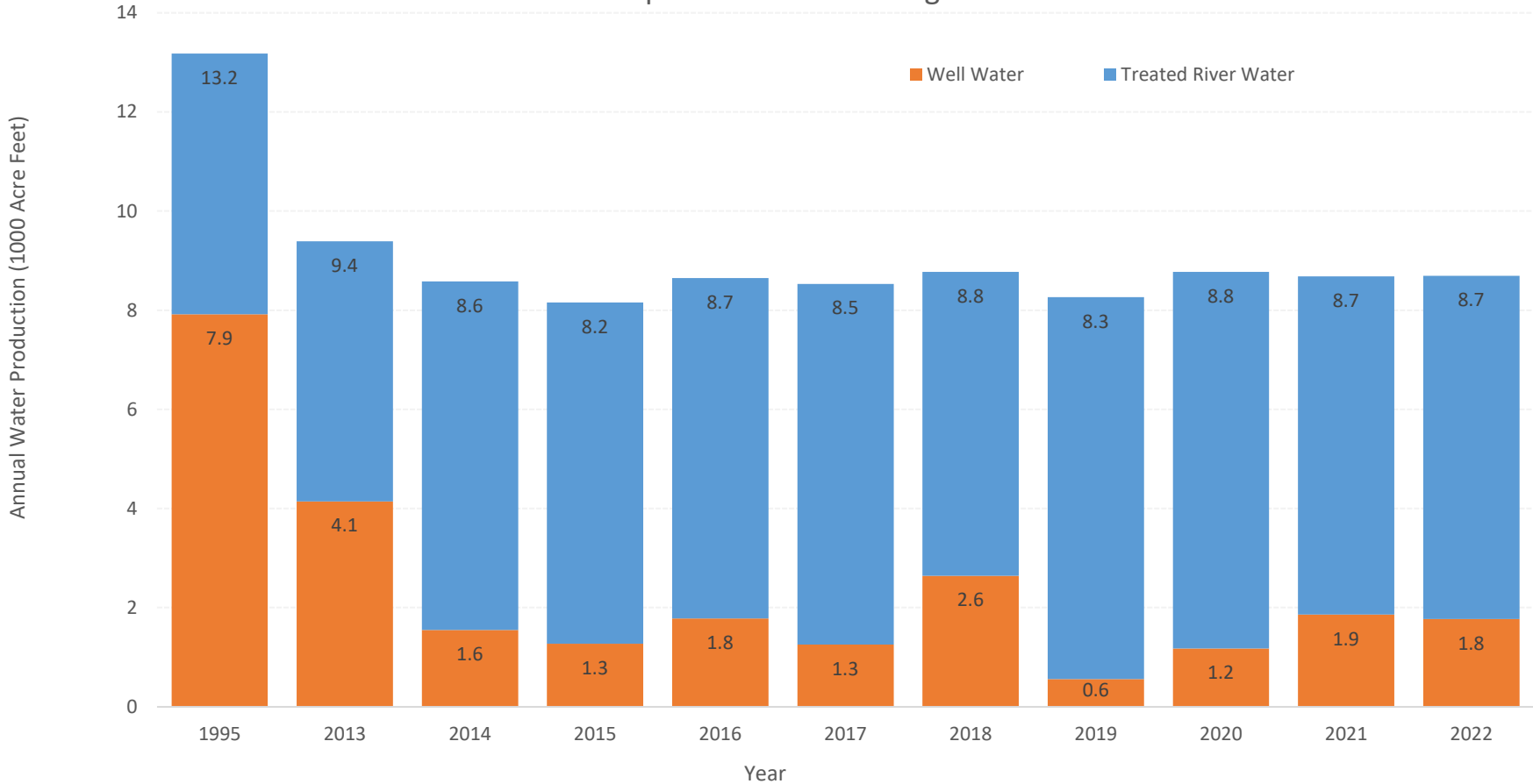
Water Conservation

GPCD & Population



Shifting to surface water dominated production

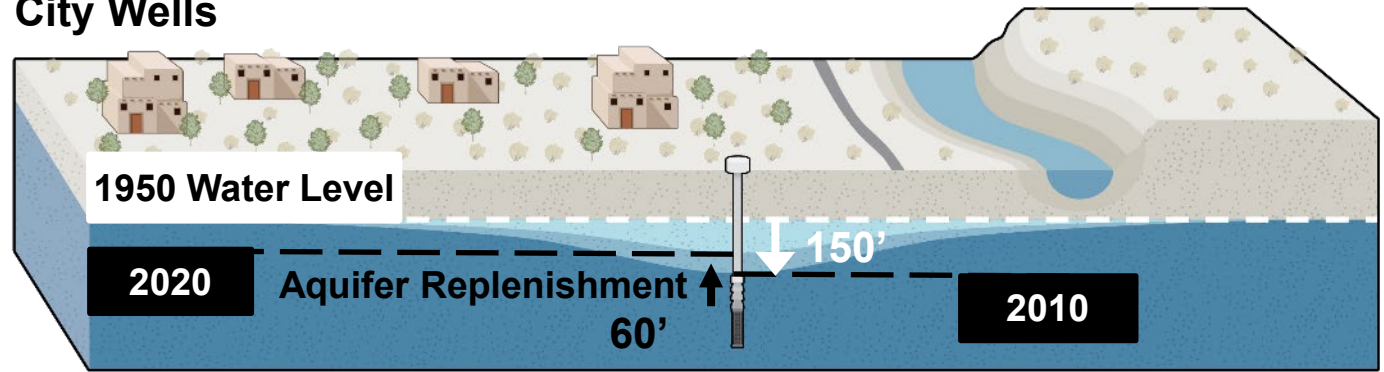
Previous 10 Years of City of Santa Fe Annual Potable Water Production
Compared to Historical High in 1995



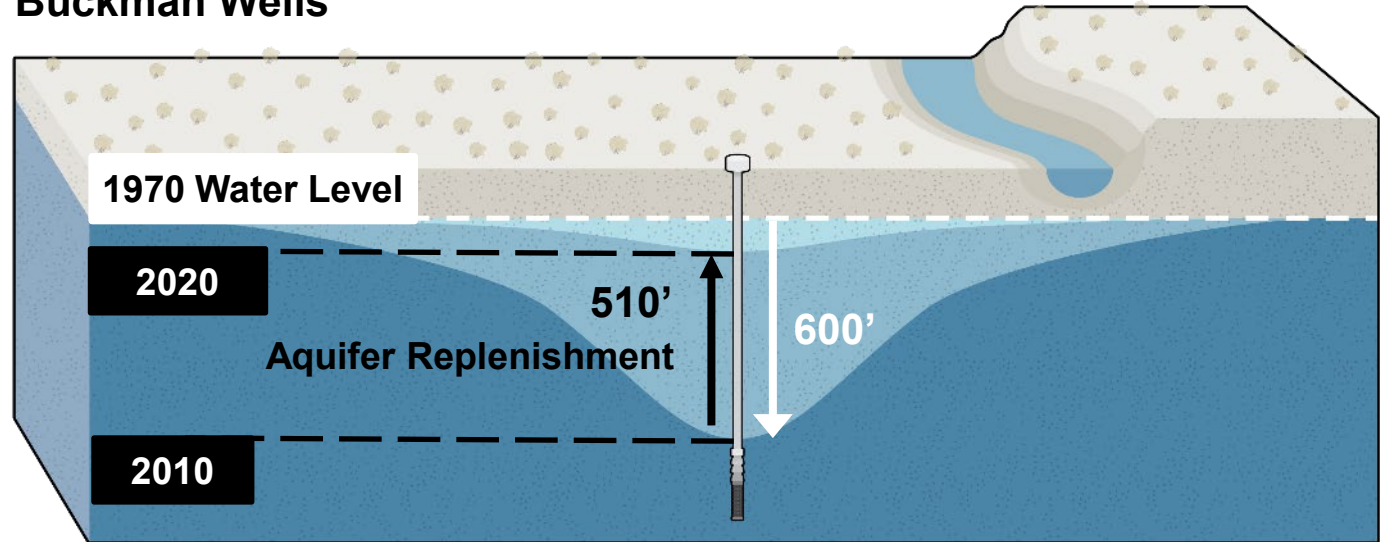
Groundwater Recovery (our “savings accounts”)

- Since shifting to surface water dominated production, our wells have been recovering
- We like to keep our wells in reserve as a “drought proof” backup

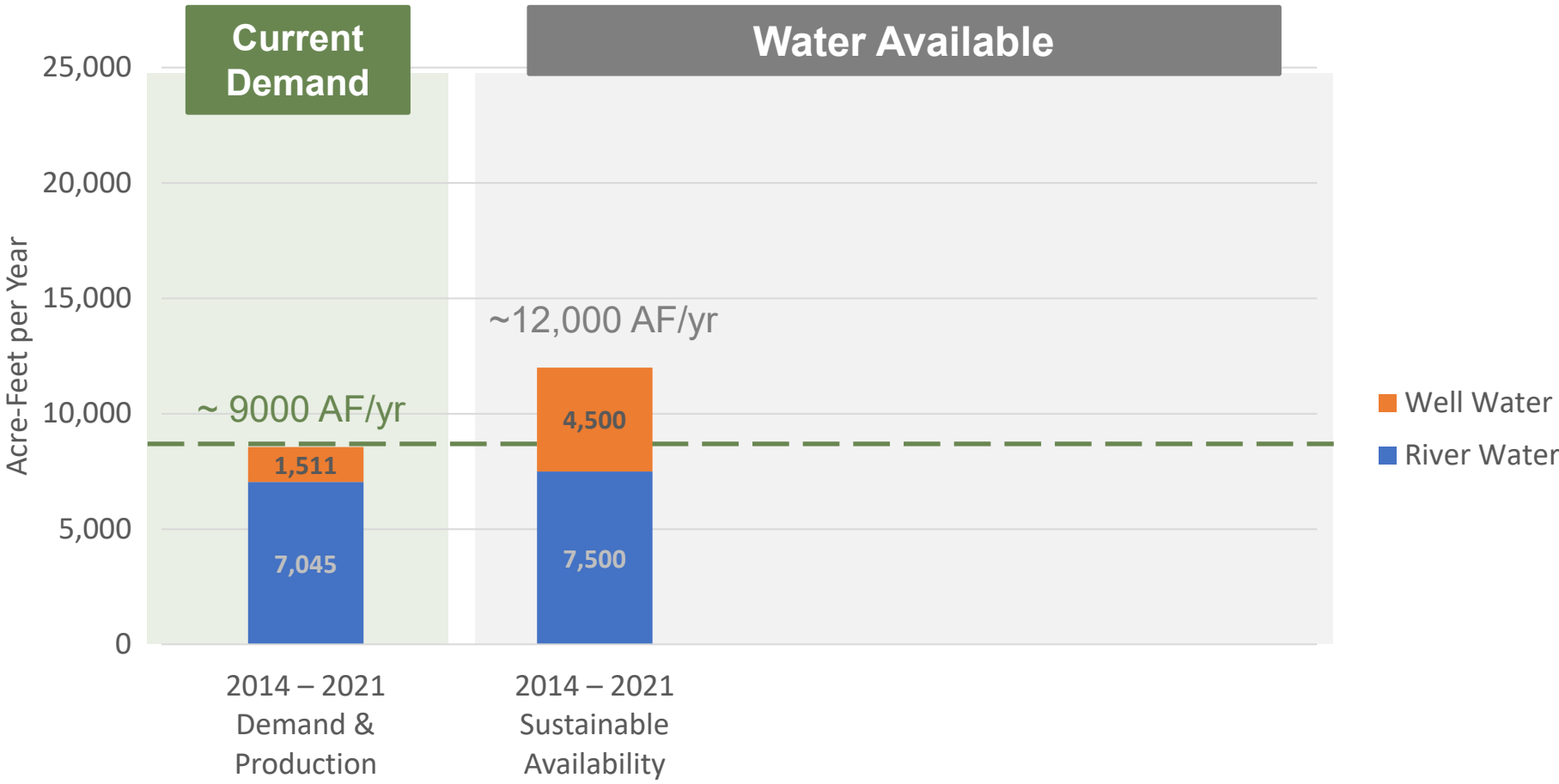
City Wells



Buckman Wells



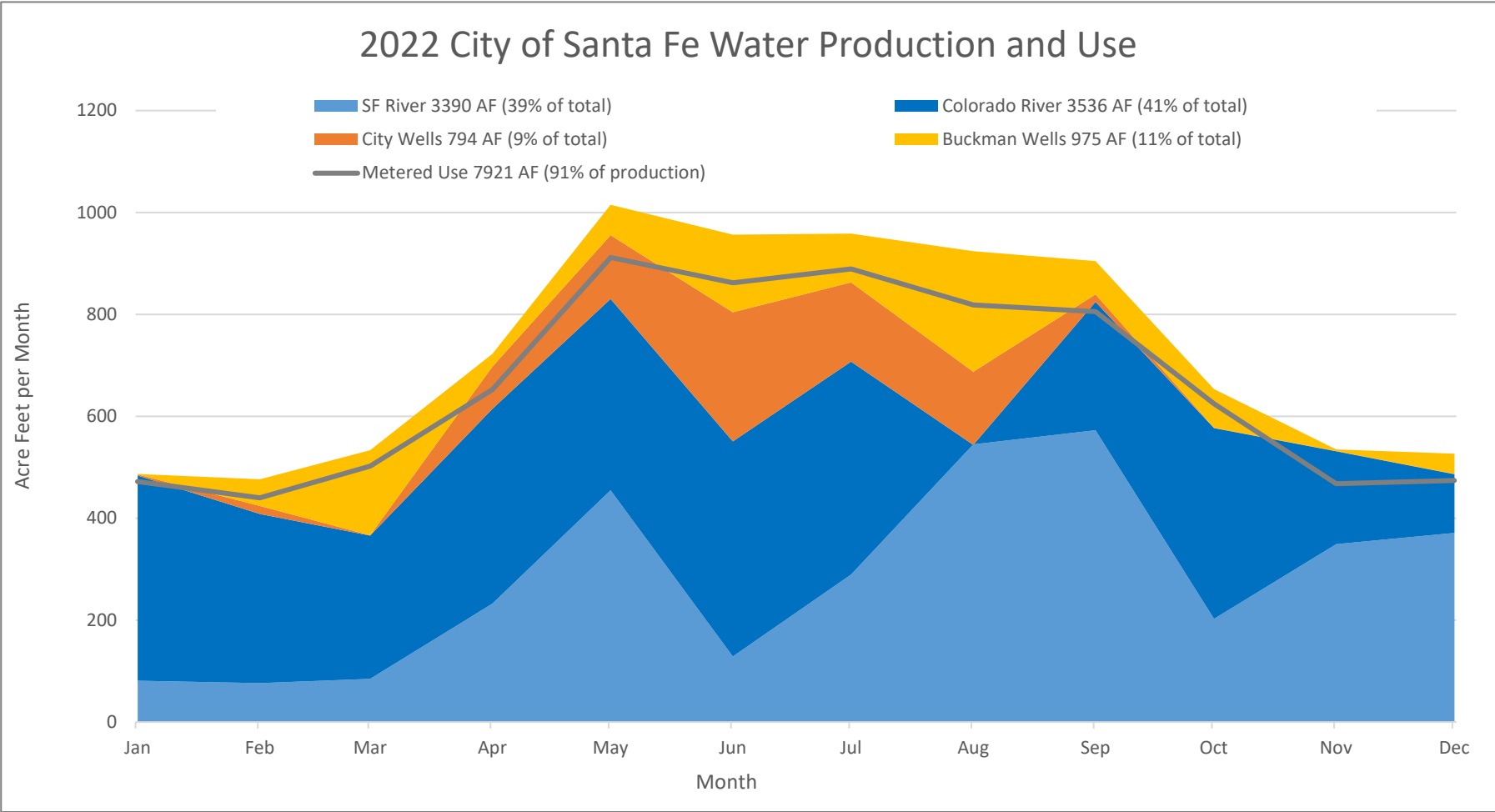
City of SF Water Current (average of recent 8 years) Demand and Supply



SF Water Past to Water Present Transition Slide

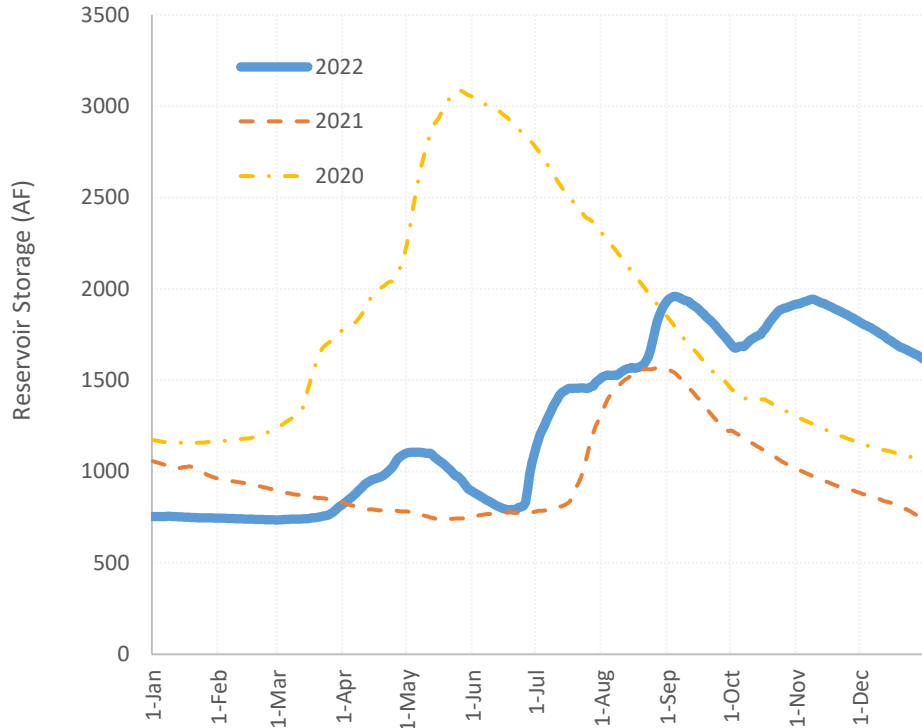
- System Overview
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2022 Specific Information

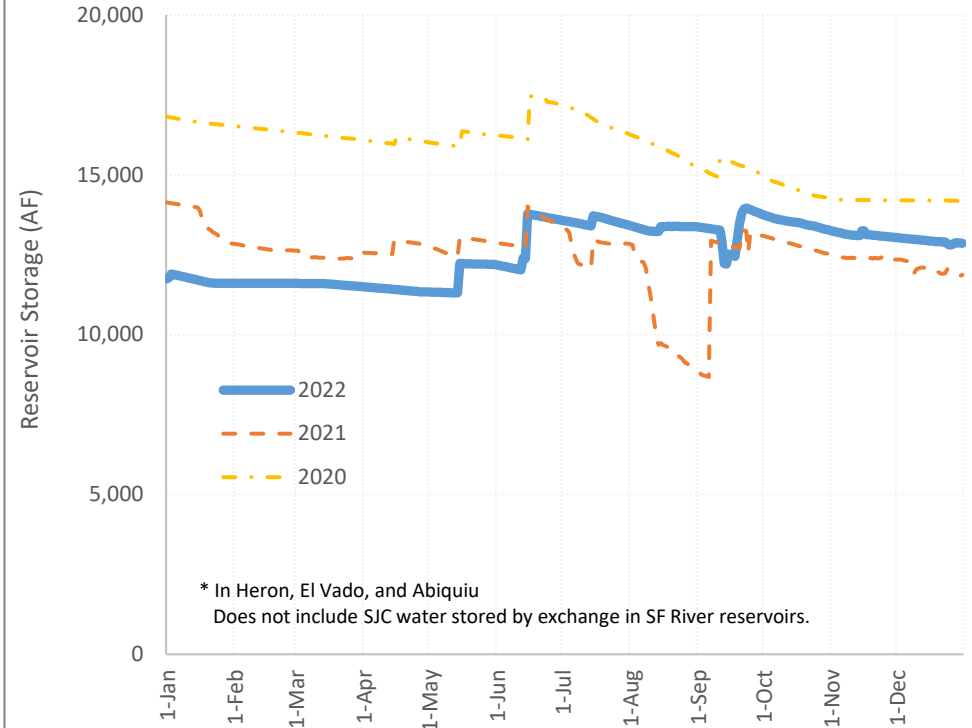


2022 Reservoir Storage

Total Santa Fe River Reservoir Storage



Total San Juan Chama Project Storage



* In Heron, El Vado, and Abiquiu
Does not include SJ water stored by exchange in SF River reservoirs.

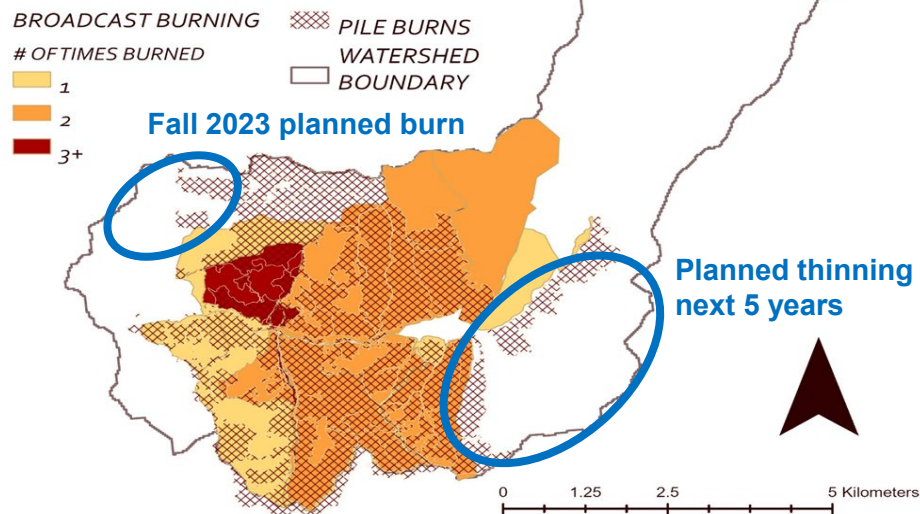
Preparation for Fire

- Fire planning
 - 20+ years of fuel reduction in upper watershed
 - Cooperating with SJC Contractors to reduce fuel loads in SJC headwaters
 - Thinning around critical water infrastructure within the City this year



Hermit's Peak Fire, as seen from Holman Hill in Mora County, NM April 30, 2022. Photo by Jim O'Donnell.
<https://wildfiretoday.com/2022/06/20/we-need-every-tool-to-fight-todays-wildfires/>

20 YEARS OF HISTORICAL TREATMENTS IN THE SANTA FE MUNICIPAL WATERSHED



Ella Kasten | USGS New Mexico Landscapes Field Station | NAD 1983 UTM Zone 13N

End Points

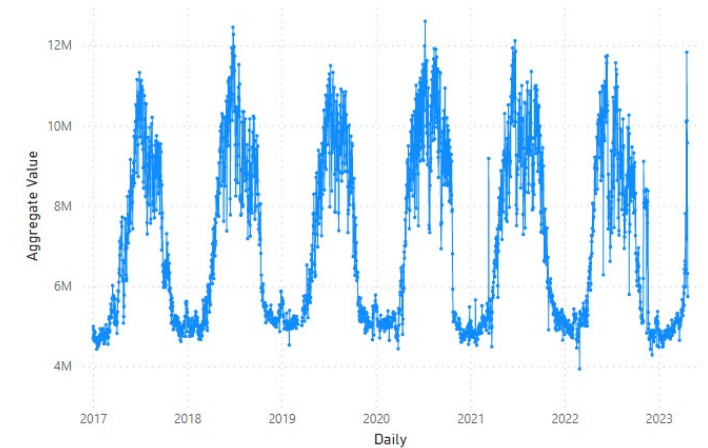
Meter reads are sent out by an “end-point” through a cellular network

- Provides real time water use data
 - Water users can access their own use with the “Eye On Water” App
 - Allows leak detection to occur within days rather than months
 - Rich source of data to better understand use
- Unfortunately, the 3g network our end points used sunsetted in January 2023
 - ~34,000 end points were exchanged between mid 2021 and the end of 2022
 - Exchange was done entirely with internal resources



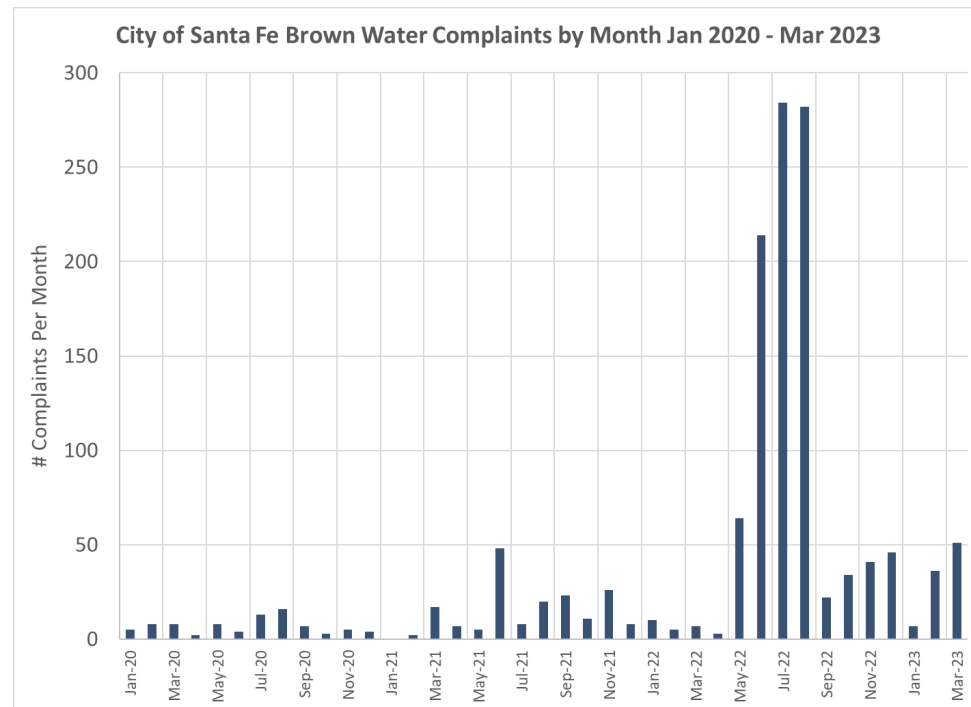
Daily Average Values

Name (Unit) ● City Demand (gal)



Manganese

- 2022 uptick in brown water in system
- Typically, is the result of either water moving through pipes faster or in a different direction than usual or a change in water chemistry
 - Either change can lead to mobilization of mineral build up inside water pipes
 - In our case the mineral mobilized is most commonly Manganese
- Manganese is a mineral common in food and is also naturally occurring in Santa Fe River water and added during treatment
- Steps being taken to reduce brown water events:
 - Corrosion and pipe scaling analysis currently underway (chemistry)
 - Targeted flushing will start in May (reduce mineral build up)
 - Oxygenation system for Nichols Reservoir should be complete in 2025 (reduce need for Manganese in treatment process)



BDD Settlement and Repair Plan

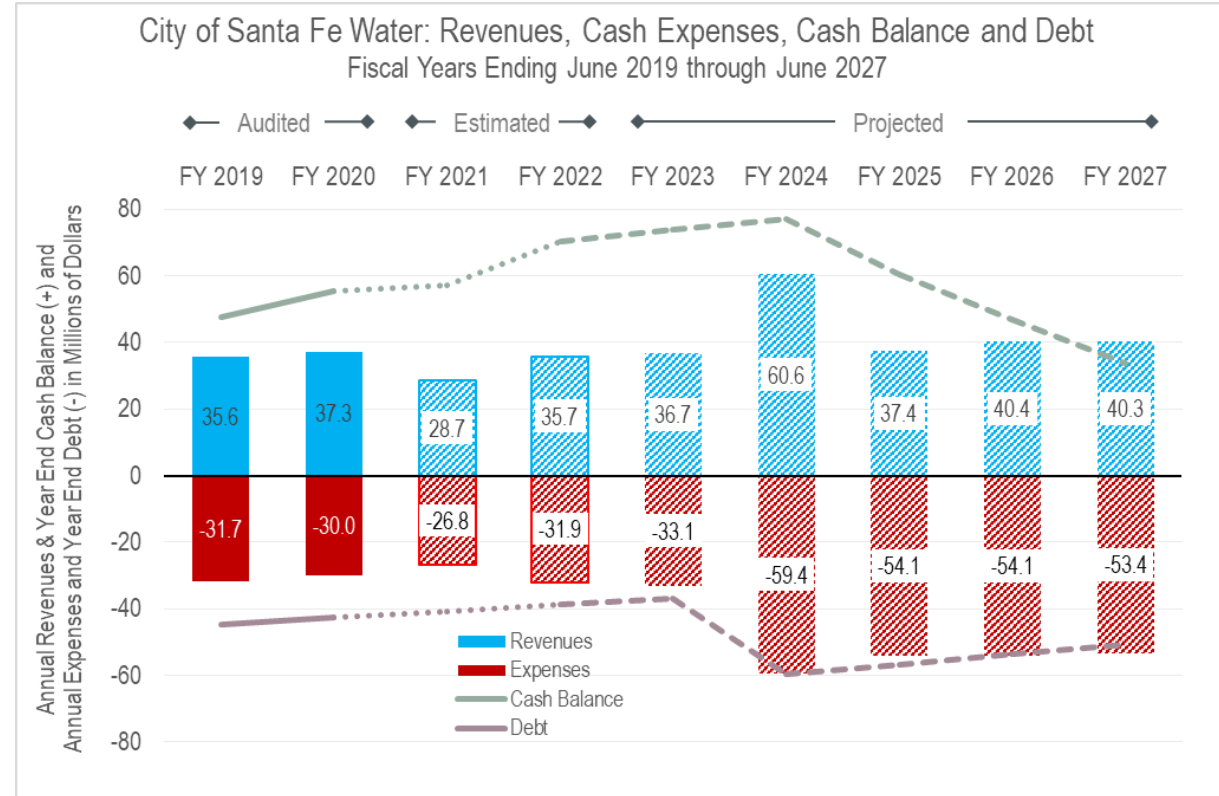
70M Settlement Funds Available

- The settlement
 - Significant design failures
 - Many related to inability of certain BDD facilities/equipment to properly handle Rio Grande sediment loads
 - A total of 70M in settlement funds obtained from CDM Smith, CH2M Hill, and Western Summit Construction
- The Repair
 - Wright Water Engineers has been hired by the BDD Board to guide solicitation and procurement of potential alternate solutions, repairs, rehabilitation, and/or replacement
 - The overall goal of repair will be a facility that can produce 15MGD 365 days per year



Financials

- 6/30/2020 Cash balance: 55.4M
- 6/30/2020 Outstanding debt: 42.5M
- Projected water revenues current FY through June 2027: 37M/yr to 40M/yr
- Projected cash expenditures including CIP current FY through June 2027: 33M/yr to 59M/yr
- ~95M in only four capital projects on the near horizon that will drawdown cash reserves and likely result in increased debt.
 - Nichols Dam Outlet Conduit Rebuild (~20M)
 - Flocculation Sedimentation Upgrades CRWTP (~15M)
 - McClure Dam Outlet Conduit Rebuild (~20M)
 - San Juan Chama Return Flow Project (~40M)



2022 City of Santa Fe Water Annual Report

- Key figures from the report are included in this presentation.
- Full 25 page report:
<https://santafenm.gov/SantaFe2022AnnualReport.pdf>



City of Santa Fe Water 2022 Annual Report



Nichols Reservoir in the upper Santa Fe River watershed.

City of Santa Fe

Alan Webber, Mayor
John Blair, City Manager

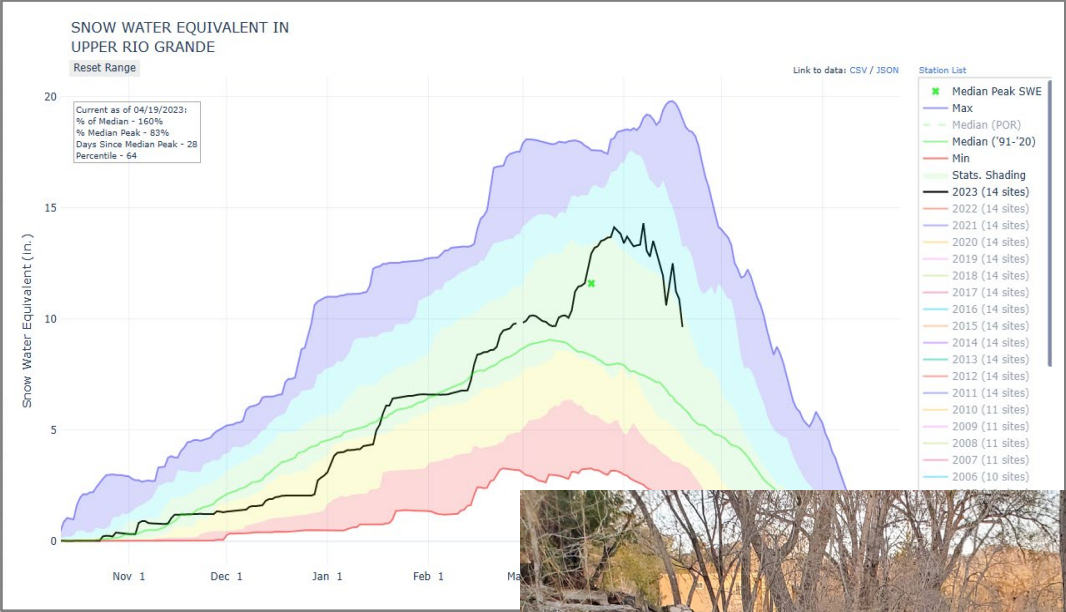
City Councilors

Signe Lindell, Mayor Pro Tem, District 1
Renee Villarreal, District 1
Carol Romero-Wirth, District 2
Michael Garcia, District 2
Chris Rivera, District 3
Lee Garcia, District 3
Amanda Chavez, District 4
Jamie Cassutt, District 4

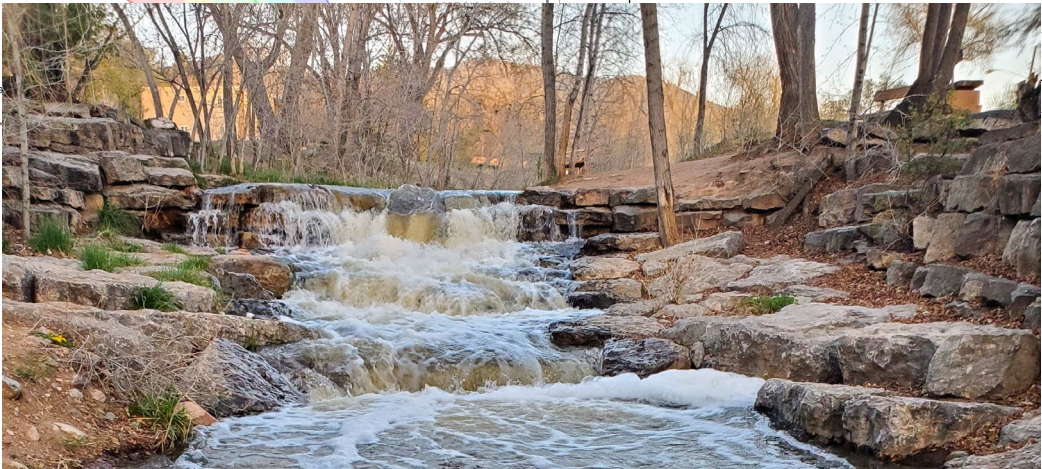
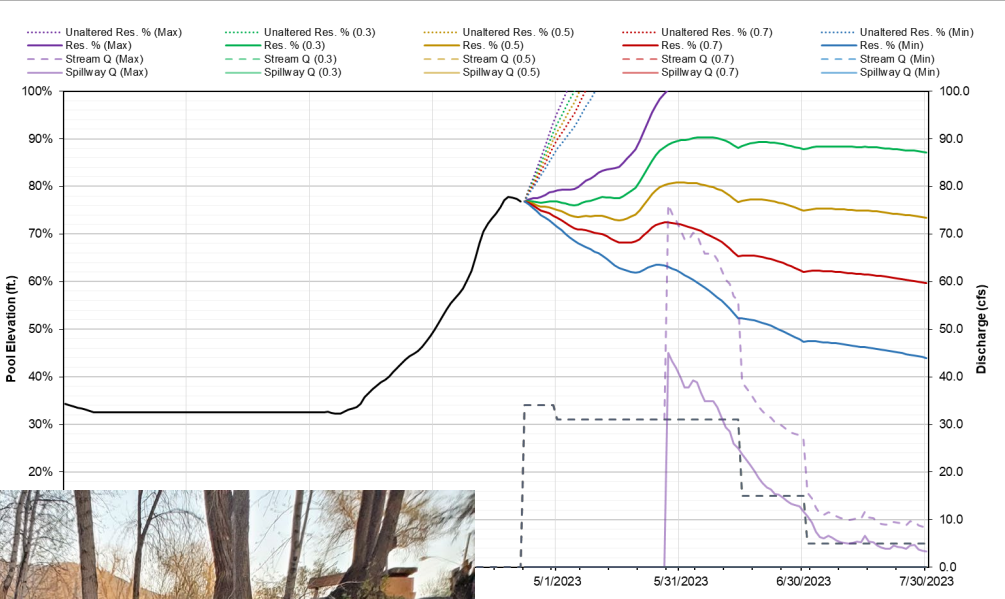
Compiled & Written by
City of Santa Fe Water Staff

2023 Outlook & Plans

RG Snowpack expressed as depth of water for 14 “snow pillows”



McClure Storage Under Probable Inflow Scenarios (with planned reservoir releases)



SF Water Present to San Juan Chama Return Flow Project Transition Slide

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Threats to a resilient water future

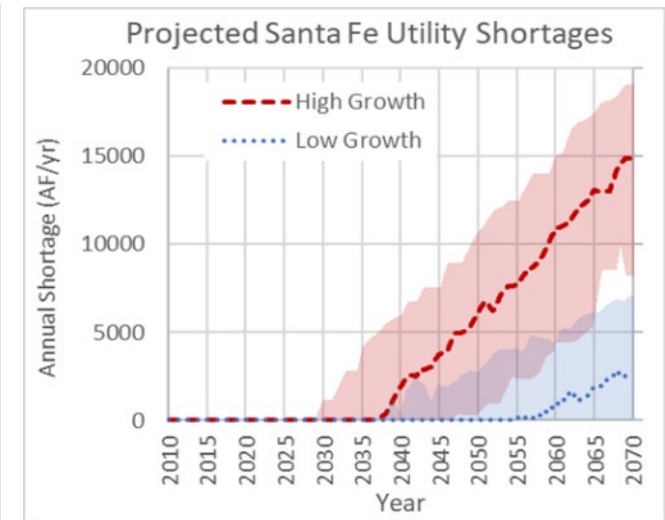
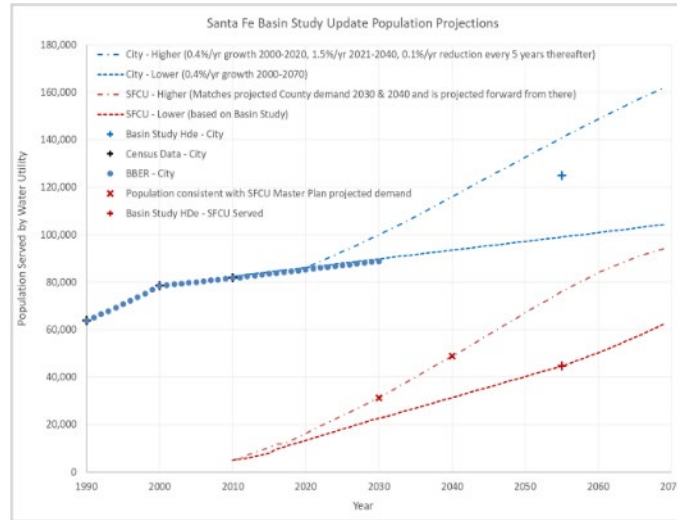
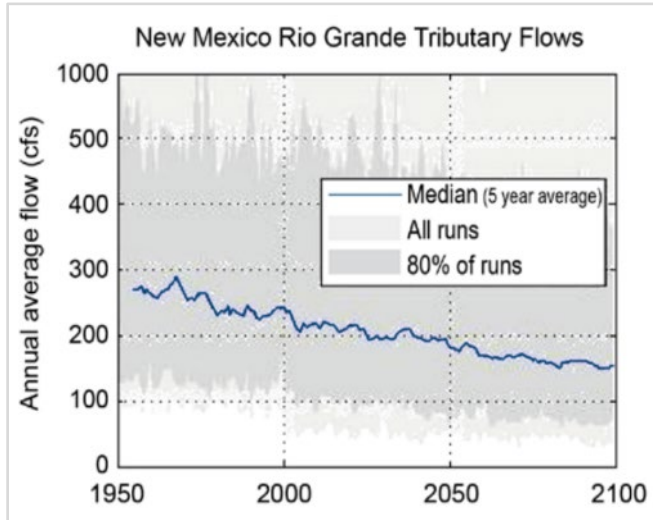
Climate Change

+

Demand Uncertainty

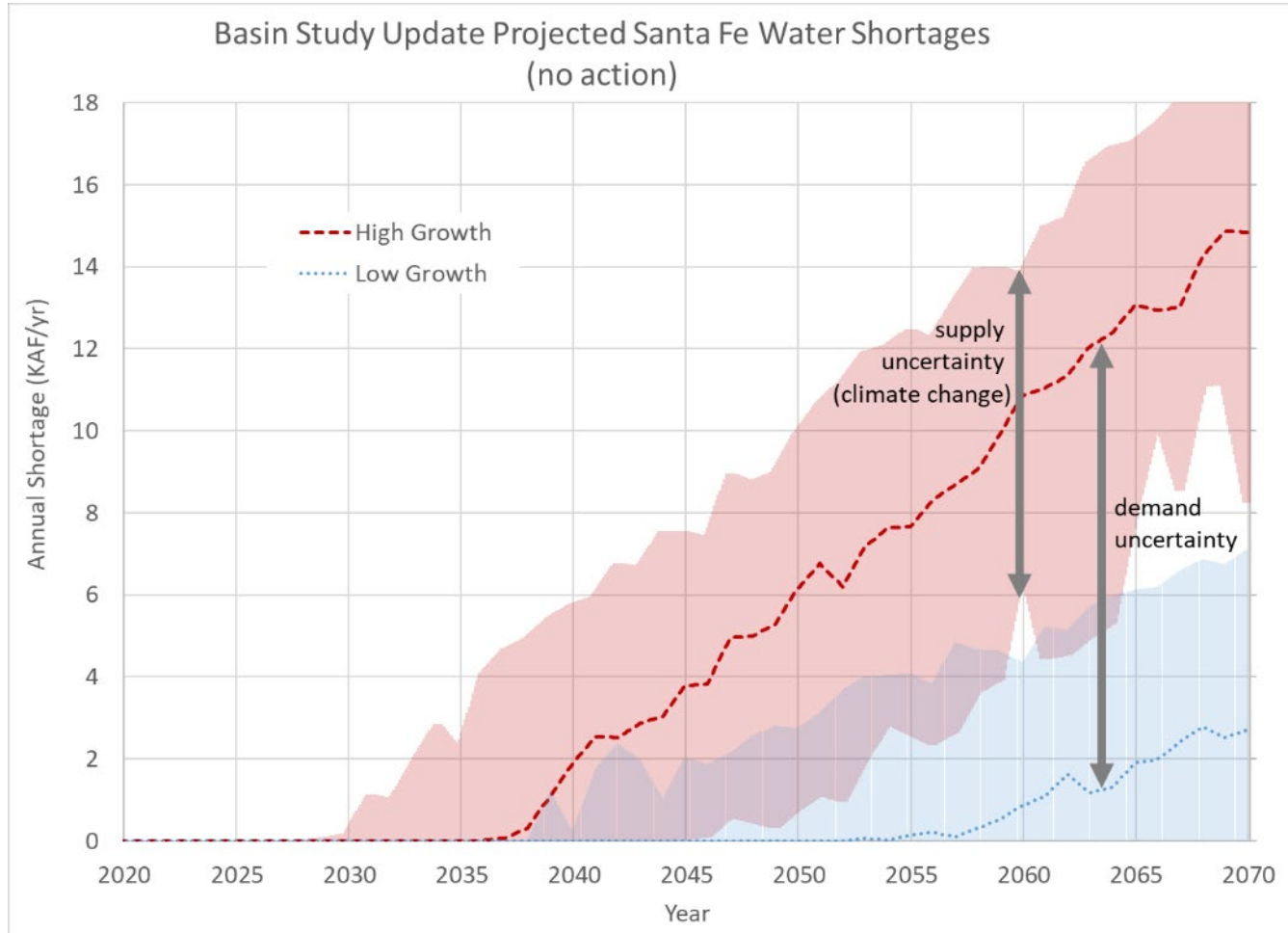
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Potential Supply Shortages



Recent planning efforts

2015 Santa Fe Basin Study and 2019 Santa Fe Basin Study Update



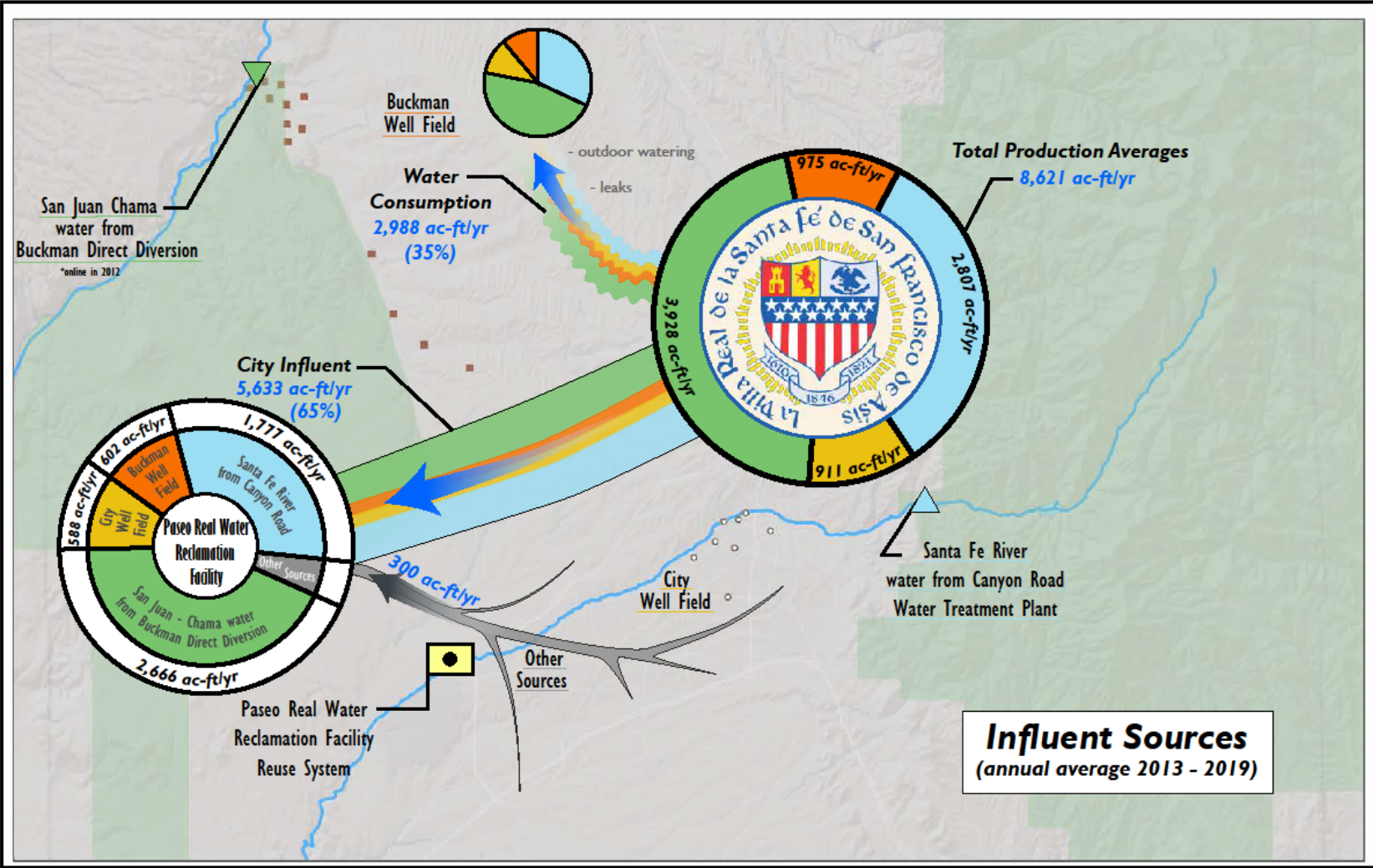
- Growing demand & less reliable supply will lead to shortages if we do nothing
- Best way to avoid these shortages is more efficient use of effluent

Adaptation Strategies to Avoid Shortages

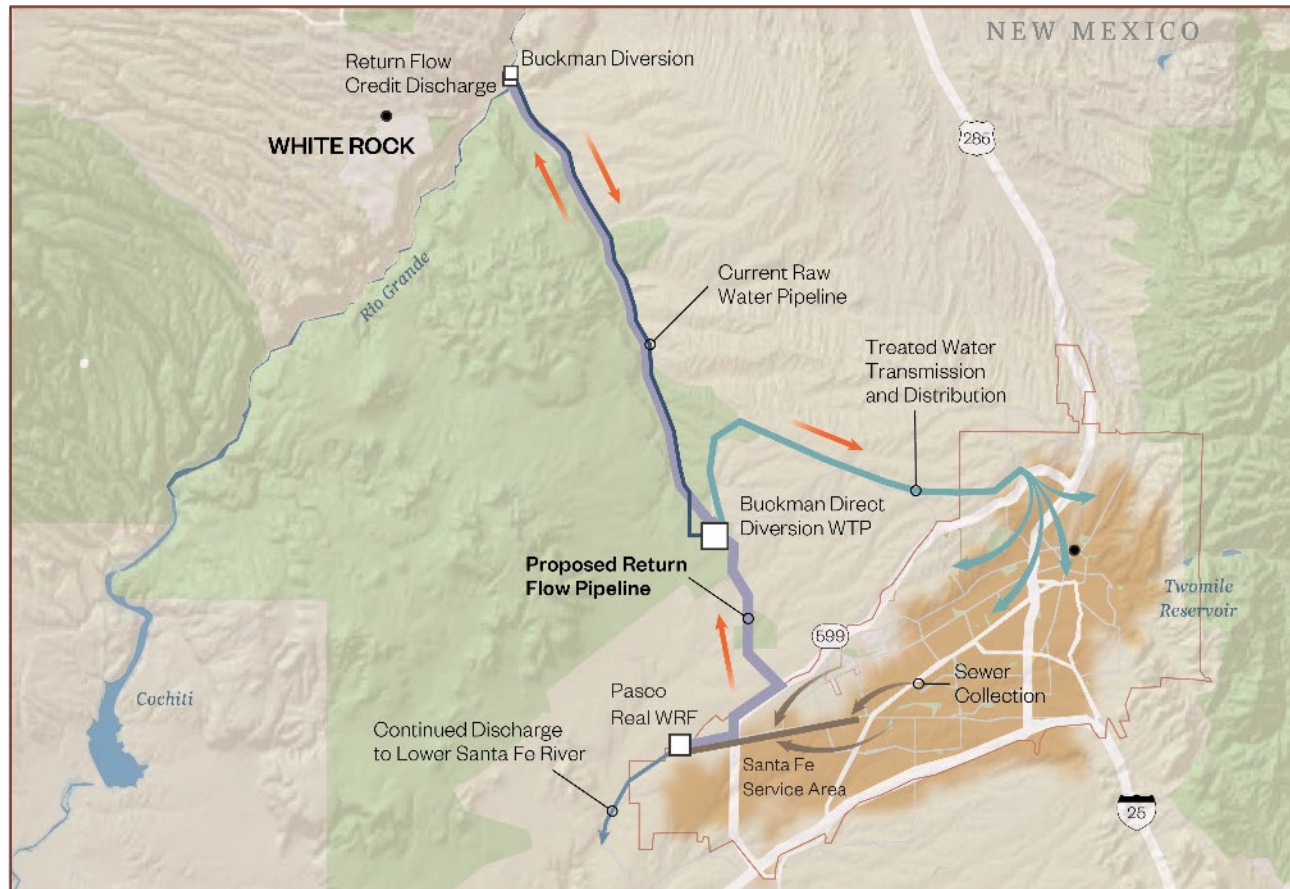
Adaptation strategies considered in the 2015 Santa Fe Basin Study:

1. Water Conservation
 - » CoSF Water believes in a water conservation ethic and budgets about \$1.6 million per year in support of conservation.
2. Direct /Indirect Reclaimed Water Reuse
 - » We are moving towards the SJC Return Flow Project.
3. Aquifer Storage and Recovery
 - » Staff is evaluating concepts for ASR of Santa Fe River Water in or near the river channel.
 - » Staff is evaluating concepts for potential infiltration of effluent or raw river water for recovery with Buckman Wellfield Wells 11-13.
4. Additional Surface Water Rights
 - » Large developers are required to bring water rights to offset added demands due to development

2013 – 2019 Flows to WWTP



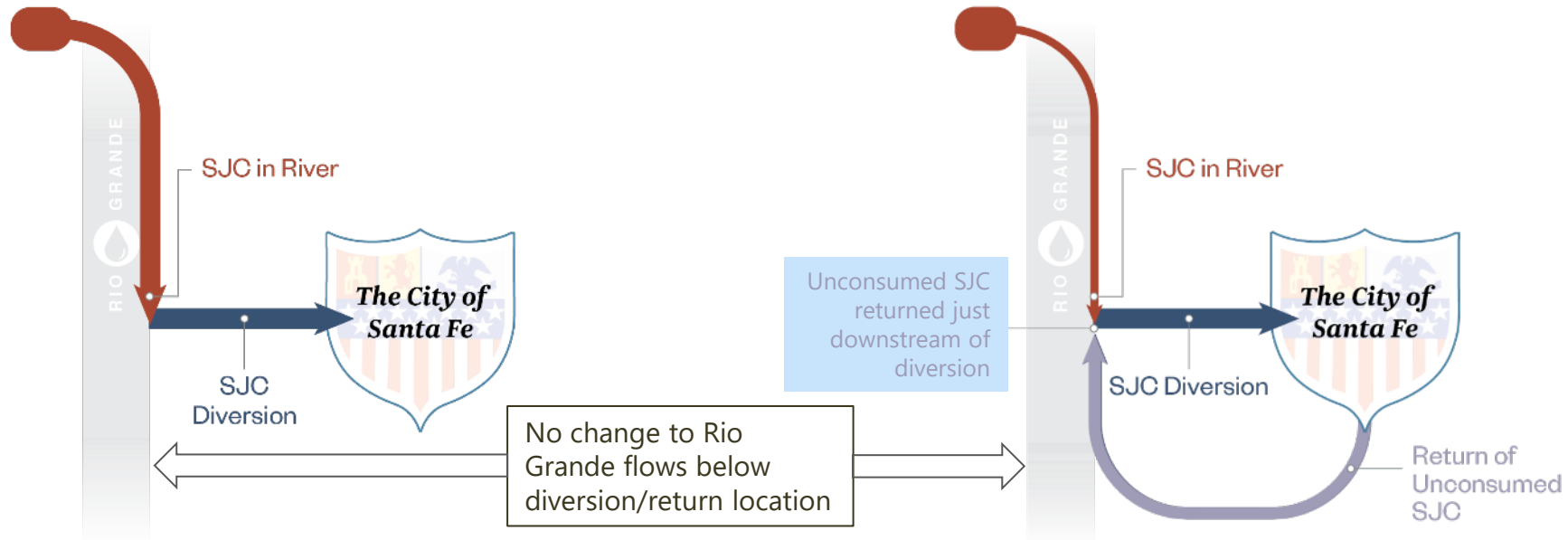
Project Location



San Juan Chama Return Flow Project

Full consumption of SJC water

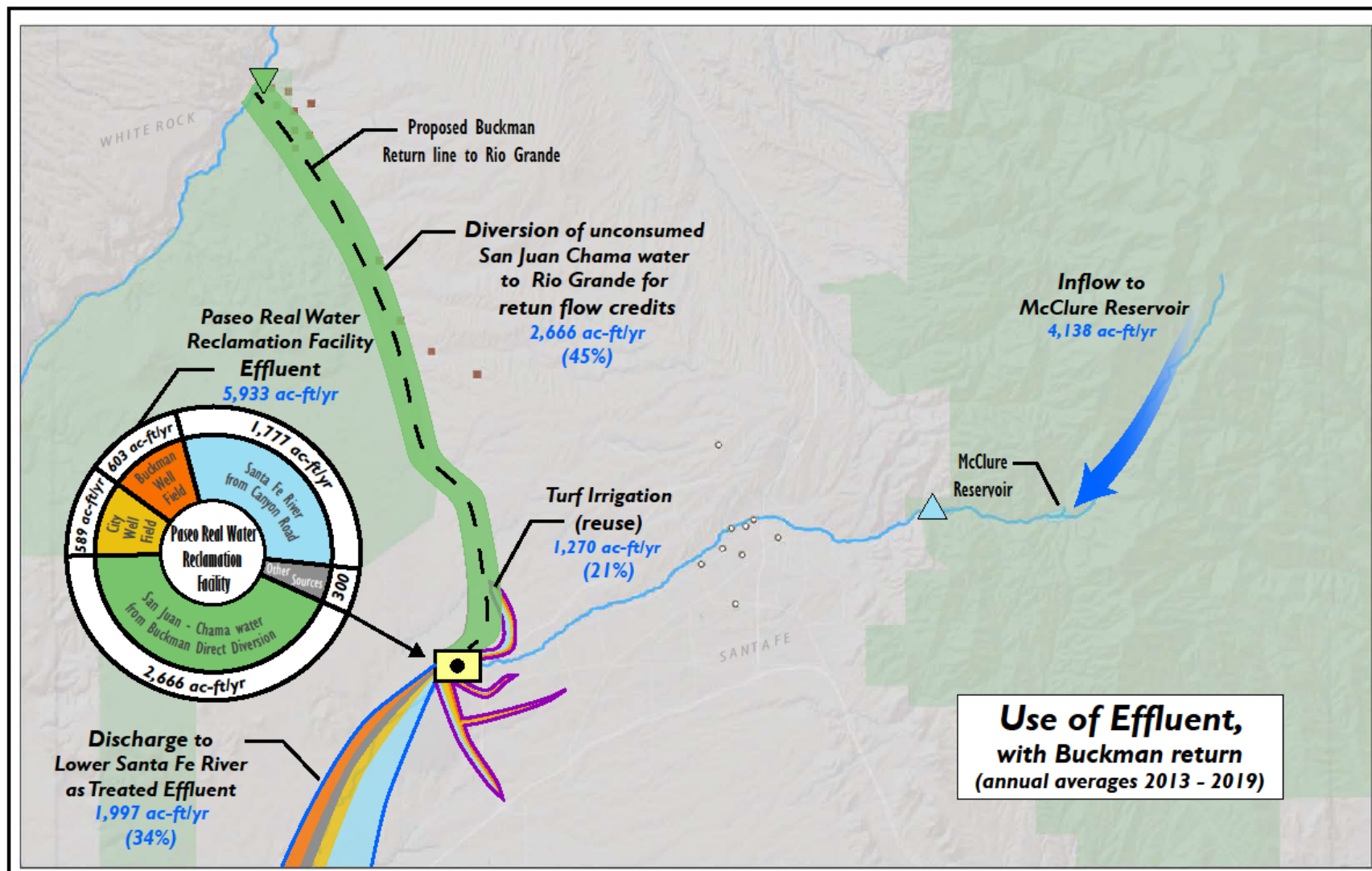
- Goal: Achieve full consumption of San Juan Chama (SJC) water by getting credit for returning unconsumed SJC water to the Rio Grande.



Current: all diversions at BDD from upstream reservoir releases

With project: same diversions at BDD with less release from upstream reservoirs. River "made whole" with effluent return.

2013 – 2019 w Pipeline



SJC Return Flow Project Status

- OSE Return Flow Credit Application
 - Submitted November 2021
 - Two protests, one resolved, one nearly resolved
 - Hopeful for permit before end of year

- NEPA Process

- BoR lead. In negotiations with USFS and BLM on Federal roles and responsibilities
 - Hoping to have draft EA before end of year

- Lower Santa Fe River Planning Process

- Being led by Santa Fe County
 - Hoping to see RFP for facilitation out in May

- Project Design

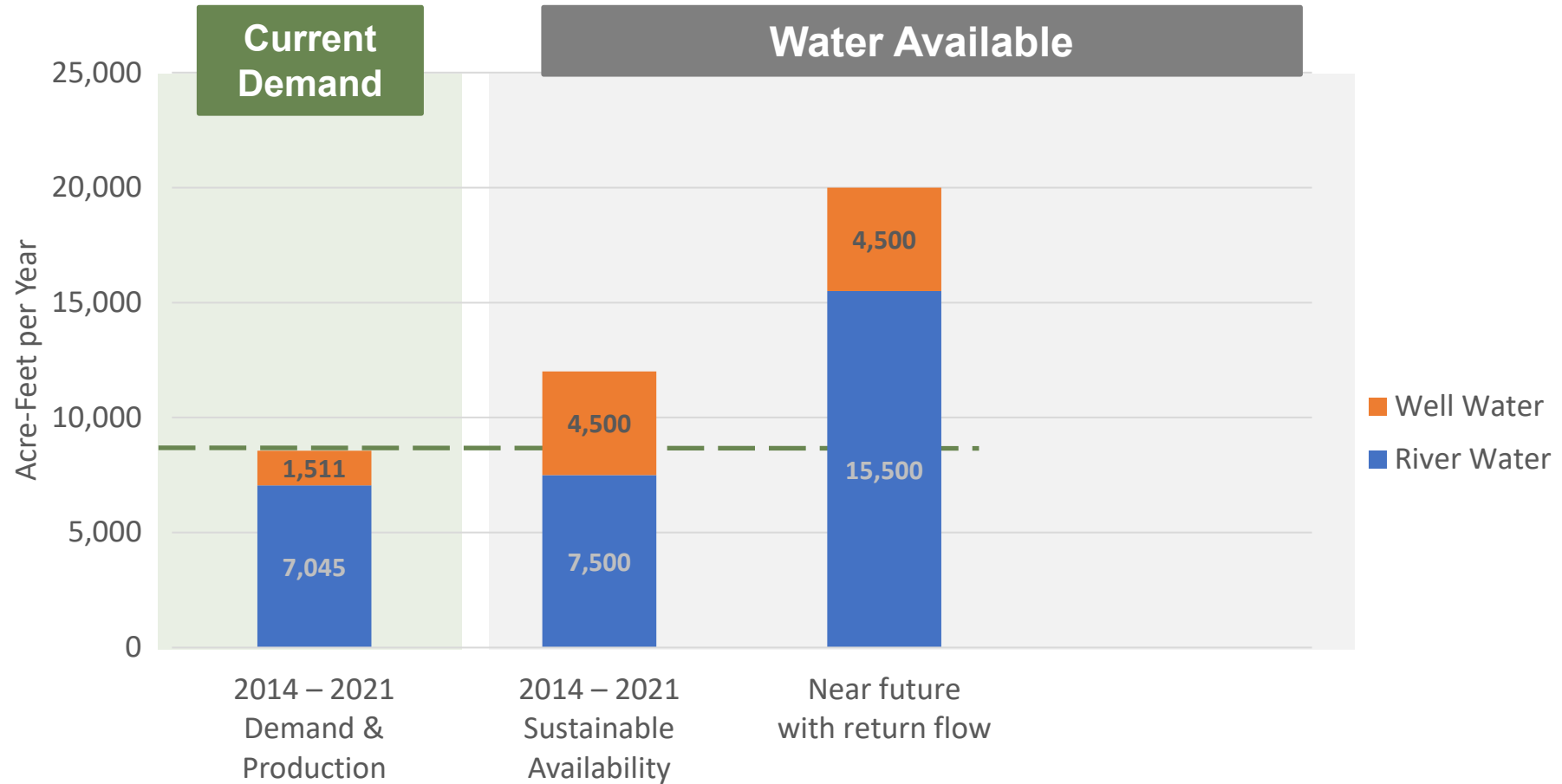
- Currently underway led by Carollo Engineering.
 - Close to 30% design
 - Hope to have final design by the end of the year

Permitting

Design



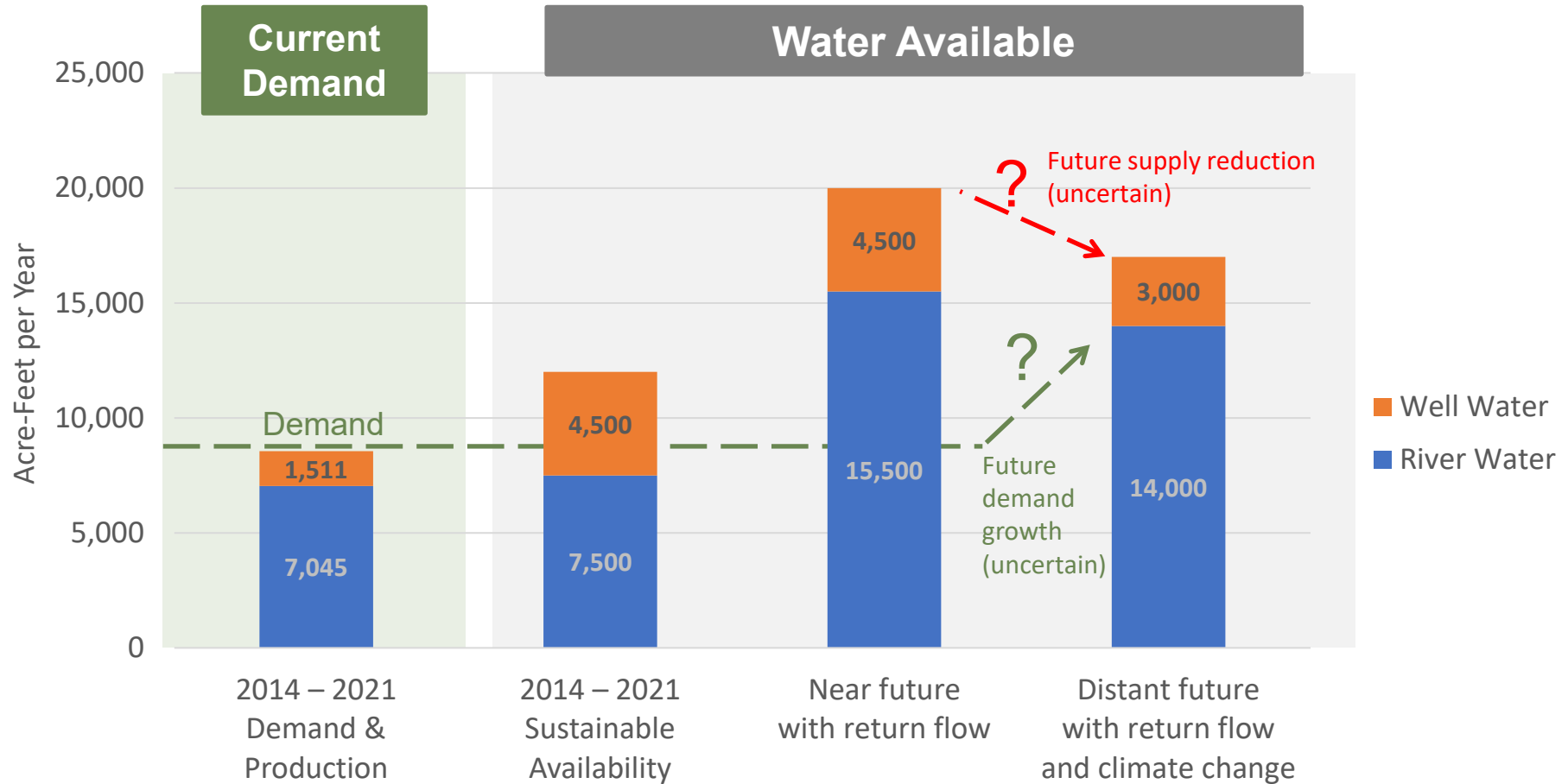
Near term plan: San Juan Chama Return Flow Project



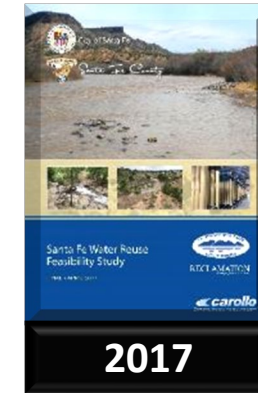
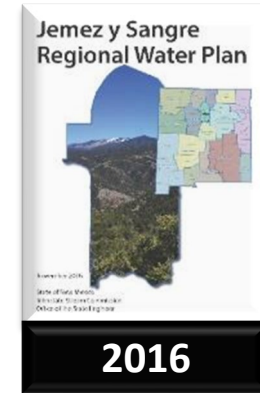
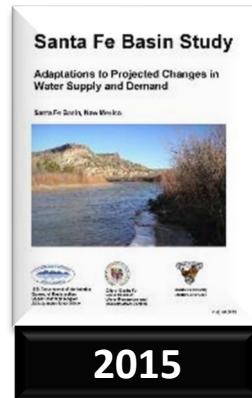
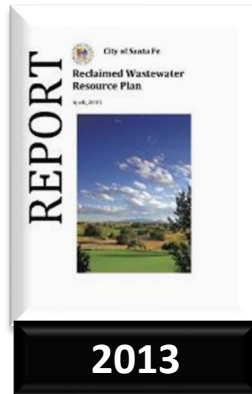
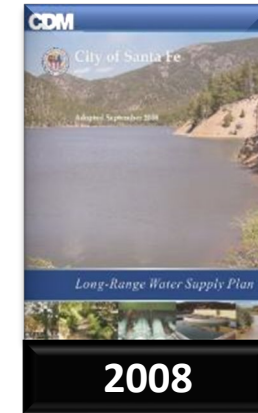
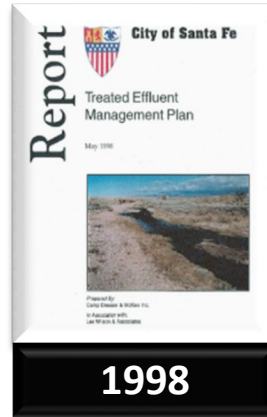
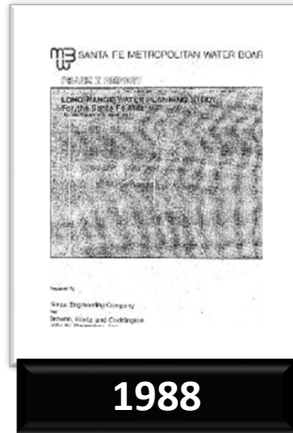
San Juan Chama Return Flow Project to Long Range Planning Transition Slide

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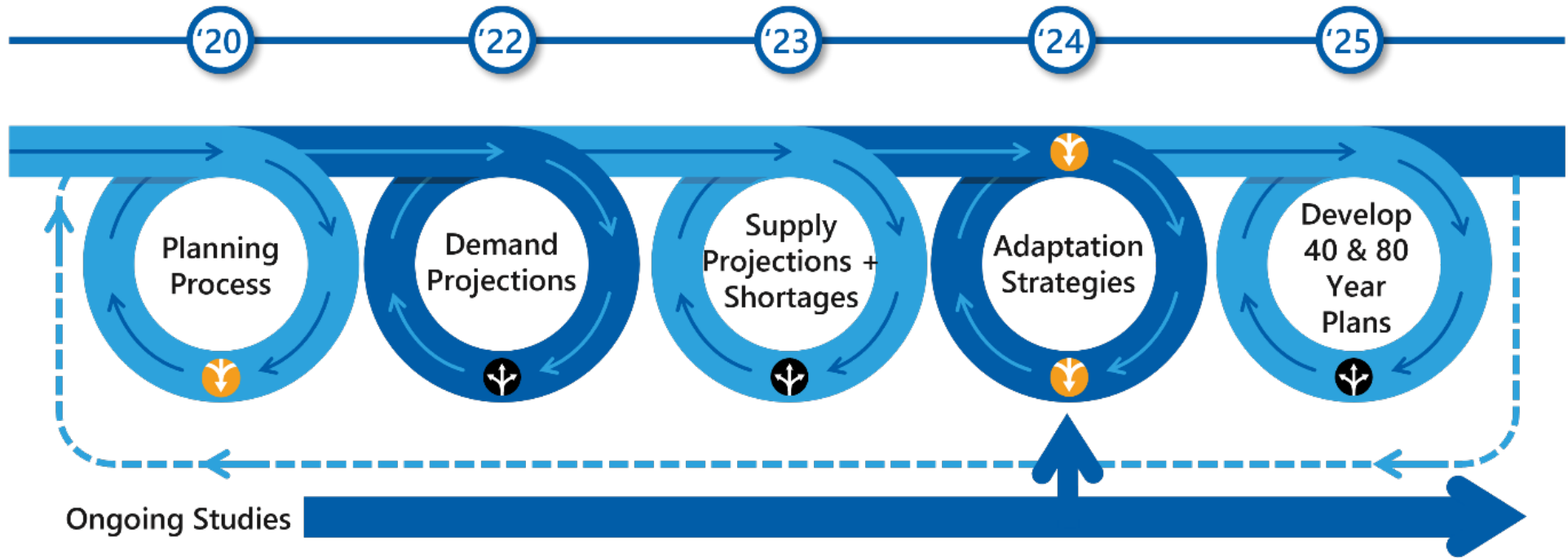
Long Term Planning



Long Range Water Resources Planning (City Water Future)



Water Resources Long Range Planning: “Water 2100”

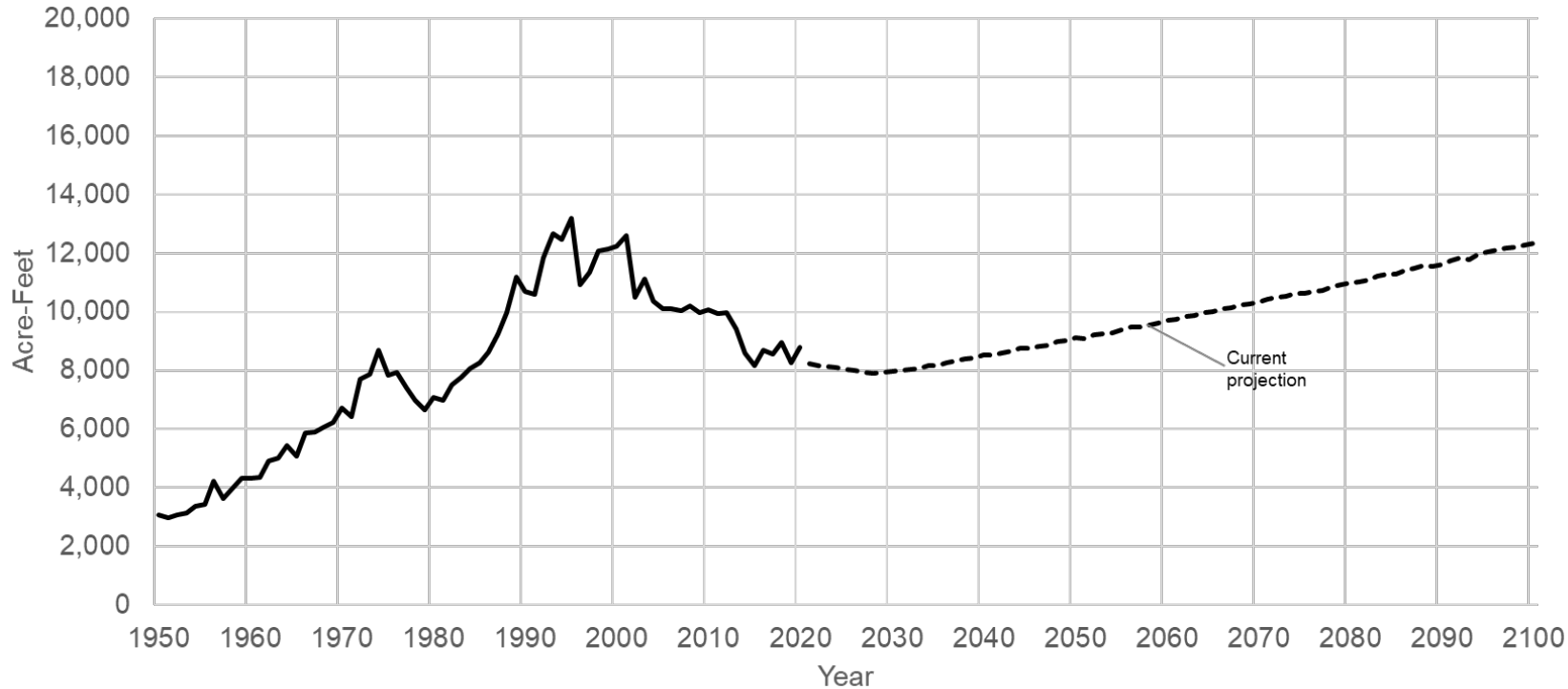


Public Q&A



Public Feedback

Water Resources Planning 2022: Demand Projection

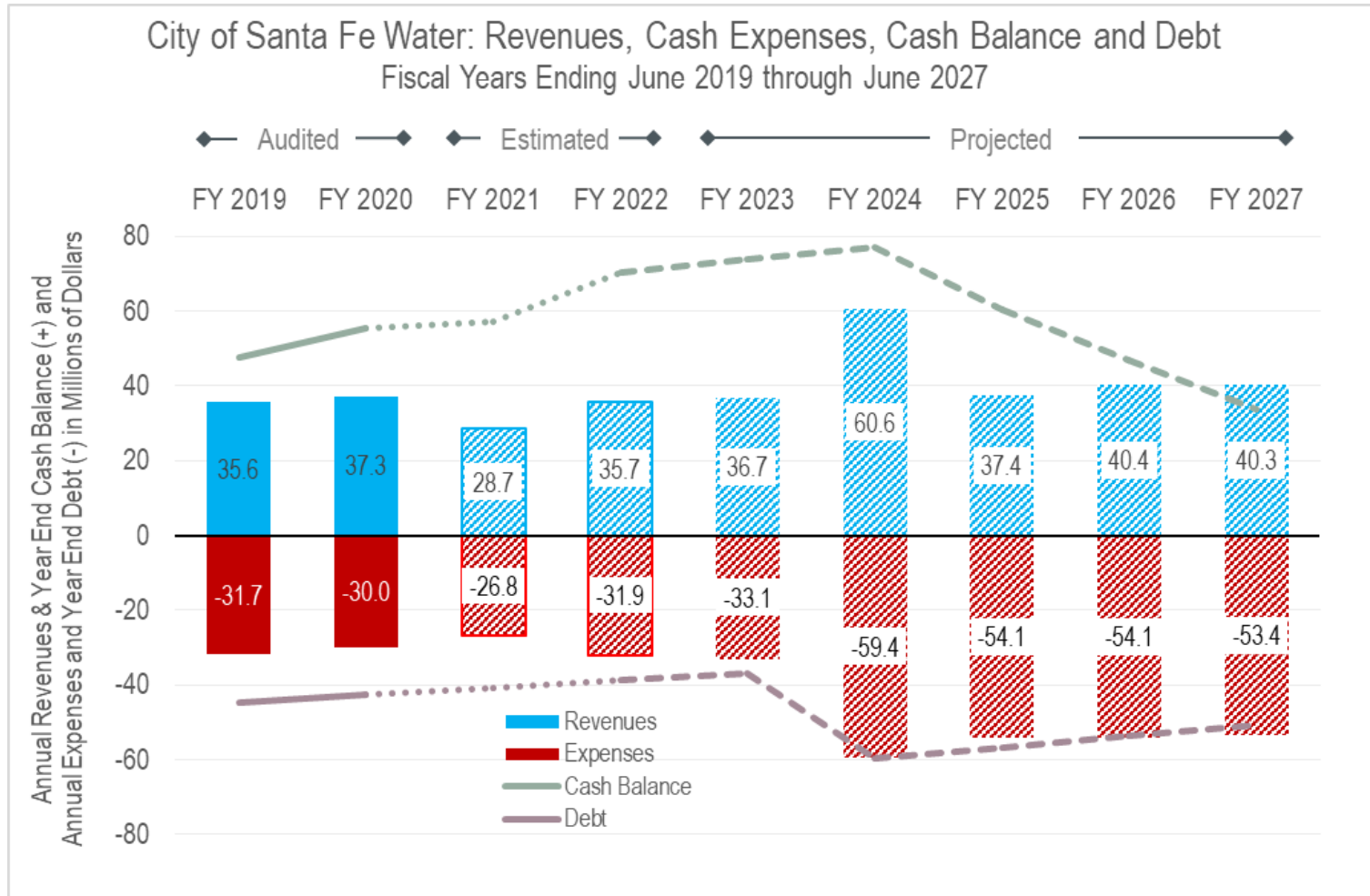


Coming this year: Supply Projections (dependent on 3rd party technical work) and Shortages Analysis

Long Range Planning to Other Activities Transition Slide

- System Overview
 - 3 slides #4-6
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- Santa Fe Water Present
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(Other) Capital Improvement Projects



(Other) Capital Improvement Projects

Projects	FY2223	FY2324	FY2425	FY2526	FY2627	5yr Total
Nichols - outlet conduit rehabilitation	\$ 100,000	\$ 11,900,000	\$ 6,000,000	\$ -	\$ -	\$ 18,000,000
CRWTP Flocculation & Sedimentation Rehabilitation	\$ 200,000	\$ 7,000,000	\$ 7,000,000	\$ 2,100,000	\$ -	\$ 16,300,000
SJC Return Flow Project	\$ 500,000	\$ 2,000,000	\$ 1,500,000	\$ 11,750,000	\$ 10,250,000	\$ 26,000,000
McClure - outlet conduit rehabilitation	\$ -	\$ -	\$ 800,000	\$ 800,000	\$ 2,400,000	\$ 4,000,000
Priority Line Replacements (PLR)	\$ 1,626,563	\$ 1,626,563	\$ 1,626,563	\$ 1,626,563	\$ 1,626,563	\$ 8,132,815
CRWTP chemical feed upgrades to meet current codes	\$ -	\$ 250,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 1,000,000
City Wellfield Optimization - St. Michael's well replacement	\$ 180,000	\$ 856,000	\$ 856,000	\$ -	\$ -	\$ 1,892,000
On-Call Contracts	\$ 2,168,752	\$ 2,168,752	\$ 2,168,752	\$ 2,168,752	\$ 2,168,752	\$ 10,843,760
Other	\$ 1,166,875	\$ 1,050,000	\$ 250,000	\$ 250,000	\$ 250,000	\$ 2,966,875
Total	\$5,942,190	\$26,851,315	\$20,451,315	\$18,945,315	\$16,945,315	\$ 89,135,450

Nichols Reservoir and Canyon Road Water Treatment Plant (CRWTP)

- Nichols Dam Outlet Works Rehabilitation Project

- Currently out for bid – bids due May 30
- Improves safety and extends dam's life by addressing potential failure modes
- Upgrades discharge design and controls
- Replaces “raw water” connection to CRWTP
- Estimated cost ~\$18M

- CRWTP Upgrades

- Going out to bid in May
- Replaces key flocculation and sedimentation infrastructure that is at “end of life”
- Improves and increases water treatment capabilities
- Estimated cost ~\$16.5M



Santa Fe Water Resources Indicator

A quantitative tool to summarize water availability to the City and County Water Utility systems in order to inform **seasonal** conservation policy

- Provide a transparent, quantitative, and predictable trigger to guide seasonal conservation policy
- Actual policy response to indicator will be developed by engagement with City's WCC and County's WPAC and direct public outreach.
- The indicator is not for short term infrastructure related disruption or long term water resources planning

"It hasn't rained in months, and all I read about in the newspaper is drought. Why aren't you asking for or even mandating more conservation?"

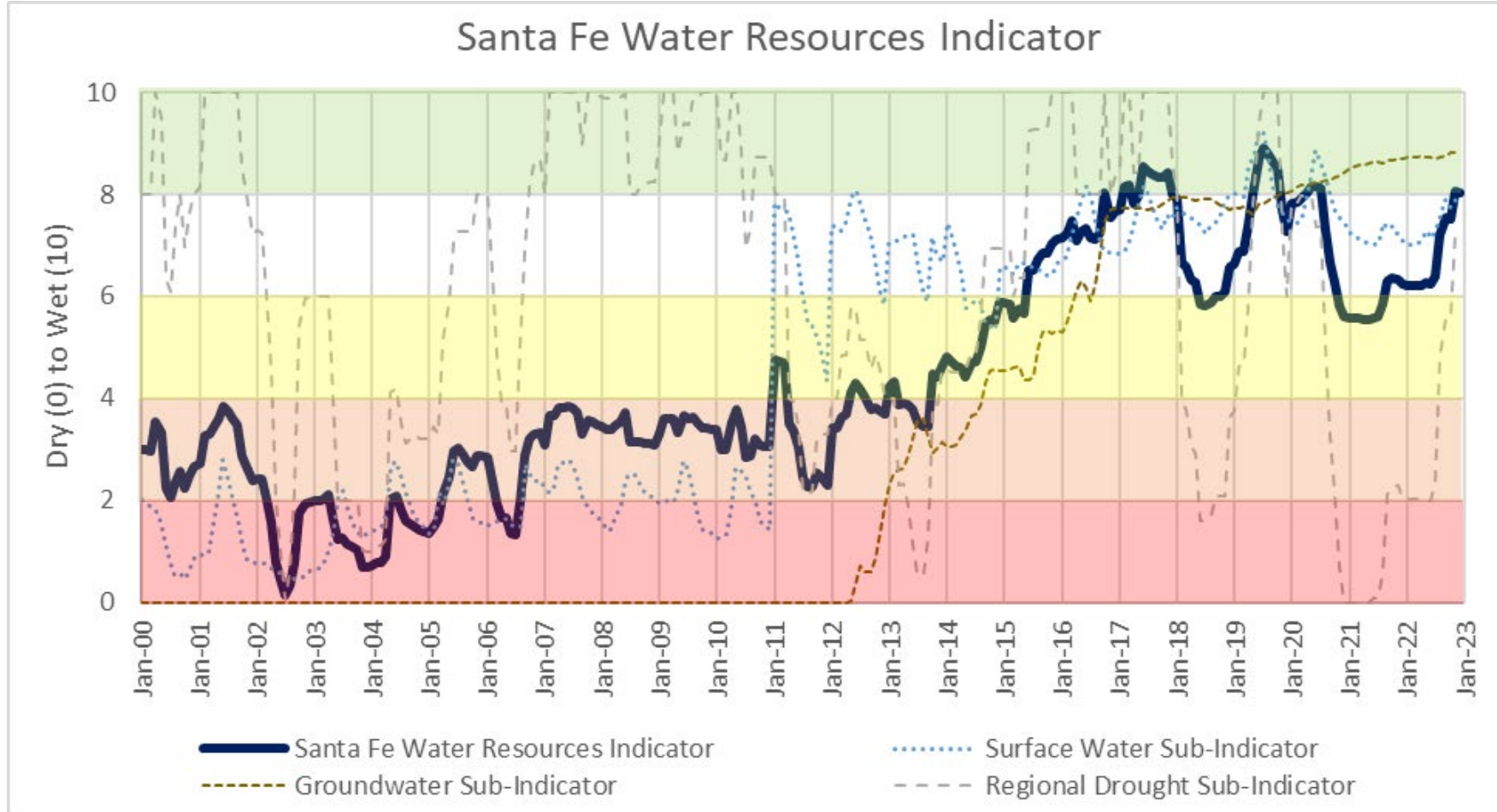
- Tina Bitworried

A hypothetical Santa Fe Water Utility customer

Types of Demand Planning Done by City and County of Santa Fe Water Utilities		
Time Scale	Technical Tools Used by Santa Fe Water Utilities	Conservation Response
Weeks to Months	Worst case scenarios evaluated with hydraulic (pipe network) model	Short term drastic reduction
1 Year	Santa Fe Water Resources Indicator	Seasonal policy
Decades	STEWaRDS long range water resources planning model	Long range conservation policy

Santa Fe Water Resources Indicator

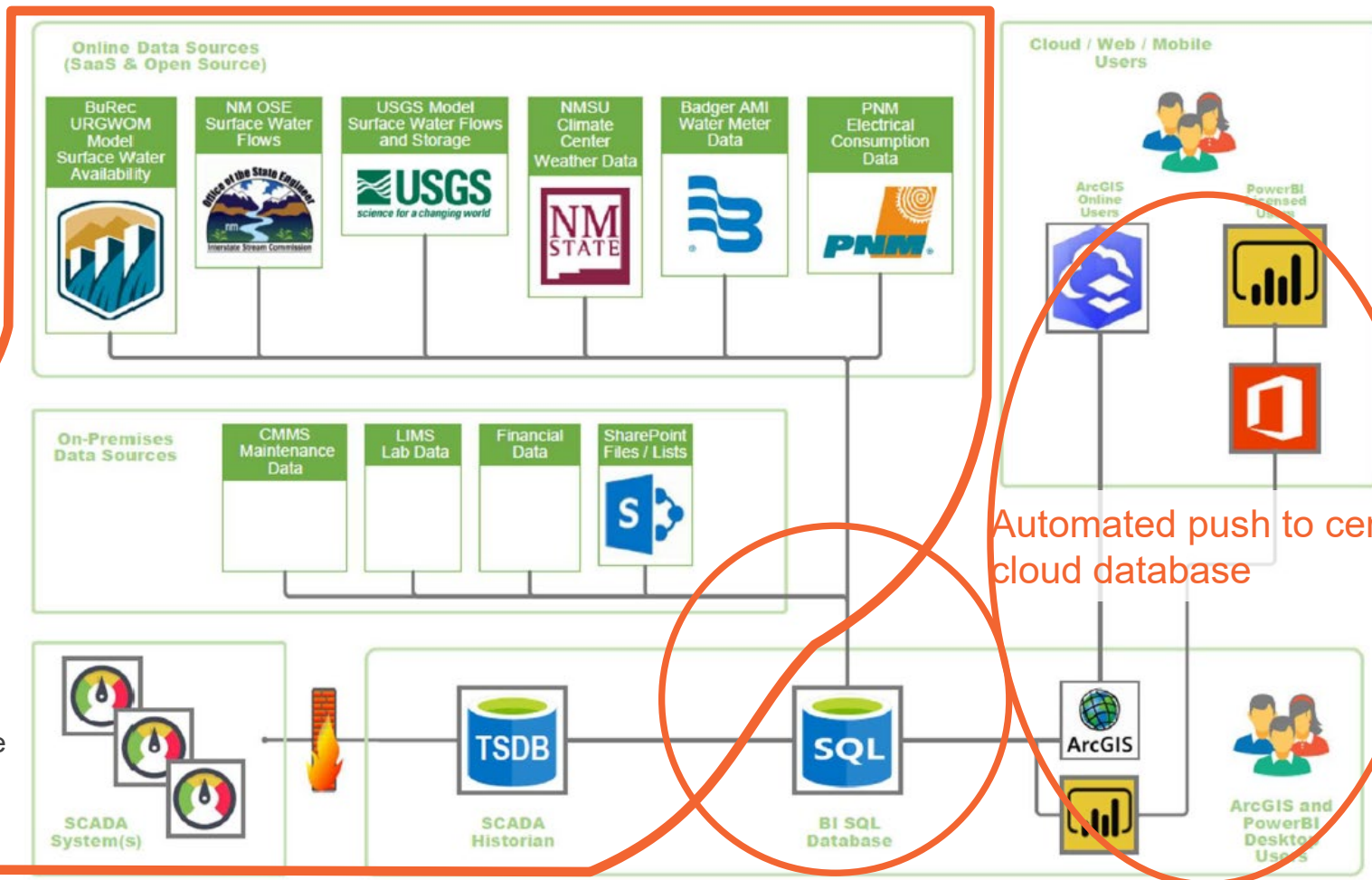
A quantitative tool to summarize water availability to the City and County Water Utility systems in order to inform **seasonal** conservation policy



Data Dashboard for City of Santa Fe Water

Data Sources

- 1. Production
- 2. Storage and Distribution
- 3. Wastewater Use
- 4. River Flows
- 5. Groundwater Levels

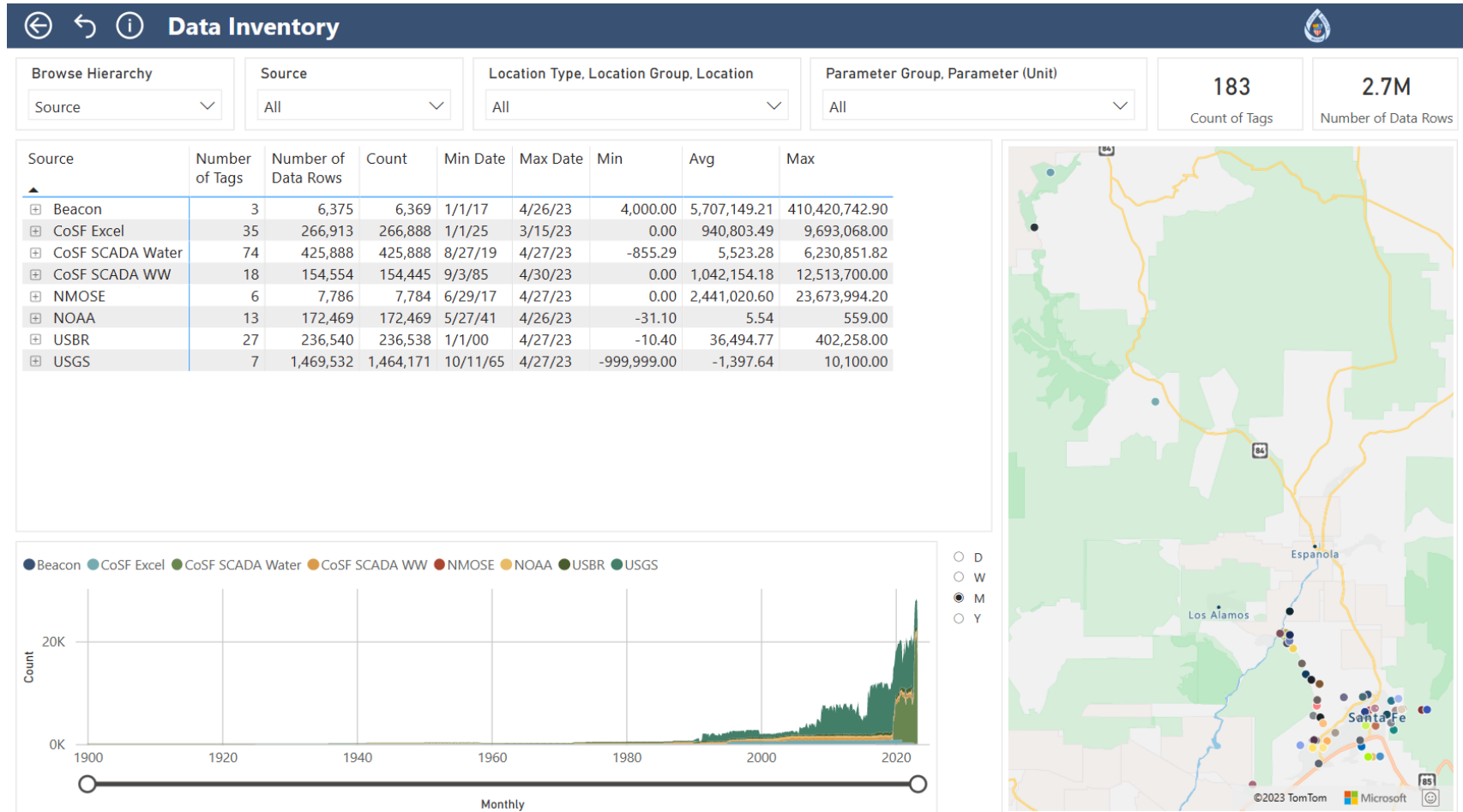


Automated Power BI refresh and publish to web, where data are always up-to-date.

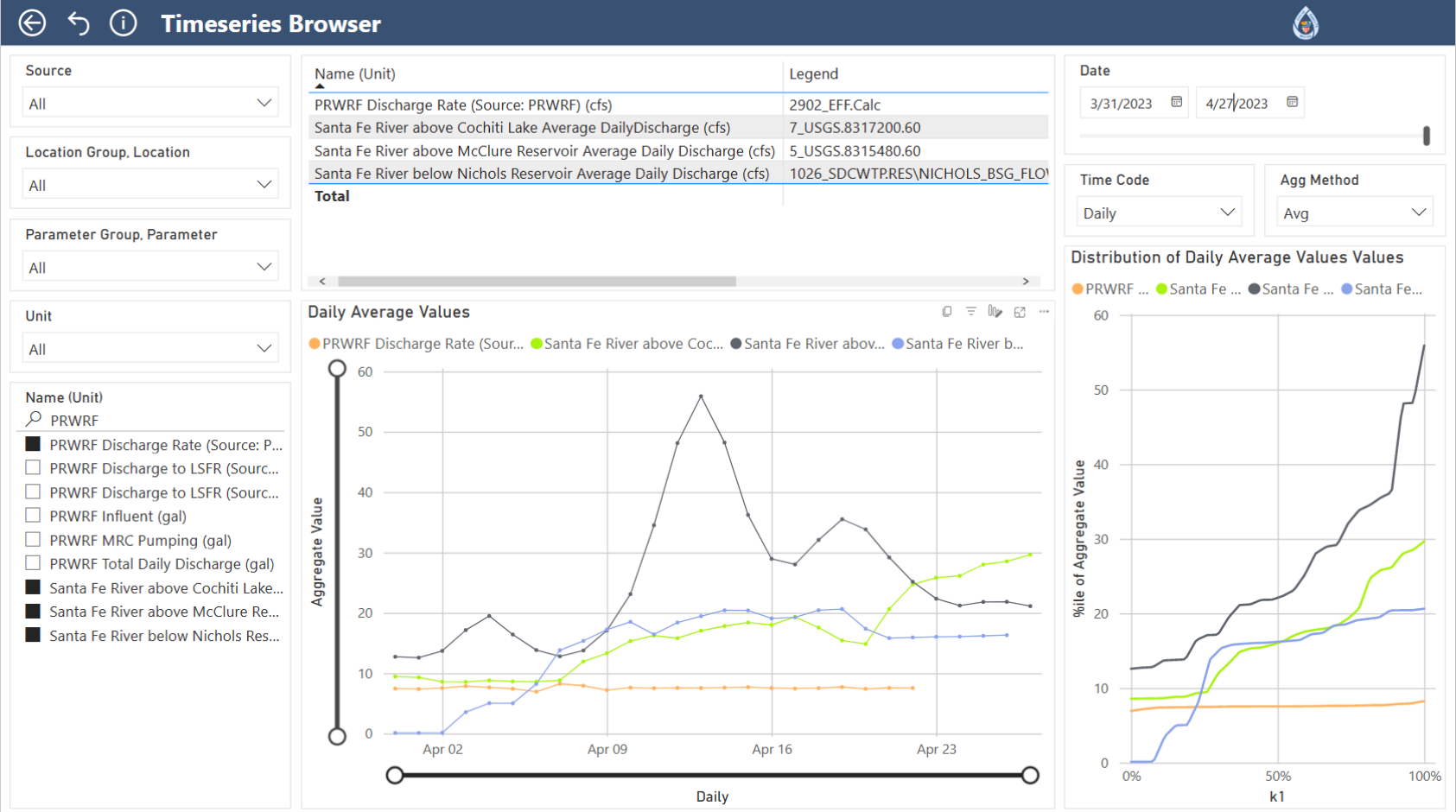
Automated push to centralized cloud database



Dashboard Screenshot



Dashboard Screenshot

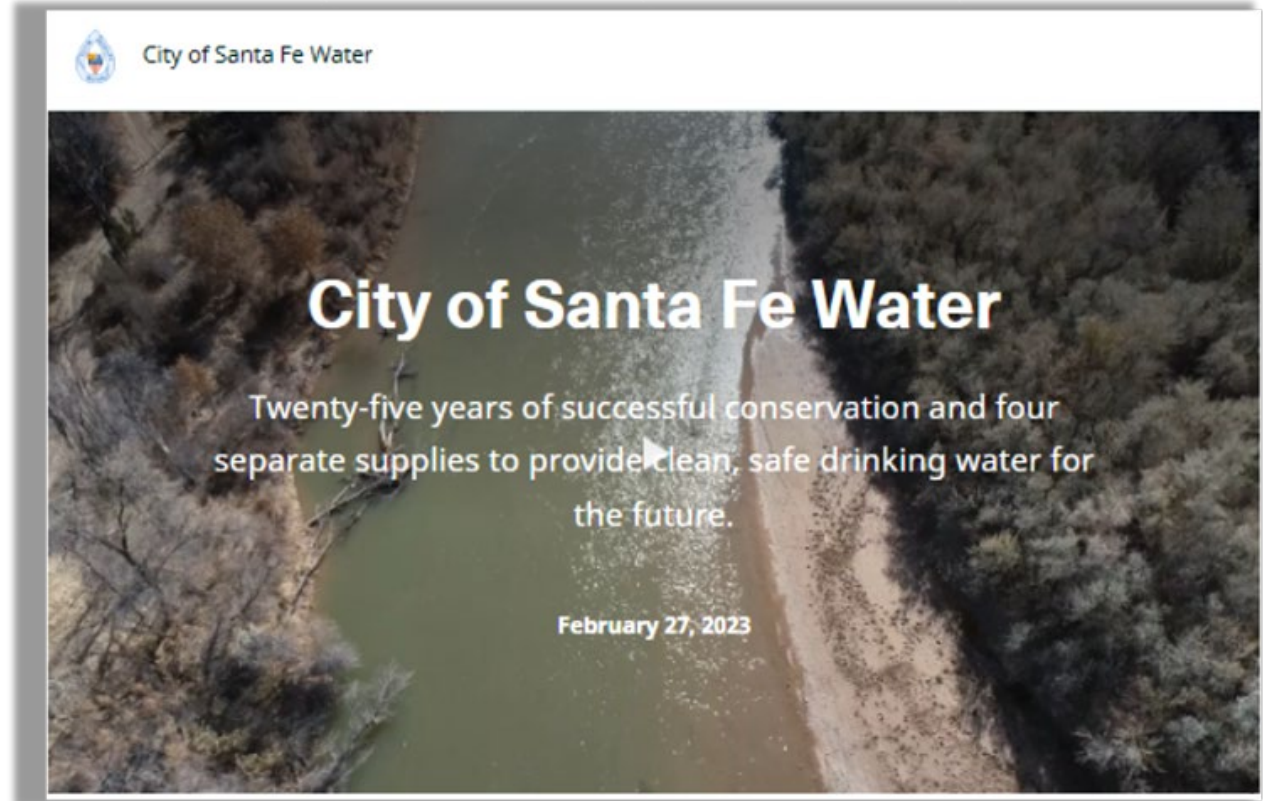


Story Map

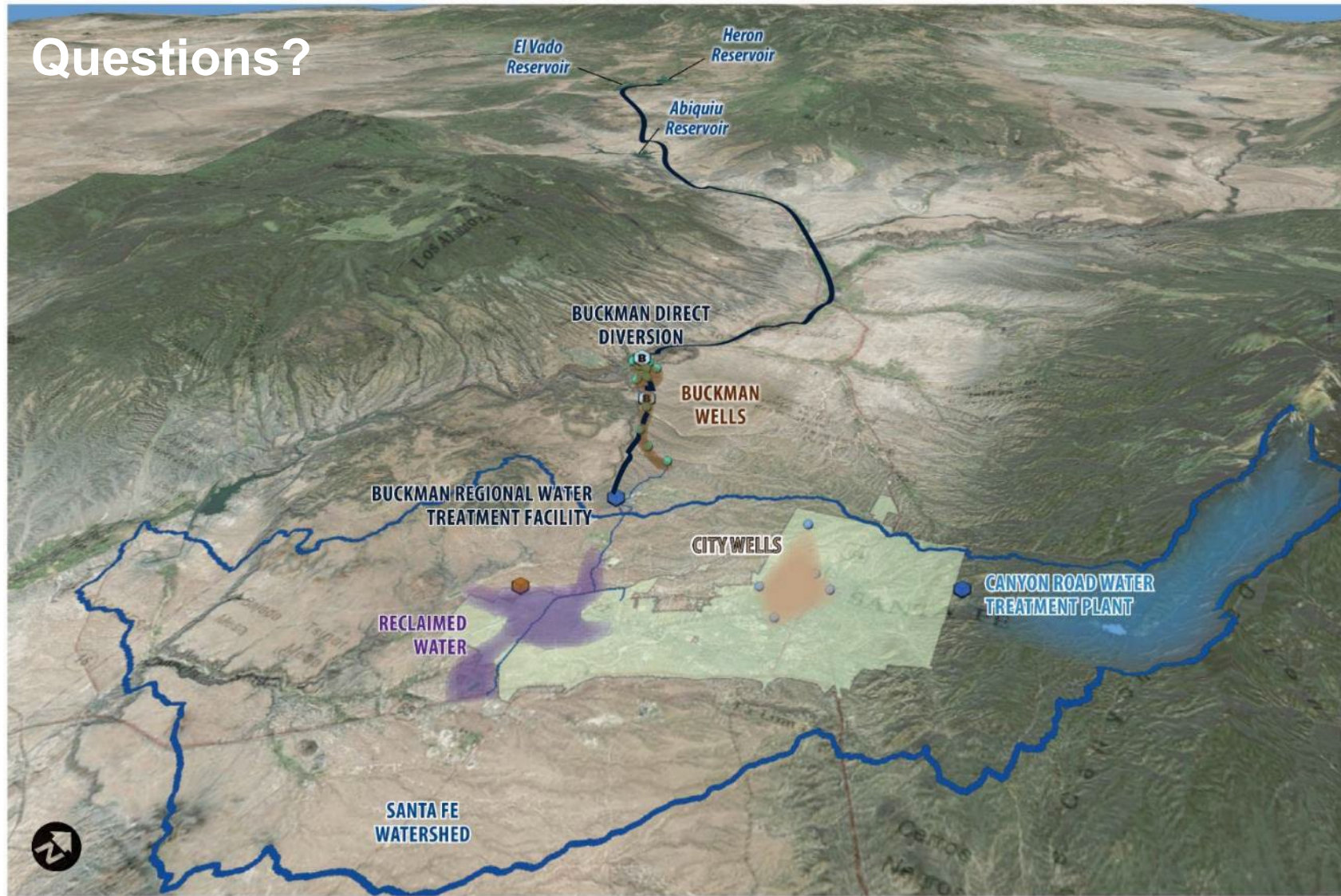


Story Map

- Interactive story map available online with information on:
 - Santa Fe's water history
 - Water supply sources
 - Planning for Santa Fe's water future.
- Visit the story map:
 - <https://arcg.is/0efrTn>

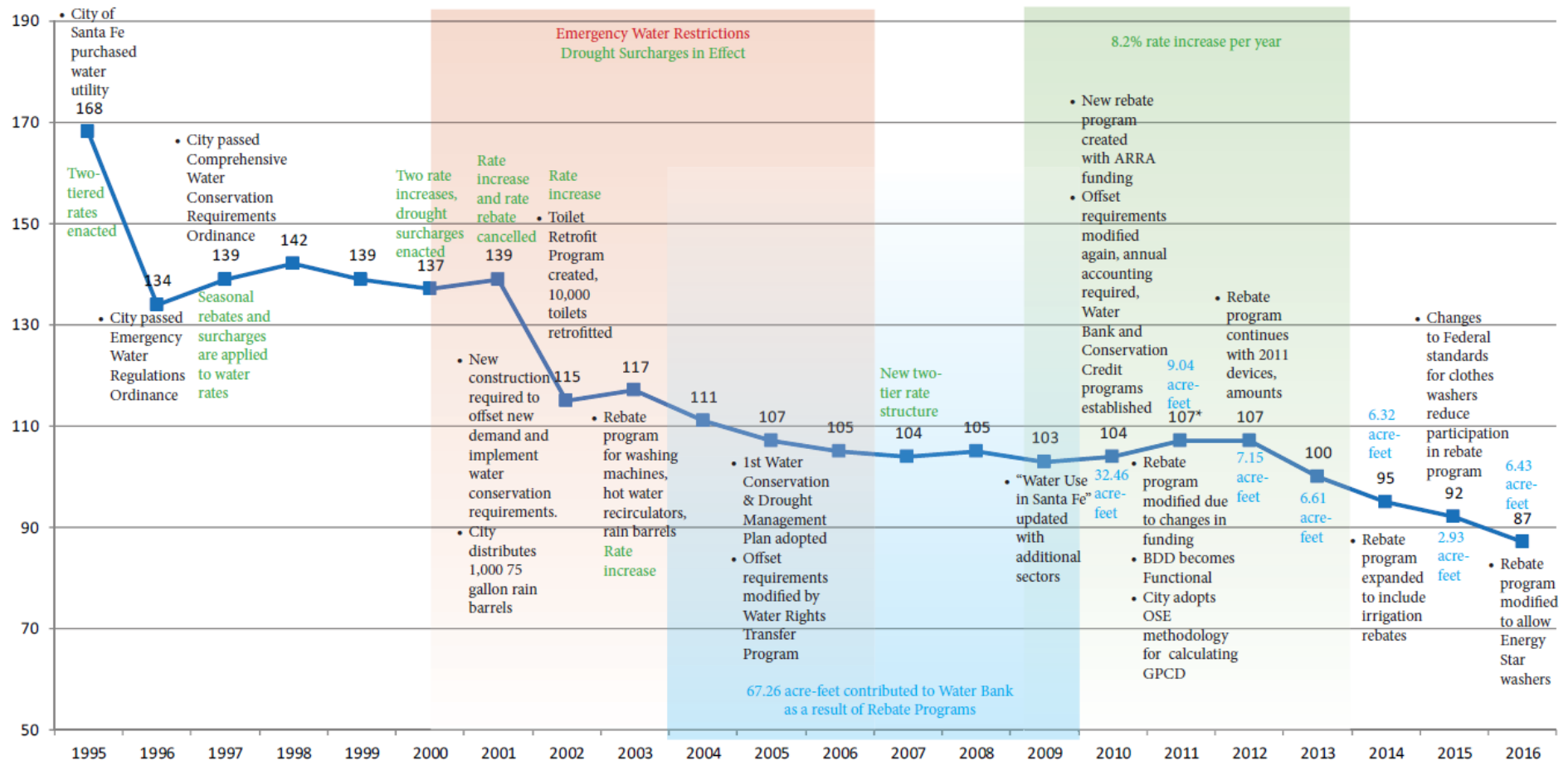


Questions?



Water Conservation Related Programs 1995-2016

GPCD 1995-2016



* Two different methods for calculating GPCD have been used: the City used their own methodology from 1995 through 2011 and adopted the NM OSE methodology in 2011 which has been used to calculate GPCD since. It is worth noting that both methodologies resulted in a calculation of 107 GPCD in 2011, the year in which the change was made.

