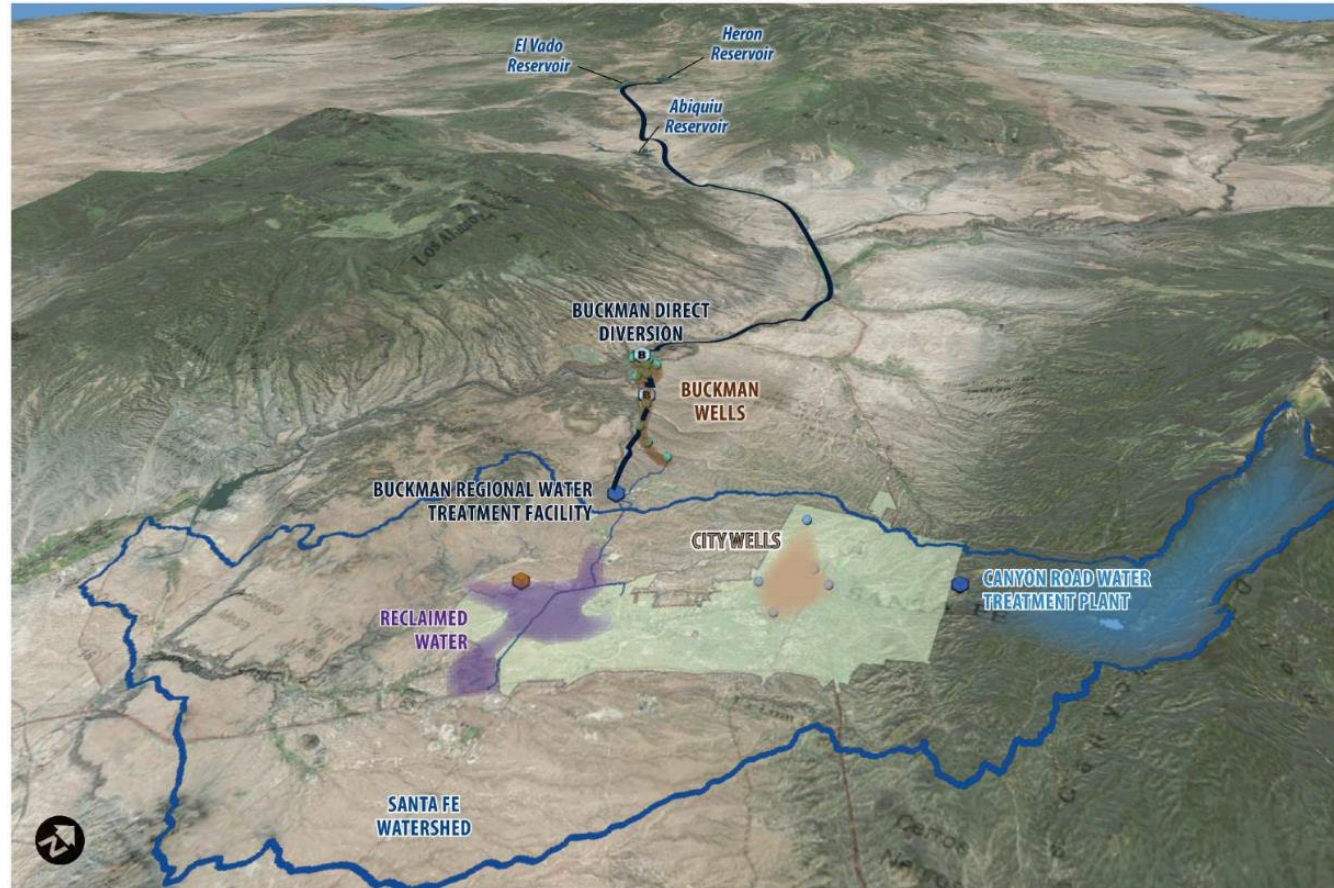


# What's Up With Water? 2022 Edition

April 2022

# Outline

- System Overview
  - 3 slides #4-6
- Santa Fe Water Past
  - 5 slides #8-12
- Santa Fe Water Present
  - 5 slides #14-20
- San Juan Chama Return Flow Project
  - 12 slides #22-32
- Long Range Planning
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  - 7 slides #49-55



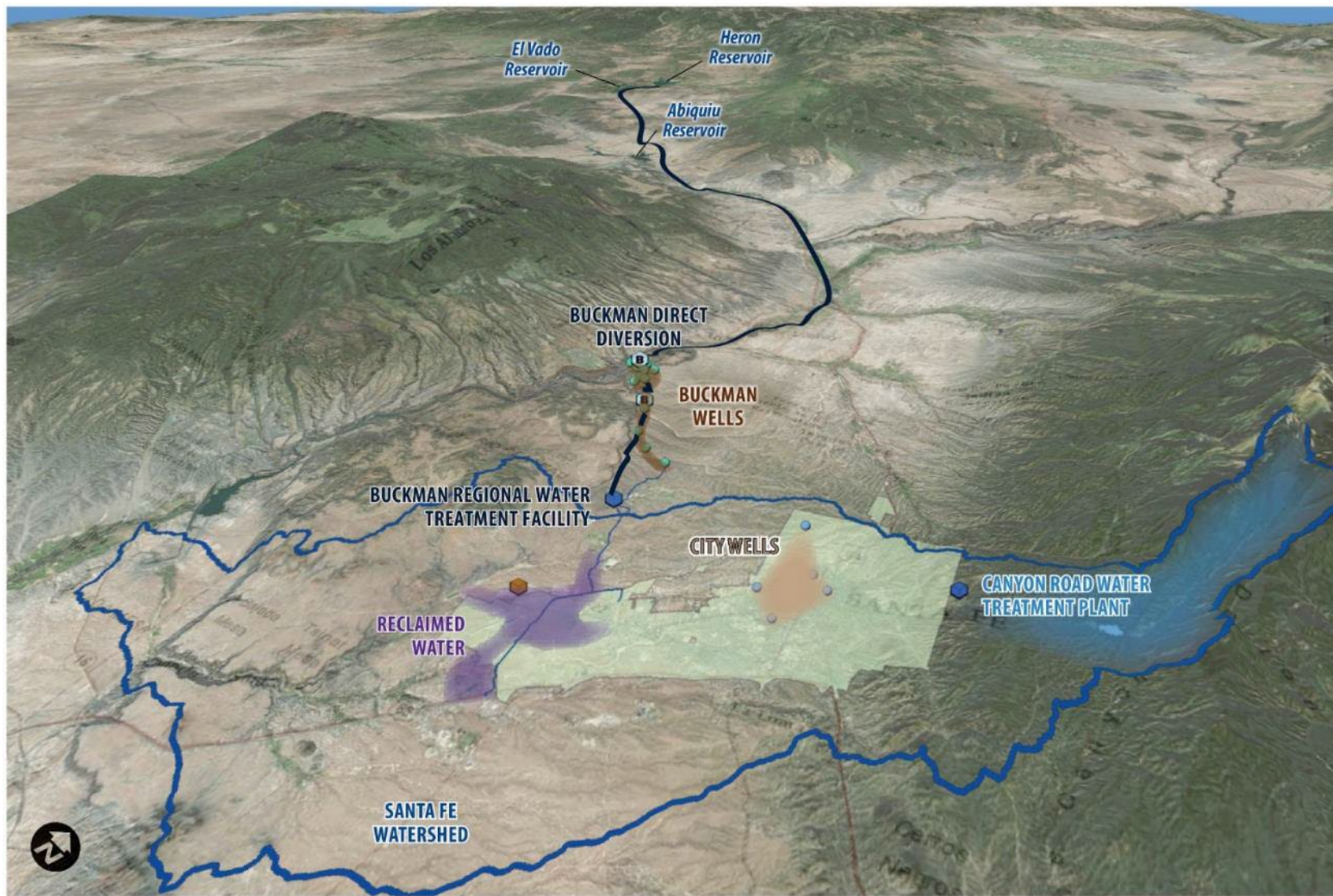
# Outline to System Overview Transition Slide

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# 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





**San Juan Chama water from Buckman Direct Diversion**

\*Buckman Direct Diversion brought online full-time in 2012

**Buckman Well Field**

**City Well Field**

**Santa Fe River water from Canyon Road Water Treatment Plant**

**Paseo Real Water Reclamation Facility Reuse System**

**45% BDD**  
**33% Canyon Road**  
**22% Groundwater**

**LA VILLA REAL de la Santa fé de San Francisco de Asís**

**975 ac-ft/yr**  
**911 ac-ft/yr**  
**2,807 ac-ft/yr**  
**3,901 ac-ft/yr**

**Total Production Averages**  
**8,594 ac-ft/yr**

Source	Production
Buckman Well Field	975
City Well Field	911
Buckman Direct Diversion	3,901
Canyon Road WTP	2,807
<b>total</b>	<b>8,594</b>

\*values are in acre-feet, calculated from monthly average

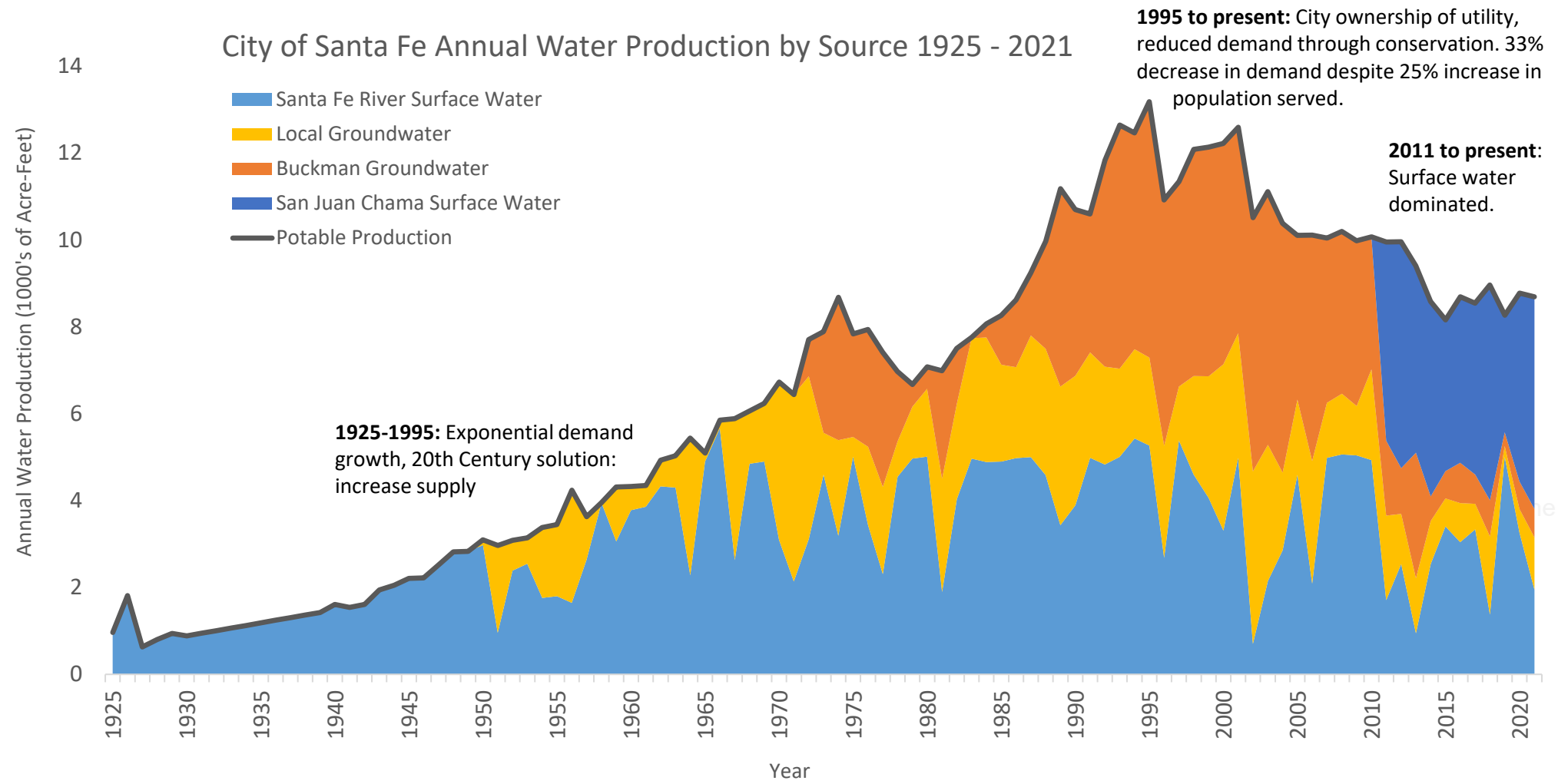
**City of Santa Fe Sources of Water Supply**  
**Total Production**  
**(annual average 2013 - 2019)**

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, Geoplace, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c)

# System Overview to SF Water Past Transition Slide

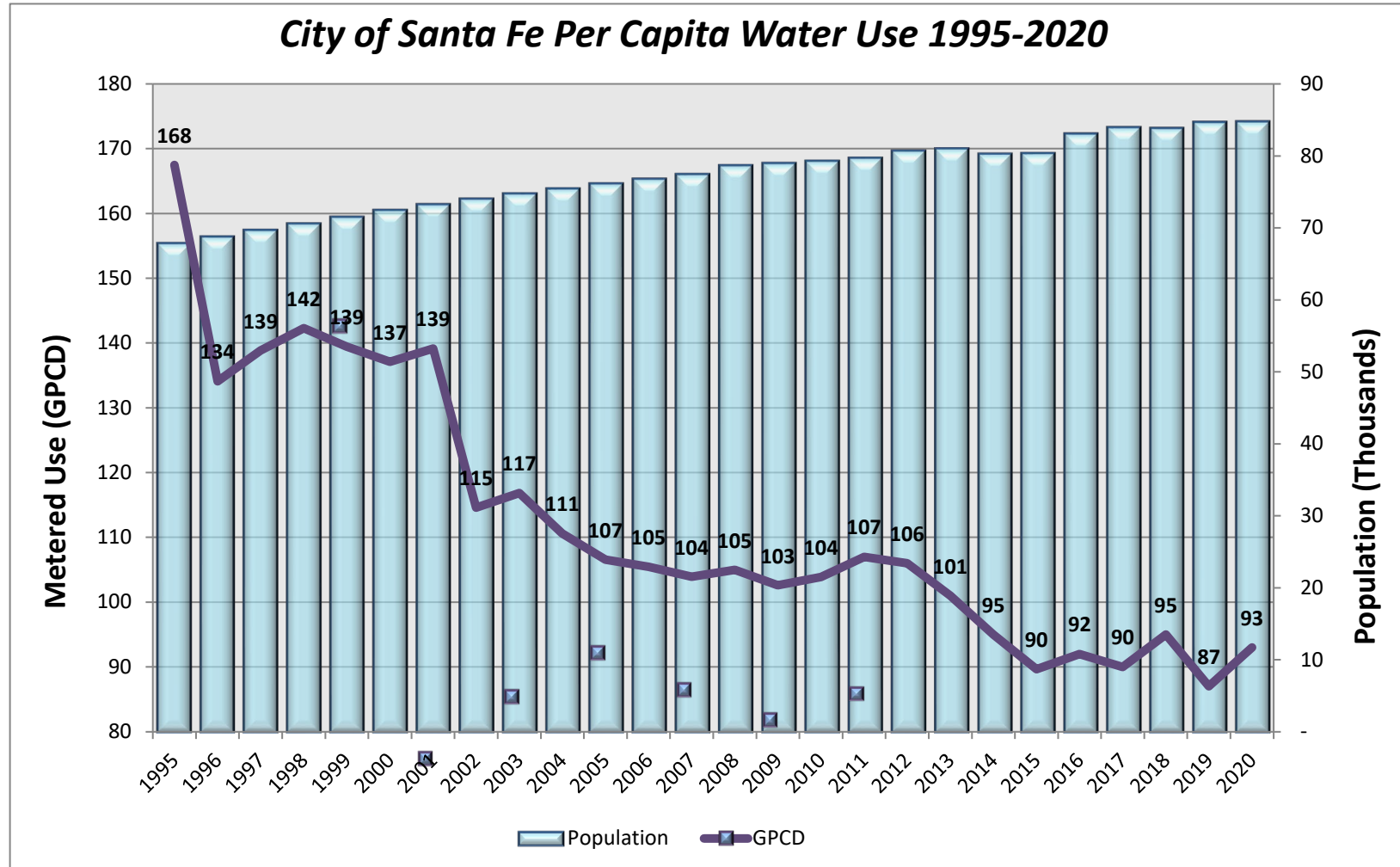
- System Overview
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# CoSF Water Past: A Picture Is Worth...



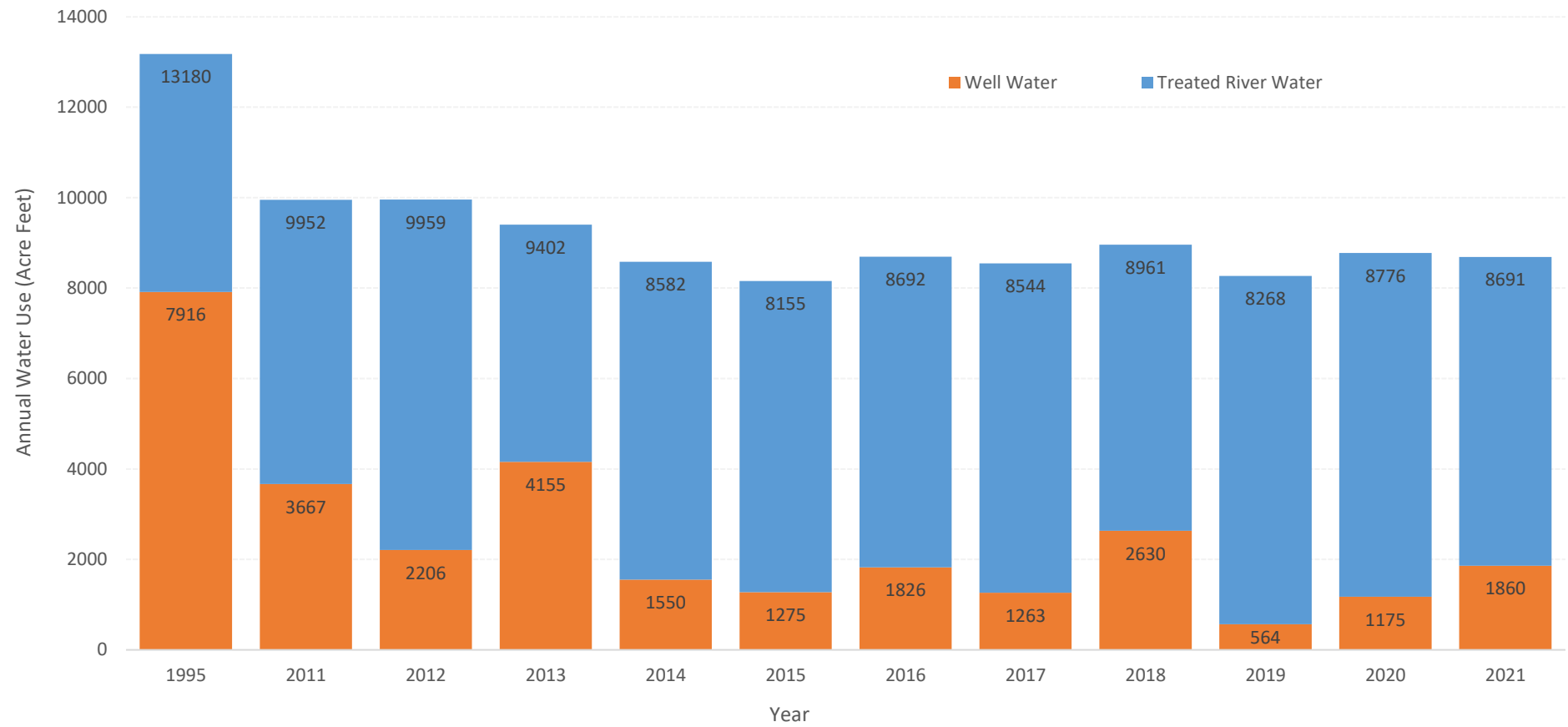


# Water Conservation



# Shifting to surface water dominated production

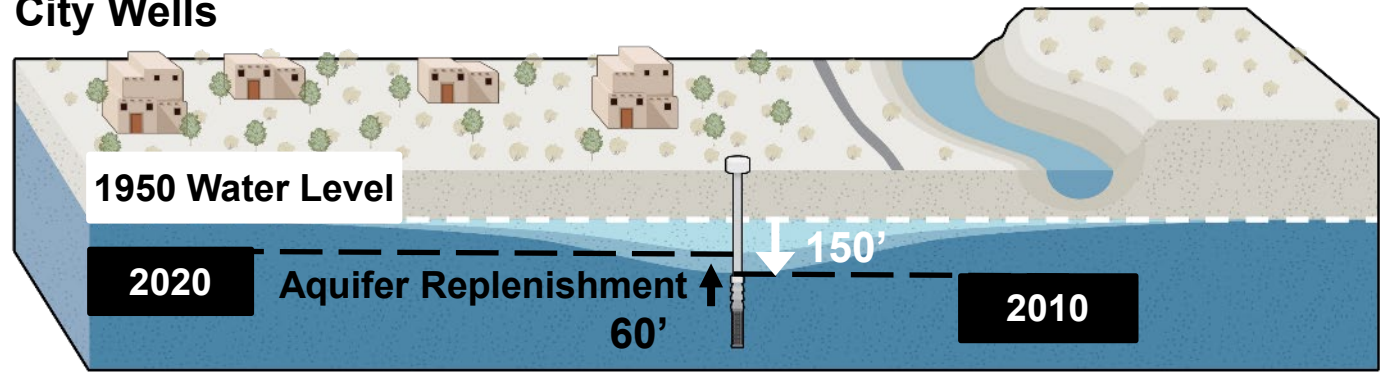
City of Santa Fe Annual Potable Water Production Since 2011 Compared to the 1995 Historical High



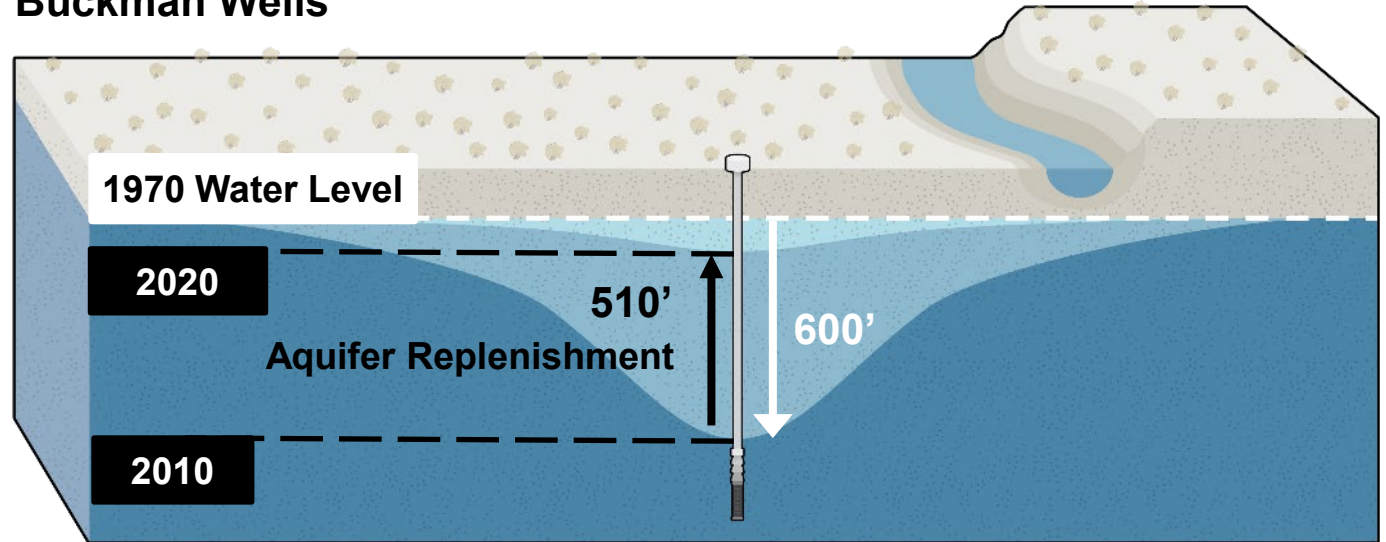
# Groundwater Recovery (our “savings accounts”)

- Since 2010, our wells have been recovering
- We like to keep our wells in reserve as a “drought proof” backup

## City Wells

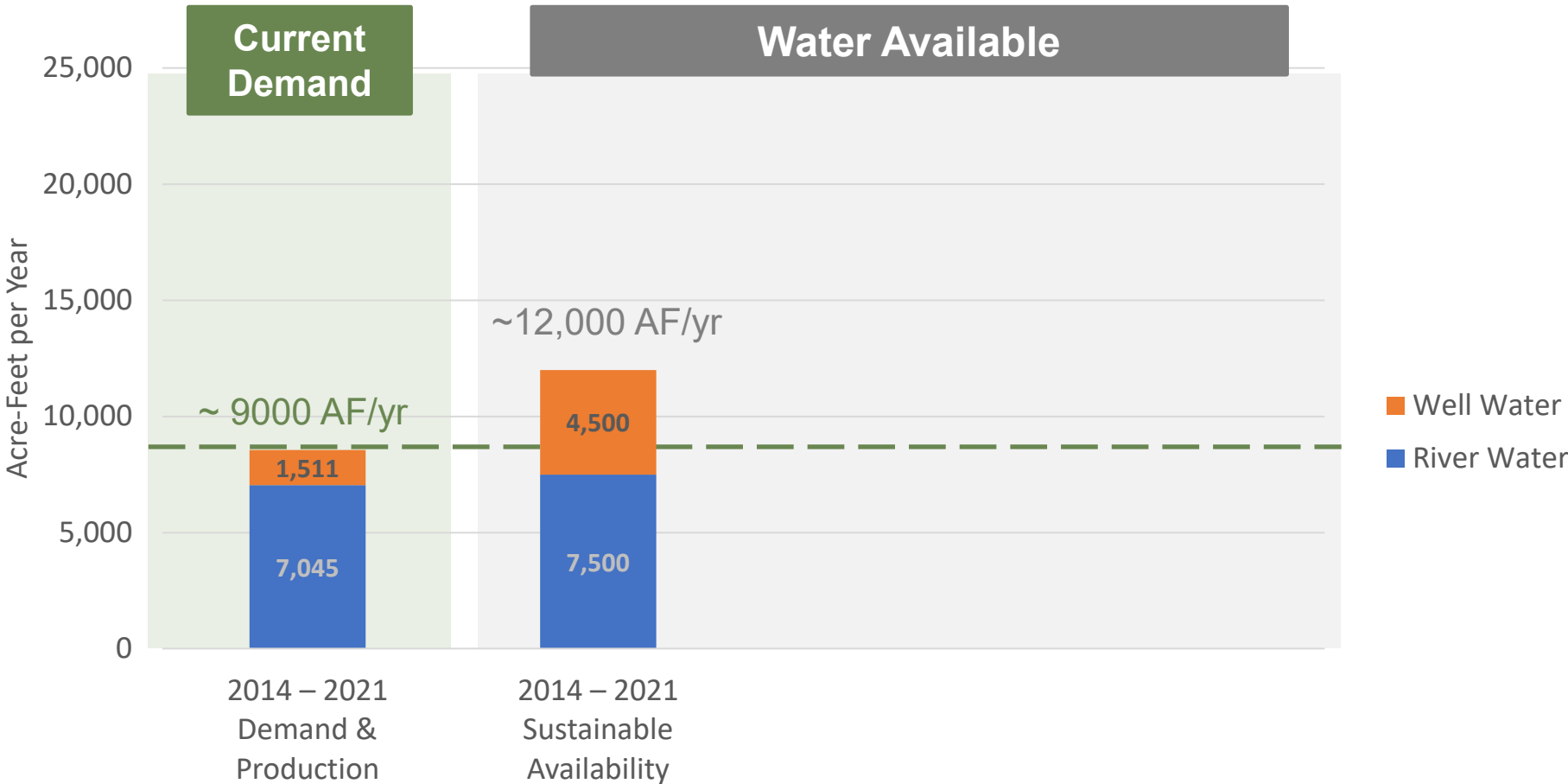


## Buckman Wells





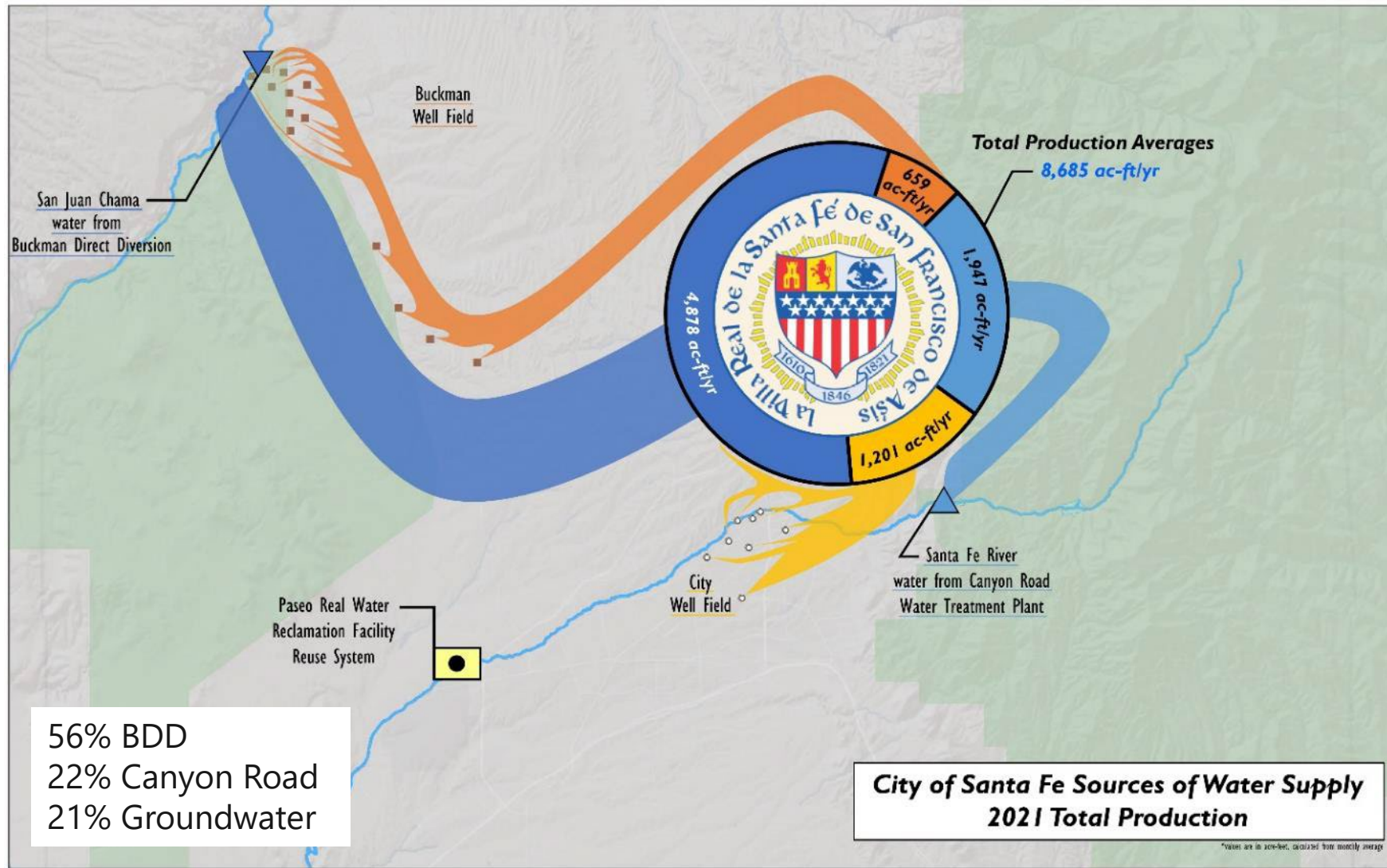
# City of SF Water Current (average of past 8 years) Demand and Supply



# SF Water Past to Water Present Transition Slide

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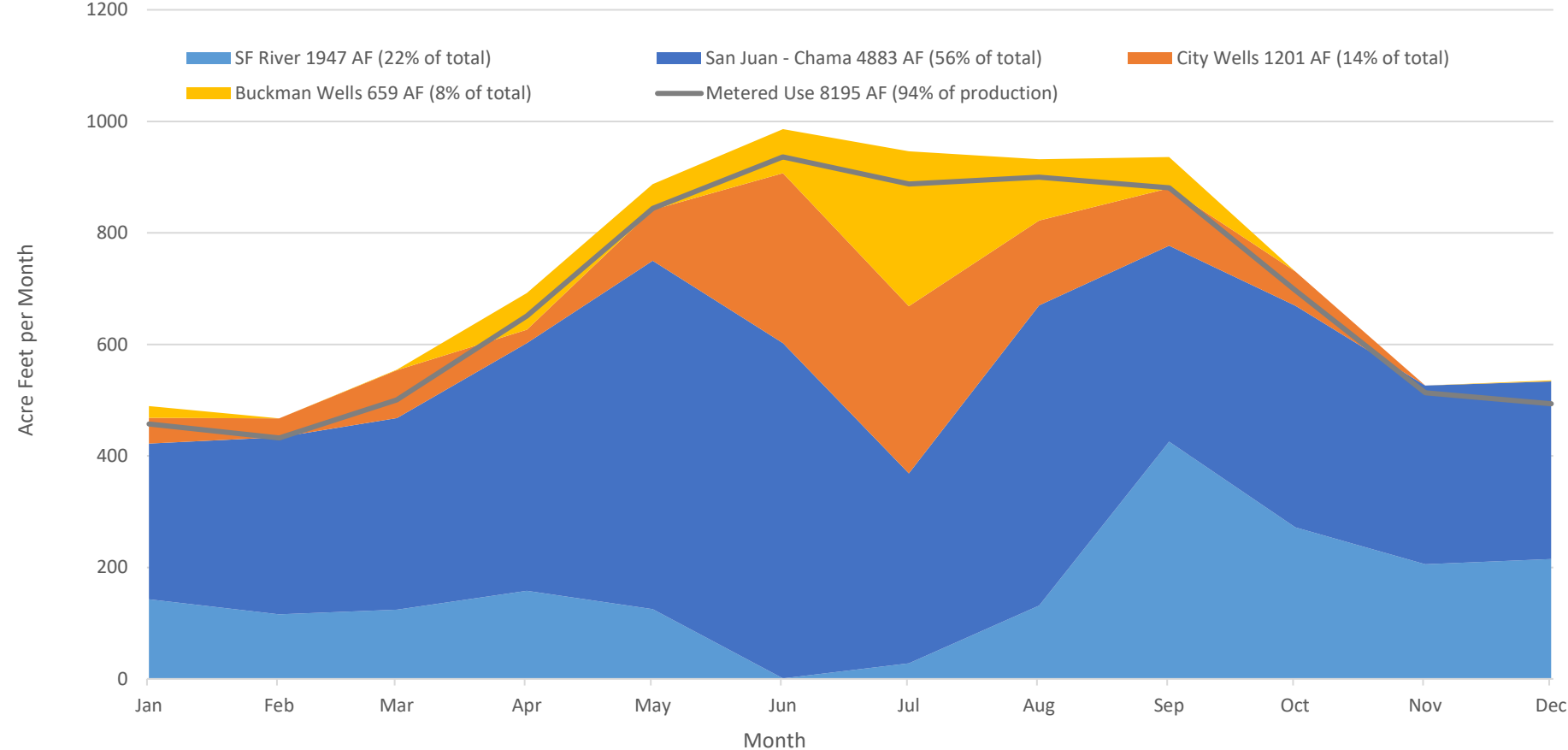
# City Water Present (2021)



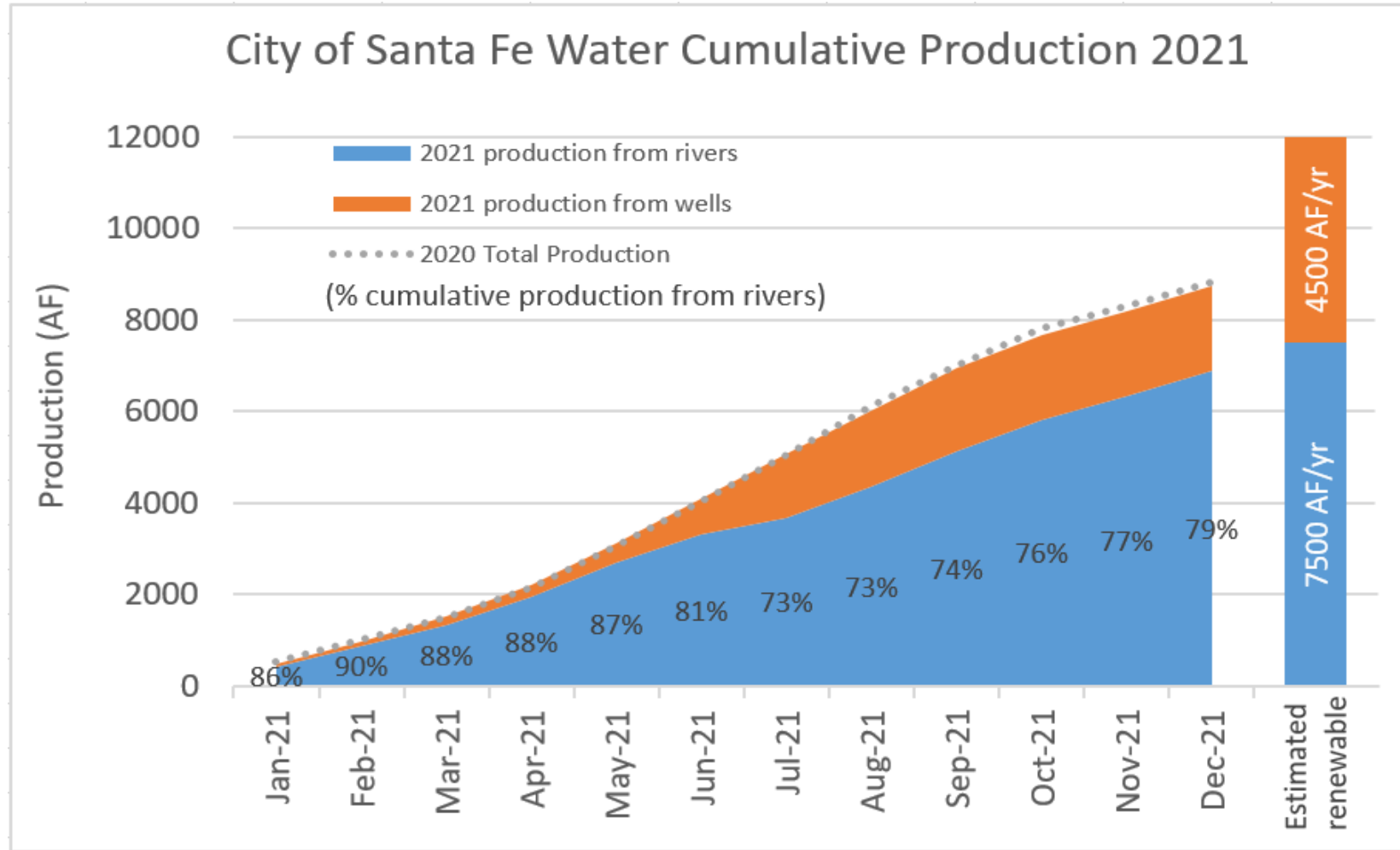


# 2021 Specific Information

## 2021 City of Santa Fe Water Production and Use

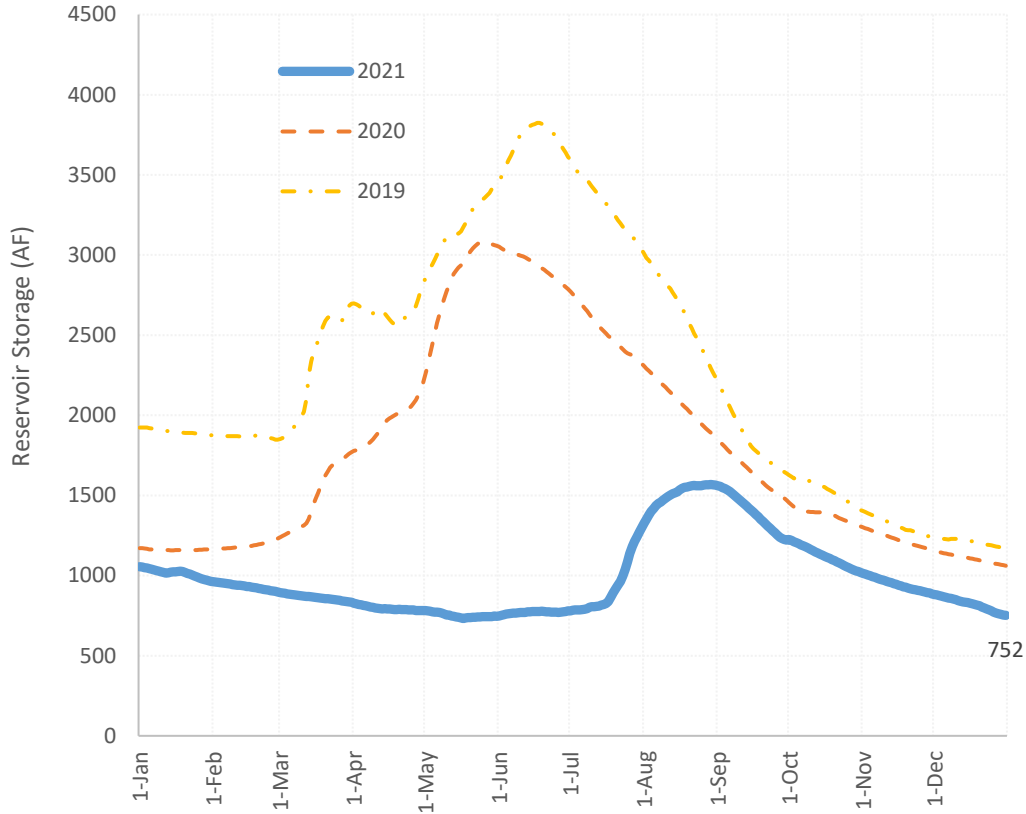


# Even in 2021, a dry year, 79% of City water use was from rivers

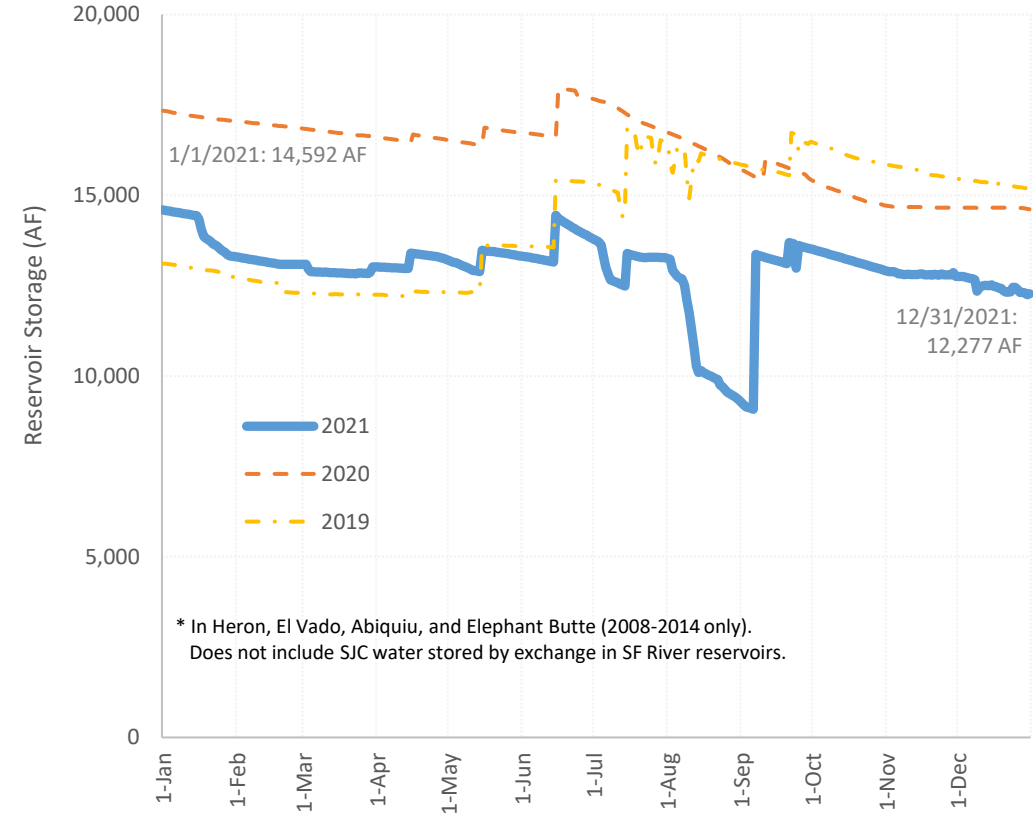


# 2021 Specific Information

## Total Santa Fe River Reservoir Storage



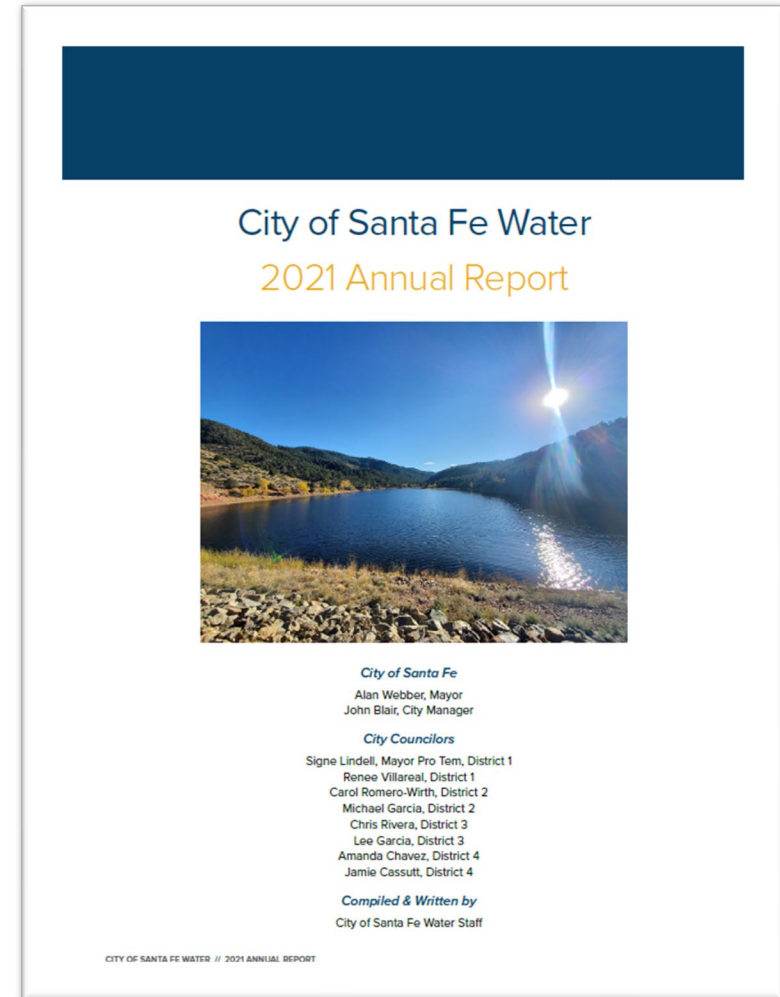
## Total San Juan Chama Project Storage





# 2021 City of Santa Fe Water Annual Report

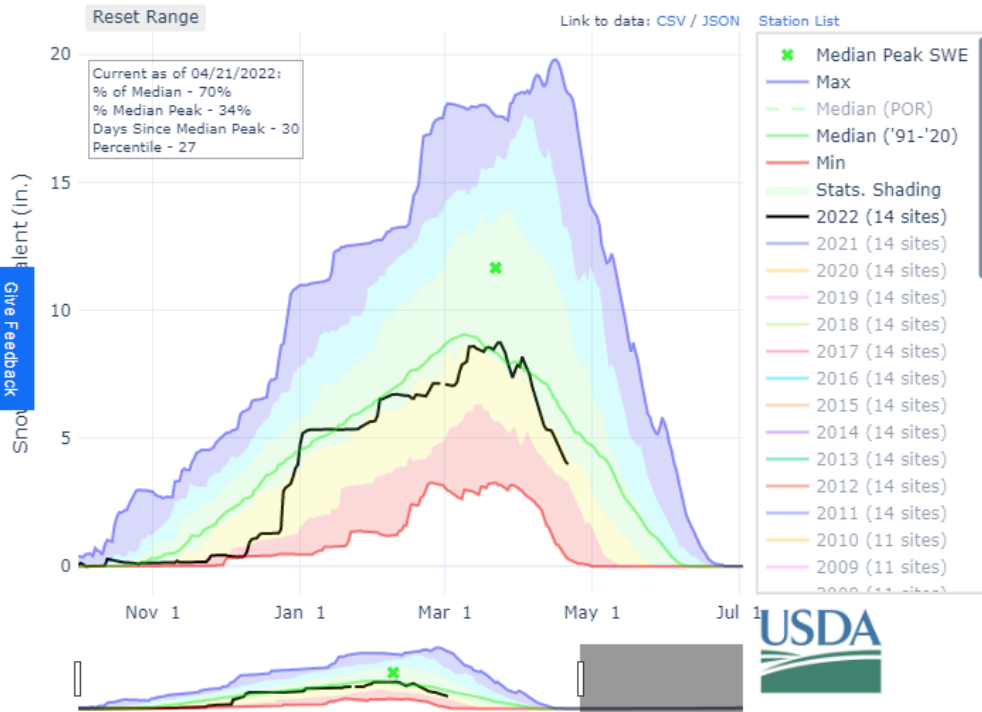
- Key figures from the report are in this slide deck
- Full 22 page report at [www.santafenm.gov/water](http://www.santafenm.gov/water)
- Please read it and let us know how to improve it!



# 2022 Outlook & Plans

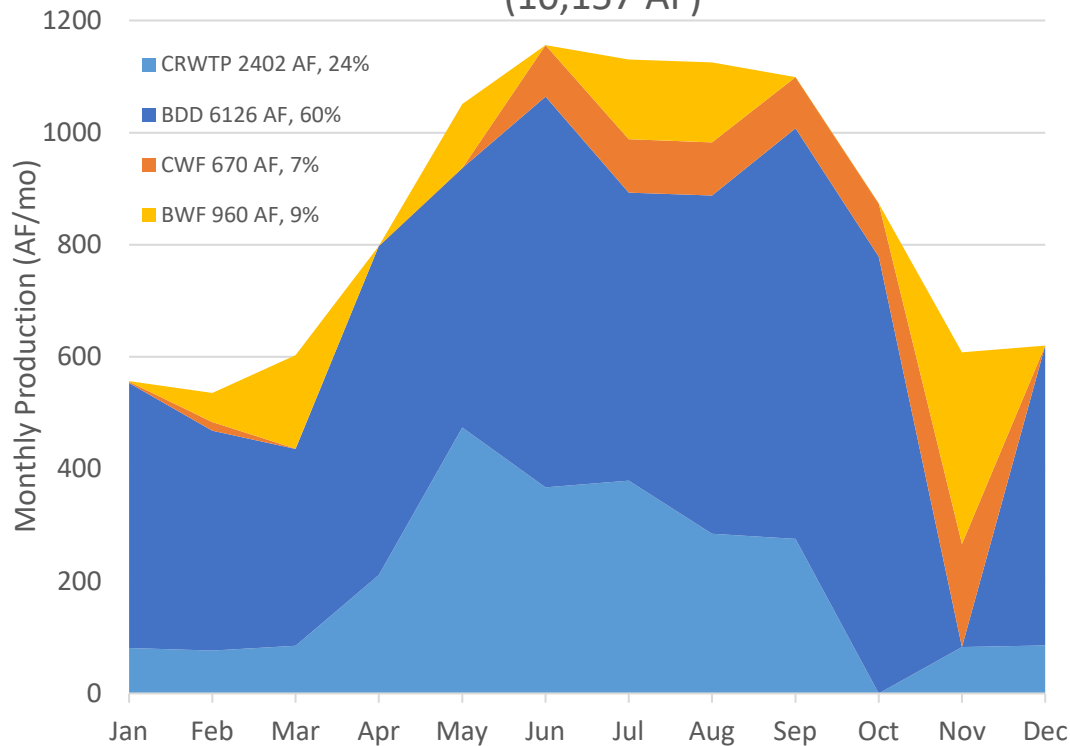
[Go to Upper Rio Grande Precip. Chart...](#)

## SNOW WATER EQUIVALENT IN UPPER RIO GRANDE



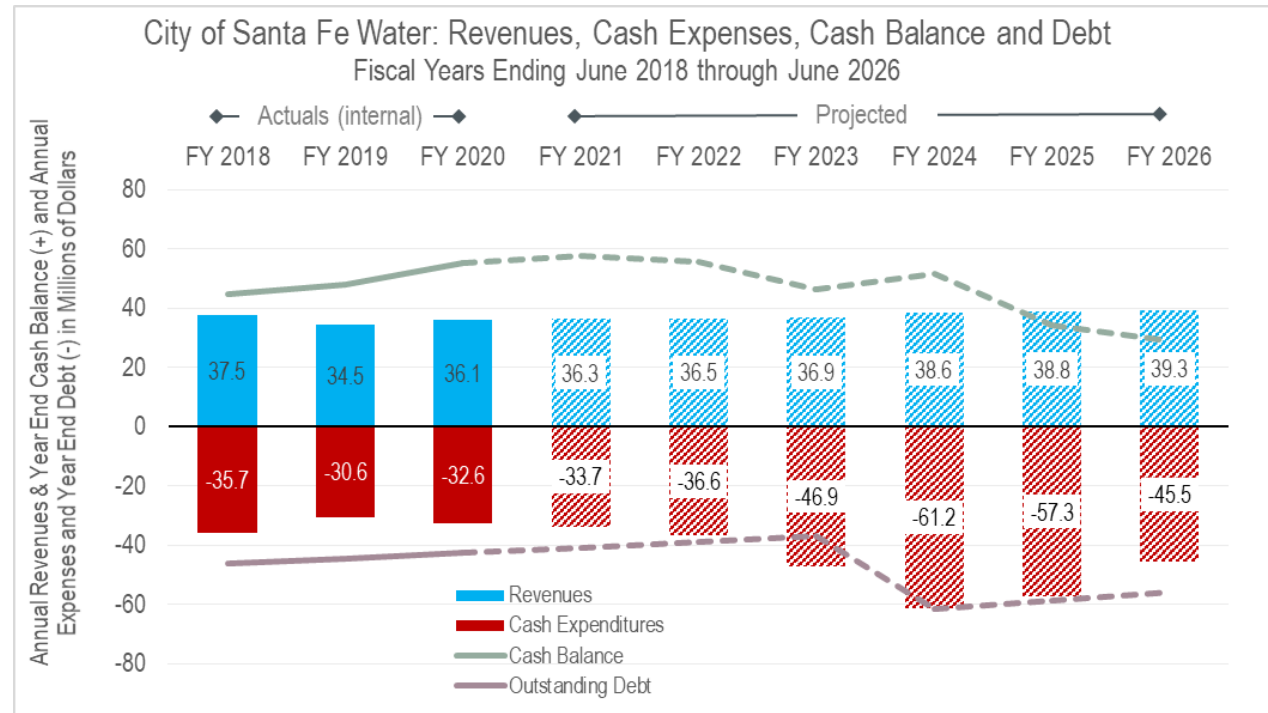
Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles  
For more information visit: [30-Year Hydroclimatic Normals](#)

## Combined City-County 2022 Supply Projection (10,157 AF)



# Financials

- 6/30/2020 Cash balance: 55.4M
- 6/30/2020 Outstanding debt: 42.5M
- Projected water revenues current FY through FY 2026 36M to 39M per year
- Projected cash expenditures including CIP current FY through FY 2026 34M to 61M per year
- ~90M in only four capital projects on the near horizon that will drawdown cash reserves and likely increase debt
  - Nichols Dam Outlet Conduit Rebuild (~19M)
  - Flocculation Sedimentation Upgrades CRWTP (~13M)
  - McClure Dam Outlet Conduit Rebuild (~19M)
  - San Juan Chama Return Flow Project (~35M)

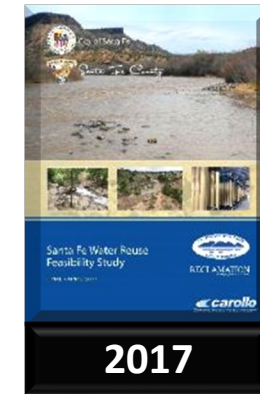
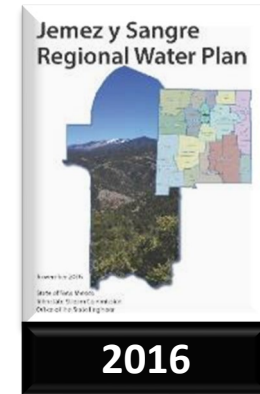
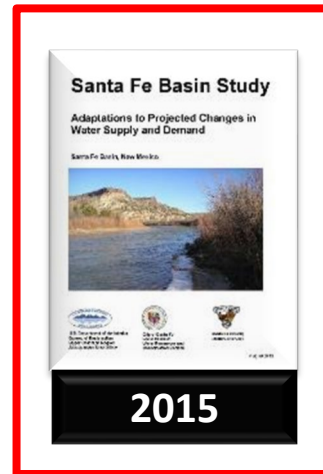
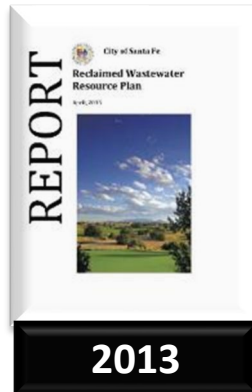
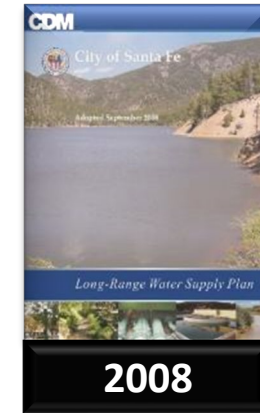
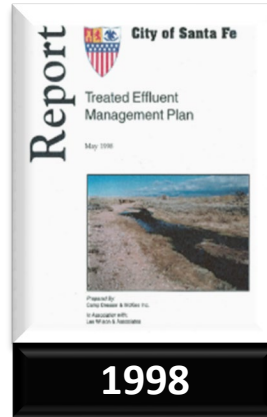
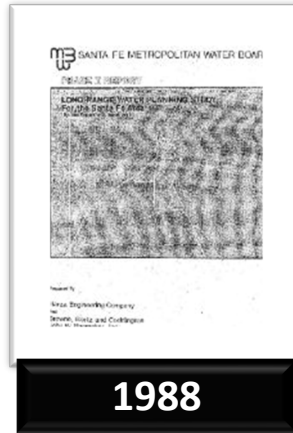




# SF Water Present to San Juan Chama Return Flow Project Transition Slide

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# Long Range Water Resources Planning (City Water Future)



# Threats to a resilient water future

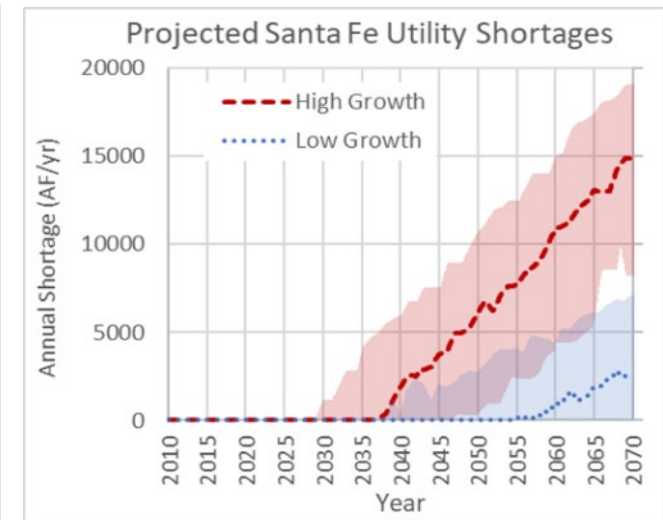
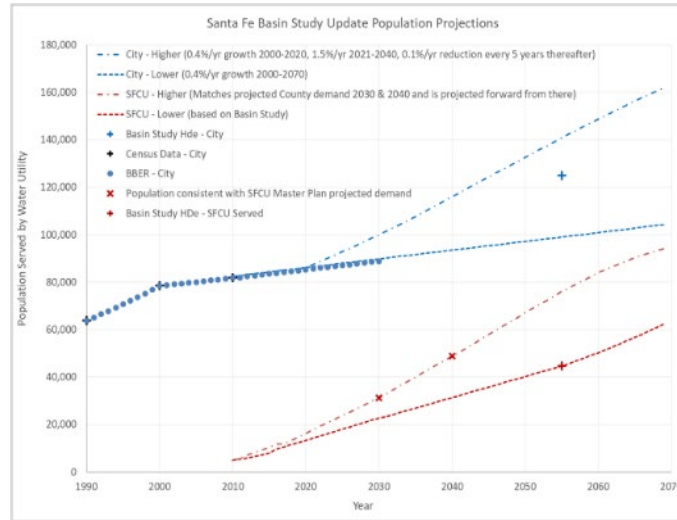
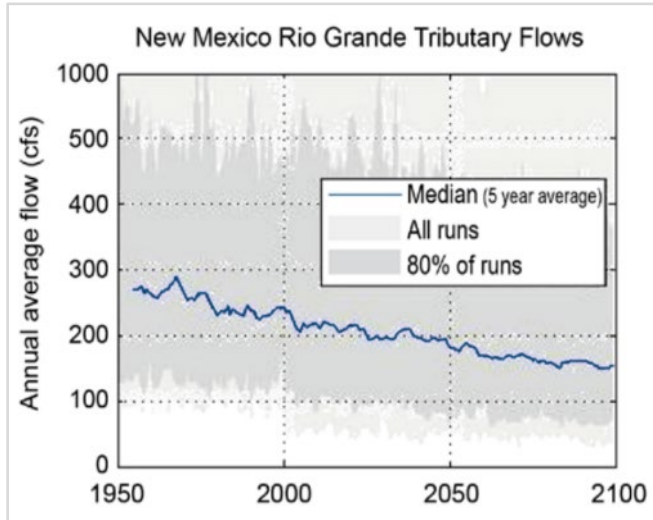
Climate Change

+

Demand Uncertainty

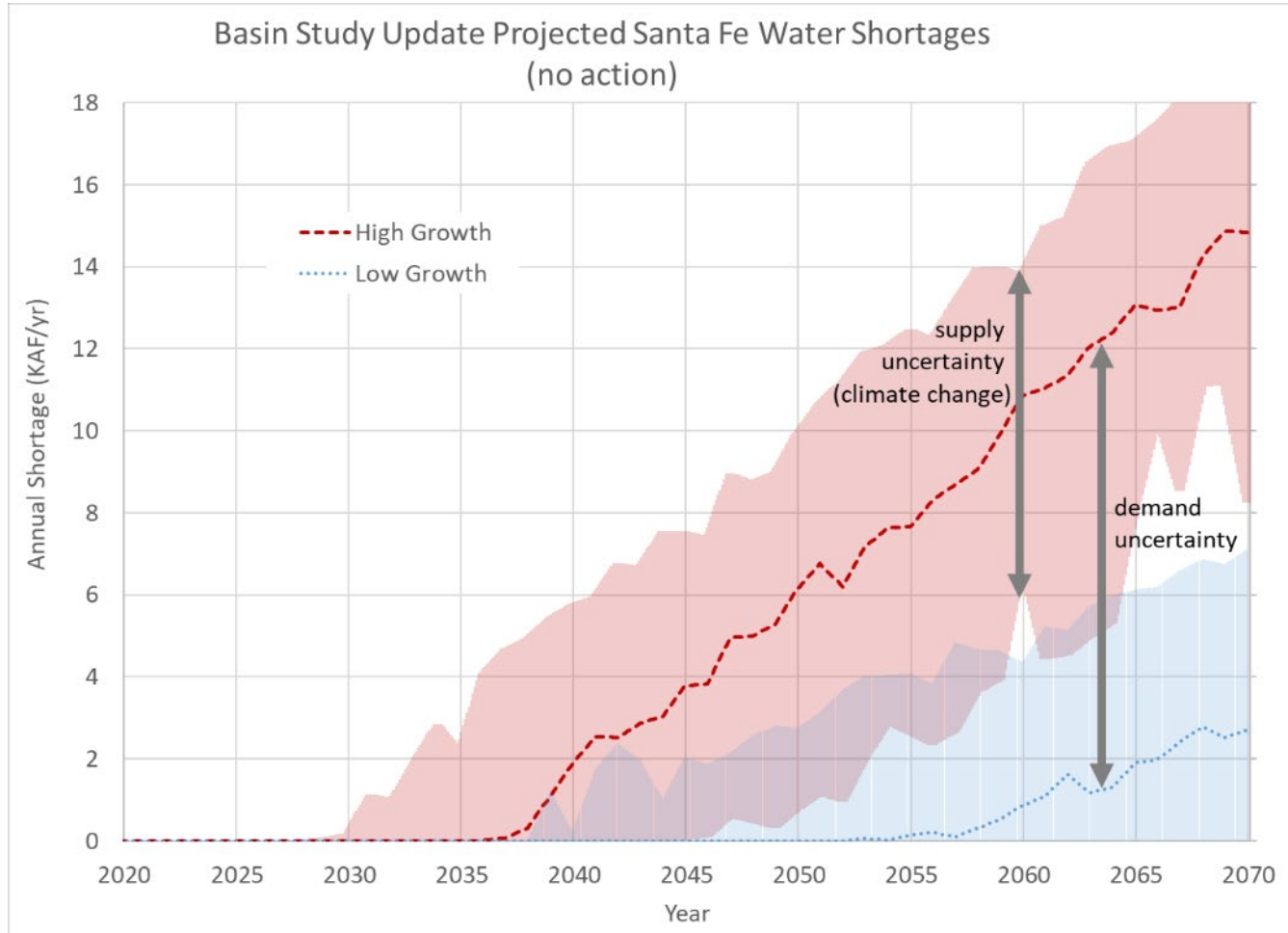
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Potential Supply Shortages



# Most 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

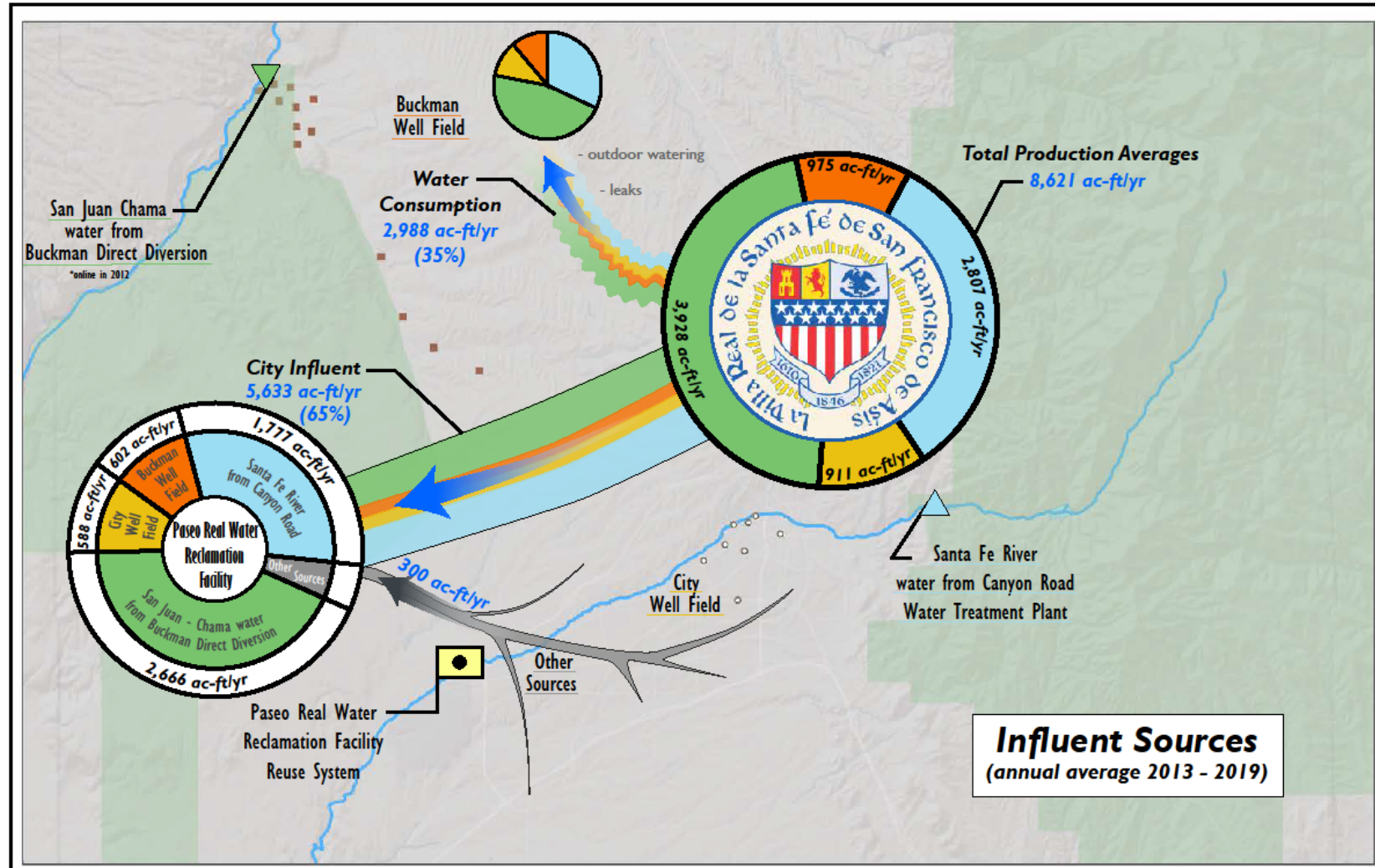
# Adaptation Strategies to Avoid Shortages

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
  - » CoSF Water purchases water rights when available at a reasonable price



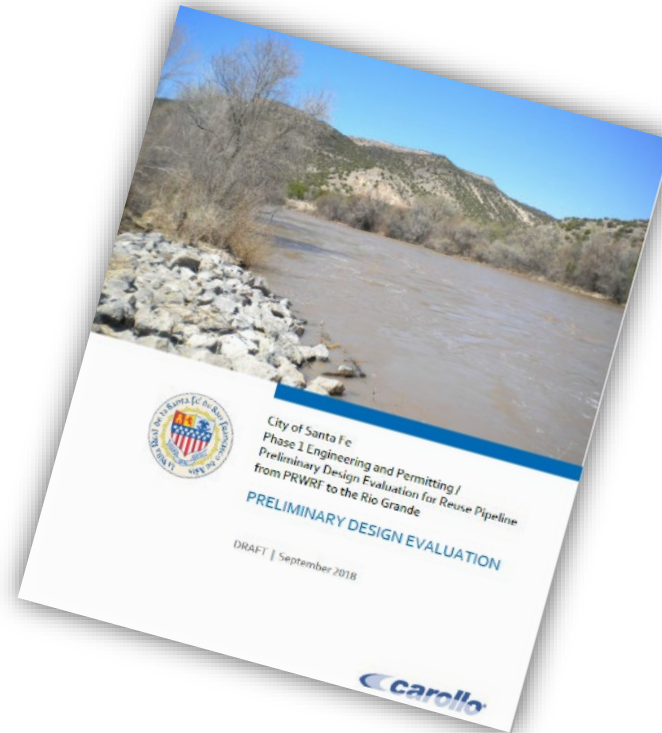
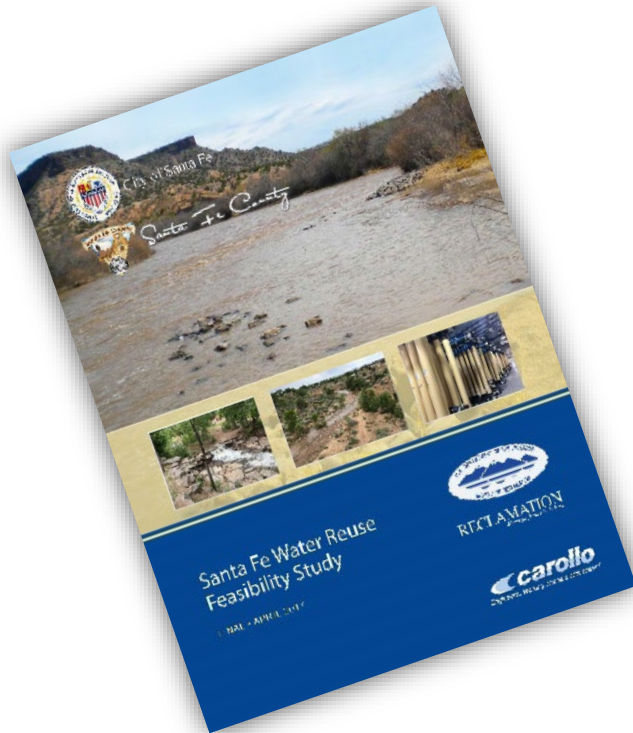
## 2013 – 2019 Flows to WWTP



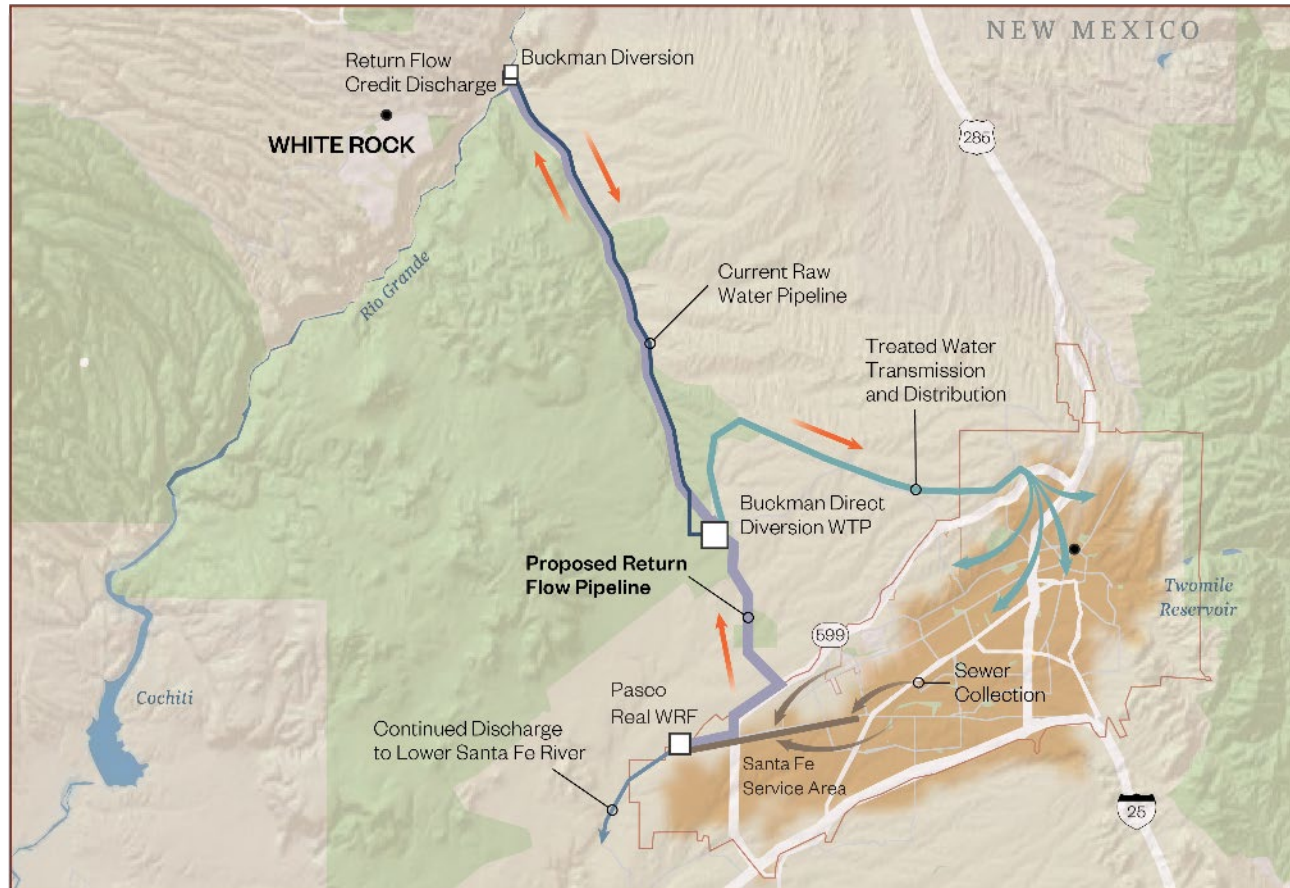
# San Juan Chama Return Flow Project

Returning water originating from the BDD to the Rio Grande was contemplated in the original BDD design

This idea was identified in the 2017 Reuse Feasibility Study as the preferred alternative for using effluent to increase City of Santa Fe Water supply.



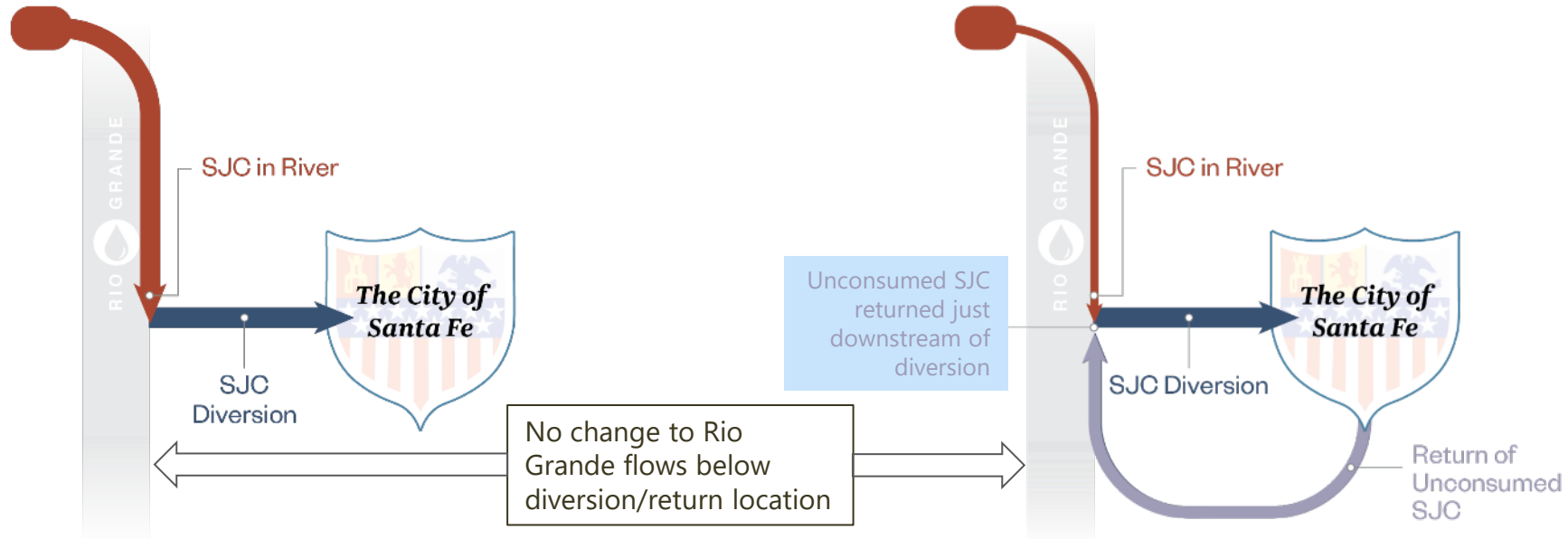
# Project Location



# 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.

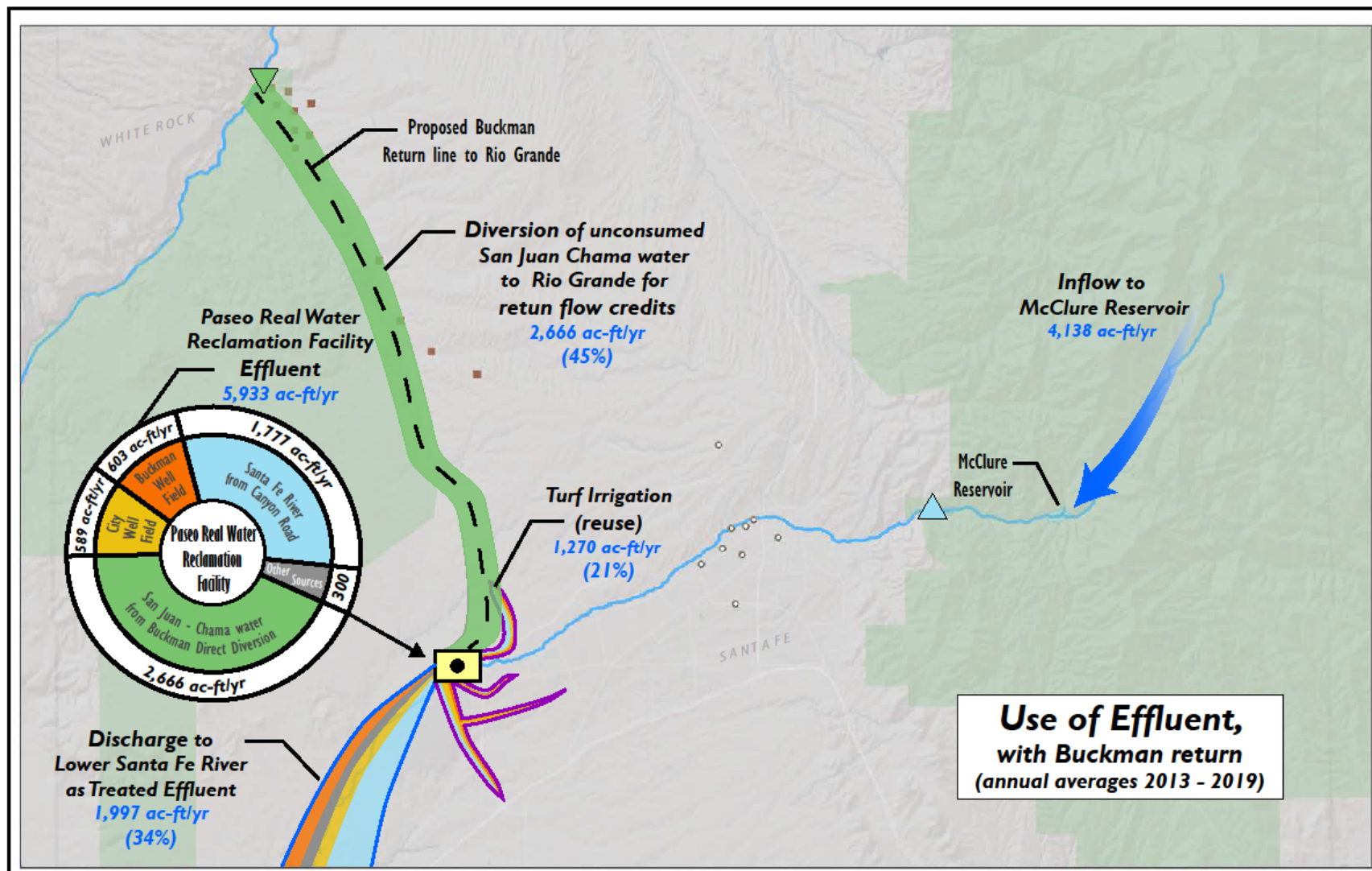


Current: all diversions at BDD from upstream reservoir releases

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



# 2013 – 2019 w Pipeline



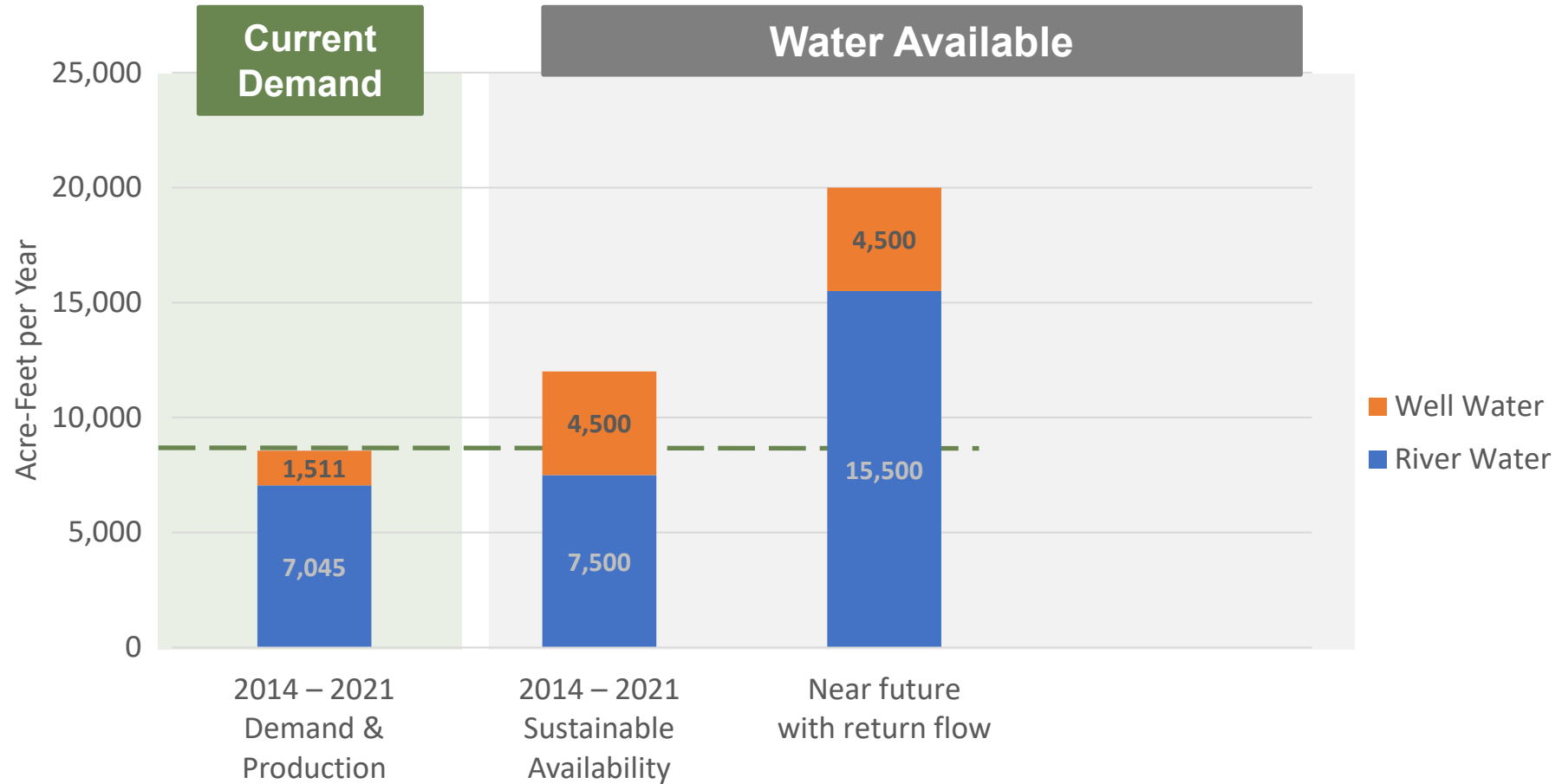


# SJC Return Flow Project Status

- OSE Return Flow Credit Application
    - Submitted November 2021. Publicly notice should occur by month end.
  - NEPA Process
    - Held two successful public scoping meetings in early November of 2021
    - Based on information gathered CoSFW is refining our proposal for NEPA analysis
    - Moving forward with this information towards target of NEPA document in fall 2022
  - Lower Santa Fe River Planning Process
    - Being led by Santa Fe County
  - Project Design
    - Currently evaluating four responses to RFP for engineering design
- Permitting
- Design



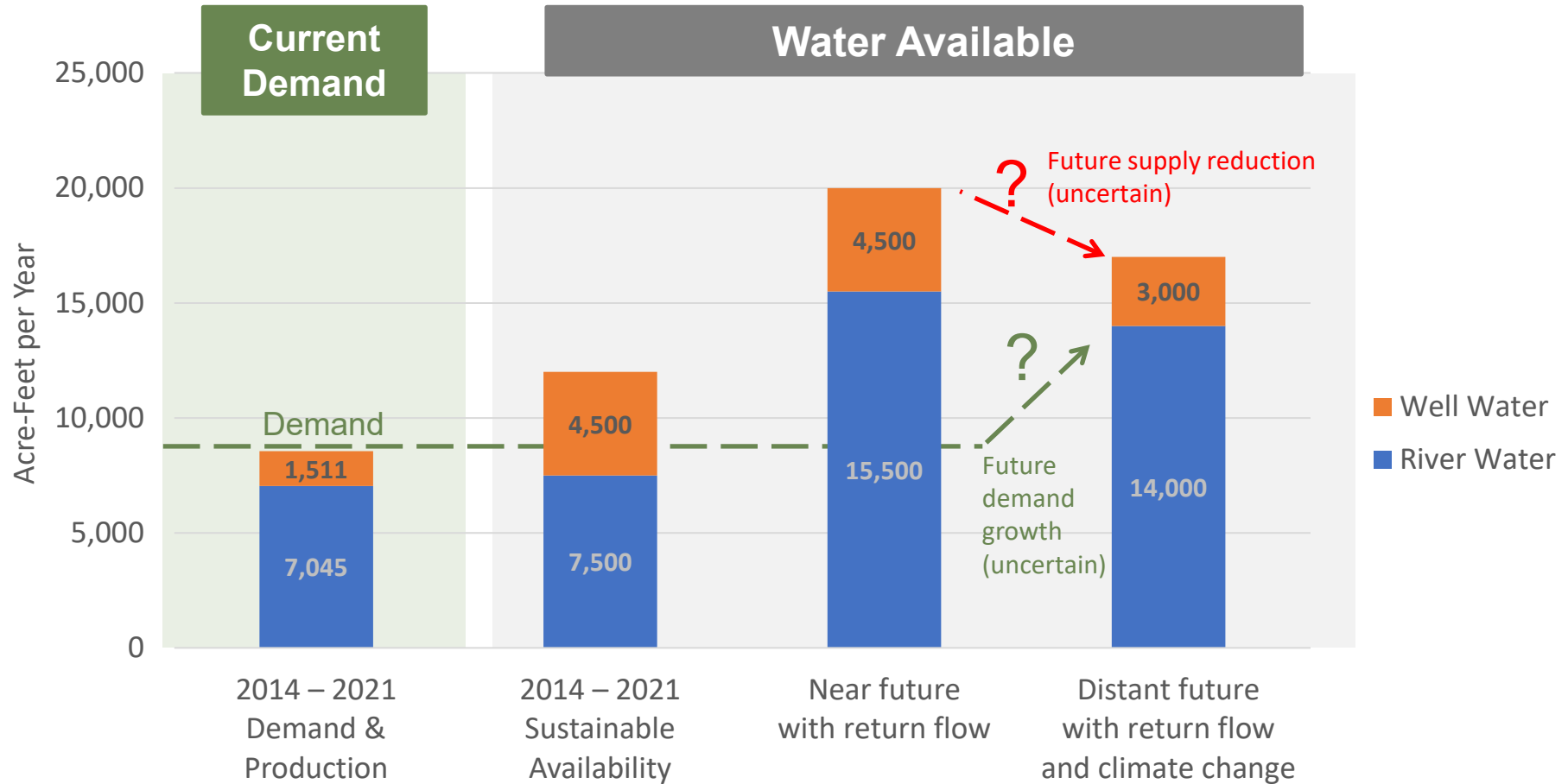
# Near term plan: San Juan Chama Return Flow Project



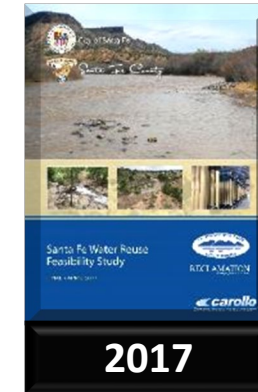
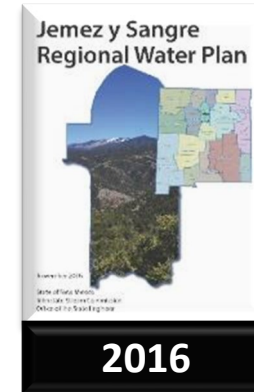
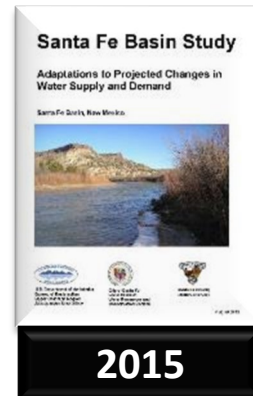
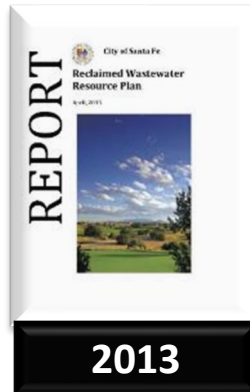
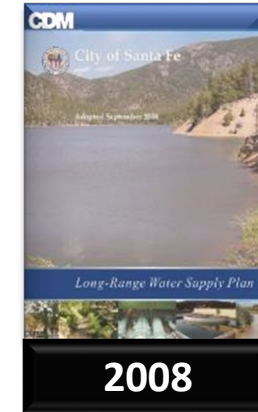
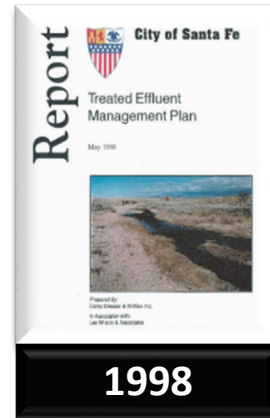
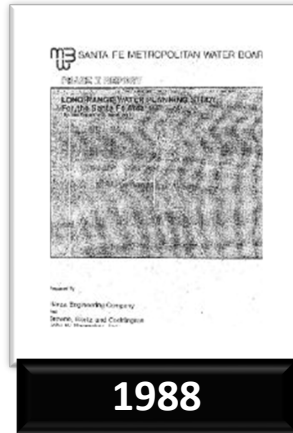
# San Juan Chama Return Flow Project to Long Range Planning Transition Slide

- System Overview
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# Long Term Planning

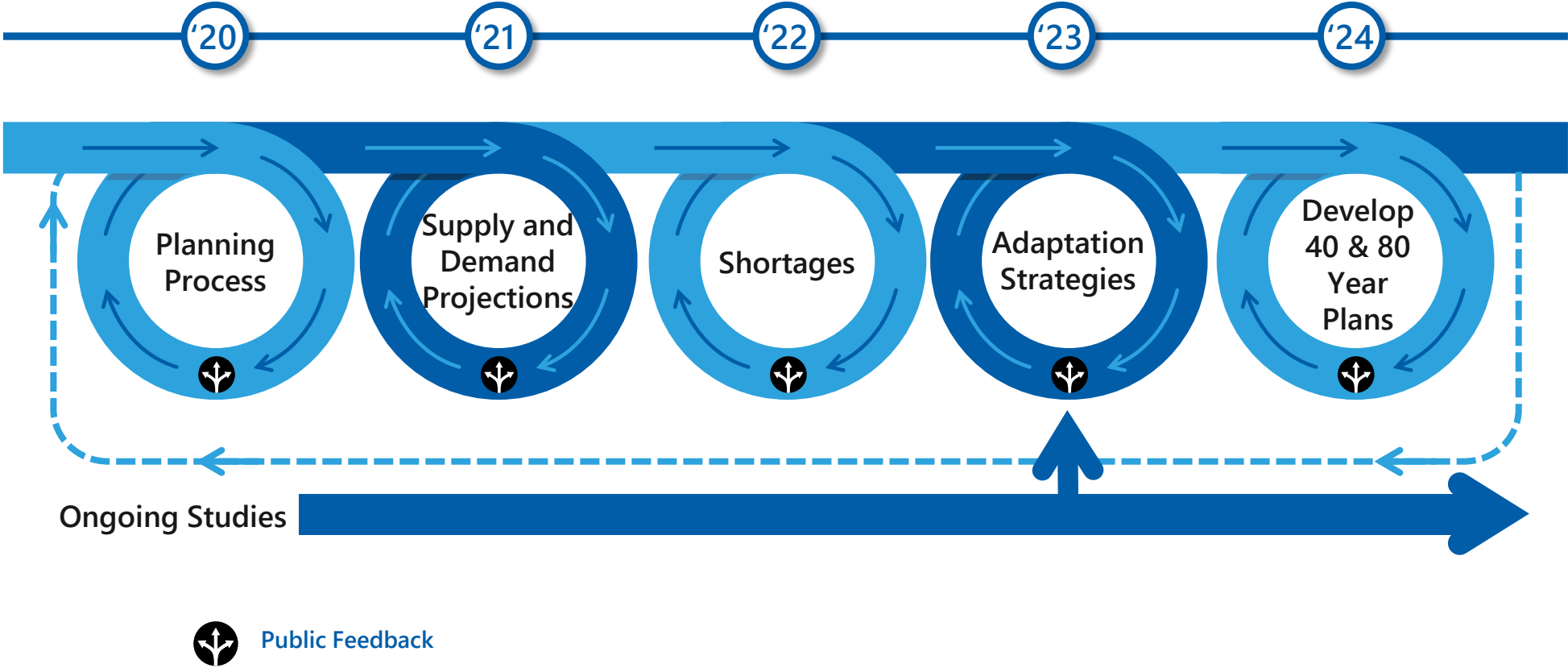


# Long Range Water Resources Planning (City Water Future)





# Local Water Planning with County: Water 2100



# Do we have water to support growth?

- 6:40s video linked from [www.santafenm.gov/water](http://www.santafenm.gov/water)
- Condensed version of much of what has been shown here

https://www.pechakucha.com/presentations/do-we-have-water-to-support-this-growth

PechaKucha

Search PechaKucha...


FEATURED CATEGORIES CHANNELS EVENTS CITIES CREATE BETA SHOP ABOUT

## Do We Have the Water to Support (This) Growth?

APRIL 2022

**'Extreme Drought'** (May 2021)  
Santa Fe City Council passes a resolution acknowledging parched conditions, vows action


30 hours



<https://www.sfreporter.com/news/2021/05/12/extreme-drought/>

**Santa Fe's Affordable Housing Timeline** (March 2021)  
30 years at a glance

30 hours



<https://www.sfreporter.com/news/2021/03/03/santa-fes-affordable-housing-timeline/>

**Megadrought in the West Is Worst in More Than 1,200 Years** (Feb 2022)

<https://www.cnet.com/news/megadrought-in-the-west-is-worst-in-more-than-1200-years/>

Do We Have Water to Support This Growth?

+ Follow

City Focus Urban Planning

Embed

f t in

Apr 20, 2022 42 0 Report

# Long Range Planning to Water Supply Indicator Transition Slide

- System Overview
  - 3 slides #4-6
- Santa Fe Water Past
  - 5 slides #8-12
- Santa Fe Water Present
  - 5 slides #14-20
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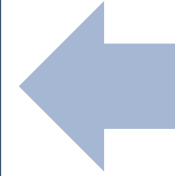
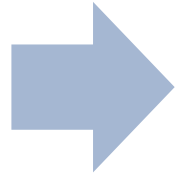
# Santa Fe Water Resources Indicator

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

- Q: When do we ask for or require more conservation from Santa Fe Water Utility customers?

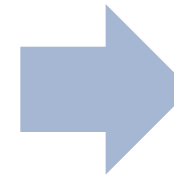
## UTILITY PERSPECTIVE:

- In the past 25 years potable water demand has decreased by 33% even as population served has increased by 25%
- Groundwater levels are rising
- We currently use about 75% of estimated renewable supply



## COMMUNITY PERSPECTIVE:

- We are in a megadrought
- Most customers are very aware of the drought
- Growth is evident



## GOAL:

Transparent and predictable conservation policy that incorporates Utility and Community perspectives

# 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

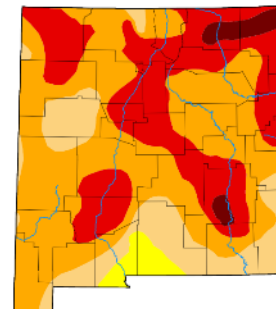
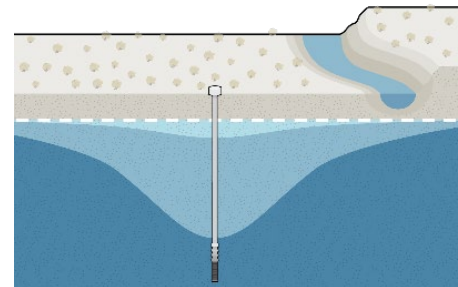
Types of Demand Planning Done by City and County of Santa Fe Water Utilities		
Time Scale	Technical Tools Used by Santa Fe Water Utilities	Conservation Response
Weeks to Months	Worst case scenarios evaluated with hydraulic (pipe network) model	Short term drastic reduction
1 Year	<b>Santa Fe Water Resources Indicator</b>	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

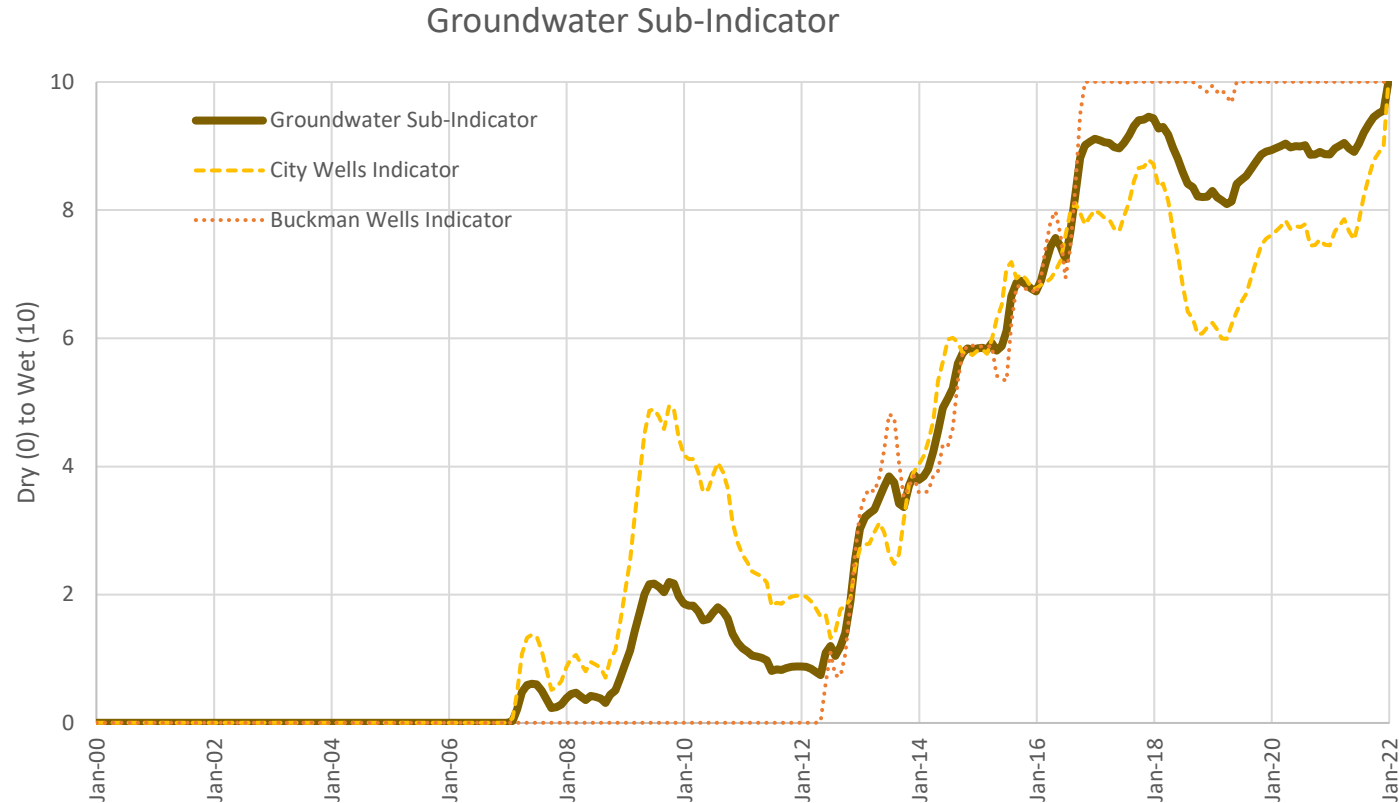
- 40% of weight to groundwater pumping
  - Groundwater (water from wells) is our “drought-proof” savings account.
  - We can only indirectly estimate total availability, but we can see if water levels in the wells are going up or down through time.
  - Over time we don’t want to be pumping more than is being recharged. Water levels should be stable or rising if this is the case.
  - City wellfield is “unconfined” and water levels change slowly through time.
  - Much of Buckman wellfield is “confined” water under pressure between clay layers and water pressure changes more quickly through time.
- 30% of weight to surface water availability
  - Surface water (river water) in reservoirs is our checkings account.
  - It is renewable and we know with very high accuracy how much is available.
  - When we use it up we have to go to the savings account (wells).
- 30% of weight to regional drought conditions
  - As summarized by the drought value assigned to Santa Fe County in the U.S. Drought Monitor.
  - The public is more aware of regional drought than Utility water availability.
  - Regional drought will impact water use, especially outside.



# 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

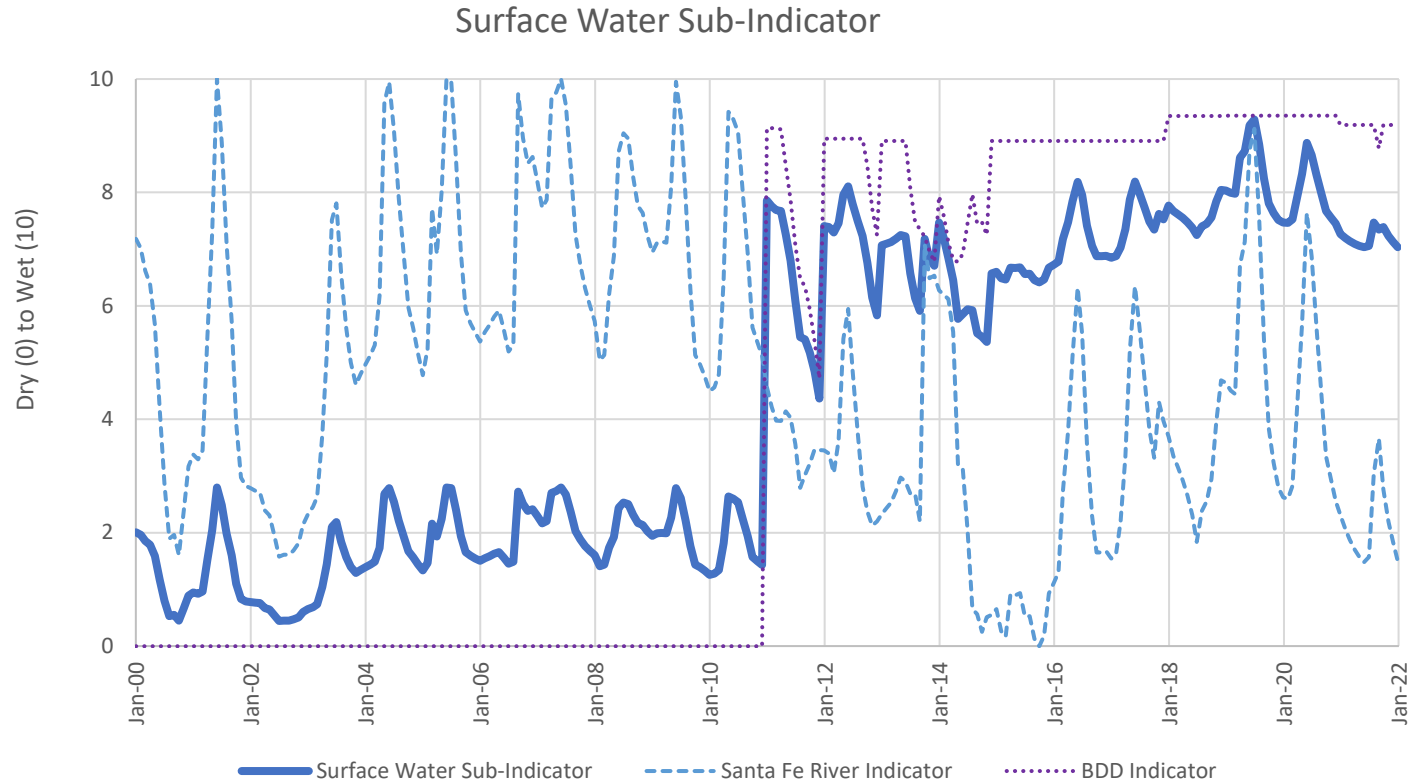
- Groundwater Sub-indicator (40% of overall Supply Indicator)



# 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

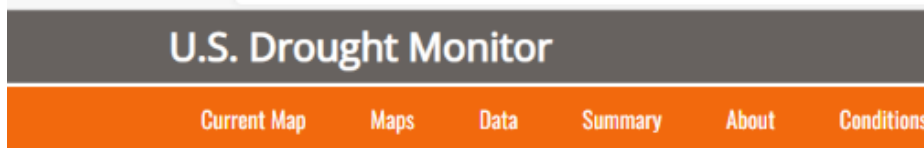
- Surface Water Sub-indicator (30% of overall Supply Indicator)



# 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

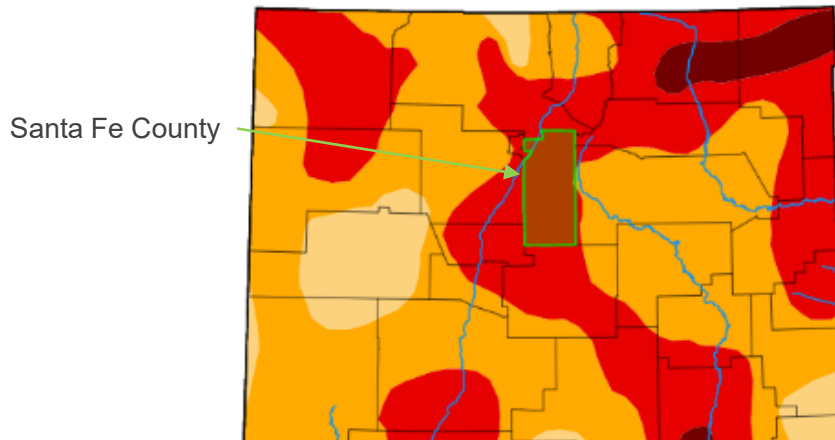
- Regional Drought Sub-indicator (30% of overall Supply Indicator)
  - Based on weekly Santa Fe County drought score in the U.S. Drought Monitor (USDA-NOAA product)










New Mexico

Map released: Thurs. March 3, 2022

Data valid: March 1, 2022 at 7 a.m. EST



## Intensity

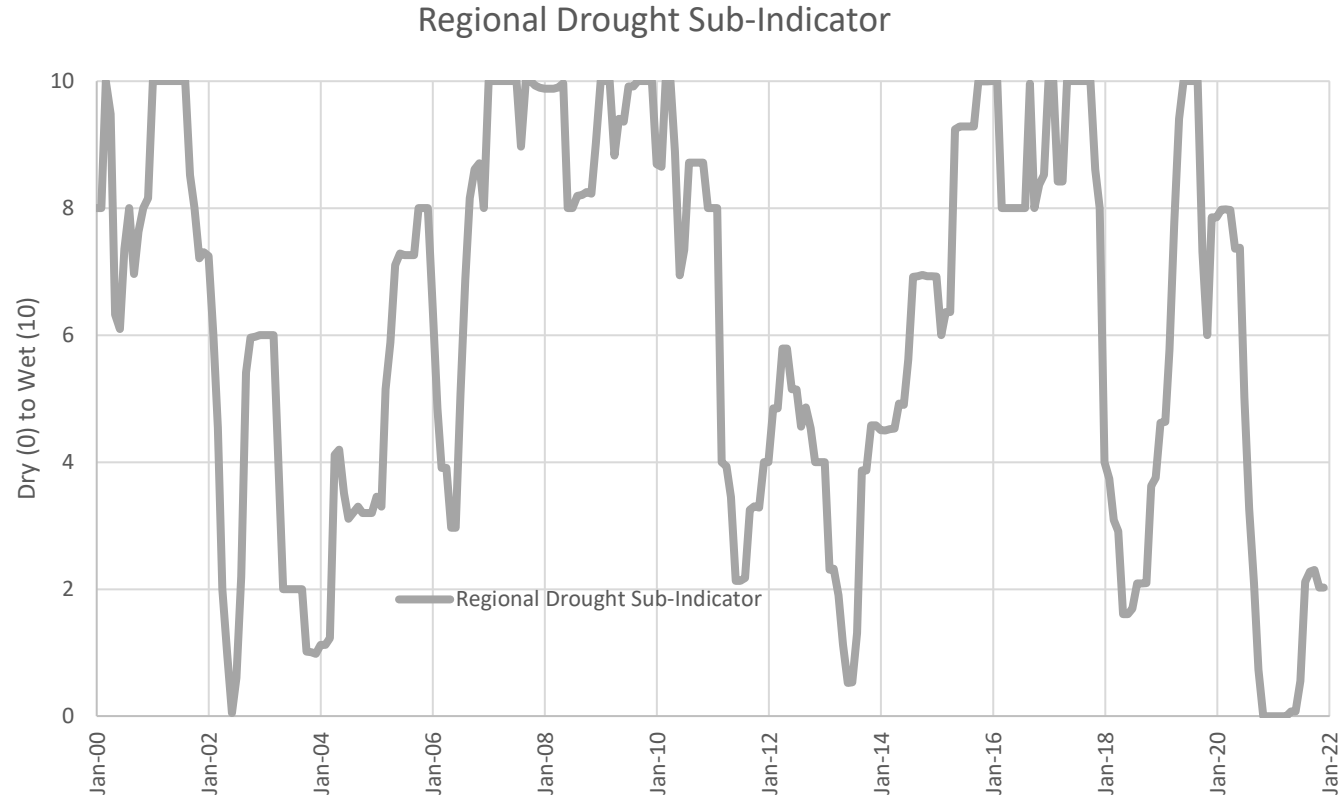
	None	-----	10
	D0 (Abnormally Dry)	-----	8
	D1 (Moderate Drought)	-----	6
	D2 (Severe Drought)	-----	4
	D3 (Extreme Drought)	-----	2
	D4 (Exceptional Drought)	-----	0
	No Data		

SFWRI Drought  
Sub-Indicator value

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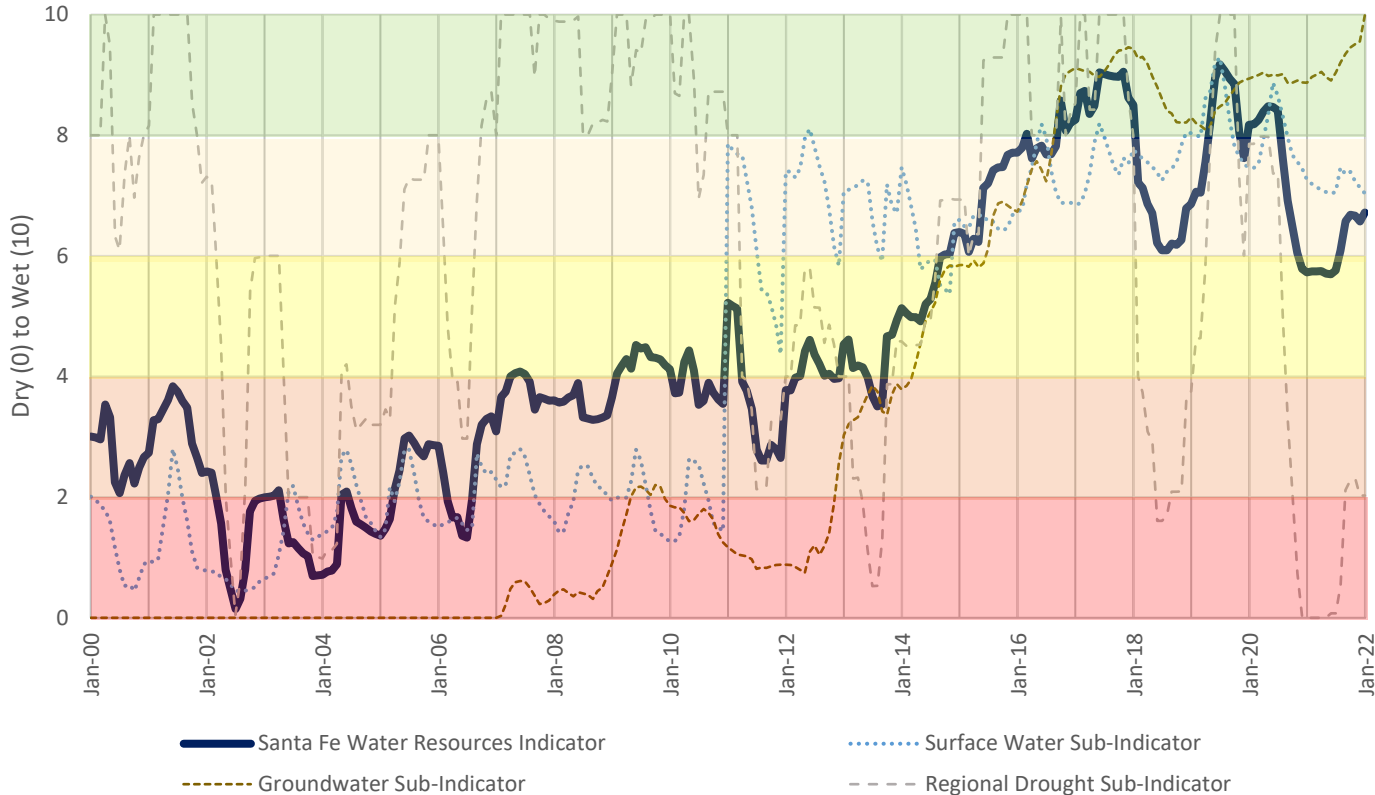
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Santa Fe Water Resources Indicator



Policy response to different indicator values will be developed by engagement with City's WCC and County's WPAC and direct public outreach.

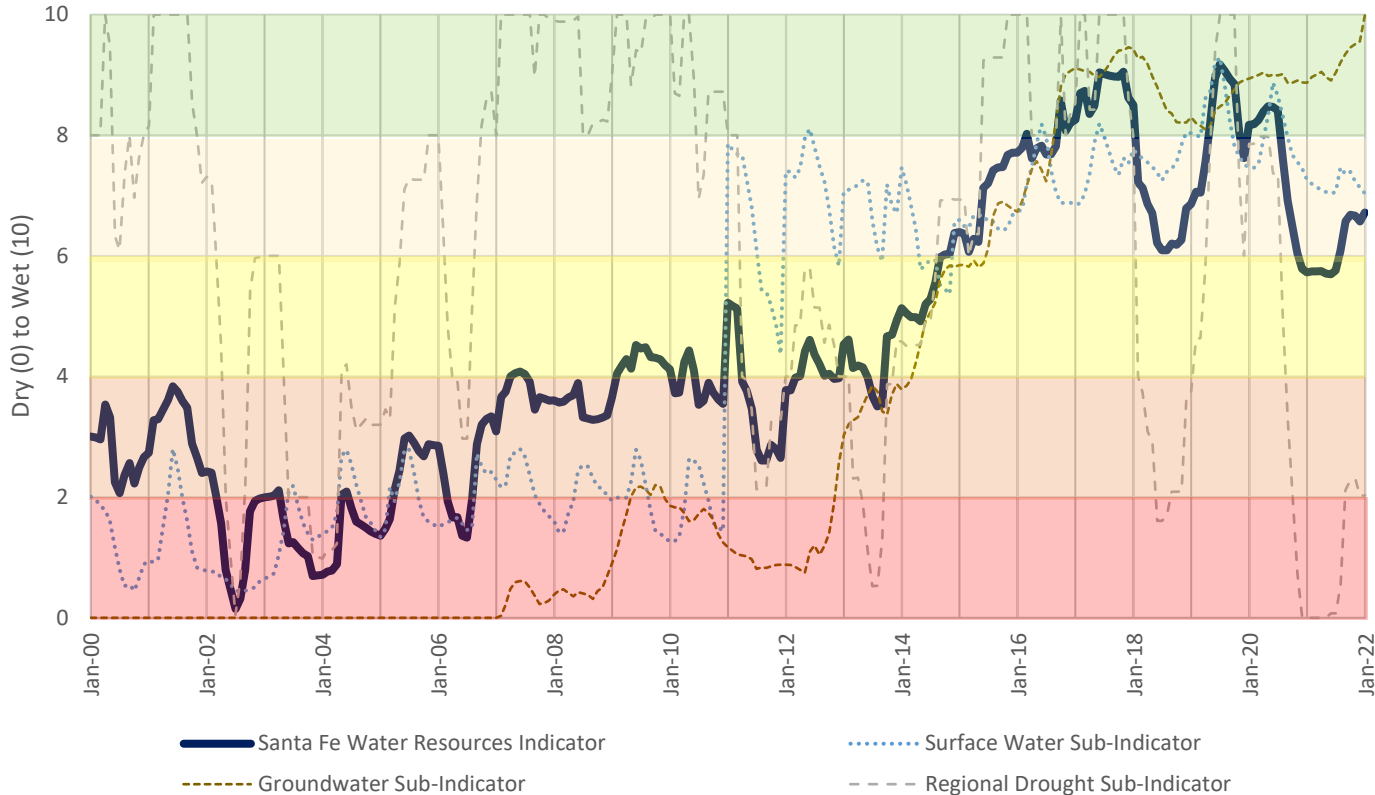
Preliminary thinking is 5 different zones of conservation efforts



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Santa Fe Water Resources Indicator



REVIEWS NEWS TECH MONEY WELLNESS HOME CARS DEALS

## Megadrought in the West Is Worst in More Than 1,200 Years

Nearly half of the drought can be attributed to human-caused climate change, a new study finds.

“a 22-year period between 2000-2021 that's unmatched over the past 12 centuries”

<https://www.cnet.com/news/megadrought-in-the-west-is-worst-in-more-than-1200-years/>

MY VIEW CAROL ROMERO-WIRTH

## Building water resiliency amid megadrought

Recent headlines call out the dangerous megadrought facing communities across the West. While concern is warranted, here's the good news: Santa Fe is better off now than it was 20 years ago. Building on the proactive water decisions made by city leaders before us, we are continuing to make smart investments in our water future.



# Water Supply Indicator to Water Bank Transition Slide

- System Overview
  - 3 slides #4-6
- Santa Fe Water Past
  - 5 slides #8-12
- Santa Fe Water Present
  - 5 slides #14-20
- San Juan Chama Return Flow Project
  - 12 slides #22-32
- Long Range Planning
  - 4 slides #34-37
- Santa Fe Water Resources Indicator
  - 9 slides #39-47
- Water Bank
  - 7 slides #49-55

# The Water Bank

Tracking development and conservation since 2010

## City Code 25-10 – City Water Bank

- Became effective January 1, 2010
- “The purpose of the City Water Bank Ordinance is to establish a city water bank consisting of various accounts holding water rights, water credits and water conservation credits” which can be dedicated “to a specific development water budget”.
- In practice, three types of rights/credits can be used to offset added demand
  1. Pre-1907 Middle Rio Grande water rights: must be transferred to Buckman Wellfield (which is water rights limited)
  2. Toilet retrofit credits: Estimated savings associated with pre-2010 conservation used to offset development from 2010 forward.
  3. Conservation credits: Estimated savings associated with conservation from 2010 forward used to offset development from 2010 forward

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Can be bought and sold by City and developers.

Used by developers to meet requirements associated with large developments.

Development using these would result in City production above 2010 levels\*.

City accounting of room for development created by conservation from 2010 forward.

City implicitly sells these (or water rights) to small developments who pay for offsets instead of bringing water rights or credits.

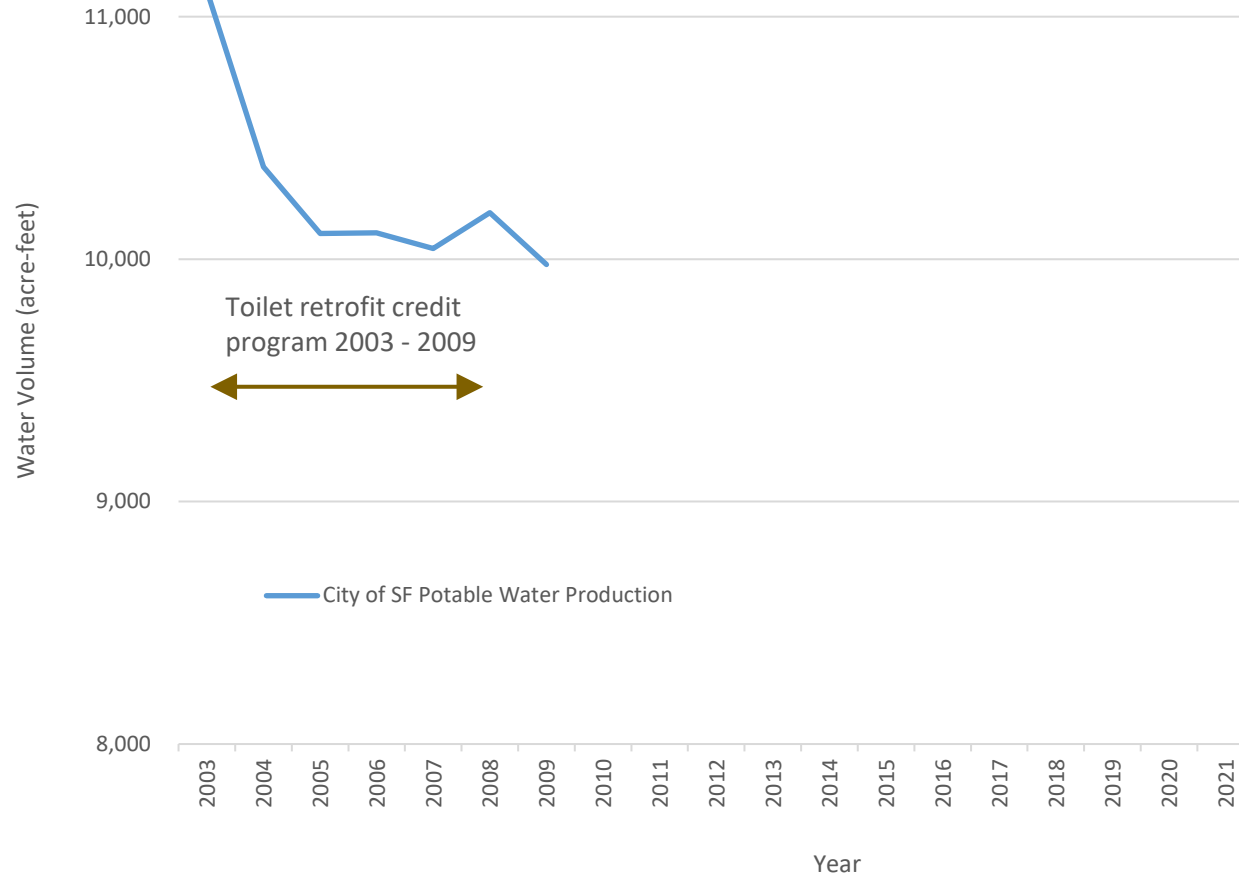
Can be used by City to offset demands associated with added affordable housing.

Development using these would not result in increased City production above 2010 levels\*.



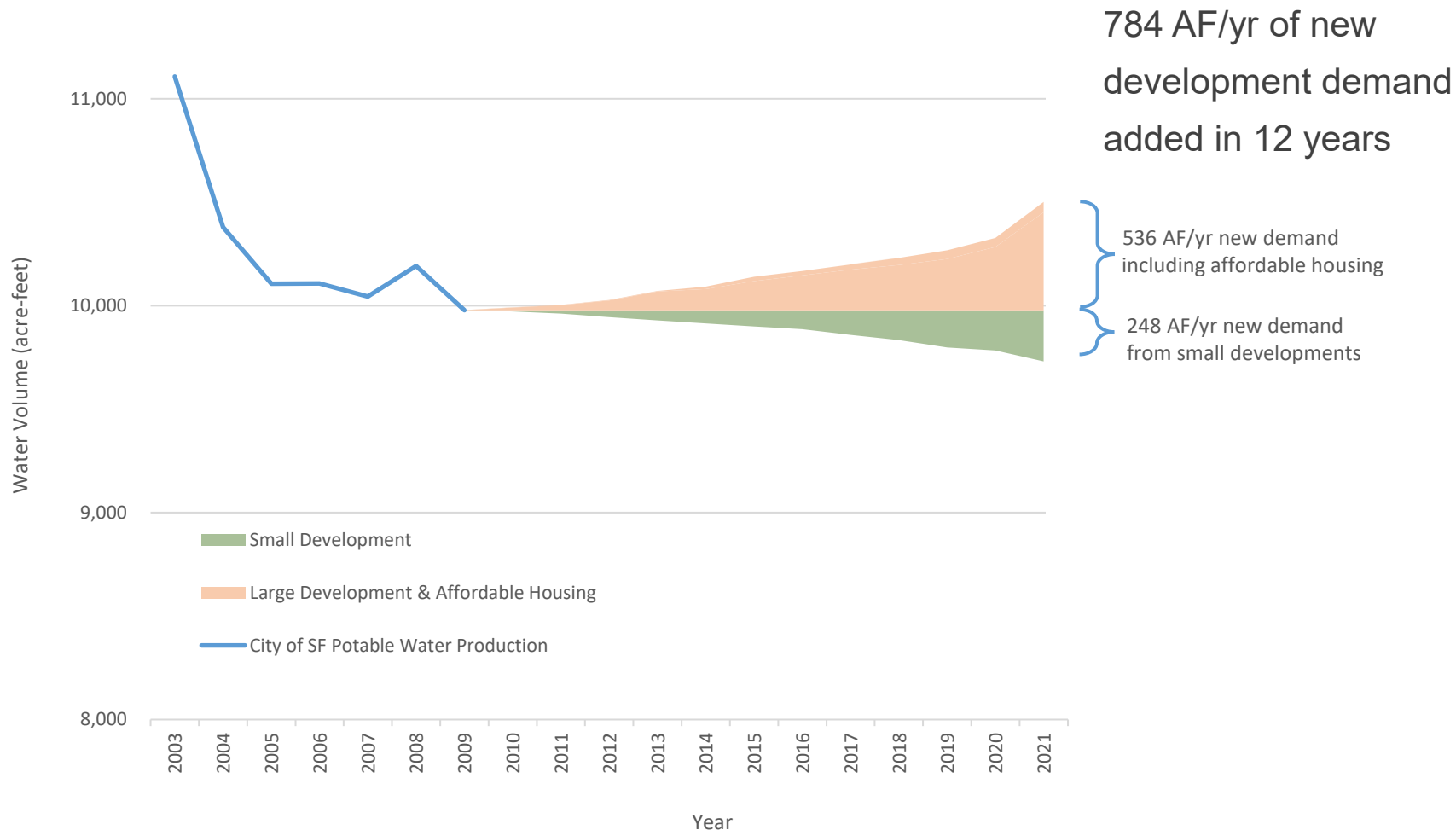
# Imagine it's January 1<sup>st</sup> 2010

City of Santa Fe Water Water Bank Accounting



# Imagine it's January 1<sup>st</sup> 2010 & you can predict development through 2020

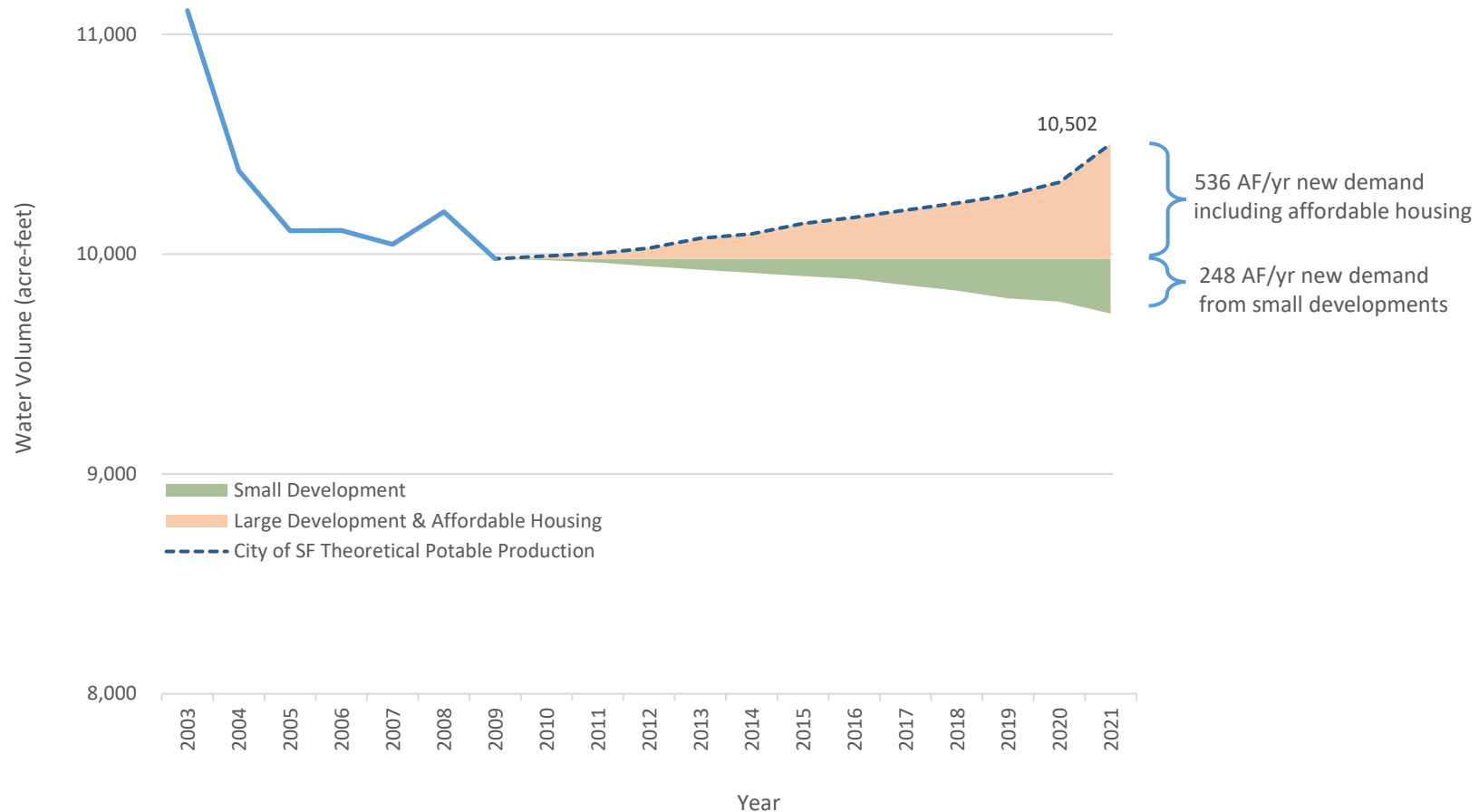
City of Santa Fe Water Water Bank Accounting





# Production of 10,500 AF in 2021 would be expected/accepted

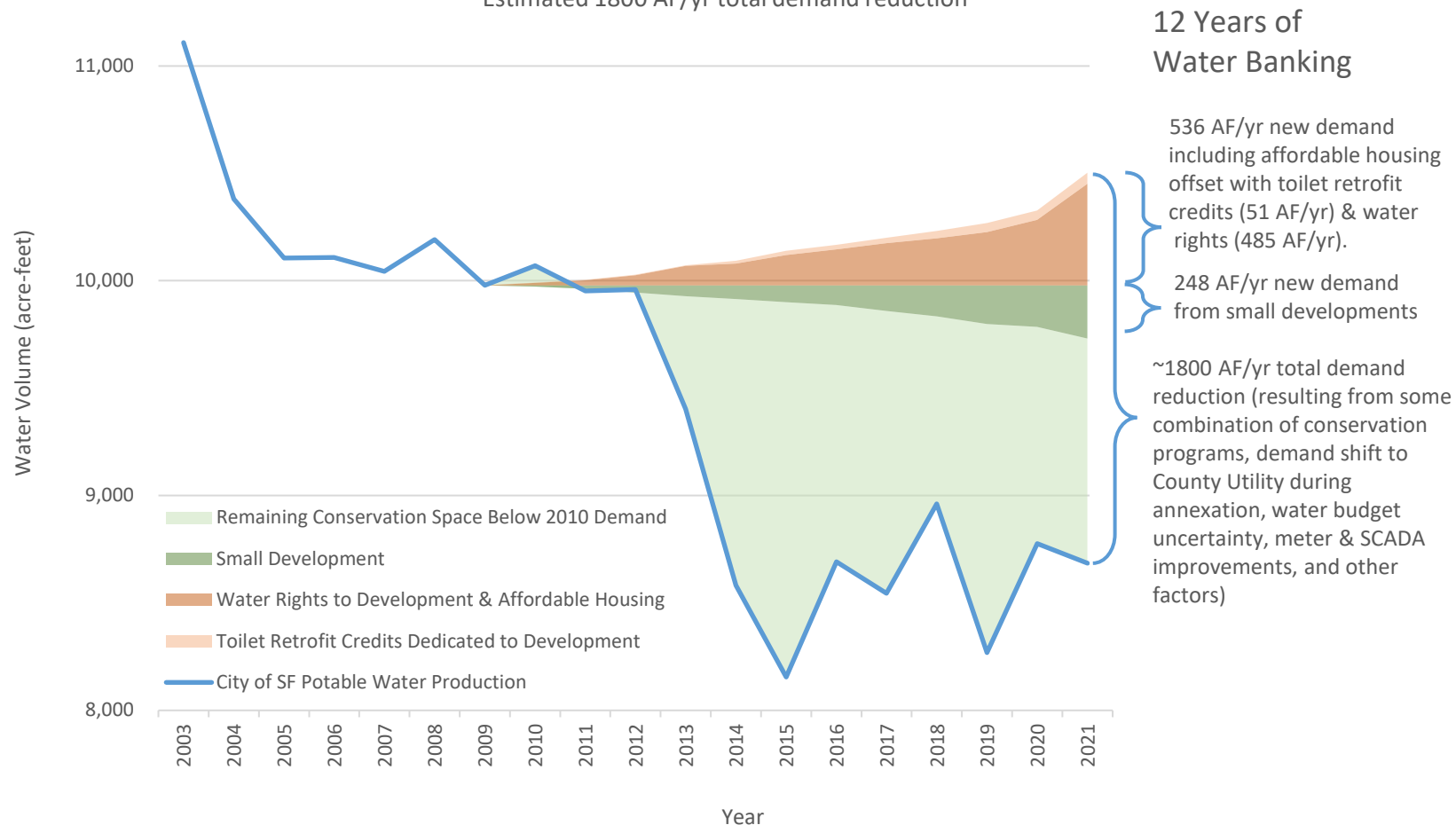
City of Santa Fe Water Water Bank Accounting



# Actual Production in 2021: 8685 (~1800 AF less than expected)

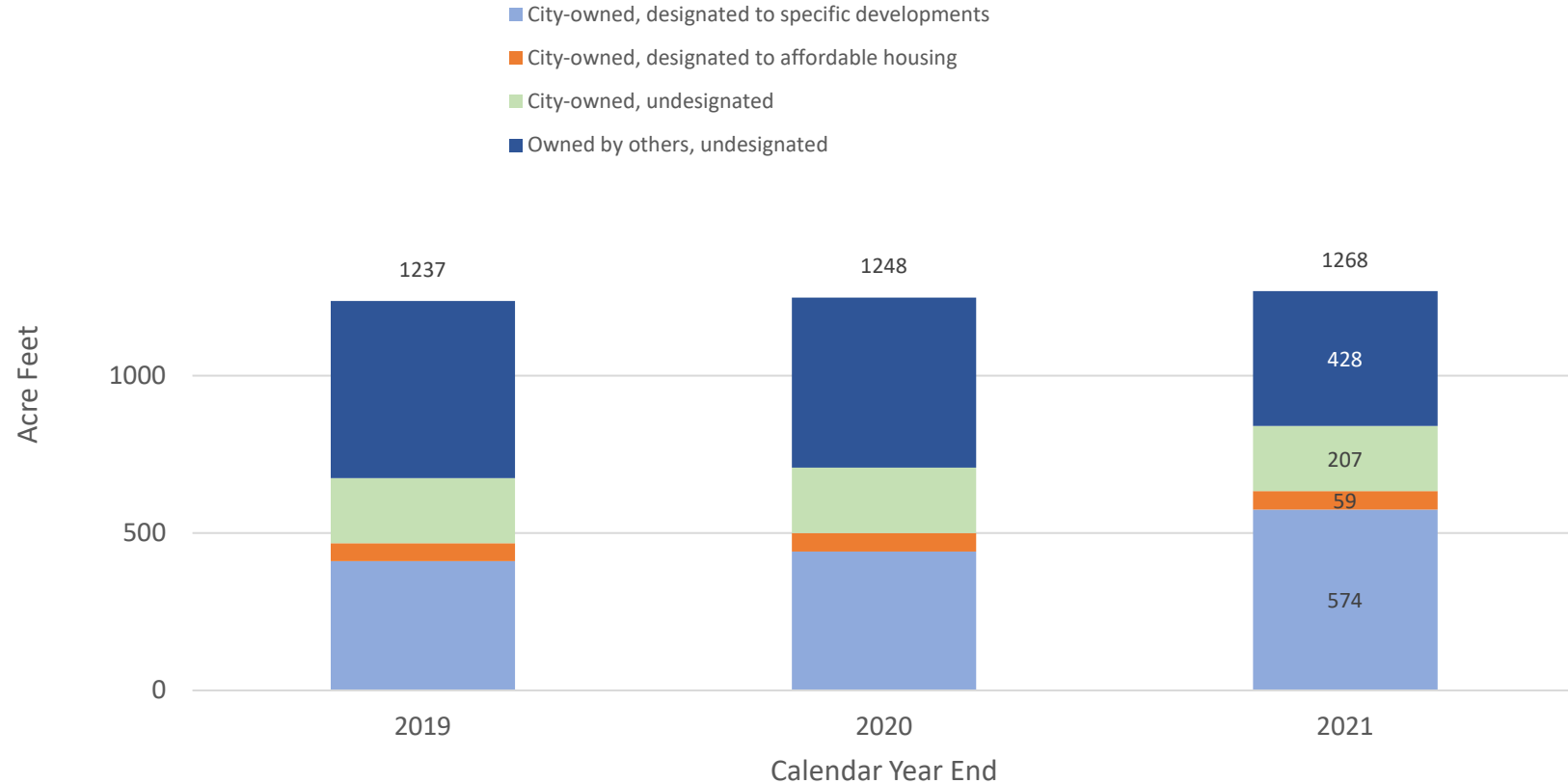
## City of Santa Fe Water Water Bank Accounting

Estimated 1800 AF/yr total demand reduction



# Pre-1907 Water Rights Moved to Buckman Wellfield

Water Rights in Water Bank at Calendar Year End



# Questions?

