
THE
WATERSHED
ASSOCIATION
LAND · WATER · CONNECTION

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The Watershed Association (formerly the Wimberley Valley Watershed Association) is a non-profit organization located in the heart of the Texas Hill Country, born out of a love for water.

The Watershed Association has been working since 1996 to protect groundwater, springs, creeks, and rivers for generations to come.

Mission

The Watershed Association's mission is to promote conservation by ensuring communities are aware of their connection and responsibilities to their watershed and are supported in advocating for water policies and practices that promote ecological sustainability for future generations.

Vision

The Watershed Association envisions a world where all community members understand the many benefits that flow from a respectful relationship with the land: human health, ecological health, economic sustainability, enriched community life, and the renewal of the human spirit.

Impact Areas:

Watershed Protection & Conservation Science
Education & Outreach (Art4Water)
Environmental Planning, Policy & Advocacy
Land Conservation
The Texas Hill Country Conservation Network

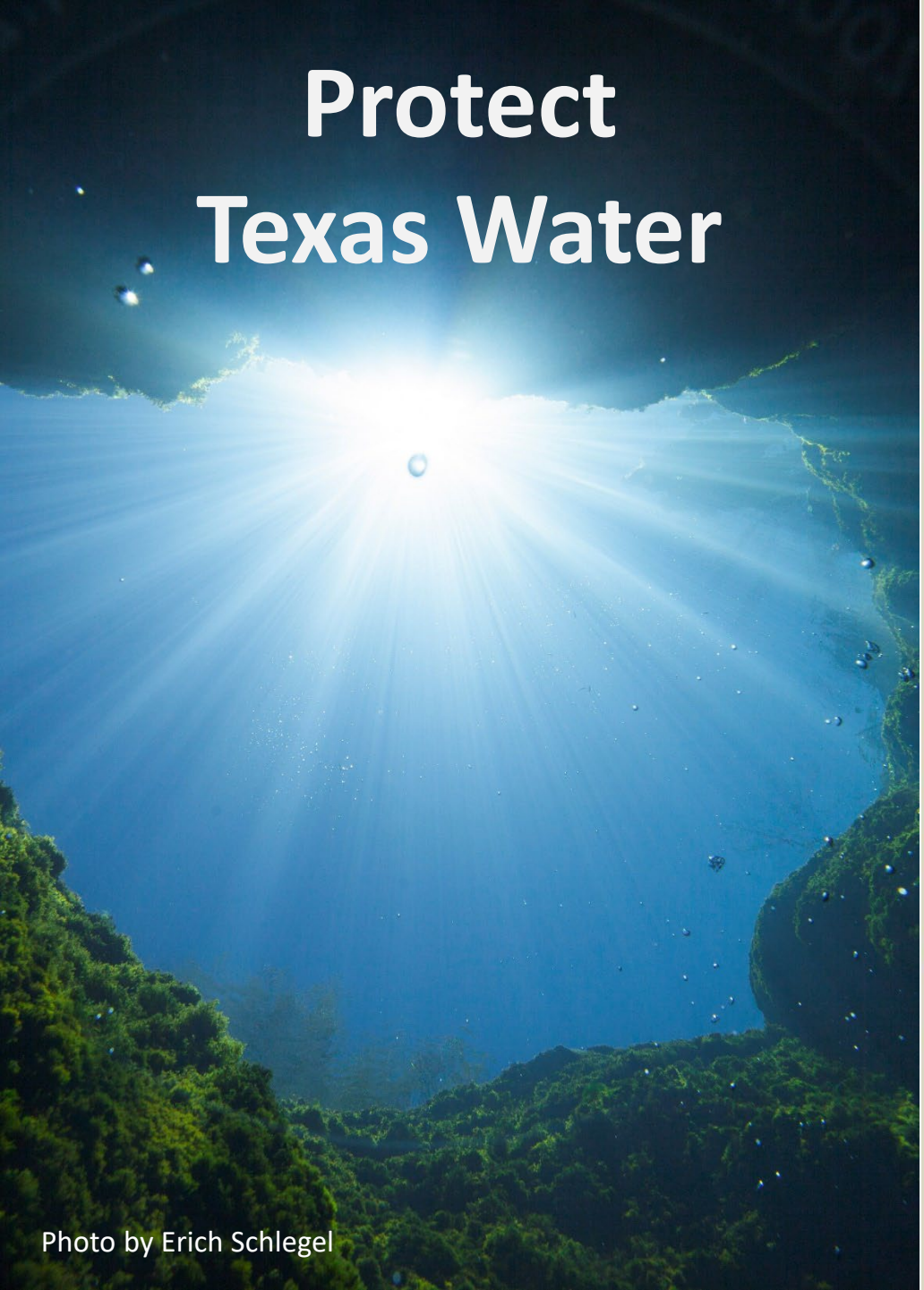


Photo by Erich Schlegel

Our Impact

2023

Land Conservation
500 acres of land in conservation

Watershed Protection & Conservation Science
19 years of water quality monitoring with the Clean Rivers Program at 13 sites along Cypress Creek & the Blanco River, 12 bacteria sites monitored monthly

Policy, Advocacy, and Environmental Planning
1.6 million gallon annual wastewater discharge into the Blanco River prevented by the formation of Protect Our Blanco. Settled by Texas Land Application Permit to prevent further discharge

Regenerative Connection and Education
1,700 residents, students, and families reached by over 20 presentations, field trips, and events

Art4Water
300,000 visitors to the Sacred Springs Kite Exhibition at the Austin Central Library

Partnerships and Community Support
157,000 people reached through informal education and digital media

David Baker & Jenna Walker

Presentation Topics

- **Cypress Blanco WPP Interlocal Agreement**
- Drought curtailments and the Jacob's Well Groundwater Management Zone
- How Jacob's Well works
- Daily impacts of groundwater pumping on Jacob's Well
- 2022 groundwater permit violations
- Test wells study
- Past, present, and future

- EPA 319 Federal funding for the Cypress Creek Watershed Protection Plan ended in September 2023.
- The Cypress Creek Project has invested over $4 million in the Cypress Creek Watershed Protection Plan (CCWPP) since 2006 to restore water quality through monitoring, special studies, best management practices, adopting policies to protect adequate stream flows, and education and outreach.
- Hays County, Wimberley, Woodcreek, The Watershed Association and Meadows Center for Water and the Environment, TSU signed an ILA to co-fund the Blanco Cypress Watershed Protection Plan (BCWPP) expansion for three years.
- Hays County will fund a new watershed coordinator and Meadows Center staff time and lab cost to perform Clean Rivers Program (CRP) water quality monitoring.
- The Financing Parties will expand the plan to include the Blanco River Basin through the BCWPP.
- Hays County and the BCWPP will cooperatively fund the USGS gauge at Jacob's Well.

HAYS COUNTY, CITY OF WIMBERLEY, CITY OF WOODCREEK, THE WATERSHED ASSOCIATION, AND TEXAS STATE UNIVERSITY REGARDING IMPLEMENTATION OF THE BLANCO CYPRESS WATERSHED PROTECTION PLAN (BCWPP)

This interlocal Agreement is made and entered into, effective the ____day of _____, 2024 ("Effective Date") by and among Hays County, Texas ("Hays County"), City of Wimberley ("Wimberley"), City of Woodcreek ("Woodcreek"), and the Watershed Association, jointly known as the "Financing Parties" and Texas State University ("Texas State"). This interlocal Agreement is entered into by the Financing Parties and the Meadows Center within Texas State pursuant to the authority granted and in compliance with, the provisions of the "interlocal Cooperation Act," as amended, Texas Government Code, Chapter 791. This interlocal Agreement is intended to further the purpose of the interlocal Cooperation Act, which is to increase the efficiency and effectiveness of local governments.

WHEREAS, the economies of Hays County, Wimberley, and Woodcreek directly benefit from a clean and flowing Cypress Creek; and

WHEREAS, The Meadows Center for Water and the Environment ("Meadows Center") is a research extension of Texas State. All work referencing Texas State in this agreement will be performed by the Meadows Center; and

WHEREAS, in 2006, the Cypress Creek Project ("CCP") was established to restore and protect the water quality in Cypress Creek, a major tributary of the Blanco River in the Guadalupe River Basin of Texas, and each Party named above has representatives on the CCP Executive Committee that is described in and operates under the Cypress Creek Watershed Protection Plan ("CCWPP"); and

WHEREAS, since the establishment of the CCP, over four (4) million dollars have been dedicated to the development and implementation of the highly recognized CCWPP; and

WHEREAS, the CCWPP is a roadmap to restore water quality in Cypress Creek and includes data collection and water quality monitoring, implementation of best management practices to address nonpoint source pollution from agriculture and urban sources, adequate stream flows, and outreach and education; and

WHEREAS, the CCWPP satisfies the US Environmental Protection Agency's ("EPA") guidelines and expectations for a watershed protection plan; and

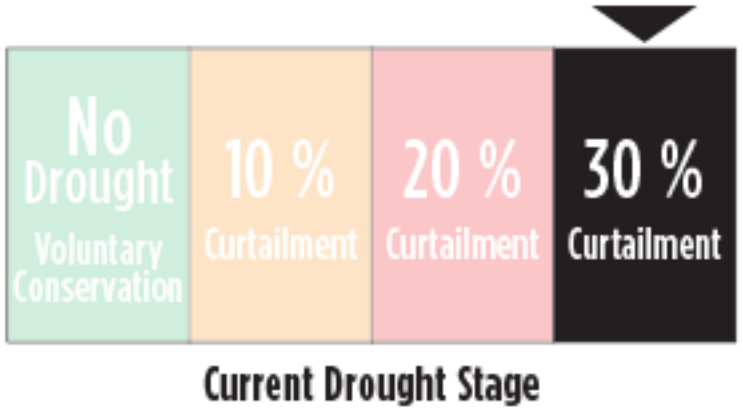
WHEREAS, the Cypress Creek Watershed Coordinator ("Watershed Coordinator"), through a grant from Texas Commission for Environmental Quality (TCEQ) and Environmental Protection Agency (EPA) payable and available to the CCP Coordinator, facilitated the CCWPP; secured funding through writing grants, tracks the progress of implementing the CCWPP; and reported water quality trends resulting from implementation of the CCWPP; and

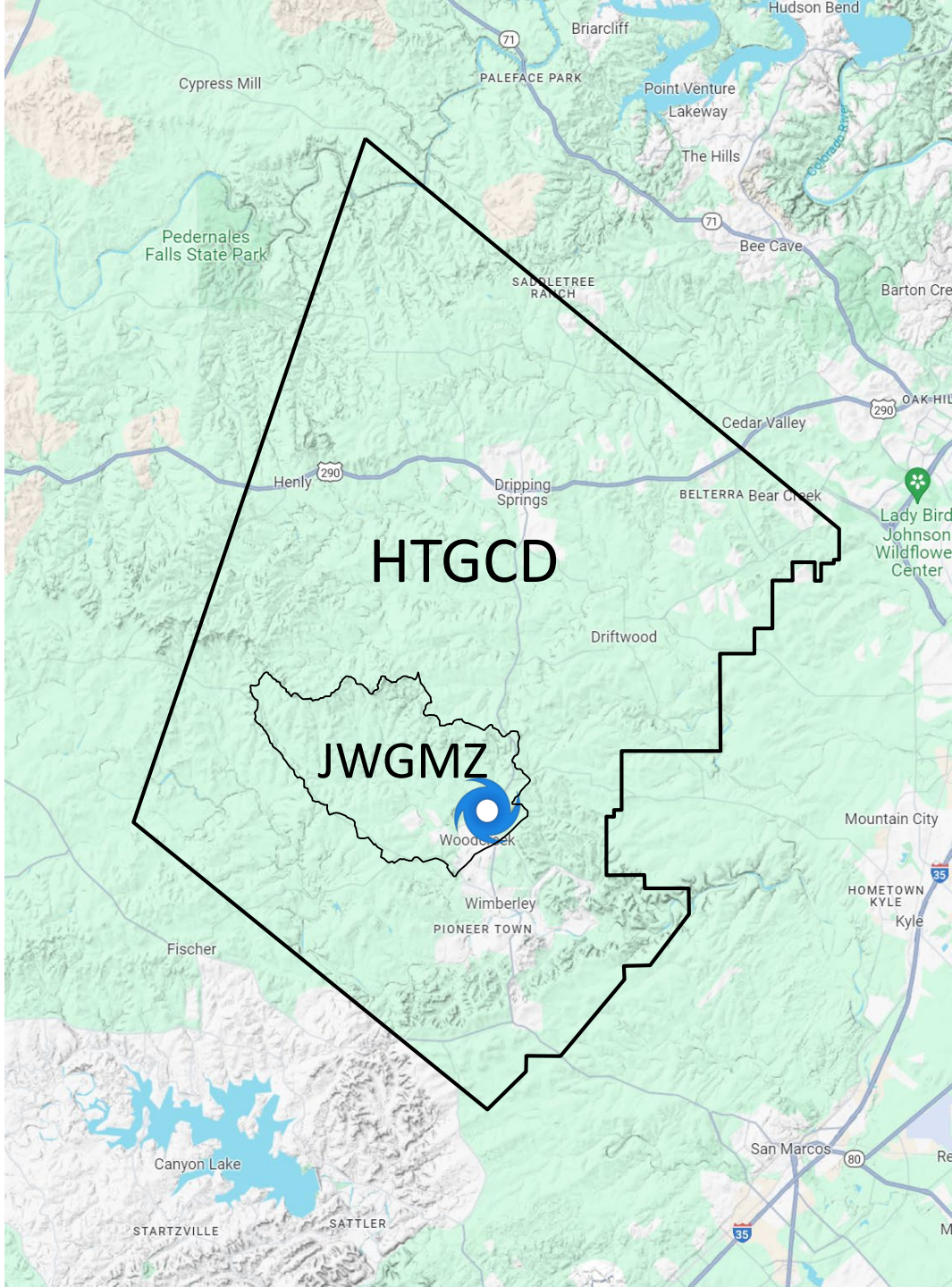
WHEREAS, in September 2023, current federal funding for the CCWPP Coordinator ended; and

Jacob's Well Groundwater Management Zone

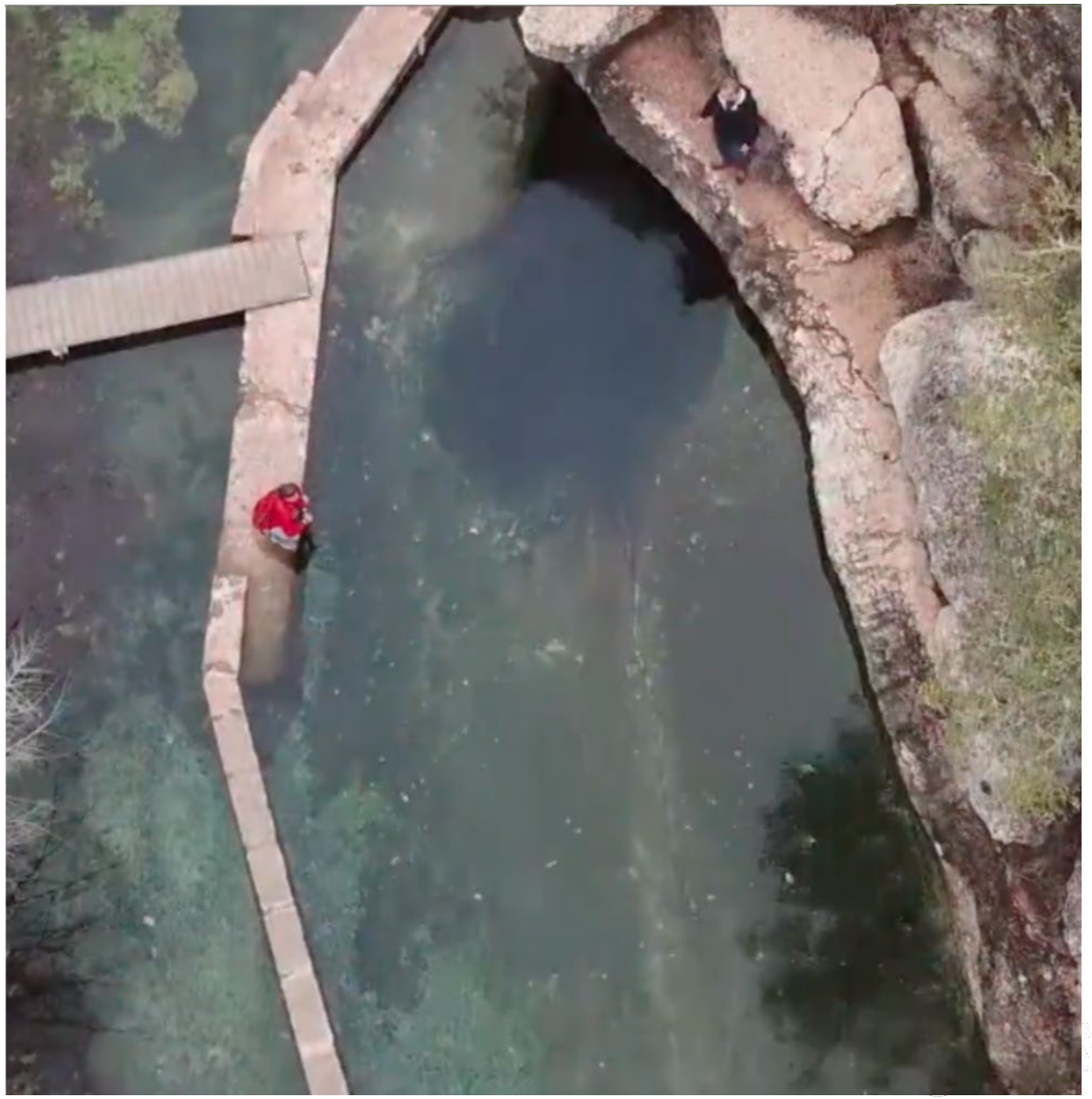
The JWGMZ is an area inside the HTGCD where groundwater pumping directly influences the flow from Jacob's Well.

HTGCD sets drought curtailment levels in the JWGMZ based on flow from Jacob's Well.





Drought curtailments in the Jacob's Well Groundwater Management Zone were developed to keep the Well flowing during drought conditions

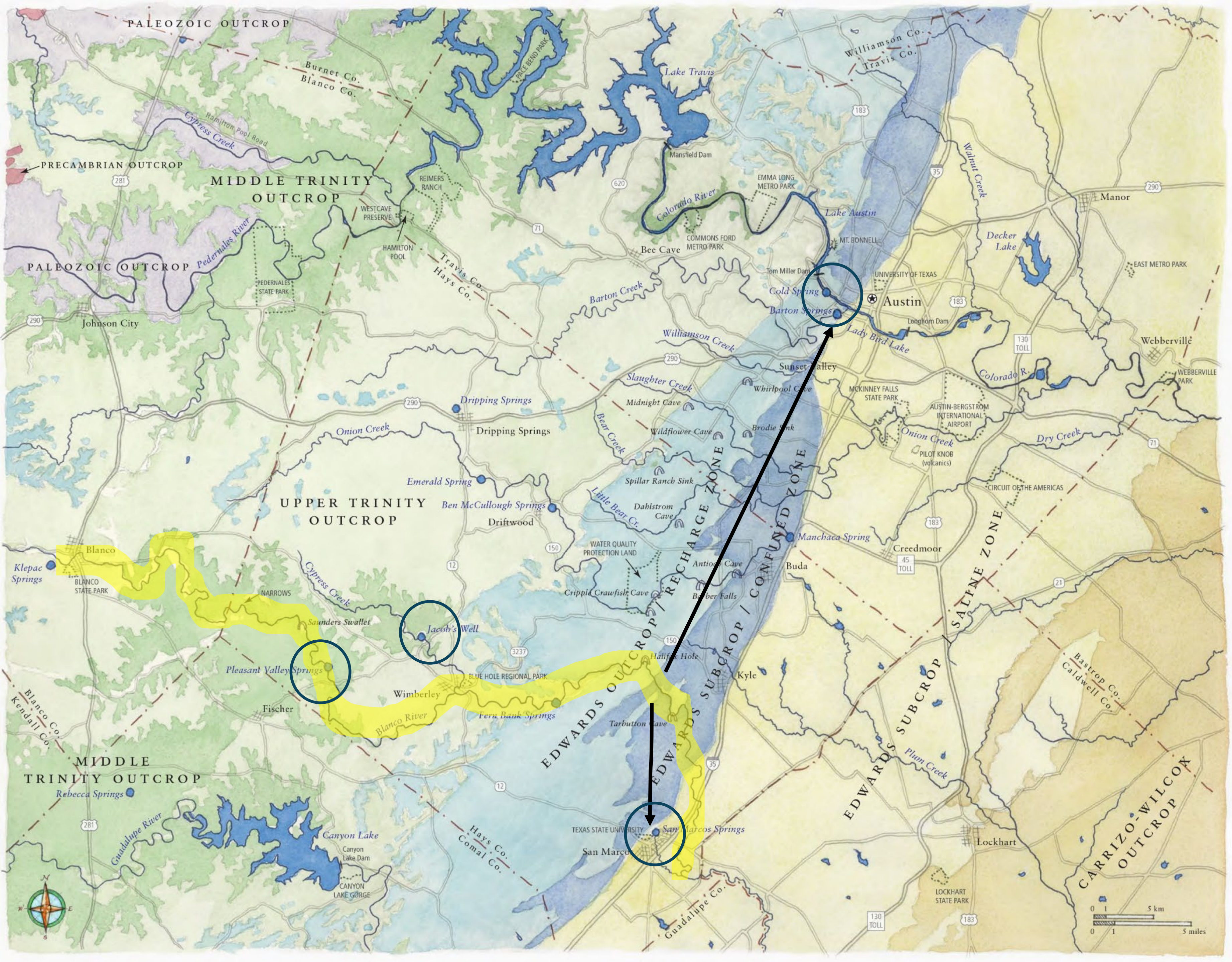


BLANCO RIVER

Photo by Robin Gary

Edwards Aquifer

Photo by City of Austin Parks and Recreation Department



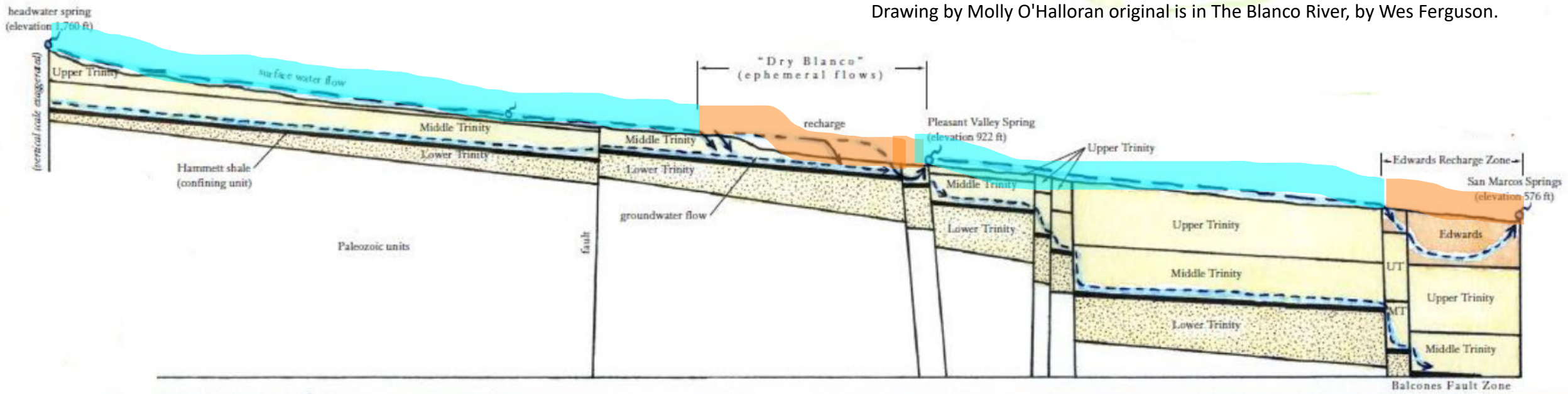
Central Texas Water Resources

geologic age	hydrostratigraphy	group	formation
Tertiary 65 – 2 million years ago	CARRIZO-WILCOX AQUIFER		Carrizo
			Wilcox
Upper Cretaceous 100 – 65 million years ago	confining units and perched aquifers		Taylor
			Austin Chalk
			Eagle Ford
			Buda
			Del Rio
Lower Cretaceous 145 – 100 million years ago	EDWARDS AQUIFER		Georgetown
		Edwards Group	Person Formation
			Kainer Formation
			Walnut Fm
	UPPER TRINITY AQUIFER	Trinity Group	Glen Rose Formation: Upper Glen Rose Mbr
	MIDDLE TRINITY AQUIFER		Glen Rose Formation: Lower Glen Rose Mbr
	semi-confining unit		Hensell
			Cow Creek
	confining unit		Hammett
	LOWER TRINITY AQUIFER		Sligo
			Sycamore/Hosston
Paleozoic 540 – 250 m.y.a.	PALEOZOIC AQUIFERS	undifferentiated Paleozoic	
Precambrian > 540 million years ago	CRYSTALLINE ROCK AQUIFERS	undifferentiated Precambrian	

stratigraphic column & geologic features

Bseacd.org/maps

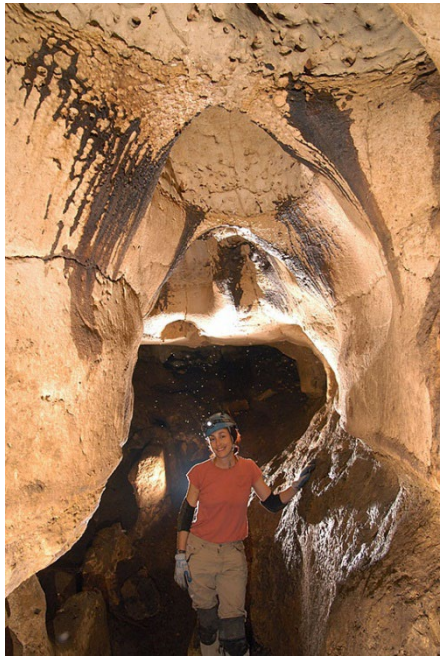
Drawing by Molly O'Halloran original is in The Blanco River, by Wes Ferguson.



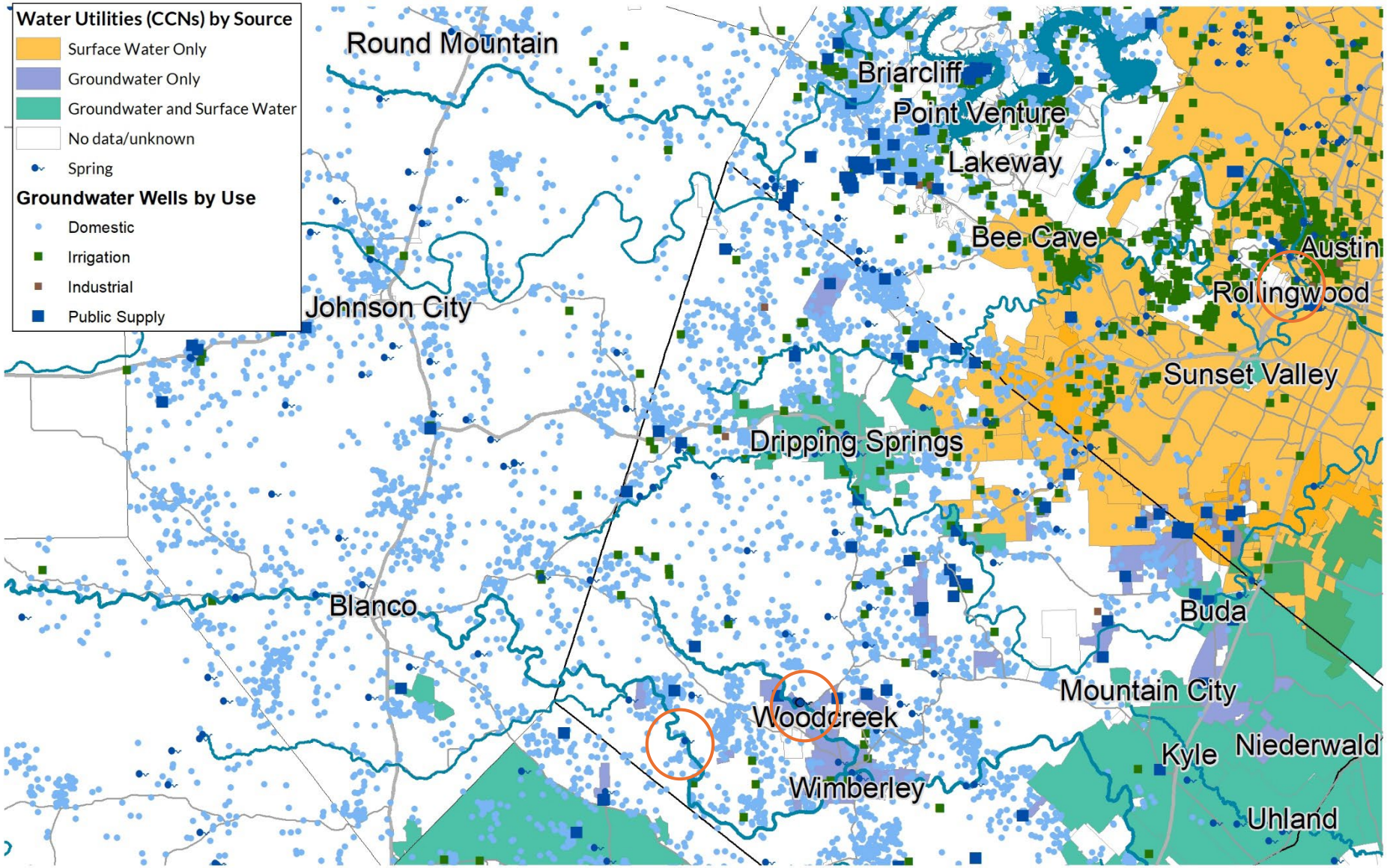
IN BETWEEN

TRINITY AQUIFER SPRINGS

Edwards Aquifer SPrings



Groundwater use



Basemap: Water Utility Certificate of Convenience and Necessity (CCN) boundaries from Public Utility Commission, CCN Water Source information compiled from the 2022 State Water Plan and groundwater permits by groundwater conservation districts (BSEACD, HTGCD, and EAA). Groundwater Wells from Texas Water Development Board Submitted Well Drillers Reports. Map by Robin Gary, Wimberley Valley Watershed Association, April 2023

Jacob's Well Groundwater Management Zone

And

Regional Recharge Study Area

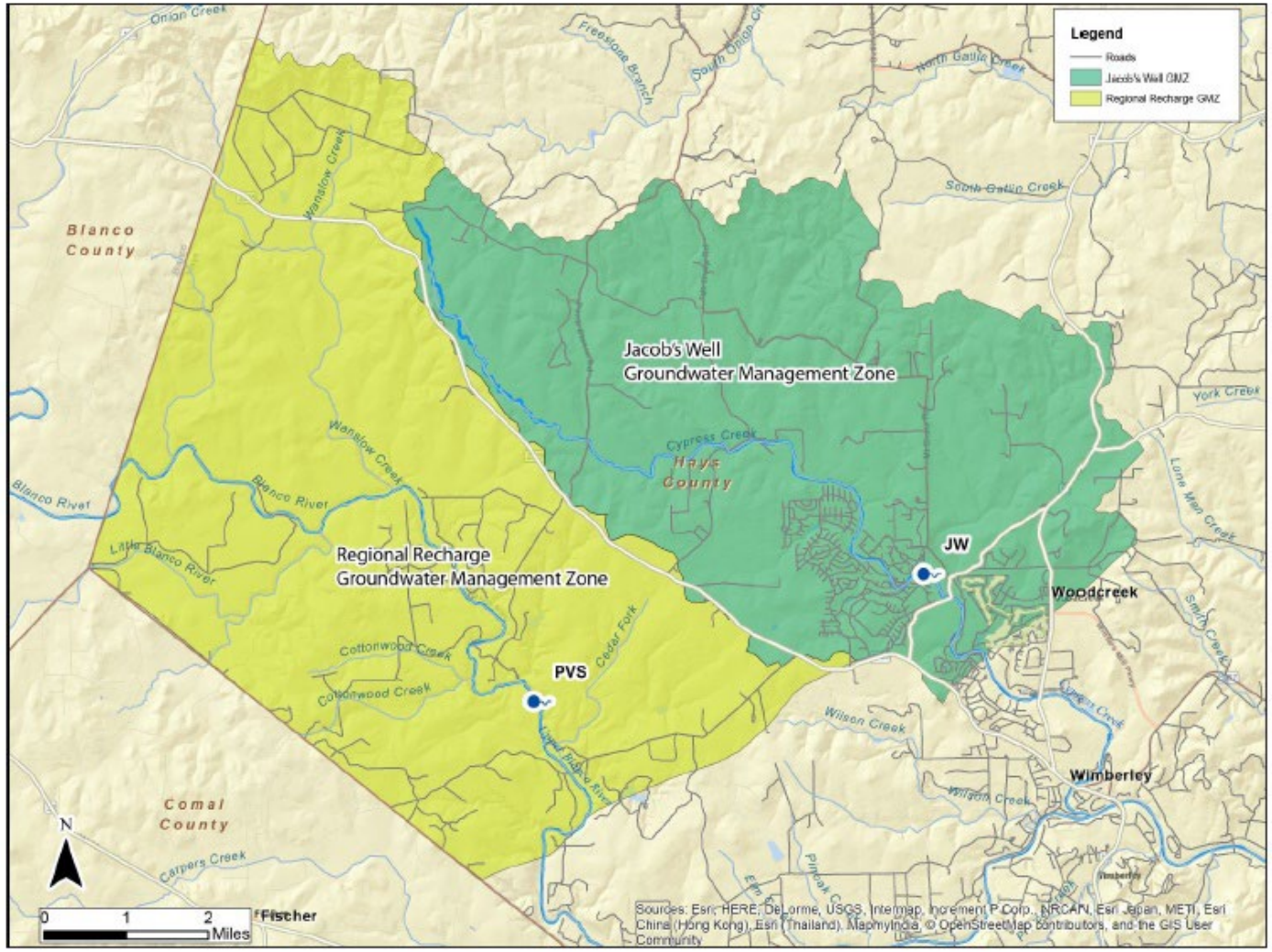
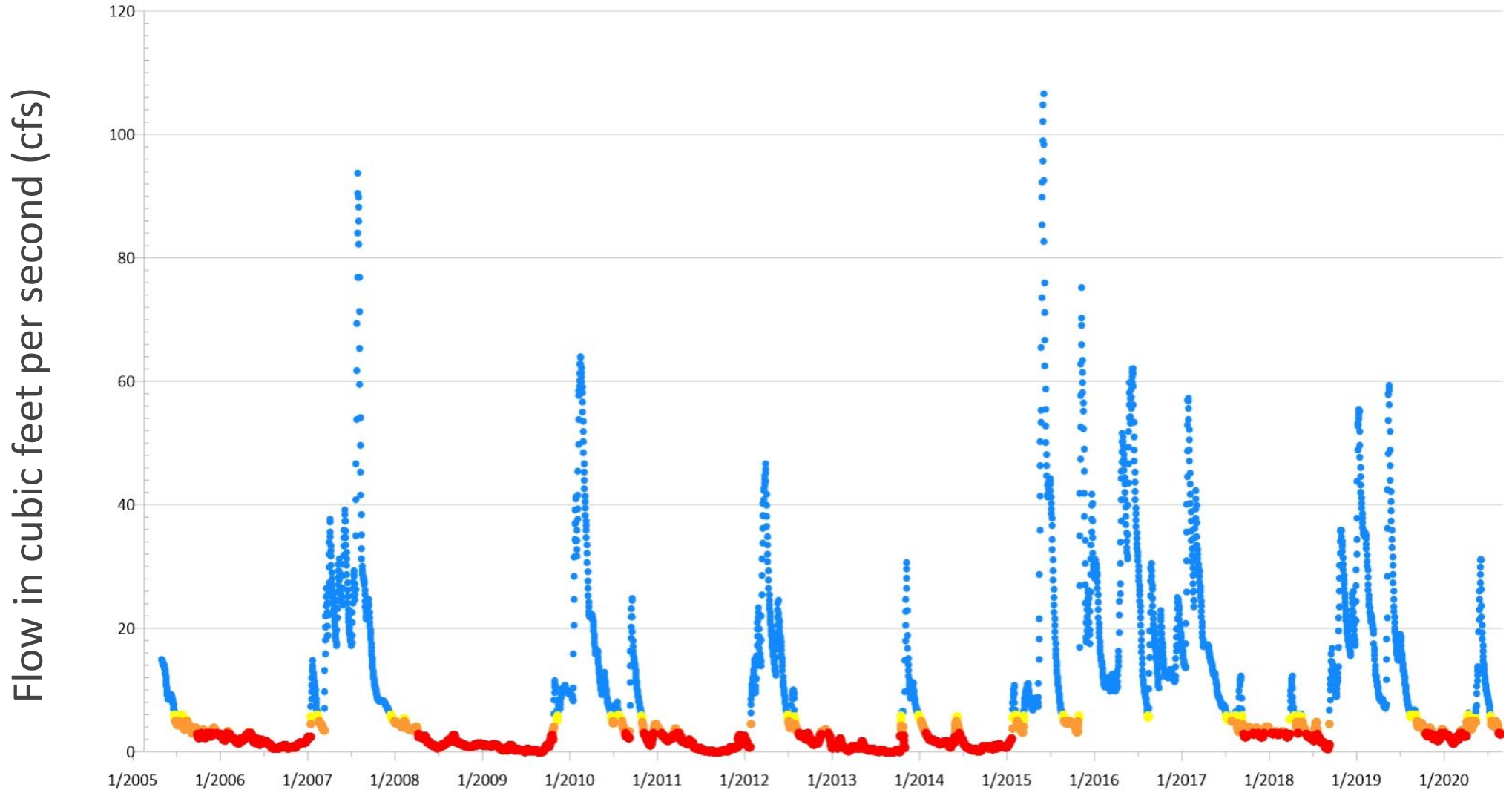
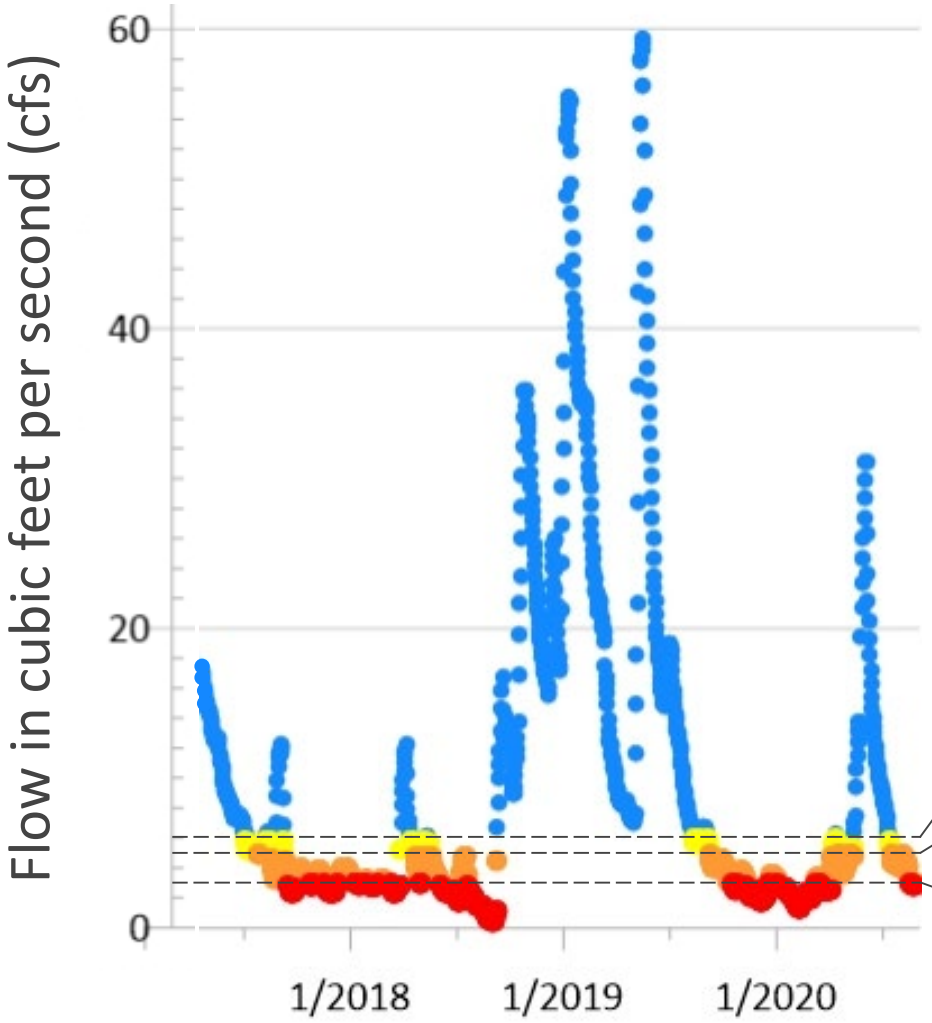


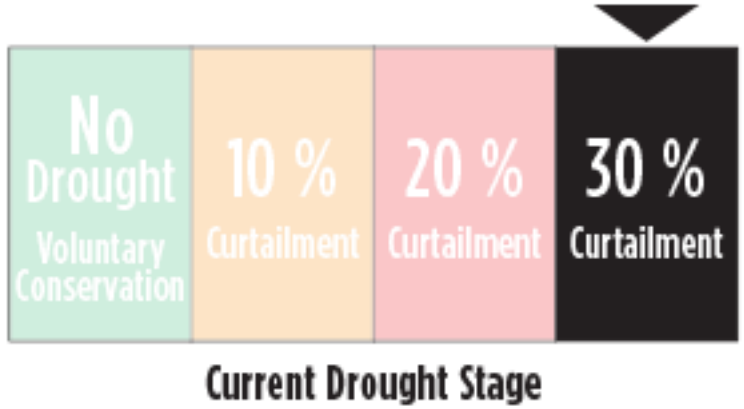
Figure 23. Recommended potential groundwater management zones shaded yellow and green. This maps is the same as Figure 22, but simplified to just the groundwater management zones.

Drought curtailments can keep the Well flowing through dry spells



Drought curtailment levels are based on flow from Jacob's Well





6 cfs or less: 10% reduction in pumping

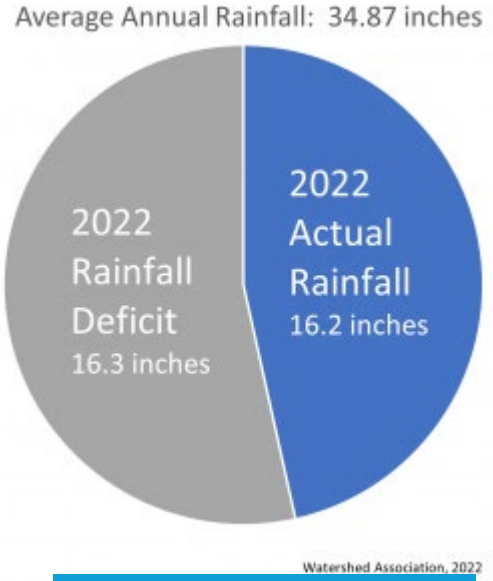
5 cfs or less: 20% reduction in pumping

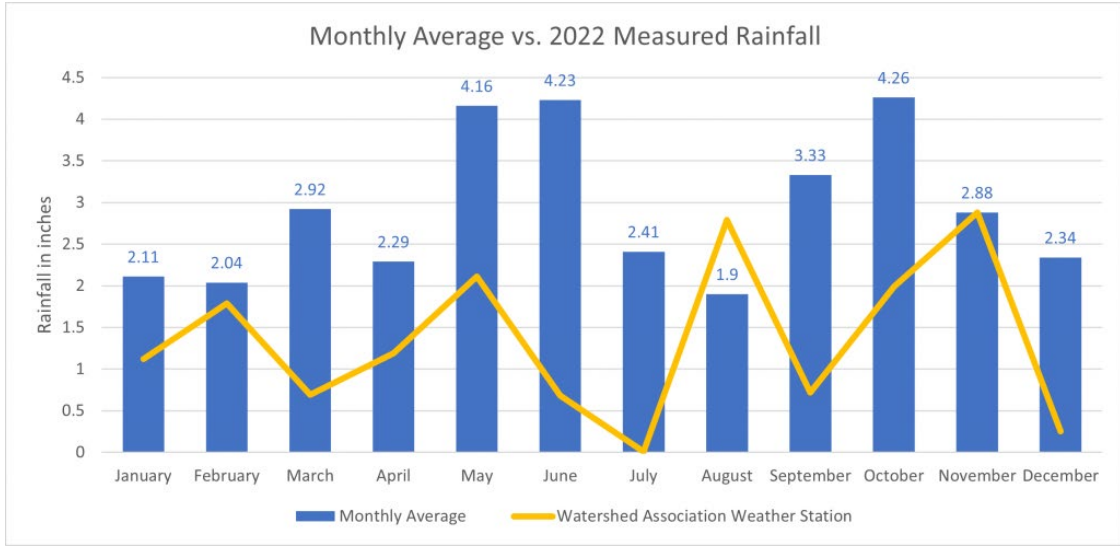
3 cfs or less: 30% reduction in pumping

Drought & Groundwater Pumping Impacts on Jacobs Well Flow

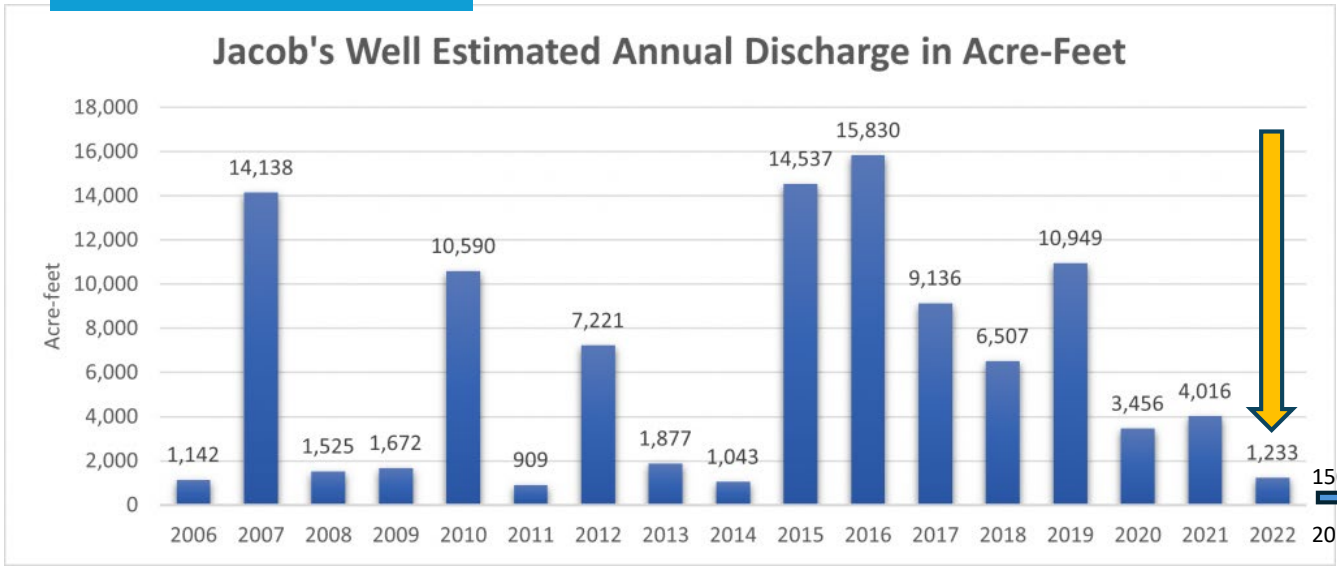
- Zero flow for the 6th time
- Less than have average rainfall
- Impacts on Cypress Creek and inflows to Blanco River and Edwards Aquifer
- Hauled water services very busy – residential well impacts

2022-23 IN REVIEW FOR JACOB'S WELL & CYPRESS CREEK

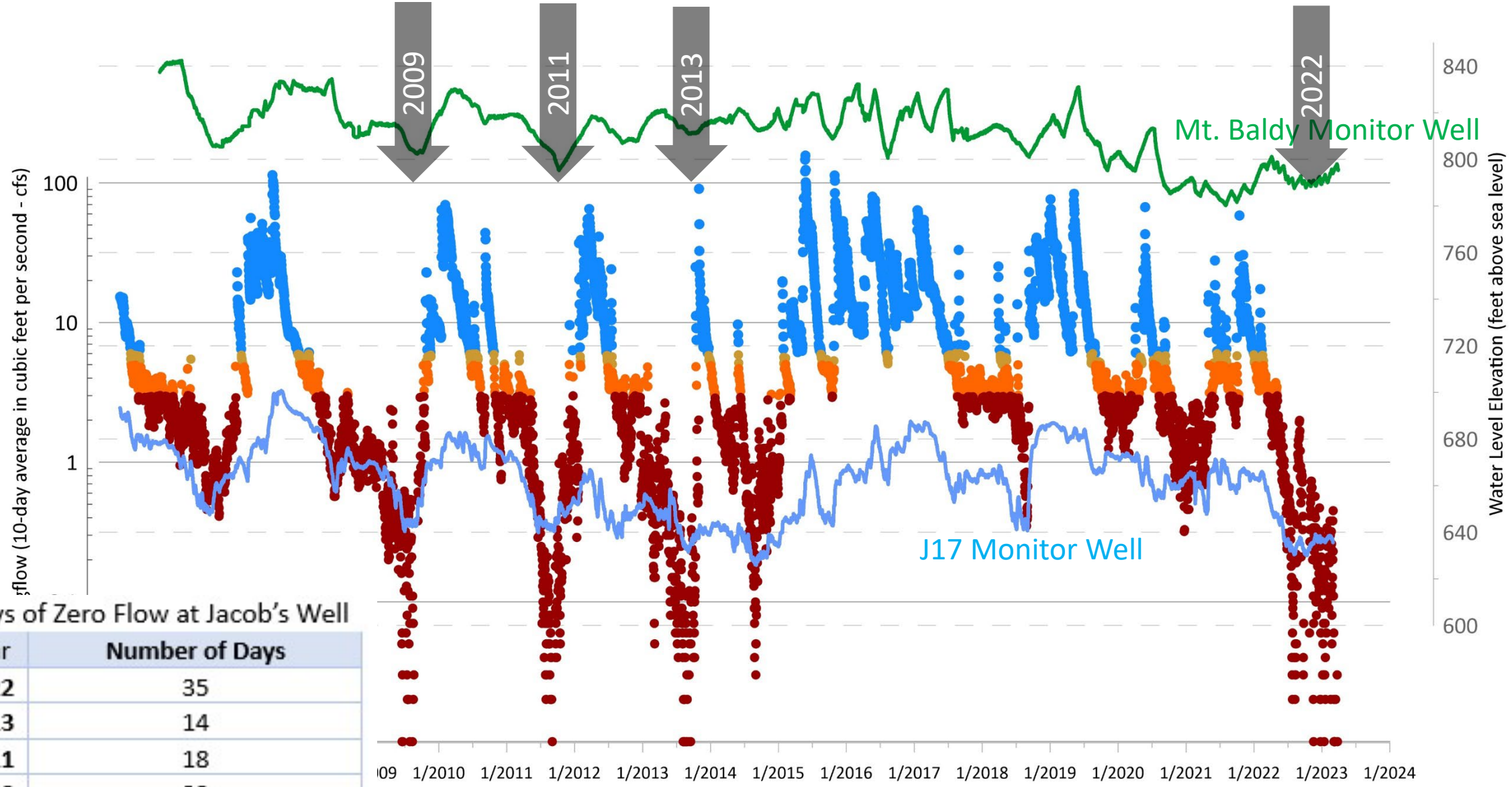




22.9 INCHES 2023



Jacobs Well flow record Compared to water levels



Days of Zero Flow at Jacob's Well

Year	Number of Days
2022	35
2013	14
2011	18
2009	33
2000	manual measurements only

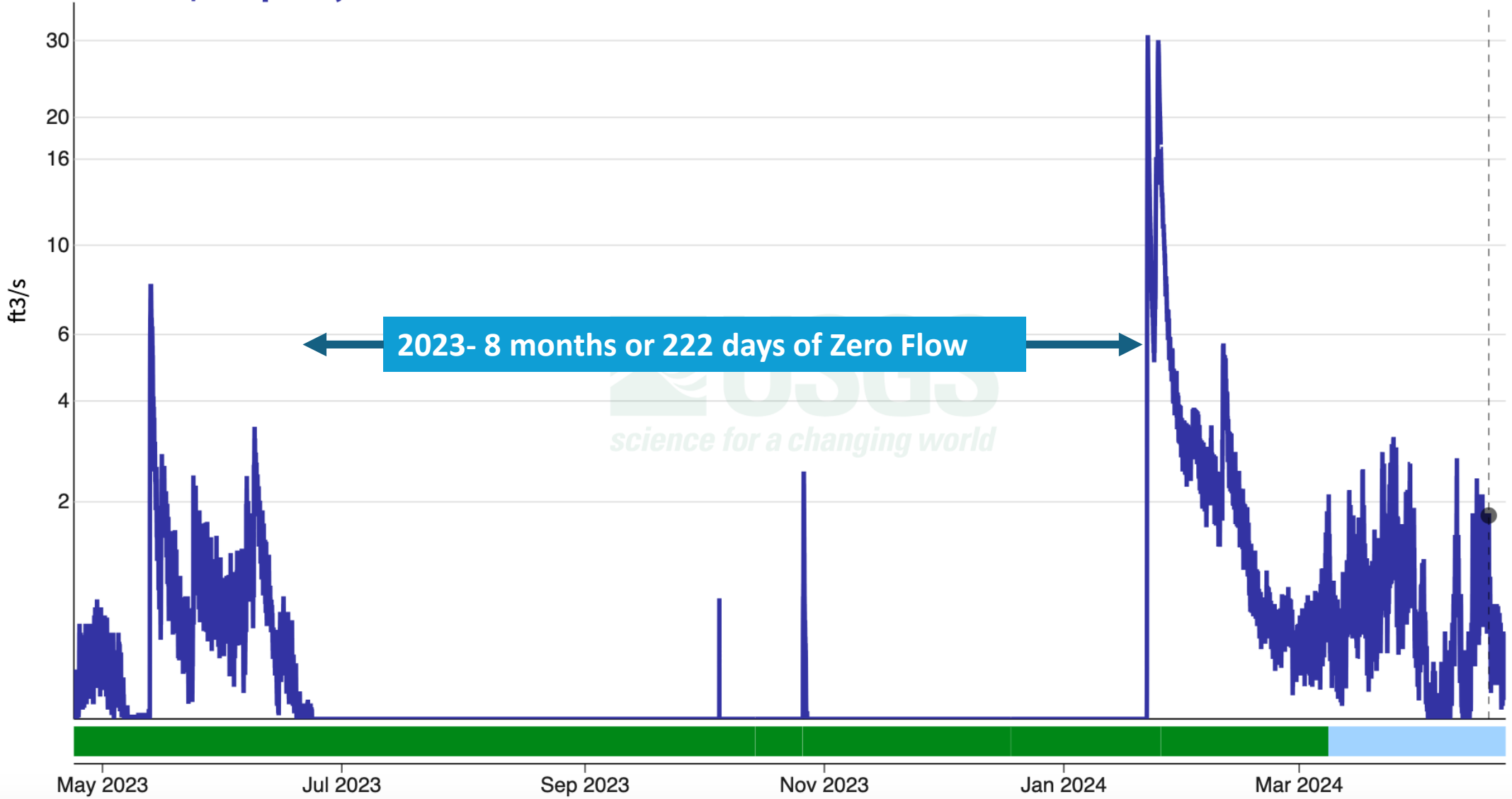
2023- 8 months or 222 days of Zero Flow

Jacobs Well Spg nr Wimberley, TX - 08170990

April 23, 2023 - April 22, 2024

Discharge, cubic feet per second

1.80 ft3/s - Apr 18, 2024 09:00:00 AM CDT



We have mapped 7,500 horizontal ft of Jacob's Well

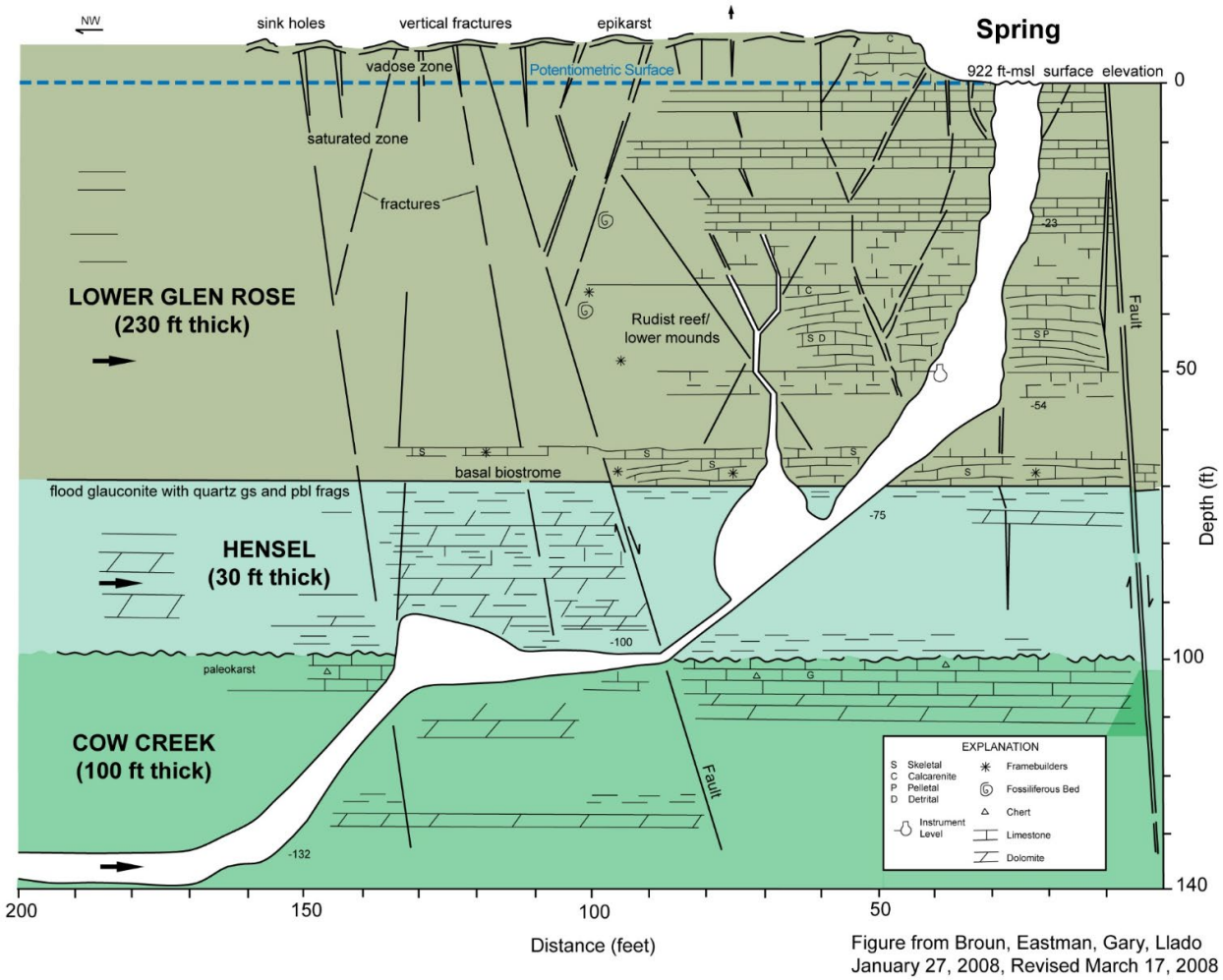
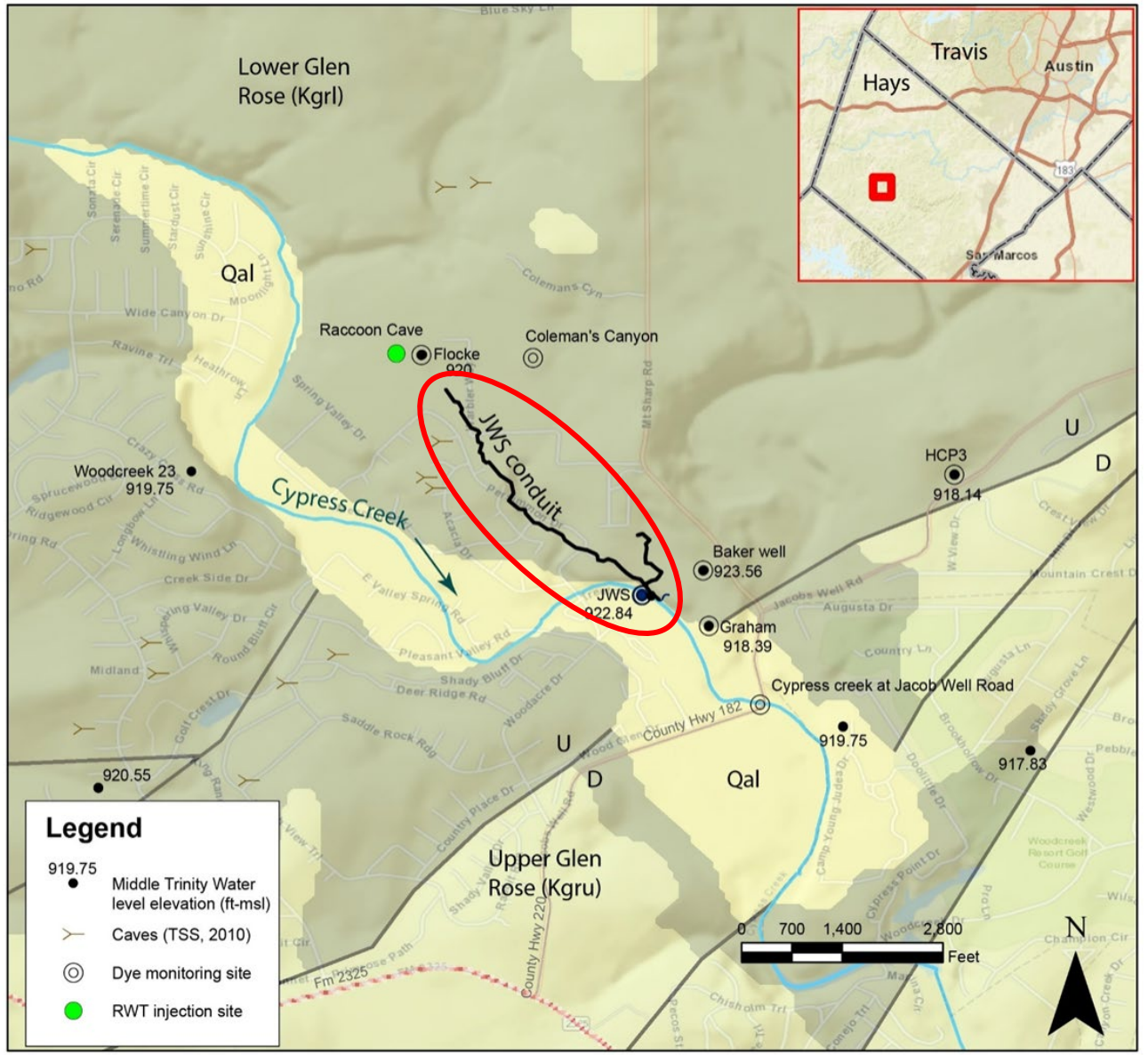


Figure from Broun, Eastman, Gary, Llado
January 27, 2008, Revised March 17, 2008

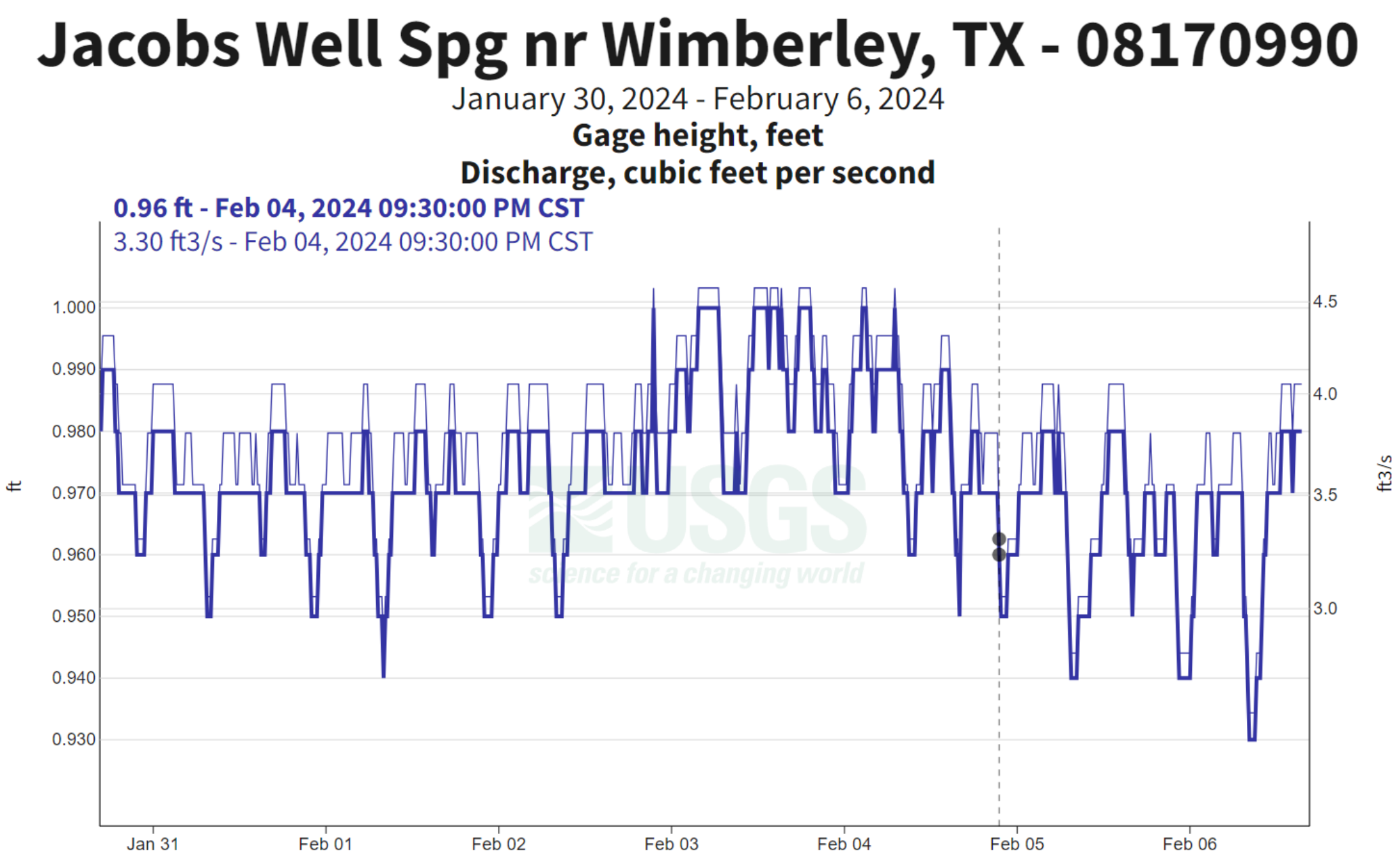


Daily impact of Aqua's pumping on Jacob's Well

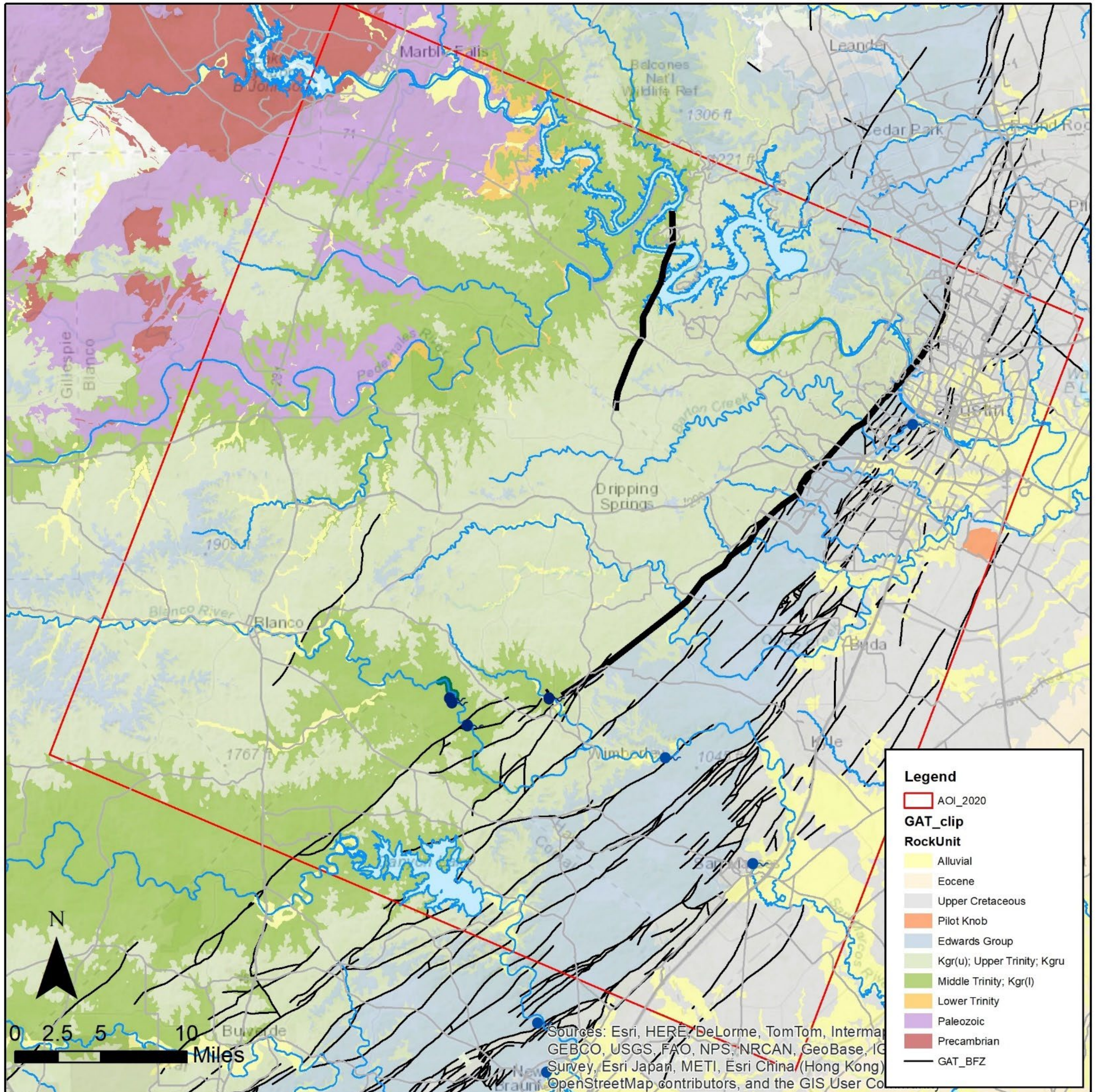
Water level in Aqua well (ft above sea level)

Flow at Jacob's Well (cubic ft per second)

Jacobs Well Spg nr Wimberley, TX - 08170990

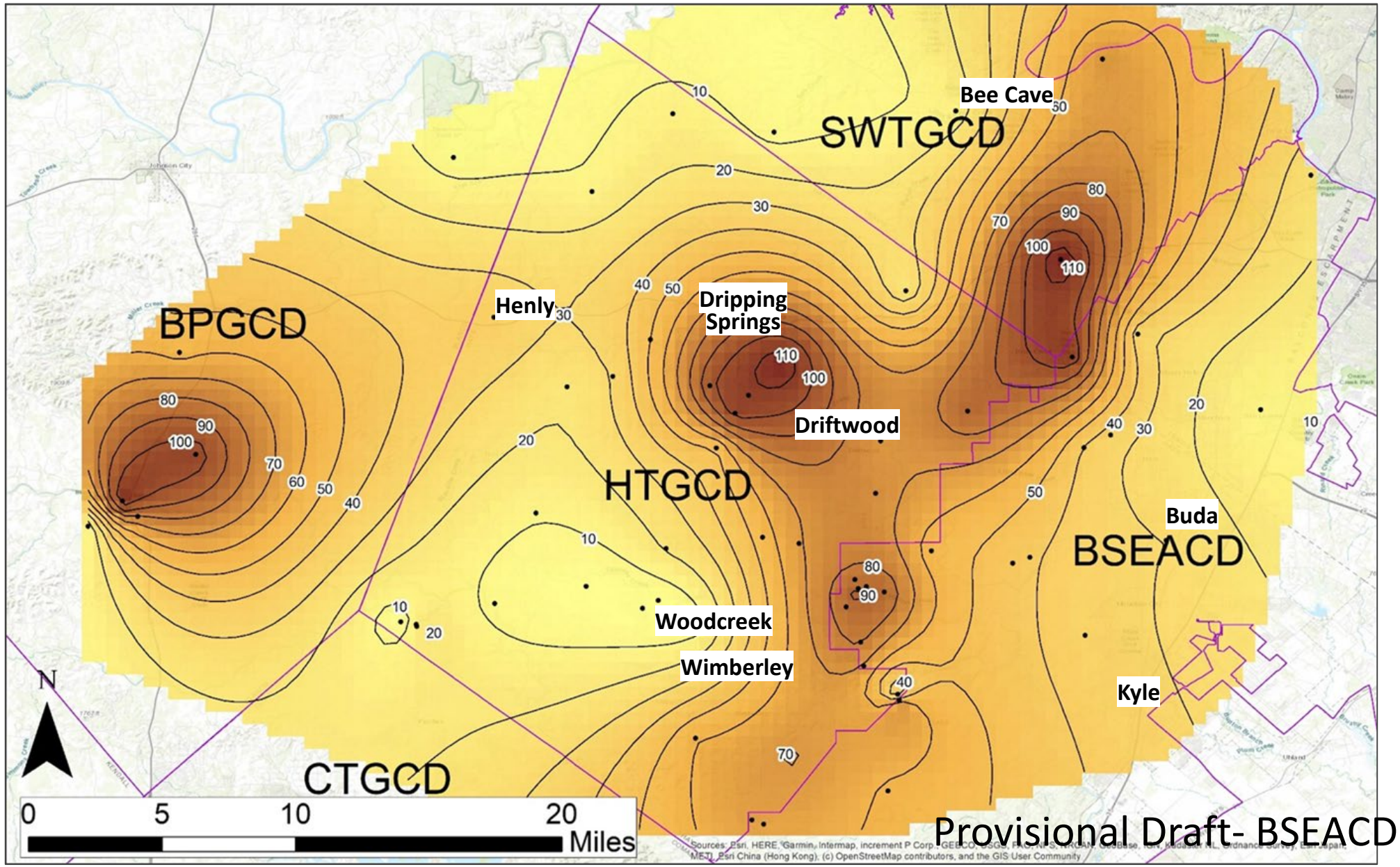


Just a few inches of drawdown have a dramatic effect on flow at Jacob's Well

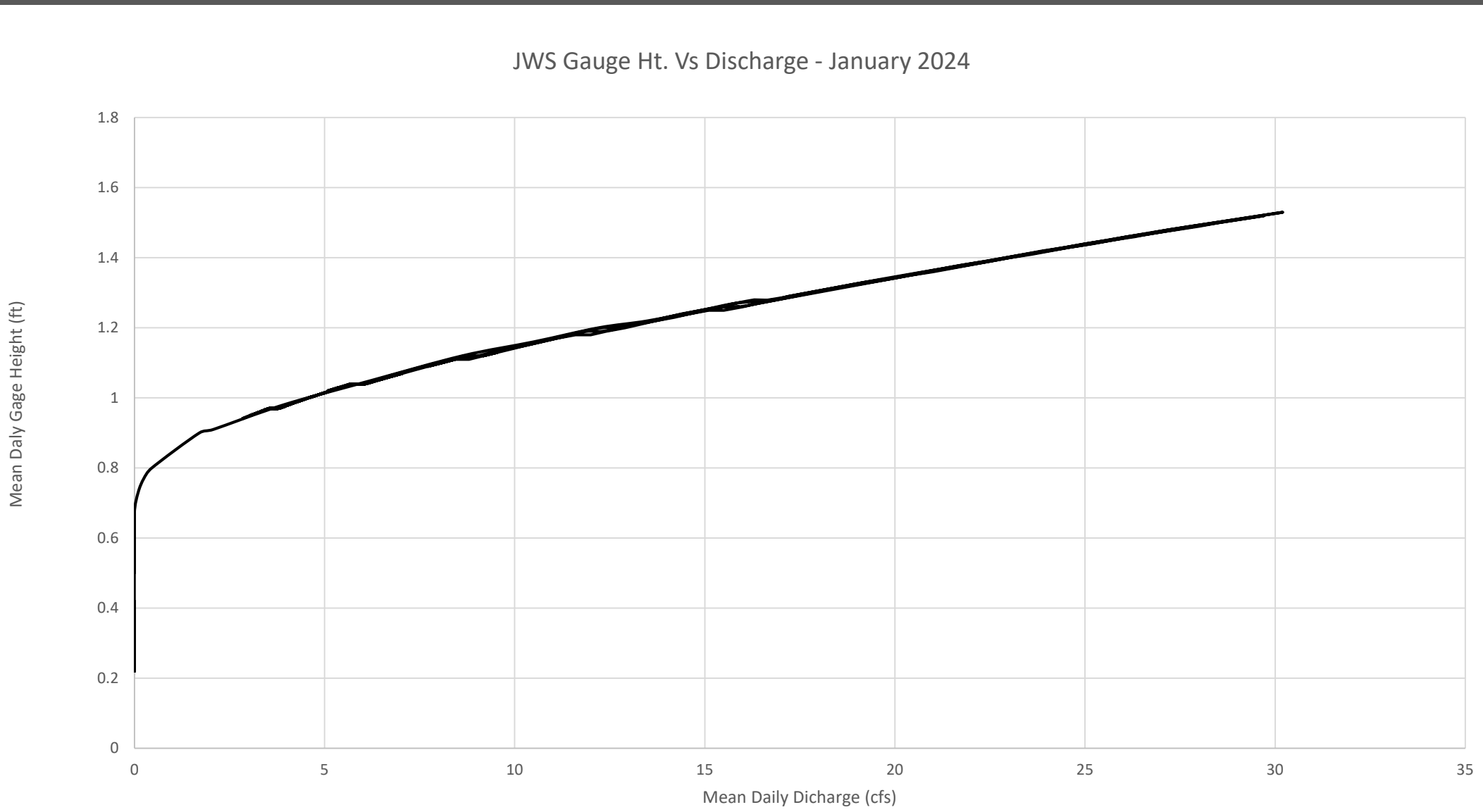


Legend
AOI_2020
GAT_clip
RockUnit
Alluvial
Eocene
Upper Cretaceous
Pilot Knob
Edwards Group
Kgr(u); Upper Trinity; Kgru
Middle Trinity; Kgr(l)
Lower Trinity
Paleozoic
Precambrian
GAT_BFZ
N
0 2.5 5 10
Miles
Marble Falls
Leander
Cedar Park
Balcones Nat'l Wildlife Ref
Dripping Springs
Blanco
Buda
Wimberley
Austin
Gillespie
Blanco River
Pedernales River
Barton Creek
Sources: Esri, HERE, DeLorme, TomTom, Intermap, GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Survey, Esri Japan, METI, Esri China (Hong Kong), OpenStreetMap contributors, and the GIS User Community

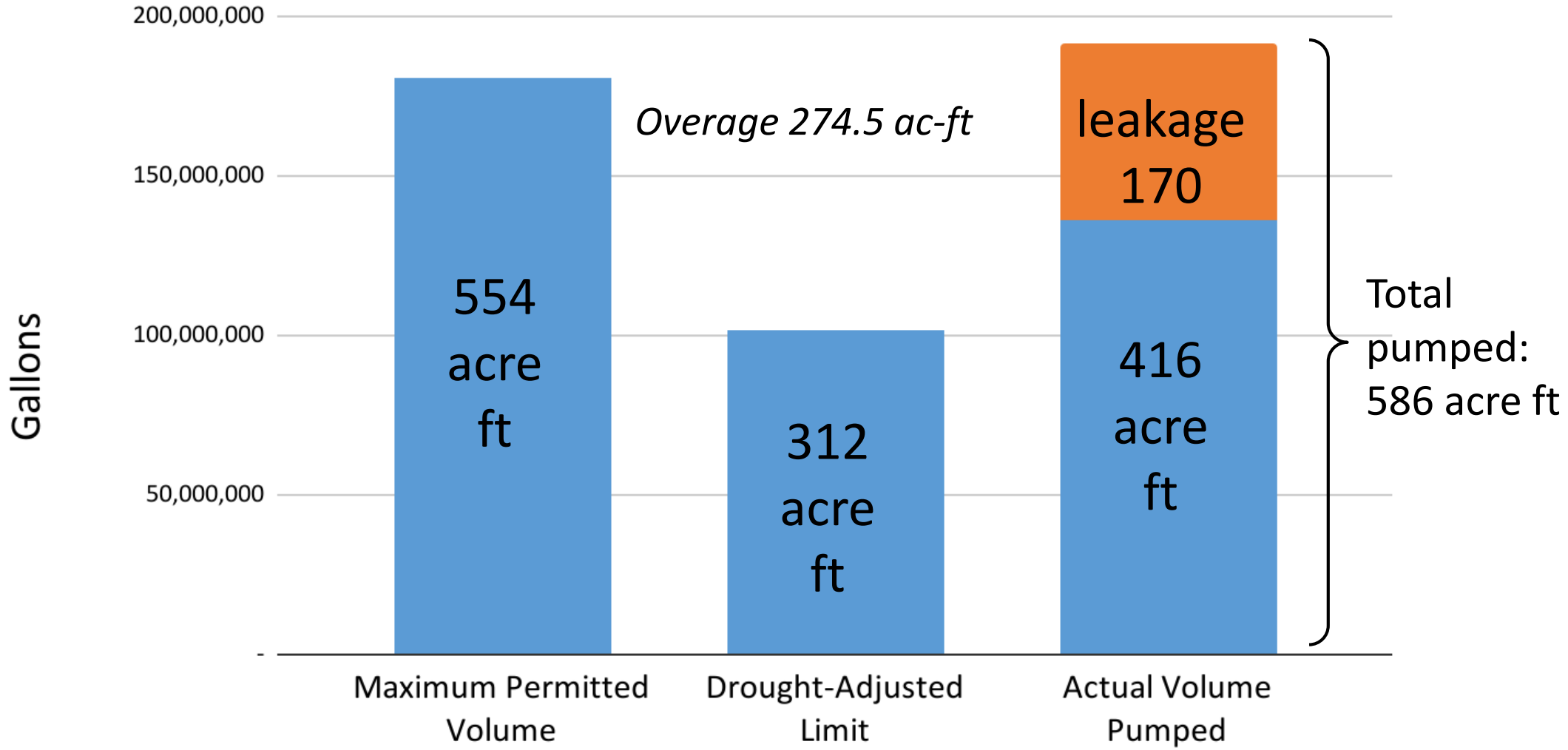
2018 vs 2023 Groundwater Levels in the Middle Trinity Aquifer



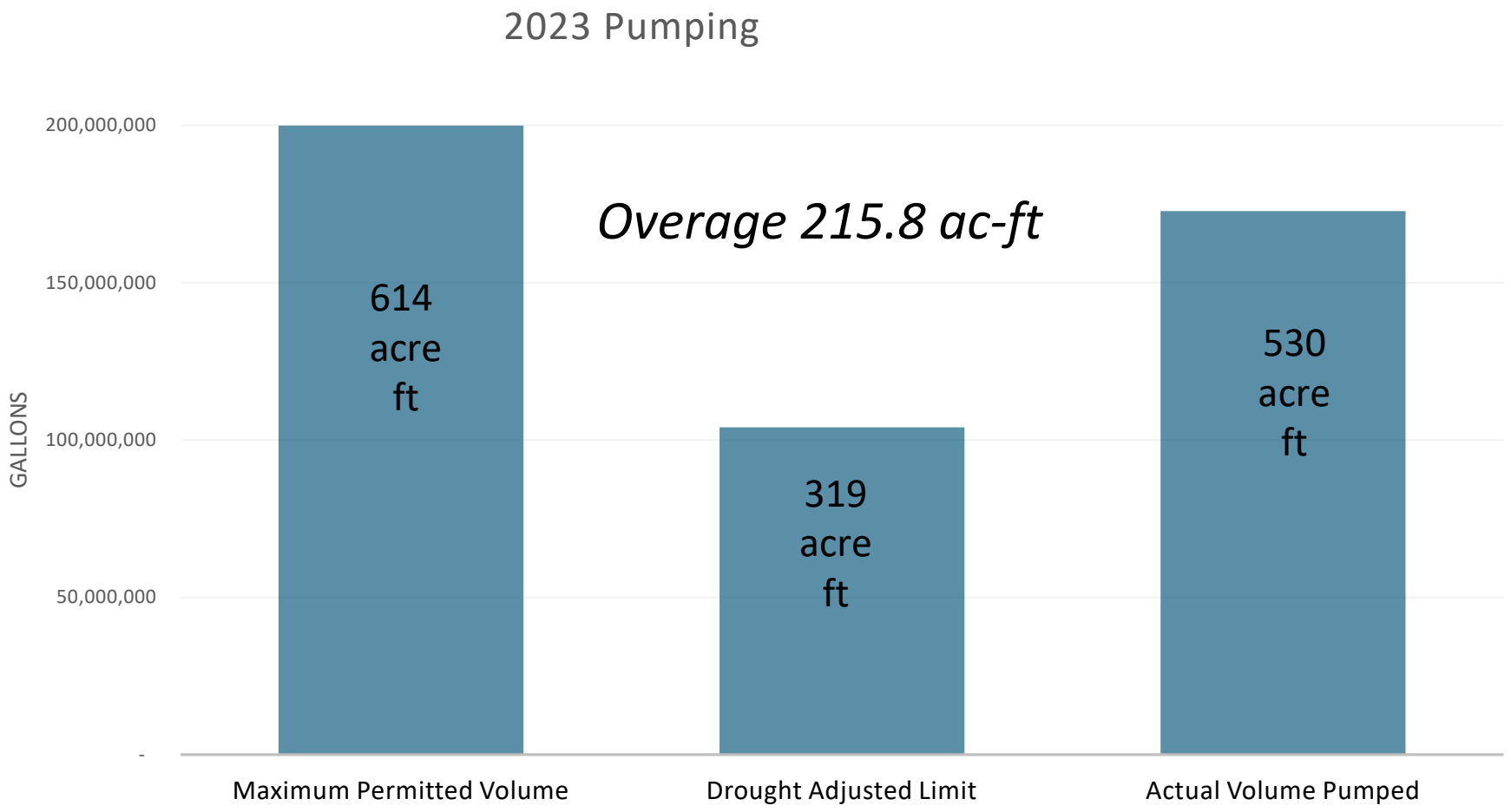
Provisional Draft- BSEACD


JWS Gauge Ht. Vs Discharge - January 2024
Mean Daly Gage Height (ft)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
5
10
15
20
25
30
35
Mean Daily Dicharge (cfs)

Aqua pumped far beyond permitted limits in 2022

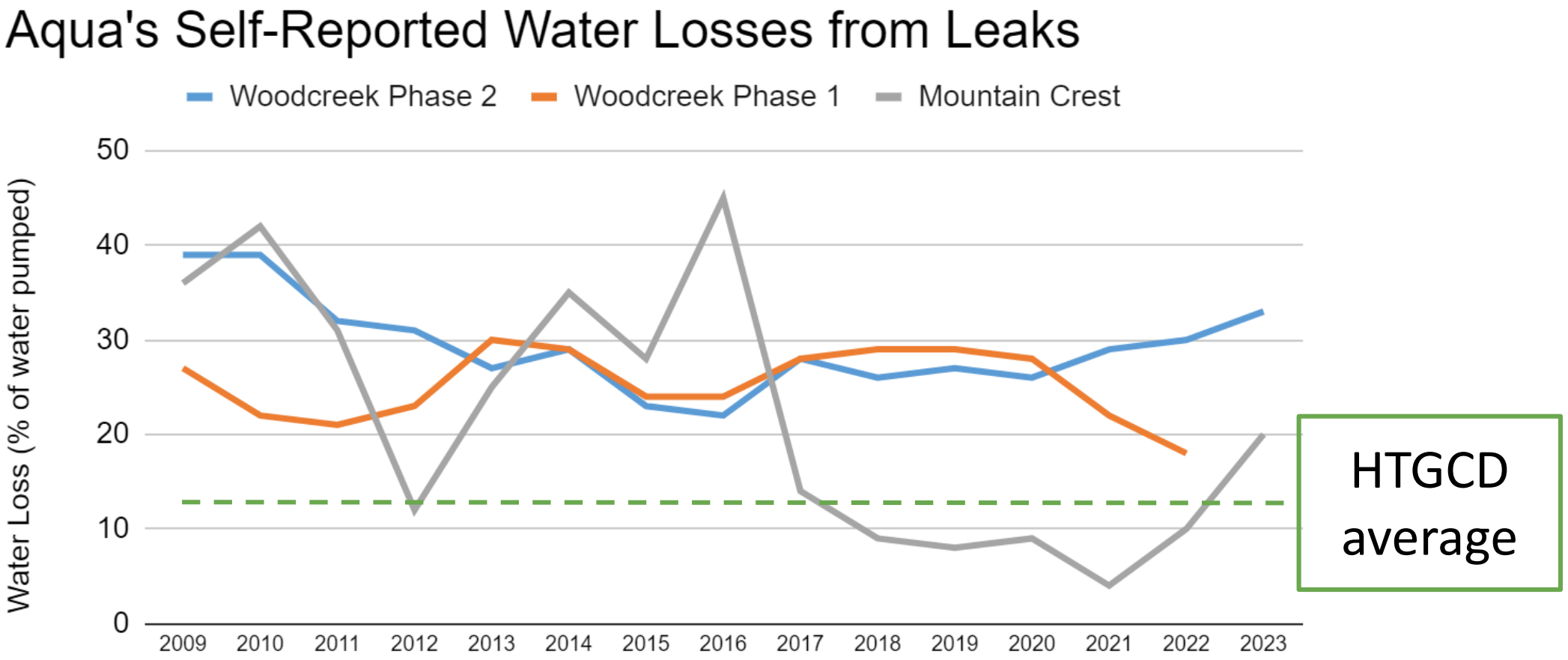


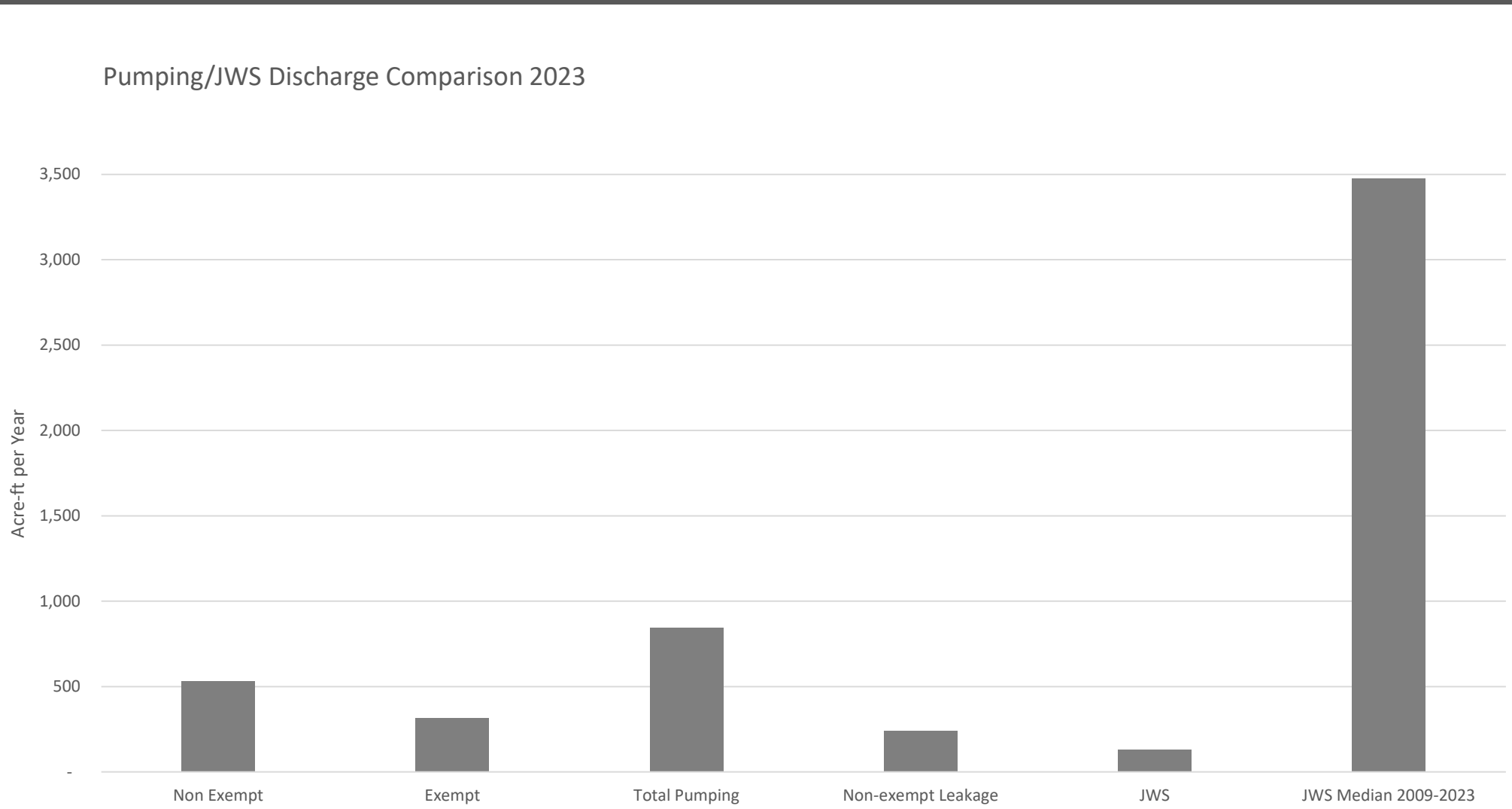
Includes WC PHs 1 & 2 , Mt Crest



Includes WC Ph1 -11, WC Ph 2, Mt Crest, WSP

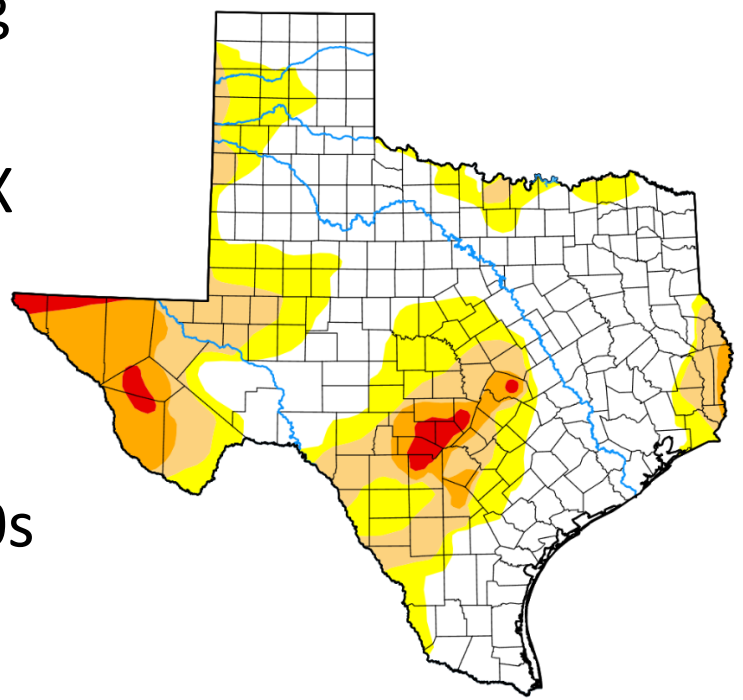
Aqua’s leaks are not new and not normal




Pumping/JWS Discharge Comparison 2023
Acre-ft per Year
3,500
3,000
2,500
2,000
1,500
1,000
500
-
Non Exempt
Exempt
Total Pumping
Non-exempt Leakage
JWS
JWS Median 2009-2023

Drought Considerations

- Is the current drought influencing flow at Jacob's Well?
- Has the over-pumping of Aqua TX wells influenced flow at Jacob's Well?
- Jacob's Well flowed throughout the drought of record in the 1950s



Map released: Thurs. February 1, 2024

Data valid: January 30, 2024 at 7 a.m. EST

Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Authors

United States and Puerto Rico Author(s):

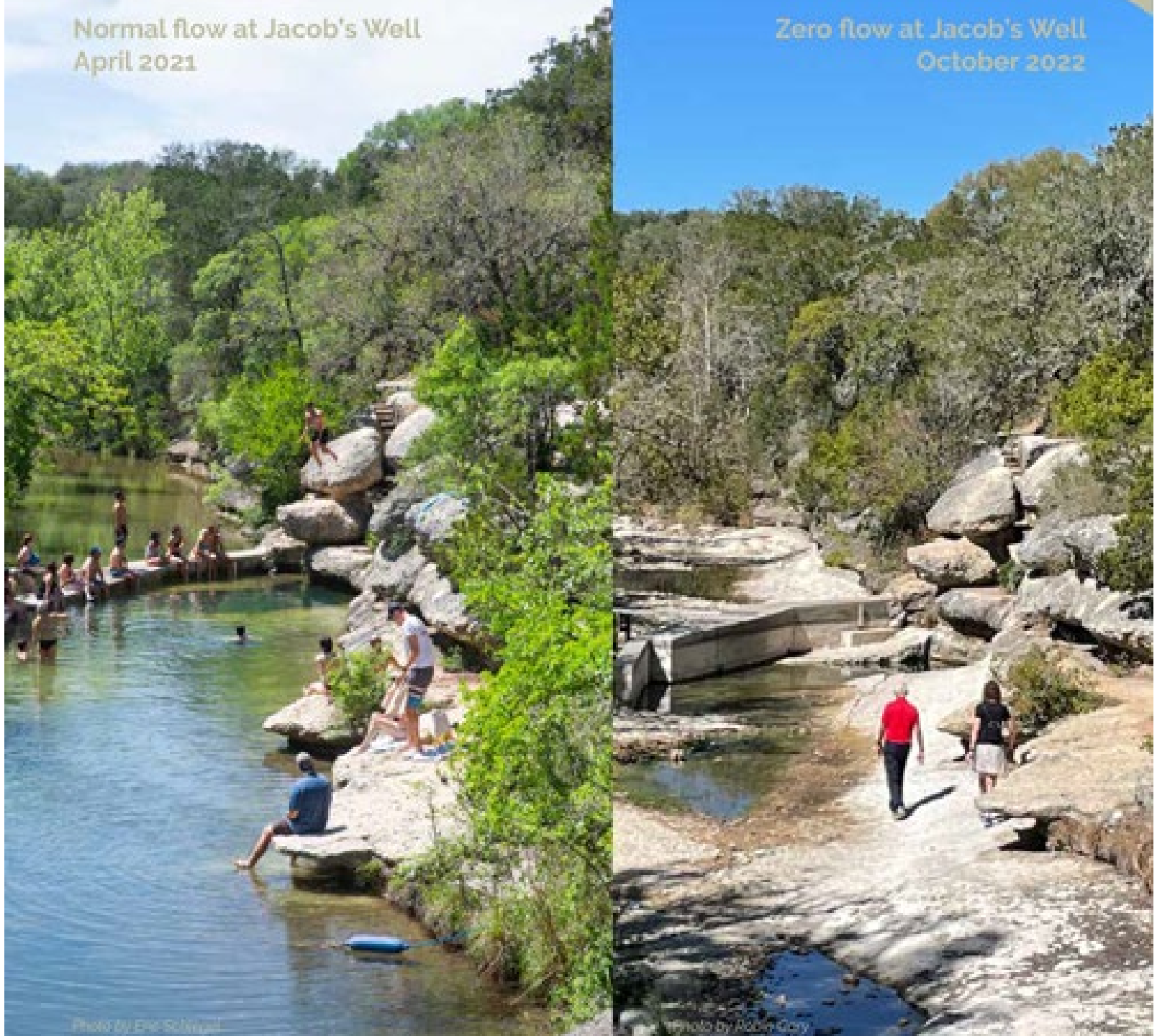
Brian Fuchs, National Drought Mitigation Center

Pacific Islands and Virgin Islands Author(s):

Curtis Riganti, National Drought Mitigation Center

Watershed Protection and Conservation Science

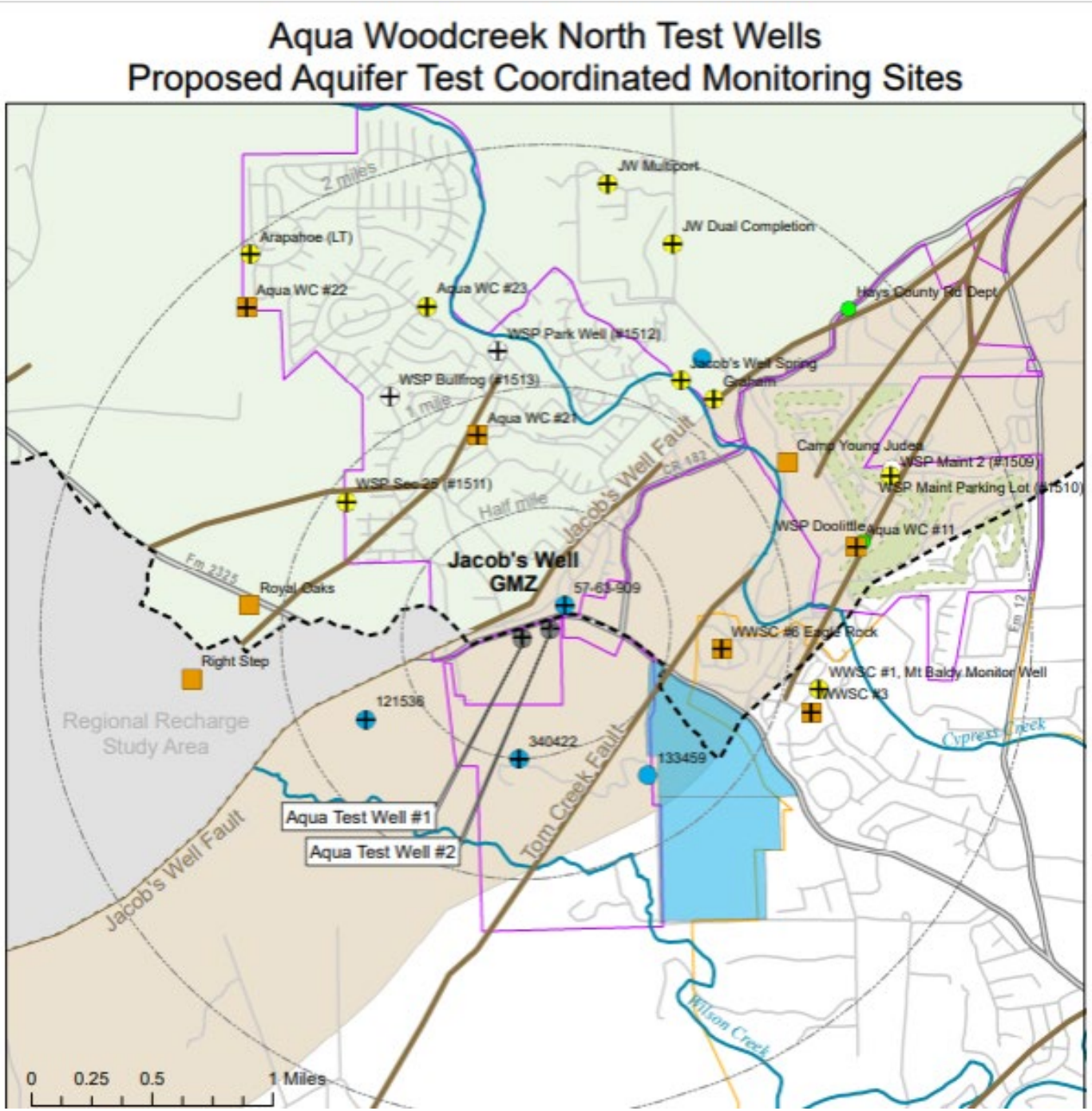
- Making science relevant
- Groundwater Monitoring
- Joint GW Planning
- BCWPP
- CRP
- Bacteria Sampling
- Education & Outreach
- Land Conservation
- Regional Water Task Force
- One Water Con. Development
- Comprehensive Planning
- Flood Infrastructure Fund
- Special Studies



Aqua's new test wells are not a solution

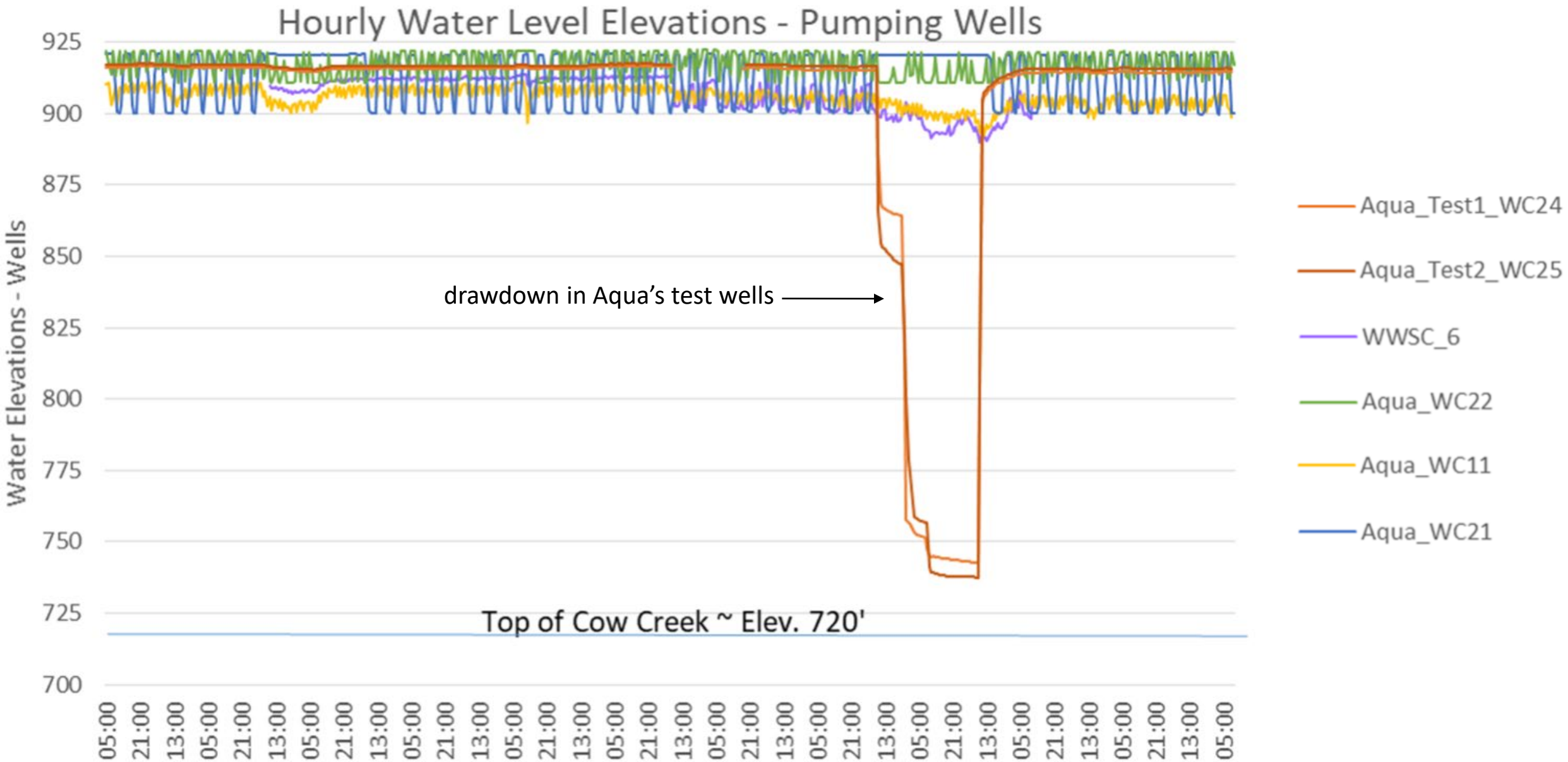
Aqua drilled its test wells *just outside* the JWGMZ.

The test wells draw from the Middle Trinity Aquifer.

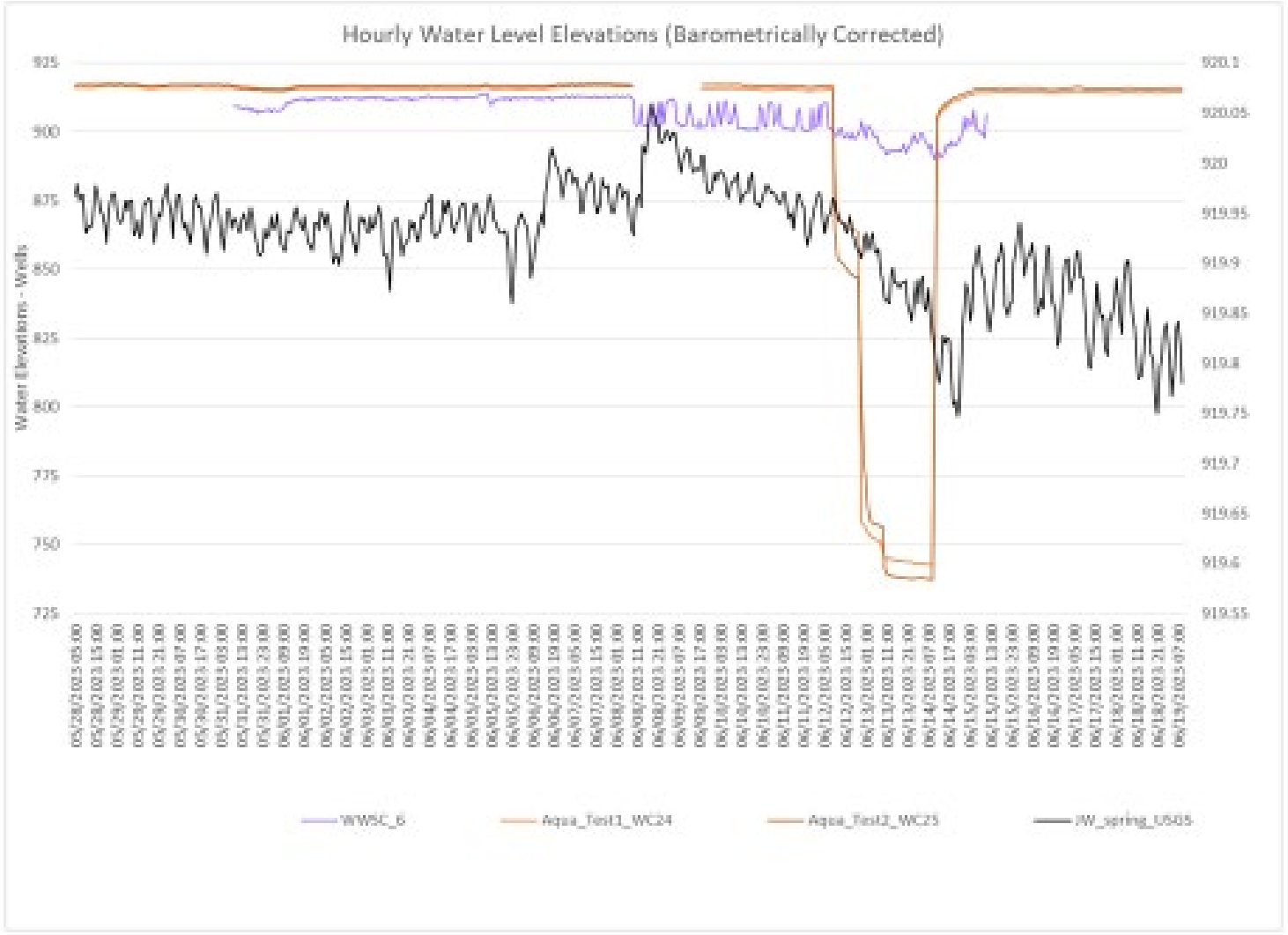


The facts about Aqua’s new test wells

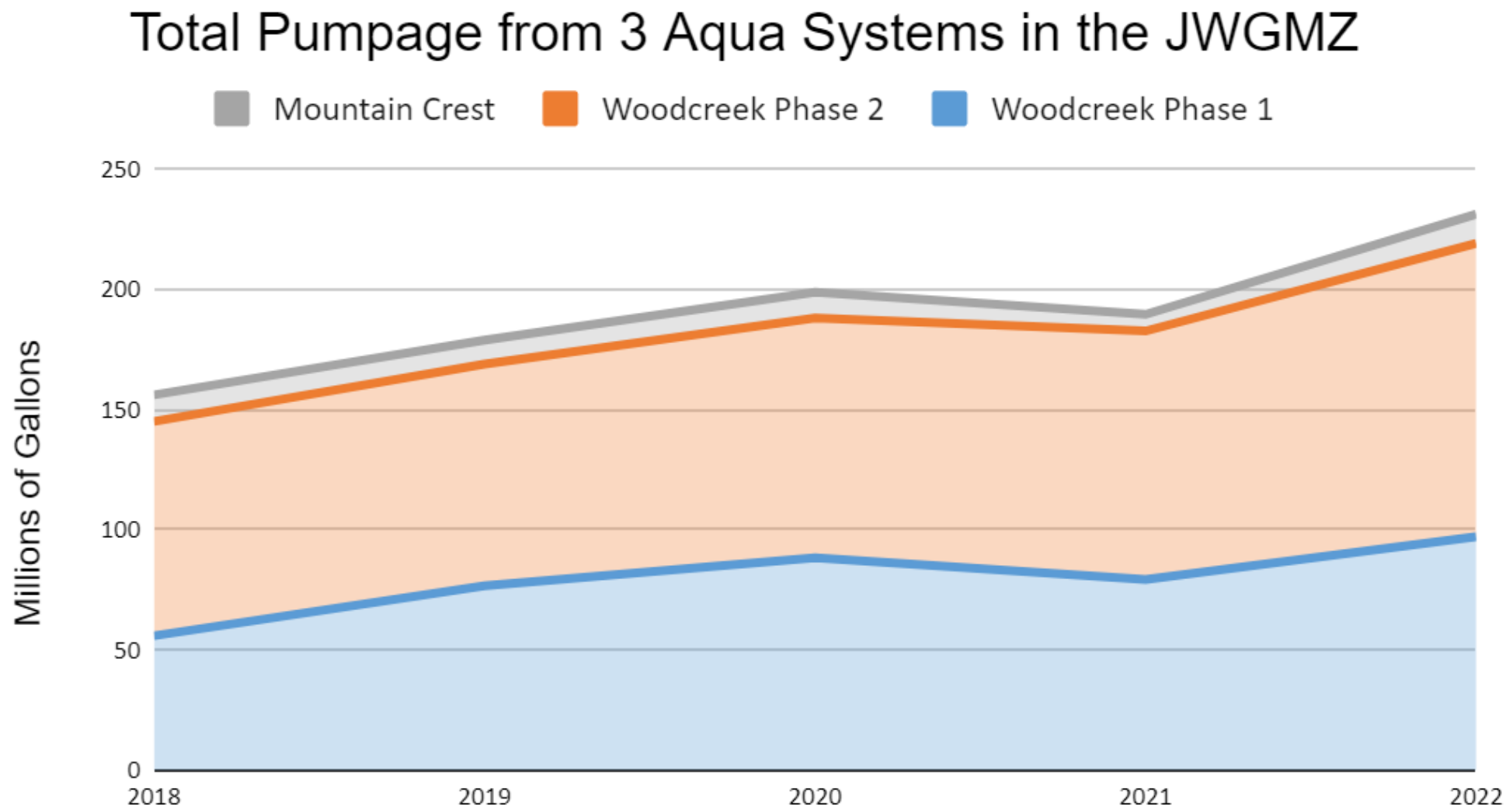
- Aqua drilled the test wells in the Middle Trinity Aquifer, the same aquifer as Jacob's Well.
- Jacob’s Well, Wimberley Water Supply Corp, residential wells, and monitoring wells were all impacted by pumping at the test wells.
- Wells down-dip of the Wimberley fault appeared unaffected by pumping at the test wells.
- Aqua claims that HTGCD is “purposefully withholding permits for these new wells,” but they have not even applied for permits.

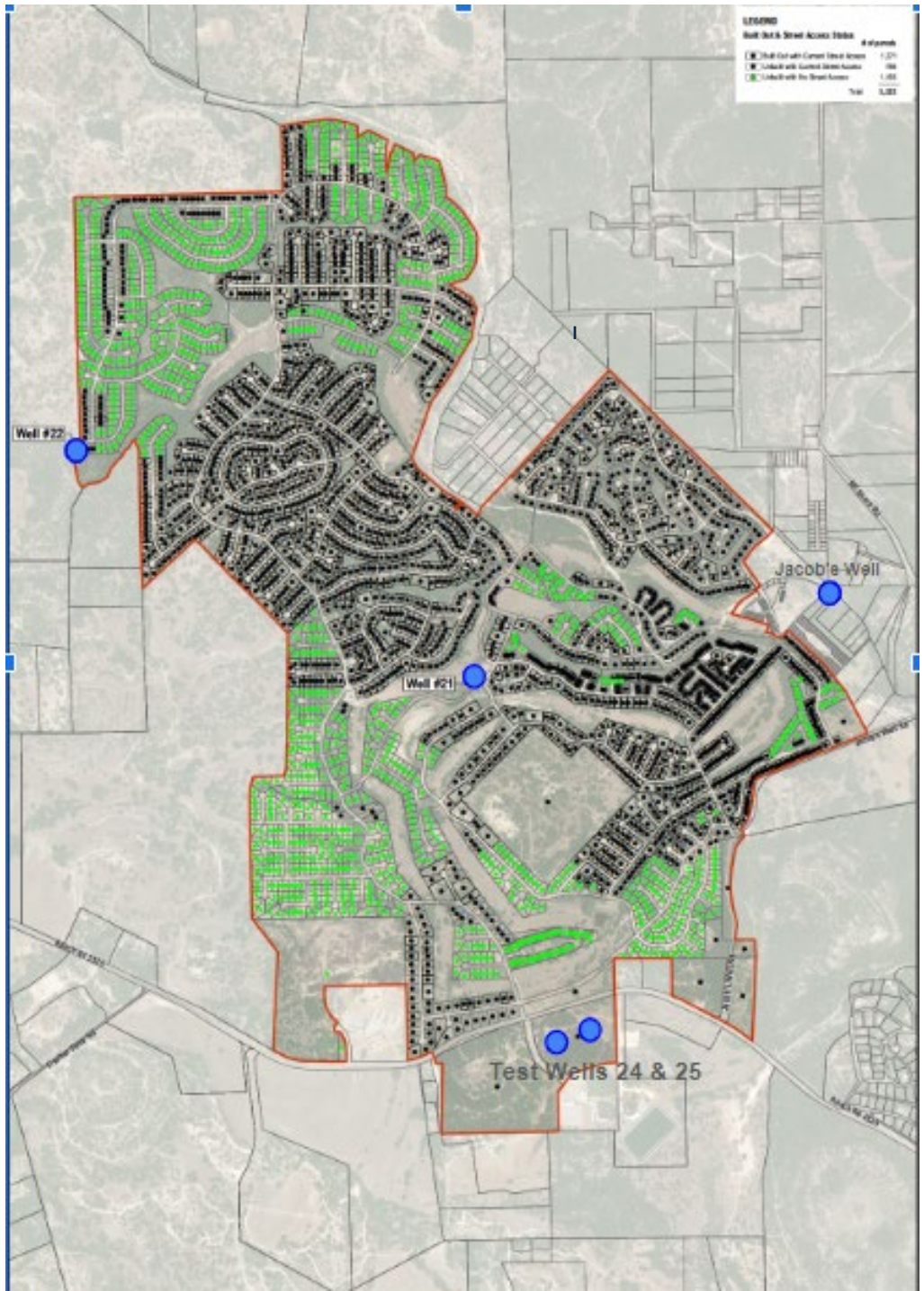

Hourly Water Level Elevations - Pumping Wells
Water Elevations - Wells
925
900
875
850
825
800
775
750
725
700
drawdown in Aqua's test wells
Top of Cow Creek ~ Elev. 720'
05:00
21:00
13:00
Aqua_Test1_WC24
Aqua_Test2_WC25
WWSC_6
Aqua_WC22
Aqua_WC11
Aqua_WC21

The purpose of the test wells was to *test* if Jacob's Well was impacted. If so, then they were not to be used. Tests concluded that *they did impact Jacob's Well*.



Demand for water is growing





The Future is not sustainable on the current path

Woodcreek North (Aqua TX Ph 2)

- 3600 total lots
- 1300 lots currently build out
- 2300 platted lots to be build out

2022 Water Utilization

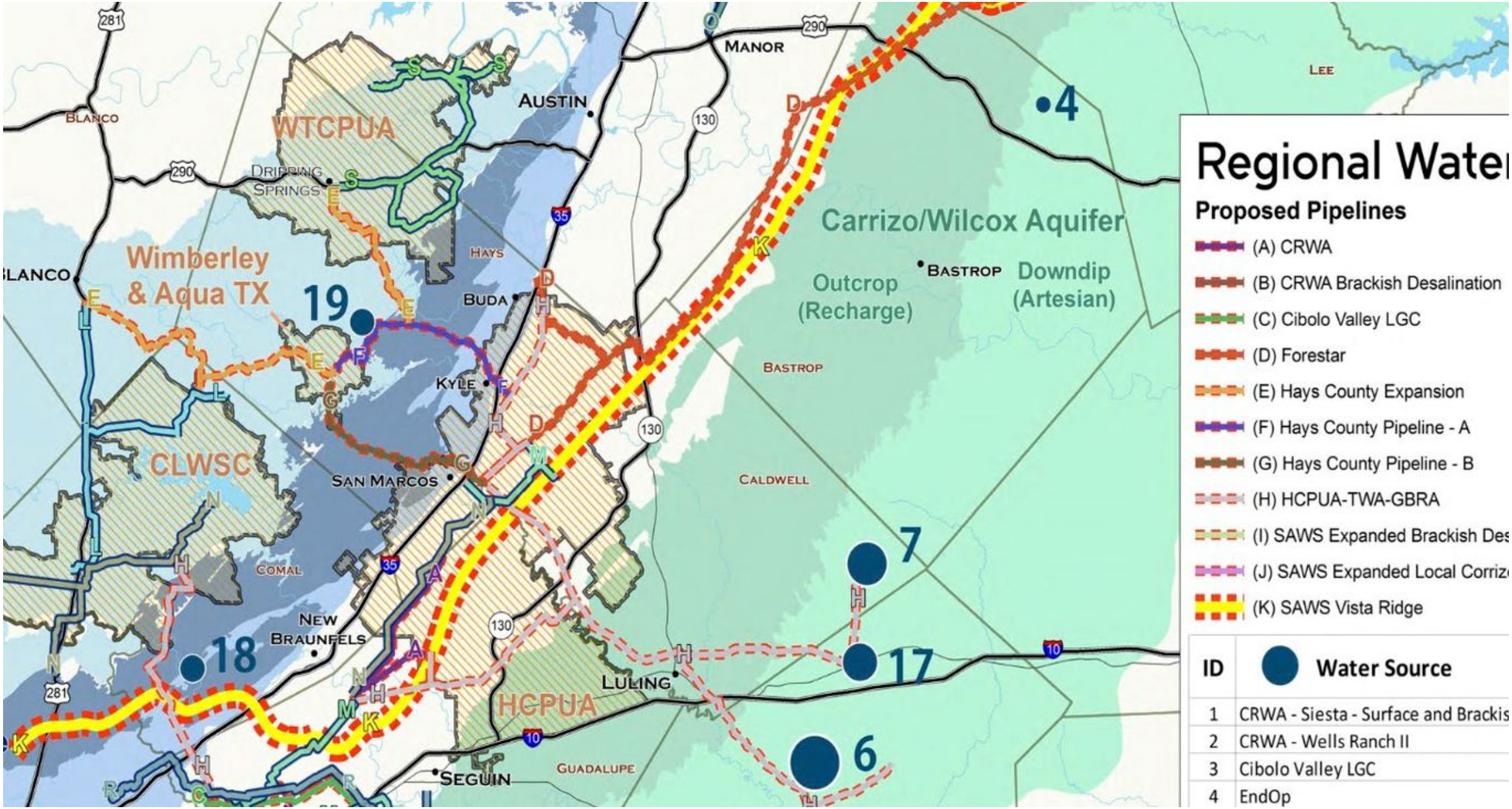
- **316 ac-ft or 269 gal/day/connection**

Projected Water Utilization at Full Build Out

- **3600 connections @ 269 gpd = 1085 ac-ft**

Summary

- The Community has come together to establish and Interlocal Agreement to continue and expand the Cypress Blanco Watershed Protection Plan.
- Drought curtailments in the JWGMZ were put in place to maintain some flow during drought conditions.
- Flow from JWS very sensitive to aquifer levels and pumping at Aqua TX wells.
- Aqua TX over pumping of drought curtailments in 2022 resulted in a NOAV from the HTGCD. 2023 pumping levels were similar to 2022.
- During a pumping test, Aqua TX test wells impacted flow at JWS, other municipal water supply wells and residential wells. Wells to the southeast of the test wells did not show any noticeable decline in water levels.
- Given current impacts and projected growth, the future of flowing water from JWS in not sustainable. New water is needed.
- How will depleting groundwater levels impact surface water quantity and quality in Cypress Creek and the Blanco River long term?


Regional Water
Proposed Pipelines
(A) CRWA
(B) CRWA Brackish Desalination
(C) Cibolo Valley LGC
(D) Forestar
(E) Hays County Expansion
(F) Hays County Pipeline - A
(G) Hays County Pipeline - B
(H) HCPUA-TWA-GBRA
(I) SAWS Expanded Brackish Des
(J) SAWS Expanded Local Corriz
(K) SAWS Vista Ridge
ID
Water Source
1 CRWA - Siesta - Surface and Brackis
2 CRWA - Wells Ranch II
3 Cibolo Valley LGC
4 EndOp
Carrizo/Wilcox Aquifer
Outcrop (Recharge)
Downdip (Artesian)
WTCPUA
Wimberley & Aqua TX
CLWSC
HCPUA
Austin
Manor
Bastrop
Buda
Kyle
San Marcos
New Braunfels
Luling
Seguin
Blanco
Dripping Springs
Hays
Caldwell
Guadalupe
Lee
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THANK YOU!

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