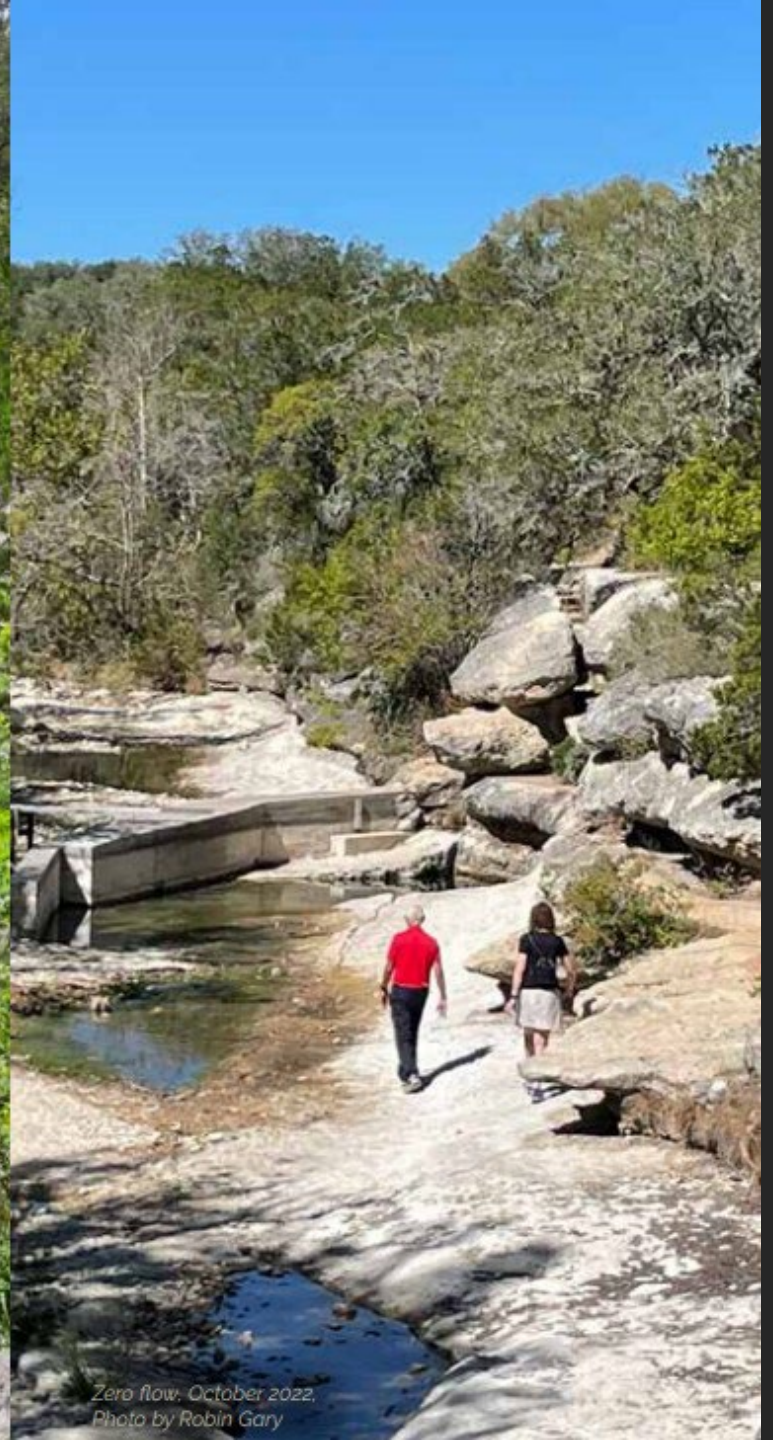


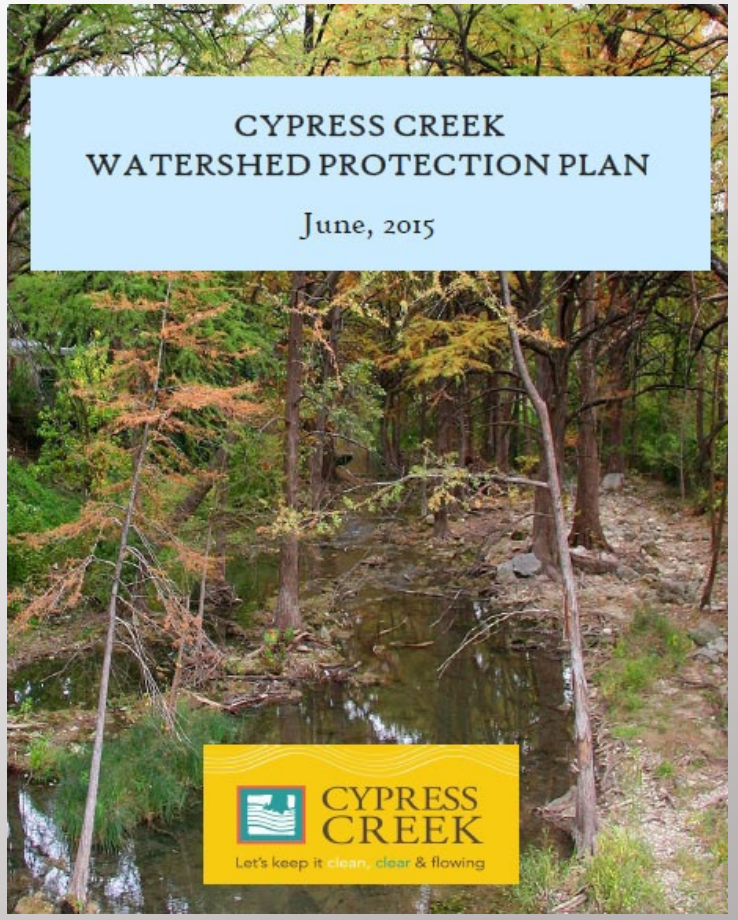
Clean Rivers Program
Coordinated Monitoring Meeting
March 15, 2023

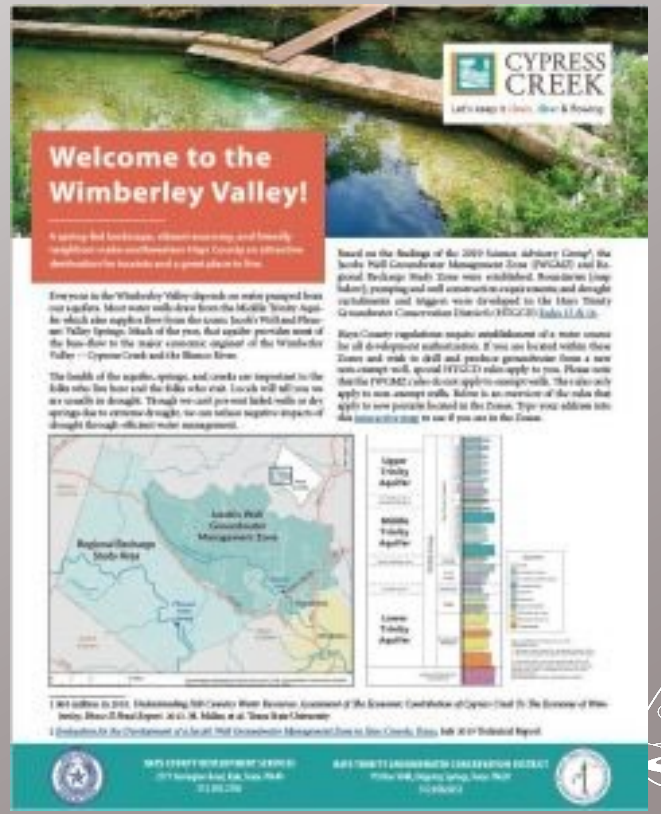
WATERSHED ASSOCIATION PROGRAM UPDATES

David Baker
Watershed Association
davidbaker@wimberleywatershed.org

CYPRESS CREEK WATERSHED PROTECTION PLAN & EPA 319 GRANT

- 319 Grant funds go until Aug 2023.
- Watershed Association helping wrap up deliverables.
- Working on a sustainability plan.
- Cypress Creek listed on 303D list for impaired DO and aquatic life.
- Clear need to continue work.





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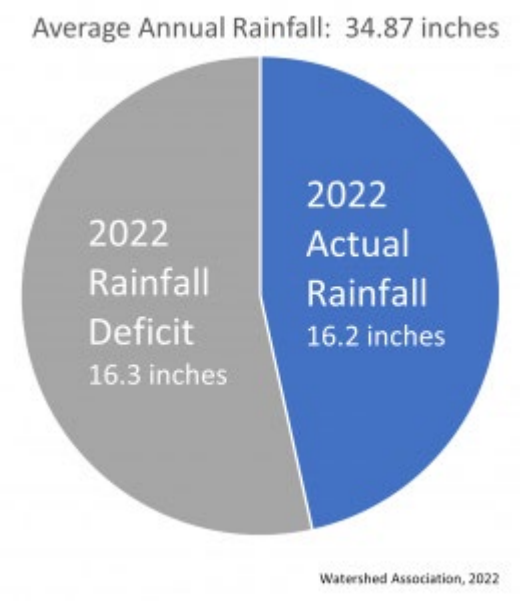
DROUGHT & GROUNDWATER PUMPING IMPACTS ON JACOBS WELL FLOW

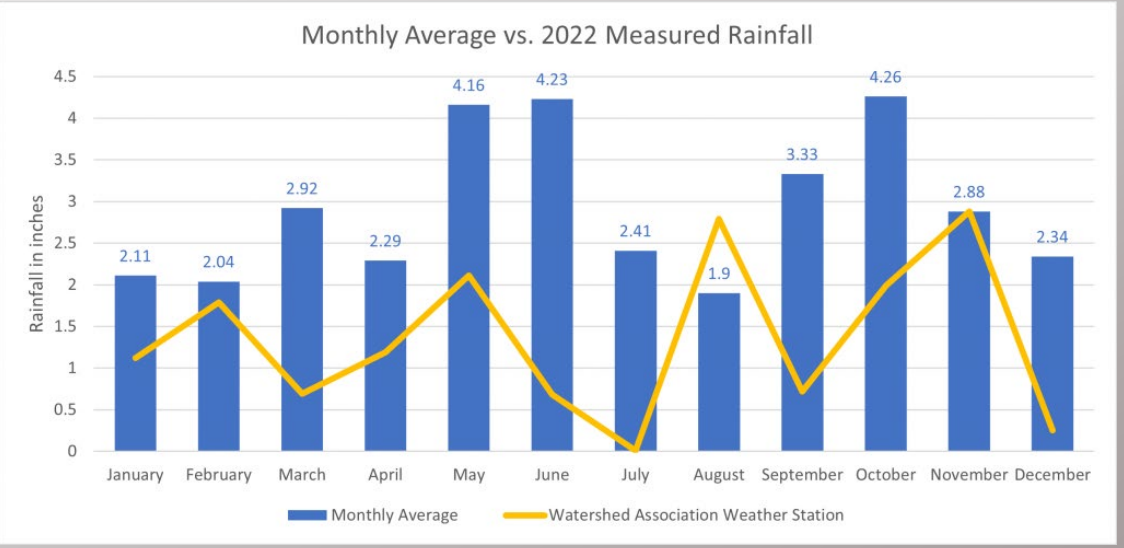
- Zero flow for the 5th time
- Less than have average rainfall
- Impacts on Cypress Creek and inflows to Blanco River and Edwards Aquifer

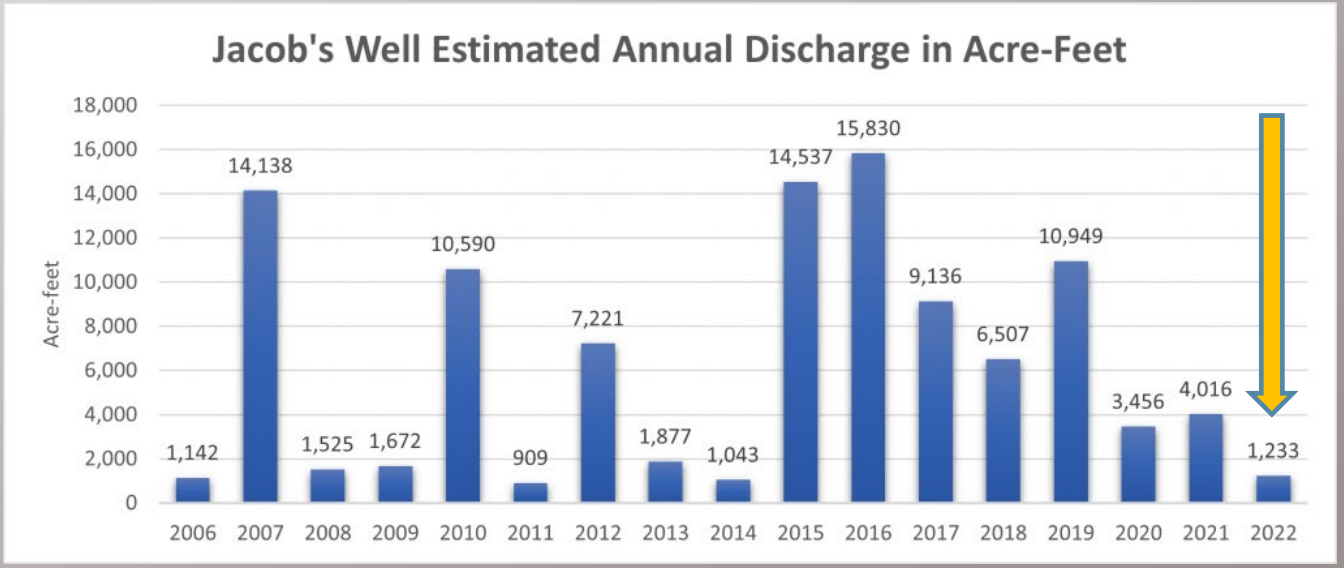
Days of Zero Flow at Jacob's Well

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

2022 IN REVIEW FOR JACOB'S WELL & CYPRESS CREEK







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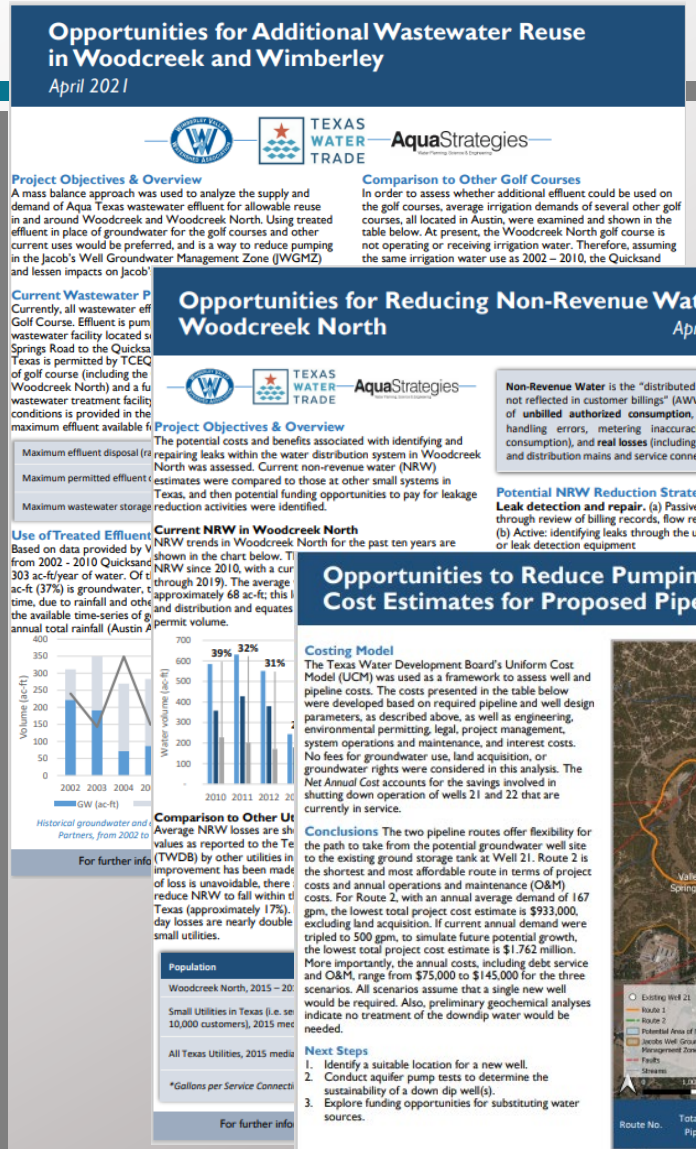
DROUGHT & GROUNDWATER PUMPING IMPACTS ON JACOBS WELL FLOW

- Woodcreek North development surge – 400 additional lots on the market.
- Aqua Texas test wells and coordinated monitoring effort for aquifer test.
- Research and discussions with Aqua Texas on ways to reduce impact to spring flow.



Opportunities for Additional Wastewater Reuse in Woodcreek and Wimberley

April 2021

TEXAS WATER TRADE — AquaStrategies

Project Objectives & Overview

A mass balance approach was used to analyze the supply and demand of Aqua Texas wastewater effluent for allowable reuse in and around Woodcreek and Woodcreek North. Using treated effluent in place of groundwater for the golf courses and other current uses would be preferred, and is a way to reduce pumping in the Jacob's Well Groundwater Management Zone (JWGMZ) and lessen impacts on Jacob'

Comparison to Other Golf Courses

In order to assess whether additional effluent could be used on the golf courses, average irrigation demands of several other golf courses, all located in Austin, were examined and shown in the table below. At present, the Woodcreek North golf course is not operating or receiving irrigation water. Therefore, assuming the same irrigation water use as 2002 – 2010, the Quicksand

Current Wastewater P

Currently, all wastewater eff Golf Course. Effluent is pum wastewater facility located s Springs Road to the Quicksa Texas is permitted by TCEQ of golf course (including the Woodcreek North) and a fu wastewater treatment facilit conditions is provided in the maximum effluent available f

Maximum effluent disposal (ra

Maximum permitted effluent

Maximum wastewater storage

Use of Treated Effluent

Based on data provided by V from 2002 - 2010 Quicksand 303 ac-ft/year of water. Of t ac-ft (37%) is groundwater, time, due to rainfall and othe the available time-series of g annual total rainfall (Austin A

Historical groundwater and Partners, from 2002 to

For further info

Opportunities for Reducing Non-Revenue Water in Woodcreek North

April 2021

TEXAS WATER TRADE — AquaStrategies

Non-Revenue Water is the "distributed volume of water that is not reflected in customer billings" (AWWA, 2012). It is made up of **unbilled authorized consumption**, **apparent losses** (data handling errors, metering inaccuracies, and unauthorized consumption), and **real losses** (including leakage on transmission and distribution mains and service connections).

Project Objectives & Overview

The potential costs and benefits associated with identifying and repairing leaks within the water distribution system in Woodcreek North was assessed. Current non-revenue water (NRW) estimates were compared to those at other small systems in Texas, and then potential funding opportunities to pay for leakage reduction activities were identified.

Current NRW in Woodcreek North

NRW trends in Woodcreek North for the past ten years are shown in the chart below. Tl NRW since 2010, with a cur through 2019). The average approximately 68 ac-ft; this l and distribution and equates permit volume.

Potential NRW Reduction Strategies

Leak detection and repair. (a) Passive: identifying leaks through review of billing records, flow records, or similar data; (b) Active: identifying leaks through the use of visual inspection or leak detection equipment

Comparison to Other Ut

Average NRW losses are sh values as reported to the Te (TWDB) by other utilities in improvement has been made of loss is unavoidable, there reduce NRW to fall within t Texas (approximately 17%). day losses are nearly double small utilities.

Population
Woodcreek North, 2015 – 20
Small Utilities in Texas (i.e. se 10,000 customers), 2015 mea
All Texas Utilities, 2015 media

*Gallons per Service Connecti

For further info

Opportunities to Reduce Pumping near Jacob's Well: Cost Estimates for Proposed Pipeline Routes

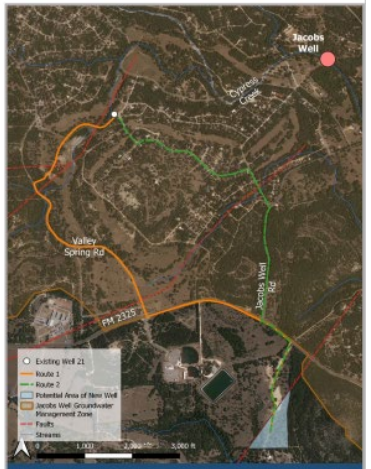
Costing Model

The Texas Water Development Board's Uniform Cost Model (UCM) was used as a framework to assess well and pipeline costs. The costs presented in the table below were developed based on required pipeline and well design parameters, as described above, as well as engineering, environmental permitting, legal, project management, system operations and maintenance, and interest costs. No fees for groundwater use, land acquisition, or groundwater rights were considered in this analysis. The *Net Annual Cost* accounts for the savings involved in shutting down operation of wells 21 and 22 that are currently in service.

Conclusions The two pipeline routes offer flexibility for the path to take from the potential groundwater well site to the existing ground storage tank at Well 21. Route 2 is the shortest and most affordable route in terms of project costs and annual operations and maintenance (O&M) costs. For Route 2, with an annual average demand of 167 gpm, the lowest total project cost estimate is $933,000, excluding land acquisition. If current annual demand were tripled to 500 gpm, to simulate future potential growth, the lowest total project cost estimate is $1.762 million. More importantly, the annual costs, including debt service and O&M, range from $75,000 to $145,000 for the three scenarios. All scenarios assume that a single new well would be required. Also, preliminary geochemical analyses indicate no treatment of the downdip water would be needed.

Next Steps

1. Identify a suitable location for a new well.
2. Conduct aquifer pump tests to determine the sustainability of a down dip well(s).
3. Explore funding opportunities for substituting water sources.

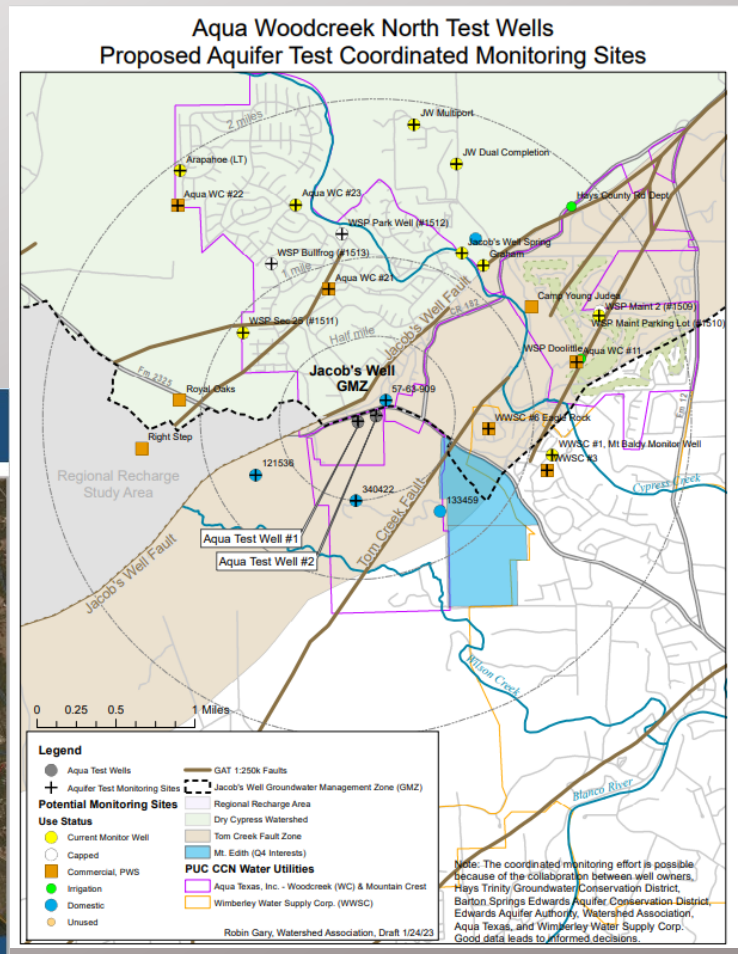


Route No.	Total Length of Pipeline (mi)	Length in Rock (mi)	Length in Soil (mi)	Number of Roadway Crossings
1	2.27	1.52	0.75	4
2	1.82	1.53	0.29	6

Right: Pipeline routes from potential well downdip of JWGMZ to Well 21
Bottom: Estimated Total Project Costs and Net Project Costs

Average Demand (gpm)	Peak Design Demand (gpm)	Total Pipeline Cost	Total Well Cost	Total Project Cost	Annual Debt Service	Annual O&M, Pumping Costs	Total Net Annual Cost	Net Cost of Water, per 1,000 gallons (Incl. Debt Service)	Net Cost of Water, per 1,000 gallons (Excl. Debt Service)
167	200	$346,000 - $529,000	$492,000 - $620,000	$933,000 - $1,038,000	$63,000 - $71,000	$19,000 - $26,000	$75,000 - $80,000	$0.85 - $0.91	$0.08 - $0.16
210	252	$505,000 - $700,000	$552,000 - $608,000	$1,099,000 - $1,268,000	$75,000 - $86,000	$23,000- $26,000	$84,000 - $96,000	$0.76 - $0.87	$0.07 - $0.10
500	600	$984,000 - $1,052,000	$778,000 - $799,000	$1,762,000 - $1,851,000	$120,000 - $126,000	$48,000 - $51,000	$136,000 - $145,000	$0.52 - $0.55	$0.06 - $0.07

For further information contact: David Baker | Email: davidbaker@wimberleywatershed.org | Phone: 512-722-3390



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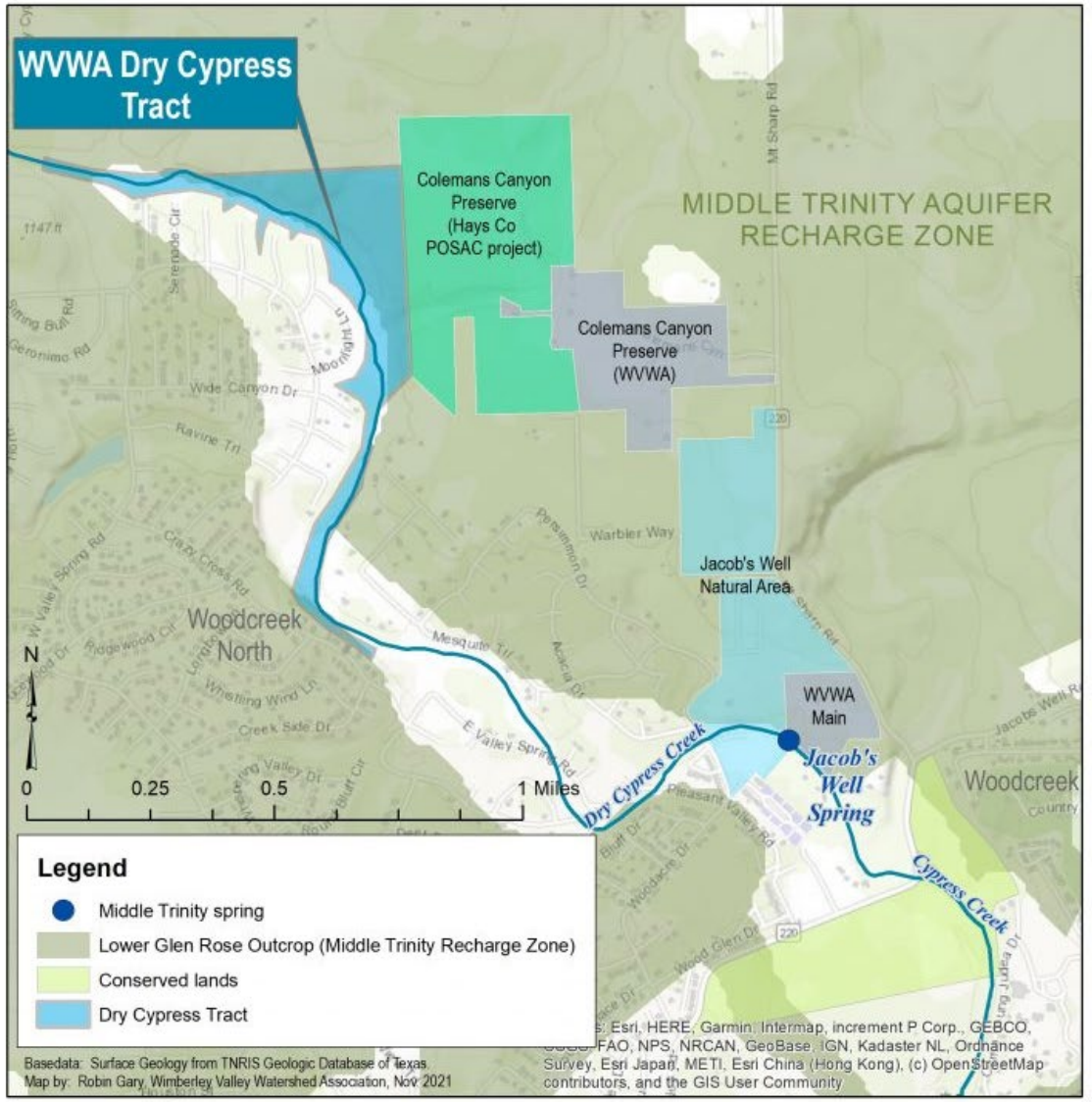
LAND CONSERVATION

- Hays County $75M Parks and Open Space Bond Status
- Watershed Association projects: Dry Cypress and Colemans Canyon



Location Map

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CITY OF BLANCO WATER RECLAMATION TASK FORCE

- 2+ year collaborative work group
- Recommendation to transition from direct discharge to TLAP
- CRP data & biologic surveys show direct discharge negatively impacts water quality in the Blanco River
- Direct discharge happening for past 2 weeks @ 100,000 gal/day.

Blanco River looking upstream from the 165 Bridge, CRP site. Photo taken 3/10/23 by Robin Gary, Watershed Association

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WHAT'S NEXT?

- Continue to inspire and inform One Water projects
- Coordinate with teachers, students, and families to teach One Water principles
- Develop One Water curriculum
- Unlock performance data to make publicly accessible
- Apply One Water principles at all building scales (residential, multi-family, commercial, neighborhood, etc.)

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