

Cypress Creek Flow Study, Phase 2: Blanco and Travis Counties, Texas

BPGDC Board Meeting - October 16, 2025

Presented by:

Doug Wierman, P.G. & Jenna Walker, M.A.Geo.



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT

TEXAS STATE UNIVERSITY

Our Mission

Inspiring research, innovation, and leadership that ensures clean, abundant water for the environment and all humanity.



Our Vision

A world where all people understand and embrace the value of water and environmental stewardship.

Cypress Creek Flow Study, Phase 2: Blanco and Travis Counties, Texas



Prepared by

Douglas A. Wierman, P.G., Jenna Walker, M.A.Geo., Nicky Vermeersch, M.S., Laura Parchman, Megan Flannery, Christina Lopez, Ph.D., and Noah Powell

The Meadows Center for Water and the Environment, Texas State University

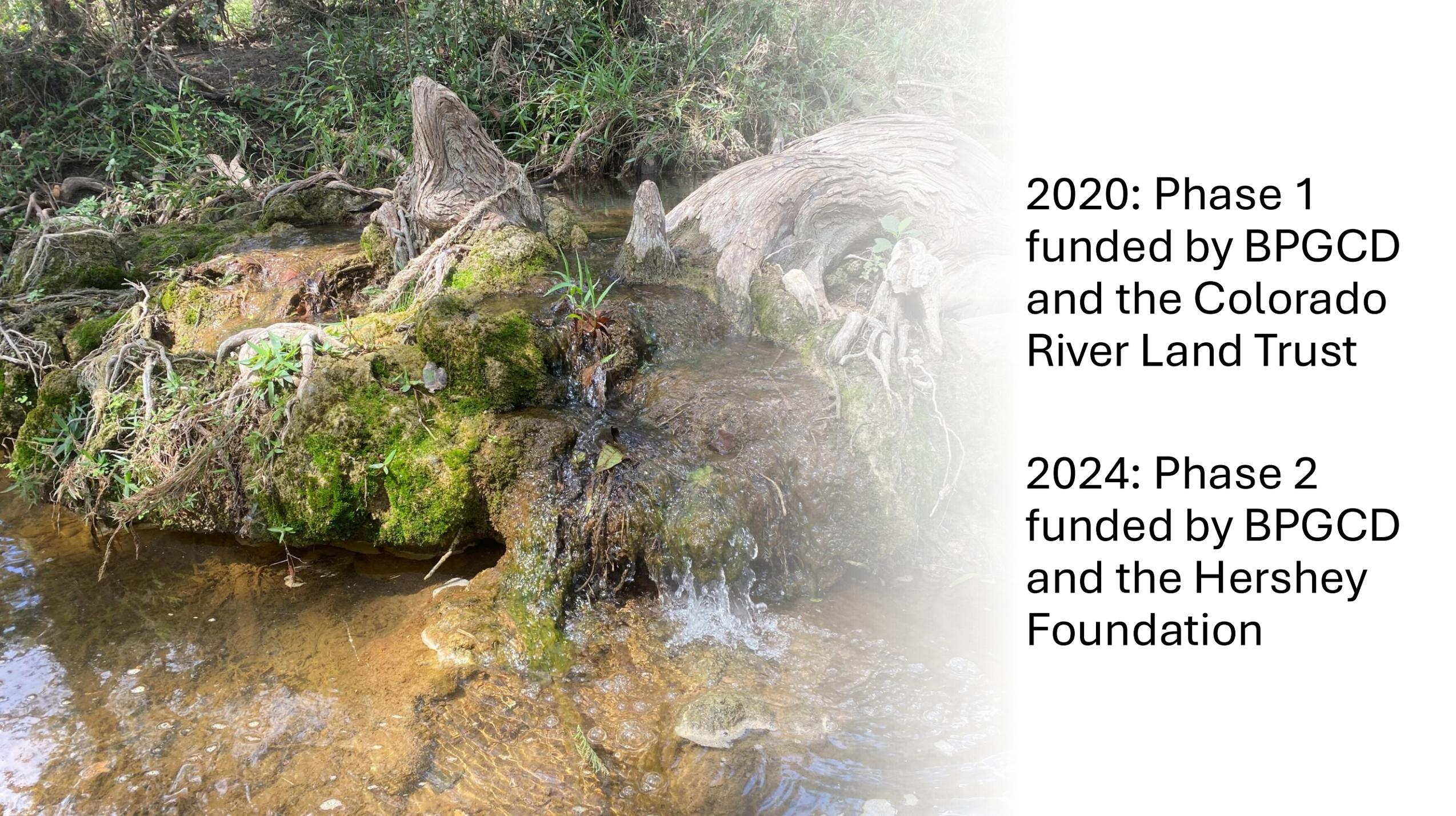
April 2025



**THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT**

TEXAS STATE UNIVERSITY

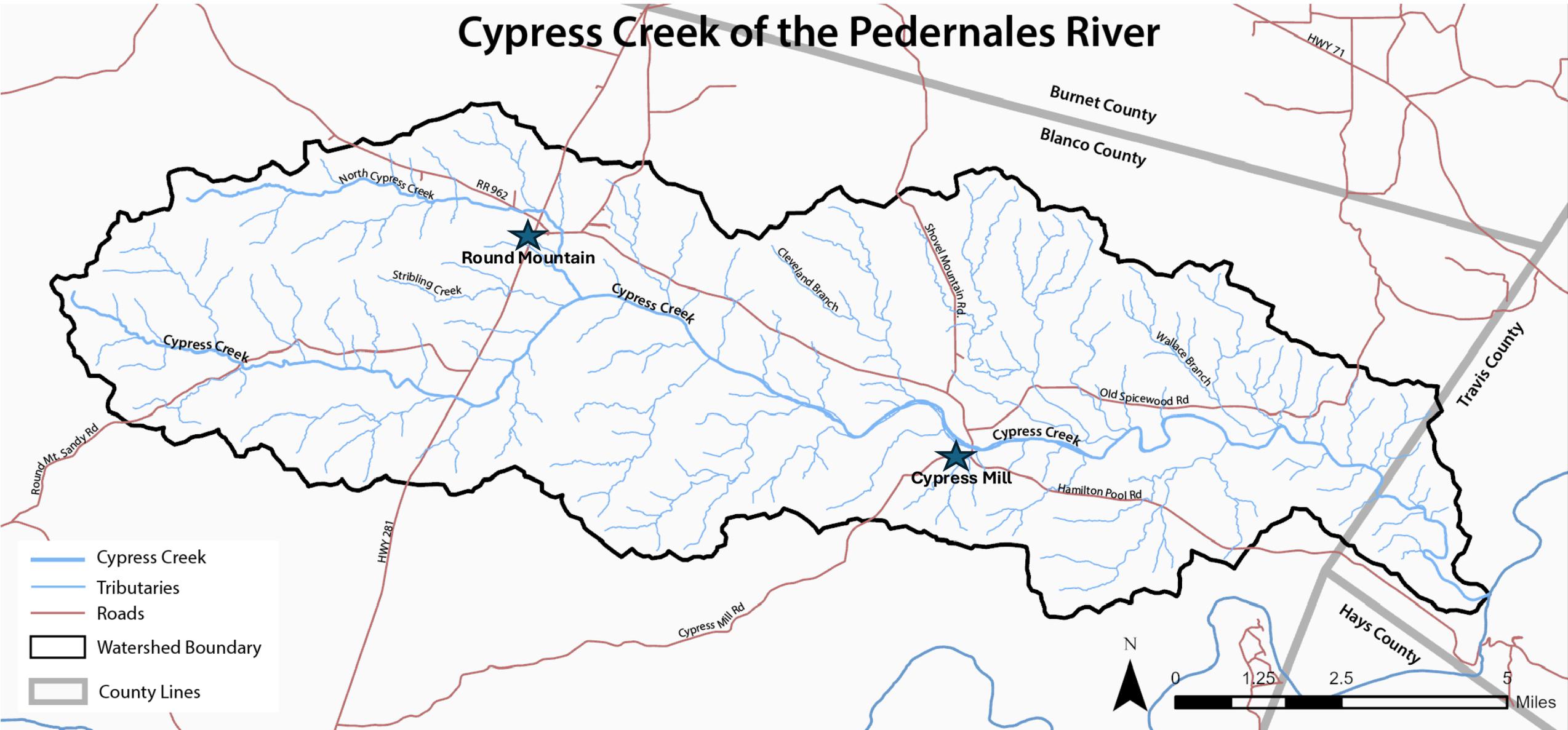
MEMBER **THE TEXAS STATE UNIVERSITY SYSTEM**



2020: Phase 1
funded by BPGCD
and the Colorado
River Land Trust

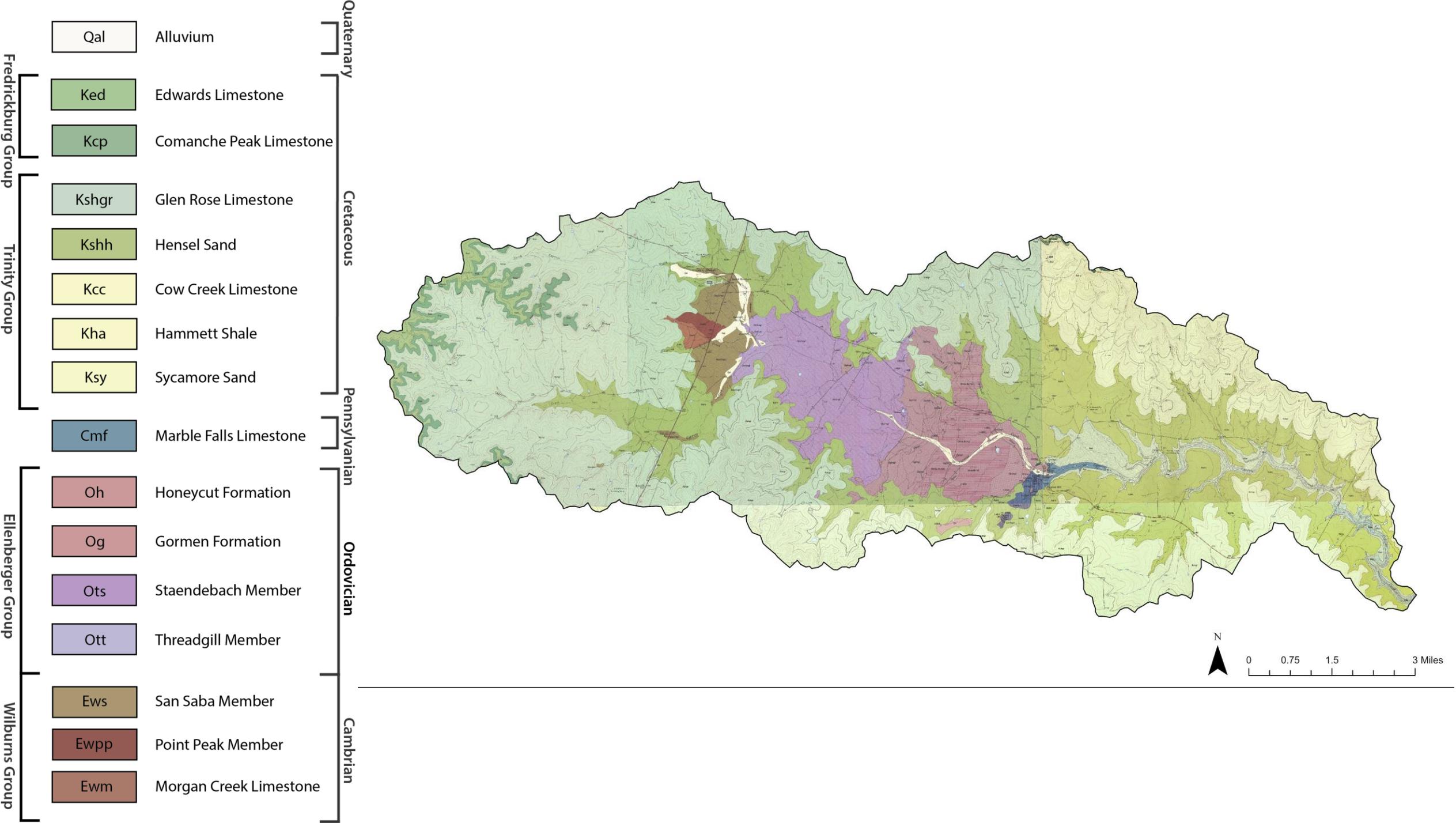
2024: Phase 2
funded by BPGCD
and the Hershey
Foundation

Cypress Creek of the Pedernales River

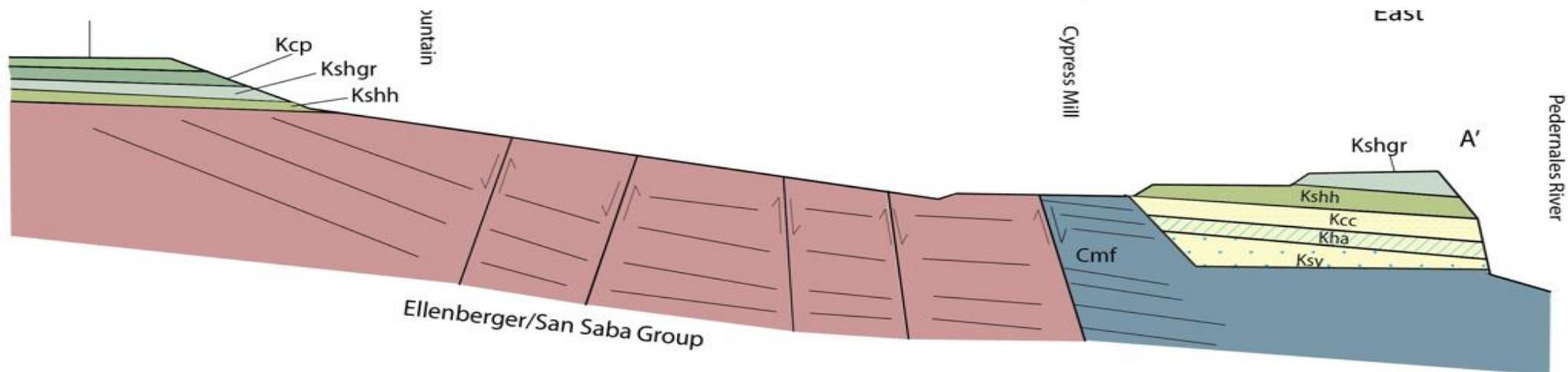
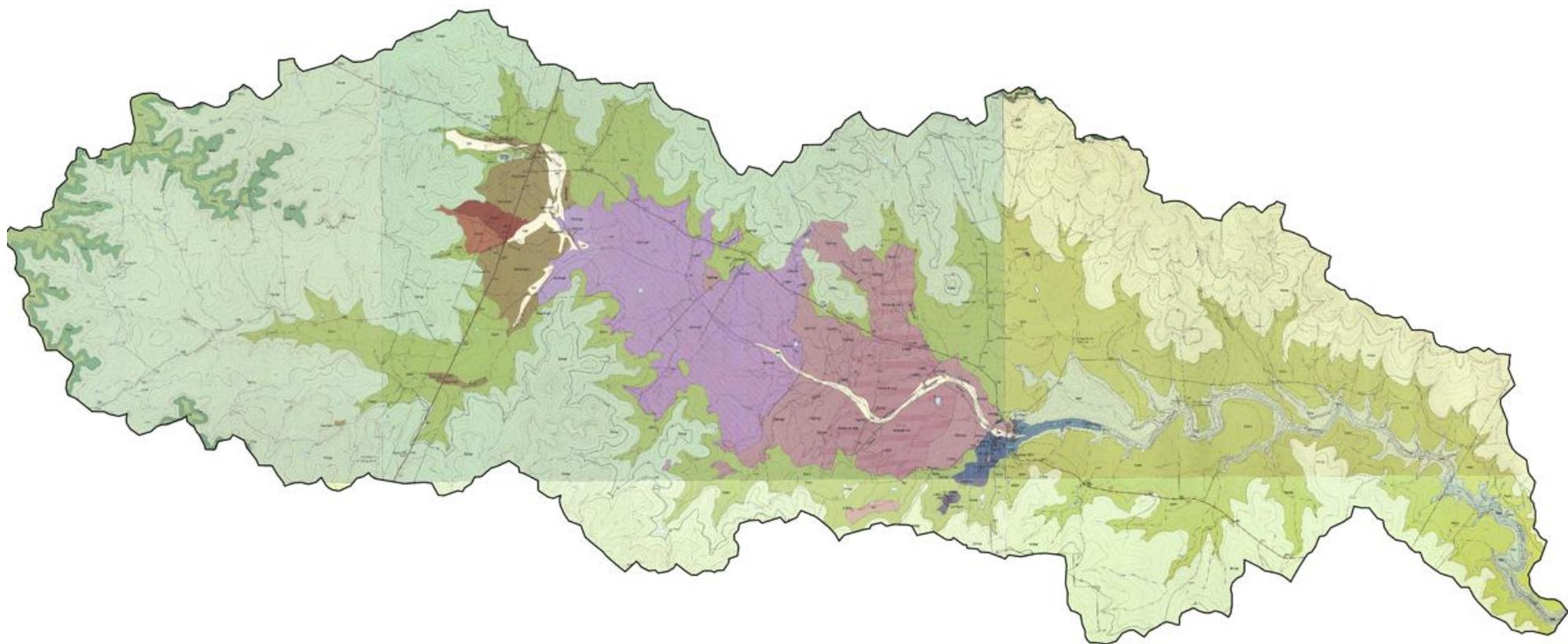




“It’s all about the rocks.”







Phase 2 Scope of Work

- 1. Public outreach campaign**
- 2. Identification of River Monitoring Sites and Access Points**
- 3. Expanded Groundwater Level Monitoring and Water Quality Synoptic Blitz**
- 4. Preliminary Data Analysis and Interpretation**
- 5. Final Report**

**Landowner-Stakeholder
Kick-off Meeting
St. Luke's Episcopal Church
June 1, 2024**



“Landowner collaboration is the backbone of watershed studies. They possess invaluable knowledge and access that provide us with invaluable opportunities to expand regional conservation strategies.”

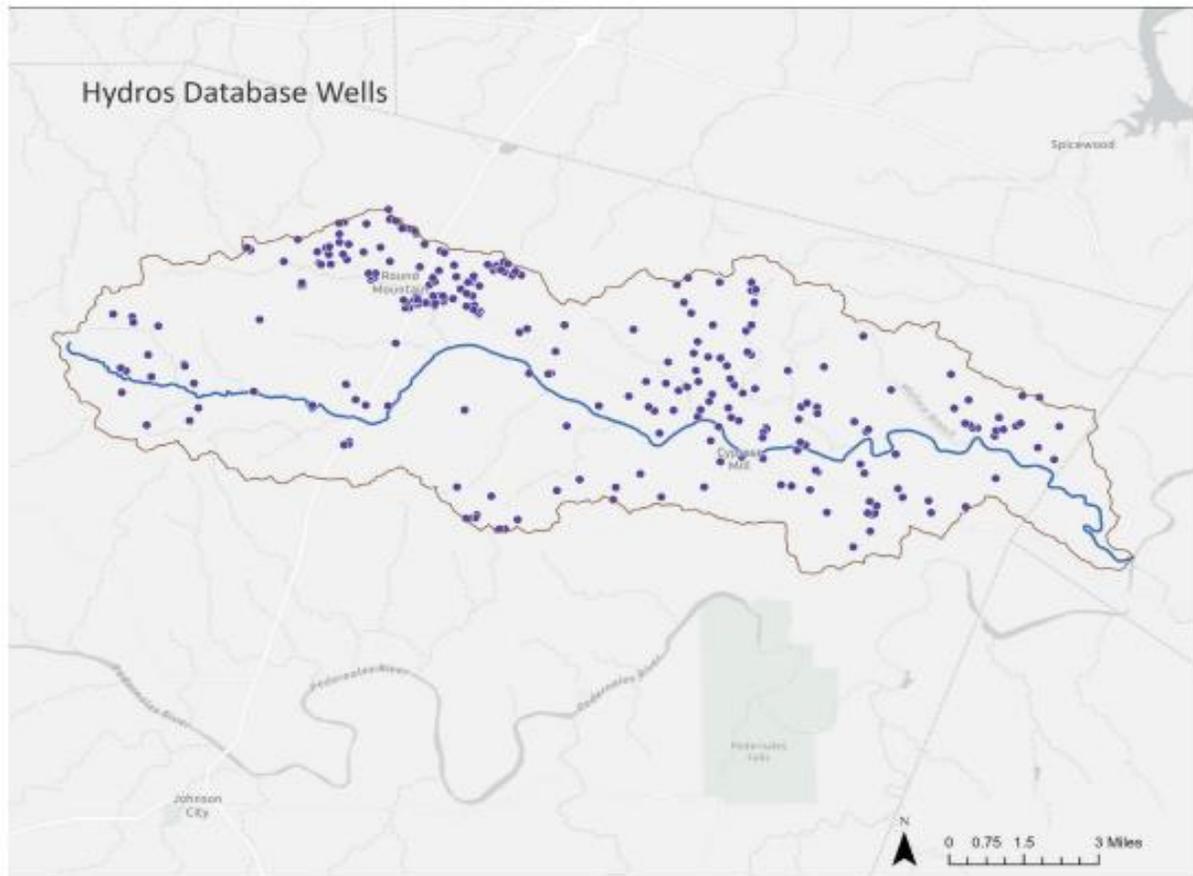


Figure 8. Wells from Hydros Database (n=282)

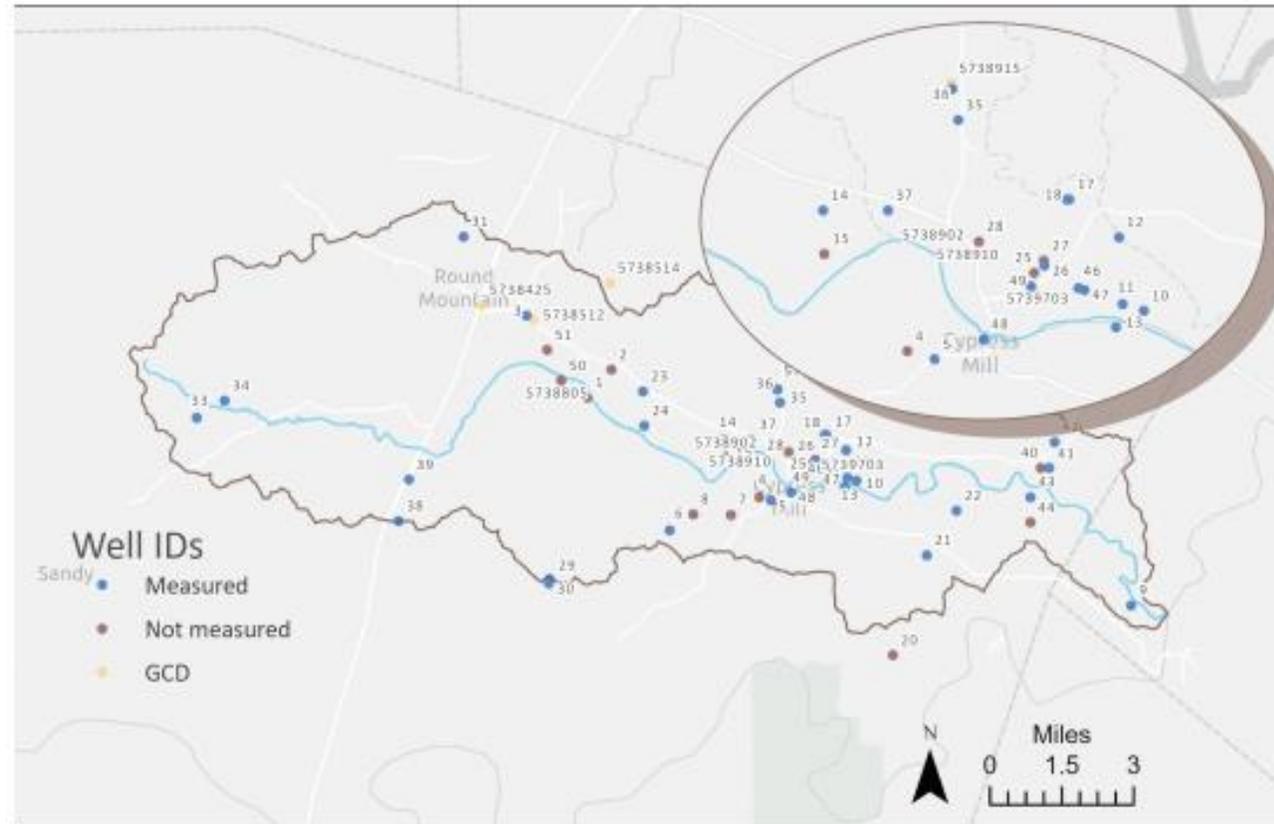
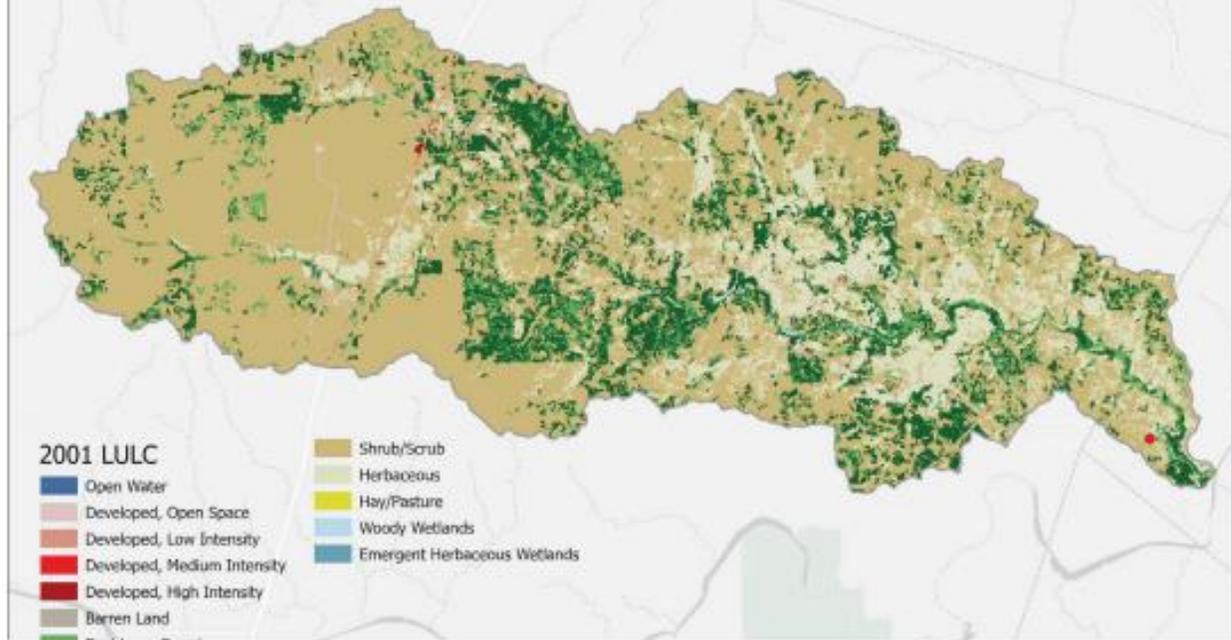


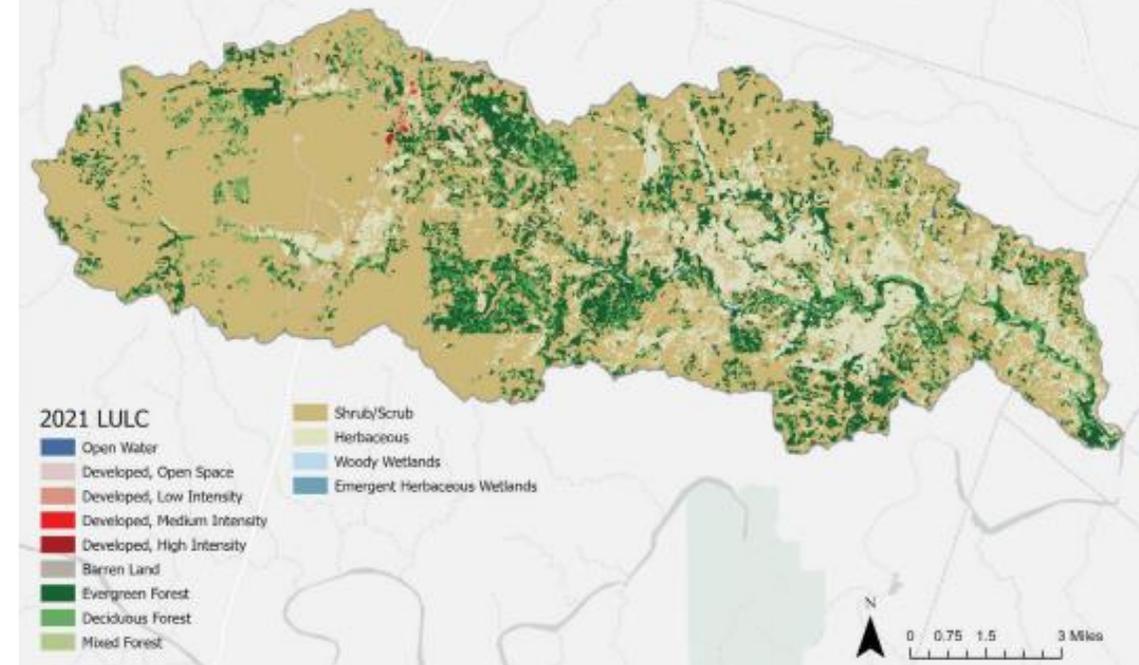
Figure 9. Study area wells (n=52 with 30 measured by MCWE, 17 not measured, and 5 measured by GCD)



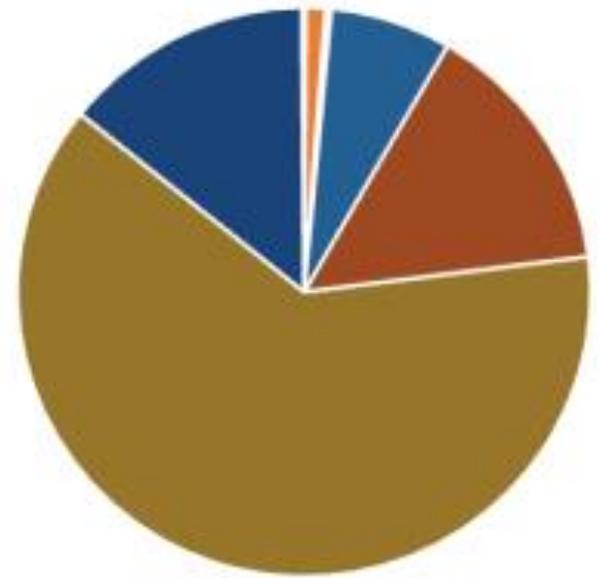
Land Cover in the Cypress Creek of the Pedernales Watershed
2001



Land Cover in the Cypress Creek of the Pedernales Watershed
2021

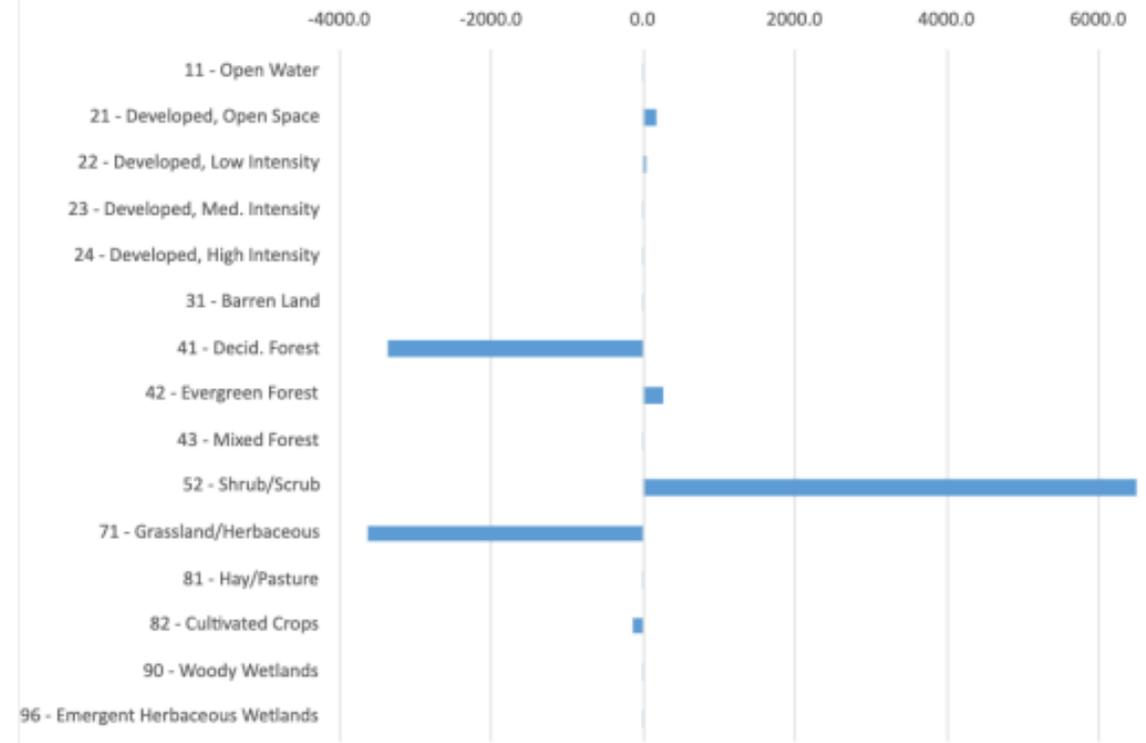


2021 Land Use Cypress Creek Watershed

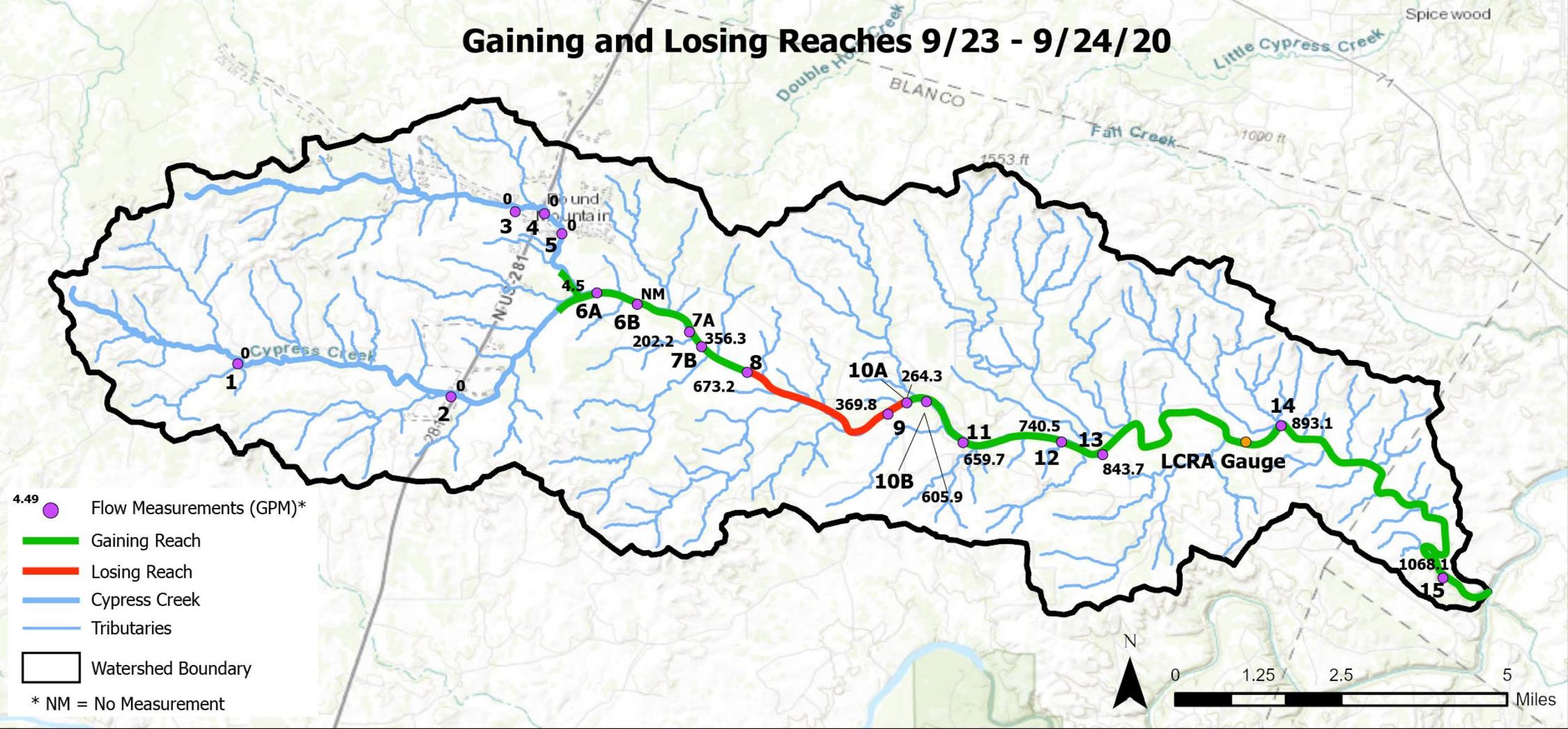


- 11 - Open Water
- 21 - Developed, Open Space
- 22 - Developed, Low Intensity
- 23 - Developed, Med. Intensity
- 24 - Developed, High Intensity
- 31 - Barren Land
- 41 - Decid. Forest
- 42 - Evergreen Forest
- 43 - Mixed Forest
- 52 - Shrub/Scrub
- 71 - Grassland/Herbaceous
- 81 - Hay/Pasture
- 82 - Cultivated Crops
- 90 - Woody Wetlands
- 96 - Emergent Herbaceous Wetlands

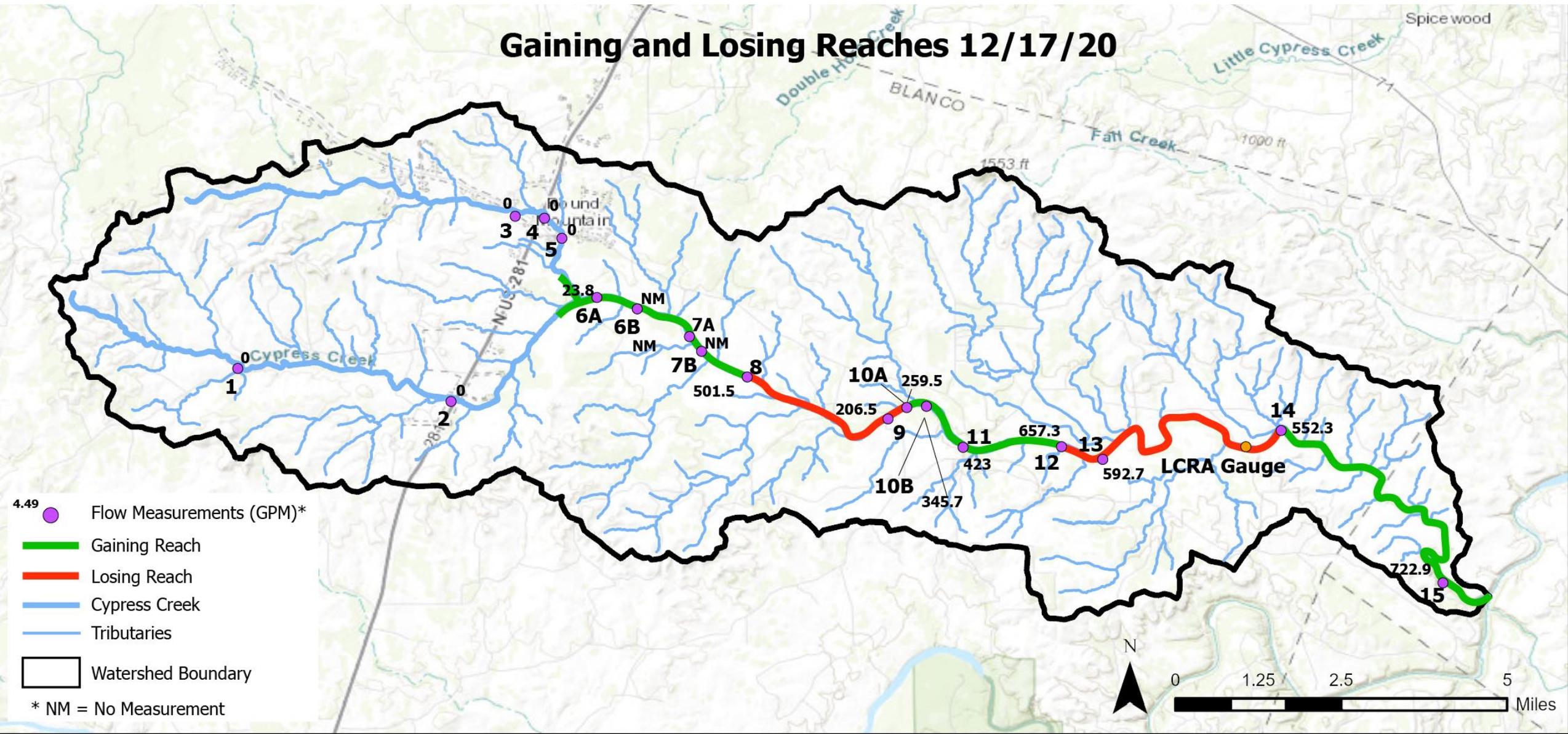
Change in Land Use (acres) 2001-2021

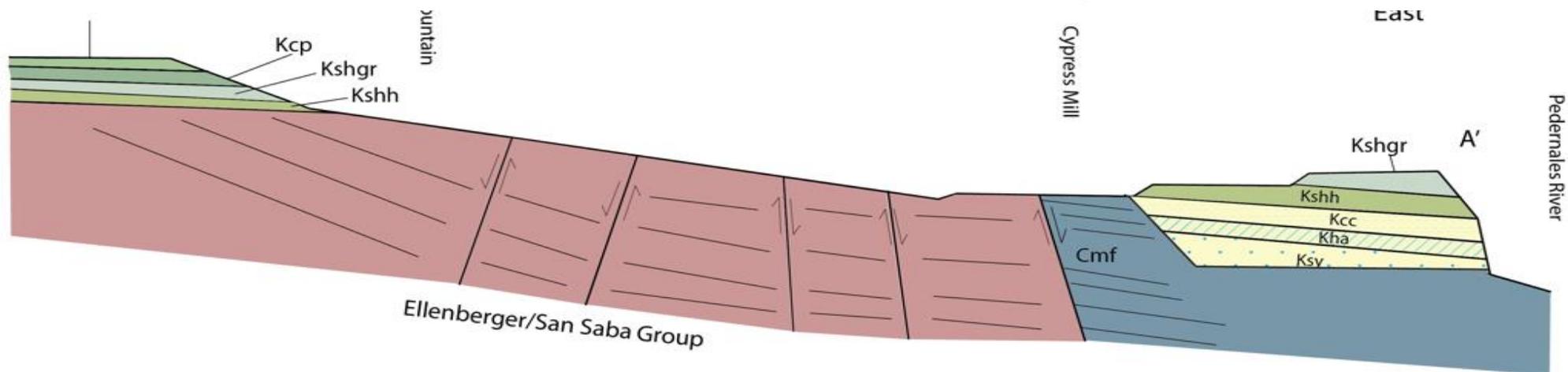
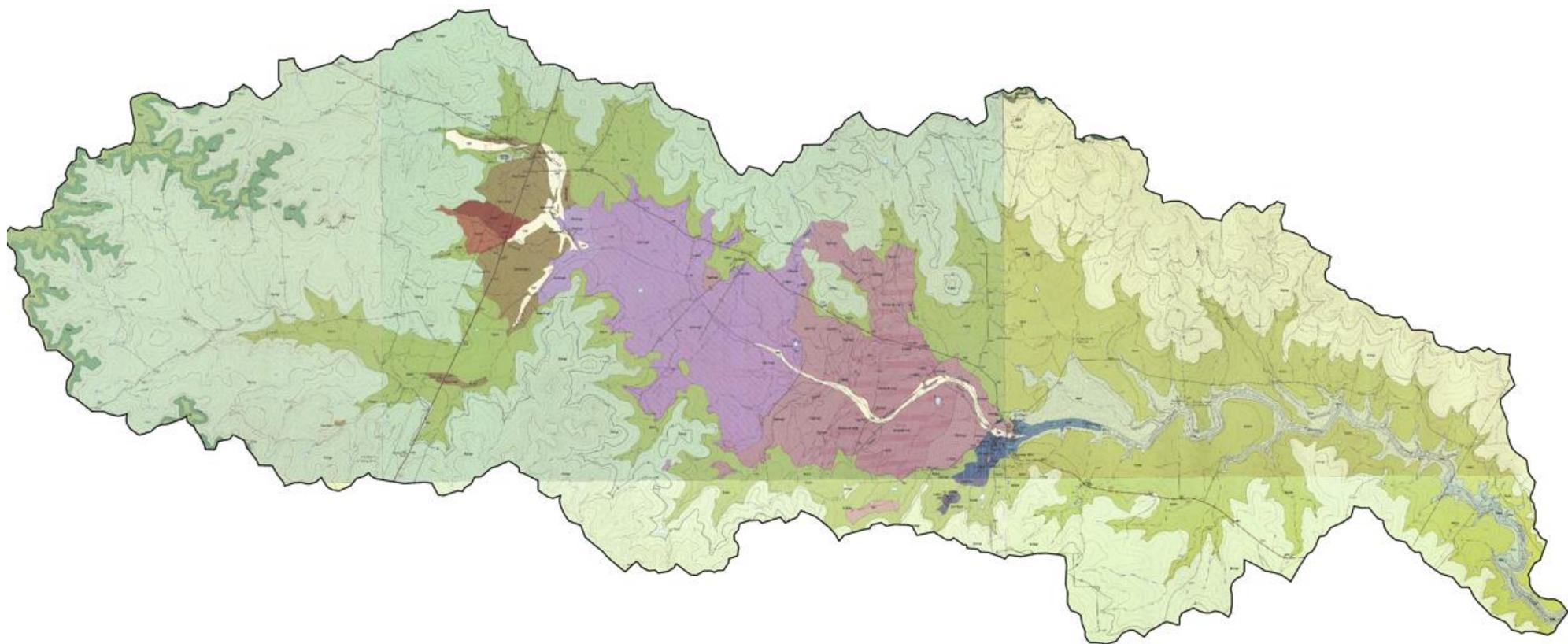


Gaining and Losing Reaches 9/23 - 9/24/20



Gaining and Losing Reaches 12/17/20





Water Levels for Well ID: 20100077 (Shovel Mtn - Cypress Mill MW)

Click and drag in the plot area to zoom in



Zoom 1h 1d 1m 1y **all**

Jun 20, 2022 — Aug 5, 2025

Water Level Below Land Surface (ft)



— Static ● Pumping

Well Elevation Show Well Depth

Water Levels for Well ID: 20210203 (Verizon Monitor Well)

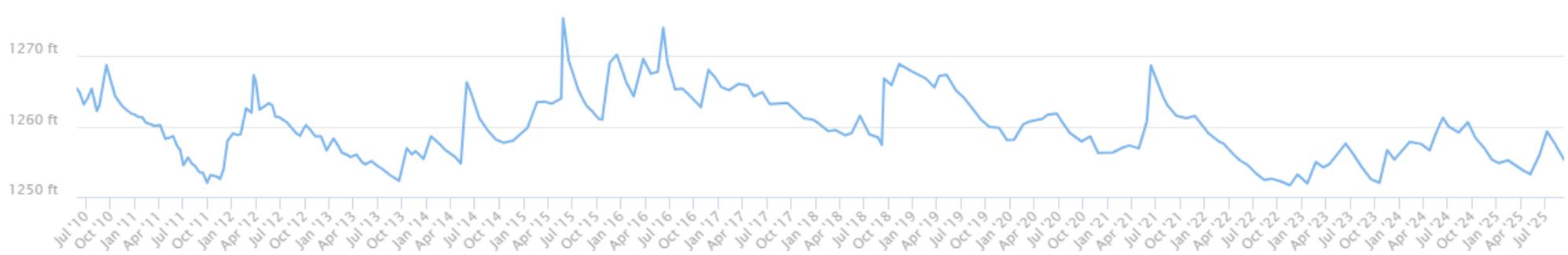


Click and drag in the plot area to zoom in

Zoom **1h** 1d 1m 1y **all**

May 26, 2010 — Sep 9, 2025

Water Level Elevation (ft)



Water Level Below Land Surface Hide Well Depth Show Screens

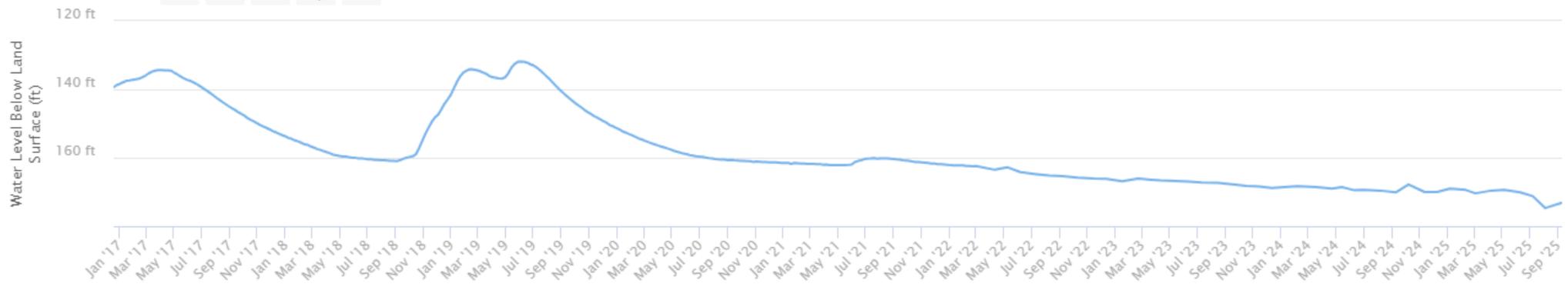
Water Levels for Well ID: 20110111 (Stoneridge Mnt. Monitor Well)

Click and drag in the plot area to zoom in



Zoom 1h 1d 1m 1y all

Dec 19, 2016 – Sep 9, 2025



— Static ● Pumping

Well Elevation Show Well Depth Show Screens

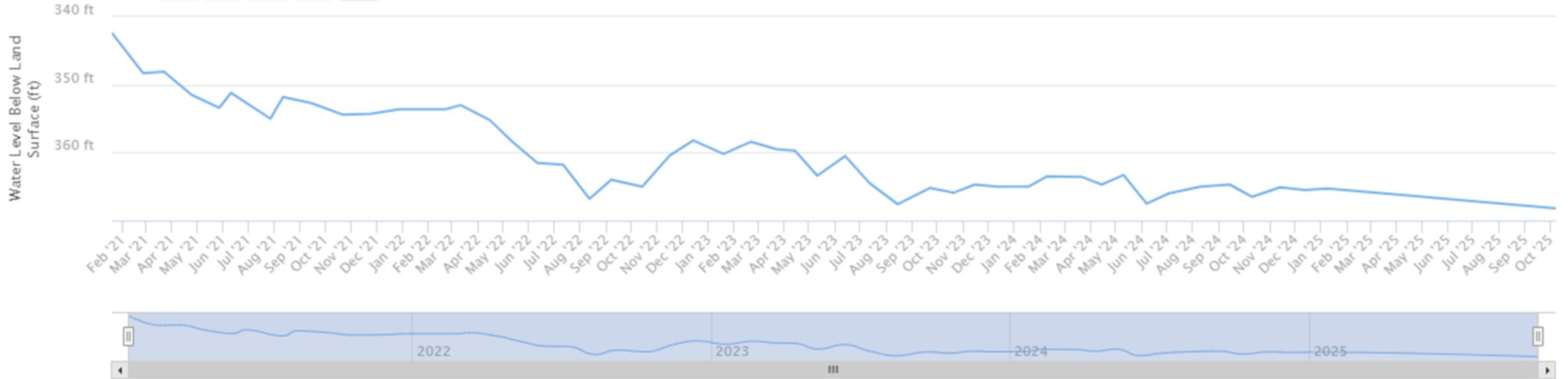
Water Levels for Well ID: 20200187 (Legacy Hills Test Well #9 MONITOR WELL)



Click and drag in the plot area to zoom in

Zoom 1h 1d 1m 1y **all**

Jan 19, 2021 — Oct 7, 2025



— Static ● Pumping

Well Elevation Show Well Depth Show Screens

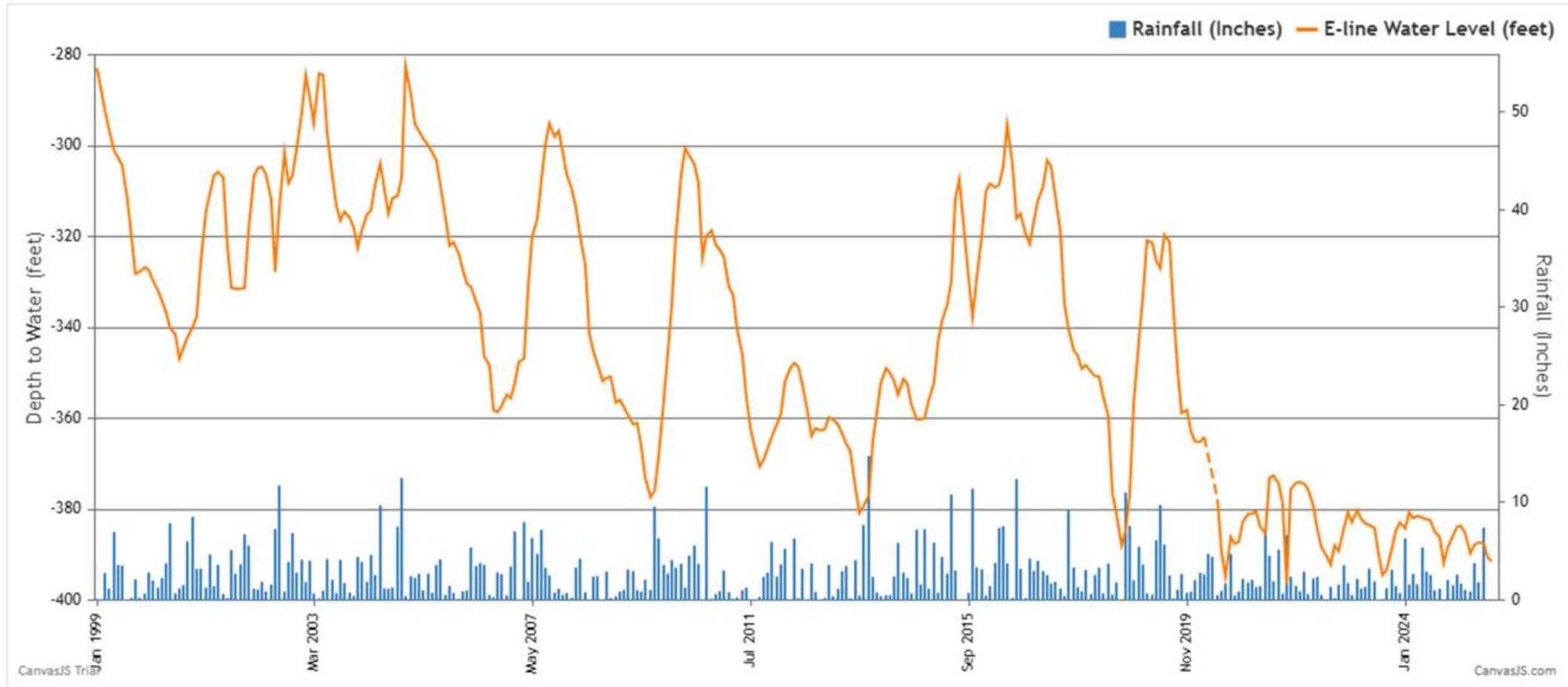
Henly Church

30° 11' 46" NORTH

98° 12' 45" WEST

Total Well Depth:460

Elevation:1325.89



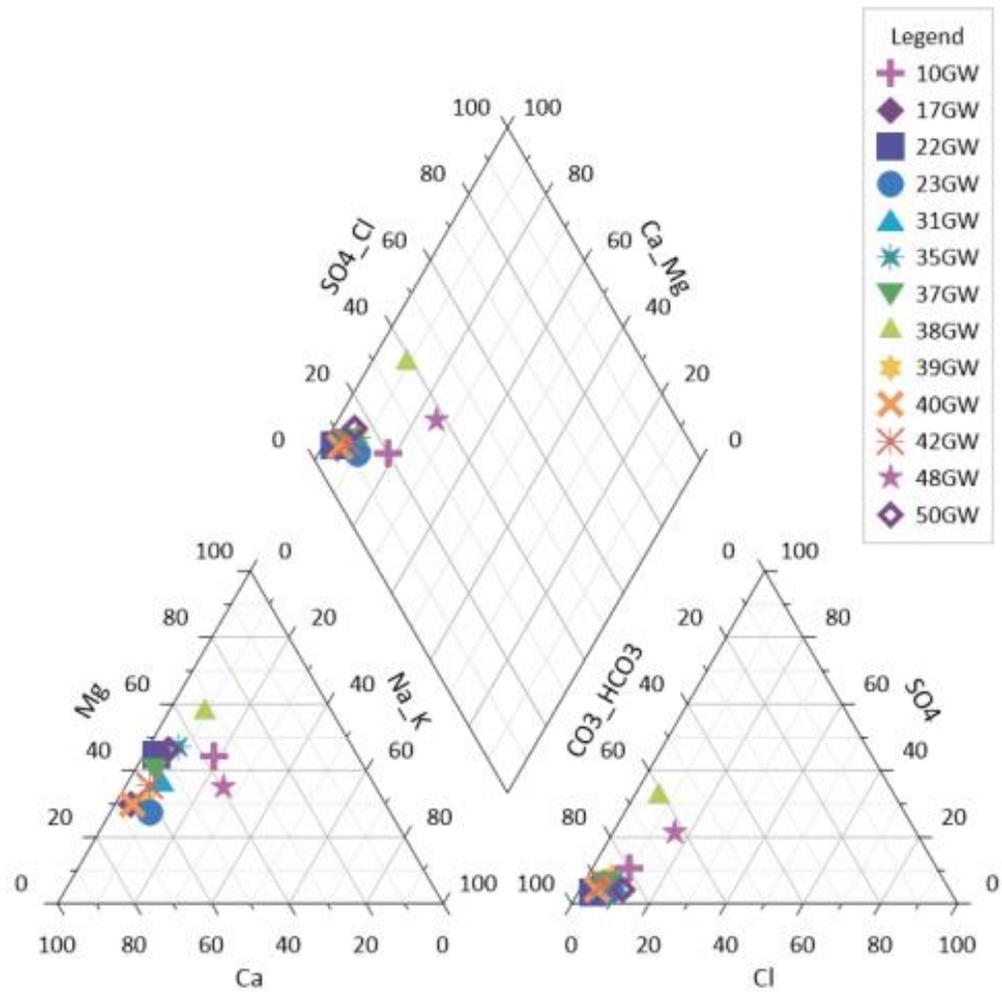


Figure 29. Piper plot of water quality data from sampled wells

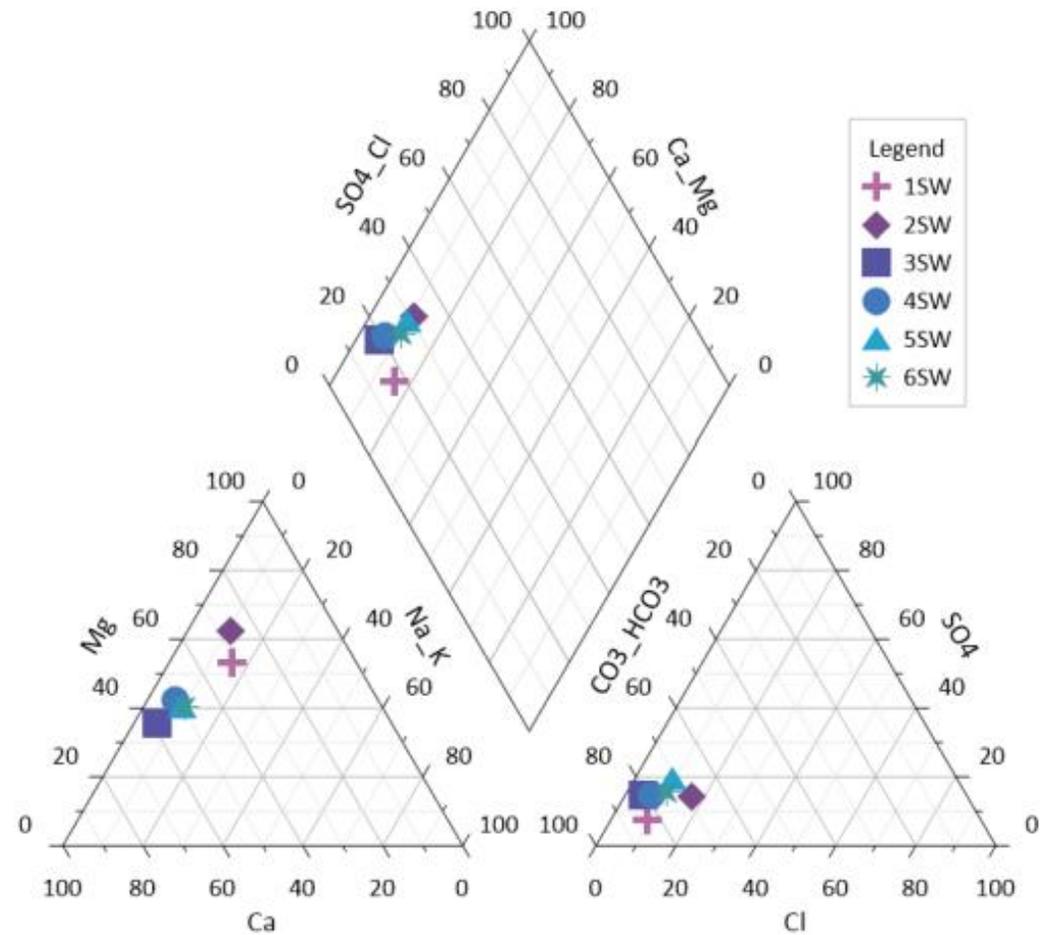
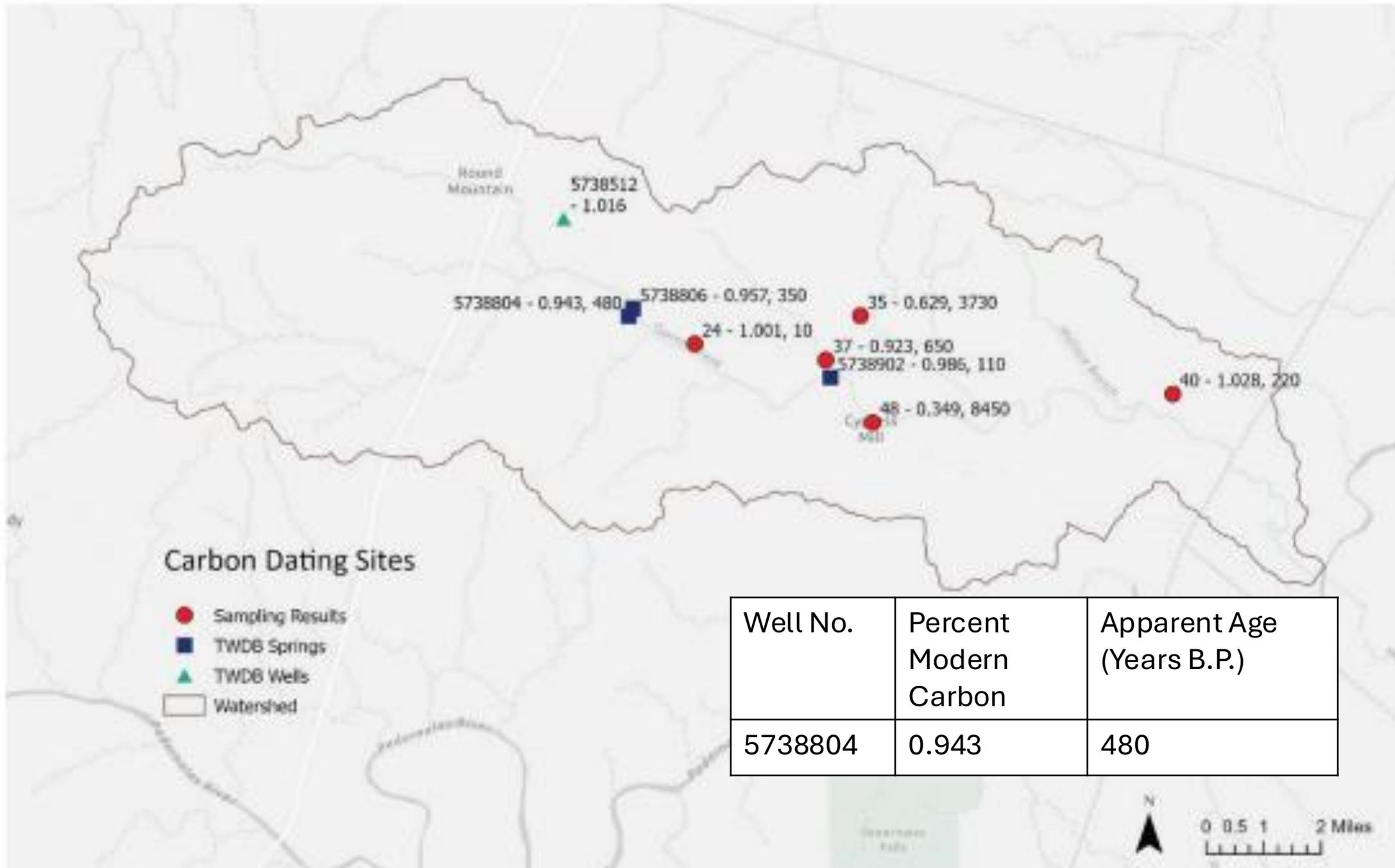


Figure 34. Piper Plot of water quality data for sampled surface water locations



Conclusions

- Land use from 2001 through 2021 indicates the watershed is over 50% scrub and shrub. The percentage of scrub and shrub has increased significantly due to the loss of deciduous forest and grasslands.
- In the short term (i.e. last few years), Groundwater levels have been showing a downward trend.
- Groundwater flow is from west to east.
- Carbon dating of spring flow and groundwater near spring indicate relatively young groundwater, indicating local recharge areas for local groundwater. Groundwater levels near major springs is shallow with gradient towards the springs. Older groundwater was measured north of the creek on Shovel Mountain Road and at Cypress Mill indicating this area is not significantly contributing to spring flow.

Conclusions (con't)

- There appears to be an increase in groundwater gradient across the Ellenburger/ Marble Falls structure near Cypress Mills. The fault zone between the Ellenburger and Marble Falls may be a conduit for spring flow in this area.
- The off-channel pond was constructed over spring 5738804. The increased head of water over the springs may have negatively impacted spring flow ultimately entering Cypress Creek. Due to drought/low flow conditions and without detailed study, the extent of potential impacts is not clear.



August, 2020

Source: Google Earth™



Jan 2022

Source: Google Earth™

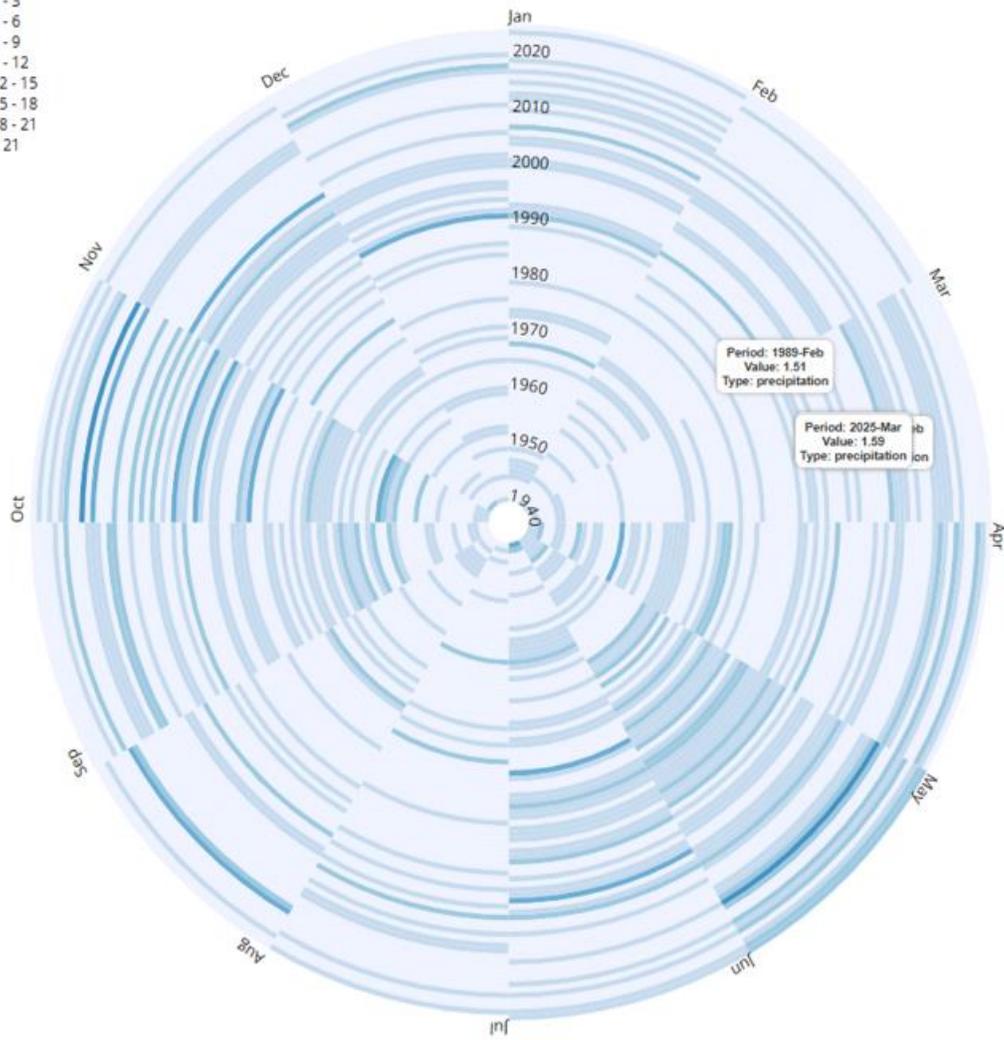




Nov 2024

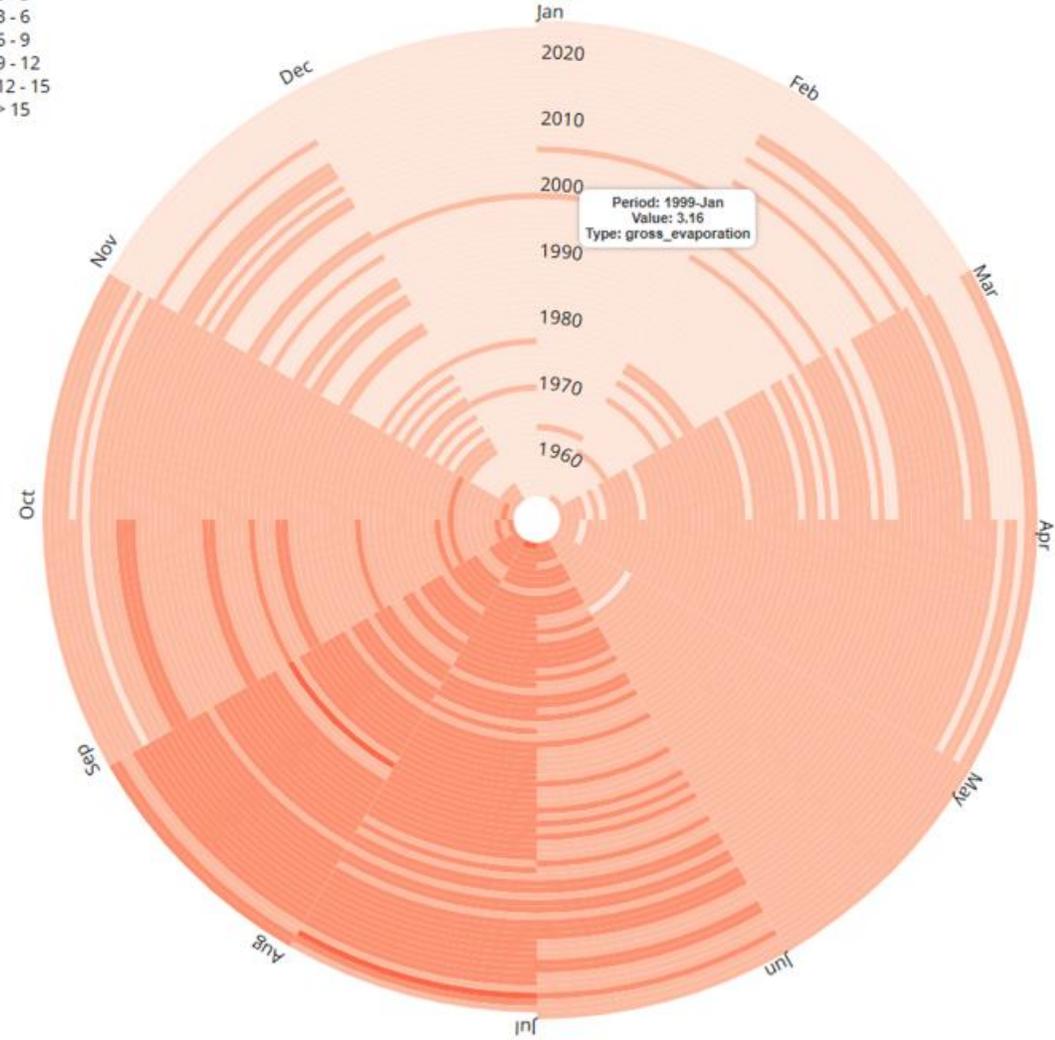
Source: Google Earth™

- Precipitation (inch)
- 0 - 3
 - 3 - 6
 - 6 - 9
 - 9 - 12
 - 12 - 15
 - 15 - 18
 - 18 - 21
 - > 21

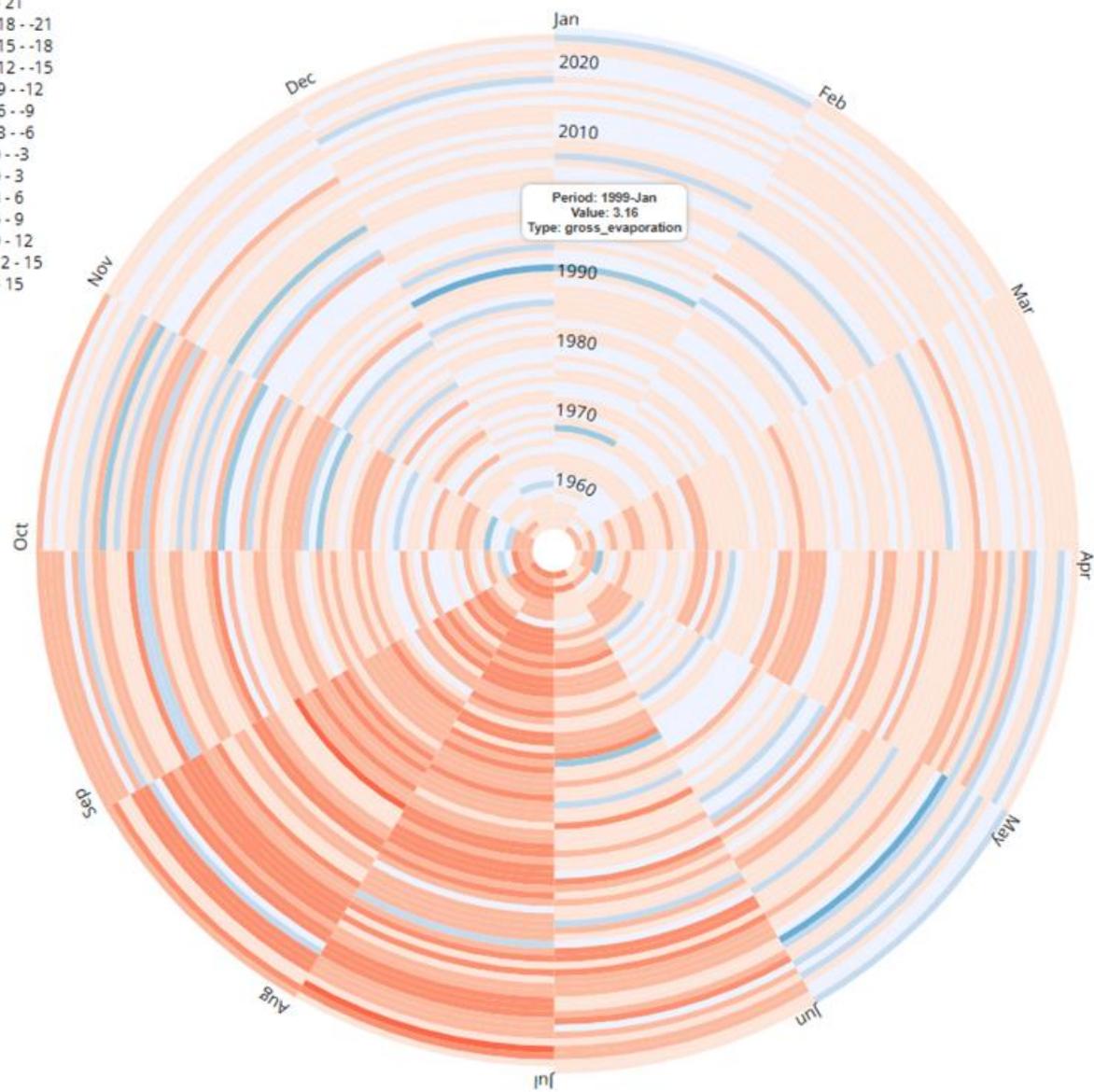
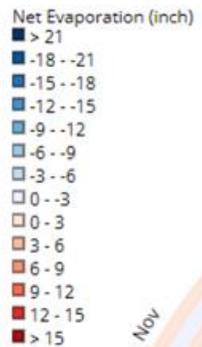


Median Precip 33"/year

- Gross Evaporation (inch)
- 0 - 3
 - 3 - 6
 - 6 - 9
 - 9 - 12
 - 12 - 15
 - > 15



Gross Evaporation Median 51"/year



Net Evaporation 16"/year

Thank you!

