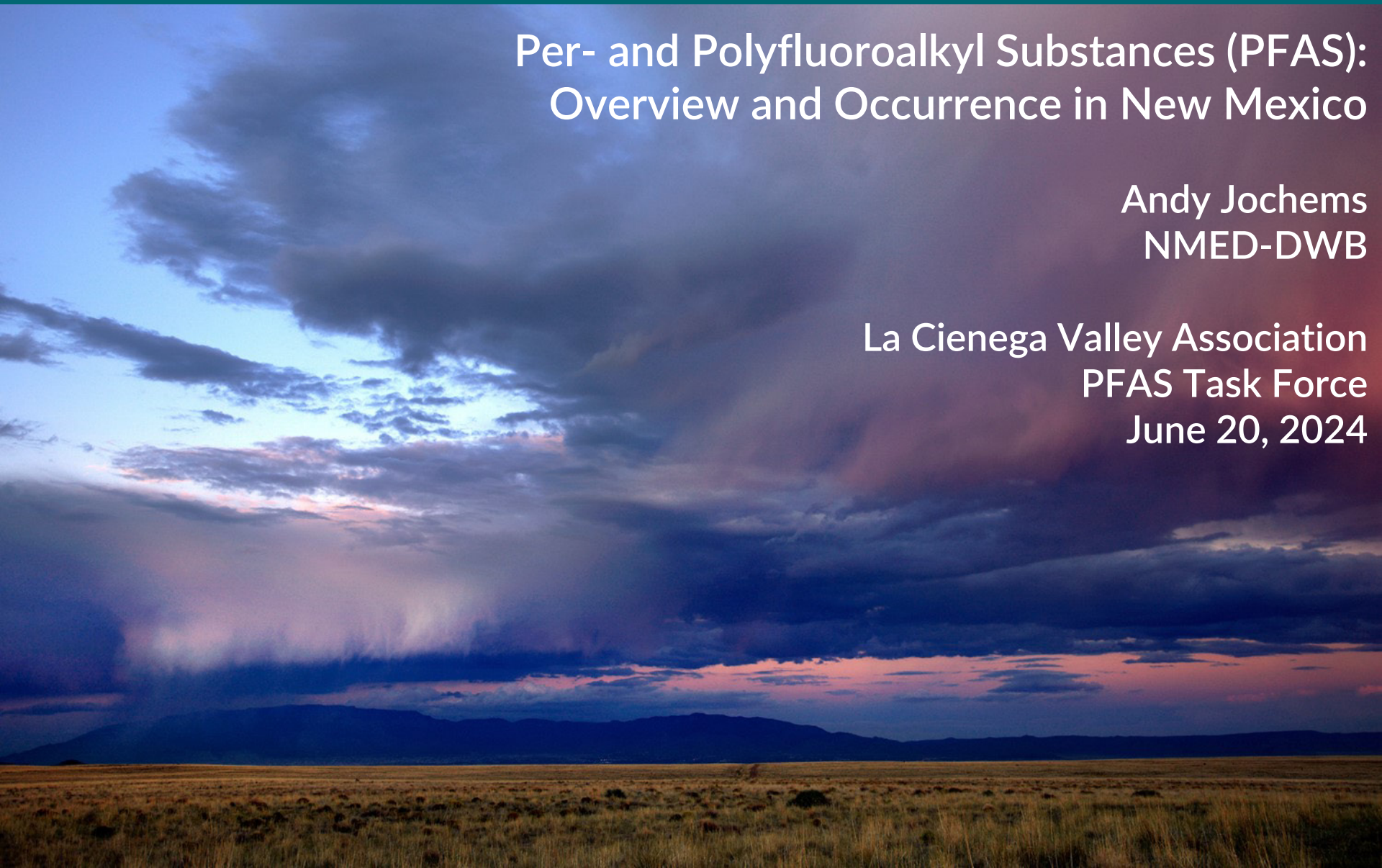
New Mexico Environment Department



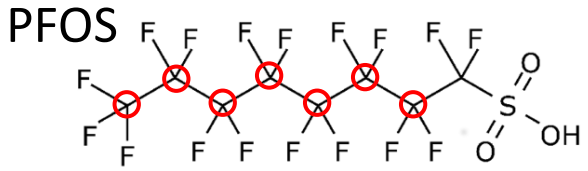
Per- and Polyfluoroalkyl Substances (PFAS): Overview and Occurrence in New Mexico

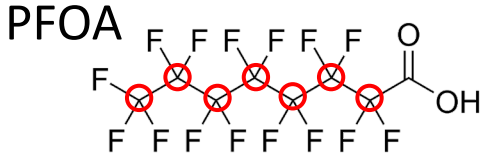
Andy Jochems
NMED-DWB

La Cienega Valley Association
PFAS Task Force
June 20, 2024

PFAS – What are PFAS?

- Per- and polyfluoroalkyl substances
- Human-made (Teflon invented 1938)
- “Forever chemicals” that do not break down easily
- PFOA + PFOS are the most studied out of ~12,000





The carbon-fluorine bond is one of the strongest chemical bonds in nature

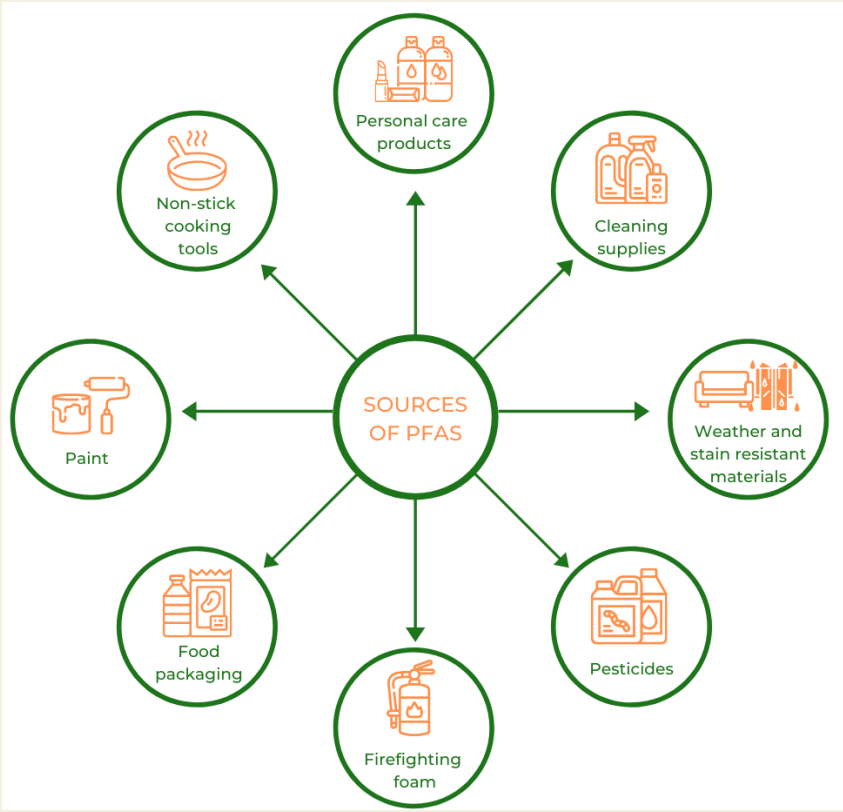
PFAS – Sources and Uses

Primary Sources

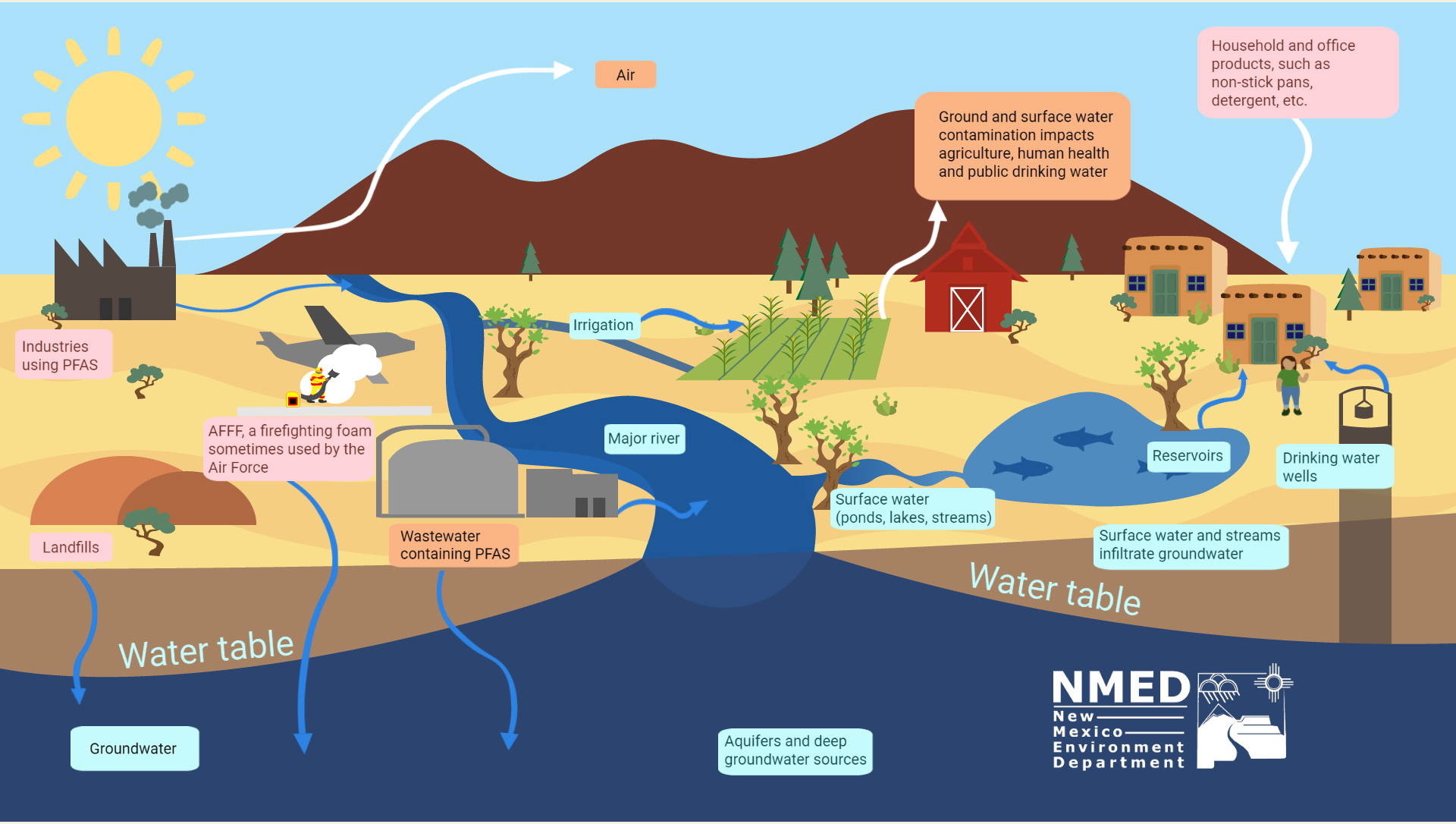
- >200 uses
- 60+ industries
- Many consumer products

Secondary Sources

- Domestic sources
- Wastewater treatment plants and landfills
- Atmospheric



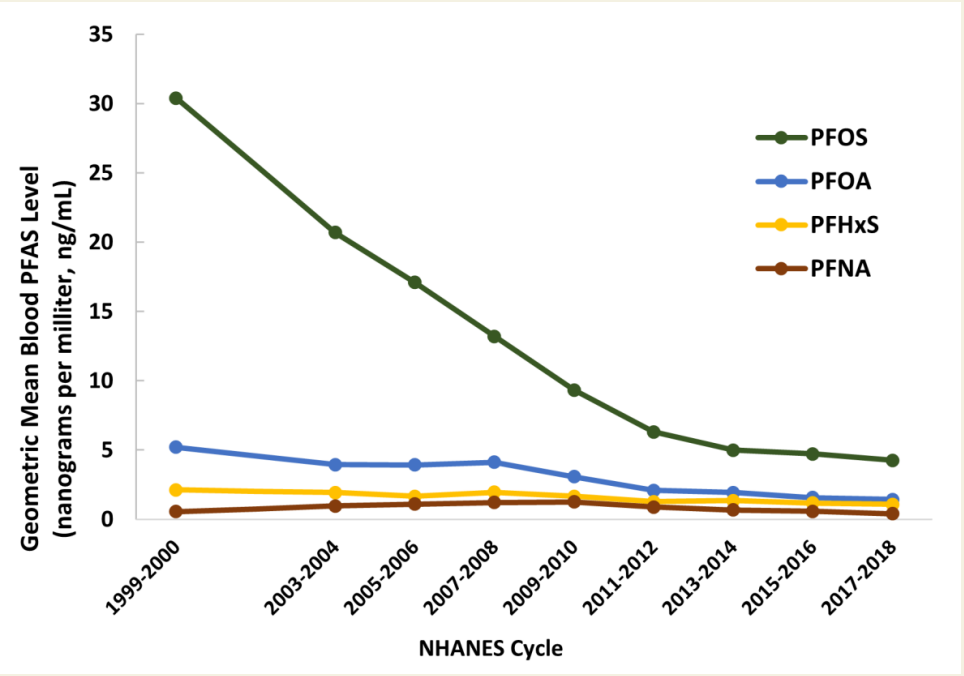
PFAS – Releases to the Environment



PFAS – Health Effects

PFAS Chemical	Health Effects						
	Cancer	Cholesterol	Immune	Kidney	Liver	Thyroid	Developmental / Reproductive
PFOA	✓	✓	✓	✓	✓	✓	
PFOS		✓	✓		✓		
PFBS				✓		✓	✓
PFHxS					✓	✓	✓
PFNA			✓		✓		✓
GenX	✓		✓	✓	✓		

PFAS – Health Effects



ATSDR (2024)

- Almost everyone has PFAS in their blood
- Not everyone exposed to PFAS will experience adverse health effects
- Health outcomes depend on:
  - Concentrations
  - Frequency of exposure
  - Duration of exposure
  - Exposure during sensitive life stages
  - Other susceptibility factors

PFAS – Treatment

Two main types of water treatment used in residences:

1. Activated Carbon

Courtesy of SpringWell©

*

- *Ad*sorption technology
  - -PFAS *ad*here to organic material
- Typically more affordable than RO
- Not as effective for certain short-chain PFAS such as PFBA
- What to do with old ("spent") treatment material?
- Point-of-entry or point-of-use
- NSF/ANSI Standard 53

2. Reverse Osmosis


Courtesy of USEPA

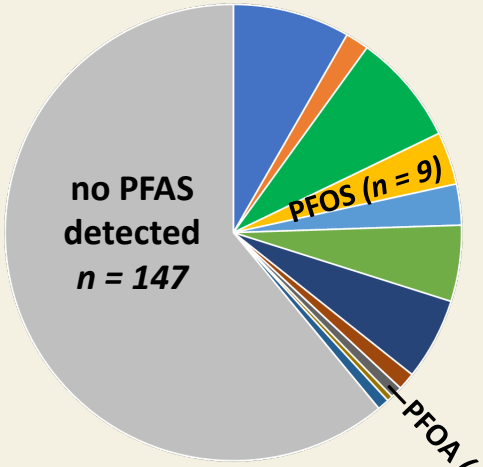
- Membrane filtration technology
  - -PFAS are filtered out
- Typically more expensive
- Effective for a greater range of PFAS
- What to do with spent membranes and reject water?
- Mostly point-of-use
- NSF/ANSI Standard 58

*NMED cannot endorse specific filter brands

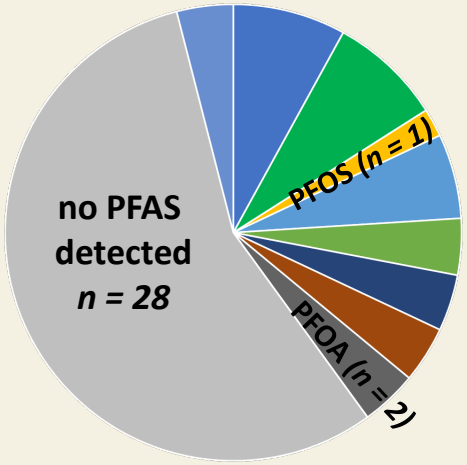
PFAS in New Mexico

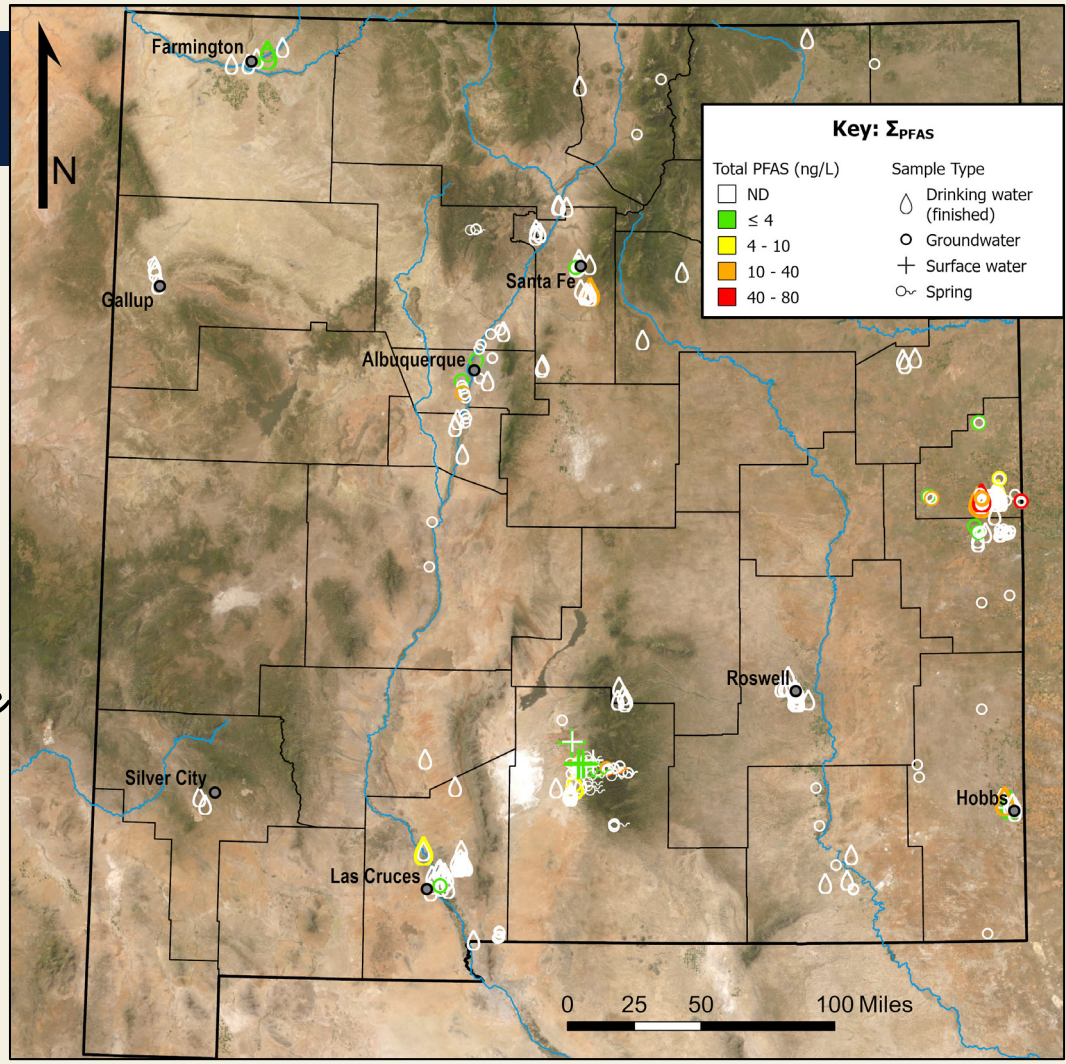
Public Water Utilities

Groundwater samples *(n = 184)*



Surface water samples *(n = 36)*

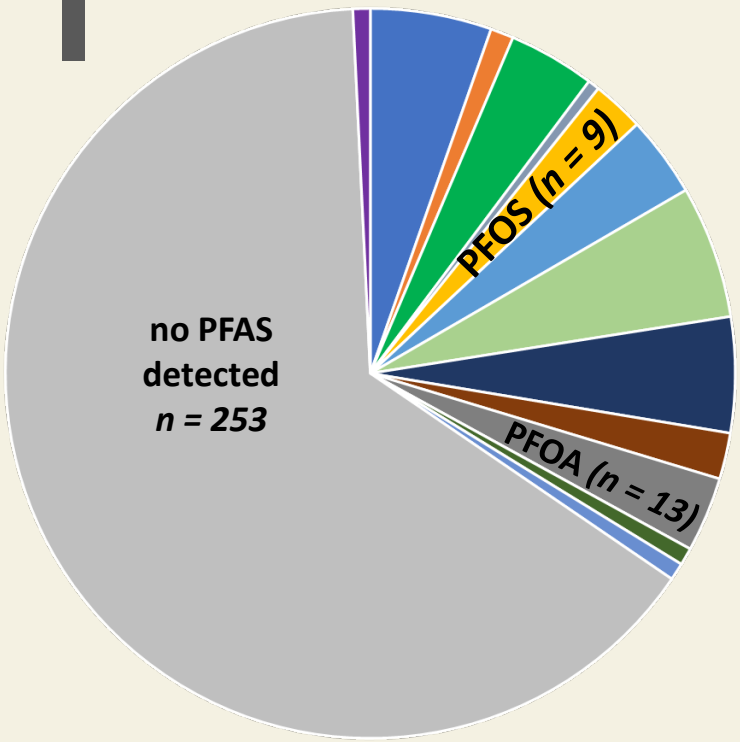


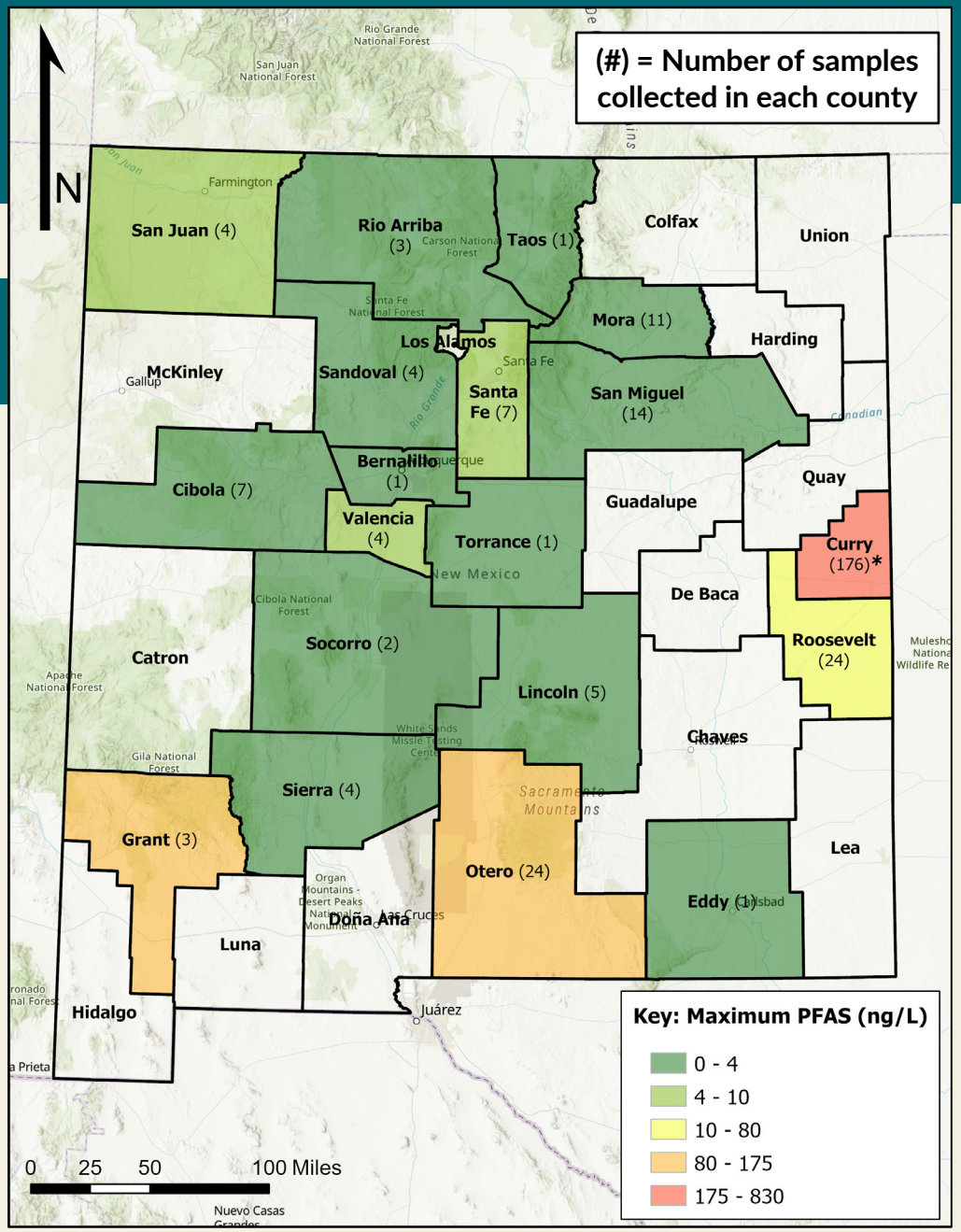


PFAS in New Mexico

Private Wells

n = 296

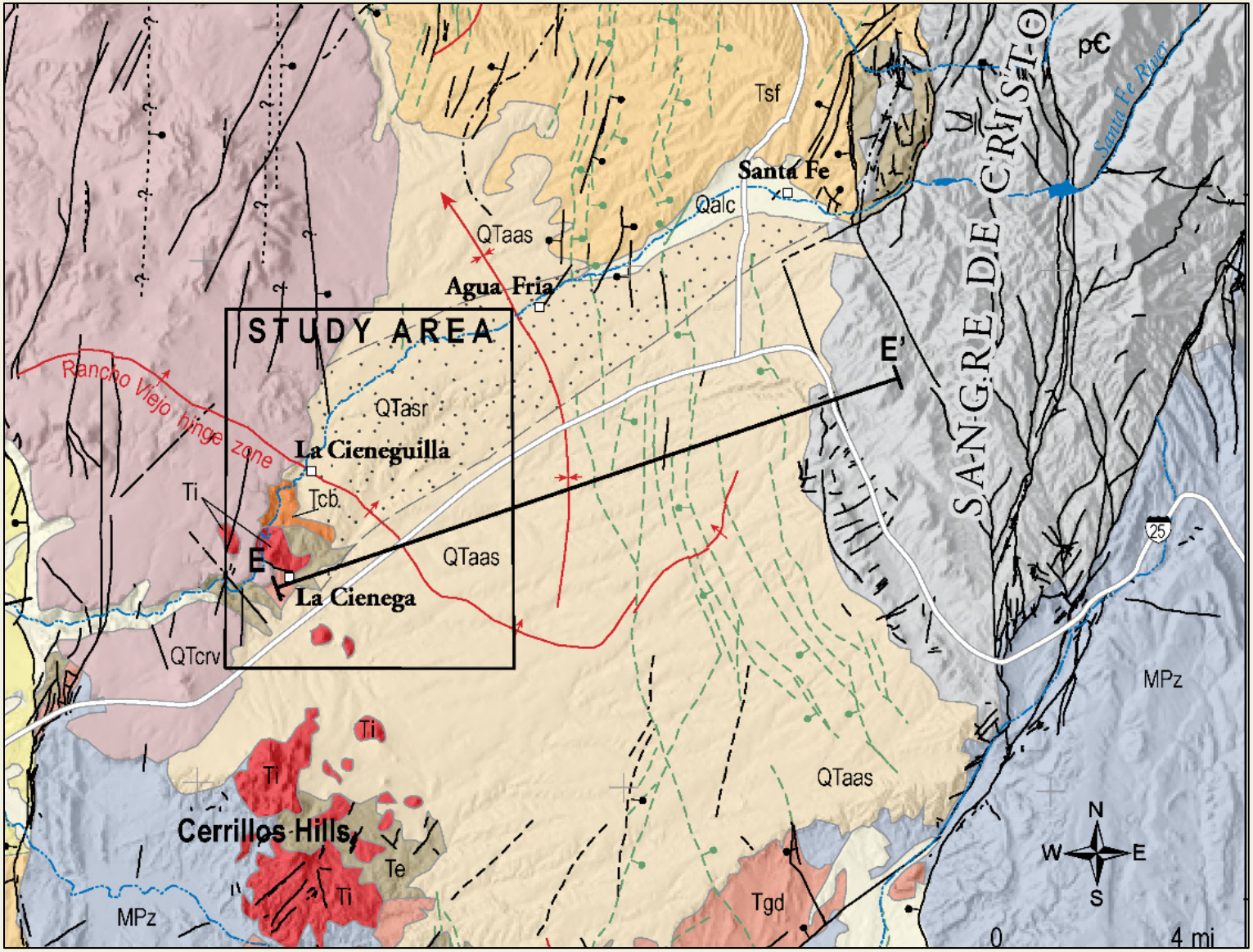




*Data excludes Curry County dairy farms

La Cienega Hydrogeology

Johnson et al. (2015, NM Bureau of Geology)



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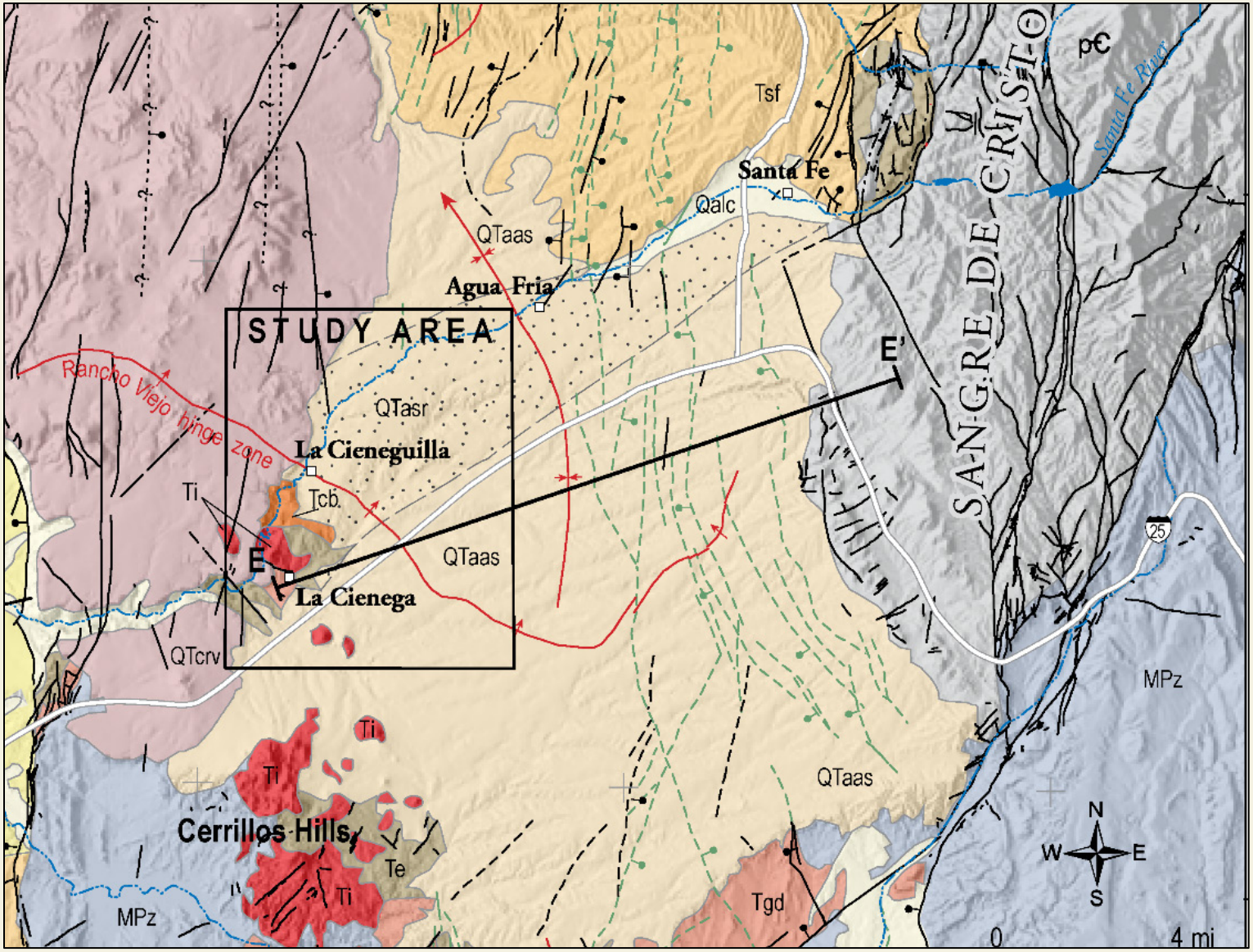

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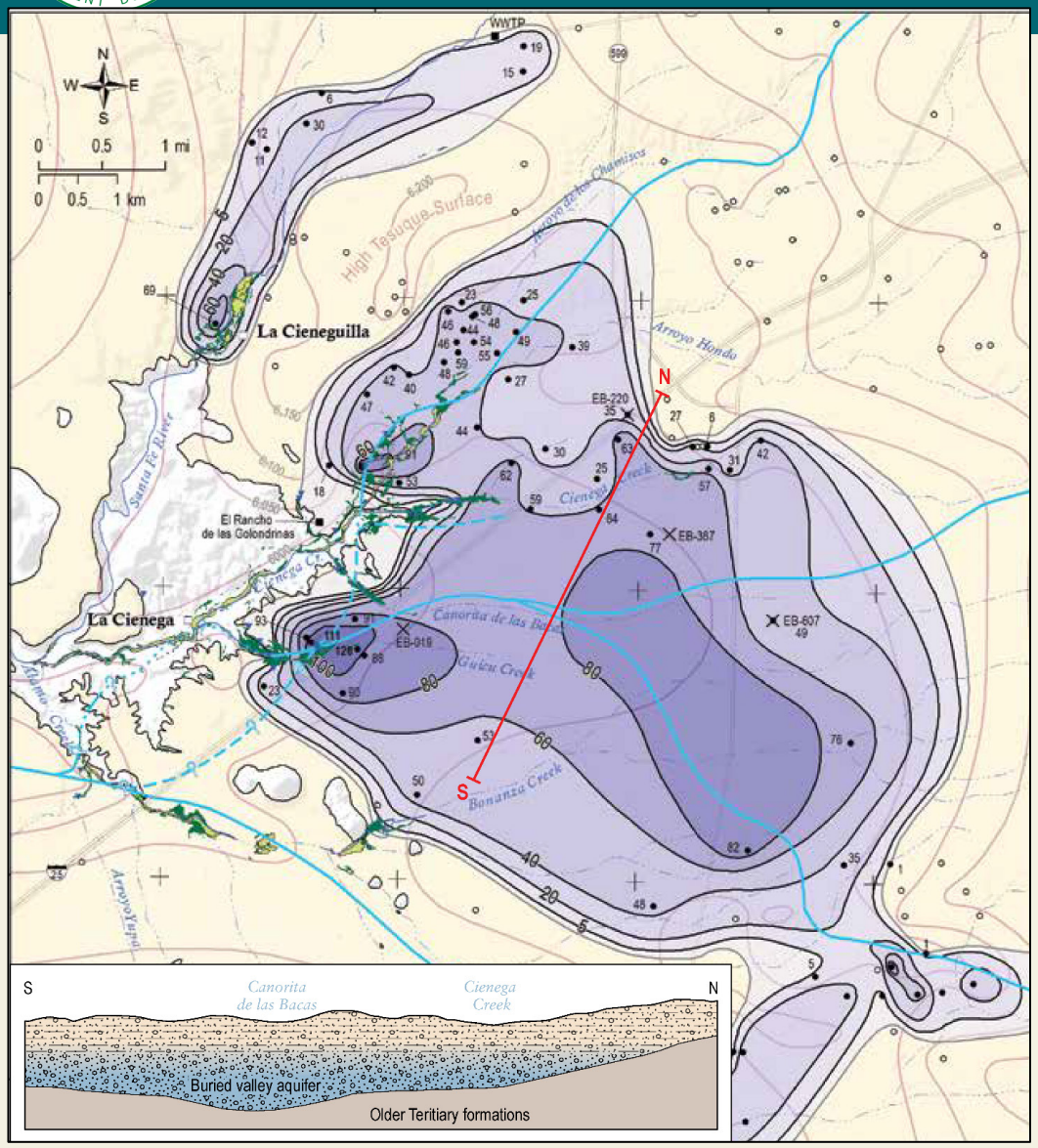

Buried paleovalleys in the Ancha Formation (e.g., ancestral Santa Fe River)

Saturated thickness of the Ancha Formation *(darker = thicker)*

La Cienega Hydrogeology

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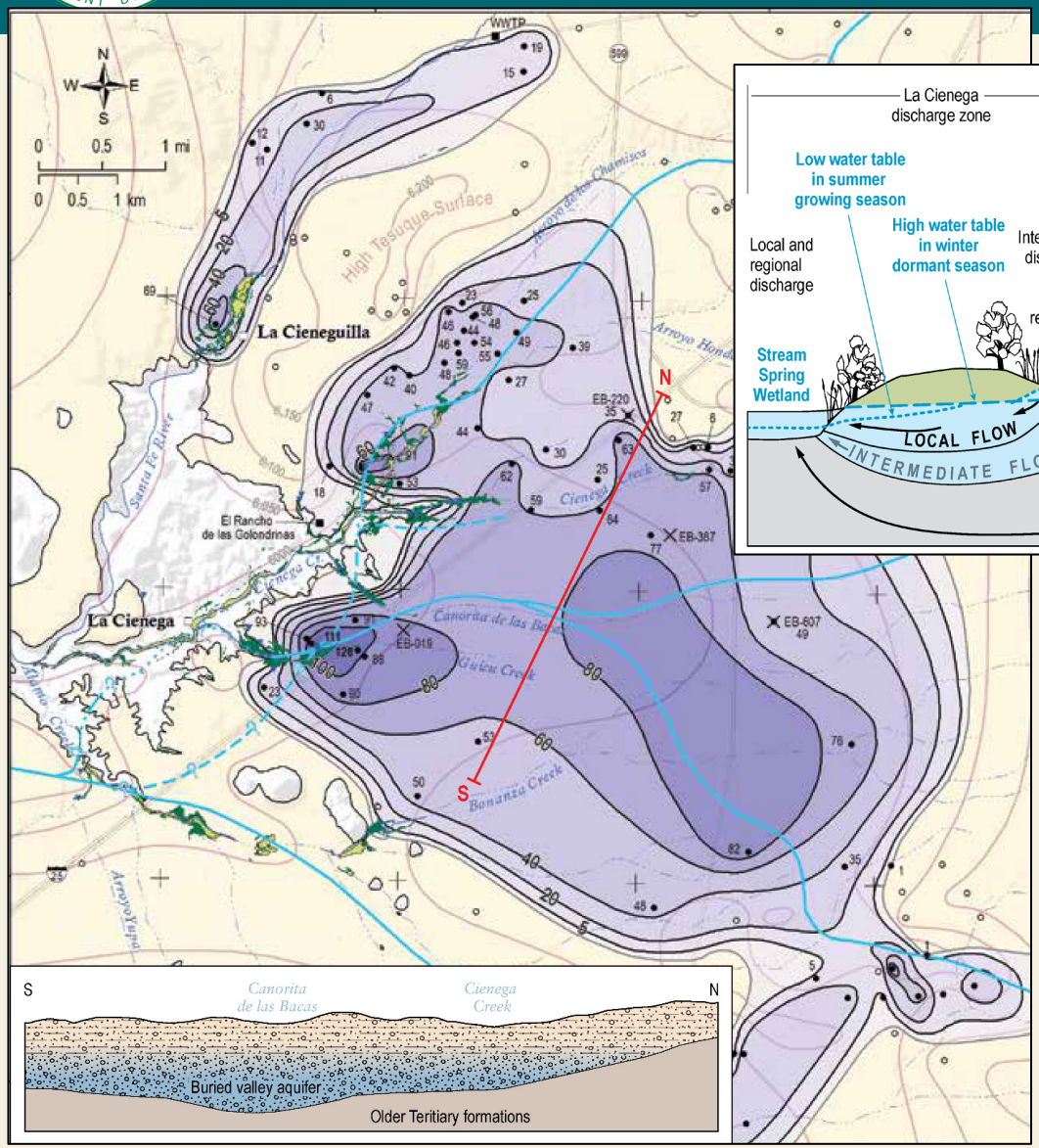

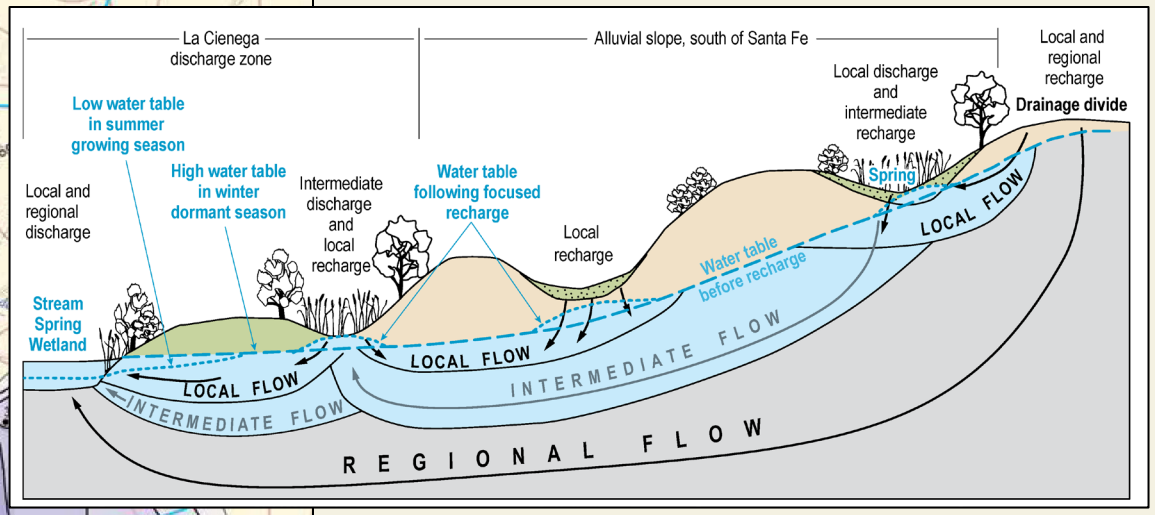

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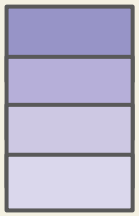

Saturated thickness of the Ancha Formation *(darker = thicker)*

Thank You

Andy Jochems
505-205-6964
Andy.Jochems@env.nm.gov