La Cienega-La Cieneguilla-El Canon Integrated Water Planning project meeting August 28, 2025

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Agenda - August 28, 2025

1. Project Purpose
2. Related Projects and Studies
3. Presentation: Area Hydrogeology
4. ***Small Group Discussion - Potential Projects***

Key Term to Know:

Preliminary Engineering Report (PER)

- Identifies impairments
- Evaluates engineering solutions

Alternatives = Potential Projects/Solutions/Strategies

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LCLC Integrated Water Planning Project

Scope: Preliminary Engineering Report (PER) related to the protection of traditional water resources in LCLC communities.

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LCLC Integrated Water Planning Project

Purpose: Protect sensitive resources (e.g., springs), build resilience, protect water quality, conserve water, and improve access to sustainable and healthy water and/or sewer services.

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LCLC Integrated Water Planning Project

How:

- Identify impairments to aquifer health
  (examples: water quality, groundwater levels, seasonal availability)
- Determine the most cost-effective solutions
  (examples: stormwater infrastructure, aquifer recharge, water/sewer connections)

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LCLC Integrated Water Planning project

- Update on other water projects and studies (Andrew)

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Hydrogeology of the La Cienega and La Cieneguilla area

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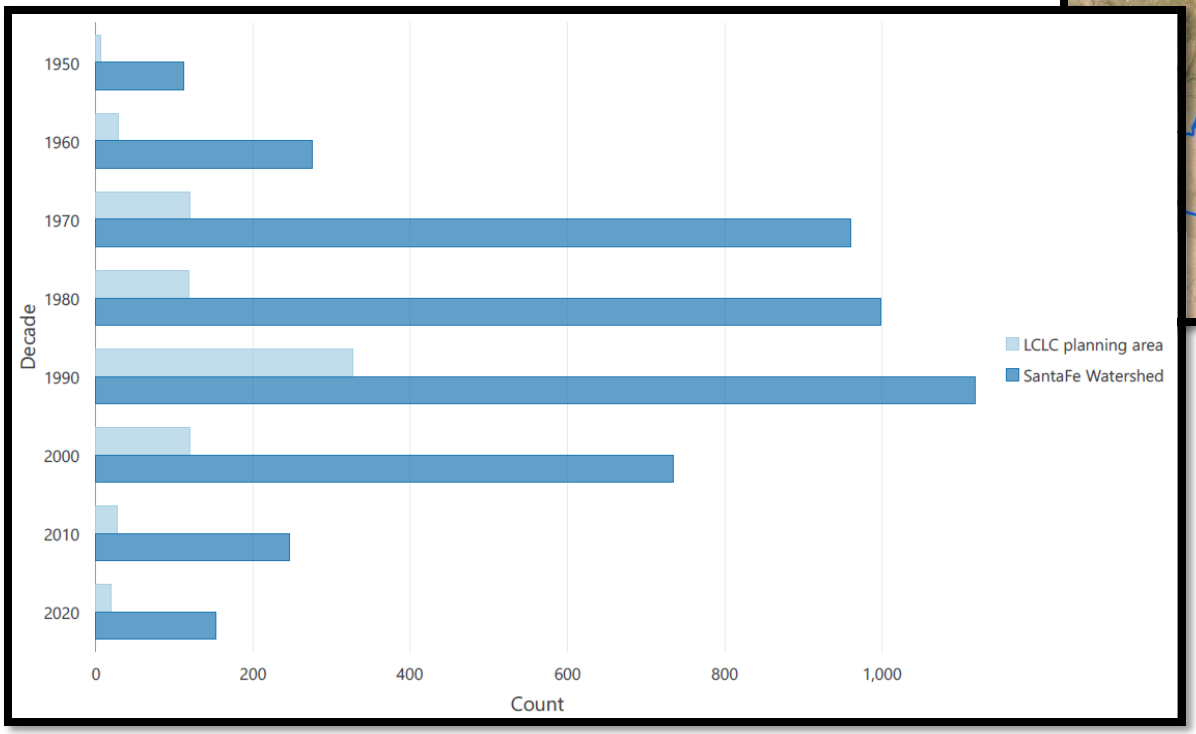
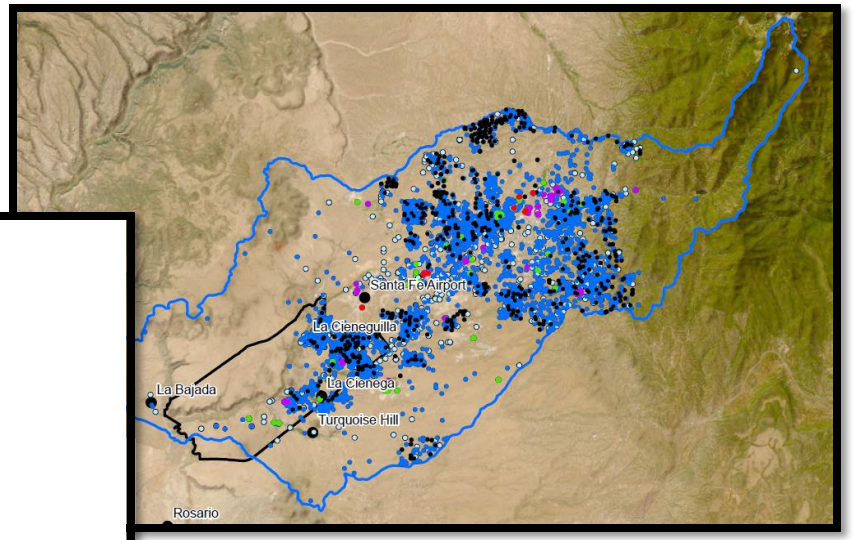
Groundwater Flow

- Groundwater flows from high to low pressure or "downhill"
  - Recharge flows from the Sangre de Cristo Mountains towards the Rio Grande
- Water is "captured" before it reaches the springs by supply wells, discharge to creeks, and evapotranspiration (ET)

Upgradient Wells Capture Water





Watershed area: ~ 4,600 wells
LCLC area: ~ 760 wells

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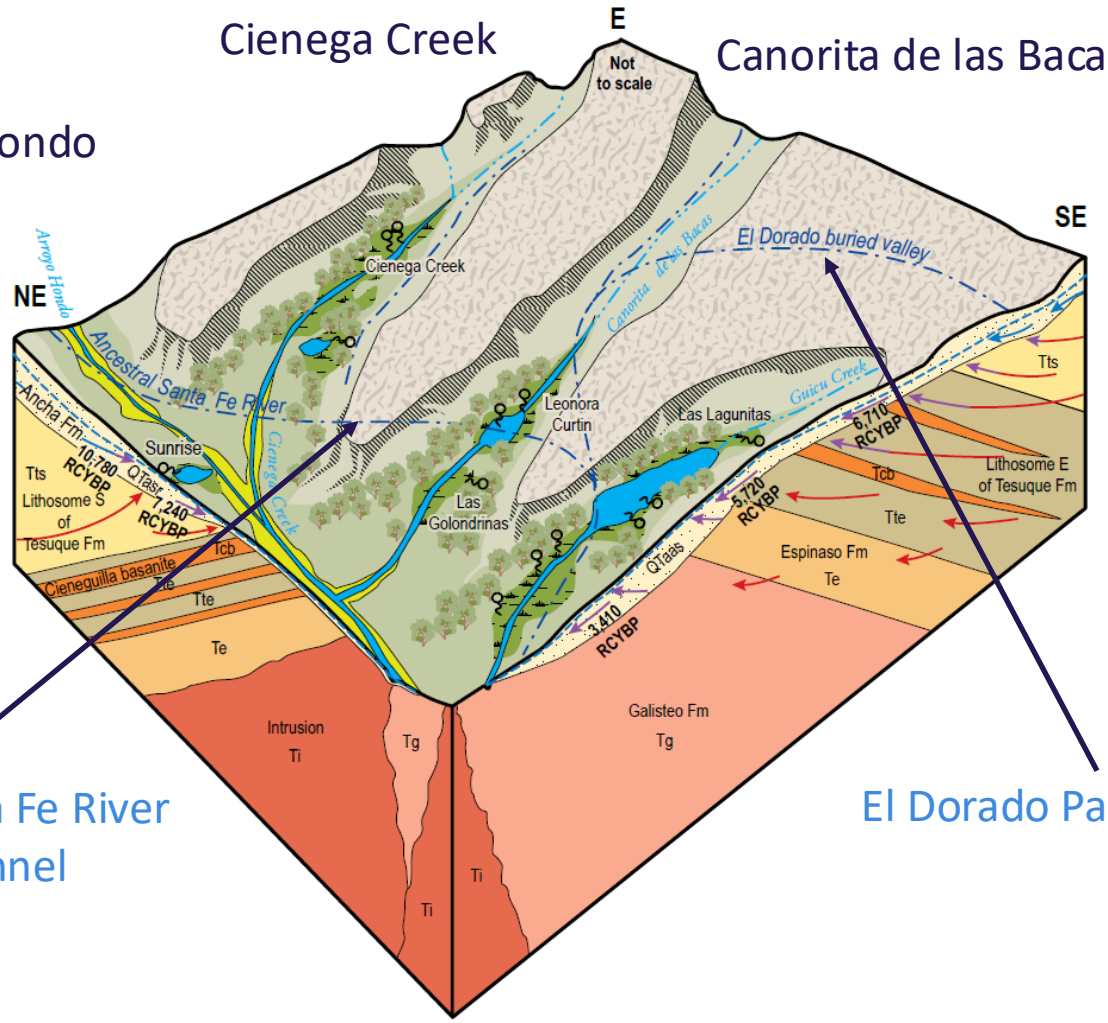
Where does the water originate?

- Groundwater at the wetlands and springs are discharge points of the regional aquifer
- Deep (old) and shallow (young) flow paths converge
- Groundwater preferentially flows through ancient, buried stream channels in Ancha
  - El Dorado and Santa Fe River paleochannels

Groundwater Plumbing



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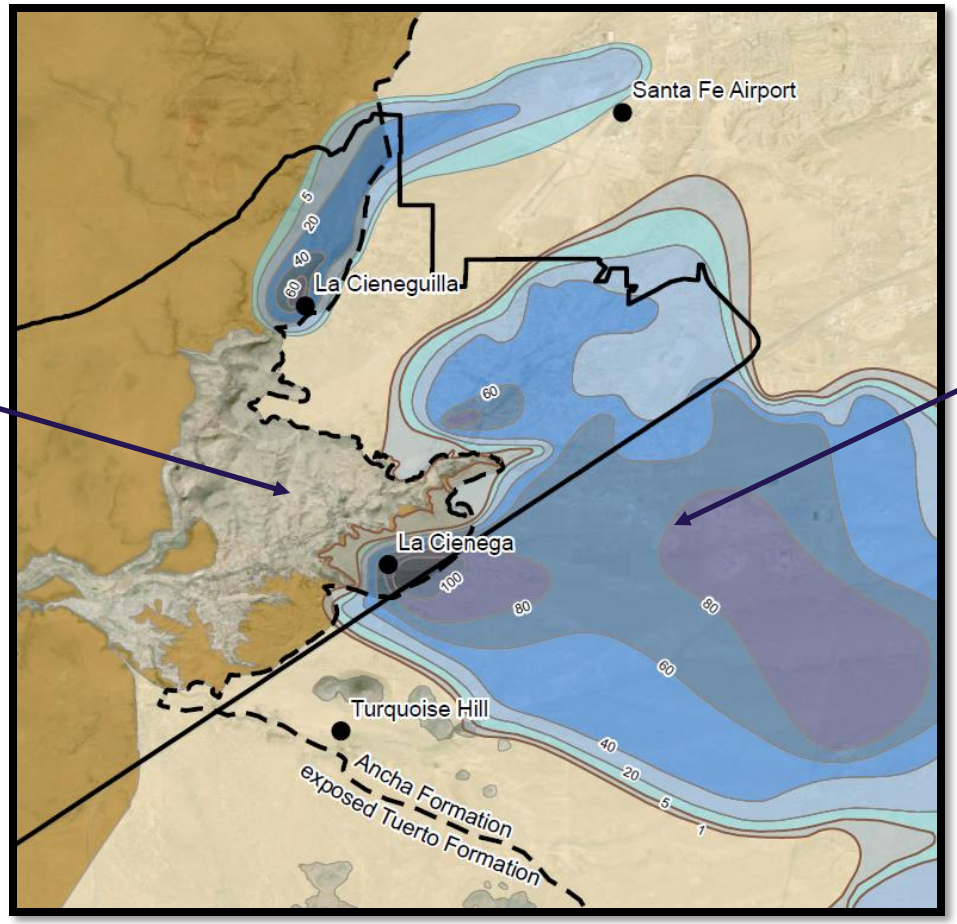
Ancha Formation Aquifer

Eroded Area



Saturated Area

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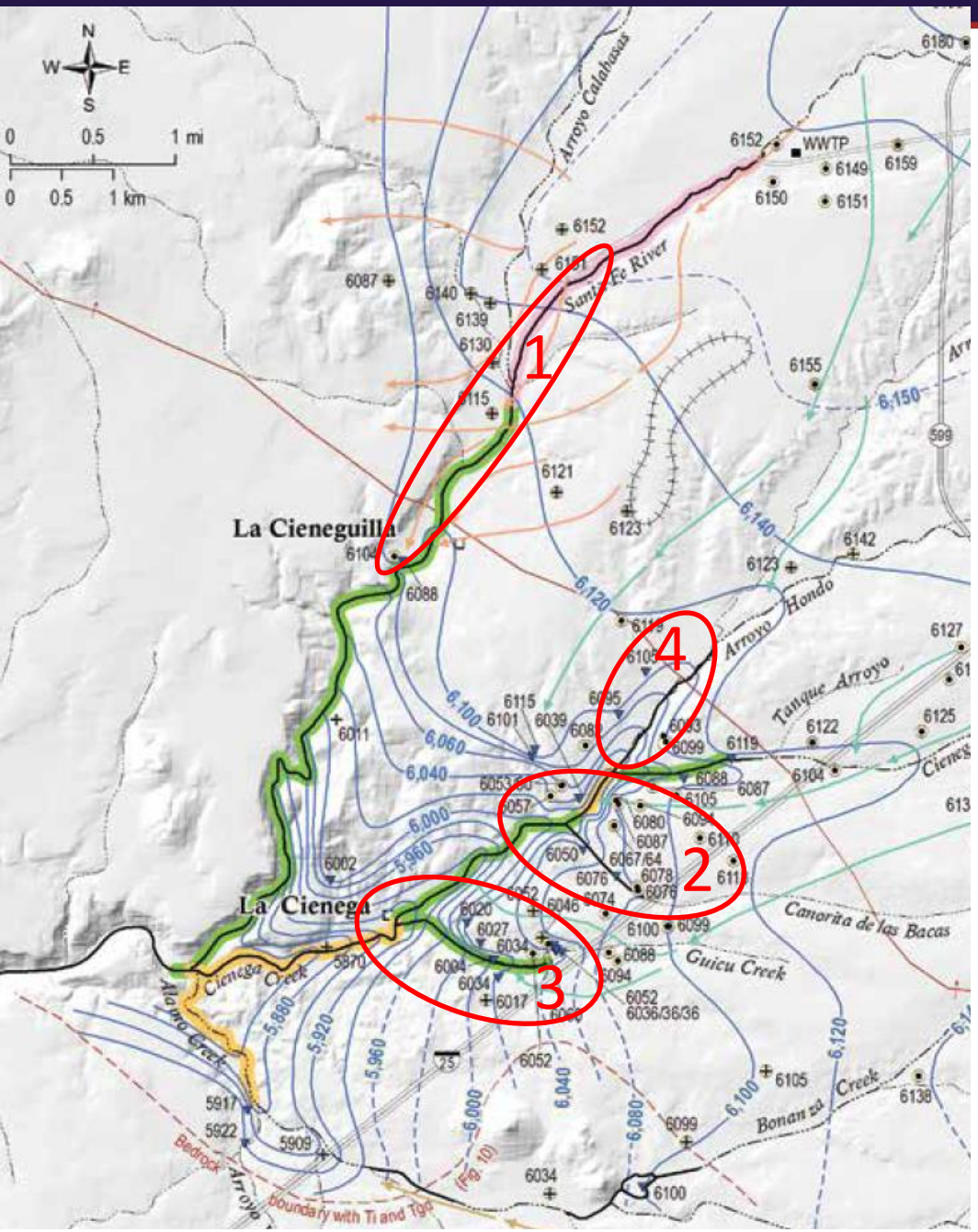

PLANNING AREAS and GROUNDWATER FLOW DIRECTIONS

1. Santa Fe River/PRWRF Area

- La Cieneguilla
- (Rio Grande)

2. El Dorado Paleochannel

- Leonora Curtin Wetlands
- Las Lagunitas

3. El Dorado Paleochannel Tributary

- Upper La Cienega wetlands

4. Ancestral Santa Fe River Paleochannel

- Sunrise Springs
- Arroyo Hondo wetlands

How to Enhance Flow

- Springs and Gaining Stream Reaches
  - Can benefit from managed recharge using
    - Groundwater
    - Surface water (via Buckman Direct Diversion Project)
    - Treated effluent
- Introduce Water Upgradient
  - Ancha permeability 10 to 100 feet/day
  - Close to target area
  - Well, exfiltration gallery, arroyo

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Challenges

- Water availability
- Permitting
  - Requires a NMED discharge permit
  - May require an OSE USR permit (variance?)
- Hydraulics
  - Location, location, location
  - Wells may capture recharge
  - Needs to daylight in reasonable amount of time

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Creating Hydrologic Resilience

- Johnson et al. (2016) list the following possible solutions to reduce groundwater depletions in the Ancha Formation and support a positive water balance:
  - Eliminate groundwater withdrawals from areas near the ancestral Santa Fe River and El Dorado buried valleys
  - Manage the timing and location of groundwater withdrawals from the Ancha Formation saturation zone to eliminate or reverse further losses to the Ancha aquifer near the wetlands
  - Utilize the natural recharge capabilities of buried-valley aquifers in the Ancha saturation zone and develop effective aquifer storage projects where opportunities exist
  - Manage overgrowth of unwanted invasive vegetation in the wetland riparian zones to minimize summer losses to evapotranspiration

Small Group Discussion: Project Preference

What alternatives (potential projects) should be formally evaluated?

What projects would...

...be best for the community?

...protect sensitive resources like the springs?

...ensure clean, accessible water for families and farmers?

...reduce demand on the aquifer?

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Next Steps

At a future meeting, solicit feedback on project evaluation criteria.

How should project be evaluated?

Examples:

Capital Costs (building cost)

Operations and Maintenance (ongoing cost)

Environmental Impacts

Shorter-term Results

Longer-term Results

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Potential Project Types

1. Vegetation management
2. Stormwater management
3. Reduce local/upgradient groundwater demand
4. Recharge and reuse projects

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Potential Projects

1. Vegetation management
   - Remove invasive species to reduce evapotranspiration (ET)
   - Enhance wetland areas

2. Stormwater management
   - Implement stormwater projects that would retain runoff for up to 96 hours, slowing down flows and allowing for more infiltration
   - Implement a comprehensive community-wide water conservation and water harvesting program to include stormwater management and flood control

Potential Projects

3. Reduce local/upgradient groundwater demand
   - Connect more domestic well users to County water or other small water systems
   - Stop approving developments that would be supplied by domestic wells
   - Coordinate with the Eldorado Area Water & Sanitation District (EAWSD) regarding taking their Ancha/Tesuque wells offline
   - Construct the proposed La Cieneguilla mutual domestic water system
   - Water conservation initiatives (including promoting rainwater harvesting)

4. Recharge and reuse
   - Recharge treated wastewater from the County's Quill Wastewater Treatment Facility (QWWTF) upgradient of area springs
   - Increase the reuse of treated effluent (e.g., for irrigation) to minimize groundwater pumping
   - Connect more septic system users to the County sewer system, increasing the volume of wastewater that is collected and treated (and potentially reused)

Discussion

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