

# Adelaida Hydrology Study

*Evaluation of Groundwater Resources in the Adelaida Area, San Luis Obispo County, California*

June 2, 2021

In cooperation with the San Luis Obispo County Flood Control and Water Conservation District;

Upper Salinas-Las Tablas Resource Conservation District



*These data are preliminary or provisional and are subject to revision. They are being provided to meet the need for timely best science. The data have not received final approval by the U.S. Geological Survey (USGS) and are provided on the condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the data.*

# Purpose and Scope, and Objectives

## **Purpose and Scope:**

- Characterize the hydrology of the Adelaida Area, SLO County, California

## **Objectives:**

- Compile and collect geologic, hydrologic, and hydraulic data
- Quantify the hydrologic budget
- Refine the hydrogeologic understanding of the area with respect to geographic, vertical, and temporal variations

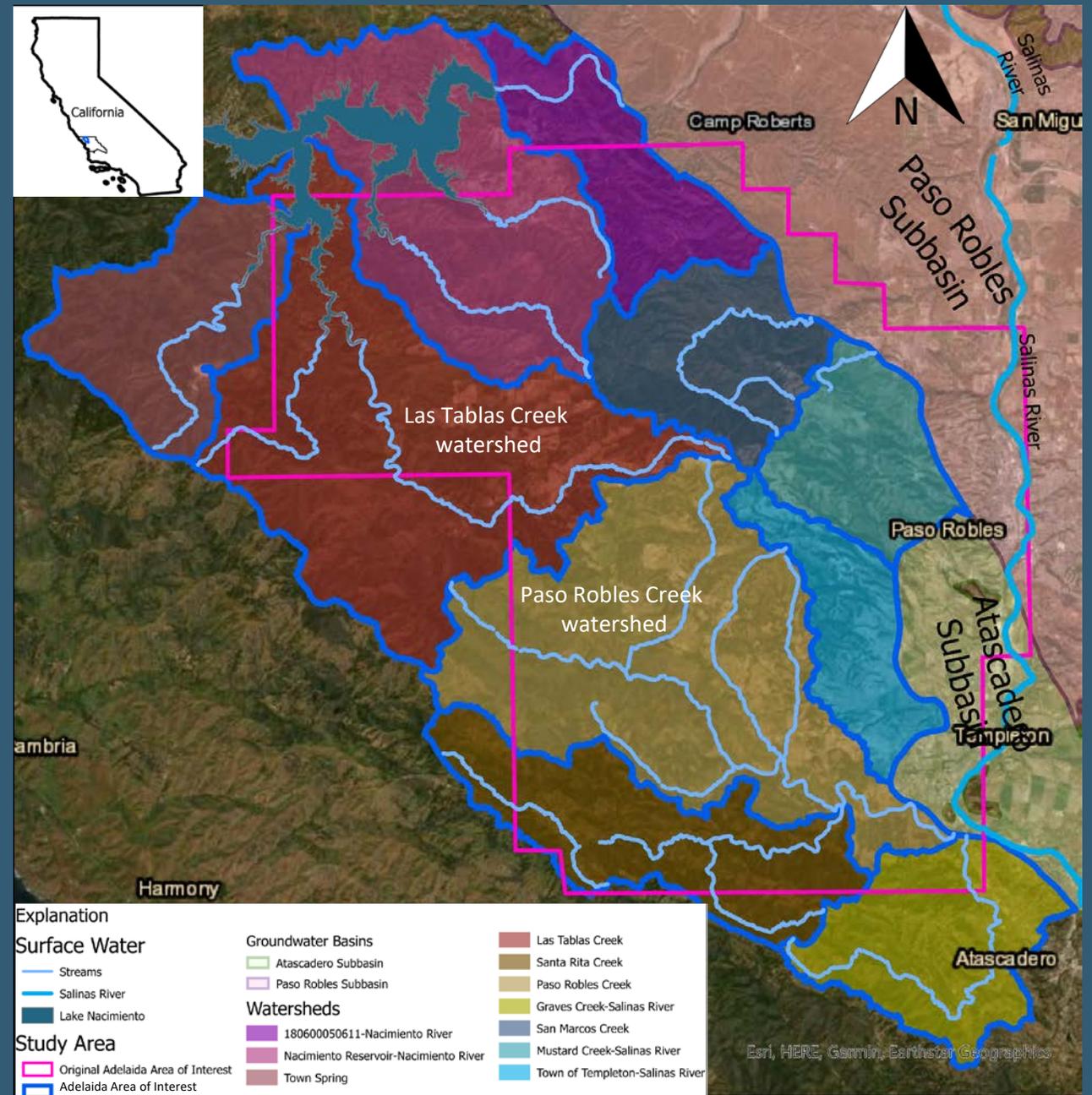
# Concerns

## Concerns

- Increased demand for water use likely will continue to affect groundwater levels and availability
- Adelaida Area is *not* in a DWR designated groundwater basin; comprised mostly of consolidated sedimentary rocks
- SLO County has a specific need to evaluate historic and current hydrogeologic conditions

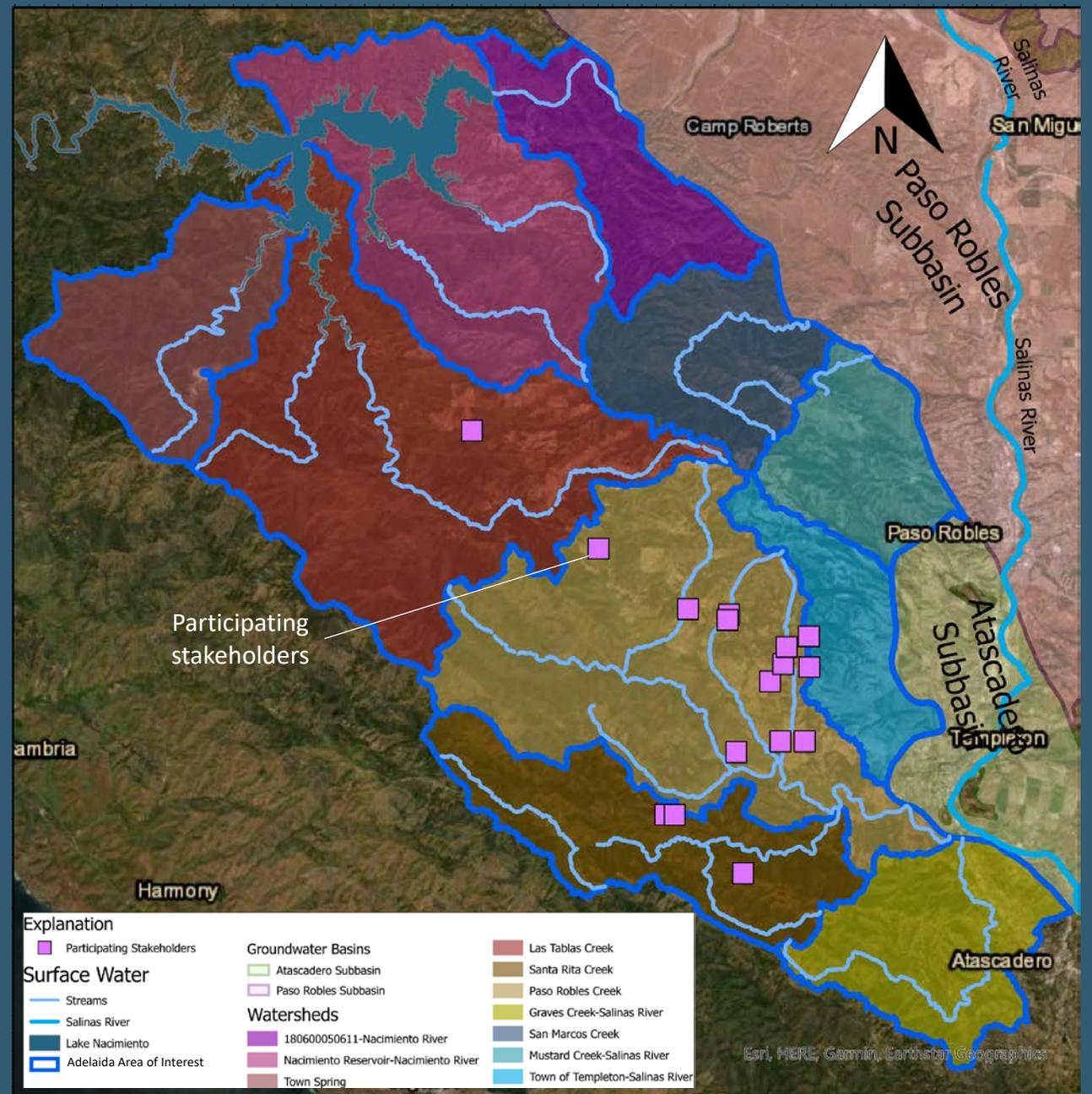
# Study Area

- Conforms with hydrologic boundaries
- Includes 10 local watersheds
- Areas of focus include Paso Robles Creek and Las Tablas Creek watersheds



# Local Participation and Outreach

- Community Meetings August 2020 and April 2021
- Engage residents, vineyards, advocacy groups
- 17 stakeholders agreed to participate
  - Field visits, phone calls, email
  - Hydrogeologic data
  - Local knowledge—past and present



# Local Participation and Outreach

- Website

- Project Summary

- Interactive map
    - Hydrologic information
    - Select data
    - Outreach

- Interactive Map

- Select publicly available data

## Evaluation of Groundwater Resources in the Adelaida Area of San Luis Obispo County, California

[Overview](#) | [Data and Tools](#) | [Maps](#) | [Partners](#)

Stakeholders in San Luis Obispo County are concerned that the increased demand for water use has, and will continue to, affect [groundwater](#) levels and availability in the Adelaida area. To address stakeholder concerns, the County of San Luis Obispo Board of Supervisors has asked the USGS to conduct a comprehensive evaluation of groundwater resources of the Adelaida area.

Status - Active



[Interactive Map](#) | [Water Supply](#) | [Land Use](#) | [Groundwater Flow](#) | [Outreach](#)

Groundwater is the primary source of water in the Adelaida area and local stakeholders use private domestic and commercial wells to pump groundwater from the [aquifer](#) system. There is concern among stakeholders that the increasing demand for water is negatively affecting groundwater levels and groundwater availability. In response to these concerns, the County of San Luis Obispo Board of Supervisors (County Board) seeks to evaluate groundwater management solutions in the Adelaida area and has asked the United States Geological Survey (USGS), in cooperation with the San Luis Obispo County Flood Control and Water Conservation District (SLOFC&WCD), to provide a comprehensive evaluation of historic and current groundwater resources in the area.

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[hydrogeology](#)  
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View of Paso Robles and the Adelaida area near the central California coast as taken from an airplane flying overhead. (Credit: Geoff Cromwell, USGS. Public domain.)

The USGS will gain an increased scientific understanding of the hydrologic system in the Adelaida area by compiling and collecting hydrogeologic and hydraulic data in the defined study area. The California Department of Water Resources (DWR) has not defined the highlands of the Adelaida area as a groundwater basin, therefore the area is not subject to California [Sustainable Groundwater Management Act \(SGMA\)](#) regulations (CADWR, 2016). The eastern border of the Adelaida area is outside of the Salinas Valley-Paso Robles Area (Paso Robles sub-basin) and Salinas Valley-Atascadero Area (Atascadero sub-basin) groundwater basins (CADWR, 2016; fig. 1). Publicly available hydrogeologic and hydraulic data (such as aquifer yield, water quality, or water availability) are limited throughout the Adelaida area, and to date, no investigation of the groundwater resources or water-bearing units of the aquifer system of the Adelaida area has been completed. The Adelaida Study (Study) will extend to the eastern area of the Paso Robles sub-basin and Atascadero sub-basin to better understand the groundwater connectivity between the sub-basin boundaries and the Adelaida areas.

This Study will benefit water managers, stakeholders and potential future interested entities and studies by providing:

- an improved understanding of the aquifer system, including identifying the water-bearing units
- evaluating the historic and current impacts of groundwater use in the Adelaida area
- quantifying the groundwater resources in an undefined local aquifer system
- advancing monitoring networks in the County for groundwater and water-quality data
- providing a more thorough understanding of geological controls on water availability

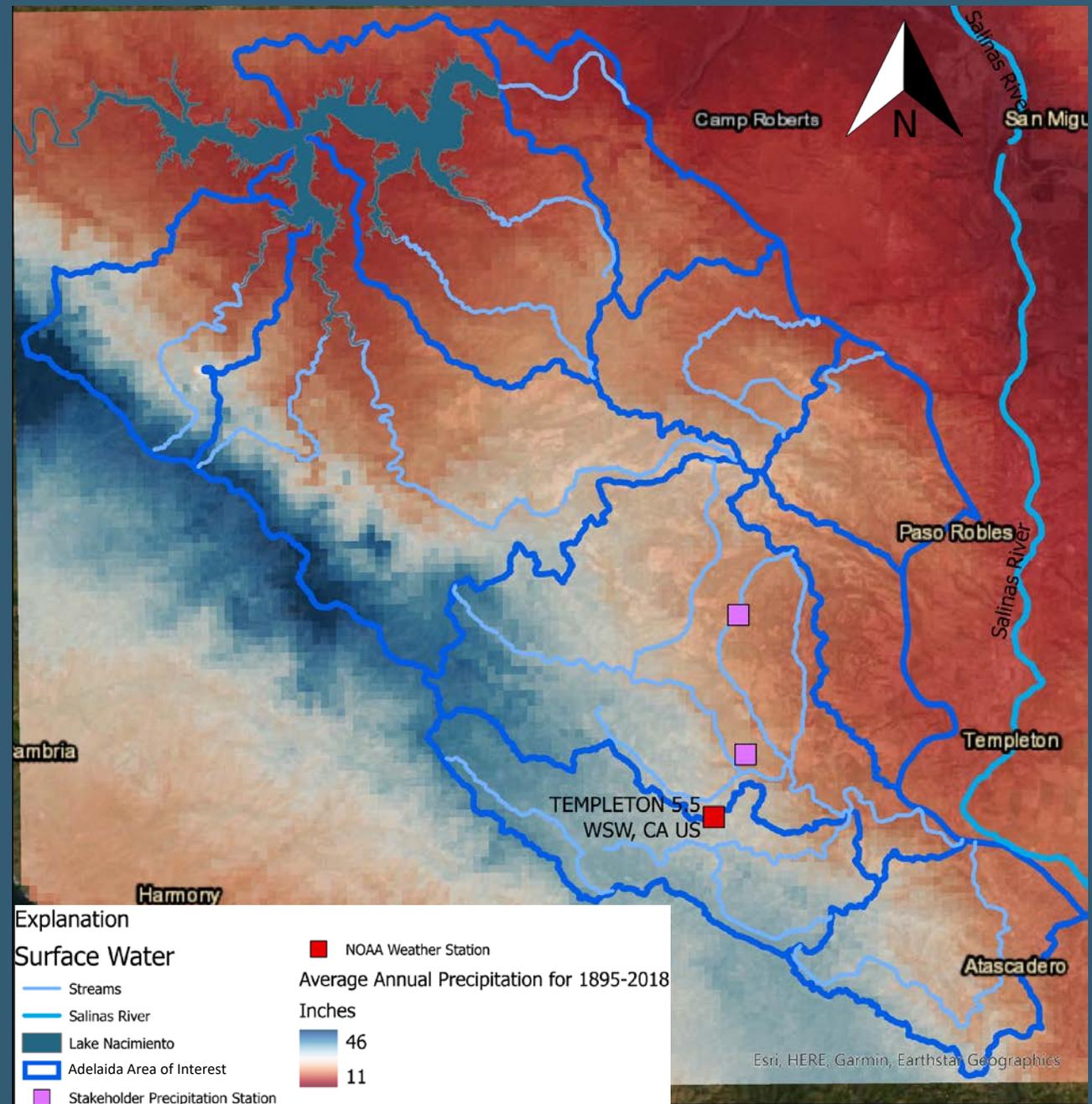
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# Data Sources and Compilation

- Public databases, reports, and local stakeholders
  - Climate (precipitation and temperature)
  - Land use
  - Streamflow
  - Surface and subsurface geology
  - Groundwater levels
  - Groundwater and surface-water chemistry
  - Groundwater recharge and discharge

# Climate (Precipitation)

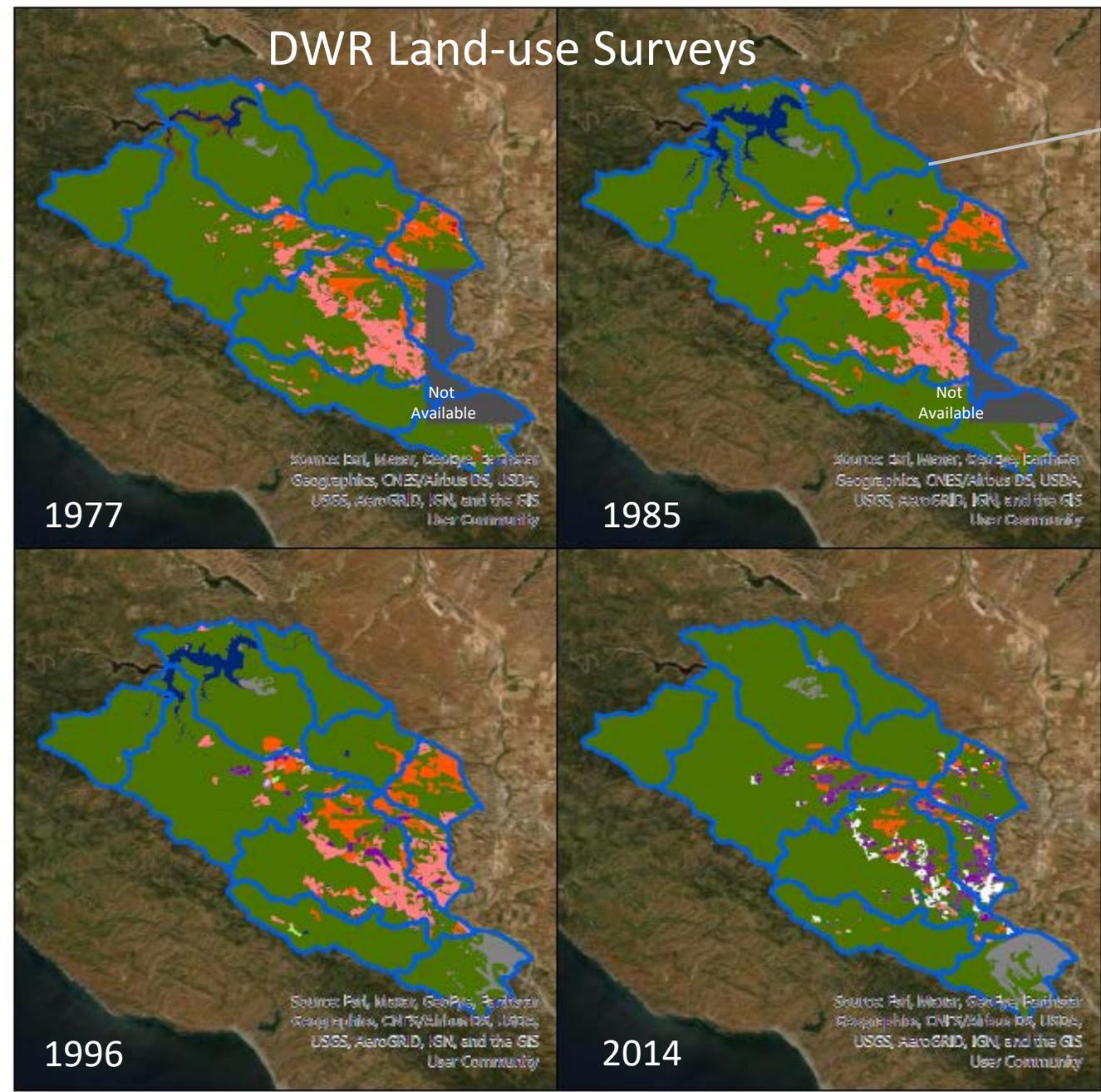
- Estimated precipitation
  - USGS Basin Characterization Model (Flint and others, 2021)



# Land use

## DWR Land-use Surveys

Adelaida area and sub-watersheds

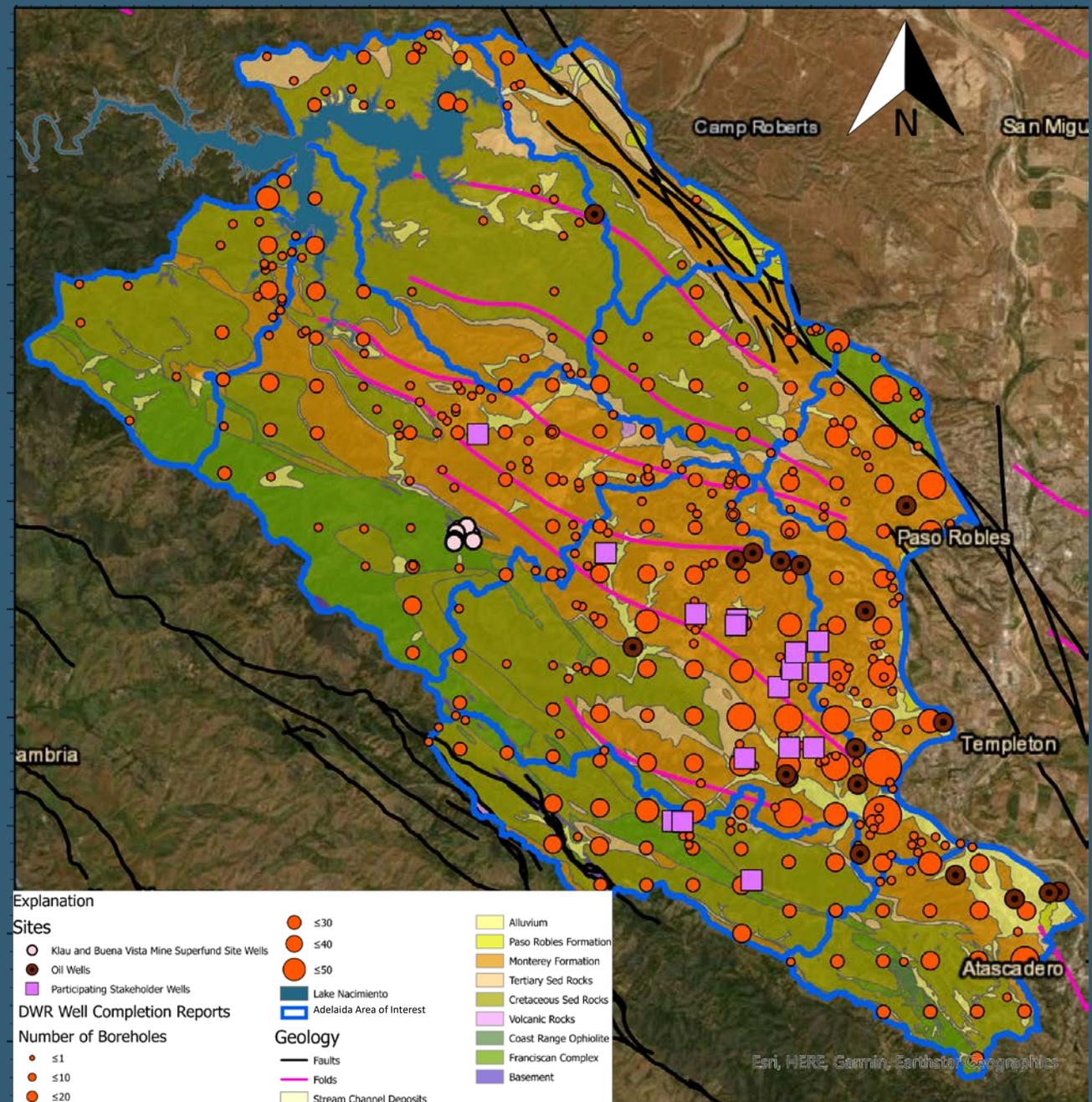


California Department of Water Resources (1977, 1985, 2000); LandIQ (2017)

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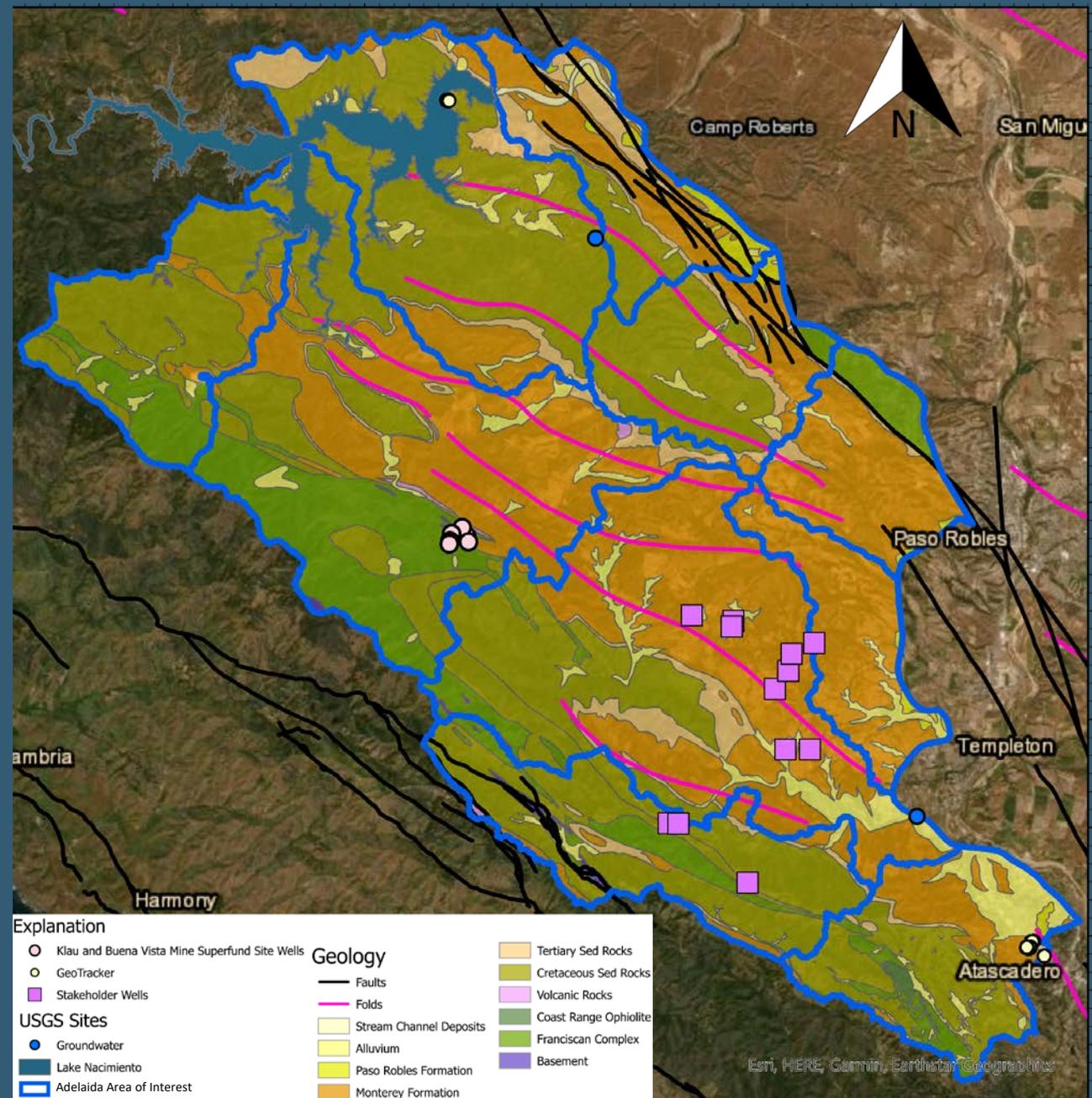
# Surface and subsurface geology

- Subsurface geology sources
  - Drillers' lithology logs
  - Borehole geophysical logs
- Regional geophysical surveys and data

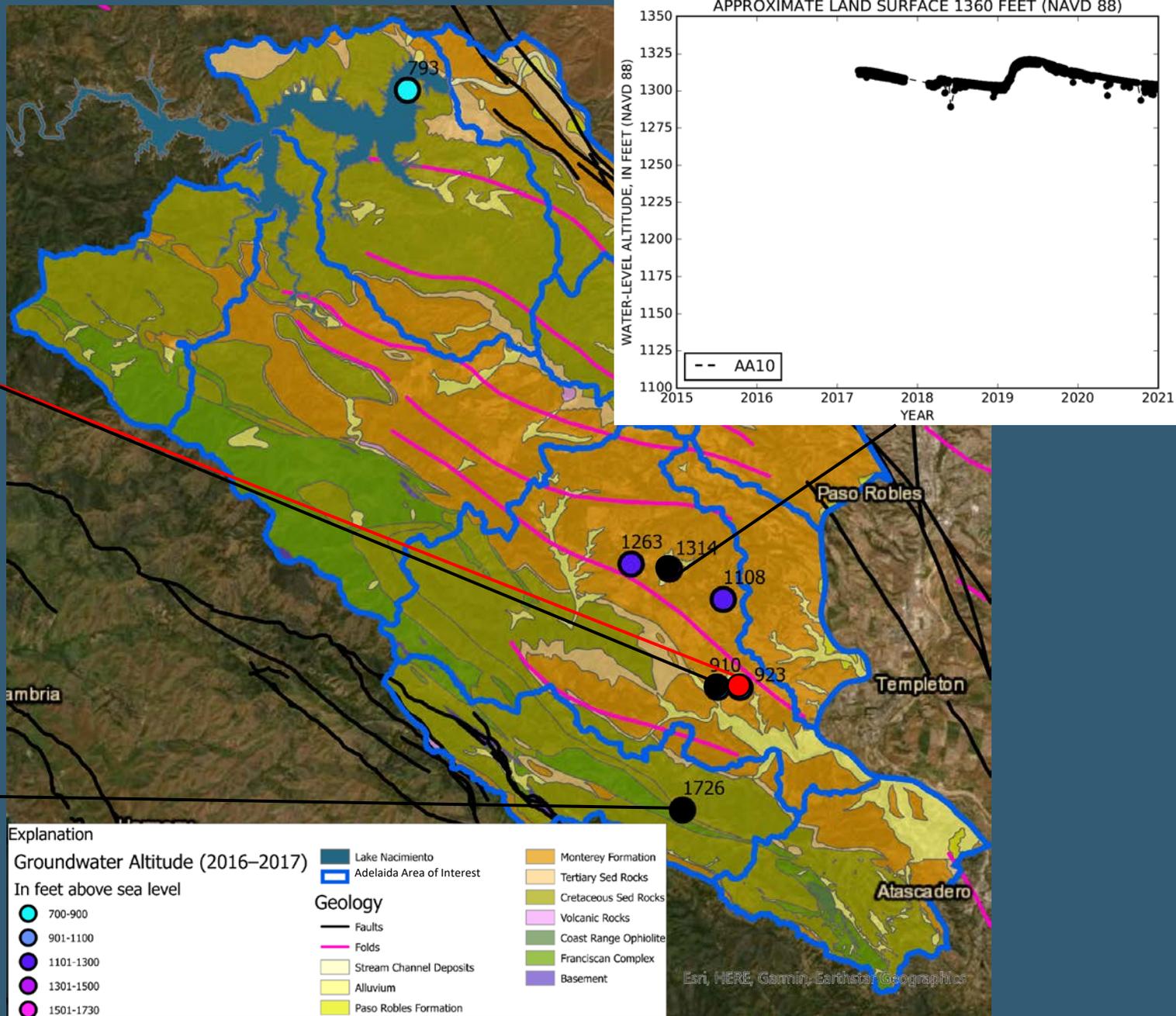
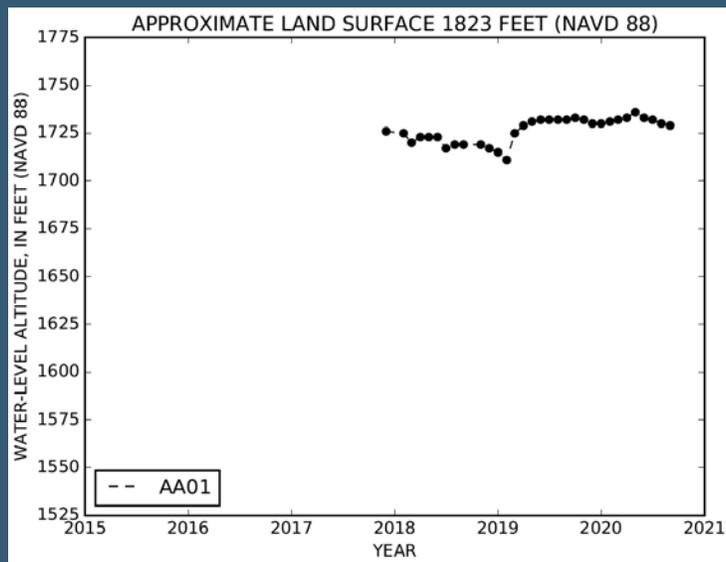
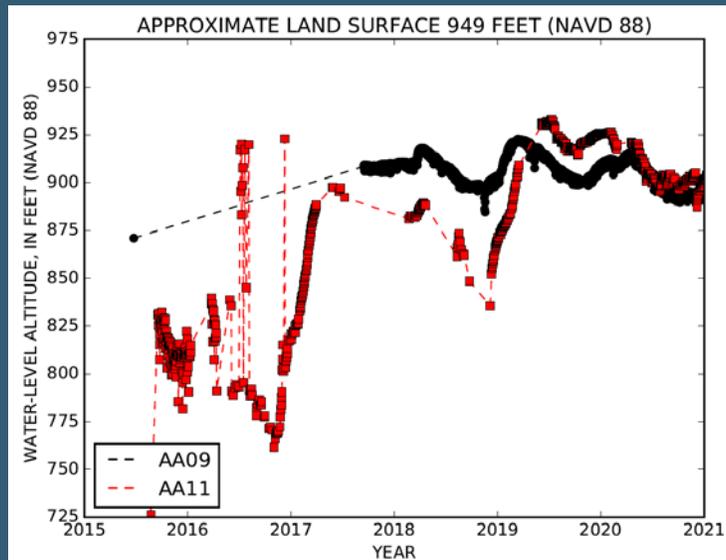


# Groundwater levels

- Groundwater-level measurements
  - 1992–2021
- Length of record
  - Occasional
    - Most stakeholder wells
  - Regular
    - Klau/Buena Vista Mine
    - GeoTracker
  - Semi-continuous
    - Few stakeholder wells

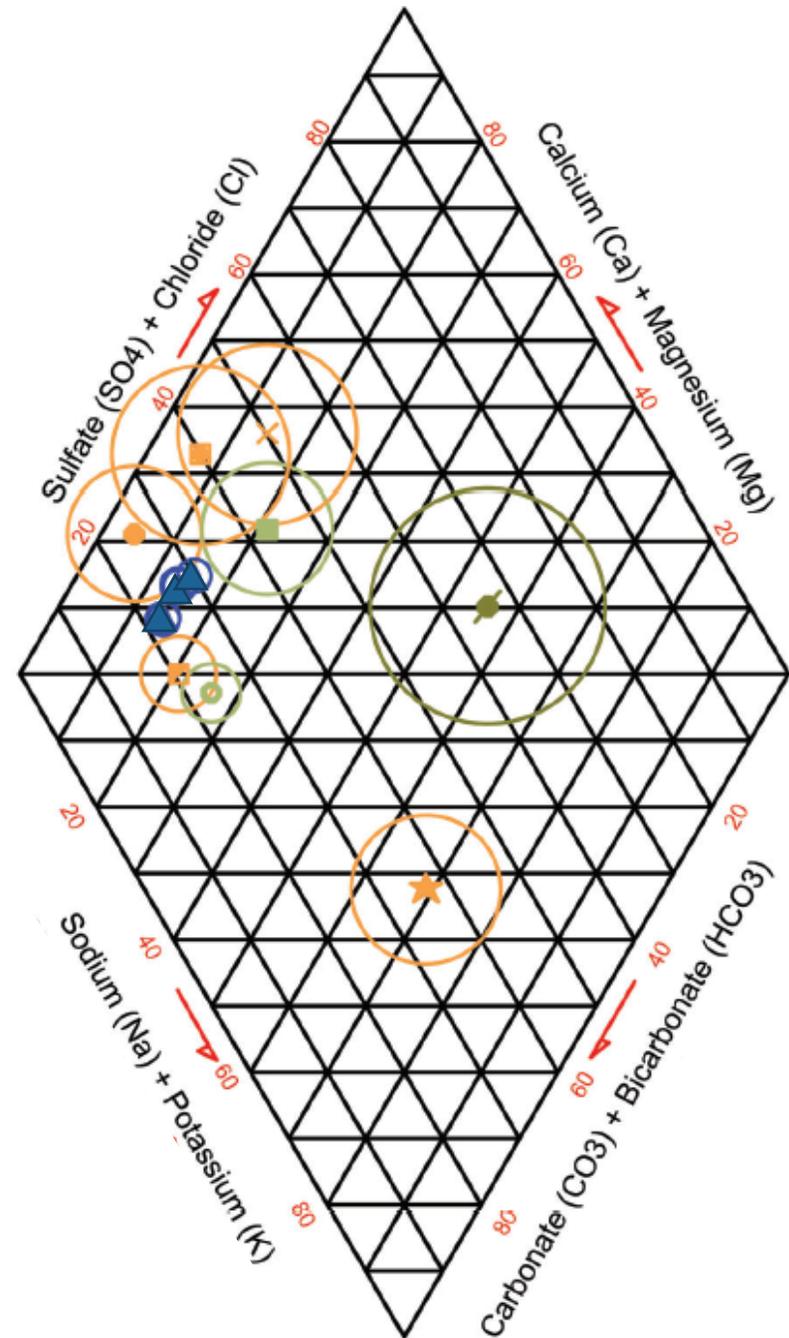
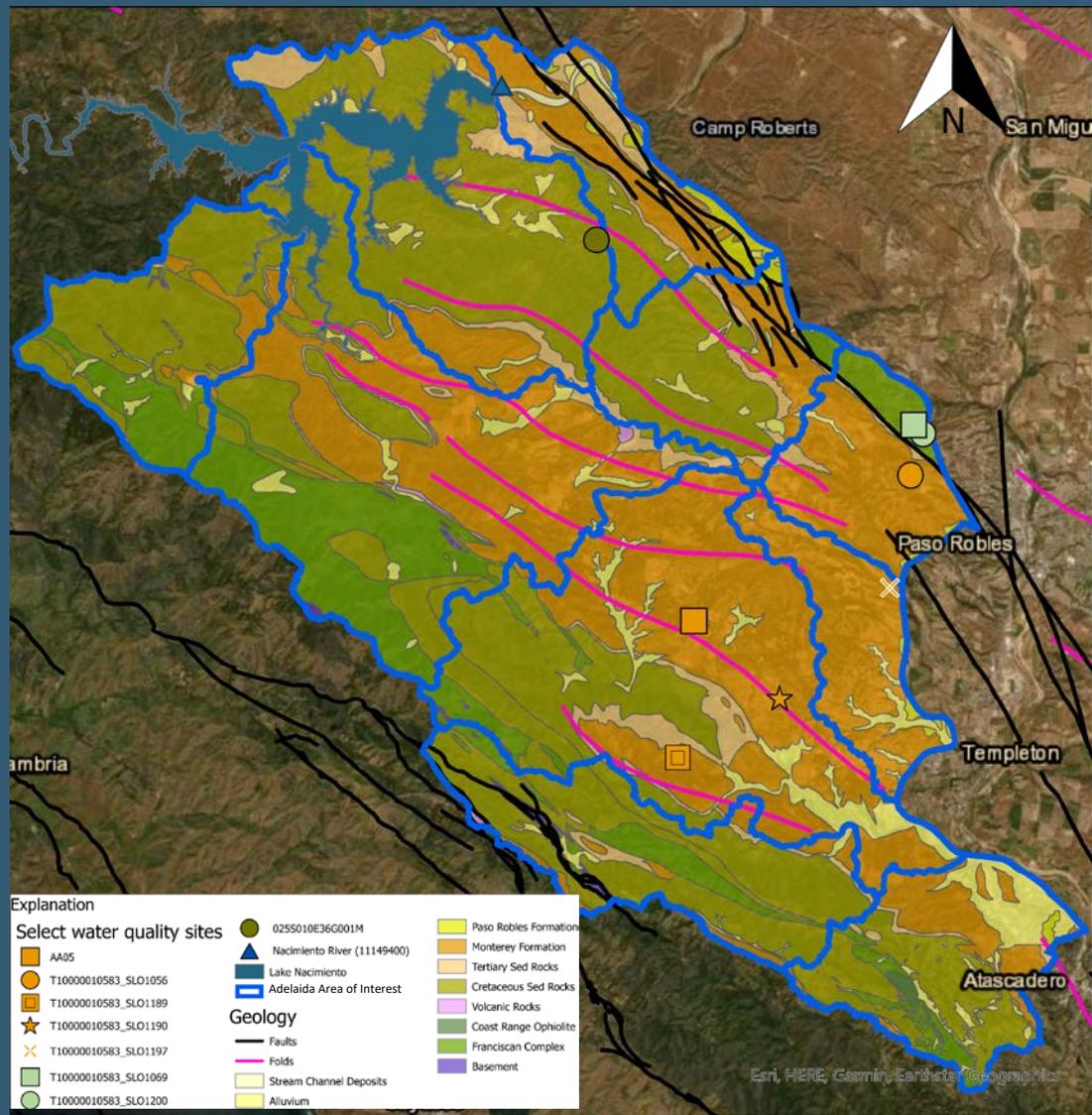


# Groundwater levels



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# Water Quality

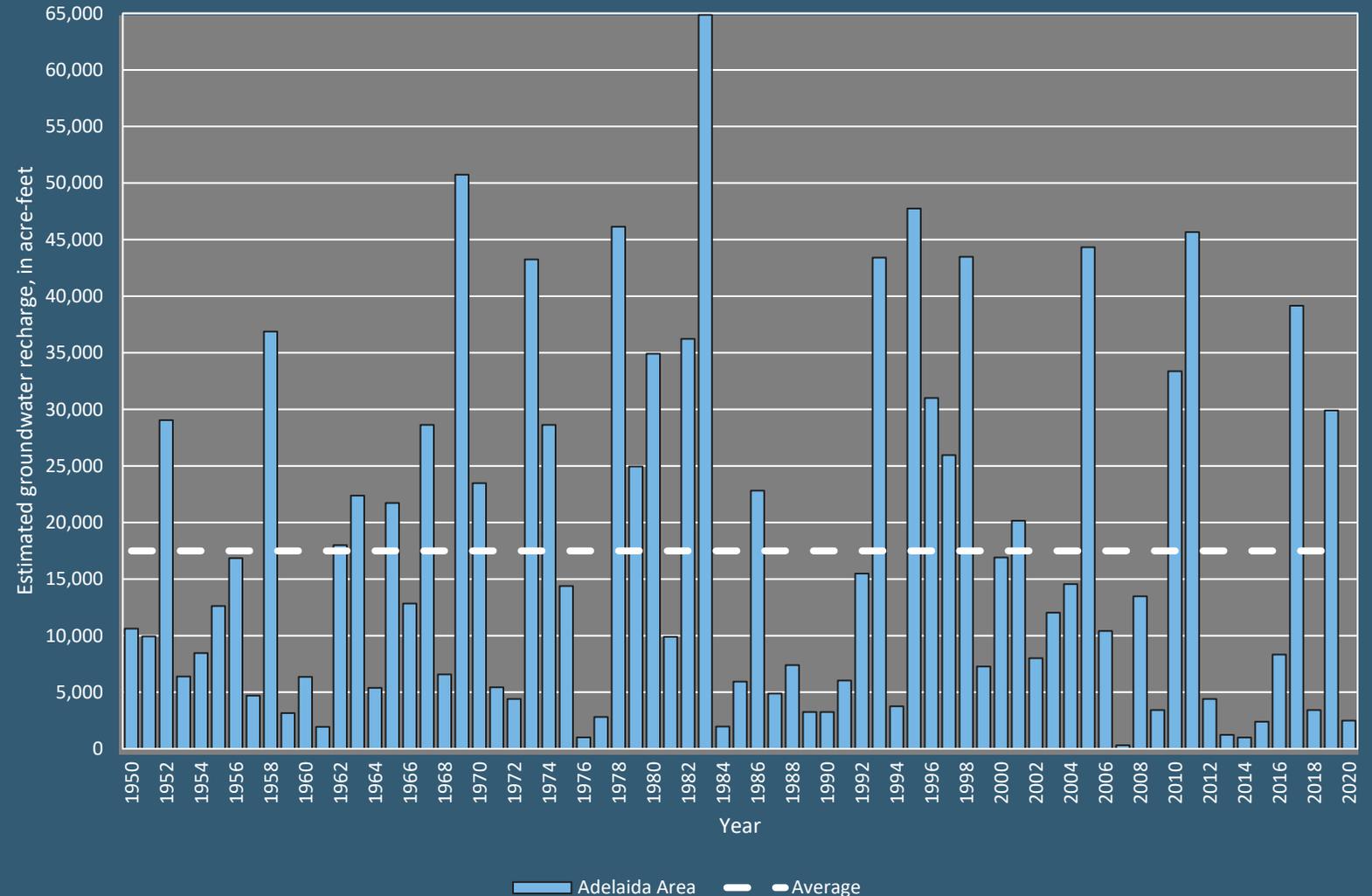


California State Water Resources Control Board (2016); CH2MHill (2012); U.S. Geological Survey (2020)

Preliminary, subject to revision. Do not cite or distribute.

# Estimated Recharge

- Estimated Recharge
  - USGS Basin Characterization Model (Flint and others, 2021)



Preliminary, subject to revision. Do not cite or distribute.

# Task 1 Summary

- Stakeholder outreach and project website
- Comprehensive hydrogeologic data compilation
  - Historic changes in climate and land use
  - Groundwater and surface-water flow and quality
  - Estimates of groundwater recharge
- Foundation for integrated analysis
- *Need for additional historic groundwater-level measurements*

# Proposed Future Work

- Data Collection
  - Hydrologic data
    - Surface-water monitoring
    - Groundwater-level monitoring
    - Water quality
  - Geophysical Data
    - Downhole geophysical logs
    - Direct-current resistivity surveys
  - Groundwater storage
    - Repeat microgravity surveys
    - InSAR
- Hydrogeologic Framework Model
- Evaluation and interpretation
- Reporting
  - USGS SIR, Factsheet, and data releases
- Project Website and Outreach
  - Annual community meetings

**All collected data will be publicly available through the USGS National Water Information System database, GeoLog Locator, or ScienceBase Data Release**

# Proposed Project Timeline

- Proposed work to SLO County Board of Supervisors Summer 2021
- Data collection 2021–2024
  - Field visits beginning Summer/Fall 2021
- Framework and analysis 2022–2024
- Anticipated completion of study late 2025

# Thank you!

Sign up for EMAIL LIST at:

<https://www.slocounty.ca.gov/AdelaidaStudy>

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## Websites:

### Upper Salinas – Las Tablas Resource Conservation District:

<https://www.us-ltrcd.org/adelaida-hydrology-study>

### San Luis Obispo County Flood Control and Water Conservation District:

<https://www.slocounty.ca.gov/AdelaidaStudy>

### U.S. Geological Survey:

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