



**Santa Maria Valley
Water Conservation District**

Groundwater Summaries

Santa Maria & Cuyama Valleys

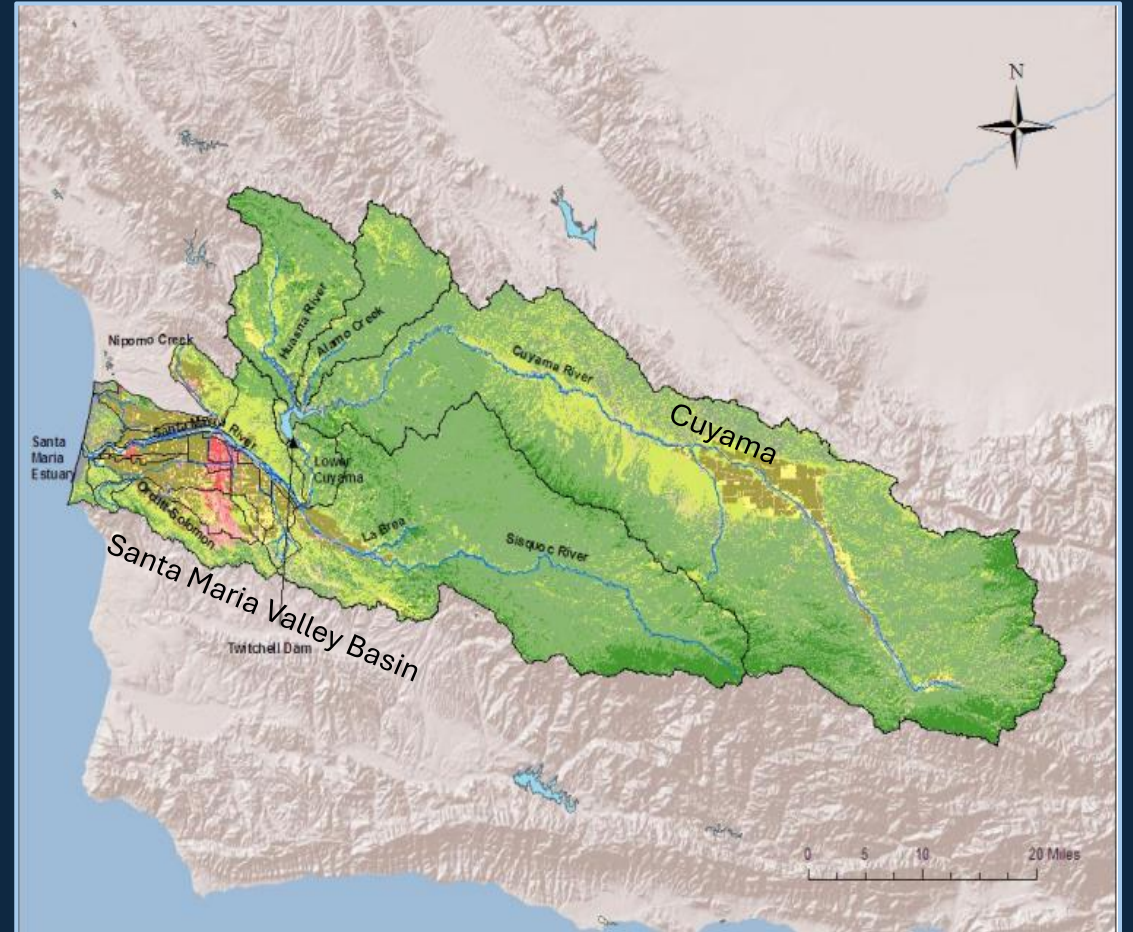
Director Ramon Elias, Division 1

October 2025

Santa Maria and Cuyama Groundwater Report Summaries

The Cuyama and Santa Maria Valleys

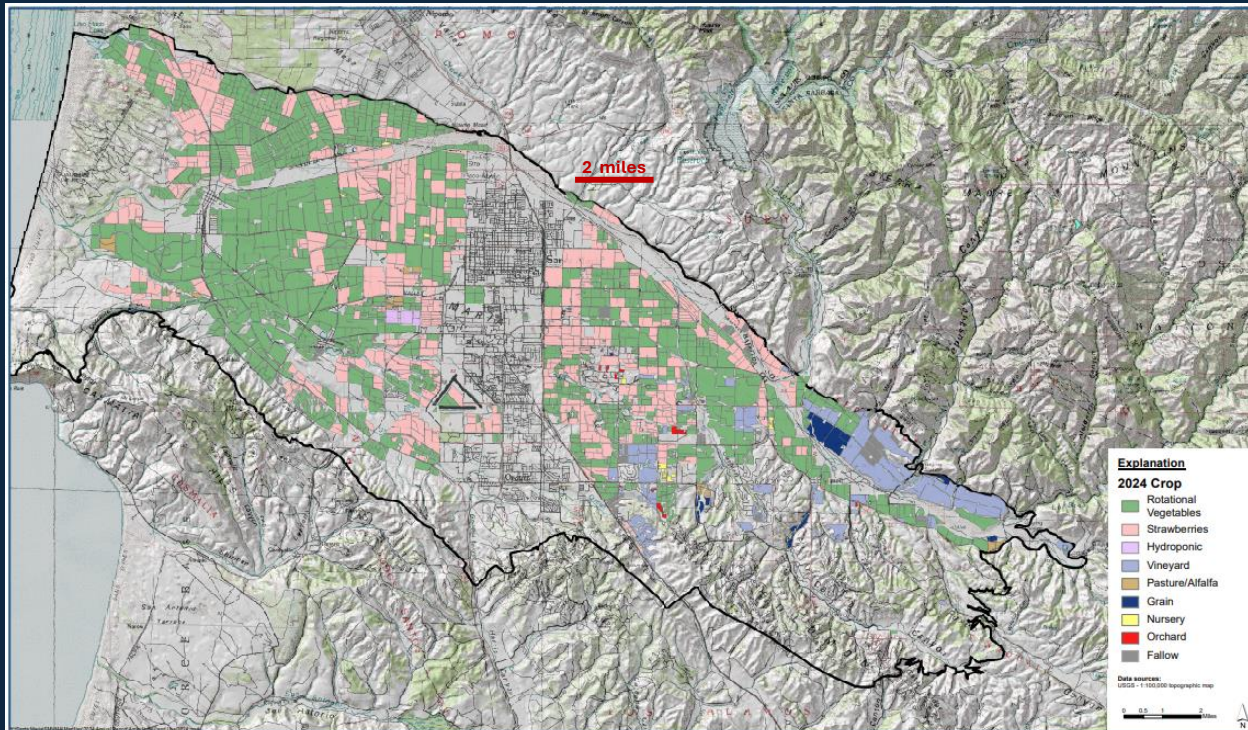
- Agriculture
- Geology
- Groundwater levels
- Water withdrawal & replenishment
- Groundwater Sustainability Plan



Agriculture

Santa Maria Valley

- 184,000 basin surface area
- 65,000 – 70,000 farmed acres



Cuyama Valley

- 147,200 basin surface area
- 16,000 farmed acres

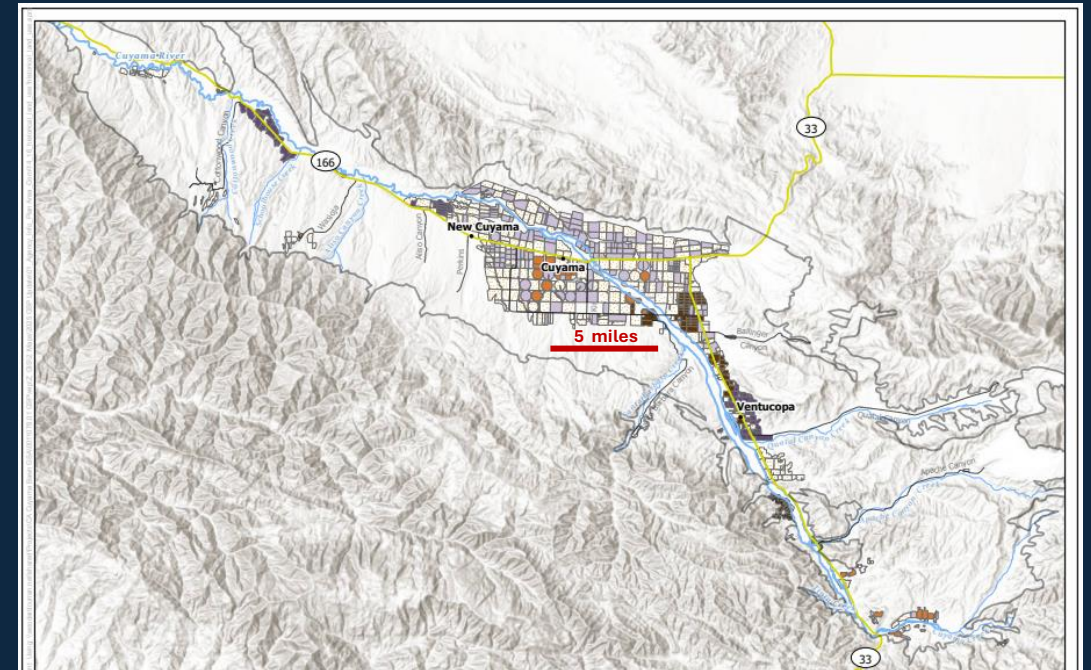
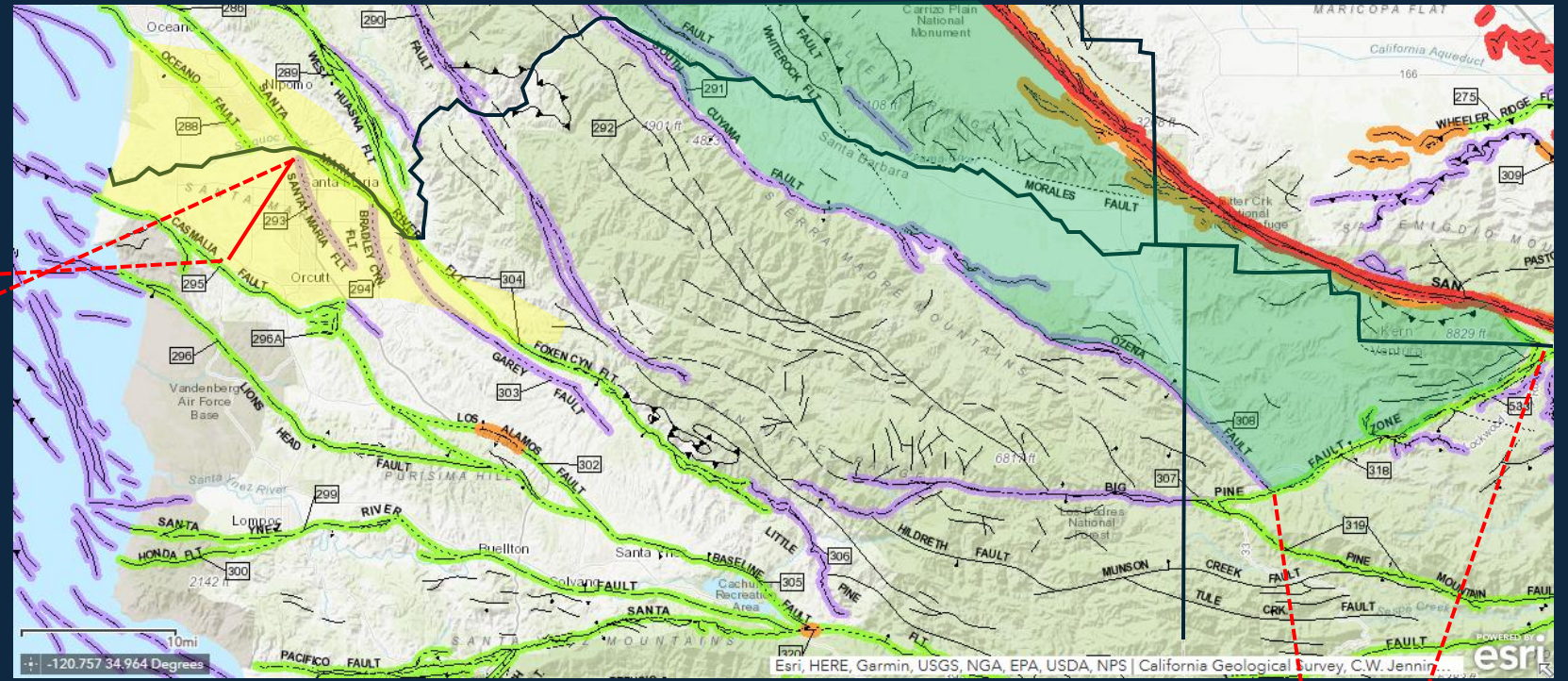
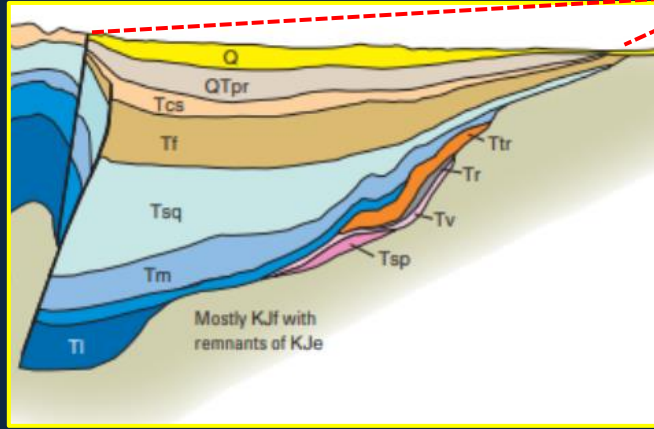


Figure 1-16: 2022 Land Use

Geology

Different geologic settings

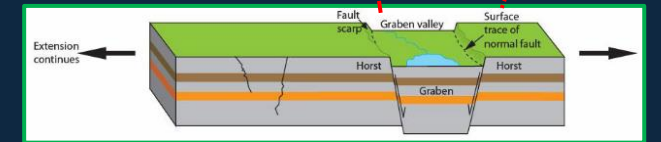


Santa Maria Valley

- Situated at the boundary of the California Coast Ranges and Transverse Ranges
- Characterized by west-trending folds and a significant structural syncline
- Marked by basin development, extension, subsidence, and volcanic activity during the Tertiary period
- Contains extensive deposits of marine and non-marine sedimentary rocks.

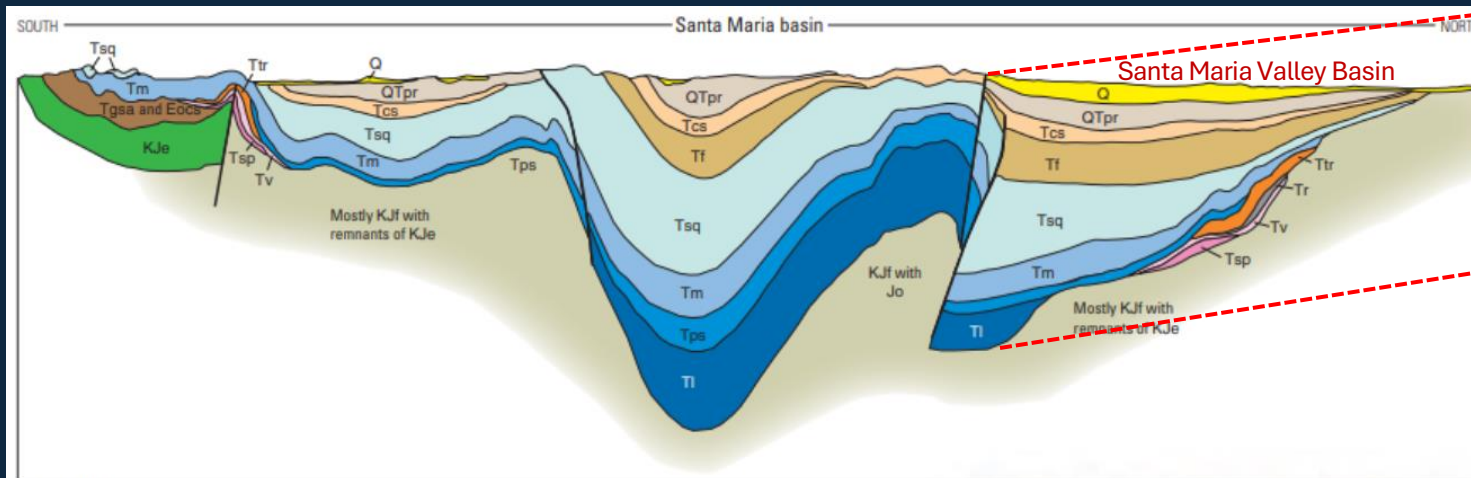
Cuyama Valley

- An alluvium-filled synclinal basin
- A downfaulted block dropped by surrounding faults also known as a graben
- Trough area is filled with loose sediments like clay, silt, sand, and gravel deposited by water
- Defined by numerous faults, including the Morales Thrust Fault on the north and faults on the south like the South Cuyama and Ozena faults.
- Surrounding mountains feature Miocene and Pliocene sedimentary formations, such as the Monterey Formation.



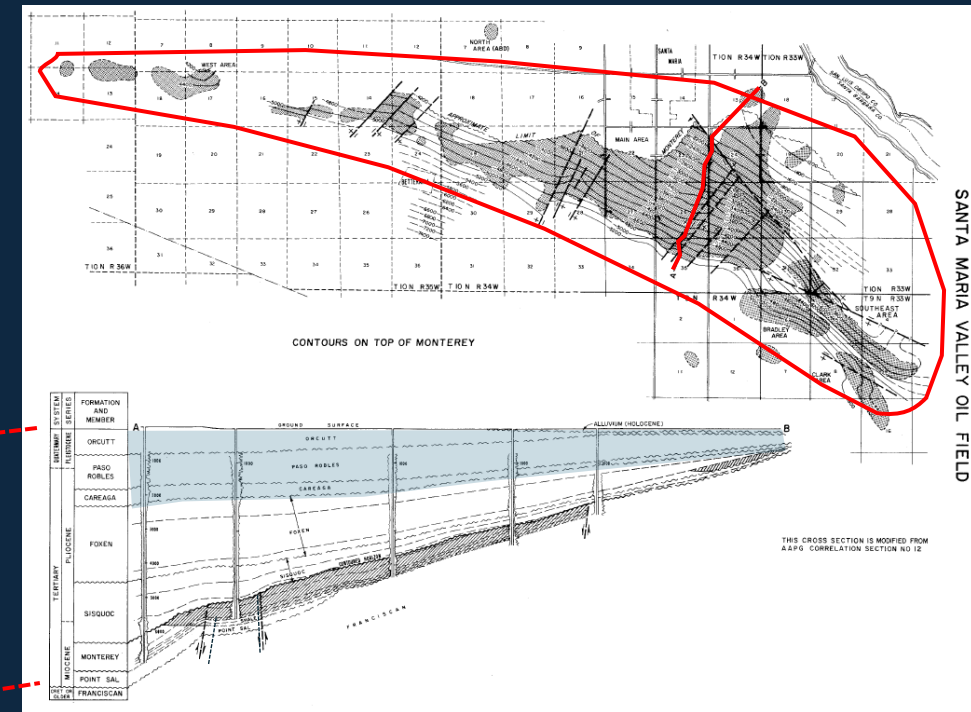
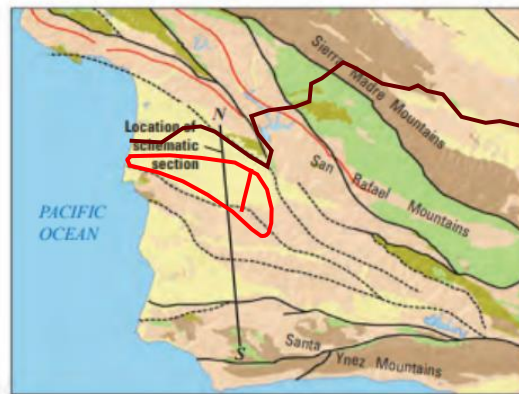
Santa Maria Valley Basin

- Quaternary material (yellow) includes, very porous and permeable silt and clay intermixed with dune sand and gravel.



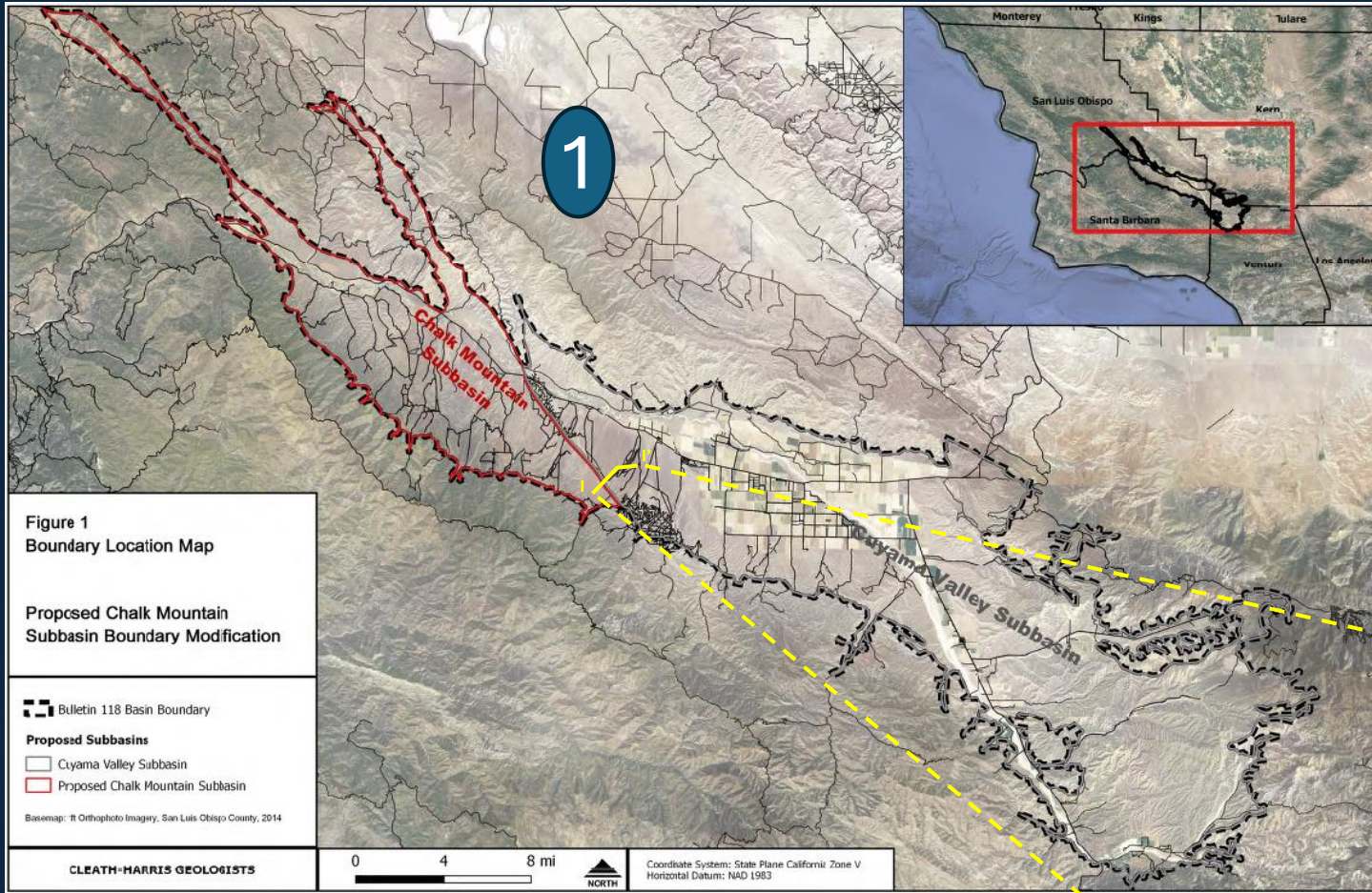
NOT TO SCALE

Stratigraphic units shown on section		EXPLANATION		Generalized units shown on index map	
Q	Undivided Quaternary deposits	Tr	Rincon Shale	Yellow	Quaternary sediments
QTpr	Paso Robles Formation	Tv	Vaqueros Formation	Light Blue	Neogene sedimentary and minor volcanic rocks
Tcs	Careaga Sandstone	Tsp	Sespe Formation	Orange	Paleogene sedimentary rocks
Tf	Foxen Mudstone	Eoc	Eocene units, undivided	Brown	Mesozoic sedimentary and minor volcanic rocks
Tsq	Sisquoc Formation	KJe	Espada Formation	Dark Blue	Franciscan Complex and Coast Range ophiolite
Tm	Monterey Formation		Franciscan Complex and Ophiolite		
Tps	Point Sal Formation				
Tl	Lospe Formation				
Ttr	Miocene volcanic rocks				

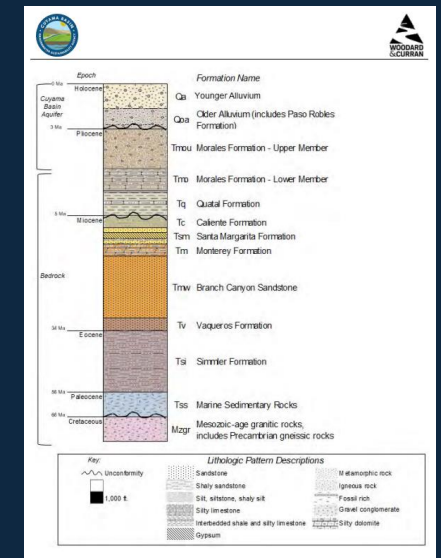
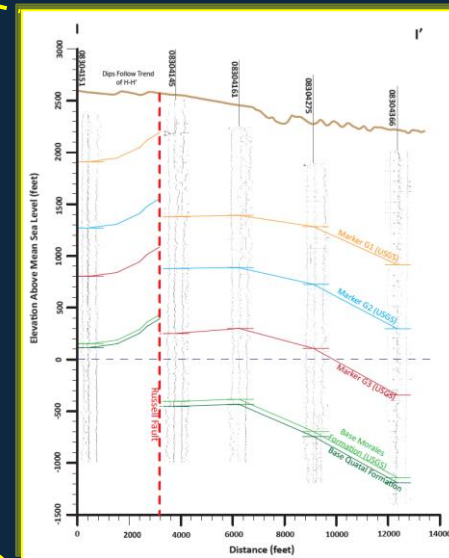
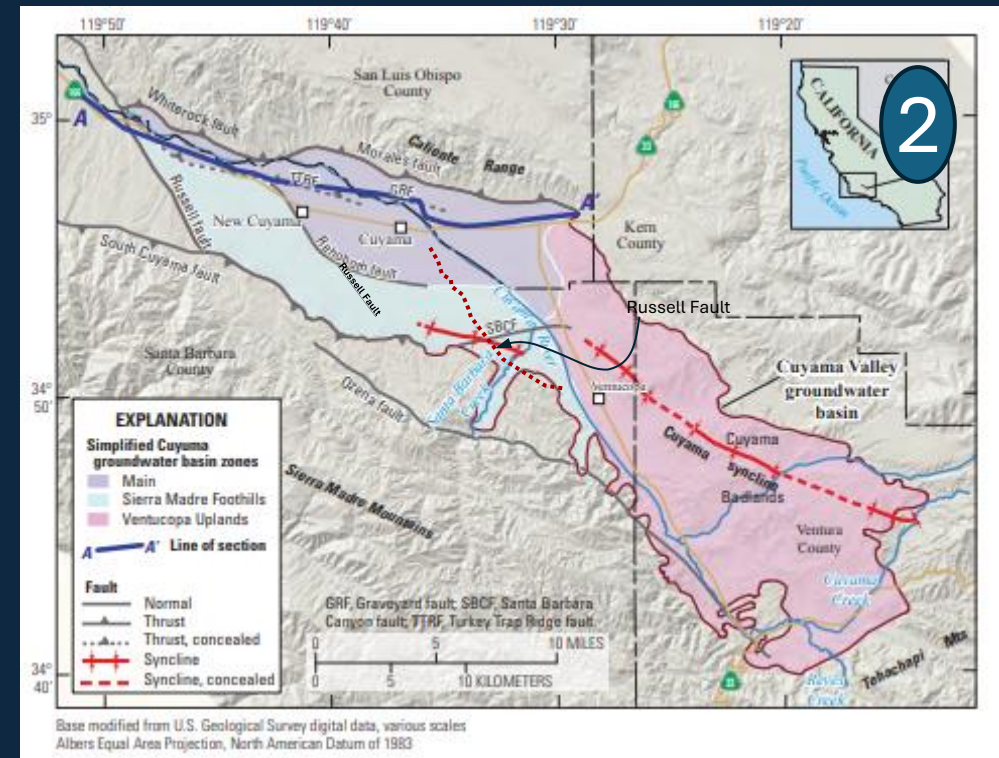
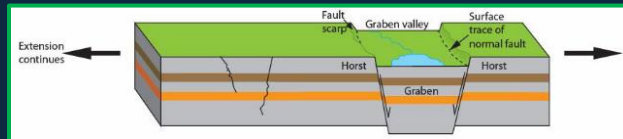


- Top layers (blue shown above) include Quaternary, Paso Robles and Careaga formations mostly land derived sediment filling.
- Foxen mudstone (brown left x-section) represents a shift to underlying marine sediments.
- Subsided and faulted Miocene era marine sediments run below the Foxen including the Sisquoc, Monterey and Lospe formations.
- Mostly basement below.

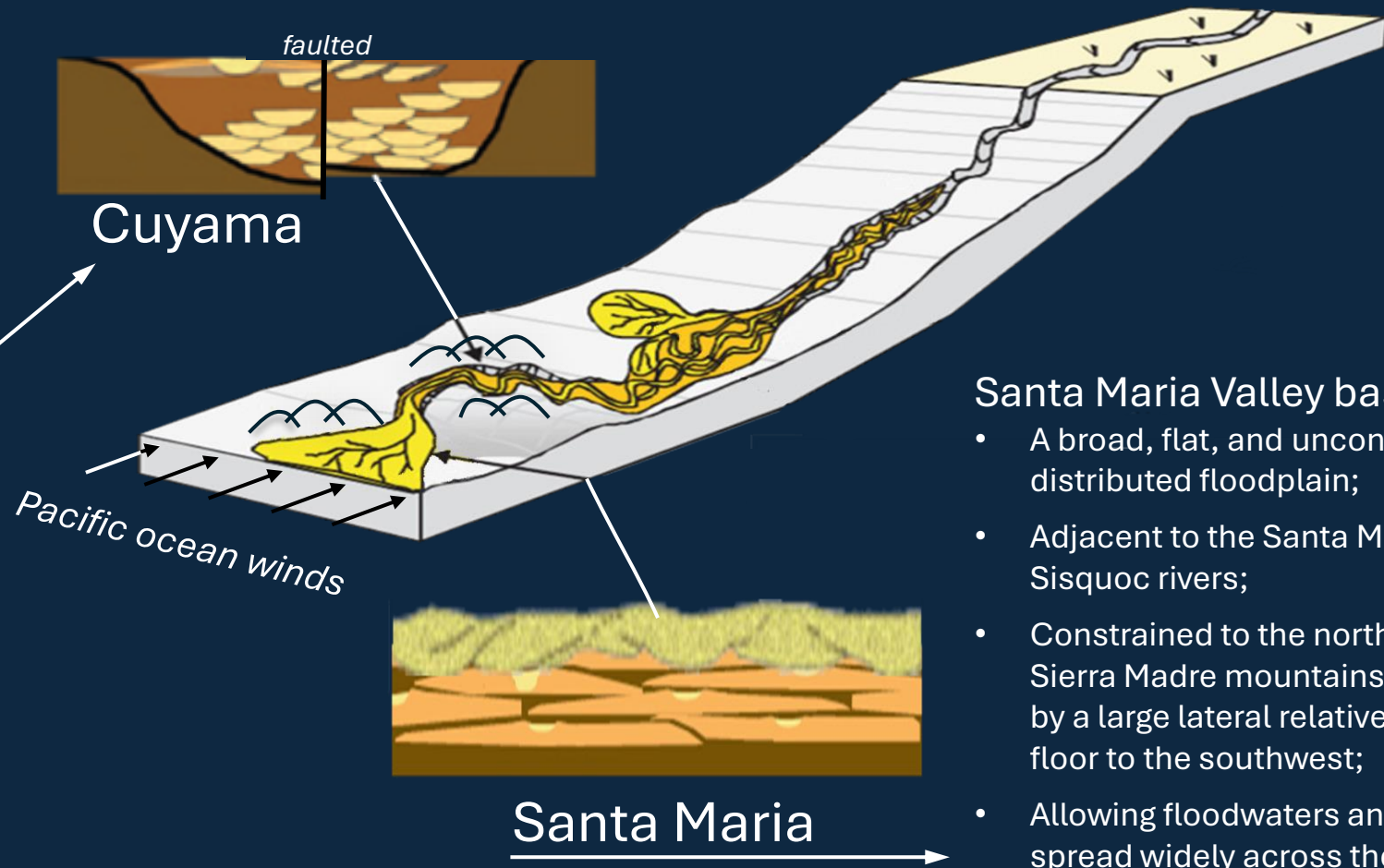
Cuyama Valley Basins



CUYAMA VALLEY GROUNDWATER BASIN (3-13) BOUNDARY MODIFICATION REQUEST, TECHNICAL MEMORANDUM, April 3, 2018, Prepared for GRAPEVINE CAPITAL MANAGEMENT



Santa Maria vs Cuyama Groundwater Settings



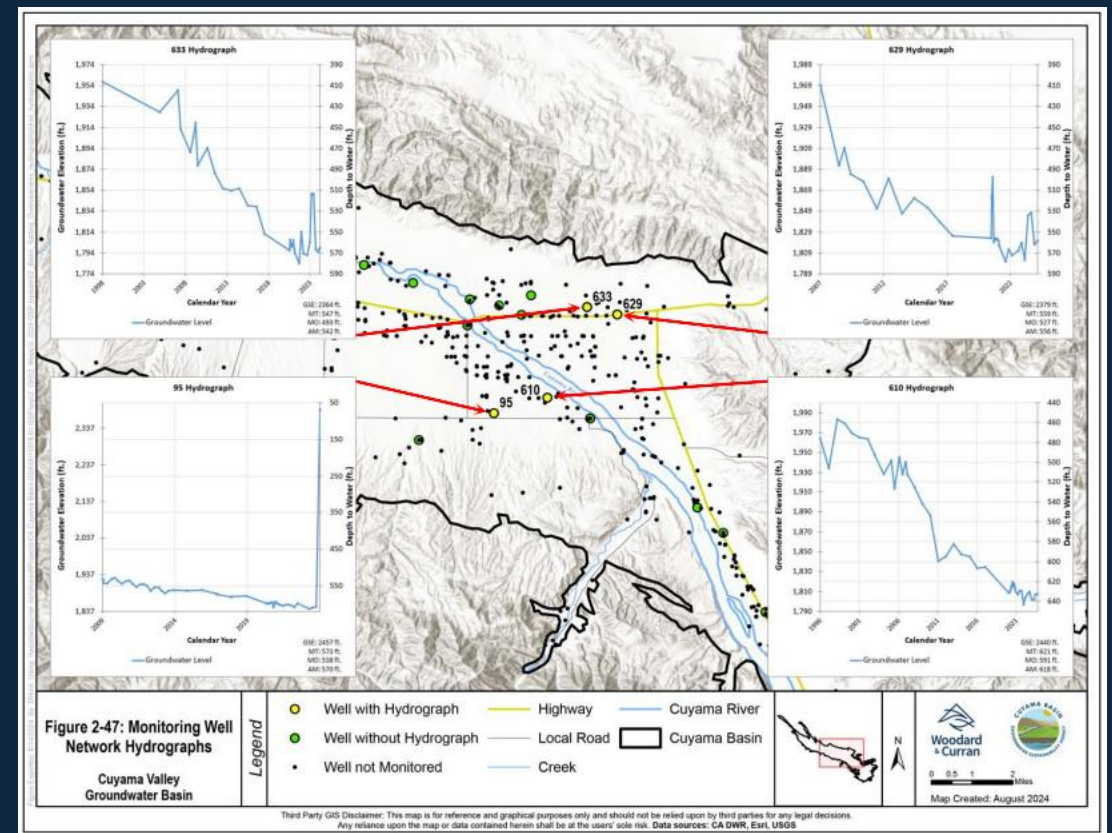
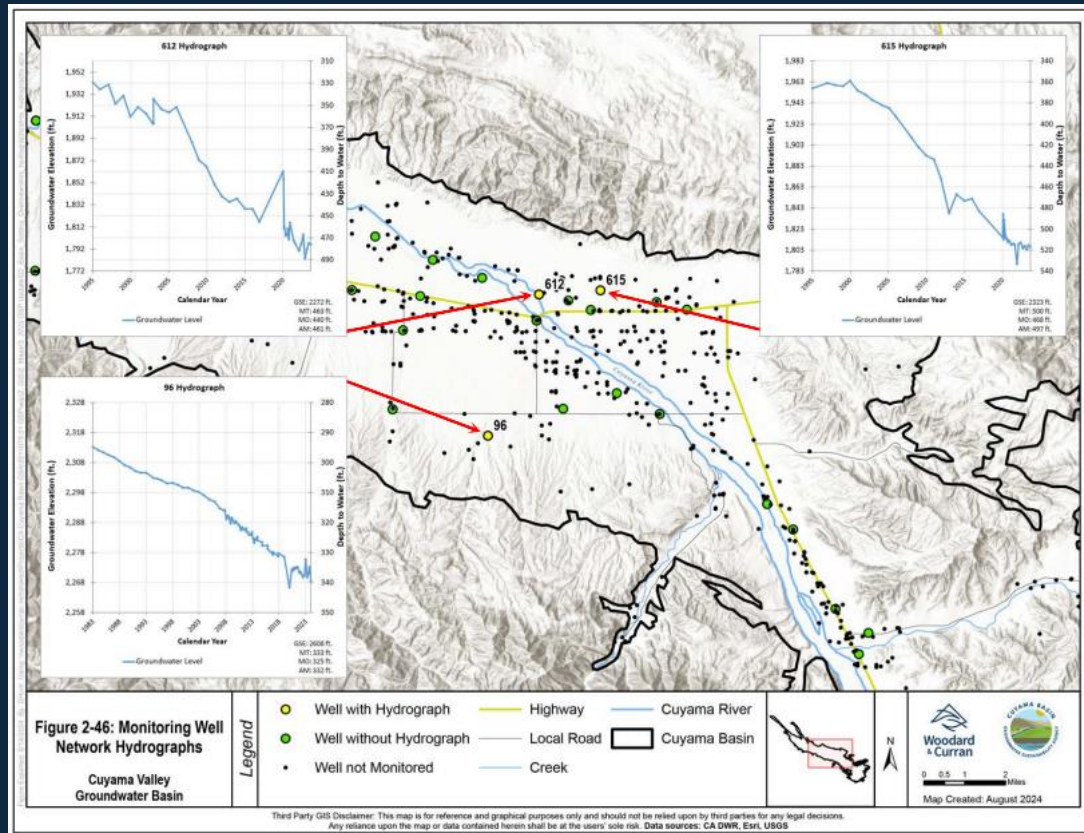
Cuyama basin:

- Consists of three mostly separate groundwater accumulations (Slide 6);
- Formed within a confined floodplain restricted by opposing valley walls;
- Composed of stacked fluvial sandstone deposits (cream) that are encased within fine-grained silt and clay sediments (brown);
- Resulting in poor deposit preservation,
- Distorted by active tectonic forces.

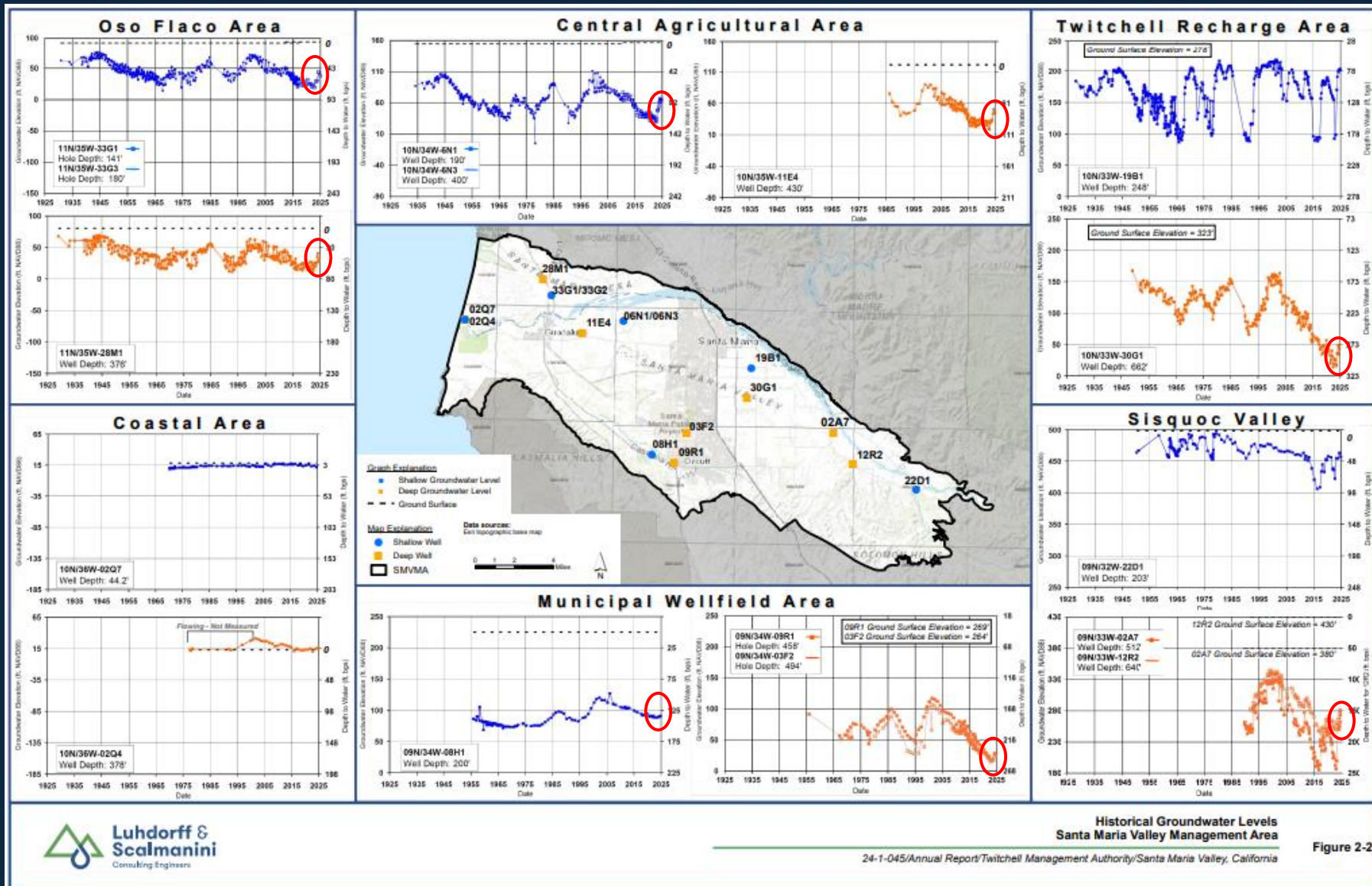
Santa Maria Valley basin:

- A broad, flat, and unconfined, distributed floodplain;
- Adjacent to the Santa Maria and Sisquoc rivers;
- Constrained to the northeast by the Sierra Madre mountains and bordered by a large lateral relatively flat valley floor to the southwest;
- Allowing floodwaters and sediment to spread widely across the landscape;
- Overlain by a highly conductive alluvium layer deposited by floodwaters and Pacific ocean winds.

Historical Cuyama Groundwater Levels



Historical SMV Groundwater Levels



Groundwater Pumping & Replenishment

Basin	Pumping, ac-ft	Natural Replenishment, ac-ft	Average Twitchell releases, ac-ft	Balance, ac-ft
Santa Maria	(102,000)	50,000	46,000	(6,000)
Cuyama	(50,000-60,000)	14,000	na	(36,000) to (46,000)

- Twitchell reservoir on average provides over 46,000 ac-ft towards replenishing the SMV groundwater.
- Wet years can more than double the SMV groundwater replenishment demonstrating good water infiltration.
- Cuyama groundwater replenishment rate is limited by natural factors and is not shown to efficiently respond to water capture during historic wet years.