Proposed 2025 Improvements to Santa Cruz Mid-County Basin Groundwater (GSFLOW) Model

MONTGOMERY & ASSOCIATES
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Santa Cruz Mid-County Groundwater Agency Board of Directors

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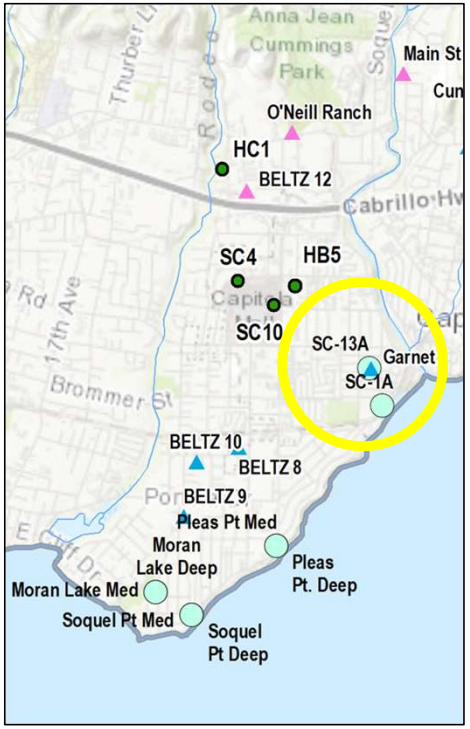
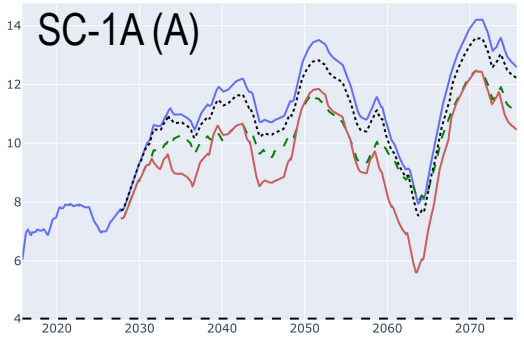
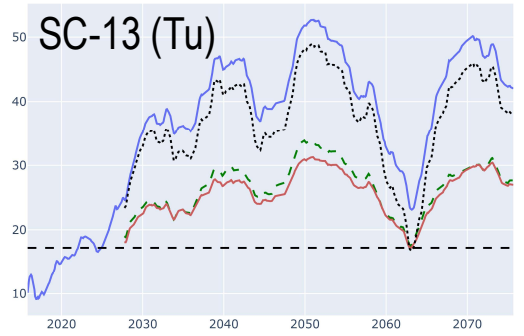
GSFLOW Model Supports Sustainability Planning and Implementation

- Projects groundwater levels over SGMA time horizon for comparison with sustainable management criteria
- Updated for annual reports
- Support planning and permitting of GSP projects
- Optimize GSP projects

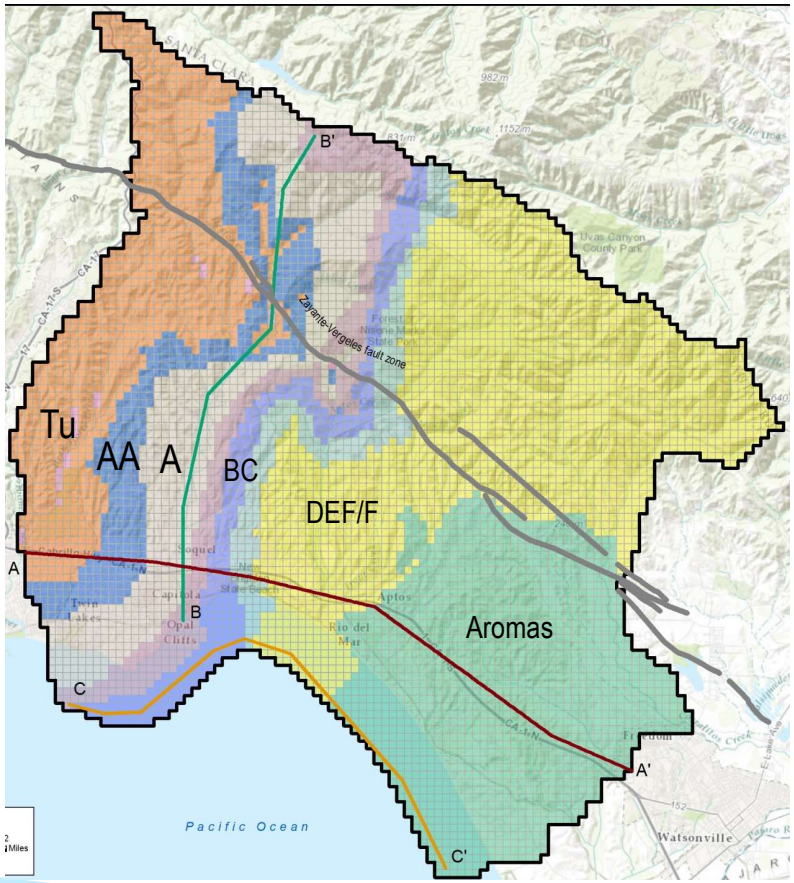


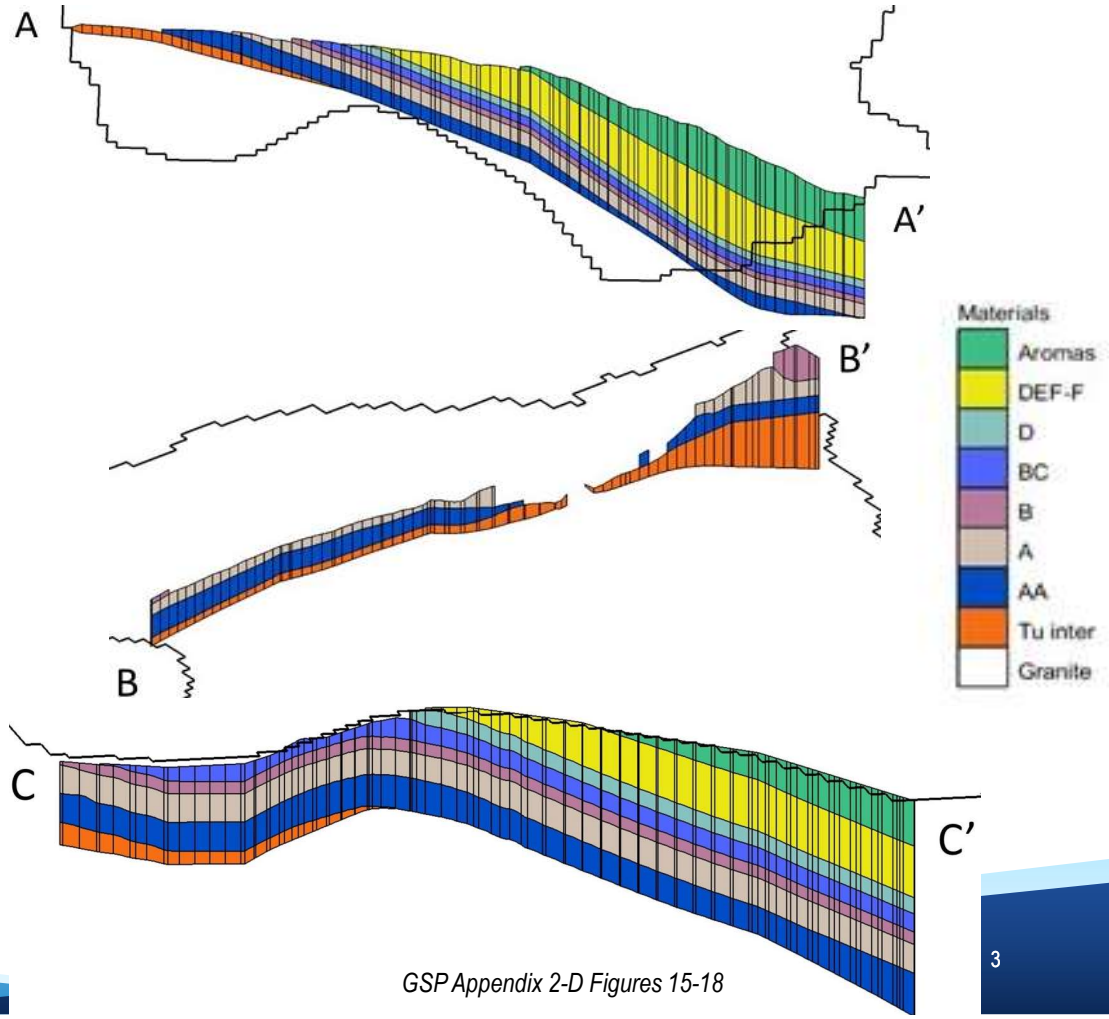




Example from 6/20/24 MGA Board meeting re: optimization study

Proposed 2025 Improvements Focus on Model Layering (Geometry)

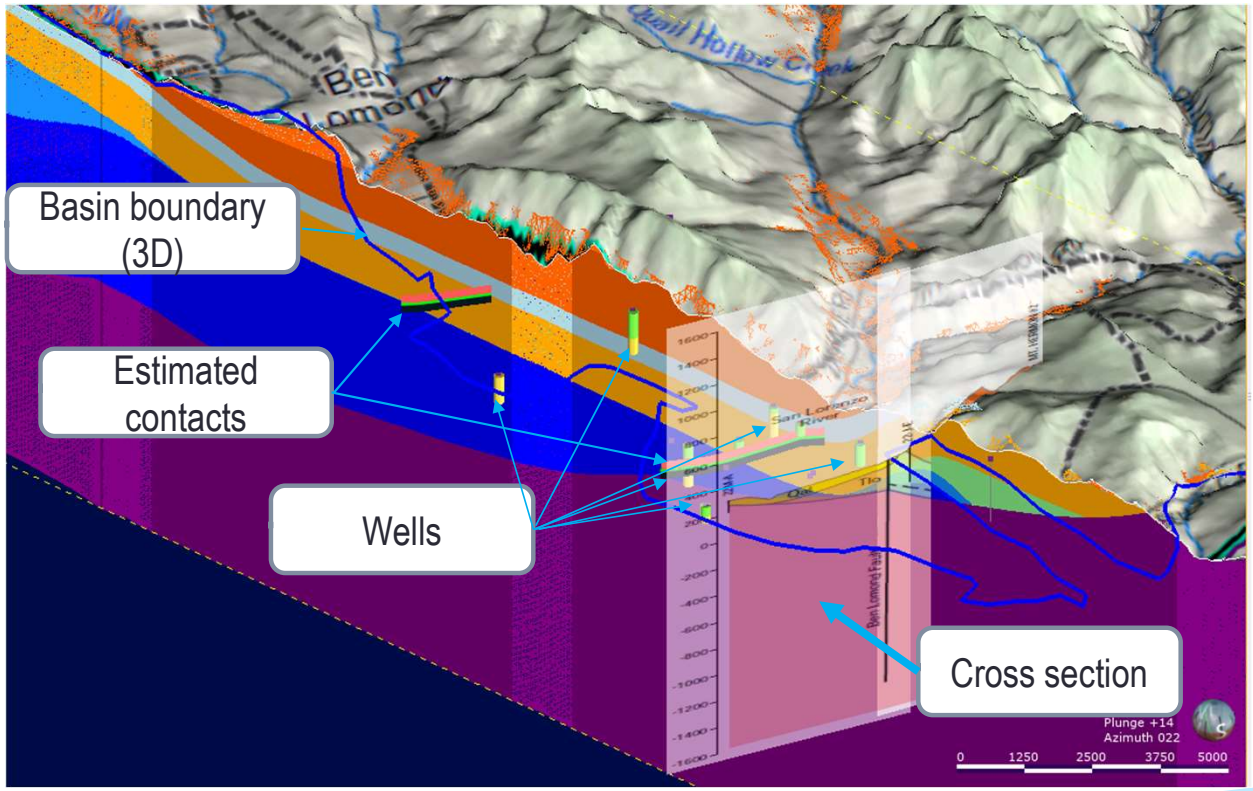




GSP Appendix 2-D Figures 15-18

Evaluating 3D Geologic Structure using Leapfrog will Support Layer Improvements

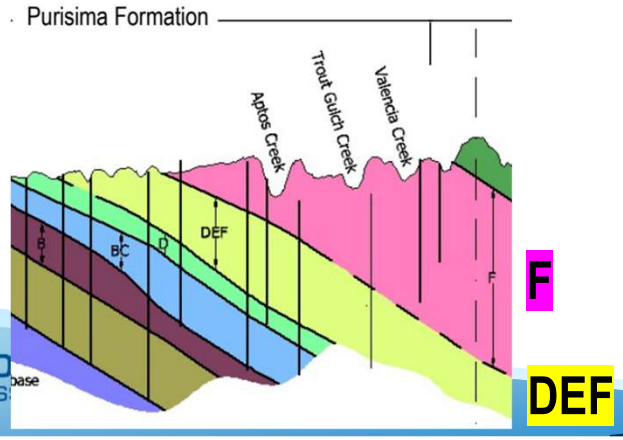
- **Task 1** imports existing information into Leapfrog software
  - Model layers
  - Estimated elevations of aquifer and aquitard units at boreholes
  - Well construction information



Example for Santa Margarita Basin presented go Santa Margarita Groundwater Agency 1/23/2020

Subdividing model layer will improve simulation of DEF unit

- Model combines adjacent Purisima DEF and F principal aquifer units
- Improve calibration by defining DEF and F units as separate layers using Leapfrog in **Task 2**

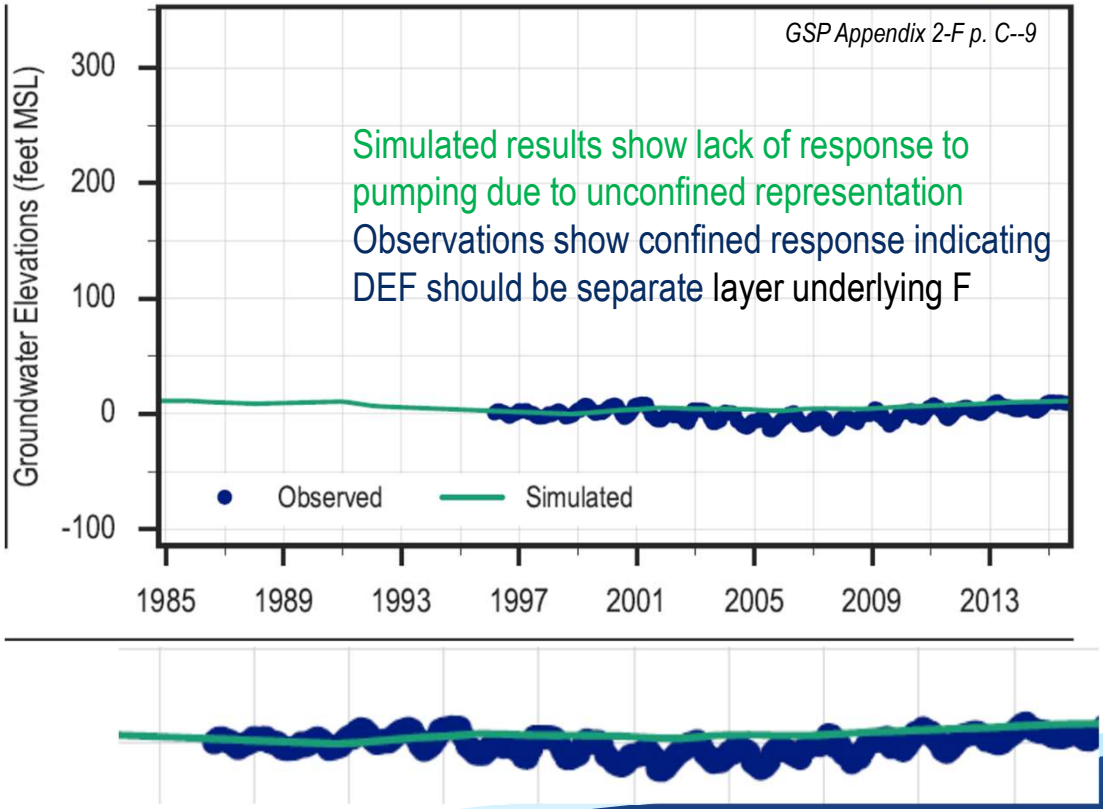


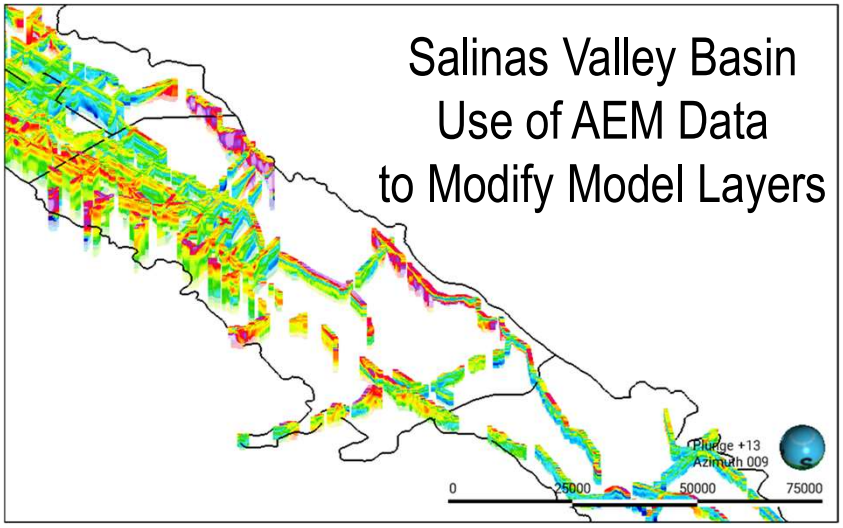
GSP Figure 2-19

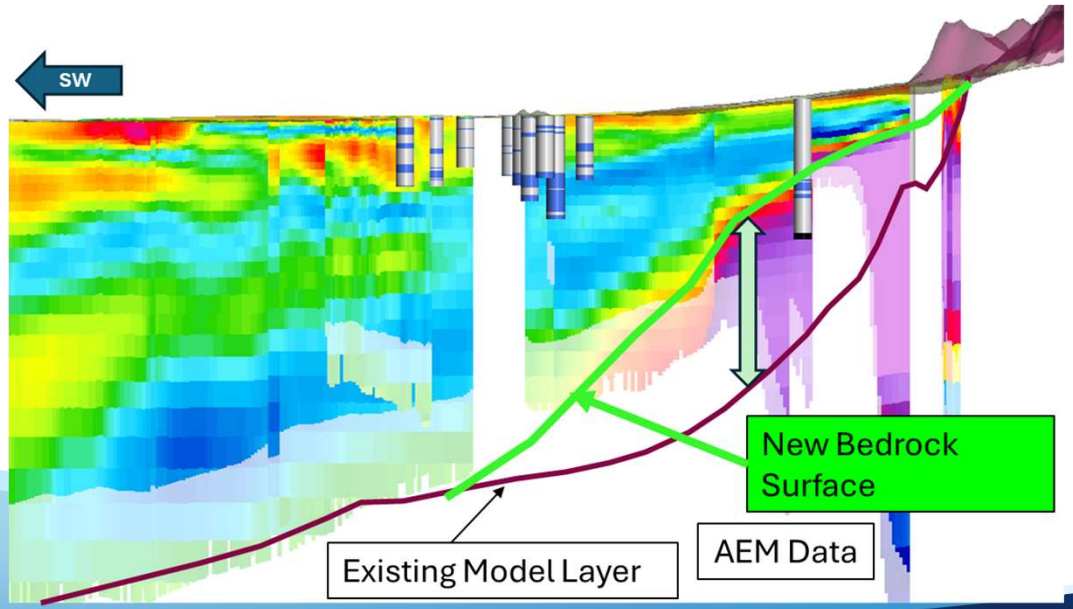
F

DEF

SC-8RD
Purisima DEF Unit





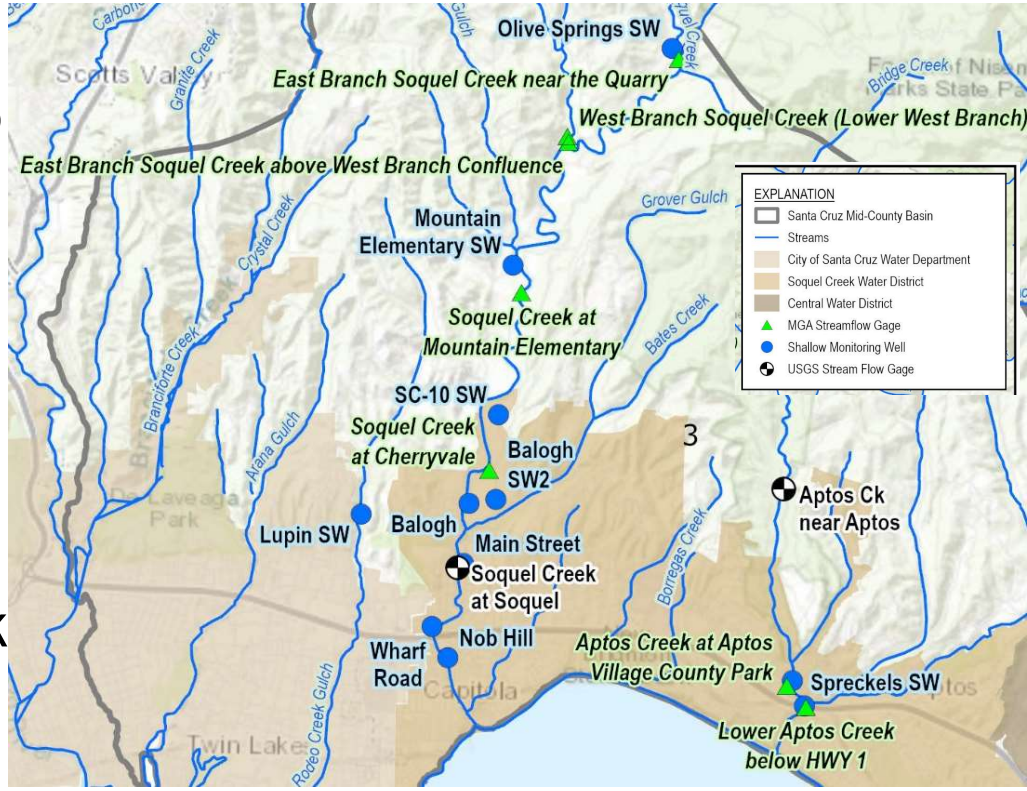


Modify layer geometry based on AEM Data from DWR

- **Task 3** will define model layers based on AEM data (*2025 Periodic Evaluation Figure 2-1*)
  - Evaluate AEM data in Leapfrog
  - Import into GSFLOW model
- **Task 4** will test GSFLOW model
  - Evaluate numerical stability and calibration
  - Recommend next steps

Post 2025 Planned Model Improvements for 2030 Periodic Evaluation

- Address recommendations from 2025
- Improve simulation of shallow aquifer interconnection with surface water
- Recalibrate model
  - Data from GSP Project operation
  - Data from expanded monitoring network for interconnected surface water



2025 Periodic Evaluation Figure 7-4

Questions