



Basic Approach

- Project development is not far along enough to be specific on sources of water or volumes
- Model does not care where the water is coming from; it just needs to know volumes and locations (spatially and in which aquifer)
- Initial modeling approach is to estimate how much water it takes to recover lowered groundwater levels in the Santa Margarita and Lompico aquifers in the area south of Bean Creek without causing negative impacts by 2042







A system with excess surface water supply in the winter is able to provide some of that surface water to a system reliant on groundwater, allowing that system to rest it's wells.





Project Type	Time of Year	Frequency	Approx. Volume AFY	Comments	
Injection/Recovery	Nov - Apr injection May - Oct recovery	Inject every year Extract only dry years	Inj = 780 Recov = 760 over 50 years	City of Santa Cruz; used same climate scenario as GSP will use	
Injection only	Year round	Every year	560	SVWD; used different climate scenario as GSP will use	
In-Lieu /Conjunctive Use	Nov - Apr	Wet years	610	SLVWD and SVWD don't pump their wells in the Scotts Valley area in winter and but rather use excess surface water	
Injection/Recovery	Nov - Apr injection May - Oct recovery	Every year	Inj = 780 Recov = 725 over 50 years	Inject in winter/spring and pump out during summer/fall (less 20%)	
Injection only	Year round	Every year	710 Expected that basin will fill within 10 years		

Due to the availability of surface water each year (based on climate change), the already modeled injection/extraction scenario has a range of injection volumes over 50 yrs of:

max = 1930 AFY min = 116 AFY

Extraction range over 50 yrs of: max = 1887 AFY min = 0 AFY





Note these charts are shown cumulative changes from baseline conditions when there is ASR in the Lomoico aquifer for 50 years with climate change factored in. Positive numbers represent an increase and negative number represent a decrease. The black line represents the cumulative amount of water stored in the aquifer taking into account recovery.

The light blue bars in each chart are the change in storage



These are two municipal wells near the ASR wells. The hydrographs show they are predicted to respond to changing conditions due to ASR operations. Both of these wells experience temporary declines in levels below their baseline levels (and likely the historic minimum's used as Minimum Thresholds).



Storage change are basinwide numbers. The analysis did not include breaking storage changes down by aquifer.



Location of potential in-lieu recharge





Proposed Model Scenarios and Sensitivity Run in the Santa Margarita Aquifer

Project Type	Time of Year	Frequency	Approx. Volume AFY	
Stormwater Recharge and Low Impact Development	Nov-Apr	Annual	100	
Sensitivity Run Type	Time of Year	Frequency	Approx. Volume AFY	
Eliminate private wells pumping from Santa Margarita aquifer and add that pumping to public water system	Year round	Annual	175	

Model Outputs used to Evaluate Different Options

- Effects on groundwater levels
 - Rate and amount of Lompico aquifer recovery?
 - Rate and amount of Santa Margarita aquifer recovery?
 - Do levels rise to the point where they could cause property damage?
- Effects on creek baseflows
- Change in groundwater in storage for each subarea



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