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Subj: Ground water modeling in Butte County

Background: The release and recharge of aquifers direct/indirect utilization of surface water in Butte County needs to be bounded in some fashion if we are to provide cost-effective guidance for existing stakeholders and future developers/DIY builders. It is hoped that DCS will find experts that can provide a high confidence response to questions and/or suggest methods for obtaining guidance that will drive development.

Question candidates:

1. Given that we elect to discern short term/decadal trends in existing well performance, what are the recommended measurement technique spectrum and sampling/reporting procedures?
2. What knowledge can we expect to gain from data from drilling data submitted to DWR or other agencies?
3. Fetter (Applied hydrogeology) has recommended that essentially constant flow draw down and recovery measurements of production wells be performed for the order of a few feet drop per measurement interval. Butte County per Krasny & Sharp (ground water in fractured rocks) suggest that very long sample periods may be required to generate meaningful generalizations about the nature of the aquifer and long term performance. Is there a potential for contamination of a production well for extended measurements? Can we gain knowledge of the aquifer from a reasonable cost effective measurement technique? Can we identify protection zones or coupling to adjacent production wells without the addition of test wells?
4. Can we identify likely recharge well/ pond locations that can economically support failing production well performance or allow additional production wells?
5. What is the role of tensiometers or vegetation turgor pressure measurements in optimizing or setting concern triggers for massive dieback threats of long lived vegetation associated with wildland fire?
6. Do we need monitoring wells that can provide adequate/meaningful hydrographs of the water-table? What are desirable locations? Can these wells be used to monitor aquifer contamination?
7. What are the potential for geoelectrical /acoustic refraction methods for identifying structures and contaminated /saline regions in Butte County?
8. Can we identify similar volcanic regions in the world that can guide extrapolation to Butte County safe water resource exploitation?
9. Can we identify nearby federal and industrial forest agency current/projected policies that will drive ground and surface water interaction with Butte County?
10. Based on trend analysis, can we predict regional ground/surface storage/recharge water requirements and life costs by 2030?

