

TECHNICAL MEMORANDUM

**MODIFICATION OF WELL ANNULAR SEAL REQUIREMENTS,
WELL SITING AND CONSTRUCTION GUIDELINES, STANISLAUS
COUNTY, CALIFORNIA**

PREPARED FOR: Mr. Robert Kostlivy, Director, Department of Environmental Resources
PREPARED BY: Walter Ward and Mike Tietze, PG, CEG, CHG, Formation Environmental, LLC
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INTRODUCTION AND BACKGROUND

The Stanislaus County Board of Supervisors adopted modifications to the County’s *Well Siting and Construction Guidelines* on June 14, 2022 (the Guidelines) and authorized the Director of the Department of Environmental Resources (DER) to adopt additional changes as needed to facilitate implementation. The purpose of the Guidelines was to clarify the conditions under which well permits formerly issued on a ministerial basis under the County’s Well Ordinance (Chapter 9.36 of the County Code) must undergo a discretionary review. Specifically, the Guidelines include standards intended to assure that wells are sited and constructed in a way that is adequately protective of water quality throughout the County without the requirement for a discretionary review. During implementation of the revised Guidelines, comments were received from applicants and drillers that a uniform increase in the minimum annular seal depths to 80 feet was making it impossible to install productive domestic and agricultural in the Upper Zone under some circumstances. Specifically, in areas where the Upper Zone is relatively thin, deepening the well seal and accounting for additional vertical separation between the well seal and the well perforations could limit the available screen interval to just 10 to 30 feet. The DER asked Formation to evaluate whether the minimum well seal depth for domestic and agricultural wells could be decreased to 50 feet.

DISCUSSION

The California Department of Water Resources (DWR) developed well standards to protect groundwater quality, including protection against adverse effects caused by improper well construction or abandonment of wells, as published in the “California Well Standards – Bulletin 74-81/90” (Bulletin). Stanislaus County adopted these standards in its Well Ordinance (Chapter 9.36 of the Stanislaus County Code). Minimum well annular seal depths required under these standards as applied by the County were 20 feet for agricultural wells and 50 feet for industrial, public supply and domestic wells. The Guidelines adopted a uniform increase in the minimum well annular seal depth to 80 feet as an additional level of protection under potentially variable site-specific aquifer conditions throughout the County.

A decrease in the minimum seal depths to 50 feet for domestic and agricultural wells would allow the construction of shallow domestic and agricultural wells with adequate production capacity where the

Upper Zone is relatively thin. The following analysis evaluates whether such a decrease would still provide an adequately improved level of groundwater quality protection under the conditions likely to be encountered across the County. The following is noted:

- A 50-foot minimum annular seal depth for agricultural wells represents an increase of 150% from standards contained in the DWR Bulletin and previously implemented by the County. As such, it will result in an increased level of water quality protection throughout the County to address potentially variable aquifer conditions.
- A 50-foot minimum annular seal depth for domestic wells would not be a departure from the prior standard used in the County, but is consistent with the most conservative standard for domestic wells in common use throughout the State. Groundwater extraction from domestic wells is generally considered “*de minimis*” under the Sustainable Groundwater Management Act (SGMA), which defines a *de minimis* extractor as “a person who extracts, for domestic purposes, two acre-feet or less (of groundwater) per year.” This definition has been adopted under various guidance documents and regulatory requirements by the Department of Water Resources (DWR) and the State Water Resources Control Board (SWRCB). The SWRCB’s Drinking Water Source Assessment and Protection (DWSAP) program and the County’s Local Area Management Plan (LAMP) for Onsite Wastewater Treatment Systems (OWTS) consider that drawdown cones induced by domestic wells are smaller than other wells in proportion to their more limited water use, and smaller separation distances from domestic wells are therefore required when compared to industrial and public supply wells. This is reflected in Table VI-1 in the Guidelines. For example, because the risk of contamination associated with domestic wells is smaller, the lateral separation distance of domestic wells from septic disposal systems under the LAMP is 100 feet, whereas the required separation distance for public supply wells is 150 to 600 feet. Because domestic wells result in a lower risk of inducing contaminant migration, it is appropriate that lower minimum annular seal depths than public supply and industrial wells also be required.
- The minimum annular seal depth for industrial and public supply wells is proposed to be retained at the increased depth of 80 feet. This represents a 60% increase over the prior standard and over domestic wells, and provides an added level of protection to account for potentially variable conditions throughout the County.

CONCLUSIONS

Based on the discussion above, a minimum well annular seal depth of 50 feet for agricultural wells will provide a significantly increased level of protection compared to State or prior County standards. A 50-foot annular seal depth for domestic wells appears adequately protective as these wells present minimal risk. Retention of an increased annular seal depth for industrial and public supply wells provides increased protection relative to the prior standard and compared to domestic wells. In general, it may be concluded that based on typical average soil vertical hydraulic conductivities throughout the County, a 50 foot seal depth will provide a contaminant travel and attenuation time of approximately 2 or more years, which is consistent with contaminant travel time considerations in the SWRCB’s DWSAP program. The proposed changes to the minimum well annular seal depths discussed above are therefore defensible based on the observations summarized above and appear to be a reasonable step to address a potentially burdensome requirement. However, any decrease in minimum seal depths carries with it an inherent increased risk of

criticism. A more quantitative assessment seal depth effectiveness, or an evaluation of the observed performance of different well seal depths across the area is beyond this scope of this memorandum and is not currently available.