

Questions Resulting From the Groundwater Monitoring Advisory Workgroup Meeting of 30 June 2011

A meeting of the Groundwater Monitoring Advisory Workgroup (GMAW) was held on 30 June 2011 in the Rancho Cordova office of the Central Valley Water Board. The GMAW consists of groundwater experts representing State agencies, the United States Environmental Protection Agency, the United States Geological Survey, academia, and private consultants. The purpose of the meeting was to gather input from the group of groundwater experts relative to the development of a list of recommended critical questions that should be answered by groundwater monitoring for the Long-Term Irrigated Lands Regulatory Program (ILRP). These questions are meant to assist Central Valley Water Board staff in identifying how groundwater monitoring will be integrated into the ILRP. Groundwater requirements developed for the ILRP will be incorporated into monitoring and reporting programs prepared for coalition waste discharge requirements general orders.

The following questions were identified by the GMAW and Water Board staff as critical questions to be answered by groundwater monitoring conducted to comply with the ILRP.

1. What are irrigated agriculture's impacts to the beneficial uses of groundwater and where has groundwater been degraded or polluted by irrigated agricultural operations (aerial and vertical extent)?
2. Which irrigated agricultural management practices are protective of groundwater quality and to what extent is that determination affected by site conditions (e.g., depth to groundwater, soil type, and recharge)?
3. To what extent can irrigated agriculture's impact on groundwater quality be differentiated from other potential sources of impact (e.g., nutrients from septic tanks or dairies)?
4. What are the trends in groundwater quality beneath irrigated agricultural areas (getting better or worse) and how can we differentiate between ongoing impact, residual impact (vadose zone) or legacy contamination?
5. What properties (soil type, depth to groundwater, infiltration/recharge rate, denitrification/nitrification, fertilizer and pesticide application rates, preferential pathways through the vadose zone [including well seals,

abandoned or standby wells], and contaminant partitioning and mobility [solubility constants] are the most important factors resulting in degradation of groundwater quality due to irrigated agricultural operations?

6. What are the transport mechanisms by which irrigated agricultural operations impact deeper groundwater systems? At what rate is this impact occurring and are there measures that can be taken to limit or prevent further degradation of deeper groundwater while we're identifying management practices that are protective of groundwater?
7. How can we confirm that management practices implemented to improve groundwater quality are effective?

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