

---

## Central Valley Regional Water Quality Control Board

**TO:** Susan Fregien  
Senior Environment Scientist  
Irrigated Lands Regulatory Program

**FROM:** Ashley Shaddy, P.E.  
Water Resource Control Engineer  
Irrigated Lands Regulatory Program

**DATE:** 5 November 2015

**SUBJECT:** REVIEW OF GRASSLAND DRAINAGE AREA STEERING COMMITTEE  
GROUNDWATER QUALITY ASSESSMENT REPORT OUTLINE

To meet the conditions of the Waste Discharge Requirements General Order for Growers in the Grassland Drainage Area Order R5-2015-0095 (Order), the Grassland Drainage Area Steering Committee (Steering Committee) is required to prepare a Groundwater Quality Assessment Report (GAR). The GAR is due on 31 July 2016. The main objectives of the GAR are to:

- Provide an assessment of all readily available, applicable and relevant data and information to determine the high and low vulnerability areas where discharges from irrigated lands may result in groundwater quality degradation.
- Establish priorities for implementation of monitoring and studies within high vulnerability or data gap areas.
- Provide a basis for establishing monitoring workplans developed to assess groundwater quality trends.
- Provide a basis for establishing management practices evaluation program workplans and priorities developed to evaluate the effectiveness of agricultural management practices to protect groundwater quality.
- Provide a basis for establishing groundwater quality management plans in high vulnerability areas and priorities for implementation of those plans.

The Monitoring and Reporting Program (MRP) Order R5-2015-0095 requires the Steering Committee to provide a proposed outline of the GAR to the Executive Officer that describes data sources and references that will be considered in developing the GAR. The due date for the submission of the proposed GAR outline was 29 October 2015, and the Central Valley Water Board received the Steering Committee's GAR outline on 20 October 2015. The submitted outline and accompanying information were reviewed to assess the preliminary list of data sources and references that will be considered in developing the GAR.

The Central Valley Water Board staff considered the preliminary data sources and whether the process proposed for data compilation and analysis would provide the information needed to address the main objectives and minimum requirements of the GAR (Order Section VIII.C.1 and MRP Order Section B.III.A). The submitted GAR outline addresses all readily available sources

of information for all required components and includes review and analyses as described in the Order.

Overall, the proposed GAR outline suggests that the GAR will adequately address the five main objectives specified in the Order:

**Objective I. Provide an assessment of all readily available, applicable and relevant data and information to determine the high and low vulnerability areas where discharges from irrigated lands may result in groundwater quality degradation.** The GAR outline indicates that approaches for existing vulnerability assessments will be summarized, and a statistical method will be developed to identify a vulnerability formula based on hydrogeologic parameters and groundwater quality observations. A vulnerability model will be developed using data from select areas based on relevant properties of geology, soil, hydrology, and available water quality data. The derived model will be applied to calculate vulnerability across the entire Grassland Drainage Area using hydrogeologic, temporal, and land use variables. The model results will be validated using a subset of water quality data and calculated vulnerability designations. The model performance will be compared to the results of existing assessments, such as the Department of Pesticide Regulation and State Water Resources Control Board vulnerability designations. Based on the above calculations and evaluations, the rationale for vulnerability identification will be presented.

**Objective II. Establish priorities for implementation of monitoring and studies within high vulnerability or data gap areas.** Relative priorities will be established for high vulnerability areas based on multiple considerations, such as groundwater quality trends, constituent toxicity and mobility, land use and dominant commodities, proximity to areas contributing recharge to communities, and so on. Statistical analyses of associations between observed water quality and physical hydrogeologic conditions will inform the prioritization.

**Objective III. Provide a basis for establishing monitoring workplans developed to assess groundwater quality trends.** The outline indicates that the GAR will review information on existing well networks and monitored parameters, feasibility of using/sharing existing wells and data, as well as identify key data gaps in existing programs. The GAR will provide enough information on land use and will develop vulnerability prioritization sufficient to provide preliminary recommendations and justification related to informational needs for purposes of developing a Groundwater Quality Trend Monitoring Workplan.

**Objective IV. Provide a basis for establishing management practices evaluation program workplans and priorities developed to evaluate the effectiveness of agricultural management practices to protect groundwater quality.** Although the proposed outline indicates that the GAR will include much of the information necessary to design the Management Practices Evaluation Program, this objective is not explicitly addressed.

**Objective V. Provide a basis for establishing groundwater quality management plans in high vulnerability areas and priorities for implementation of those plans.** The data compilation and proposed analyses described in the outline indicate that the GAR will develop information necessary to designate and prioritize high vulnerability areas, and necessary for development of the Groundwater Quality Management Plan.