

## Central Valley Regional Water Quality Control Board

16 November 2016

Joseph C. McGahan  
Grassland Basin Drainage Steering Committee  
PO Box 2157  
Los Banos, CA 93635

### **CONDITIONAL APPROVAL OF THE GRASSLAND BASIN DRAINAGE STEERING COMMITTEE'S GROUNDWATER QUALITY ASSESSMENT REPORT**

Thank you for submitting the 28 July 2016 Grassland Drainage Area Groundwater Quality Assessment Report (GAR), as required by Waste Discharge Requirements General Order R5-2015-0095 (Order).

Based on the information submitted and the attached staff review, the GAR addressed the Order's main objectives to determine high and low vulnerability areas, establishes priorities within high vulnerability areas, and provides a basis for further workplan and management plan requirements. However, there are some areas within the Grassland Drainage Area which should be designated as high vulnerability areas that were excluded.

I am conditionally approving the GAR with the requirement that the high vulnerability areas be expanded to include all areas where site properties are consistent with the definition of a hydrogeologic high vulnerability area, regardless of the presence of tile drains, and all areas where legacy pesticide and nitrate exceedances have occurred, as noted in the staff review memo. A revised GAR reflecting these changes should be submitted to the Central Valley Water Board by **16 December 2016**.

Compliance dates associated with this conditional approval are provided in Table 1.

If you have any questions or comments regarding this letter, please contact Ashley Peters at [Ashley.Peters@waterboards.ca.gov](mailto:Ashley.Peters@waterboards.ca.gov) or by phone at 916-464-4798.

Sincerely,

*Original signed by*

Pamela C. Creedon  
Executive Officer

Enclosure: Staff Review Memo for GAR

**Table 1.** Compliance dates associated with the approval of the Grassland Drainage Area Groundwater Quality Assessment Report (GAR) on 16 November 2016.

<b>Due Date</b>	<b>Requirements</b>
<b>16 January 2017</b>	Comprehensive Groundwater Quality Management Plan
<b>15 May 2017</b>	Basin Plan Amendment Workplan, if pursuing
<b>16 November 2017</b>	Groundwater Quality Trend Monitoring Workplan
<b>16 November 2017</b>	Management Practices Evaluation Program Group Workplan*
<b>16 November 2017</b>	Groundwater QAPP
<b>16 November 2021</b>	GAR update

\*Participation in a Group Workplan requires submittal of the agreement of the parties included in the MPEP Group. The Grassland Basin Drainage Steering Committee may indicate they are participating in an MPEP Group whose Workplan is submitted in accordance with the timeframe of another ILRP Order.

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## Central Valley Regional Water Quality Control Board

**TO:** Susan Fregien  
Senior Environmental Scientist  
**IRRIGATED LANDS REGULATORY PROGRAM**

**FROM:** Ashley Peters, P.E.  
Water Resource Control Engineer  
**IRRIGATED LANDS REGULATORY PROGRAM**

**DATE:** 7 November 2016

**SUBJECT:** REVIEW OF THE GRASSLAND DRAINAGE AREA GROUNDWATER QUALITY ASSESSMENT REPORT

On 2 August 2016, the Central Valley Water Board received the Grassland Drainage Area (GDA) Groundwater Quality Assessment Report (GAR) from the Grassland Basin Drainage Steering Committee as required by the Monitoring and Reporting Program (MRP), Attachment B, for General Order R5-2015-0095 (Order). The GAR was reviewed to determine compliance with requirements pursuant to Section VIII.C of the Order and Section III.A of the MRP.

The GAR provides the foundational information necessary for design of the Management Practices Evaluation Program, the Groundwater Quality Trend Monitoring Program, and the Groundwater Quality Management Plan. To accomplish this purpose, the GAR must include the following:

- Assessment of all 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 areas;
- Provide a basis for establishing workplans to assess groundwater quality trends;
- Provide a basis for establishing workplans and priorities to evaluate the effectiveness of agricultural management practices to protect groundwater quality; and
- Provide a basis for establishing groundwater quality management plans in high vulnerability areas and priorities for implementation of those plans.

Table 1 provides descriptions of the required GAR components from the Order and MRP, and lists the section in the GAR that addresses each component.

Staff noted minor errors in the GAR text and tables. For example, Tables 5-1b and 7-2 report different values for the total number of "Drains/Wells with Results Over 10 mg/L (as N)". However, these discrepancies do not appear to affect the determinations made in the GAR.

The GAR identified dibromochloropropane (DBCP) in a single well location in the GDA based on California Department of Pesticide Regulation (DPR) monitoring results at concentrations that have exceeded the maximum contaminant level (MCL). The number of times that exceedances have occurred is not provided in the GAR, but it is noted that 209 detections have occurred in the well with a maximum concentration of 10.10 micrograms per liter ( $\mu\text{g/L}$ ). The California primary MCL for DBCP is 0.2  $\mu\text{g/L}$ . DPR monitoring location information is only available to the Steering Committee to the section level. Staff recommends that the entire section where the well is located be included in the high vulnerability area.

The GAR identified areas that have tile drains as low vulnerability, regardless of hydrogeological properties. Tile drains are used to keep rising groundwater from reaching the root zone. They may also capture water percolating below the root zone from applied irrigation and other very shallow water, limiting downward vertical movement of water quality constituents from irrigated agriculture. Staff agrees that tile drains can reduce the likelihood that constituents will reach deeper groundwater. However, the presence of tile drains does not entirely eliminate this potential. There are several nitrate exceedances reported in the GAR that have not been included in the high vulnerability area. This is presumably because they are in very shallow groundwater (tile drain samples), which are composites of the contributing tile drains.

The Order does not apply to discharges of waste that are regulated under other Central Valley Water Board issued Waste Discharge Requirements. This includes discharges regulated by the Waste Discharge Requirements for San Luis & Delta-Mendota Water Authority and United States Department of the Interior Bureau of Reclamation Surface Water Discharges from the Grassland Bypass Project, which regulates discharges to surface water from tile drains within the GDA. However, it is a requirement of the Order that the GAR “determine where known groundwater quality impacts exist for which irrigated agricultural operations are a potential contributor or where conditions make groundwater more vulnerable to impacts from irrigated agricultural activities” (MRP Section III.A.3).

Staff recommends that all locations where nitrate exceedances have occurred be designated as high vulnerability areas with a 0.5 mile radius, even when the results are for very shallow groundwater. Exceedances show that nitrates are present at levels that could pose a human health risk. In addition, the presence of tile drains should not result in areas with properties characteristic of a hydrogeologic high vulnerability area (HHVA) being designated as low vulnerability. Staff recommends that all areas exhibiting characteristics that meet the definition of a HHVA be identified as such, regardless of the presence of tile drains.

Staff recommends that the GAR be conditionally approved, pending revisions to the high vulnerability area designations as described above.

**Table 1.** Components of the Groundwater Assessment Report

<b>Item No.</b>	<b>Required Component</b>	<b>Section in GAR</b>
<b>GAR Objectives – MRP section III.A.1</b>		
1	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.	Throughout
2	Establish priorities for implementation of monitoring and studies within high vulnerability or data gap areas.	5 & 6
3	Provide a basis for establishing monitoring workplans developed to assess groundwater quality trends.	Throughout
4	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.	Throughout
5	Provide a basis for establishing groundwater quality management plans in high vulnerability areas and priorities for implementation of those plans.	Throughout
<b>Required GAR Components – MRP section III.A.2</b>		
6	Detailed land use information with emphasis on land uses associated with irrigated agricultural operations. The information shall identify the largest acreage commodity types in the Grassland Drainage Area (GDA), including the most prevalent commodities comprising up to at least 80% of the irrigated agricultural acreage in the GDA.	4
7	Information regarding depth to groundwater, provided as a contour map(s), if readily available. Tabulated and/or graphical data from discrete sampling events may be submitted if limited data precludes producing a contour map.	3
8	Groundwater recharge information, if readily available, including identification of recharge areas for urban and rural communities where groundwater serves as a significant source of supply. Disadvantaged communities must be identified	3
9	Soil survey information, including significant areas of high salinity, alkalinity and acidity.	3
10	Shallow groundwater constituent concentrations from existing monitoring networks (potential constituents of concern include any material applied as part of the agricultural operation, including constituents in irrigation supply water [e.g., pesticides, fertilizers, soil amendments, etc.] that could impact beneficial uses or cause degradation).	5
11	Information on existing groundwater data collection and analysis efforts relevant to this Order (e.g., Department of Pesticide Regulation [DPR], United States Geological Survey [USGS], State Water Board Groundwater Ambient Monitoring and Assessment [GAMA], California Department of Public Health, local groundwater management plans, etc.). This groundwater data compilation and review shall include readily accessible information relevant to the Order on existing monitoring well networks, individual well details, and monitored parameters. For existing monitoring networks (or portions thereof) and/or relevant data sets, the third-party should assess the possibility of data sharing between the data-collecting entity, the Steering Committee, and the Central Valley Water Board.	5 & 7
<b>GAR Data Review and Analysis – MRP section III.A.3</b>		
12	Determine where known groundwater quality impacts exist for which irrigated agricultural operations are a potential contributor or where conditions make groundwater more vulnerable to impacts from irrigated agricultural activities.	5
13	Determine the merit and feasibility of incorporating existing groundwater data collection efforts, and their corresponding monitoring well systems for obtaining appropriate groundwater quality information to achieve the	7

	objectives of and support groundwater monitoring activities under this Order. This shall include specific findings and conclusions and provide the rationale for conclusions.	
14	Prepare a ranking of high vulnerability areas to provide a basis for prioritization of work plan activities, with emphasis on communities reliant on groundwater as a significant source for water supply and higher priority given to disadvantaged communities.	6
15	Describe pertinent geologic and hydrogeologic information for the GDA and utilize GIS mapping applications, graphics, and tables, as appropriate, in order to clearly convey pertinent data, support data analysis, and show results.	3, 5 & 6
<b>Groundwater Vulnerability Designations – MRP section III.A.4</b>		
16	The GAR shall designate high/low vulnerability areas for groundwater in consideration of high and low vulnerability definitions provided in Attachment E of the Order. Vulnerability designations may be refined/updated periodically during the Monitoring Report process. The Steering Committee must review and confirm or modify vulnerability designations every five (5) years after Executive Officer approval of the GAR. The vulnerability designations will be made by the Steering Committee using a combination of physical properties (soil type, depth to groundwater, known agricultural impacts to beneficial uses, etc.) and management practices (e.g., irrigation method, crop type, nitrogen application and removal rates, extent of implementation, etc.). If the Steering Committee intends to develop a Basin Plan Amendment Workplan (as described in section VIII.H of the Order), the Steering Committee must identify the areas where a high vulnerability designation results from exceedances due to naturally elevated levels of a constituent. The Steering Committee shall provide the rationale for proposed vulnerability determinations. The Executive Officer will make the final determination regarding vulnerability designations.	6
<b>Groundwater Vulnerability Designations – MRP section III.A.5</b>		
17	Identified exceedances of water quality objectives for which irrigated agriculture waste discharges are the cause, or a contributing source.	6
18	The proximity of the high vulnerability area to areas contributing recharge to municipal and domestic supplies where groundwater serves as a significant source of supply.	6
19	Existing field or operational practices identified to be associated with irrigated agriculture waste discharges that are the cause, or a contributing source.	6
20	The largest acreage commodity types comprising up to at least 80% of the irrigated agricultural acreage in the high vulnerability areas and the irrigation and fertilization practices employed by these commodities.	6
21	Legacy or ambient conditions of the groundwater.	6
22	Groundwater basins currently or proposed to be under review by CV-SALTS.	6
23	Identified constituents of concern, e.g., relative toxicity, mobility.	6
<b>Other</b>		
24	Section 7835 of the California Geologist and Geophysicist Act states that “All geologic plans, specifications, reports, or documents shall be prepared by a professional geologist or registered certified specialty geologist, or by a subordinate employee under his or her direction. In addition, they shall be signed by the professional geologist or registered certified specialty geologist or stamped with his or her seal, either of which shall indicate his or her responsibility for them.”	Title Page