



April 1, 2015

Pamela Creedon
Executive Officer
Central Valley Regional Water Quality Control Board
11020 Sun Center Dr #200,
Rancho Cordova, CA 95670

Re: Comments on Tulare Lake Basin Draft Groundwater Assessment Reports and Draft Comprehensive Groundwater Quality Management Plans

Dear Ms. Creedon,

Thank you for the opportunity to comment on the draft Comprehensive Groundwater Quality Management Plans (CGQMP) published by the Water Quality Coalitions for the Kings, Kaweah, and Kern River regions. We have taken the opportunity to review all of the currently available Groundwater Assessment Reports (GAR) prepared for the Tulare Lake Basin as well as the three CGQMPs. Since there was no available comment period provided for the GARs, we've included response to both the GARs and GQMPs in this correspondence.

A general comment on all of the documents: it is extremely disappointing that, three years after the publication of the UC Davis Nitrate Report, the agricultural community continues to summarily dispute its findings and the findings of other scientific studies that current agricultural practices continue to contribute to exceedances of water quality objectives for nitrate. The majority of the GARs and GQMPs we reviewed would have been improved by a reduction in unfounded editorializing, and rather a focus on solution-based, proactive management practices.

Groundwater Assessment Reports

Our review of these reports show many of the same problems that we have pointed out in earlier reports:

- The use of the Maximum Contaminant Level (MCL) for nitrate of 45ppm (or 10ppm measured as N) to track nitrate problems and identify Hydrologically Vulnerable Areas. For drinking water providers, additional monitoring and disclosure requirements are triggered when nitrate concentrations reach 50% of the MCL. Additionally, drinking water providers commonly replace a drinking water well that exceeds the nitrate MCL because of the acute nature of the contaminant and the expense and difficulty of treatment, thus reducing the number of wells with exceedances and skewing data about



groundwater nitrate concentrations. Nitrate concentrations at 50% of the MCL must trigger high vulnerability designation.

- Limitations on access to well completion reports collected by DWR continue to limit the ability of Coalitions to accurately characterize the aquifers they are charged to protect. Without well construction information, conservative assumptions about the location and depth of nitrate contamination must be used to assess aquifer conditions, and coalitions must attempt to reproduce information that is on file with the state. This impairs the quality of GARs and CGQMPs and raises the extent and cost of the upcoming trend monitoring plans.
- Lack of trend analysis of data. Even where temporal data is available (1969 DWR report for Kern River Region; 1993 analysis in Buena Vista GAR) it is not well presented or analyzed. For example, the Kern GAR shows an increase in wells exceeding the nitrate MCL from 178 in the 1969 testing to 339 in the present, but doesn't show that as a trend of increasing contamination, thereby missing an opportunity to better characterize the high-vulnerability area.

Comprehensive Groundwater Quality Management Plans

Although the GARs document the extent of nitrate contamination in the Tulare Lake Basin, the subsequent groundwater management plans fail to present an adequate course of action to address the problem. Instead, each plan restates the basic requirements of the current permits under the Irrigated Lands Regulatory Program, offering no specific objectives, actions or timelines to address the Hydrologically Vulnerable Areas (HVAs) of each region. Decades of fertilizer application have contributed to dangerous levels of nitrate in underground water supplies, and immediate action is required to reverse the deterioration of groundwater in the Tulare Lake Basin.

We recommend that the CGQMPs develop specific actions in the following areas:

- Information.
 - The isotope study identified as a next step in the Kings plan should provide helpful information. However, it should be noted that there have been rounds of isotope testing in the region to determine sources of nitrate to only moderate success. Often there are multiple contributing sources and the isotope results have been determined to be inconclusive. In other cases there were clear indicators of synthetic fertilizer sources. We strongly suggest that if such a study is developed, it include a diverse stakeholder group from the region to provide input into the process. This will facilitate a stronger study, greater understanding of results and local buy-in which in turn will encourage better management practices. This type of study would



be more appropriate as part of the Management Practices Evaluation Study and would include utilizing shallow monitoring wells, age dating, and isotope testing to determine whether current agricultural practices are contributing to groundwater exceedances. This may be more helpful in informing current management practices than attempting to diagnose the source of contamination deeper in the aquifer that has already occurred. That said, we certainly welcome, in addition to more in-depth monitoring well testing as part of the Management Practices Evaluation Study, any additional testing or studies in the region to better characterize the source of contamination of community drinking water sources. An investigation into the (now closed) Seville well by the Regional Board concluded preliminarily that the source was most likely agricultural, for example. Investigations into the sources of nitrate for community wells will help to develop a better understanding of how to protect sources in the future, and may also be useful to potential enforcement or voluntary actions to ensure polluting sources help pay for mitigation.

- One limiting factor in the GARs and determination of HVAs is the lack of any nitrate data in many agricultural areas. The Coalitions should collect nitrate samples from all of their members to improve relevant data and help members better manage their operations individually and within the basin. Coalitions could offer wholesale rate and technical assistance to growers to collect this information. In the alternative, since the Coalitions do not include this in their management plans, the Board should use its authority to replicate the Central Coast Board's requirement that all permitted agricultural operations test and report the nitrate concentration of all wells on their property. That would develop a far more accurate and robust mapping of actual high vulnerability and nitrate exceedance areas.
- Given the vulnerability of the groundwater in the mapped high vulnerability areas, and the known high-risk to nitrate in those areas, we urge the Board to order that coalitions conduct nitrate testing for all domestic wells and state small system wells in these HVAs and nitrate exceedance areas. The coalitions should share results with owners and residents, with appropriate notice and information to ensure that mitigation steps are taken where nitrate is over the MCL, and provide the results to the State Board's Geotracker Gama database to build a better characterization of aquifer conditions. That state database system has the capability to protect individual information for privacy purposes, while still sharing data that helps to better characterize the basin.



- Actions to reduce continued contamination, with specific benchmarks and timelines. The HVAs and nitrate exceedance areas should be the focus of early activities identified in the Tulare Basin Waste Discharge order, including:
 - Identification and safe closure of all abandoned or dry wells that may be vectors for contamination of aquifers in HVAs and nitrate exceedance areas within 2 years. This is increasingly urgent as more wells go dry with the drought;
 - Accelerated implementation of the Management Practices Effectiveness Program to the crops that have the highest level of nitrate loading to groundwater in the region. We suggest a four-year deadline for affirming practice effectiveness for crops covering 90% of the HVAs;
 - Focused outreach and hands-on, site specific education program to growers in these HVAs and nitrate exceedance areas to identify and update irrigation and fertilizer practices;
 - Implementation of practices that have been shown to limit nitrate leaching below the vadose zone. We suggest a two year deadline.
 - All coalitions should utilize existing data developed and compiled by the CDFA Fertilizer Research and Education Program (FREP) and other crop-specific sources to provide each grower with recommended reduced amounts and high-efficiency application methods for fertilizer applied for the most common crops in HVAs and nitrate exceedance areas. This should be provided within one year and then updated as more information is developed on an ongoing basis. This timeline seems to be consistent with the literature review proposed in the Kaweah CGQMP. This kind of education does not seem to be included in the Kings CGQMP.
 - All coalitions should identify those individual growers reporting higher than recommended amounts or other less protective and less efficient practices within HVAs and nitrate exceedance areas, and conduct site visits by licensed certified nutrient management specialists to encourage swift adoption of efficient nutrient management practices. The coalitions should develop this list of growers “in-need” of site visits within 3 months of reporting of practices by growers. Site visits to provide hands-on, site specific nutrient management assistance by certified practitioners for identified “in-need” growers within HVAs and nitrogen exceedance areas should be completed within two years of approval of this plan, or one year after a grower is identified as “in need”, whichever is later.



- The Kings River CGQMP in particular needs to emphasize an increase in the rate of reduction in high-volume irrigation, as roughly two-thirds of the irrigated land in the project area still relies on gravity irrigation (Kings River Groundwater Assessment Report, Figure 4-10). Unfortunately, there seems to be no targeted or grower/site-specific education on improved nutrient management practices included within the Kings CGQMP, nor clear metrics or timelines for such activities that we could find. We find this completely insufficient.
- After site visits have been conducted with the initial list of “in–need” growers, the coalitions should develop a follow up program that provides annual warnings and offers nutrient management assistance to growers that are not instituting efficient practices. These warnings should turn into enforcement actions after a maximum of 2 years after the first education information is provided, as growers would then have ignored warnings, education and assistance to institute protective nutrient management practices. Lists of all notifications provided, assistance provided or offered, and reporting of practices collected by coalitions should be provided to the Board annually.
 - We support the Kaweah CGQMP’s use of A/R ratios as a compliance metric and appreciate the clarity of having a clear metric. However, we also appreciate that A/R ratios are not a perfect indicator, and additional metrics of efficient nutrient management practices should be added, such as irrigation and application methods and timing. We suggest all coalitions develop clear metrics to evaluate member compliance/efficiency, including A/R ratios.
 - Identification of a minimum and steadily increasing acreage to implement a “pump and fertilize” program to reduce nitrate concentrations in groundwater within HVAs and nitrate exceedance areas in each coalition;
 - Establishment of a pilot groundwater recharge program within one or more HVAs and nitrate exceedance areas to determine the impact of targeted recharge on drinking water supply wells that currently exceed the MCL.
- Actions to assist disadvantaged communities in obtaining safe and affordable drinking water;
 - Communities impacted by continued anthropogenic contamination have to rely on contaminated water, pay to treat the contamination or replace their drinking water supply regardless of the source of the contamination. Coalitions should use their ability to take collective action to direct assistance



and resources to help disadvantaged communities develop alternative water supplies. A specific commitment in these plans would raise the level of trust between growers and impacted communities.

- 123 TCP should be added as a constituent of concern for this region;
 - 123 Trichloropropane (123 TCP) is a constituent of concern in the Tulare Lake Basin region associated with past pesticide use. While the pesticides that caused 123 TCP contamination of the aquifer are no longer applied, current irrigation pumping and application of 123 TCP contaminated water acts to maintain the location and concentration of 123 TCP within the aquifers. 123 TCP is a toxic chemical, is a potent carcinogen, and has a public health goal set by the state of California. It is expected that the State Water Board will propose an MCL for 123 TCP before the end of 2015, and that 123 TCP will be included in the list of Title 22 drinking water contaminants. While current practices are not responsible for creating the problem, they have important roles to play in helping to manage the contaminant to protect beneficial uses. Therefore 123 TCP should be included as a constituent of concern and management practices should be developed to 1) identify where 123 TCP contaminated water is used by or influenced by current agricultural operations, and 2) develop management practices to reduce concentrations and limit the spread of existing plumes to new areas.

The UC Davis Nitrate report has identified fertilizer application as one of the main culprits contributing to nitrate pollution, and it cautions that nitrate levels will increase if growers fail to implement new practices. While the Kern and Kaweah CGQMPs accept the findings of the study, and in fact say that it may be impossible to eliminate continuation of current impacts entirely even with best practices, the Kings CGQMP disputes that current practices have any impact and accordingly demonstrates a lack of will to avert the worsening crisis in the region's groundwater supply. The Kings' assertion that "the potential exists that the nitrate issue is in fact a consequence of practices long since abandoned by growers, and that the problem will self-correct over a long period of time" (31) betrays a lack of understanding of both the nature and severity of the problem. So too does its claim that "if it is proven that current practices are protective, then the issues seen within the groundwater basin must be due to past practices, and thus are legacy issues." (9) The Kings RWQCA must base its planning on the implications of the accepted scientific studies done to-date in the region, rather than baseless conclusions and beliefs, and act with the corresponding urgency necessary to confront the challenges posed by groundwater contamination.

Finally, the plans must include immediate strategies to protect disadvantaged communities in or near high vulnerability areas. One strategy to enact immediate relief is to



employ targeted recharge of high-quality water in such areas. The coalitions must act now to protect the communities that rely on nitrate-contaminated water to meet their basic needs.

The rampant contamination of groundwater will not “self-correct” in a foreseeable timeframe; addressing this issue will require new strategies and bold implementation. The proposals in the CGQMPs are insufficient to the task presented to the Board, namely, protecting California groundwater for now and future generations. We therefore ask the Board to accelerate strategies to confront this problem and demand more ambitious, specific, and time-certain proposals from the Kern, Kaweah, and Kings River Water Quality Coalitions.

In addition to these general comments for all of the region’s plans, we have the following comments specific to individual plans:

Kings: The area covered by the Tulare Lake Basin De-designation study should be included in this analysis. That area remains under the jurisdiction of the General Order and the de-designation study would benefit from inclusion of the area in question in the analysis. In addition, we would like to see

- How the dairy areas were designated and removed from the HVAs. Given that there are many times compounding or co-contributing sources on dairy lands – i.e. irrigated lands - we do not think that dairy areas should be removed from HVA designations unless the coalition can show that nitrate impacts in those areas are not influenced by any irrigated lands. In fact, these areas may be more vulnerable given the multiple contributing sources to contamination and less assimilative capacity for agricultural contributions.
- How or why only the top 15% of areas were designated as high-vulnerability. This 15% cut-off seems arbitrary. Why not the top 20% or 50%? This needs further clarification to ensure that the HVAs are not underestimated. We are concerned since the HVAs that Kings used seems to exclude areas that rank high on the nitrogen hazard index and seemed smaller than the areas we would anticipate

Kaweah: We appreciate that the coalition has included what seems to be an appropriate area within HVAs. Unlike other regions, it does not appear that the coalition is attempting to artificially shrink areas considered high vulnerability areas.

Kern: We are concerned with how small the final high vulnerability areas seem to be. We believe that all the irrigated lands within the nitrate impacted areas should be within the final HVAs and that all three Tiers within the HVA should be included within HVA requirements for implementation of the Order. It is also not clear to us why so much of the nitrogen hazard



index areas are not included in the final HVA. It seems there is a larger lack of data for many areas in this Basin area than others. We suggest that the Coalition make efforts to secure state small water system nitrate monitoring data from Kern County, and do further data collection of domestic wells and state smalls in areas with high nitrogen hazard index, as we suggest above, to ensure that a more accurate area of coverage is achieved.

Thank you for providing us the opportunity to comment on these documents. We look forward to working with your staff and the coalitions on the implementation of these Groundwater Management Plans

Sincerely,

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