

North Kings GSP Public Comment:
Potential impacts on small-scale farming operations

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Introduction

The North Kings GSA (NKGSA) contains a large diversity of stakeholders, including urban areas, disadvantaged communities, and many small-scale family farms. Among them are many Southeast Asian refugee farmers. We recognize that the NKGSA has made an effort to engage small-scale immigrant and socially disadvantaged farmers through outreach and is in a better position to manage groundwater without substantial socioeconomic impacts than many other basins due to existing surface water rights, as well as current and proposed projects to increase supply. However, it is important to note that during the recent drought, many groundwater wells on small farms went dry during periods when surface water was not available. Small farms with older, shallower wells are more vulnerable to decreases in groundwater levels. Additionally, these farms are more limited financially than larger farms, and might be impacted more severely by increased costs and requirements for measuring groundwater. In this comment, we analyze some of the potential effects of the methods outlined in the GSP on small farms in Fresno County. We recommend additional efforts to include small-scale farmers in the process of SGMA implementation and outline possible ways to mitigate potential financial impacts.

**Although we are university academics and students, any opinions or statements in this document we make as individuals and not as representatives of the University or any of its offices or units.*

Summary of recommendations

- Develop a mitigation plan for agricultural wells on small-scale farms that may go dry under the measurable objectives (MOs) and minimum thresholds (MTs) established in the GSP.
 - A well mitigation plan similar to those being considered for domestic wells that may go dry could be developed in coordination with funding agencies and other GSAs in the Kings sub-basin.
- Include representation of small-scale, socially disadvantaged farmers on the NKGSA technical committee and/or Board of Directors.
 - While outreach efforts have been made to inform these farmers of SGMA implementation, there is a need for greater participation in decision-making.
- Provide concrete details and timelines for proposed management actions that could severely and adversely impact the profitability of small farms in the region.
 - Different methods for implementing fees, groundwater measurement, and other management actions have the potential to impact small farms differently.
 - These impacts are difficult to assess under the current plan, where the specifics of implementation have not been detailed.
- Work with local partners to obtain grants to assist small-scale farmers with the cost of groundwater measurement, such as installing flow meters if they are required, as well as involving them in projects such as groundwater recharge.
- Consider a progressive fee structure, so that project fee assessments operate on a tiered scale (i.e., for an acreage-based fee, farms <50 acres pay rate 1 per acre, farms 50-100 acres pay rate 2 per acre, where rate 1 is less than rate 2.)
- Reassess minimum thresholds for monitoring wells in areas where there is likely to be higher rates of well outage if those thresholds are met (see Figures 1 and 2 below).
 - Consider areas of the GSA where the coverage of the monitoring network wells may be insufficient to track changes over time and evaluate impacts on surrounding groundwater users.

Analysis of wells that may go dry under measurable objectives and minimum thresholds

The GSP states that “SGMA does not require the GSA to maintain current water levels or prevent any wells from going dry” (page 4-5) and that the NKGSA “recognizes that some shallow wells will go dry prior to water levels reaching stabilization” (page 4-11). However, the experience of Southeast Asian and other small-scale, socially disadvantaged farmers during the recent drought illustrates the social and economic consequences of shallow wells going dry due to groundwater overdraft. The minimum thresholds in the GSP were set based on the actual decline during the 2012-2016 drought (page 4-4), during which 22% of Hmong farmers surveyed by UCCE in 2015 reported that their well had gone dry. This implies that if minimum thresholds are reached under the GSP during a future period of drought and reduced surface water availability, similar problems could occur. Most Hmong farms in the UCCE survey had well depths between 80-120 feet. This matches the information in the GSP, which states that depths of irrigation wells east of the city of Fresno can be as shallow as 100 feet or less (page 3-46). Under the proposed measurable objectives and minimum thresholds, it is likely that some of these farms would lose their wells. While NKGSA is not required to prevent these shallow wells going dry, we recommend seeking funding to develop a well mitigation program similar to those being proposed for domestic wells that may go dry, in order to prevent the undesirable socioeconomic consequences of small-scale immigrant and refugee farmers losing their farms.

To analyze the potential for well outages under the designated measurable objectives and minimum thresholds, we used publicly available data from the Online State Well Completion Report (OSWCR) database, which contains well location and depth information for all wells that filed Well Completion Reports in the state. We mapped all 15,781 domestic and irrigation wells within the NKGSA boundary. A 3-mile radius was assumed around each of the GSP’s designated monitoring wells (since we did not find it otherwise specified in the Plan), and we compared the MOs and MTs set for each monitoring well to the depths of the wells within the 3-mile buffer. We focused only on agricultural wells. All wells where the total depth is less than the MO or MT for the closest monitoring well are assumed to go dry if those MOs and MTs are met.

Our analysis estimated that, at a *minimum*, 33 agricultural wells will go dry under the proposed MOs, and 75 agricultural wells would go dry under the proposed MTs. These represent 2.8% and 6.4% of all agricultural wells in the GSA, respectively. Many Southeast Asian farmers are renting land on parcels with older wells that are less likely to be recorded in the database. The maps in figures 1 and 2 show the spatial analysis of agricultural wells that will go dry under the MOs and MTs for each monitoring well. We

interpret these numbers as an *underestimate* of the potential well outages given the following limitations of the data available for the following reasons: 1) The analysis relies on total completed depth information of the well, but wells will go dry before hitting their absolute depth; 2) The OSCWR database is incomplete and may be missing older wells or wells where the well completion reports were not filed; 3) The analysis could not be completed for over 300 wells that were either missing information about total completed depth information (about 200 agriculture wells in the GSA boundary) or fell outside of the 3-mile radius around a monitoring well (141 agriculture wells in the GSA boundary).

How many agricultural wells may go dry under the proposed thresholds?

| If Measurable Objective is met at all monitoring wells | | If Minimum Threshold is met at all monitoring wells | |
|---|----------------------|--|----------------------|
| # of wells going dry | % of ag wells | # of wells going dry | % of ag wells |
| 33 | 2.8 | 75 | 7 |

Figure 1: Representative map of agricultural wells that will go dry (33 wells) when MOs for each monitoring network well are reached.

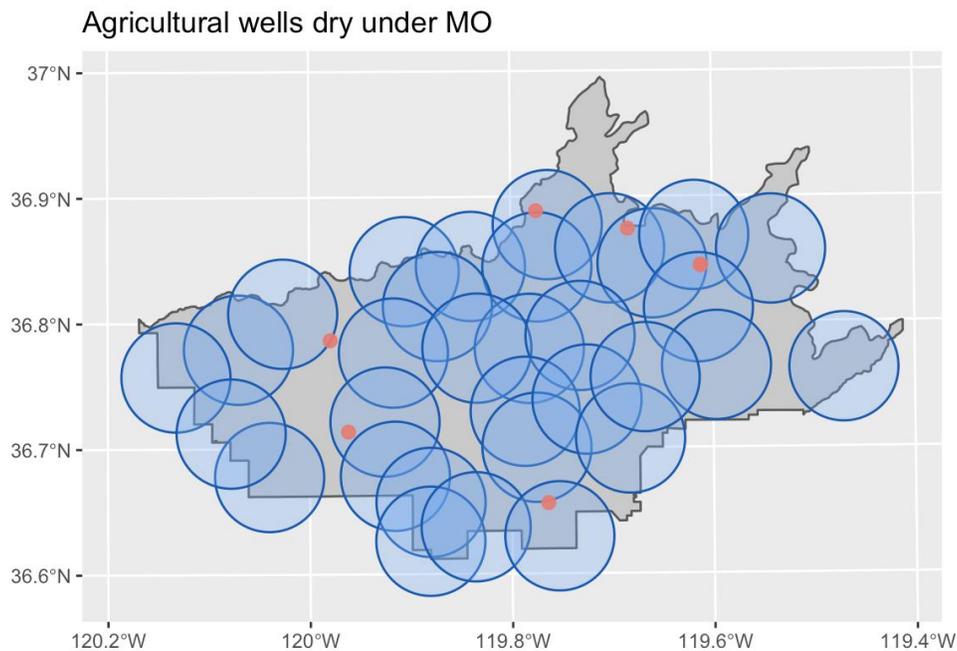
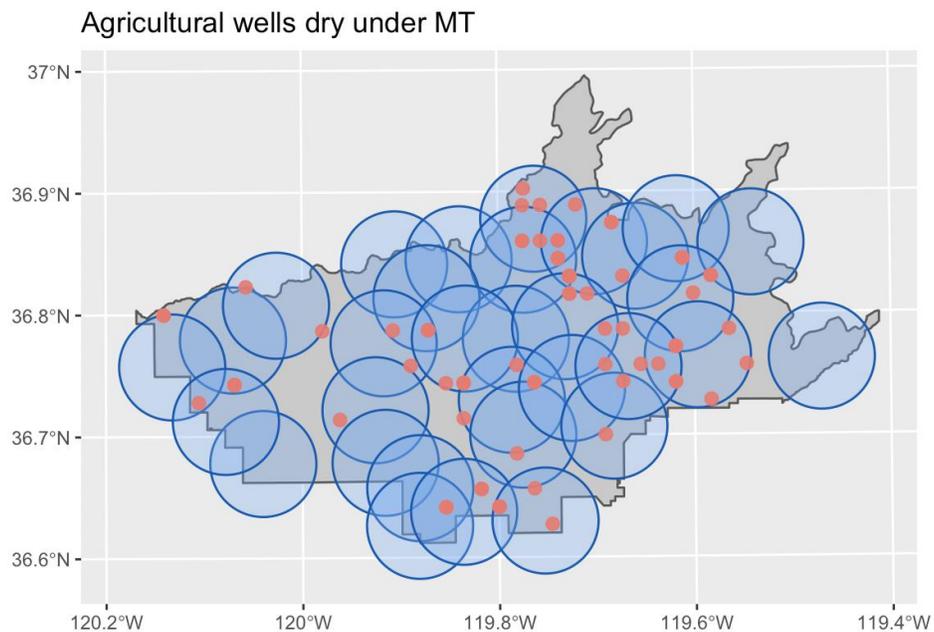


Figure 2: Representative map for agriculture wells that will go dry (75 wells) when MTs for all monitoring network wells are met.



NOTE on Figures 1 & 2: Red map markers may represent more than one individual well, when wells are in close proximity to one another. Thus, there are fewer markers on the map here than wells estimated to go dry under MOs (33 wells) or under MTs (75 wells)

Effects of GSA operational costs and project costs on small farms

It is beneficial to small farms that they will not need to sign up or register to be members of NKGSA, as this prevents adding to the already substantial membership and reporting requirements from other agencies and regulatory programs in the state. Small-scale farmers will likely pay GSA operational costs through increased property tax assessments paid by landowners within the Fresno Irrigation District (FID). Those owning land would pay the increased assessment directly to FID, while farmers renting land might see increases in land rental rates if the assessment is passed on to them in the cost of the lease. The financial impact of this assessment is likely to be low, at least in the early stages of SGMA implementation, although it is difficult to determine given that the amount of the assessment is not specified in the GSP.

To pay project costs, the NKGSA proposes leveraging fees to landowners based on volumetric pumping if metering is available, estimated pumping if not, land area, or another method as determined by each agency (page 7-2). These new project costs could have a financial impact on small farms through increased operational costs, but the extent and severity of this impact cannot be estimated without details on magnitude and cost structures. One clear issue, however, is the information asymmetry between landowners

and renters (who are often small-scale, socially disadvantaged farmers) that is implicit with this management plan, and which we believe NKGSA should work to address.

Despite the collaborative Board structure, there is no distinct entity on the board that is likely to represent the specific interests of small-scale farmers and the unique characteristics of their farms. The NKGSA outreach committee has worked with the Asian Business Institute and Resource Center (ABIRC) and the University of California Cooperative Extension (UCCE) Fresno County to inform small-scale Southeast Asian farmers about SGMA implementation (page 2-44). However, outreach and education should not be equated with farmers providing feedback to the GSA or with participation and engagement in the decision-making process. Including representation of small-scale, socially disadvantaged farmers on additional committees, such as the technical committee and advisory committee, would improve consideration of the interests of these farmers in the implementation of the GSP.

Effects of the GSP management plan on small farms

In addition to potential well outages if MOs and MTs are reached, the management plan has the potential to raise operational costs and limit access to groundwater through pumping restrictions. We are concerned that if implemented, these management actions could cause financial hardship to the small farming community in the NKGSA service area. However, the extent of these impacts are challenging to assess without specific details and timelines about project implementation.

The GSP provides a 12-page description of potential management actions that will be used only if necessary, but does not explain the details and timelines of initiating or implementing any of the projects. We understand that this permits flexibility to the GSA to adaptively manage and determine an appropriate course of action if and when MOs and MTs are met; however the current lack of detail prevents us from analyzing how these projects may impact small-scale farmers in the NKGSA. We point out concerns about the three following management actions:

- **A moratorium on new wells** during periods of droughts (page 6-24) could have severe impacts on all agriculture in the GSA service area, if growers are unable to drill deeper wells to access groundwater. Small-scale farmers who rely almost entirely on groundwater, already have limited resources to adapt to decreasing groundwater levels, and may have shallower wells than their neighbors could be disproportionately limited by a moratorium on new wells.
- **Additional well-head requirements** with new well construction requirements and new permit criteria (page 6-15) could increase costs for small-scale farmers.

Similarly, **requirement of flow meters** or self-reporting twice a year will require financial and/or human resources that are more limited on small-scale farms. We recommend working with local partners on grants to assist small-scale farmers with potential new infrastructure costs.

- **Groundwater allocations and pumping restrictions** per acre could reduce agricultural production in the area. Table 6-4 outlines five possible methods for quantifying groundwater use. Potential problems exist for small-scale, diversified specialty vegetable farms with several of the approaches. Use of flow meters will require farmers to install equipment that will have a proportionally larger financial impact on small-scale farmers if costs are not defrayed. If the irrigated area hybrid method is used, estimation of groundwater use will be difficult because crop coefficients are not established for many crops grown by small-scale farmers in the region (such as many of the Asian specialty vegetable crops), and diversified farms may contain up to 100 different crops grown in seasonal rotations. If methods that use crop type to estimate groundwater use are employed, we recommend that an estimate for groundwater use for a category such as “mixed vegetables” be developed. Also, estimation of pumping by crop does not reflect rotation with fallow areas within a farm, and might overestimate groundwater use for farmers rotating parcels within their farms.

Suggestions for improving outreach and participation by small-scale farmers

The NKGSA outreach plan separated beneficial users of groundwater into three categories: 1) Collaborated; 2) Consulted; and 3) Connected (page 2-39). While outreach events were conducted in collaboration with ABIRC, and one with UCCE, these events focused more on outreach than on feedback and participation, and it is not clear how input from the farmers who attended was incorporated into the development of the GSP. Outreach during GSP implementation would benefit from action items to increase communication with farmers who are harder to reach, such as developing bilingual materials or partnering with groups connected to these farmers. Adding members representing the Southeast Asian farming community and other socially disadvantaged farmers to the advisory and/or technical committees would improve participation by a diversity of small-scale farmers.