

February 9, 2023

Comments following February 2, 2023, Second public hearing for GMD No. 1 Proposed 4-County LEMA,

Earl D. Lewis, PE  
Chief Engineer, Division of Water Resources  
Kansas Department of Agriculture

re: GMD No. 1 4-County Proposed LEMA (LEMA)

Comments regarding: Permits still within their Perfection Period, Proposed LEMA Geographic boundaries and proposed LEMA pumping allocations within those proposed boundaries

As with my earlier comments for the initial LEMA public hearing in October 2023, most of my analysis was done in Scott County where our family farm is located. Some additional analysis was also done for neighboring Lane County.

And let me state that I fully support the implementation of a LEMA to at least partially address significant water level decline issues that exist in much, but not all, of the 4-county area covered by the proposed GMD No. 1 LEMA. I also support revision if the LEMA's management plan to exclude of irrigation permits that are within their perfection period on the effective date of implementation of the LEMA. This change in the management plan was detailed in GMD No. 1's written comments of February 1, 2023, for the February 2, 2023, Second public hearing for the LEMA.

The two most significant guideposts of any proposed LEMA are as follows:

- (1) Do the LEMA control measures effectively and fairly allocate any reductions in total water use within the areas with decline issues to all irrigation water users in those areas of decline?

(2) Is the area covered by the proposed LEMA conservation control measures (which is only advertised to slow and not eliminate significant water level declines) properly giving due consideration to areas of the aquifer that had little or no recent historical water level decline (Lane County and significant portions of eastern and southern Scott County).

**The LEMA plan advertises itself to require larger cutbacks from individual irrigators that applied more inches of water per acre in the recent 10-year test period when compared to those that applied less water per acre.**

However, the proposed LEMA uses an apples-to-oranges calculation that determines high or low water use per acre by dividing actual water use in the 10-year test period by the total authorized acres an irrigator is permitted to irrigate and not the acres an irrigator actually irrigated in the 10-year test period.

**Violating guidepost (1), and solely because the LEMA uses authorized acres which differs for each irrigator, it requires different cutbacks as a percent of actual use for neighbors that are right next door to each other and use similar amounts of water per actually irrigated acre. To correct this calculation error in the proposed LEMA, the LEMA calculation needs to determine high or low water use per acre by dividing historical water use in the 10-year test period by the total acres actually watered in the 10-year test period. This change will result in the LEMA doing as advertised in requiring larger cutbacks from individual irrigators that applied more inches of water per watered acre in the recent 10-year test period.**

Authorized acres are established when permits are initially approved and the wells are relatively new. This is before significant reductions in pumping capability have occurred that limit an irrigator's ability to water the original authorized acres. In GMD 1, especially in overpumped areas with large water level declines and reduced pumping capability, total authorized acres bear little relationship to recently watered acres. **For many irrigators in older overpumped areas,**

**use of authorized acres in the LEMA calculation tends to significantly reduce the LEMA required cutback in those areas that actually need enhanced cutbacks due to their larger-than-average historical water level declines.**

Use of authorized acres in the proposed LEMA calculation, and its underestimate of actual use per acre, also results in the proposed LEMA using cutbacks ranging from no cutback at an indicated 3 inches or less use per **authorized** acre to up to 25% cutback for an indicated 12 inches or more use per **authorized** acre. Since very few significant irrigators use only 3 inches of water or less per actually watered acre, it makes no sense for the LEMA plan to start its cutbacks at 3 inches of water or less. Using current irrigation technology and techniques, the cutback scale should start at a minimum of no cutback for use of 6 inches or less of water per actually irrigated acre. The 12 inch scale for the maximum cutback would not need to be changed.

With use of actual watered acres instead of authorized acres, the LEMA's sliding scale cutback levels between 6 inches and 12 inches per acre will need adjustment to reach the anticipated LEMA desired minimum conservation of water use.

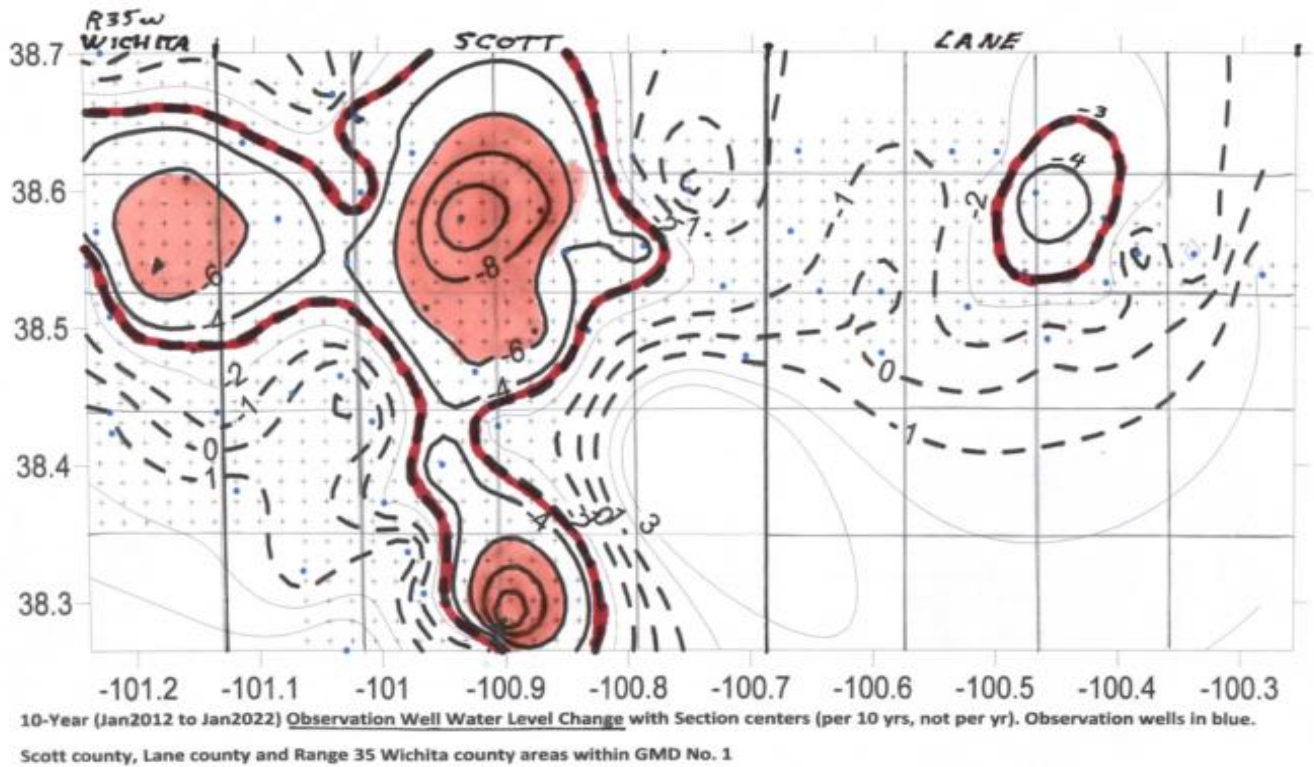
**To meet guidepost (2) for at least Scott and Lane counties, areas of the counties with greater than average water level declines in the most recent 10-year test period from January 2012 to January 2022 need to be segregated for enhanced management from those areas with less than average or no water level decline within the recent test period.**

For these two counties and also for the 4-county area of GMD 1, I recommend that excessive water level decline be defined as 4 feet or more in the most recent Jan2012 to Jan2022 time period and significant decline as 2 feet or more and less than 4 feet in the most recent period (Wallace county may need different segregation due to the greater average water level decline in that county).

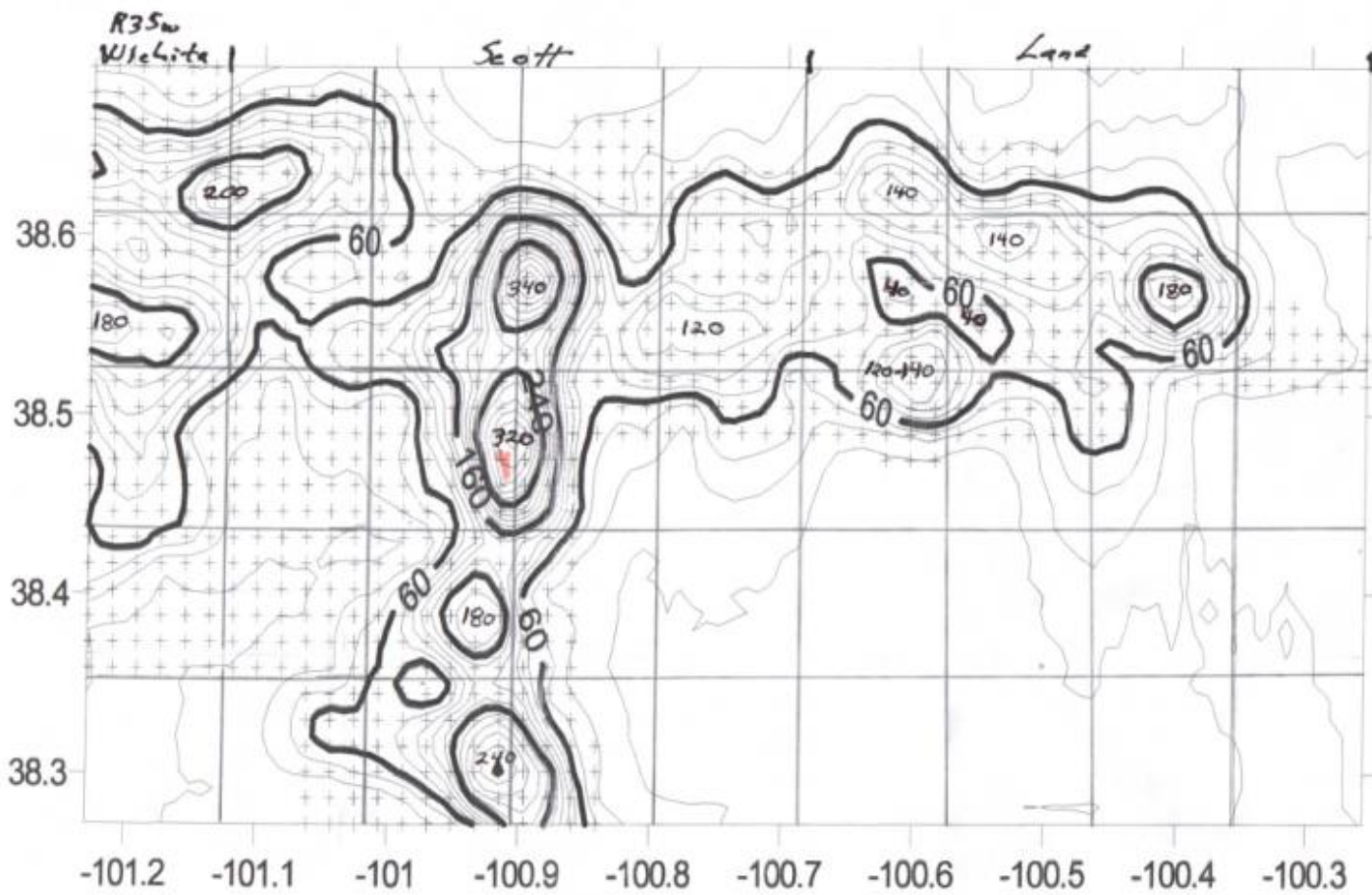
The minus 2-foot 10-year contours clearly show that water level declines in the Scott and Lane county high use areas are caused by and correlate to the high water use areas. The water level

decline from the high-water use area west of Pence is shifted a few miles south due to being commingled with a nearby higher use area concentrated to the south and west in Wichita county that is outside the proposed 4-county LEMA.

KGS data water-level change map – plate 1 – measurements vetted individually, not 3-year averages



KGS data Annual Water Use per square mile map – plate 2



Average 10-Year (2012 to 2021) Water Use within a 2-mile radius of Indicated Section centers (not to scale to fit page)  
Range 35 Wichita county, Scott county and Lane County areas within GMD No. 1

The proposed LEMA boundaries and rules need to be revised to more fairly allocate LEMA conservation measures among water users in the areas of the GMD that are in decline and target the greatest LEMA conservation measures to those areas of the GMD with significant or excessive water level declines. My modifications to the Proposed LEMA to accomplish these goals more effectively are as follows:

- (1) Segregate areas of individual or neighboring counties within GMD 4-county area (Wallace and Greeley together or separate and Scott and Lane in the same manner) that are experiencing less than 2 feet of total decline for the 10-year period from Jan 2012 to Jan 2022. These areas should have only a minimal conservation requirement of 5 percent at the maximum 12 inches per acre cutback level.
- (2) Next, segregate areas of individual or neighboring counties within GMD 4-county area (Wallace and Greeley together or separate and Scott and Lane in the same manner) that are experiencing 2 feet or more, but less than 4 feet of total decline for the 10-year period from Jan 2012 to Jan 2022. These areas should have conservation requirement of 15 percent at the maximum 12 inches per acre cutback level.
- (3) Finally, segregate areas of individual or neighboring counties within GMD 4-county area (Wallace and Greeley together or separate and Scott and Lane in the same manner) that are experiencing 4 feet or more of total decline for the 10-year period from Jan 2012 to Jan 2022. These areas should have conservation requirement of 25 percent at the maximum 12 inches per acre cutback level.

Points of diversion within any quarter township, 9 square miles each (NW1/4, NE1/4, SW1/4, SE1/4 of each township) where the contoured water level decline at the center of that quarter township exceeds the recommended segregation level would be subject to the LEMA specified sliding scale conservation measures for that quarter township level. One can see from the attached water level change maps and historical water use maps that application of this concept

closely targets proposed LEMA conservation measures to those areas with both large irrigation water use and larger-than-average water level declines for the county.

Using the above example for segregation based on water level decline, only the NW1/4 of T17s, R27w in Lane County had an average decline in excess of 4 feet for the 10-year period. In addition, five neighboring quarter townships to the high use area were in the significant 2 feet to 4 feet average decline areas, and 22-quarter townships were in the minimal decline areas of less than 2 feet for the 10-year period. Neither Scott nor Lane counties has any standalone quarter townships that were not neighboring a high-use over 4 foot decline areas.

For Scott County, the GMD area north of 96 highway had fifteen-quarter townships, 135 square miles, with water level declines in excess of 4 feet for the 10-year period. Thirteen-quarter townships, 117 square miles were in the significant 2 feet to 4 feet average decline areas, and nine-quarter townships were in the minimal decline areas of less than 2 feet for the 10-year period.

Scott County GMD areas south of 96 highway had had five-quarter townships with water level declines in excess of 4 feet for the 10-year period. Six-quarter townships were in the significant 2 feet to 4 feet average decline areas, and eleven-quarter townships, were in the minimal decline areas of less than 2 feet for the 10-year period.

Use of even county-level data is problematic for appropriate definitions of geo boundaries for the LEMA. This is illustrated by the following KGS analysis of a portion of the high-use ‘trough’ area north of Scott City. This study covered nine years of historical water use through 2016 that was done a few years ago for the GMD, but the finding would be very similar today. It showed that this high-use area of 5 miles radius from the Scott index well averaged approximately 207 ac-ft/year per square mile over this 78.5 square mile area for the 9-year period. To stabilize this area and bring water use into equilibrium with recharge, water use per square would need to be reduced by 38.6% to approximately 127 ac-ft/year per square mile. A few years later, KGS estimated the cutback for stability for all of Scott County was only a 18% cutback for the whole county. This would indicate that the required cutback for stability in areas of Scott County that are outside the high use areas would be in all likelihood significantly less than 10%.

GMD 1's comments on page 15 of their written comments in support of February 2, 2023 second public hearing, indicated that their "treat everyone the same LEMA proposal" resulted in only a 9.3% reduction in the high-use trough area and an 8.3% reduction in the rest of the GMD in Scott County. These proposed LEMA cutbacks in these two LEMA sample areas of Scott County are a far cry from the over three times required cutback for stability in high use areas when compared to my estimate for stability in areas of Scott county outside of high-use areas.

Significant and excessive high use as defined herein in Scott County extends from north "trough" area for another 10 miles south and west along 83 hwy to the Finney County line. The Pence west area is another high use area that is in the northwest part of Scott County.

John Huslig

Water Right 43197 owner, and representative for Water Rights 43199 and 43198 that are under common family management

(703) 338-7203 cell