Resolving the Quivira Impairment

Kansas Department of Agriculture–Division of Water Resources

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For decades, the U.S. Fish and Wildlife Service expressed concern that its senior water right on Rattlesnake Creek in the Quivira National Wildlife Refuge was being impaired by junior groundwater pumping. In 2016, KDA–DWR found that impairment is occurring. Since then, KDA has worked with GMD5 to find a solution to the Quivira impairment that minimizes the adverse effect to the region's economy. KDA believes that an augmentation project, along with modest reductions in groundwater use, averaging approximately 13–15 percent, and 4,400 acre-feet of targeted reductions, will resolve the impairment and protect the region's economy for at least a generation.

Does KDA support augmentation?

Yes, KDA strongly supports augmentation as a part of the remedy and believes that augmentation is the basin's most effective tool to minimize economic harm. The statute dealing with the administering of water rights was amended in 2015 to allow augmentation specifically, and only in Rattlesnake Creek, to be considered in addressing impairment. KDA–DWR has consistently encouraged GMD5 to move forward with developing augmentation and continues to offer its assistance. For example, at GMD5's request, and to provide additional assurance to the basin, the chief engineer has signed a memorandum of understanding (MOU) with GMD5 reaffirming KDA's commitment to give full credit for augmentation that addresses the impairment.

GMD5 says augmentation alone solves the problem. Why does KDA disagree?

While GMD5's proposed augmentation project will reduce the frequency and magnitude of impairment, it will not remedy the impairment in critical periods, and it becomes less effective long-term as current levels of pumping eliminate more and more streamflow. This is explained in detail in a KDA memo sent to GMD5 and WaterPACK on Jan. 4, 2019. That memo includes a summary of the analysis provided by GMD5's modeling expert in October 2018, and KDA–DWR's review and response.

Why isn't there a LEMA plan to remedy the impairment?

In 2018, GMD5 proposed a plan that included: augmentation at a minimum of 15 cfs; pumping reductions via removal of end guns as well as additional voluntary measures; and 4,400 acre-feet of focused reductions in the high-impact area where 40% or more of the water pumped comes from Rattlesnake Creek streamflow.

In September 2017, KDA–DWR informed GMD5 that its plan to address the impairment with a LEMA would require GMD5 to commit to an allowable level of pumping in the first five years of the LEMA, and then implement reduced water allocations in the second five years if the allowable pumping was exceeded. After nearly 18 months of work on the LEMA concept, KDA and GMD5 have been unable to agree on a LEMA plan that resolves the impairment.

Won't removing end guns save water?

Maybe, but not necessarily. In 2010, GMD5 implemented an Agricultural Water Enhancement Program (AWEP) project whose goal was to reduce water use by removing end guns from center pivot systems. The owners of irrigation systems were paid to remove their end guns which reduced irrigable acres by about 5%; the rates and quantities of their water rights were not affected. The review of the actual water savings under 45 irrigation systems where end guns were removed found no reduction in water use between the time before the end guns were removed and the six years afterward. Based on this analysis, KDA–DWR continues to hold that removing end guns does not automatically save water. To ensure water savings, restrictions must be placed on pumping.

If we have to reduce pumping, who decides who gets cut and how much?

It depends on which path we take, and whether augmentation takes place. No matter what, augmentation is a crucial element to resolving the impairment. Without augmentation, the groundwater model shows that groundwater pumping would have to be reduced by more than 50% from recent use to restore streamflow to the levels where the Refuge is not impaired.

The decisions about pumping reductions will vary depending on which of these paths we take:

- **LEMA** — the GMD5 board controls this process and the contents of the LEMA. As the purpose of this GMD5 LEMA is to resolve an impairment, it will have certain required goals and results to be measured. A LEMA can't order augmentation, but augmentation can be considered if it is available.
- **Intensive Groundwater Control Area (IGUCA)** —hearings and evidence would guide the chief engineer to develop an order that will resolve the impairment. KDA–DWR has already defined the pumping reductions required to resolve the impairment in a LEMA, and these same requirements would resolve the impairment if implemented through the IGUCA process. Significant flexibility (multi-year allocations; the ability to move water allocations around) can be provided in the resulting order. Like the LEMA, an IGUCA cannot order augmentation, only consider it if it is available.
- **The Courts** — With a nearly three-year-old final report from KDA–DWR finding impairment and a clear system of water right priority — "first in time is first in right" — the court system will likely have very little trouble deciding that a significant number of junior water rights should be shut off to ensure that the senior water right is satisfied. The courts do not have access to the LEMA or IGUCA tools to help soften the effects of priority administration, and may not be inclined to trust that a future augmentation project would relieve some of the impairment. KDA–DWR believes that all parties should work very hard to avoid the court system.

How would allocations by water right be set in a LEMA or IGUCA?

That is yet to be determined. There are many ways to set allocations fairly and equitably. KDA–DWR has developed tools to look at a wide variety of options, including consideration for: priority, proximity, floors and ceilings, past conservation, and water right retirements and rotational-fallow operations. If a successful LEMA proposal is developed, GMD5 will decide how the allocations are set. If an IGUCA process is used, the chief engineer will set the allocations. Either way, since the goal is the same in both cases — to resolve the impairment — the overall reductions will likely be very similar.

Where can you go for more information?

Go to www.agriculture.ks.gov/quivira or contact Chris Beightel, program manager, Water Management Services, Kansas Department of Agriculture, at Chris.Beightel@ks.gov or 785-564-6670.

Addendum:

Key events:

- 1980s: U.S. Fish and Wildlife Service (FWS) begins complaining that junior appropriators are impairing the refuge
- 1994-2013: Rattlesnake Creek Partnership (GMD5, WaterPACK, KDA–DWR, FWS) seeks voluntary solutions. Rattlesnake Creek Management Plan 2000-2012 accomplishes roughly 10% of its water use reduction goal.
- April 2013: FWS requests impairment investigation
- December 2015: KDA–DWR publishes its initial impairment investigation report
- December 2015: KDA–DWR hosts a public meeting in St. John to review the initial report
- July 2016: KDA–DWR publishes its final impairment report
- Fall 2016: Spring 2017 — GMD5 offers FWS augmentation-based solutions. FWS finds GMD5's proposals inadequate. GMD5 requests KDA–DWR specify what is needed to remedy impairment.
- July 2017: KDA–DWR presents remedy requirements in addition to GMD5's planned 15 cfs augmentation project to the GMD5 board
- August 2017: GMD5 outlines a proposed LEMA to remedy the impairment with augmentation, end gun removal, and other voluntary measures. KDA outlines the specific commitments to water use reductions and timelines that GMD5 needs to accomplish their plan as a LEMA.
- Fall 2017–November 2018: KDA works with GMD5 on LEMA development
- November 2018: GMD5 withdrawals LEMA proposal
- December 2018: GMD5 formally proposes a LEMA plan with the sole corrective control being removal of end guns and without a commitment to a quantified level of water use reductions.

KDA support to GMD5 LEMA development:

- Performing detailed modeling to determine whose groundwater pumping is impacting flows at Zenith and by how much. Zones defined with "Zone A" being where 10% or more of pumping comes from streamflow, "Zone B" 20% or more, and so on including "Zone D" 40% or more which becomes prominent in later discussions and plans. Used the model to evaluate several different reduction plans with different borders and targeted reductions.
- Developing a climate-based water use estimator to allow for climate to be factored into whether the basin achieved the required savings.
- Providing multiple water allocation calculation tools to allow GMD5 to explore various ways to create allocations considering priority and proximity to the stream as well as other factors.
- Proposing a rule to allow movement of water rights out of the high-impact area.
- Proposing a LEMA-wide Water Conservation Area (WCA) concept to allow flexibility in use of LEMA allocations.
- Providing detailed feedback on GMD5's various draft LEMA plans and offering draft language on certain portions of their plans.
- Coordinating with KDHE on preliminary water quality analysis of GMD5's augmentation plan
- Entering into an MOU to further assure GMD5 that augmentation that relieves the impairment will be fully credited.
- Reaching out to and meeting with other basin stakeholders to increase awareness of the issues including the consequences of inaction.
- Evaluating GMD5's assertion that its proposed augmentation project alone is sufficient to remedy the impairment, memo published 1/4/2019 (on website).
- Reviewed data related to potential end guns savings, published 1/4/2019 (on website).