SPECIAL MEETING OF THE BOARD OF MANAGERS
OF SPECIAL IMPROVEMENT DISTRICT #6
OF THE RIO GRANDE WATER CONSERVATION DISTRICT
December 20, 2023 at 12:30 p.m.
Rio Grande Water Conservation District Conference Room
Alamosa, CO 81101
And by Zoom/Teleconference

Present: Tyler Faucette, President; Virgil Valdez, Vice-President; Ronald Reinhardt, Secretary/Treasurer; Mario Curto, Manager; Rodney Reinhardt, Manager; Peter Clark, Manager; Austin Miller, Manager; Robert Middlemist, Manager; Kenneth Reynolds, Manager; and Armando Valdez, Ex-Officio Member.

Absent: Gerald Faucette, Manager;

Staff and Consultants: Pete Ampe, Hill & Robbins P.C.; Angelo Bellah, Program Manager; Rose Vanderpool, Program Assistant; Kylie Gregg, Office Manager; Crystal Benavidez, HCP Coordinator/Program Assistant; Wylie Keller, Water Resource Specialist; Michael Carson, Database Administrator; Clinton Phillips, Davis Engineering; and, April Mondragon, Administrative Assistant.

Guests: David Hofmann, Sally Wier, Nathan Fransen, Jace Booth, Peggy Godfrey, Jason Lorenz, Michelle Lanzoni, Deb Sarason.

Meeting Called to Order
President Faucette called the meeting to order at 12:32 p.m. A quorum was present. The Pledge of Allegiance was recited.

Approval of the Agenda
President Faucette asked for any changes or a motion to approve the agenda. A motion was made to approve the agenda as presented. The motion was seconded and unanimously approved.

Public Comment
President Faucette asked for public comment. There was none.

Discussion on What Programs/Measures to Implement in Order to Achieve Aquifer Sustainability
President Faucette asked for the discussion on what programs/measures to implement in order to achieve aquifer sustainability. Jason Lorenz reported developing an empirical model that relates streamflow vs. pumping with changes to the aquifer hydrostatic pressures. He presented his report (copy of report attached) and explained the calculations. Mr. Lorenz reported the data could be used as a tool to manage the aquifer as a reservoir. He suggested the Subdistrict curtail in wet years in order to reduce the curtailment in dry years by storing the water ahead of time to recover the aquifer. Discussion was held on prime recharge zones, pumping limits in wet years and the ability to fluctuate while managing the aquifer. President Faucette reported on possibly incentivizing the SB22-028 program with Subdistrict funds. Wylie Keller provided an update on the program and explained the approval process. Mr. Keller reported that almost all the SB22-028 funds had been allocated. Rodney Reinhardt suggested the Subdistrict not incentivizing the SB22-028 at this time. President Faucette asked for a discussion on a potential well purchase program. Discussion was held on how to proceed with those who have voluntarily reduced pumping, how to keep fees reasonable, and possibly doing a tiered system or sliding fee schedule. Pete Ampe reminded the Board the Subdistrict is a budget-based organization and fees could not be used as a punitive measure. Jace Booth reported losing 60% of his hay crop due to too excess water not be able to run properly through the ditch. He asked what could be done to prevent the issue. Discussion was held on a voluntary vs. mandatory allocation program. Mr. Lorenz explained the curtailment method in the Trinchera Subdistrict and why they went with the acre foot basis. Sally Wier updated the Board on the programs available through Colorado Open Lands. She gave an overview of what a groundwater easement is and reported on the need to gain knowledge on the evaluation/appraisal process. Peggy Godfrey commented on the water being withdrawn by Closed Basin Project. Staff was directed to draft a hypothetical allocation program and a resolution to allocate funds to incentivize Colorado Open Lands program.

Next Meeting
A special meeting would be scheduled in January to discuss programs/measures further.

The next quarterly meeting was scheduled for February 14, 2024 at 1:30 p.m.

Adjournment
A motion was made to adjourn the meeting. The motion was seconded and unanimously approved.

The meeting was adjourned at 2:50 p.m.

President

Secretary/Treasurer

AGRO ENGINEERING, INC.

"COMPREHENSIVE AGRICULTURAL AND WATER RESOURCE CONSULTING"

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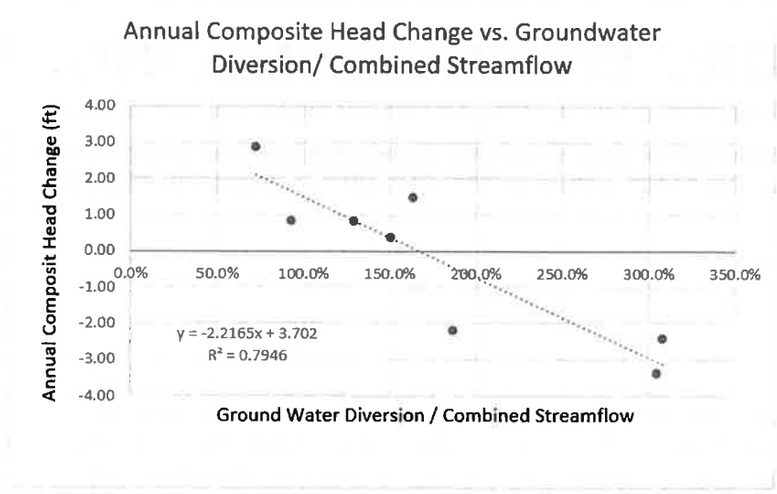
To: Subdistrict 6
From: Jason Lorenz, P.E.
Date: December 14, 2023
Re: Sustainability

The following is an empirical approach relating the relative ground water diversion to streamflow into the basin and comparing that ratio to changes in the aquifer composite water head. It assumes that inflows into the aquifer are proportional to streamflow into the basin and that aquifer inflows and diversions in the current year affect the subsequent year's composite water head. The representative stream chosen is Alamosa Creek. Including La Jara Creek yields a similar result but with a slightly lower R squared value. As more years of data are available this may change. The following is the analysis for the Alamosa La Jara Response Area. The data for this analysis comes from the July 1st, 2023 Division of Water Resources memos concerning composite water head and five year average withdrawals from the confined aquifer.

Groundwater Diversion/Combined Streamflow and Change in Composite Water Head

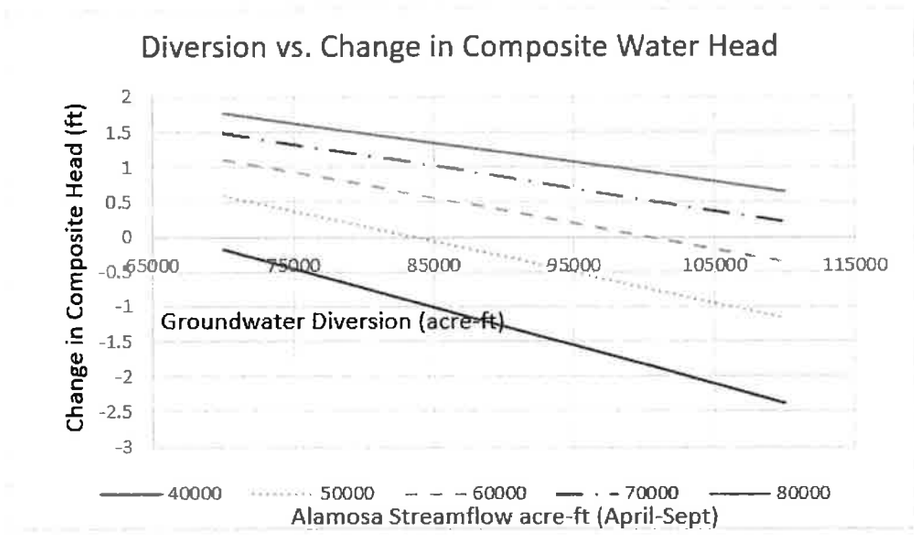
Year	Alamosa Creek above Terrace Reservoir (Apr-Sep) acre-ft	Net Groundwater Consumptive Use acre-ft	Net Groundwater Diversion/ Combined Streamflow (Apr-Sep) %	Composite Water Head Change Relative to 2015 ft	Annual Change Current Year to Subsequent Year ft
2015	53004.5	86658	163.5%	0	1.48
2016	64309.4	83311	129.5%	1.48	0.83
2017	81353.9	75590	92.9%	2.31	0.83
2018	37652.2	116066	308.3%	3.14	-2.43
2019	96950.1	70234	72.4%	0.71	2.87
2020	34931.5	106432	304.7%	3.58	-3.38
2021	54183	101295	186.9%	0.2	-2.21
2022	63424	95757	151.0%	-2.01	0.39
2023				-1.62	
Average	60726	91918	176.2%		



When groundwater diversion as a percentage of Alamosa streamflow exceeds 167% the composite water head declines. On average since 2015 the average percentage groundwater CU relative to streamflow has been 176%. The year with the most significant impact on the aquifer was 2020 when diversions exceeded 106,000 acre-ft which as a percentage was 305% of stream flow a 3.38-foot drop in composite water head. In 2020 groundwater diversion exceeded the sustainable diversion level for that streamflow by 48,000 acre-ft. The greatest recovery seen in one year was in 2019 at 2.87-foot increase, when groundwater diversion was at 70,000 acre-ft vs 97,000 acre-ft of streamflow or 72%. In this year groundwater diversion was 92,000 acre-ft below the sustainable diversion level for that streamflow. This indicates that there is physically some limit to the amount the aquifer can be recharged in a year. Extrapolating out the data indicates that the maximum increase that could be affected in the aquifer would be 3.7 feet if no ground water diversion occurred. As such increased pumping in dry years is not fully replaced by increased aquifer inflows in wet years.

Sustainability Limits

This relationship could be used to set annual limits on total diversion with an allocation or provide a target for reduction in diversion for an incentive-based program. The following graph presents the change in composite water head relative to groundwater diversion at varying streamflow.



If streamflow on the Alamosa is at or above 50,000 acre-ft, total groundwater diversion of 85,000 acre-ft or less would maintain or increase the aquifer.

Given the current water level -1.62' it would take five years limiting the diversion to 152% of Alamosa streamflow to return to the 2015 level. If streamflow averages around the 2015-2022 average of 60,000 acre-ft per year this would allow for average diversions of 92,250 acre-ft per year. If it is a dry period such that years like 2017 and 2019 do not occur the average diversion allowable to recover the aquifer is 78,000 acre-ft or a limitation of 85,000 acre-ft would maintain the aquifer assuming streamflow of 51,250 acre-ft per year.

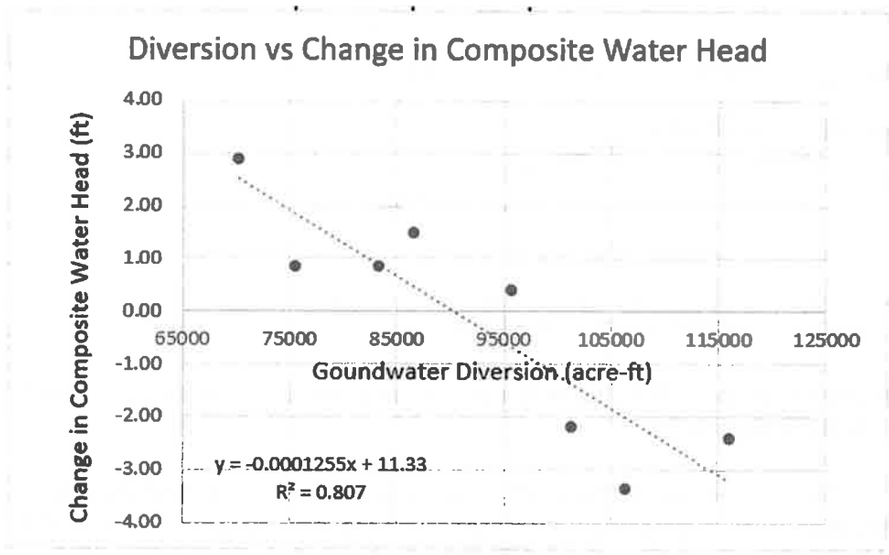
A limit of 85,000 acre-ft per year would recover or maintain the aquifer if annual streamflow on the Alamosa exceeded 50,000 acre-ft. In an extreme dry year such as 2020 a limit of 85,000 acre-ft would result in a drop in the aquifer of 1.7'. This would take 3 years to recover at the 85,000 acre-ft diversion limitation at the average streamflow of 60,000 acre-ft. Using this model as conditions change limitations to diversion could be adjusted accordingly.

Diversion Limitations

If a diversion limit was set at 85,000 acre-ft it would be a 7.6% reduction from the average diversion level of 91,918 acre-ft. In a dry year such as 2018 when diversion was at 116,000 acre-ft it would represent a 27% curtailment and would still result in a drop in the aquifer of 1.3 feet. From 2015 to 2022 half the years had diversion which were at or less than 85,000 acre-ft and wouldn't require curtailment per say, but in order to store water in the aquifer during the wet years which would allow for greater diversion in the dry years a limit of 73,000 acre-ft of diversion would be an average of a 7.5% reduction in the wet years and would recover the aquifer at 0.5 to 1 foot per year given streamflow at 50,000 to 60,000 acre-ft per year. This would allow for greater diversion during a dry year. For example a 95,000 diversion limitation in a year at 40,000 acre-ft streamflow year would drop the aquifer 1.6 feet, but by having greater curtailment in a wetter period that drop could be offset.

Alternative Method

Another method is to compare diversion with change in composite water head without regard to streamflow. This is a simpler method and yields a similar R squared value.



This methodology yields a similar result such that the composite water head decreases when diversion exceeds 90,000 acre-ft. Given the current water level -1.62' it would take five years limiting the diversion to 87,500 acre-ft to recover the aquifer to the 2015 level.

Both methods yield similar results such that to maintain or recover the aquifer overall diversion would need to be limited to between 85,000 and 90,000 acre-ft. As more data becomes available the relationships can be refined.

Respectfully,

Jason Lorenz

Jason Lorenz, P.E.
Agro Engineering Inc.