October 22, 2016

Middle Rio Grande Water Assembly

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Baseline condition: The Middle Rio Grande is *at least* fully appropriated.

In 1963's Supreme Court Decision in *City of Albuquerque v. S.E. Reynolds*, the State Engineer found, without argument from the City, that the surface waters were fully appropriated. This case also effectively codified the requirement to offset ground water pumping impacts.

The OSE has stated in documents prepared for the Biological Opinion that the surface waters in the MRG were fully appropriated by 1907.

Promises Made:

- The Treaty of Guadalupe Hildago conveys and protects rights

- The New Mexico Constitution confirms existing water rights, declared *unappropriated* surface water to belong to the public and be subject to appropriation, and that *priority of appropriation shall give the better right*.

- Protection of prior rights is scattered throughout the water code and other statutes

One Possible Future Scenario

- The plans estimate an additional MRG water demand in 40-50 years in the M&I sector of about 120,000 afy
- If Acquired Only Thru Transfer of Senior Water Rights
  - Would require about 57,000 acres of such rights to be transferred…
- Estimates of total amount of land currently irrigated within the MRGCD are between 50,000 and 65,000 acres

Source: Jemez y Sangre Regional Water Plan, March 2003

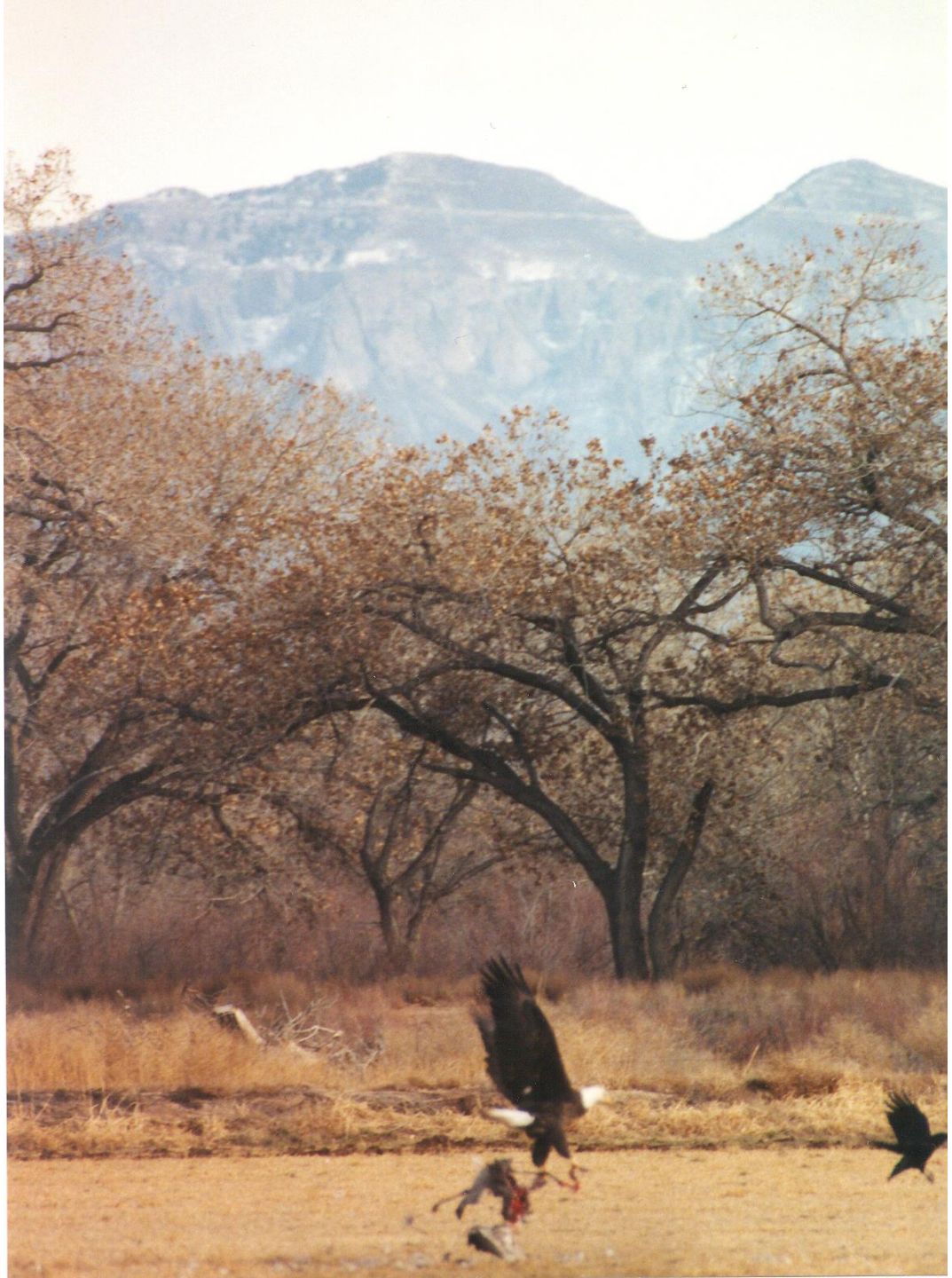
MIDDLE RIO GRANDE WATER RIGHTS

55,000 - 66,000

IRRIGATED
ACREAGE
WITHIN
MIDDLE RIO GRANDE

45,000 - 55,000

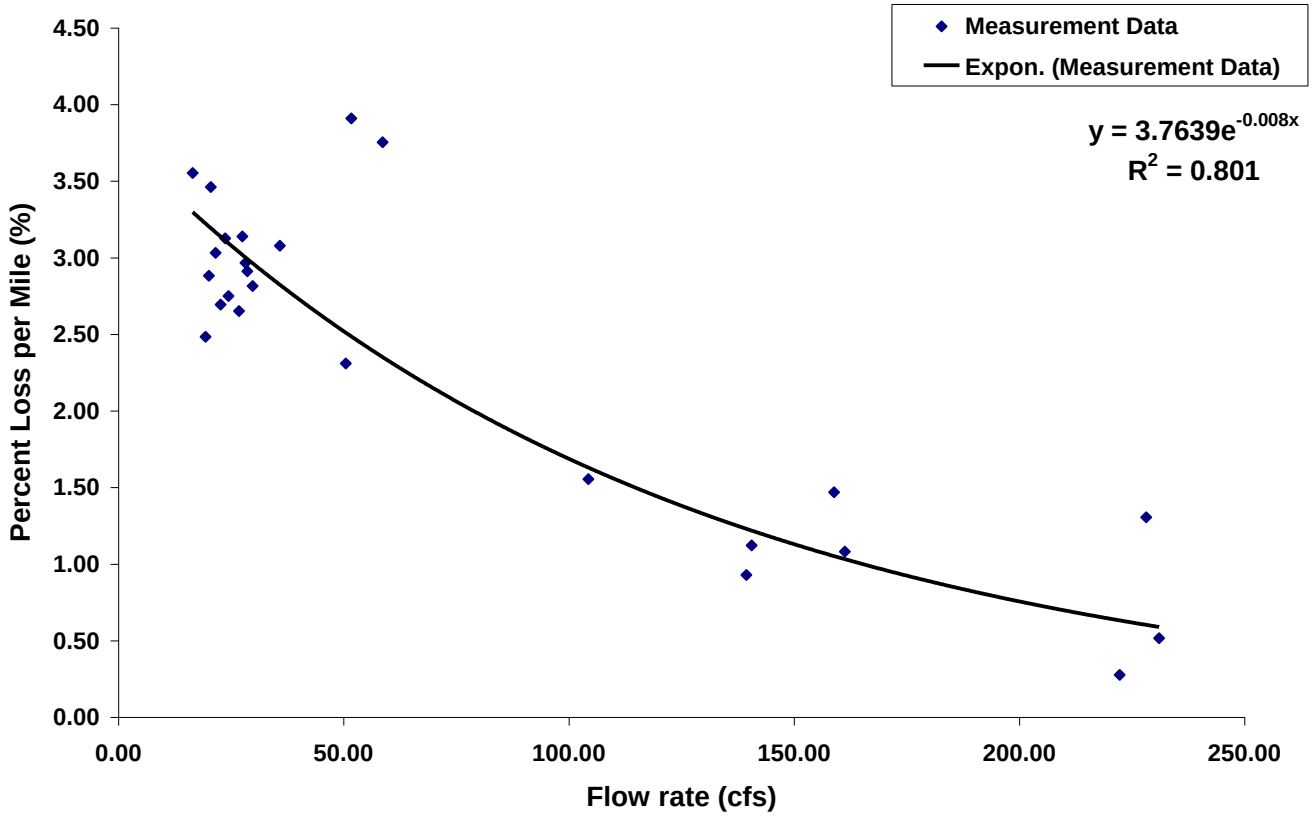
IRRIGATED
ACREAGE TO BE RETIRED
TO SATISFY
DEDICATION/RETIREMENT PERMITS

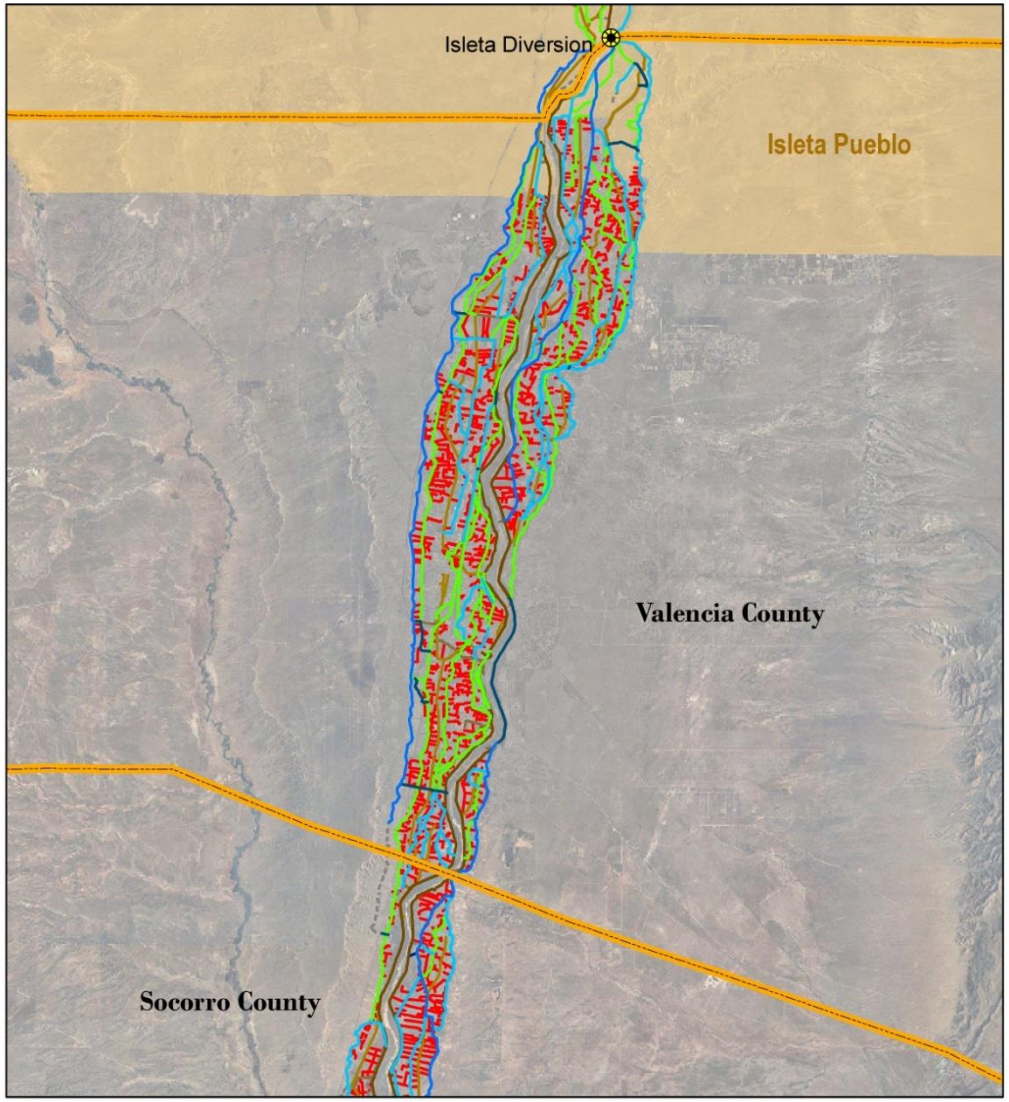


Main canals 1.03% (104 – 230 cfs flow rate)
Lateral canals 3.11 (27 – 58 cfs flow rate)
Acequia canals 2.96 (20 – 26 cfs flow rate)

The difference in the recharge rates of is a manifestation of the relationship to both inflow rates and width at top of ditch. The slower the rate of flow, the higher the percentage of recharge via the ditch.

70,579 af recharge per year from canals alone. This does not include the non-MRGCD operated ditches.





MRGCD Conveyances
Belen Division

MIDDLE RIO GRANDE CONSERVANCY DISTRICT
February 2, 2011

Legend

- Diversions
- Pueblo Land
- MAIN CANAL
- FEEDER
- LATERAL
- ACEQUIA/DITCH
- RIVERSIDE DRAIN
- INTERIOR DRAIN
- WASTEWAY
- COMMUNITY OR PRIVATE DITCH

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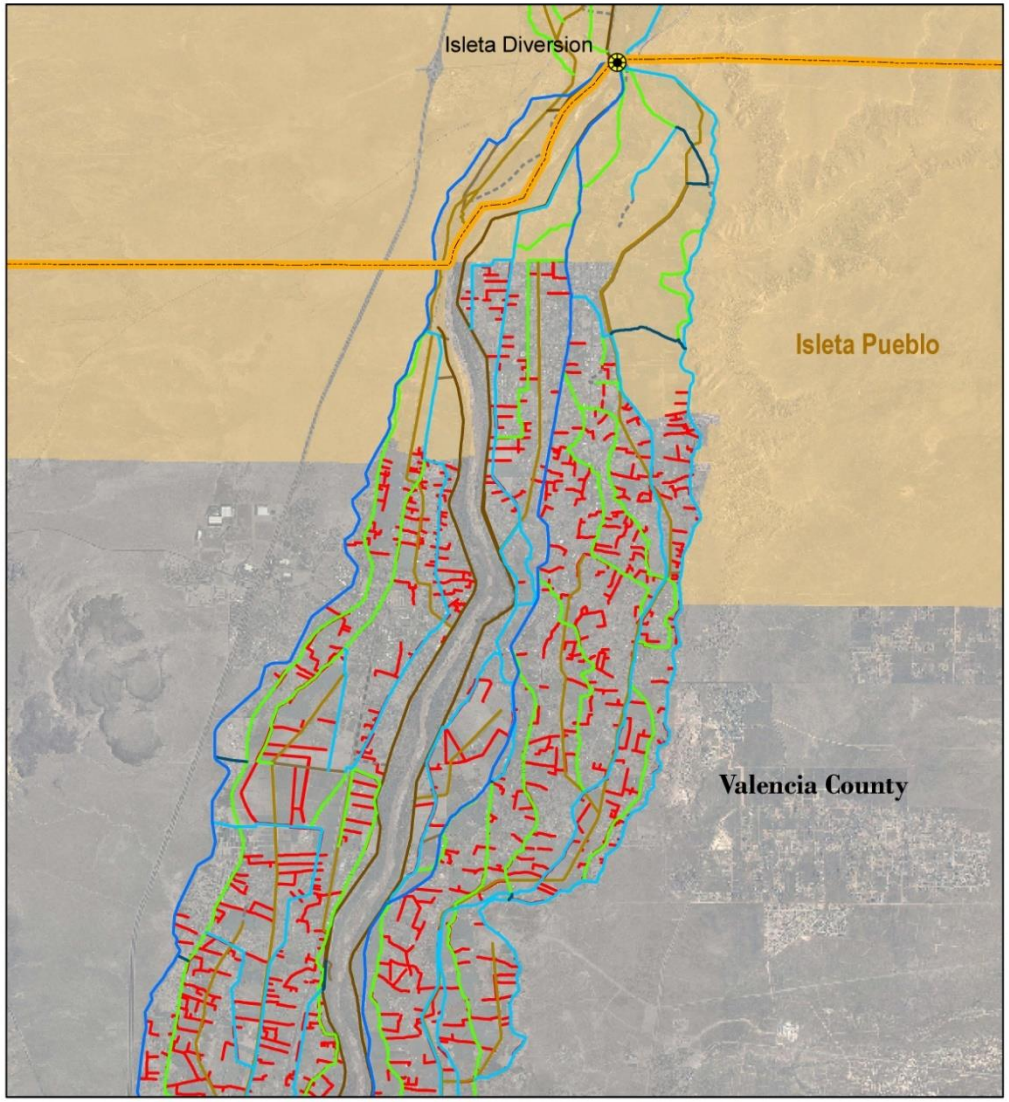
MIDDLE RIO GRANDE CONSERVANCY DISTRICT



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MIDDLE RIO GRANDE CONSERVANCY DISTRICT

0 4,750 9,500 19,000
Scale in Feet

About 16% of the flow in an earthen *acequia* irrigation ditch seeped out of the ditch bed and banks.

Hydrologic, Riparian,and Agroecosystem Functions of Traditional Acequia Irrigation Systems Journal of Sustainable Agriculture, Vol. 30(2) 2007

Irrigated agriculture and associated water distribution facilities contribute about half, or 31,000 acre-feet, of the annual recharge presently occurring in the Albuquerque Reach between Bernalillo and Isleta (Hansen, in press[a]).

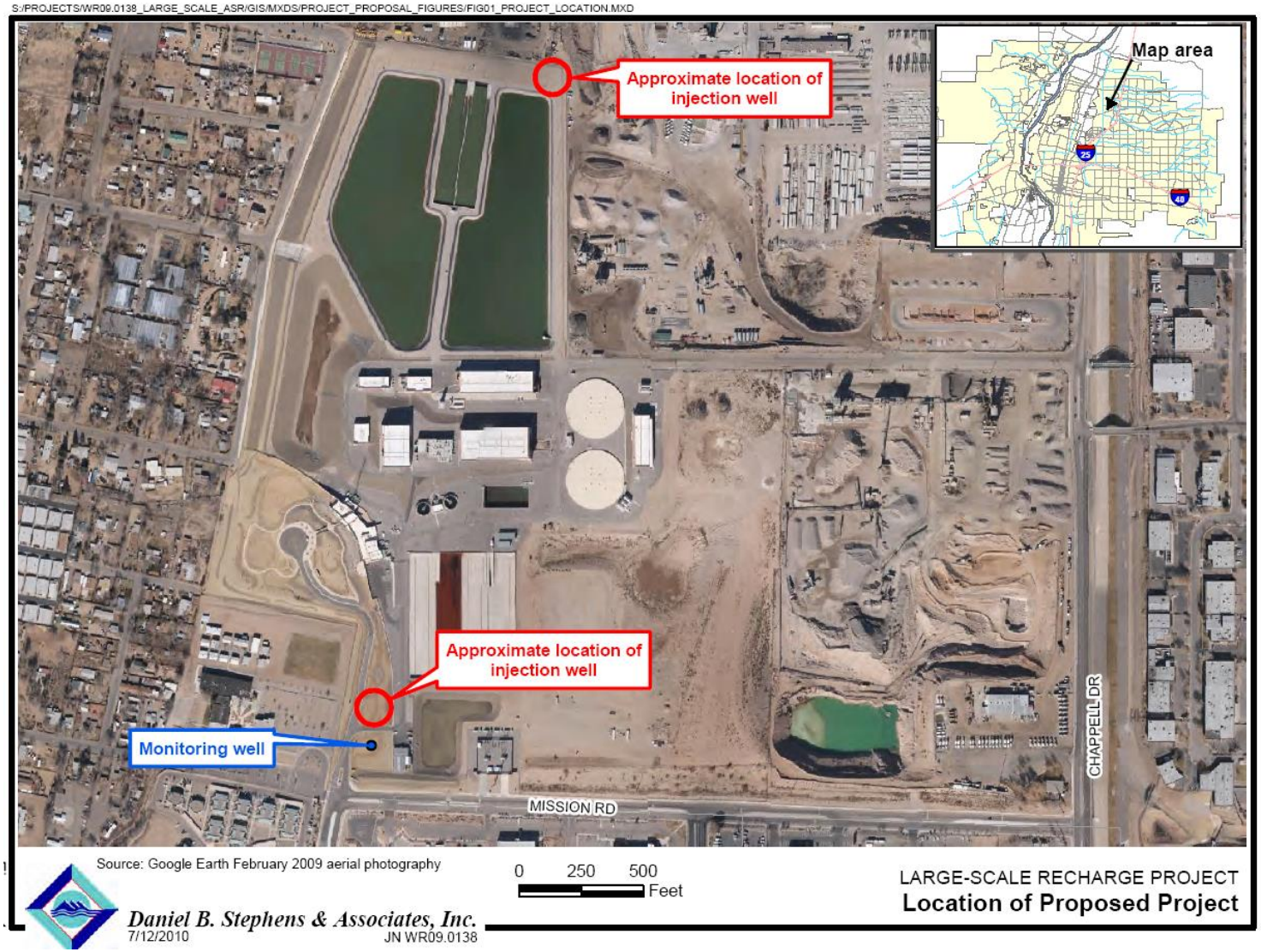
Middle Rio Grande Water Assessment 1997 – Final Report

Canal seepage: 90,000 af
Crop Irrigation seepage: 35,000 af
Total recharge: 125,000 af

Laura Bexfield, "*Conceptual Understanding and Groundwater Quality of the Basin-Fill Aquifer in the Middle Rio Grande*"

"…MRGCD canals keep the shallow private domestic wells at a pretty constant level. It's a moderating system that doesn't really allow affects on the river to propagate to wells rapidly. You have canals on one side or both sides [of the river]... Those canals are intended to keep the river at a pretty constant stage. Well, they're not intended for that, but that's what they do, that's how they work."

(Linda Logan, Office of the State Engineer Hydrology Bureau, testimony delivered on OSE File No. 4830, City of Albuquerque Drinking Water Project, February 26, 2003.)



Approximately $5,000,000.00 for 2 years; Recharge: ? af / yr

Approximately $0.00 indefinitely; Recharge: 125,000 af/yr

Protests have raised concerns regarding impacts of transfers. The Bureau of Reclamation has protested several transfers, and submitted a white paper delineating concerns, including:

- *Transferring uses upstream*: "Flows between the move-to and move-from locations are diminished because the CU portion of the water right and possibly portions of the "carriage water" necessary to move water through the system will be conveyed only to the upstream diversion point."

- *Transfers from surface water to ground water*: "…Withdrawal of a full CU quantity from groundwater sources under a transferred right may allow use of water that would not have been available to the original surface water user."

- *Segmentation of cumulative impacts*: "…The Guidelines make no provision to account for the cumulative effects of many such water transfers…..Reclamation's Middle Rio Grande Water Assessment investigations of 1993-1994 showed river and riverside drain losses between Bernalillo and Isleta Pueblo to groundwater recharge to be about 45 cfs or 32,600 acre-feet per year. Later estimates by the USGS, for the period 1996 to 2000, for a reach of the river between Bernalillo and Rio Bravo, indicate that losses from the surface water system to groundwater recharge had increased to about 87 cfs for the same reach of the river, but 10 miles shorter. These losses will continue to increase over time as the full impact of groundwater mining grows on the river."

Consequences:

As depletions increase, more stored water will have to be released for El Vado Reservoir to meet the greater demand. More water will need to be released to assure full delivers to Pueblo Prior and Paramount lands. This will lead to increased frequency and magnitude of shortages for all Middle Rio Grand Project water users.

Increased depletions will reduce water deliveries to Elephant Butte Reservoir as required by the Rio Grande Compact (Compact). ….

Ultimately, New Mexico may be unable to deliver enough water to comply with the Compact….

Reduced river flow will also mean that more supplemental water will be needed to maintain flow targets in the river for protection of endangered species. Failure to meet these Biological Opinion flow requirements will be more probable, resulting in potential for Federal Court mandated solutions to the violation.

White Paper on Pre-1907 Water Rights Transfer Applications, Bureau of Reclamation, June 18, 2008

Nitrogen (nitrate) removal per year

Tomatoes: at 25,000 lbs / ac, removes 38.37 lbs / ac

Green Chile: at 25,400 lbs / ac, removes 81.28 lbs / ac

Corn, for silage: at 25 tons / ac, removes 193.75 lbs / ac

Alfalfa, for hay, early bloom: at 8 tons / ac, removes 437 lbs /ac

USDA, NRCS PLANTS Crop Nutrient Tool

When water is reallocated from agricultural use, there are land use changes. These changes have many impacts, including:

•Conversion to developed land, which will use ground water; this groundwater is insulated from climate shifts, reducing incentive for conservation. This only delays the impacts to the river; it does not eliminate them.

•Habitat reduction – many sources estimate over 90% of endangered species live on private lands. Land use conversion reduces the habitat for many species.

•Food security and local food production are severely impaired.

• Aquifer recharge, which in the middle valley is predominately from agricultural sources, will be severely impaired. The fields and canals are primary sources of recharge for all the wells in the valley, including domestic, industrial, and municipal. The process of spreading water across the flood plain via irrigation is the only remaining vestige of the hydrograph produced by a meandering river, which the Rio Grande once was.

•The MRGCD is not a federal irrigation project, so the federal government cannot easily reallocate water from agricultural use to ESA purposes. It is an accumulation of over 78 acequias which are hundreds of years old, and protected in statute. The water rights do not belong to an entity, but rather to the thousands of irrigators in the middle valley. Any reallocation is either willing seller / willing lessor, or a condemnation of private property. This means an enormous additional cost to the taxpayer for government driven water reallocation.

73-14-47 . Use of Water

D. At the time of the general appraisal of benefits and damages of the district, or at any subsequent time, the board may cause a determination to be made of the conditions and extent of the water rights, and water supply and of the watercourses within the district as they were before the improvements of the district were made, or as they existed at any subsequent time, and they may **make a determination of all rights**, property, easements or other interests in the waters, or the watercourses, such determination being based upon records of greatest and least flow, upon the evidence of use, or evidence of legal rights, and upon any other evidence and records which may be available.

E. Upon the completion of such determination, the board shall make its report thereon to the court. Thereupon a hearing shall be had, notice shall be given of the pendency of said report and of the hearing, which notice and hearing shall conform as nearly as possible to the notice and hearing on appraisals of benefits and of land to be taken;….

What does the future hold for water acquisitions?

- Uncompensated takings cases
- a priority call on the MRGCD by senior rights holders
- environmental justice litigation
- litigation against the OSE for non-compliance with prior appropriation
- Invocation of the "god-squad" for ESA compliance
- litigation against municipalities for depletion effects

We already have litigation regarding groundwater depletions and implications for compact compliance in Texas v. New Mexico. It is worth noting that while the LRG is initially implicated, there is no preclusion to the MRG suffering the same fate. Any losses in this case will be paid by the state as a whole, not the OSE, and not the LRG.

What's the solution? Keep the promises!

True priority administration, with an adjudication process, and honest accounting for depletions and timing impacts can mitigate many of the circumstances leading to litigation, and clarify water transfer impacts, and quantify water in the market, leading to more security for water users.

Anticipating the unintended consequences can greatly mitigate political, economic, and ecosystem impacts.