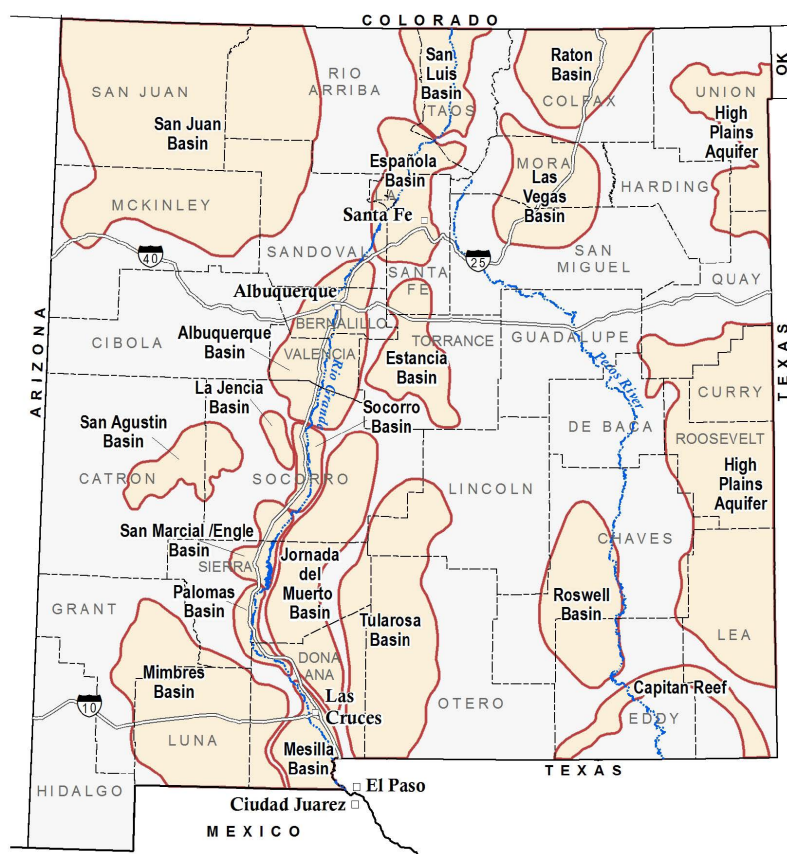


OVERVIEW OF FRESH AND BRACKISH WATER QUALITY IN NEW MEXICO

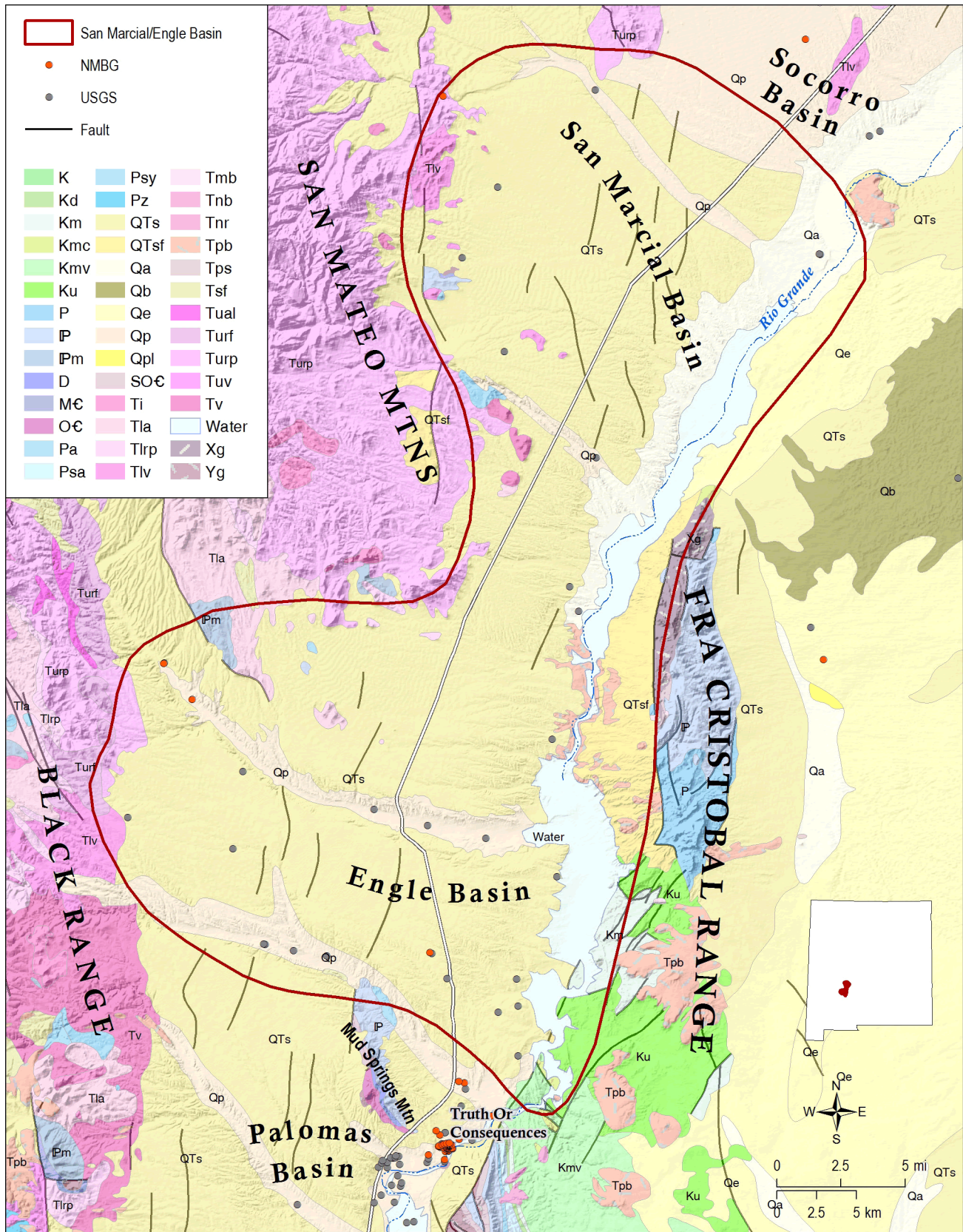
Lewis Land

As New Mexico considers the use of desalinated brackish water (less than 10,000 mg/L total dissolved solid) to diversify the public water supply, many questions must first be answered. Where are the brackish water resources? What data are available? What exactly is the water chemistry? How feasible is it to use brackish water for public supply?

With funding from the New Mexico Environment Department, Drinking Water Bureau (related to Source Water Protection), the New Mexico Bureau of Geology, Aquifer Mapping Program, has compiled a number of water quality resources and data. These data were derived from the Aquifer Mapping Program, digitized historical water reports, the U.S. Geological Survey, and the New Mexico Environment Department. All publicly available data are now on an interactive map found here, under Water Resources: geoinfo.nmt.edu/maps. For an analysis and review of the compiled water quality data, we have attempted to assess the brackish water resources in the state of New Mexico in a regional approach. It is apparent that very large regions of New Mexico lack sufficient data to assess the brackish water resources. Most of the data compiled in this review are from existing water supply wells, and therefore are not representative of the brackish water resources. These data also represent, in general, the shallowest parts of the aquifers where water wells are commonly completed. Each of the regions of assessment shown on the map are provided in individual chapters for quick review. These chapters are part of a larger technical report that is available from the New Mexico Bureau of Geology and Mineral Resources at: geoinfo.nmt.edu/publications/openfile/details.cfm?Volume=583



New Mexico counties, groundwater basins and aquifers discussed in this report.



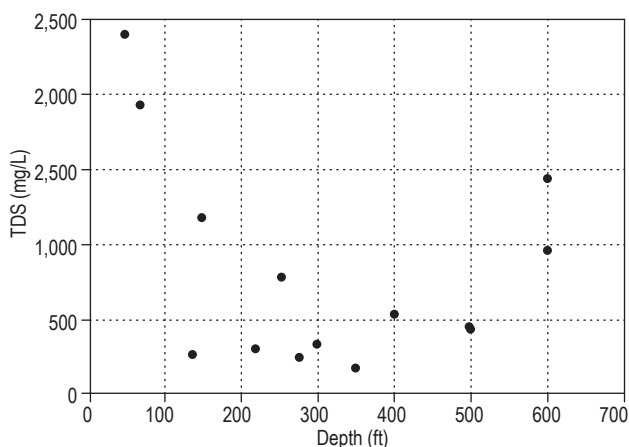
San Marcial and Engle Basins, surface geology and data distribution.

San Marcial and Engle Basins

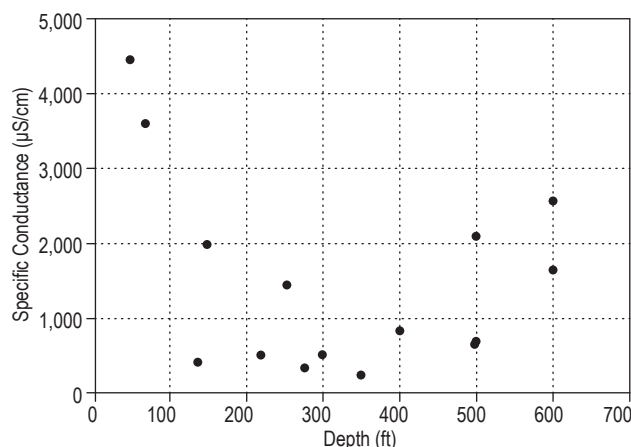
The San Marcial and Engle Basins are axially-linked basins of the southern Rio Grande Rift system that connect the Socorro Basin with the Palomas Basin to the south (Connell et al., 2005). The Engle Basin is an east-tilted half graben containing ~2,000 feet of basin-fill material. Compared to other groundwater basins of the Rio Grande Rift, information specific to these two basins is limited. The compiled data contains only 32 data points for both basins. This very incomplete record indicates water in these basins is relatively fresh, with only four wells exceeding 1000 mg/l TDS.

San Marcial and Engle Basins, summary of water chemistry.

	Specific Cond. ($\mu\text{S}/\text{cm}$)	TDS (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	HCO ₃ (mg/l)	SO ₄ (mg/l)	Cl (mg/l)	F (mg/l)	As (mg/l)	U (mg/l)	Well depth
Maximum	4,450	2,400	220	30	620	195	590	1,300	2.87	0.012	0.0076	600
Minimum	249	177	20	1.6	11	136	6.1	3.7	0.2	0.002	0.003	50
Mean	1,366	704.3	88.9	9.2	152.6	157.3	94.9	279.7	1.4	0.0037	0.0047	327
Median	840	456	72	8.1	79	141	71	78	1.05	0.002	0.004	300



San Marcial and Engle Basins, depth vs. TDS.



San Marcial and Engle Basins, depth vs. specific cond..

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