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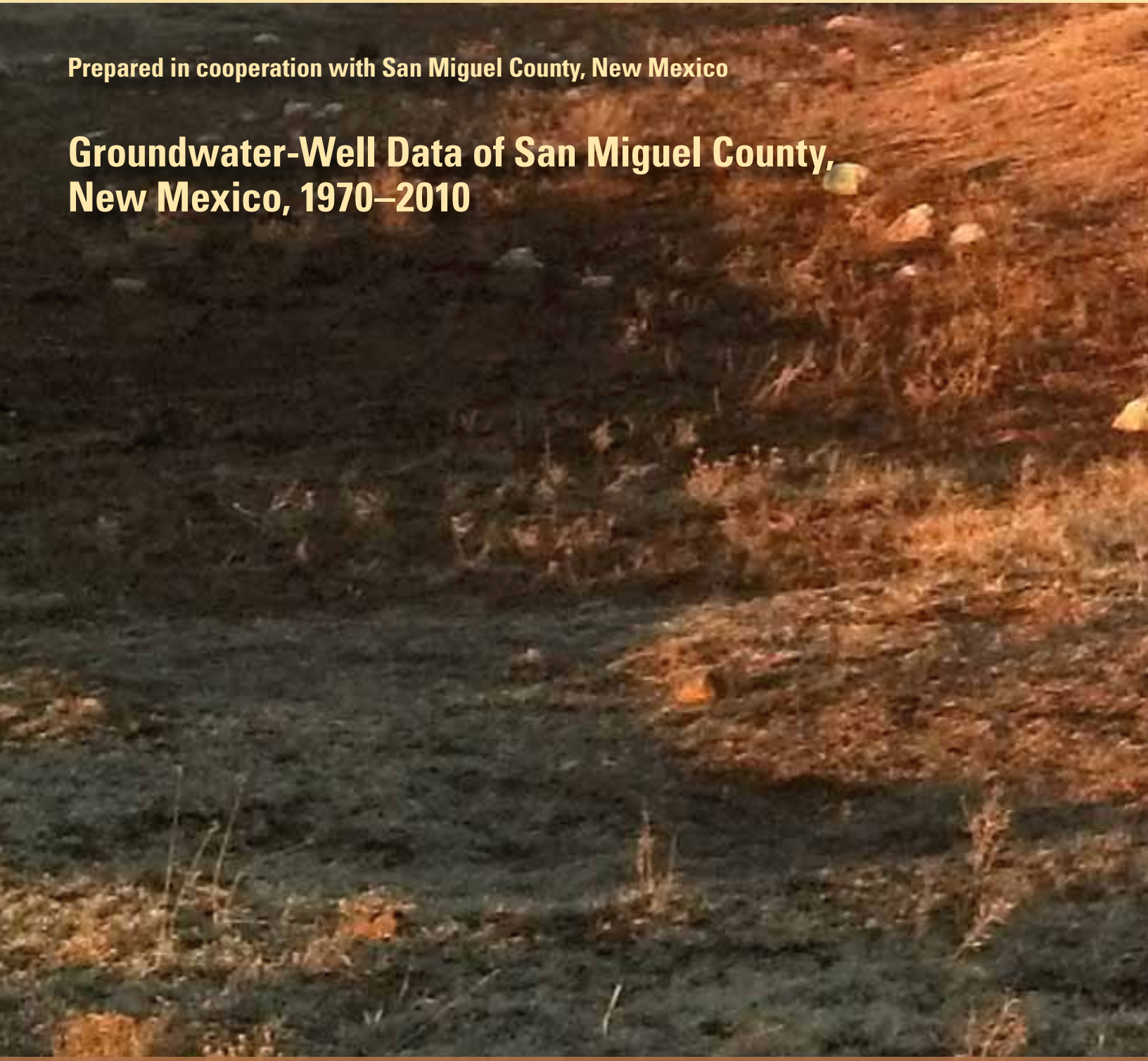
Groundwater-Well Data of San Miguel County, New Mexico, 1970–2010



Data Series 686

U.S. Department of the Interior
U.S. Geological Survey

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(Available online at http://pubs.usgs.gov/ds/686/.)

Conversion Factors and Datums

Inch/Pound to SI

Multiply	By	To obtain
	Length	
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
acre	4,047	square meter (m^2)
acre	0.4047	hectare (ha)
acre	0.4047	square hectometer (hm^2)
acre	0.004047	square kilometer (km^2)

Vertical coordinate information is referenced to the North American Vertical Datum of 1988 (NAVD 88).

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83).

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Abstract

The hydrologic resources of San Miguel County, New Mexico, are increasingly relied upon to meet growing domestic, livestock, and agricultural needs. The U.S. Geological Survey, in cooperation with San Miguel County, conducted a study during 2010–11 to assess current publicly available information regarding the hydrologic resources of San Miguel County. As part of that study, groundwater-well data from wells located in San Miguel County were acquired from two sources: San Miguel County groundwater-well information archived in the State of New Mexico Water Rights Reporting System online database and groundwater-well information archived in the National Water Information System of the U.S. Geological Survey. The collected data provide information regarding depth to groundwater and depth of well completions in the context of physiographic features of the county.

Introduction

The hydrologic resources of San Miguel County, New Mexico (fig. 1), are increasingly relied upon to meet growing domestic, livestock, and agricultural needs. Since a study by Griggs and Hendrickson (1951), however, only a few published studies have focused on the hydrogeology and associated surface-water/groundwater interactions within San Miguel County. As a result, there are limited publicly available, fundamental groundwater data upon which to base interpretation of hydrologic processes. The U.S. Geological Survey (USGS), in cooperation with San Miguel County, conducted a study during 2010–11 to assess current publicly available information regarding the hydrologic resources of San Miguel County. As part of that study, groundwater-well data from wells located in San Miguel County were acquired from two sources: San Miguel County groundwater-well information archived in the State of New Mexico Water Rights Reporting System (NMWRRS) database and groundwater-well information archived in the National Water Information System (NWIS) database of the U.S. Geological Survey. The collected data provide information regarding depth to groundwater and depth of well completions in the context of physiographic areas of the county.

Purpose and Scope

This report presents San Miguel County groundwater-well data acquired from the NMWRRS and the USGS NWIS databases during 2010 and 2011. Methods used to acquire and process the data and limitations of the datasets are presented.

Methods Used To Acquire and Process Groundwater-Well Data

Digitally archived groundwater-well data were obtained from the NMWRRS database (http://nmwrrs.ose.state.nm.us/nmwrrs/index.html) and the USGS NWIS database (http://waterdata.usgs.gov/nwis/gw) during 2010–11. NMWRRS-listed wells (table 1) were reported as drilled between 1973 and 2010, except for a few records for which no drilling date was reported; NWIS-listed wells (table 2) were entered into the NWIS database between 1993 and 2010. According to NMWRRS documentation (New Mexico Office of the State Engineer, 2011a), the NMWRRS compilation of digital groundwater-well data and associated water rights data for San Miguel County had not been completed as of October 2011, when data collection for this report was finalized. NMWRRS groundwater-well data for San Miguel County, summarized in table 1, reflect the status of the NMWRRS database at the time the data were acquired (October 2011). Groundwater-well records available in only paper format were also not included in this report.

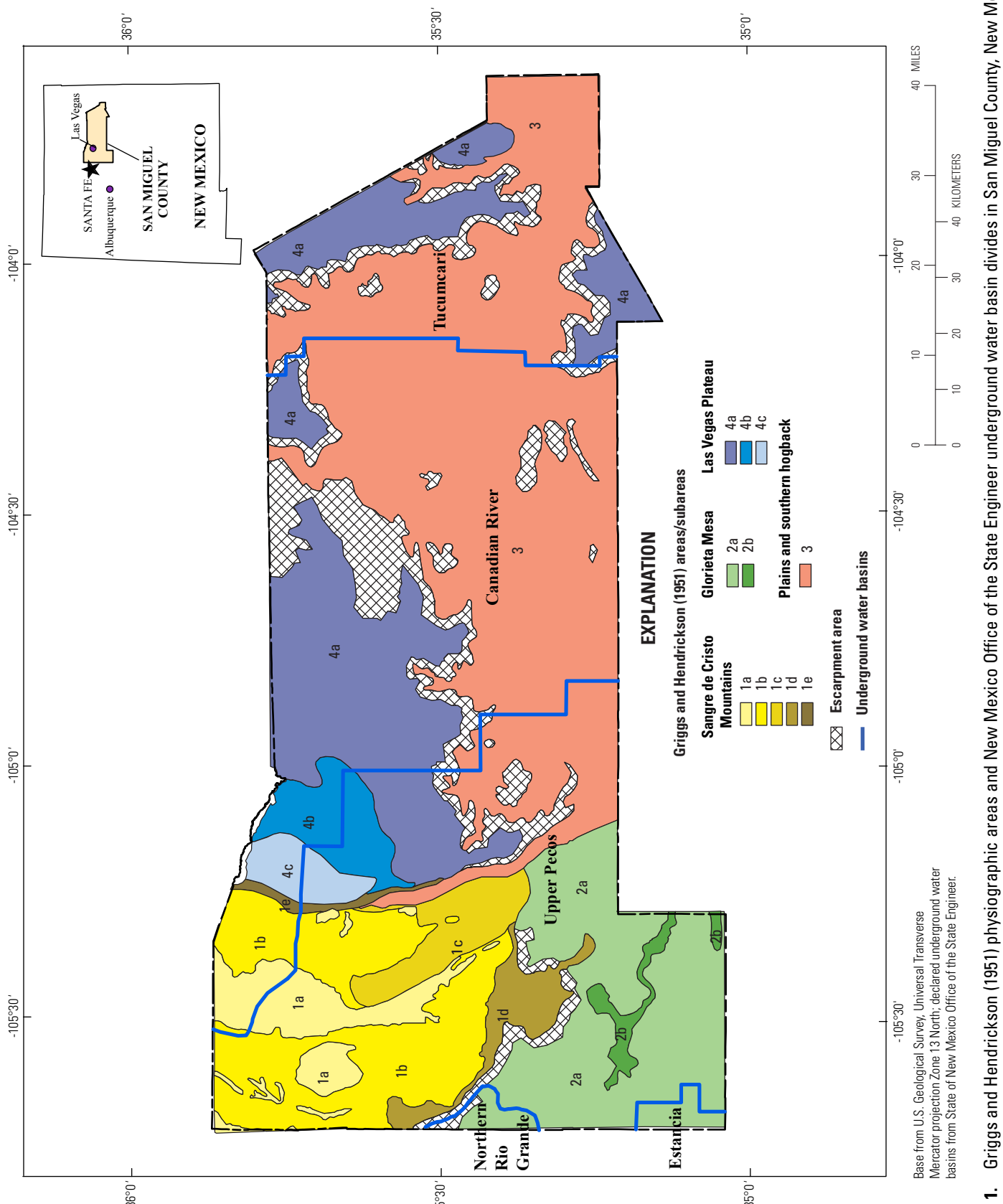

Figure 1. Griggs and Hendrickson (1951) physiographic areas and New Mexico Office of the State Engineer underground water basin divides in San Miguel County, New Mexico.

NMWRRS groundwater-well locations were mapped according to reported coordinates (table 1). Seventy-five wells plotted outside of San Miguel County; these wells were removed from table 1, leaving 2,176 well records for San Miguel County. Of these, only 11 did not include data for total well depth.

The USGS NWIS database contained 317 groundwater-well records for San Miguel County (table 2). Three wells plotted outside of San Miguel County; the associated records were removed from table 2. Of the 314 remaining wells, 289 were cross-indexed with NMWRRS point-of-diversion (POD) identification numbers. This cross-indexing was performed by the USGS in the mid-1990s on a subset of groundwater wells for which drillers' logs were obtained. POD numbers are reported in table 2 to facilitate cross-referencing with wells in the NMWRRS dataset. Of these NWIS well records, 288 records include identification of the primary tapped aquifers.

Four physiographic areas were identified by Griggs and Hendrickson (1951) within San Miguel County (fig. 1). These four areas include Area 1, with five subareas, comprising the Sangre de Cristo Mountains physiographic area, located in the northwest quadrant of the county; Area 2, with two subareas, comprising the highland portions of the Glorieta Mesa physiographic area, located in the southwest quadrant of the county; Area 3, comprising the plains and southern hogback monocline, located in the central and eastern parts of the county; and Area 4, with three subareas, comprising the Las Vegas Plateau physiographic area, located primarily in the north-central part of the county, with extensions in the northeastern and southeastern parts of the county. Griggs and Hendrickson's (1951) plate delineating physiographic areas and subareas was scanned and registered in a geographic information system project, allowing groundwater-well locations in table 1 and table 2 to be cross-indexed with the respective physiographic areas in which they are located. Detailed descriptions of these physiographic areas and subareas can be found in Griggs and Hendrickson's (1951) report. The location of wells within declared underground water basins (New Mexico Office of the State Engineer, 2011b) (fig. 1) can be evaluated on the basis of reported location coordinates.

Limitations of the Data

The reliability of groundwater-well locations as reported in the NMWRRS and NWIS databases is a function of the general accuracy of well locations as reported in the original well logs and of the spatial resolution of the reporting system. For both the NMWRRS and the NWIS databases, the original well locations were designated on well drillers' reports by either property owners or well drillers using the Public Land Survey System (PLSS), which is based on township, range, section number, and telescopic divisions of quarter-sections. The PLSS is not mapped within land grants, and wells located within land grants are generally projected to PLSS, which may generate additional estimation errors. The well point locations reported in tables 1 and 2 represent the centers of the smallest reported quarter-section division provided by well drillers in the well logs and so are inherently approximate because they refer to a center point of an area rather than to a point location of a given well. Well locations reported in tables 1 and 2 have been neither field verified nor validated. Ancillary data associated with the well records are presented as derived from the respective databases.

References Cited

Griggs, R.L., and Hendrickson, G.E., 1951, Geology and ground-water resources of San Miguel County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Groundwater Report 2, 121 p.

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