U. S. DEPARTMENT OF THE INTERIOR
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Digital geologic map of the Roswell Resource Area, New Mexico

By

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Open-File Report

OF-92-0328-A Discussion (paper copy)
OF-92-0328-B Database (diskette)
OF-92-0328-C Command Files (diskette)

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This geologic map was prepared for a report on the mineral and energy resource potential of the Roswell Resource Area that is managed by the Bureau of Land Management (Bartsch-Winkler, 1992). Geologic map information was compiled, modified, and digitized at 1:500,000 scale from the New Mexico Highway Geologic Map (New Mexico Geological Society,1982). Geologic data was transferred onto a 1:500,000-scale stable greenline base with a Lambert Conformal Conic projection and digitized from the greenline base using GSMAP 6 (Selner and Taylor, 1989). The digital line data was then transferred to ARC/INFO[1] via GSMARC 1.0 (Green and Selner, 1988). Geologic polygons were built using ARC 5.0 to produce the final color geologic map for publication. Geologic data was modified from the New Mexico Highway Geologic Map according to the following:

Quaternary gravels in Carrizozo Valley were remapped as Quaternary and Tertiary intermountain gravels. Tertiary intrusive dikes contained in the Tertiary volcanic flows of the Sierra Blanca area on the southwest part of the Roswell area were omitted for simplicity. Near the west edge of the Tertiary volcanic flows, a Tertiary intrusive stock and an outcrop of associated Cretaceous sedimentary rocks were deleted, because they were not located during fieldwork by Moore. Subdivided Cretaceous units on the New Mexico Highway Map have been modified to include two units -- KT_ru, that includes the Pajarito Shale, Mesa Rica Sandstone, and Tucumcari Shale; and Kmmd, that includes the Redondo Sandstone, and the Mesaverde, Mancos, and Dakota Formations. In the northeastern corner of the Roswell geologic map, Ku represents only the Dakota Sandstone, and in the Ruidoso-Capitan area, Ku represents the undifferentiated Dakota, Mancos, and Mesaverde Formations. The San Andres Formation and the Glorieta Sandstone (Psg) crops out in the northwestern corner of the Roswell Resource Area. Abo, Hueco, Yeso, and Bursum Formations are undivided (Pu). The Bonito Fault in Lincoln County was not extended into the Capitan intrusive as indicated on the New Mexico Highway Map, and the southwestern extent of the Sixmile Buckle was omitted owing to lack of surface evidence. Most minor faults were deleted for simplicity, but a small fault cutting the Santa Rosa Sandstone was added along U.S. Highway 84 west of Santa Rosa.

This database was developed on a MicroVAX computer system using VMS 5.4 and ARC/INFO 5.0 software[1]. The ASCII files were then copied to the DOS diskettes included in this report. To use these diskettes, the user must have the capability of transferring them to an ARC/INFO system. The ASCII files included in the two enclosed diskettes can be used to print color versions of the Roswell geologic map using the ARC/INFO software package. Patterned (black-and-white) versions of the map can be created by modification of the RBLM.AML, RBLM.KEY, and RBLM.LIN files using ARC/INFO procedures, with instructions included in the RBLM.AML file (see below).

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[1]Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Digital geologic map information is contained on two diskettes in the following ASCII files:

Database diskette (USGS Open File 92-0328-B):
ARC/INFO "export" files:

RBLM.E00	The Roswell BLM Resource Area geologic map data base (ASCII).
SINK.E00	An auxiliary data base that creates the sinkhole near Santa Rosa.

"Commands" diskette (USGS Open File 92-0328-C):

AAAREAD.1ST	Text file that contains this Open-File 92-0328-A document.
UNITS.MAP	Text file that contains the geologic explanation of map units.
LOAD.AML	ARC/INFO commands that can be used to automatically rebuild the database from ASCII.
RBLM.AML	ARCPLOT commands that create a plot file from the data bases that can be directed to a variety of plotters. (Modify this file according to contained instructions for sites using pin plotters rather than electrostatic plotters, and to obtain patterns rather than colors.)
RBLM.KEY	The ARCPLOT RBLM.AML keyshade file that assigns colors or patterns to the map explanation.
RBLM.LIN	The ARCPLOT RBLM.AML keyline file that assigns colors or patterns to the geologic line types in the map explanation, such as faults and dikes.
CCA_LIN.E00	The palette of line types (ARC/INFO lineset file) for an electrostatic plotter.
CCA_SHD.E00	The palette of colors (ARC/INFO shadeset file) for an electrostatic plotter.
FONT003.E00	The ARCPLOT geologic symbols font file for RBLM.
RBLM.COL	ARC COLOR plottable output file for an electrostatic plotter. This output file (the Roswell geologic map) can be printed without recreating the database.

References cited:

Bartsch-Winkler, Susan, ed., 1992, Mineral and energy resources of the BLM Roswell Resource Area, east-central New Mexico: U.S. Geological Survey Open-file report 92-0261, 153 p. 40 figs., 22 tables, 14 maps, 1 appendix.

Green, G.N., and Selner, G.I., 1988, GSMARC --A program and procedure to convert GSMAP data bases into ARC/INFO coverages; GSDARC --A counterpart program for GSDRAW data bases and an ARC/INFO procedure to topologically structure resultant data: U.S. Geological Survey Open-File Report 88-0430-A, 16 p., and Open-File Report 88-0430-B, 1 program diskette.

New Mexico Geological Society (*in cooperation with* New Mexico Bureau of Mines and Mineral Resources), 1982, New Mexico Highway Geologic Map, scale 1:1,000,000, including representative columnar sections and cross sections, 1 sheet.

Selner, G.I., and Taylor, R.B., 1989, GSDRAW and GSMAP system version 6.0 --Graphic programs and utility programs for the IBM-PC and compatible microcomputers to assist compilation and publication of geologic maps and illustrations: U.S. Geological Survey Open-File Report 89-0373-A, 156 p., and Open-File Report 89-0373-B, 1 program diskette.

LIST OF MAP UNITS:

Qal **Alluvium and gravel, colluvium, loess, dune, pediment, and terrace deposits (Quaternary)**

Qb **Basalt flows (Quaternary)**

Qt **High-terrace gravel and pediment deposits (Quaternary)**-- Pleistocene Gatuna Formation (Pecos River valley) and Blackwater Draw, Double Lakes, and Tahoka Formations (Llano Estacado)

QTg **Intermountain gravel of northern Tularosa Valley (Quaternary and Tertiary)**

To **Ogallala Formation (Tertiary)**

Tis **Alkalic intrusive stocks and laccoliths (Tertiary)**

Tv **Volcanic flows, Sierra Blanca Igneous Complex, and dike swarms (Tertiary)**

TKc **Cub Mountain Formation (Tertiary and Cretaceous)**

Kmmd **Mesaverde Formation, Mancos Shale, and Dakota(?) Sandstone (Cretaceous)**

KT_Ru **Cretaceous and Triassic, undifferentiated**-- includes Pajarito Shale, Mesa Rica Sandstone, and Tucumcari Shale (Cretaceous) and Redonda Formation (Triassic), undifferentiated; east of long 104°15' W. and north of lat 34° N.

Jm **Morrison Formation (Jurassic)**

Je **Exeter Sandstone (Jurassic)**

Jme **Morrison Formation and Exeter Sandstone, undivided**--east of long 105° W. and north of lat 34°45' N.

T_Rc **Chinle Formation (Triassic)**

T_Rs **Santa Rosa Sandstone (Triassic)**

T_RCs **Chinle Formation and Santa Rosa Sandstone, undivided**

M_zu **Mesozoic rocks**--Cretaceous, Jurassic, and Triassic rocks, undivided, on downthrown side of Bonita Fault on the Canadian River

Pds **Dewey Lake, Rustler, and Salado Formations (Permian)** --southernmost Pecos River valley

Pa **Artesia Group (Permian)**--includes Tansill, Yates, Seven Rivers, Queen, and Grayburg Formations

Psg **San Andres Formation and Glorieta Sandstone (Permian)** --San Andres includes Fourmile Draw, Bonney Canyon, and Rio Bonito Members

Pu **Permian, undivided**--includes Yeso and Abo Formations, Hueco Limestone, and Bursum(?) Formation (Permian), undivided

IPu **Pennsylvanian rocks, undivided**--west of long 106° W

M-Cu **Mississippian through Cambrian rocks, undivided** --west of long 106° W

p-Cu **Precambrian rocks, undivided**--west of long 106° W

——— **Contact**

■ ■ ▬···· **Fault**--Dashed where approximately located; dotted where concealed. Bar and ball on downthrown side where relative movement known