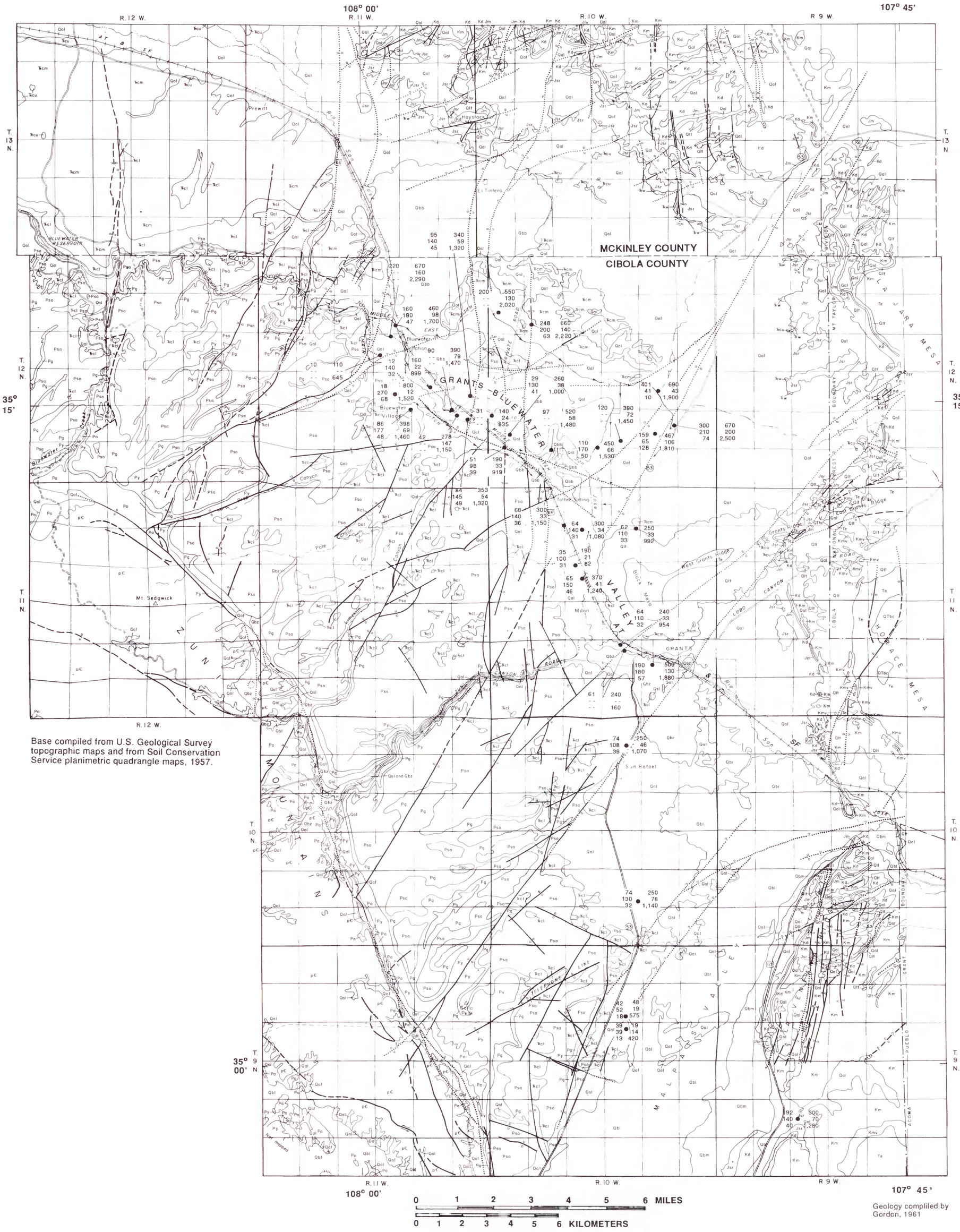
Prepared in cooperation with the
NEW MEXICO STATE ENGINEER OFFICE,
PUEBLO OF ACOMA,
PUEBLO OF LAGUNA,
and the
U.S. BUREAU OF INDIAN AFFAIRS



Base compiled from U.S. Geological Survey topographic maps and from Soil Conservation Service planimetric quadrangle maps, 1957.

0 1 2 3 4 5 6 MILES

0 1 2 3 4 5 6 KILOMETERS

Geology compliled by Gordon, 1961

EXPLANATION

QUATERNARY

Pleistocene and Holocene

Qal — ALLUVIUM
Unconsolidated silt, clay, sand, and gravel. Locally may overlie, intertongue with, or underlie Quaternary basalt. Yields adequate quantities of water to shallow wells for stock and domestic supplies at many places, and for irrigation locally

Qbm, Qbz, Qbb, Qbl — BASALT
Dark-gray to black, dense to vesicular basalt, ash, and cinders emplaced as low cones and valley flows:
Qbm, McCartys Basalt
Qbz, Zuni Canyon Basalt
Qbb, Bluewater Basalt
Qbl, Laguna Basalt
Yields adequate quantities of water to shallow wells for stock and domestic supplies at many places

Qlt — LANDSLIDE AND TALUS MATERIAL

Qsl — SPRING-DEPOSITED LIMESTONE

QUATERNARY AND TERTIARY

Pliocene and Pleistocene (?)

QTbc — BASALTIC CINDER CONES, PLUGS, AND DIKES

TERTIARY

Pliocene

Te — EXTRUSIVE ROCKS
Flow rocks capping Horace Mesa and Grants Ridge; include some rhyolite and tuff breccia; include some small areas of intrusive rocks in East Grants Ridge

CRETACEOUS

Upper Cretaceous

Kmv — MESAVERDE GROUP
Gray to yellowish-buff silty shale and thin- to thick-bedded fine-grained sandstone and local coal beds. Water-yielding properties in Grants-Bluewater area not determined; yields adequate quantities of water for stock and domestic supplies in adjacent areas

Km — MANCOS SHALE
Platy, calcareous dark-gray marine shale; some thick-bedded sandstone in lower part. Water-yielding properties in Grants-Bluewater area not determined

Lower (?) and Upper Cretaceous

Kd — DAKOTA SANDSTONE
Massive medium- to coarse-grained yellowish-buff sandstone, containing interbedded siltstone locally. Water-yielding properties in Grants-Bluewater area not determined; yields adequate quantities of water for stock and domestic supplies in adjacent areas

JURASSIC

Middle and Upper Jurassic

Jm — MORRISON FORMATION
Varicolored claystone and siltstone interbedded with fine- to medium-grained sandstone. Includes Recapture, Westwater Canyon, and Brushy Basin Members. Water-yielding properties in Grants-Bluewater area not determined; yields adequate quantities of water for stock and domestic supplies in adjacent areas

Jsr — SAN RAFAEL GROUP
Fine- to medium-grained varicolored sandstone, in part silty, and claystone; contains some limestone in lower part and massive, crossbedded reddish-brown to orange sandstone in basal part. Includes or is equivalent to Zuni Sandstone, Entrada Sandstone, Todilto Limestone, Summerville Formation, and Bluff Sandstone. Yields adequate quantities of water for stock and domestic supplies in northern and eastern parts of area

TRIASSIC

Upper Triassic

Ꞧw — WINGATE SANDSTONE
Massive crossbedded reddish-brown to orange sandstone. Yields adequate water for stock and domestic supplies

ꞦCu, ꞦCm, ꞦCl — CHINLE FORMATION
Variegated siltstone and mudstone containing interbedded silty and conglomeratic sandstone. Contains some thin beds of limestone in the upper part, a thick sandstone unit near the middle, and considerable sandstone in the lower part; coarse-grained to conglomeratic sandstone occurs locally in basal part:
ꞦCu, upper part
ꞦCm, middle part
ꞦCl, lower part
The sandstone units yield adequate quantities of water for stock and domestic supplies

PERMIAN

Psa — SAN ANDRES LIMESTONE
Thick-bedded to massive light-gray limestone, sandy limestone, and limy sandstone. The limestone is locally cavernous. Yields adequate quantities of water for irrigation, industrial, and municipal supplies

Pg — GLORIETA SANDSTONE
Thick-bedded to massive, well-sorted medium-grained white to yellowish-gray sandstone with limonitic flecks. Some siltstone interbedded in lower part. Yields water to irrigation, industrial, and municipal wells. Contributes water by vertical leakage to the San Andres Limestone in areas of heavy pumpage from the San Andres

Py — YESO FORMATION
Orange to red siltstone and fine-grained silty sandstone, containing a few thin beds of limestone in the lower middle part and thick-bedded to massive crossbedded fine-grained silty sandstone in basal part. Partly gypsiferous. Yields adequate quantities of water for stock and domestic supplies

Pa — ABO FORMATION
Dark-brick red to reddish-brown arkosic sandstone and siltstone; partly conglomeratic in basal part. Water-yielding properties in Grants-Bluewater area not determined. Includes strata of possible Pennsylvanian age

PRECAMBRIAN

p€ — PRECAMBRIAN ROCKS, UNDIVIDED
Granite, gneiss, metarhyolite, schist, and greenstone

CONTACT BETWEEN GEOLOGIC FORMATIONS

U/D FAULT
Dashed where approximately located or doubtful; dotted where covered (D, downthrown block; U, upthrown block)

VOLCANIC CONE

CHEMICAL CONSTITUENTS

Sodium plus potassium	74	● WELL	250	Sulfate
Calcium	130		78	Chloride
Magnesium	32		1,140	Specific conductance

● WELL

All concentrations in milligrams per liter except specific conductance, which is in microsiemens per centimeter at 25 degrees Celsius. Dashes indicates no value

MAP SHOWING SURFICIAL GEOLOGY AND CONCENTRATIONS OF SELECTED DISSOLVED CONSTITUENTS AND PROPERTIES OF WATER FROM WELLS IN THE GRANTS-BLUEWATER AREA