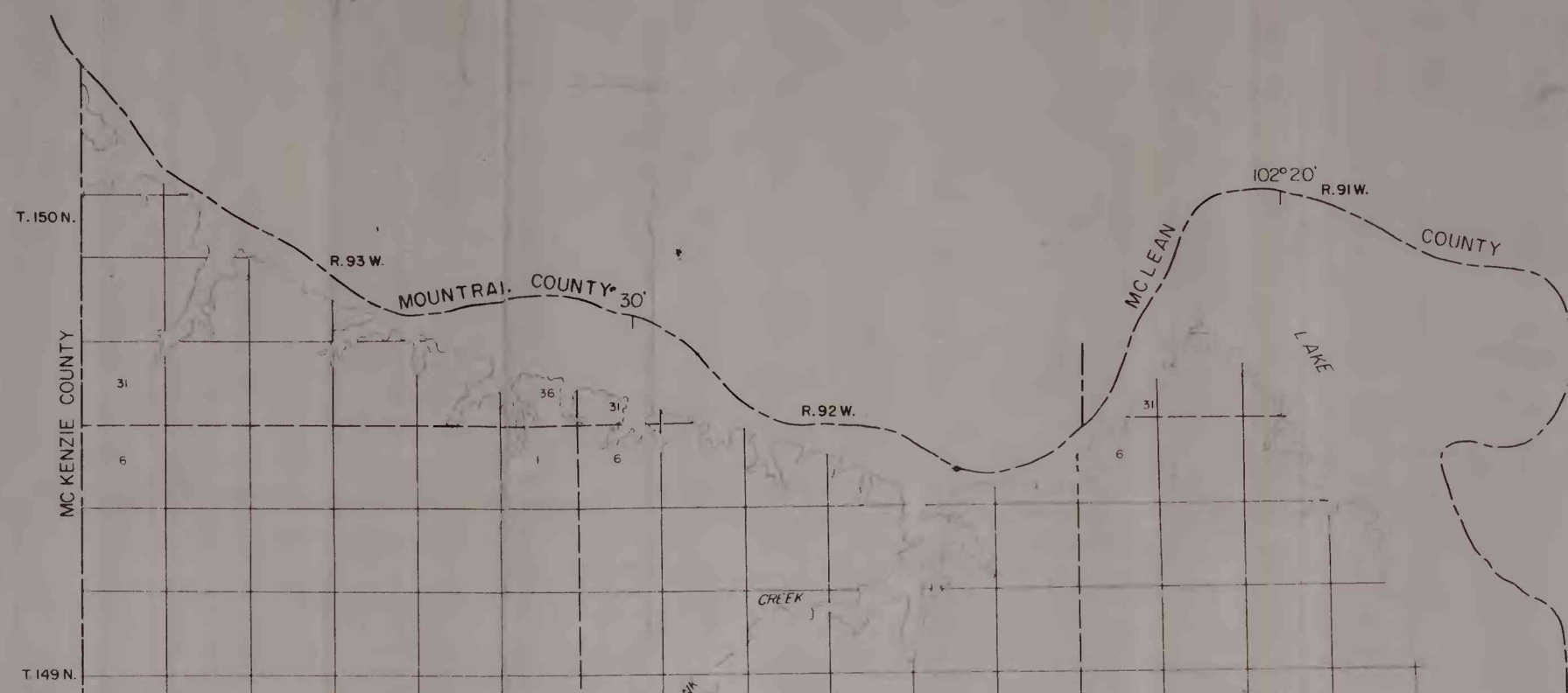


LOCATION OF STUDY AREA



EXPLANATION

ESTIMATED POTENTIAL WELL YIELDS, IN GALLONS PER MINUTE (LITERS PER SECOND)

- 500 to 1000 (32 to 63)
- 200 to 500 (13 to 32)
- 50 to 200 (3 to 13)
- 10 to 50 (0 to 3)

SELECTED TEST-HOLE AND WELL DATA

TEST HOLE OR WELL—Upper numbers are top and base of aquifer depth interval in glacial drift. Number in parentheses is aggregate thickness of sand and gravel. Sand and gravel thicknesses of less than 5 feet (1.5 meters) are not shown. Lower number is depth to consolidated rock, in feet below land surface. Absence of lower number indicates that the test hole or well did not completely penetrate the glacial drift.

INTRODUCTION

This preliminary map was prepared as part of a reconnaissance of the ground-water resources in Dunn County (see Location map). The investigation is part of a statewide program to determine the location, extent, and hydrologic characteristics of the ground-water reservoirs (aquifers). It was made cooperatively by the U.S. Geological Survey, North Dakota State Water Commission, North Dakota Geological Survey, and the Dunn County Water Management District.

A well inventory provided data on depth, construction, and productivity of private and public wells. Test drilling by the North Dakota State Water Commission and commercial well drillers provided data regarding the thickness, grain size, and extent of the aquifers. These data are published in a report by Klausung (1976).

Potential well yields shown on the availability map were estimated from the thickness and hydraulic conductivity (permeability) of the water-bearing materials logged at each test hole and from aquifer tests. Generally the yield of a well is proportional to the hydraulic conductivity and thickness of the aquifer.

Aquifers occur both in glacial drift and in underlying and adjacent bedrock formations in Dunn County. However, the availability map shows only the extent and potential yields of the glacial-drift aquifers.

The glacial drift consists of till and glaciofluvial sand and gravel deposits. The till, which occurs as isolated remnants, consists predominantly of clay and will not yield significant amounts of water to wells.

The glaciofluvial sand and gravel deposits are confined in melt-water channels. Wells developed in these deposits will generally yield more than 50 gallons per minute (3 liters per second), and in places the yield may be as much as 1,000 gallons per minute (63 liters per second).

The availability map should be used with the understanding that the estimated yields are for properly screened and developed wells that fully penetrate the aquifer. The map is designed as a guide to the availability of ground water from glacial-drift aquifers and not to locate specific wells. Few aquifers are so uniform in their water-bearing properties that production wells may be drilled in them without additional test drilling. If the map is used with an understanding of its limitations, it will be useful in the future development of ground-water resources of the area.

REFERENCES

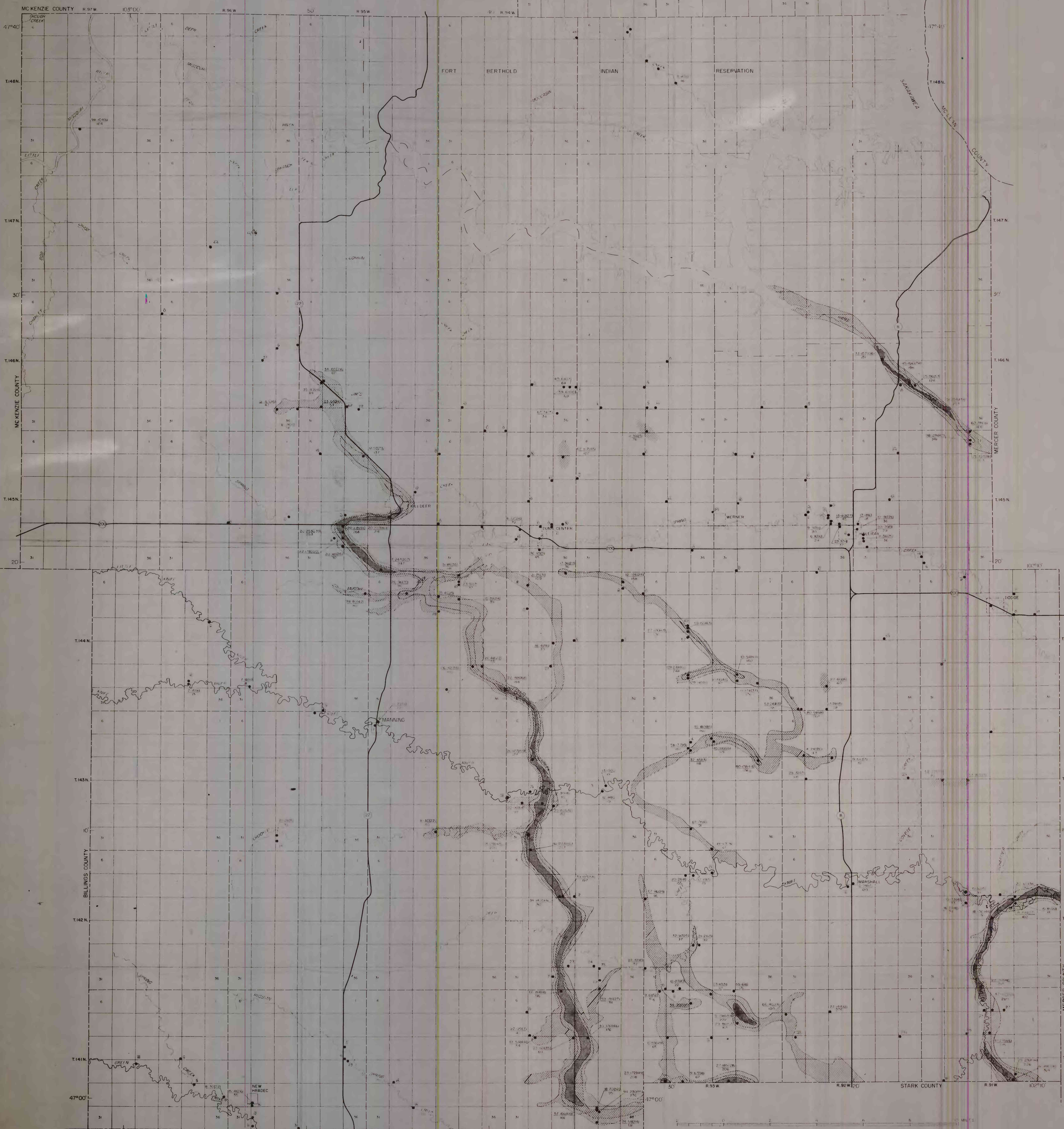
Colton, R. B., Lemke, R. W., and Lindvall, R. M., 1963, Preliminary glacial map of North Dakota: U.S. Geol. Survey Misc. Geol. Map I-333.

Clayton, Lee, 1971, Preliminary geologic map of Dunn County, North Dakota: North Dakota Geol. Survey Misc. Map 11.

Dingman, R. J., and Gordon, E. D., 1954, Geology and ground-water resources of the Fort Berthold Indian Reservation North Dakota: U.S. Geol. Survey Water-Supply Paper 1259, 115 p.

Klausung, R. L., 1976, Ground-water basic data for Dunn County, North Dakota: North Dakota State Water Comm. County Ground-Water Studies 25, pt. II, and North Dakota Geol. Survey Bull. 68, pt. II, 501 p.

Simpson, H. E., 1929, Geology and ground-water resources of North Dakota: U.S. Geol. Survey Water-Supply Paper 598, p. 124-127.



BASE FROM NORTH DAKOTA STATE HIGHWAY DEPARTMENT COUNTY HIGHWAY MAPS

PRELIMINARY MAP SHOWING AVAILABILITY OF GROUND WATER FROM GLACIAL-DRIFT AQUIFERS IN DUNN COUNTY, WEST-CENTRAL NORTH DAKOTA

By
ROBERT L. KLAUSUNG
MARCH 1977

M BACK OF BOUNDARY...
WATER BEARING IN BO...