

Base from U.S. Geological Survey
1:250,000 quadrangles; Beloit, 1965-70;
Goodland, 1954; Manhattan, 1955-60

Hydrology by L. E. Dunlap, 1979

MAP SHOWING WATER-LEVEL CHANGE IN OGALLALA FORMATION IN WESTERN PART OF REPUBLICAN RIVER BASIN, 1950-77

WATER-LEVEL CHANGES

Measurements of water levels in wells made prior to irrigation development in different parts of the basin were related generally to 1950 water levels and compared with measurements made during the spring of 1977. Thus, the water-level changes from 1950 to 1977, which were constructed from estimated point values, can be considered only as reasonable approximations.

In the western part of the basin, water levels in many areas of the Ogallala Formation declined from 5 to 40 feet from 1950 to 1977 (Pabst, 1977), as shown on sheet 5. Areas of greatest water-level decline generally coincided with areas where ground-water withdrawals for irrigation and municipal use exceeded recharge to the aquifer. Areas where declines were less than 5 feet may indicate only limited ground-water pumping for irrigation or inadequate saturated thicknesses of permeable material to provide sufficient water for irrigation-well development.

In the alluvium along Prairie Dog Creek in Norton and Phillips Counties, water levels rose 5 to 15 feet from 1950 to 1977 (L. E. Stullken, U.S. Geological Survey, written commun., 1980), as shown on sheet 5. Ground-water storage in this area has increased since 1967 as a result of recharge from irrigation by water released from Keith Sebelius Lake.

In the Grand Island Formation in Jewell County, water levels rose as much as 25 feet from 1950 to 1977, as shown on sheet 5. Ground-water storage in this area has increased since 1957 as a result of recharge from the Courtland Canal, which diverts water from the Republican River to provide storage in Lovewell Reservoir and to provide irrigation supplies for 30,000 acres in Jewell and Republic Counties.

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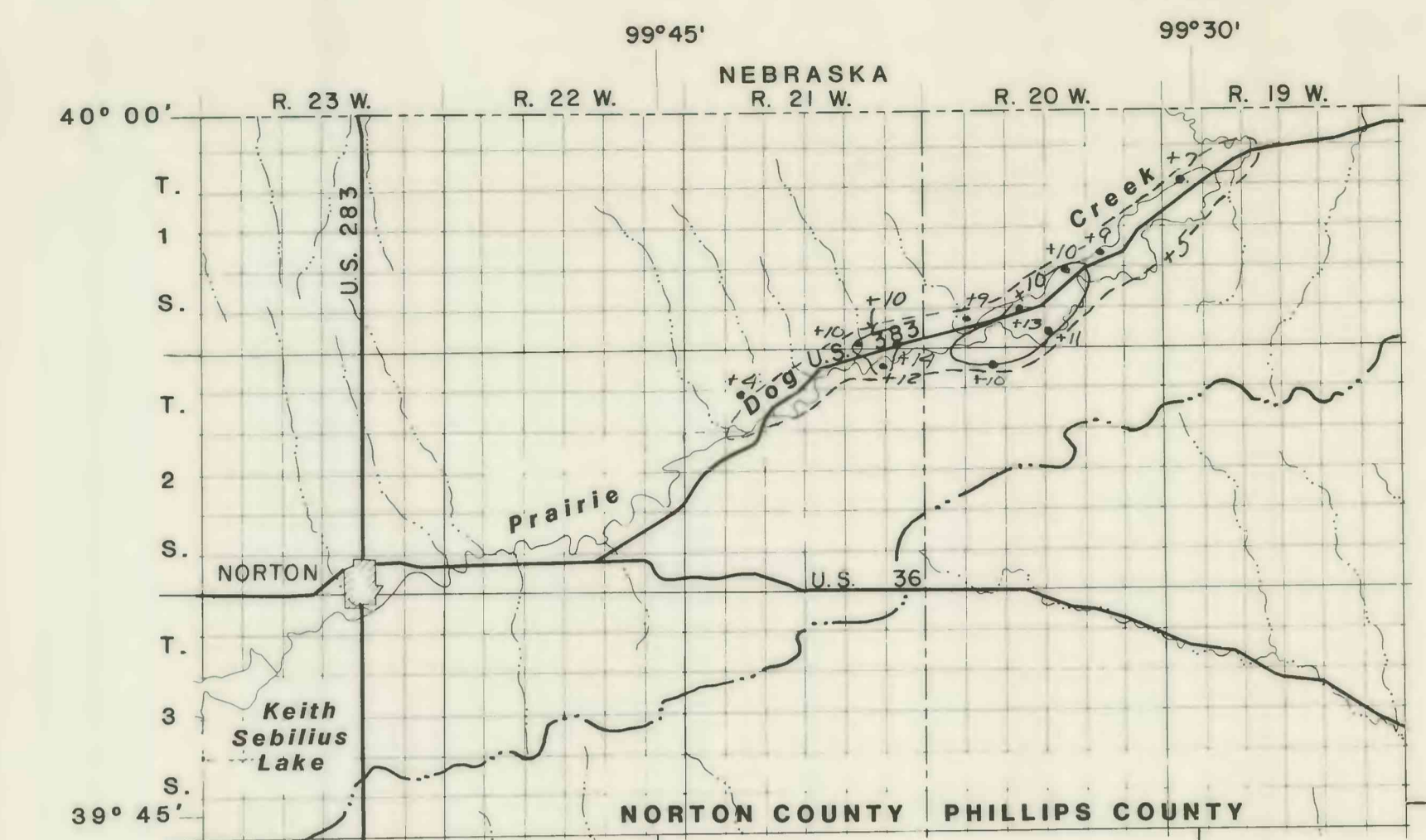
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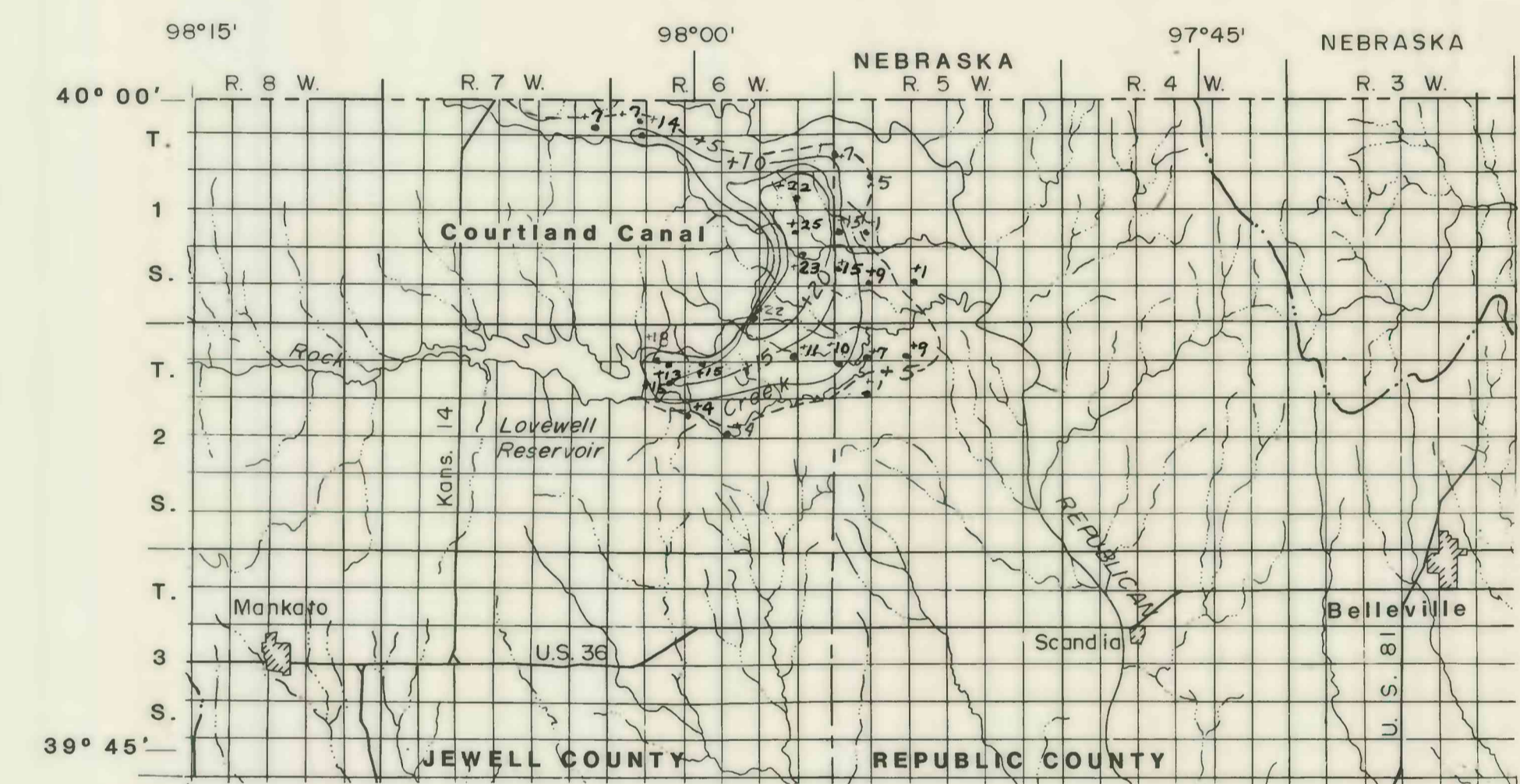
CONVERSION TABLE

The inch-pound units of measurement in this report may be converted to the International System (SI) of units by using the following factors:

Inch-pound unit	Multiply by	SI units
inch	25.4	millimeter
foot	0.3048	meter
mile	1.609	kilometer
square foot	0.9290	square meter
acre	0.4047	hectometer
gallon per minute	0.06309	liter per second
foot per day	0.3048	meter per day
foot per mile	0.1894	meter per kilometer



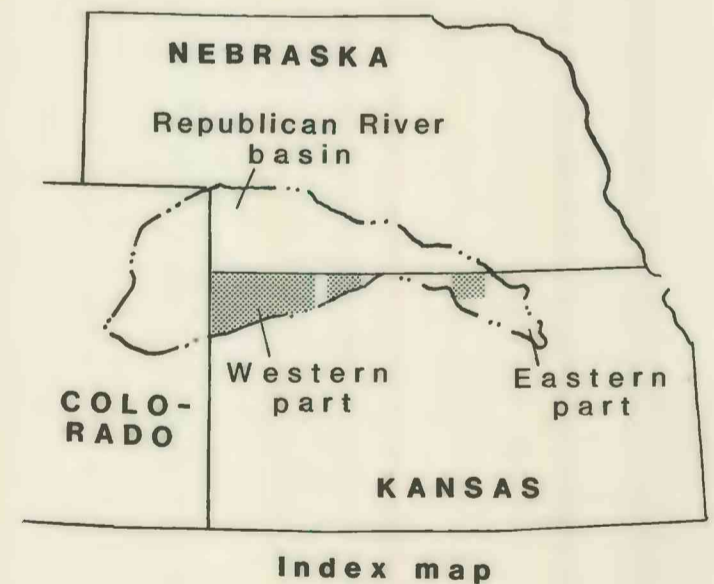
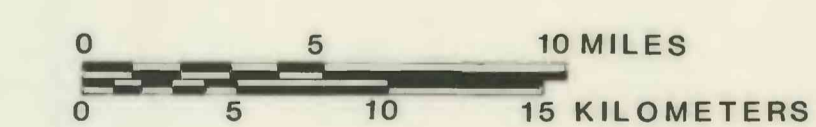
MAP SHOWING WATER-LEVEL CHANGE IN QUATERNARY ALLUVIUM OF PRAIRIE DOG CREEK, 1950-77



MAP SHOWING WATER-LEVEL CHANGE IN GRAND ISLAND FORMATION, JEWELL AND REPUBLIC COUNTIES, 1950-77

EXPLANATION

- - - - - LINE OF EQUAL WATER-LEVEL CHANGE--
Dashed where approximately located.
Interval 5 and 10 feet. A plus sign (+) indicates a water-level rise; a minus sign (-) indicates a water-level decline
- — — — — BOUNDARY OF REPUBLICAN RIVER BASIN
- - - - - WELL OR TEST HOLE--Number indicates amount of water-level change, in feet. A plus sign (+) indicates a water-level rise; a minus sign (-) indicates a water-level decline



GEOHYDROLOGY OF PRINCIPAL AQUIFERS IN THE REPUBLICAN RIVER BASIN, KANSAS

BY

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1982