

EXPLANATION

Quaternary

Aluvium
(Fine-grained sand with small amounts of coarser material. Yields moderately hard water sparingly to wells along Niobrara River and Snake Creek.)

Dune sand
(Fine-grained wind-blown sand. Dune sand areas constitute valuable intake regions for ground-water recharge. Generally too fine-textured to yield water readily to wells.)

Pleistocene and Recent

Ogallala formation
(Characterized by a lower zone of fine-grained massive sand associated with greenish-white clay beds; a middle zone of coarse unconsolidated sand mixed with gravel at many places and containing clay beds and concretionary zones; and an upper zone of fine unconsolidated sands with beds of green or yellow clay. The middle zone of coarse sands is an excellent water bearer. Yields of 1,000 gallons or more a minute have been obtained where this zone is thickest. Most of the waters in the Ogallala are moderately hard calcium-magnesium bicarbonate waters with minor amounts of sulfates, chlorides, and other constituents.)

Sheep Creek formation
Box Butte member*
(Consists of a lower zone of red clay with green mottling, friable when dry, with scattered limy "potato" concretions; a middle zone of alternating brown and green, blocky and lumpy impure sandstone; and an upper zone of silty clay, predominantly green in color, containing white limy "potato" concretions. Permeability is low. No wells are known to obtain their supply from this member.)
*The valley-fill phase of the Sheep Creek formation in sec. 11, T. 28 N., R. 49 W., is not a part of the Box Butte member.

Miocene

Marsland formation
(Consists of impure, fine-grained, clay-cemented sandstone alternating with beds of massive silt and some coarse channel sands. Permeability is low, except for the channel sands, which are limited in extent and at many places absent. Furnishes small supplies of moderately hard water in the district north and west of Alliance, but generally lies above the water table in much of the north-central and west-central part of the county.)

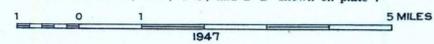
Harrison sandstone
(Well-sorted, medium to fine-grained, gray, limy sandstone containing numerous limy concretions. Yields large amounts of moderately hard water for domestic, stock, and irrigation use if wells penetrate a sufficient thickness of saturated material.)

Arkae Group

Monroe Creek and Gering sandstones undifferentiated
(Very fine grained, homogeneous sandstone, light tan to gray in color, loosely cemented with lime, and containing concretions. Wells penetrating a considerable thickness of the Monroe Creek obtain abundant supplies of moderately hard water, but in the northwestern part of the county many domestic and stock wells obtain smaller supplies.)

Base drawn from General Highway and Transportation Map, Box Butte County, Nebraska, prepared by Nebraska Department of Roads and Irrigation in cooperation with U. S. Department of Agriculture, Bureau of Public Roads.

GEOLOGIC MAP OF BOX BUTTE COUNTY, NEBRASKA
Sections A-A', B-B', C-C', and D-D' shown on plate 7



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