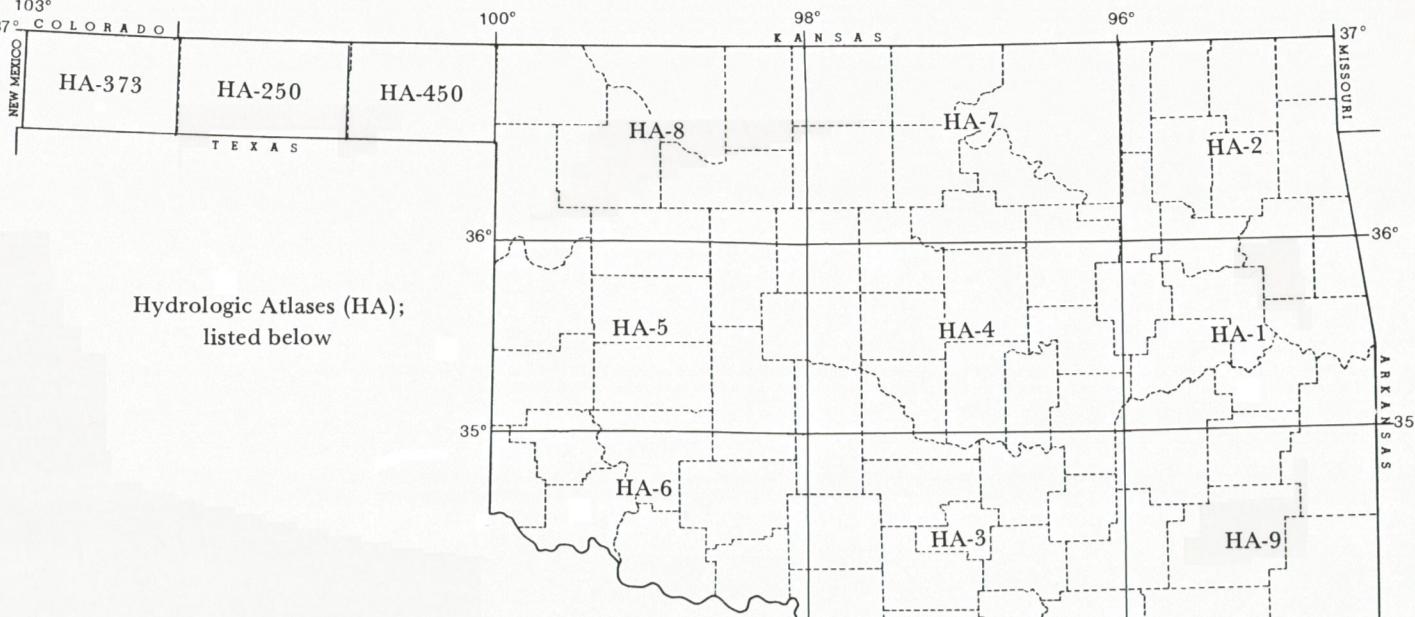


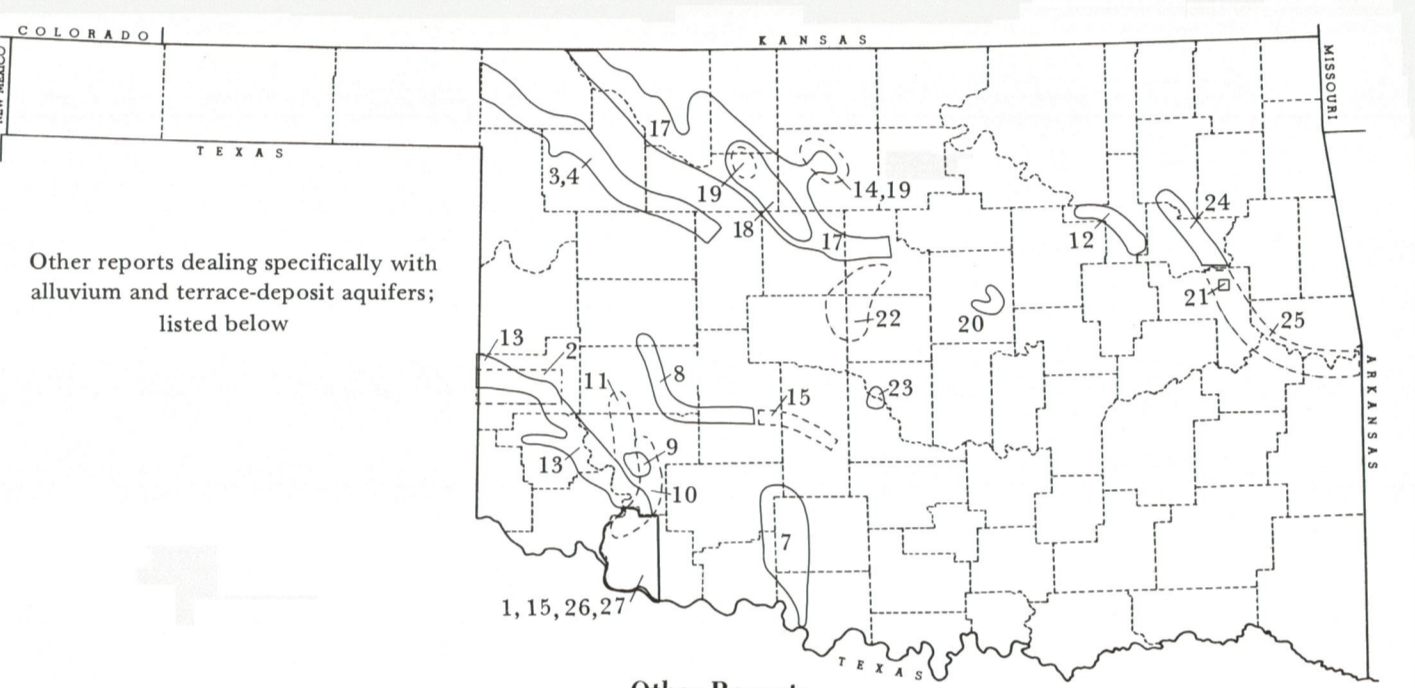
EXPLANATION

Alluvium and Terrace Deposits (Quaternary in age). Unconsolidated deposits of sand, silt, clay, and gravel that occur along or adjacent to modern and ancient rivers and streams. Thickness generally ranges from 10 to 50 ft. Locally as much as 100 ft. Wells generally yield 10 to 500 gpm of water (locally several thousand gpm), and most water is of good quality (less than 1,000 mg/L). Recharge areas are essentially the same as distribution of the alluvium and terrace deposits.

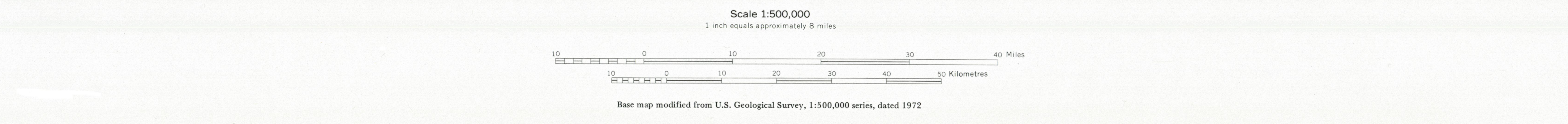
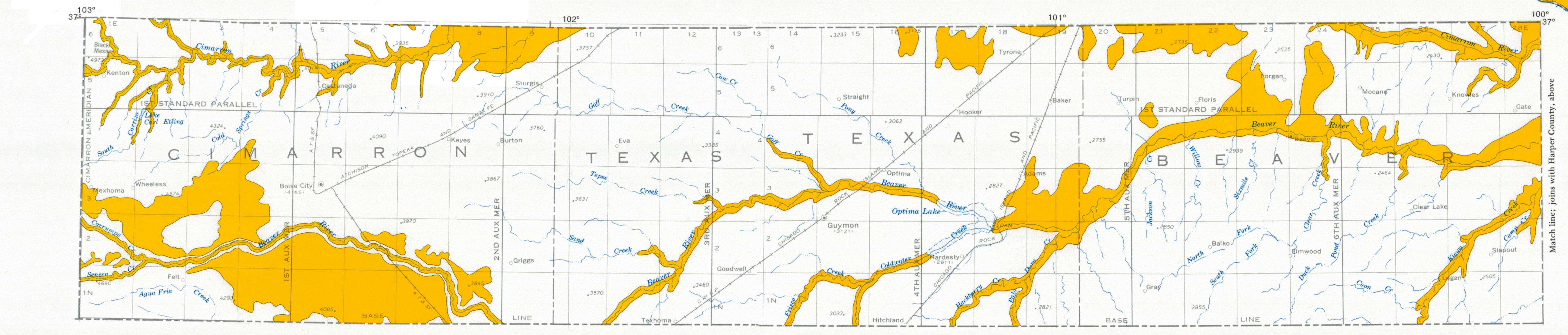
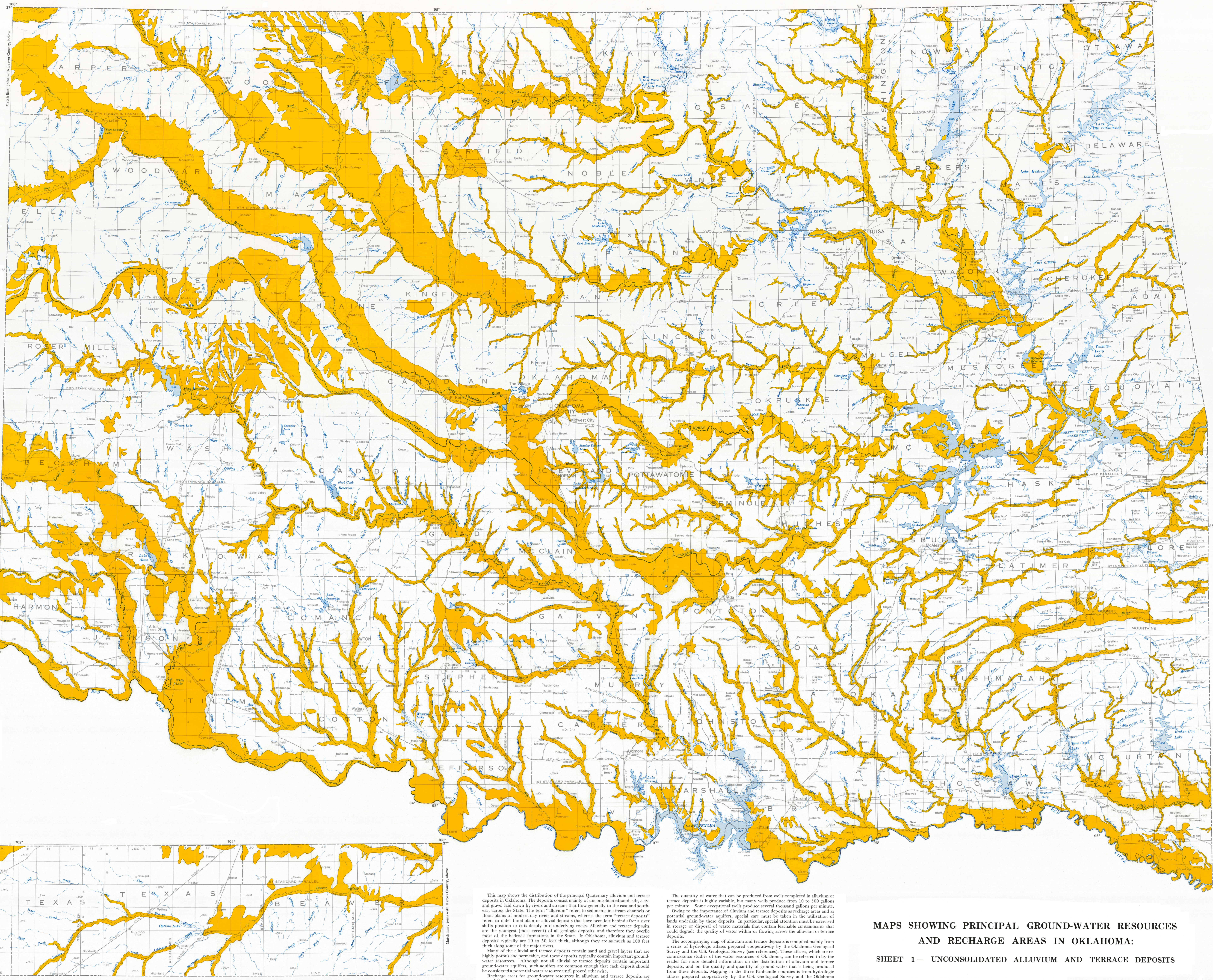
REFERENCES



- HA-1: Marcher, M.V., 1969, Reconnaissance of the water resources of the Fort Smith Quadrangle, east-central Oklahoma. Oklahoma Geological Survey Hydrologic Atlas 1, 4 sheets, scale 1:250,000.
HA-2: Marcher, M.V., and Bingham, R.H., 1971, Reconnaissance of the water resources of the Tulsa Quadrangle, northeastern Oklahoma. Oklahoma Geological Survey Hydrologic Atlas 2, 4 sheets, scale 1:250,000.
HA-3: Hart, D.L., Jr., 1974, Reconnaissance of the water resources of the Ardmore and Sherman Quadrangles, southern Oklahoma. Oklahoma Geological Survey Hydrologic Atlas 3, 4 sheets, scale 1:250,000.
HA-4: Bingham, R.H., and Moore, R.L., 1975, Reconnaissance of the water resources of the Oklahoma City Quadrangle, central Oklahoma. Oklahoma Geological Survey Hydrologic Atlas 4, 4 sheets, scale 1:250,000.
HA-5: Carr, J.E., and Bergman, D.L., 1976, Reconnaissance of the water resources of the Cimarron Quadrangle, west-central Oklahoma. Oklahoma Geological Survey Hydrologic Atlas 5, 4 sheets, scale 1:250,000.
HA-6: Havens, J.S., 1977, Reconnaissance of the water resources of the Lawton Quadrangle, southwestern Oklahoma. Oklahoma Geological Survey Hydrologic Atlas 6, 4 sheets, scale 1:250,000.
HA-7: Bingham, R.H., and Bergman, D.L., 1980, Reconnaissance of the water resources of the Ead Quadrangle, north-central Oklahoma. Oklahoma Geological Survey Hydrologic Atlas 7, 4 sheets, scale 1:250,000.
HA-8: Morton, R.E., 1980, Reconnaissance of the water resources of the Woodward Quadrangle, northwestern Oklahoma. Oklahoma Geological Survey Hydrologic Atlas 8, 4 sheets, scale 1:250,000.
HA-9: Marcher, M.V., and Bergman, D.L., in preparation, Reconnaissance of the water resources of the Muskogee and Texasland Quadrangles, southeastern Oklahoma. Oklahoma Geological Survey Hydrologic Atlas 9, 4 sheets, scale 1:250,000.
HA-250: Wood, P.R., and Hart, D.L., Jr., 1967, Availability of ground water in Tulsa County, Oklahoma. U.S. Geological Survey Hydrologic Investigation Atlas HA-250, 3 sheets, scale 1:125,000.
HA-973: Smith, D.B., and Cronan, R.L., 1973, Reconnaissance of the ground-water resources of Cimarron County, Oklahoma. U.S. Geological Survey Hydrologic Investigation Atlas HA-973, 3 sheets, scale 1:125,000.
HA-450: Carr, J.E., and Gossard, R.L., 1975, Reconnaissance of the water resources of the Beaver River and adjacent areas, Oklahoma. U.S. Geological Survey Hydrologic Investigation Atlas HA-450, 3 sheets, scale 1:125,000.



- 1. Barclay, J.E., and Burton, L.C., 1953, Groundwater resources of the terrace deposits and alluvium of western Tillman County, Oklahoma. Oklahoma Planning Resources Board Water Resources Division Report 12, 7 p.
2. Burton, L.C., 1965, Ground water in the alluvium and terrace aquifer of the Beaver-North Canadian River from the Fosholme to Canton Reservoir, northwestern Oklahoma. U.S. Geological Survey Open-File Report 40-159, 7 p.
3. Davis, S.L., Christenson, S.C., and Rimmer, R.F., 1981, Hydrologic data for the alluvium and terrace aquifer of the Beaver-North Canadian River from the Fosholme to Canton Reservoir, northwestern Oklahoma. U.S. Geological Survey Open-File Report 40-159, 7 p.
4. Davis, S.L., and Christenson, S.C., 1981, Geology and numerical simulation of the alluvium and terrace aquifer along the Beaver-North Canadian River from the Fosholme to Canton Reservoir, northwestern Oklahoma. U.S. Geological Survey Open-File Report 41-483, 42 p.
5. Eilfer, G.K., Jr., and Fay, R.O., 1970, Geologic atlas of Texas, Permian, scale 1:250,000. Texas Bureau of Economic Geology, 1 sheet.
6. Eilfer, G.K., Jr., and Fay, R.O., in preparation, Geologic atlas of Texas, Dallas sheet, scale 1:250,000. Texas Bureau of Economic Geology, 1 sheet.
7. Hart, D.L., Jr., 1961, Ground water in the alluvium of Beaver Creek basin, Oklahoma. U.S. Geological Survey Open-File Report 41-59, 13 p.
8. Hart, D.L., Jr., 1963, Ground water in the alluvial deposits of the Washita River between Clinton and Anadarko, Oklahoma. Oklahoma Water Resources Board Bull. 26, 23 p.
9. Hollister, J.R., 1961, Ground water in the vicinity of Roosevelt, Oklahoma. U.S. Geological Survey Open-File Report 41-67, 8 p.
10. Hollister, J.R., 1965, Ground water in alluvium of Otter Creek basin, Oklahoma. Oklahoma Water Resources Board Bull. 27, 15 p.
11. Hollister, J.R., 1965, Ground water in the alluvium of Elk Creek basin, Oklahoma. Oklahoma Water Resources Board Bull. 28, 12 p.
12. Kent, D.C., 1972, The ground water of the Arkansas River alluvium in Tulsa County, in Tulsa's physical environment. Tulsa Geological Society Paper, 77, p. 208-210.
13. Kent, D.C., 1980, Evaluation of aquifer performance and water supply capabilities in the North Fork of the Red River in Beckham, Custer, Kiowa, and Jackson Counties, Oklahoma. Report submitted to Oklahoma Water Resources Board, 132 p.
14. Kent, D.C., Beausoleil, V.J., and Witt, F.E., 1982, Evaluation of aquifer performance and water supply capabilities of the kind isolated terrace aquifer in Garfield County, Oklahoma. Report submitted to Oklahoma Water Resources Board, 58 p.
15. Kent, D.C., and Narey, J.W., 1978, Recharge areas of the alluvium and terrace deposits in western Tillman County, Oklahoma. Oklahoma Water Resources Board, 10 p.
16. Leonard, A.R., Davis, L.V., and Stacy, R.L., 1958, Ground water in the alluvial deposits of the Washita River and its tributaries in Oklahoma. U.S. Geological Survey Open-File Report 38-65, 10 p.
17. Oklahoma Water Resources Board, 1975, Salt water detection in the Cimarron terrace, Oklahoma. U.S. Environmental Protection Agency, EPA-660/3-74-053, 10 p.
18. Reed, E.W., and others, 1952, Ground-water resources of the terrace deposits along the northeast side of the Cimarron River in Alfalfa, Garfield, Kingfisher, and Major Counties, Oklahoma. Oklahoma Planning Resources Board Division Water Resources Bull. 9, 101 p.
19. Reed, E.W., 1979, Additional water supplies for the city of Ead, Oklahoma. U.S. Geological Survey Bull. 1238, p. 19-26.
20. Schöff, S.L., 1948, Ground water available in the Devonian area, Oklahoma. U.S. Geological Survey Open-File Report (unnumbered), 8 p.
21. Schöff, S.L., and Reed, E.W., 1951, Ground-water resources of the Arkansas River flood plain near Fort Gibson, Oklahoma. Oklahoma Geological Survey Circ. 28, 55 p.
22. Sney, R.L., 1968, Ground water in the alluvial deposits of Cottonwood Creek Valley, Oklahoma. U.S. Geological Survey Open-File Report 60-150, 8 p.
23. Sney, R.L., 1961, Ground water resources of the alluvial deposits of the Canadian River valley near Norman, Oklahoma. U.S. Geological Survey Open-File Report (unnumbered), 62 p.
24. Tanaka, H.H., 1972, Geology of the lower Venadiga River valley between Muskogee and Catoosa, Oklahoma. U.S. Geological Survey Water Supply Paper 1969-23, 23 p.
25. Tanaka, H.H., and Hollowell, J.R., 1966, Hydrology of the alluvium of the Arkansas River, Muskogee, Oklahoma, to Fort Smith, Arkansas. U.S. Geological Survey Water-Supply Paper 1809-T, 42 p.
26. Wickertsham, Gitta, 1974, Ground water resources of Tillman terrace deposits, Tillman County, Oklahoma. Oklahoma Water Resources Board Hydrologic Investigations Pub. 58, 3 sheets, scale 1:140,000.
27. Wood, J.A., and others, 1976, Basic data report on ground water levels in the Tillman County, Oklahoma, 1944-1975. Oklahoma Water Resources Board Pub. 75, 16 p.



This map shows the distribution of the principal Quaternary alluvium and terrace deposits in Oklahoma. The deposits consist mainly of unconsolidated sand, silt, clay, and gravel laid down by rivers and streams that flow generally to the east and southeast across the State. The term "alluvium" refers to sediments in stream channels or flood plains of modern-day rivers and streams, whereas the term "terrace deposits" refers to older floodplain or alluvial deposits that have been left behind after a river shifts position or cuts deeply into underlying rocks. Alluvium and terrace deposits are the youngest (most recent) of all geologic deposits, and therefore they overlie most of the bedrock formations in the State. In Oklahoma, alluvium and terrace deposits typically are 10 to 50 feet thick, although they are as much as 100 feet thick along some of the major rivers. Many of the alluvial and terrace deposits contain sand and gravel layers that are highly porous and permeable, and these deposits typically contain important ground-water resources. Although not all alluvial or terrace deposits contain important ground-water aquifers, such aquifers are common enough that each deposit should be considered a potential water resource until proved otherwise. Recharge areas for ground-water resources in alluvium and terrace deposits are essentially the same as the distribution of the deposits themselves, because almost all ground water contained in these deposits results from downward percolation of water from the land surface. Surface waters that recharge these deposits result from precipitation, surface runoff, and stream waters that flow across the unconsolidated material. The principal source of ground water in alluvium and terrace deposits is upward or lateral flow from underlying bedrock formations. The quality of ground water in alluvium and terrace deposits is normally quite good (less than 1,000 milligrams per liter of dissolved solids), and the waters generally are suitable for most purposes. Where deposits are recharged by rivers or bedrock formations containing highly mineralized waters, the quality of this ground water is naturally much poorer.

The quantity of water that can be produced from wells completed in alluvium or terrace deposits is highly variable, but many wells produce from 10 to 500 gallons per minute. Some exceptional wells produce several thousand gallons per minute. Owing to the importance of alluvium and terrace deposits as recharge areas and as potential ground-water aquifers, special care must be taken in the utilization of lands underlain by these deposits. In particular, special attention must be exercised in storage or disposal of waste materials that contain leachable contaminants that could degrade the quality of water within or flowing across the alluvium or terrace deposits. The accompanying map of alluvium and terrace deposits is compiled mainly from a series of hydrologic atlases prepared cooperatively by the Oklahoma Geological Survey and the U.S. Geological Survey (see references). These atlases, which are reconnaissance studies of the water resources of Oklahoma, can be referred to by the reader for more detailed information on the distribution of alluvium and terrace deposits, and on the quality and quantity of ground water that is being produced from these deposits. Mapping in the three Pathology counties is from hydrologic atlases prepared cooperatively by the U.S. Geological Survey and the Oklahoma Water Resources Board, and also from work done by the Oklahoma Geological Survey that was released as part of the "Geologic Atlas of Texas" (see references). Hydrologic reports dealing specifically with alluvium or terrace deposits aquifers have been prepared mainly by the Oklahoma Water Resources Board, the U.S. Geological Survey, and the Oklahoma Geological Survey, and these are listed as "Other Reports" in the references. Additional county and area reports dealing in part with alluvium and terrace-deposit aquifers are included in the reference section on Sheet 2 - Bedrock Ground-Water Resources and Recharge Areas. Compiled by Kenneth S. Johnson Oklahoma Geological Survey 1983 SECOND PRINTING, 1983 THIRD PRINTING, 2004

MAPS SHOWING PRINCIPAL GROUND-WATER RESOURCES AND RECHARGE AREAS IN OKLAHOMA: SHEET 1 - UNCONSOLIDATED ALLUVIUM AND TERRACE DEPOSITS