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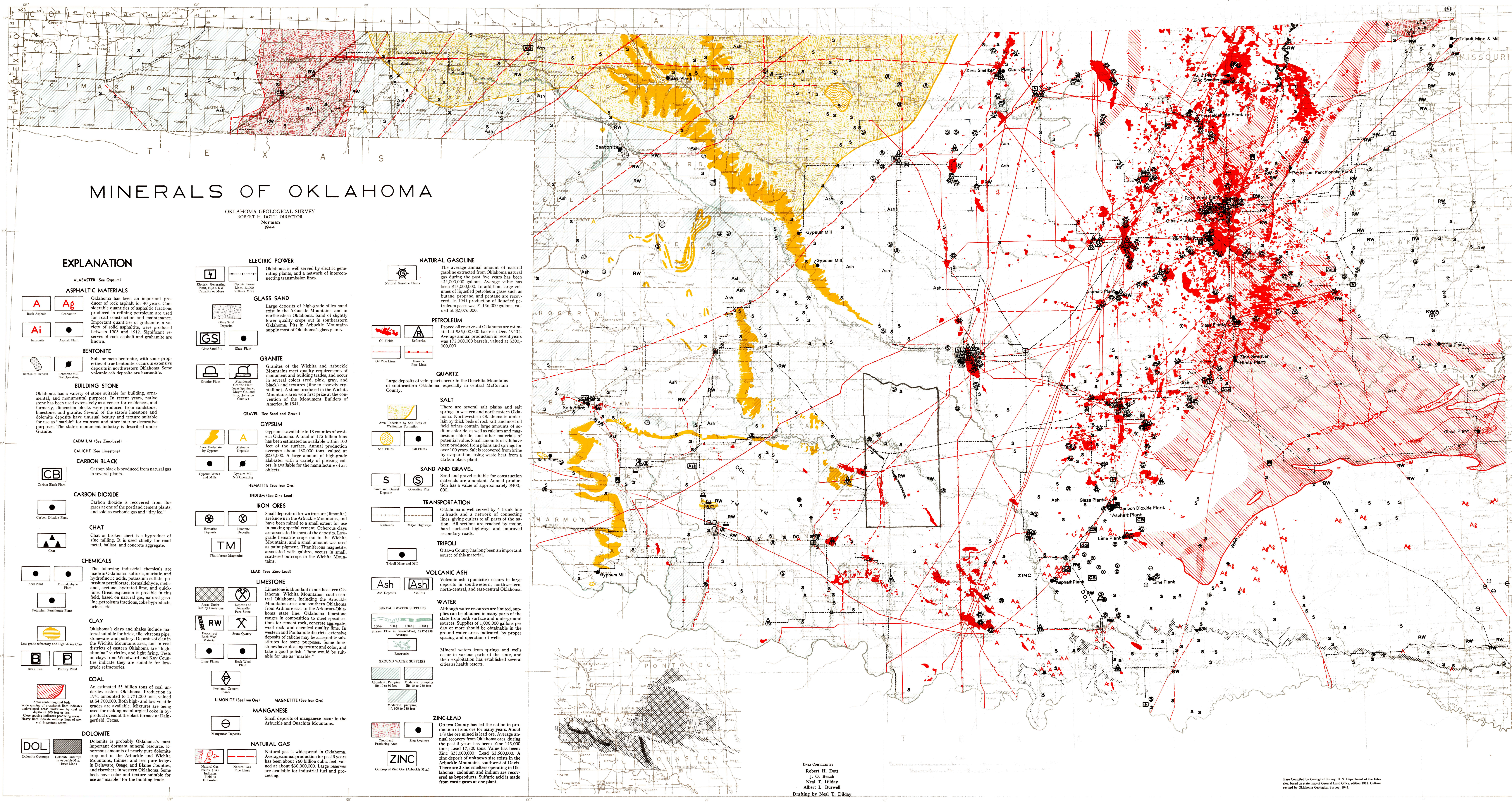
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MINERALS OF OKLAHOMA

PREPARED BY OKLAHOMA GEOLOGICAL SURVEY
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MINERALS OF OKLAHOMA

OKLAHOMA GEOLOGICAL SURVEY
ROBERT H. DOTT, DIRECTOR
Norman
1944

EXPLANATION

- ALABASTER** (See Gypsum)
- ASPHALTIC MATERIALS**
Oklahoma has been an important producer of rock asphalt for 40 years. Considerable quantities of asphaltic fractions produced in refining petroleum are used for road construction and maintenance. Important quantities of asphaltite, a variety of solid asphalt, were produced between 1903 and 1912. Significant reserves of rock asphalt and asphaltite are known.
- BENTONITE**
Sub- or meta-bentonite, with some properties of true bentonite, occurs in extensive deposits in northwestern Oklahoma. Some volcanic ash deposits are bentonitic.
- BUILDING STONE**
Oklahoma has a variety of stone suitable for building, ornamental, and monumental purposes. In recent years, native stone has been used extensively as a veneer for residences, and formerly, dimension blocks were produced from sandstone, limestone, and granite. Several of the state's limestone and dolomite deposits have unusual beauty and texture suitable for use as "marble" for wallcover and other interior decorative purposes. The state's monument industry is described under Granite.
- CADMIUM** (See Zinc-Lead)
- CALICHE** (See Limestone)
- CARBON BLACK**
Carbon black is produced from natural gas in several plants.
- CARBON DIOXIDE**
Carbon dioxide is recovered from flue gases at one of the Portland cement plants, and sold as carbonic gas and "dry ice."
- CHAT**
Chat or broken chert is a byproduct of zinc milling. It is used chiefly for road metal, ballast, and concrete aggregate.
- CHEMICALS**
The following industrial chemicals are made in Oklahoma: sulfuric, muriatic, and hydrofluoric acids, potassium sulfate, potassium perchlorate, formaldehyde, methanol, acetone, hydrated lime, and quicklime. Great expansion is possible in this field, based on natural gas, natural gasoline, petroleum fractions, coke byproducts, brines, etc.
- CLAY**
Oklahoma's clays and shales include material suitable for brick, tile, vitreous-pipe, stoneware, and pottery. Deposits of clay in the Wichita Mountains area, and in coal districts of eastern Oklahoma are "high-alumina" varieties, and light firing. Tests on clays from Woodward and Kay Counties indicate they are suitable for low-grade refractories.
- COAL**
An estimated 55 billion tons of coal underlies eastern Oklahoma. Production in 1941 amounted to 1,771,000 tons, valued at \$4,700,000. Both high- and low-volatile grades are available. Mixtures are being used for making metallurgical coke in by-product ovens at the blast furnace at Dain-gerfield, Texas.
- DOLOMITE**
Dolomite is probably Oklahoma's most important dormant mineral resource. Enormous amounts of nearly pure dolomite crop out in the Arbuckle and Wichita Mountains, thinner and less pure ledges in Delaware, Osage, and Blaine Counties, and elsewhere in western Oklahoma. Some beds have color and texture suitable for use as "marble" for the building trade.

- ELECTRIC POWER**
Oklahoma is well served by electric generating plants, and a network of interconnecting transmission lines.
- GLASS SAND**
Large deposits of high-grade silica sand exist in the Arbuckle Mountains, and in northeastern Oklahoma. Sand of slightly lower quality crops out in southeastern Oklahoma. Fits in Arbuckle Mountains supply most of Oklahoma's glass plants.
- GRANITE**
Granites of the Wichita and Arbuckle Mountains meet quality requirements of monument and building trades, and occur in several colors (red, pink, gray, and black) and textures (fine to coarsely crystalline). A stone produced in the Wichita Mountains area won first prize at the convention of the Monument Builders of America, in 1941.
- GRAVEL** (See Sand and Gravel)
- GYPSUM**
Gypsum is available in 18 counties of western Oklahoma. A total of 122 billion tons has been estimated as available within 100 feet of the surface. Annual production averages about 180,000 tons, valued at \$255,000. A large amount of high-grade alabaster with a variety of pleasing colors, is available for the manufacture of art objects.
- HEMATITE** (See Iron Ore)
- INDIUM** (See Zinc-Lead)
- IRON ORES**
Small deposits of brown iron ore (limonite) are known in the Arbuckle Mountains, and have been mined to a small extent for use in making special cement. Ocherous clays are associated in most of the deposits. Low-grade hematite crops out in the Wichita Mountains, and a small amount was used as paint pigment. Titaniferous magnetite, associated with gabbro, occurs in small, scattered outcrops in the Wichita Mountains.
- LEAD** (See Zinc-Lead)
- LIMESTONE**
Limestone is abundant in northeastern Oklahoma; Wichita Mountains; south-central Oklahoma, including the Arbuckle Mountains area; and southern Oklahoma from Ardmore east to the Arkansas-Oklahoma state line. Oklahoma limestone ranges in composition to meet specifications for cement rock, concrete aggregate, and chemical quality lime. In western and Panhandle districts, extensive deposits of caliche may be acceptable substitutes for some purposes. Some limestone have pleasing texture and color, and take a good polish. These would be suitable for use as "marble."
- MANGANESE**
Small deposits of manganese occur in the Arbuckle and Ouachita Mountains.
- MAGNETITE** (See Iron Ore)
- NATURAL GAS**
Natural gas is widespread in Oklahoma. Average annual production for past 5 years has been about 260 billion cubic feet, valued at about \$10,000,000. Large reserves are available for industrial fuel and processing.

- NATURAL GASOLINE**
The average annual amount of natural gasoline extracted from Oklahoma natural gas during the past five years has been 412,000,000 gallons. Average value has been \$15,000,000. In addition, large volumes of liquefied petroleum gases such as butane, propane, and pentane are recovered. In 1941 production of liquefied petroleum gases was 91,135,000 gallons, valued at \$2,076,000.
- PETROLEUM**
Proved oil reserves of Oklahoma are estimated at 915,000,000 barrels (Dec. 1941). Average annual production in recent years was 175,000,000 barrels, valued at \$200,000,000.
- QUARTZ**
Large deposits of vein quartz occur in the Ouachita Mountains of southeastern Oklahoma, especially in central McCurtain County.
- SALT**
There are several salt plains and salt springs in western and northeastern Oklahoma. Northwestern Oklahoma is underlain by thick beds of rock salt, and most oil field brines contain large amounts of sodium chloride, as well as calcium and magnesium chloride, and other materials of potential value. Small amounts of salt have been produced from plains and springs for over 100 years. Salt is recovered from brine by evaporation, using waste heat from a carbon black plant.
- SAND AND GRAVEL**
Sand and gravel suitable for construction materials are abundant. Annual production has a value of approximately \$400,000.
- TRANSPORTATION**
Oklahoma is well served by 4 trunk line railroads and a network of connecting lines, giving outlets to all parts of the nation. All sections are reached by major hard surfaced highways and improved secondary roads.
- TRIPOLI**
Ottawa County has long been an important source of this material.
- VOLCANIC ASH**
Volcanic ash (pumicite) occurs in large deposits in southwestern, northwestern, north-central, and east-central Oklahoma.
- WATER**
Although water resources are limited, supplies can be obtained in many parts of the state from both surface and underground sources. Supplies of 1,000,000 gallons per day or more should be obtainable in the ground water areas indicated, by proper spacing and operation of wells.
- Mineral waters from springs and wells occur in various parts of the state, and their exploitation has established several cities as health resorts.

- SURFACE WATER SUPPLIES**
Stream Flow in Second-Foot, 1917-1938 Average
- GROUND WATER SUPPLIES**
Abundant: Pumping lift 10 to 50 feet
Moderate: pumping lift 50 to 150 feet
Moderate: pumping lift 100 to 350 feet
- ZINC-LEAD**
Ottawa County has led the nation in production of zinc ore for many years. About 1/8 the ore mined is lead ore. Average annual recovery from Oklahoma ores, during the past 5 years has been: Zinc 143,000 tons; Lead 17,500 tons. Value has been: Zinc \$25,000,000; Lead \$2,500,000. A zinc deposit of unknown size exists in the Arbuckle Mountains, southwest of Davis. There are 3 zinc smelters operating in Oklahoma; cadmium and indium are recovered as byproducts. Sulfuric acid is made from waste gases at one plant.

- ASH**
Ash Deposits
Ash Pits
- TRIPOLE**
Small deposits of brown iron ore (limonite) are known in the Arbuckle Mountains, and have been mined to a small extent for use in making special cement. Ocherous clays are associated in most of the deposits. Low-grade hematite crops out in the Wichita Mountains, and a small amount was used as paint pigment. Titaniferous magnetite, associated with gabbro, occurs in small, scattered outcrops in the Wichita Mountains.
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