

THE UNIVERSITY OF TEXAS AT AUSTIN
Bureau of Economic Geology
February 28, 1939
Typeset from original stencil, December 1979

MINERAL RESOURCE SURVEY
Circular No. 23

A mineral resource survey of Texas is being conducted by the Works Progress Administration, the Bureau of Economic Geology of The University of Texas acting as sponsor. The purpose of the survey is to assemble information and make it available to the public. The mineral resource survey is helping in the location of mineral products, from some of which it is reasonable to suppose industries of value to the State may be developed. The following report is based on work done in Leon County.

REPORT ON THE MINERAL RESOURCES OF LEON COUNTY, TEXAS
by Davis Crow, Supervisor

INTRODUCTION

The principal natural mineral resources of Leon County consist of sand, clay, sandstone, gravel (both iron ore and river gravel), lignite, and natural gas. Natural gas is obtained from wells drilled 5000 to 6000 feet deep in the vicinity of a salt dome near Midway School and community about 8 miles north-northeast of the county seat, Centerville.

SAND

Extensive portions of the county are covered by fine white sand. Since these sands are very fine and poorly graded and are often contaminated with organic matter, they are unsuitable for concrete and mortar. Their only commercial use at present is for plating local clay roads. Deeper sands usually carry rather high quantities of iron and are often colored, the color varying from light yellow to deep red.

CLAY

Clays are found widely distributed over the county and vary in color from almost white and light yellow to deep red. Many of them no doubt have little or no lime present, but nearly all have more or less iron. Some are probably suitable for brick making, and small kilns have been operated at several places throughout the county. No brick kilns are being operated at present. Many of the clays contain a large proportion of fine sand.

SANDSTONE

Sandstones, usually as boulders, are found at the tops of many hills throughout the county. These sandstones when covered by soil, sand, or clay are usually found to be soft but after exposure to weathering become much harder.

No sandstones were found in sufficient quantities to justify commercial quarrying on a large scale. These sandstones and loose rock have been used by the traversing railways for building drainage structures and foundations. Their color is usually a very dark brown.

Probably the most extensive quarrying done is near Jewett, Texas. This quarry is situated on top of a large hill about 1 ¼ miles east-northeast from the town and about 1 mile from the Missouri-Pacific Railway at a point three-fourths of a mile northeast of Jewett. Exposed beds of brown sandstone here vary in thickness from 5 to 8 feet and have a smooth texture. The writer was informed that a store building in Jewett, bearing the construction date of 1877, was built of sandstone from an old quarry on this hill. Another such building in Jewett was constructed of this rock but after burning was demolished. All other store and residence buildings in the town are either lumber frame or brick buildings. The use of this sandstone for such construction has long since been abandoned. An old public road passing near the old quarry is now impassable.

IRON ORE GRAVEL

A number of beds of iron ore gravel were found in the county. This gravel varies in size from pea-gravel to stones head-size. Usually large proportions of clay, silt, or soil are present and the beds are seldom more than 1 foot or 2 feet thick.

The most extensive deposits now being worked are in the vicinity of Leona. The gravel is hauled to Centerville and is being used on a Works Progress Administration project plating the courthouse square. The gravel, mostly pea-size, is being taken from the east slope of a hillside about 100 yards west of Mustang Creek and 1 mile southeast of Leona. It is situated on Hart Jackson's land.

A semi-washed gravel is obtained from Mustang Creek in the same vicinity.

Many of the branches and creeks of Leon County also contain small pea-size iron gravel in their beds. Most of the sub-base of the asphalt highway, the Old Spanish Road, along the southern boundary of the county was obtained from creek and branch beds.

About 2 miles southwest of Newby on the Newby-McKinsey Crossing road the branch beds appear to contain small quantities of this type of gravel.

Such gravel is used locally for concrete construction, but because of the presence of more or less silt, clay, and clay balls and because of the small size and poor grading of the aggregate it is not very suitable for such use. Its tendency to disintegrate and the low crushing strength of the particles causes concrete made from this aggregate to be of poor quality.

No extensive investigation of these stream bed gravels was made since their existence is well known, the size of the deposits small, and their value slight.

Hill beds. — A special report of iron ore gravel on so-called hill beds was made for contemplated use on a proposed Works Progress Administration project county road. This road branches from State highway No. 43 about 3 miles northeast of Jewett and passes through the Cedar Creek community on its way to Buffalo.

The following beds of iron ore gravel are present:

(1) "Twin Hill" (the northwest hill) about 1½ miles southeast of Jewett on old Jewett-Centerville road:

(a) About 500 cubic yards of one-fourth inch to 4-inch gravel, perhaps 50 percent soil, sand; average depth, 12 inches. This is about 40 yards north-northeast from northwest hill peak, on land belonging to Ed Reed.

(b) 50 cubic yards, about 50 yards south-southwest from some hilltop. This gravel is on land controlled by Jewett State Bank.

(c) Old gravel pit; about worked out. Perhaps 1000 cubic yards of gravel has been removed. This gravel is situated about 50 yards south-southeast from the above hilltop.

(2) On hilltop, south side of Newby-McKinsey Crossing road, about 0.3 mile northeast of Friendship School and about 7 miles southwest of Jewett. Approximately 250 yards of gravel, 6 to 8 inches thick, underlies 2 to 6 inches of soil. This gravel is on John Allison's land.

(3) On Braudegam's land half a mile south of above road and about 6 miles southwest of Jewett. Small beds of gravel are present.

(4) Half a mile east of Leona on Leona-Pleasant Grove road. Approximately 1500 yards have been excavated from a pit on Mrs. Duncan's land north of the road. South of the road on Mrs. Newton Nash's land, 1000 to 1500 yards of mostly pea-gravel available.

(5) Hillside and creek bed gravel on Hart Jackson land, described above.

(6) About 3.5 miles east of Centerville, then south half a mile to low flat top hill on Andy Johnson or Stell land (in charge of Gilbert Gresham of Centerville). Approximately 750 yards of gravel, 4 to 8 inches thick, under 2 to 6 inches of soil.

(7) On Houston Betts' land, about 9 miles east-southeast from Centerville on north side of Centerville-Guy's Store road and 1½ miles west-northwest from Guy's Store. Approximately 400 yards of gravel is present and ranges from 8 inches to 1 foot thick.

(8) Houston-Leon County Coal Company's land, about 7 miles west of Jewett and three-fourths of a mile north of Newby-Bear Grass road, 700 yards southeast of this company's old No. 8 mine, and about 300 yards southwest of a spring. A larger bed is on top of a high hill, but a smaller bed lies as a partly encircling strip along the north and east slopes. Approximately 10,000 to 15,000 yards are available.

(9) On E. P. Willingham's land, half a mile west of Sardis Church and about 300 yards southwest from his house. From 500 to 1000 yards of gravel carrying a large proportion of soil and silt are available.

(10) On O. R. Newsome's land south of Newby-Bear Grass road, about 1 mile west of Sardis Church, on west slope of low wooded hill. From 2000 to 3000 yards, mostly pea-gravel similar to (9) above, are available.

(11) On Dr. Coleman Carter's land on the southwest side of Oakwood-Malvern road about 1 mile southeast of Hailey Creek and the same distance northwest of Malvern. Probably 10,000 to 15,000 yards have been removed from this pit and perhaps a similar quantity remains available.

(12) Mr. Henry W. Tubbs, formerly County Commissioner at Oakwood, gave information that some iron ore gravel was obtained from a pit 6 miles from Oakwood on Flo road and near Red Branch School. This pit was not examined.

(13) In Madison County. On Dr. Julis McIver's land, 300 yards south of Old Spanish Road, 2¼ miles southwest of Normangee. The gravel bed carries from 4 to 8 feet in thickness, is pea size, and lies under about 4 inches of top soil. Though this pit is in Madison County its gravel was used extensively on the Old Spanish Road which is located on or very near the Leon-Madison County line. It was also used for graveling streets in Normangee. Approximately 15,000 cubic yards of gravel have been removed; perhaps a similar amount remains.

River gravel. — Terrace gravel with pebbles varying from pea-size to 2 or 3 inches screen size is widely distributed over the western half of Leon County and is very occasionally found elsewhere. The more extensive beds are within the area bordering on Navasota River and extending eastward about 5 miles. A few beds are farther from the river than this. The best beds for commercial use are in the vicinity of Marquez and Venetia, a community about 6 miles south or south-southwest of Marquez.

None of the commercial beds are very extensive nor is the gravel very thick. With the exception of one or two deposits, the beds are removed from existing railways or highways and are reached by unimproved roads.

The better beds contain, it is estimated, 10 to 20 percent silt, 29 to 40 percent fine aggregate, and 50 to 60 percent coarse aggregate, ranging in size from one-fourth inch to 3 inches. While these gravels are suitable for road plating or sub-grade, they do not make good concrete unless thoroughly dry-screened or washed. Since year-round running water is not easily available in this part of the county, it would be necessary to impound it in reservoirs if much washing were to be done.

These gravels are used locally both for road building (plating) and for concrete.

The beds found and examined are listed as follows:

(1) On Fred Carrington's land, about one-fourth mile northwest of State highway No. 43, opposite highway mile post 39 which is about 2½ miles southwest of Marquez. About 1 to 1½ acres are underlaid by beds 6 to 18 inches thick overlain by 3 to 6 inches of soil. Approximately 2500 cubic yards are available.

About 300 yards northwest of this bed, 500 to 700 cubic yards in a similar bed was found.

(2) On the Carrington estate, about 2 miles southwest of Marquez and 1 mile northwest of State highway No. 43 on top of prominent hill (Payne Hill) overlooking low lands to east, north, and west. About two acres; 3 to 4 feet average depth; 1 to 3 inches soil cover. Approximately 10,000 yards; 1000 to 2000 yards already removed. The gravel is interbedded with gravel-iron conglomerate which interferes seriously with hand methods of extraction.

(3) On W. H. Abbot's and Wyatt Winn's land (at their adjoining boundary line) extending from 50 to 200 yards north of Marquez-Venetia road at point half a mile north of Venetia and about 5 miles south of Marquez. Bed is 1 to 5 feet thick, is under 1 to 4 inches top soil, and contains approximately 7000 cubic yards of which 2000 cubic yards have been removed.

Along a rocky ridge extending 300 to 400 yards in a north-northwest direction from this bed, 1000 to 2000 cubic yards additional gravel can be obtained. This is interbedded with conglomerate.

(4) On land belonging to C. W. Streter and E. Hander, about 1 mile southwest of Venetia, 2000 to 3000 cubic yards of gravel carrying large proportion of silt and soil can be obtained.

(5) On Byron Chaney's land, about 12 miles south of Marquez. 13 miles northwest of Normangee, one-fourth of a mile from Marquez-Wealthy road, and about half a mile north-northwest from Bruce Williams' house. On top and on southwest slope of a wooded hill. The bed is 1 to 3 feet thick and the top soil is 1 to 6 inches thick. Quantity is about 5000 to 10,000 cubic yards, 1000 to 2000 cubic yards of which has been removed.

(6) On Bruce Williams' land, in same vicinity, about half a mile west-northwest from his house, is a similar gravel. About 2000 cubic yards can be obtained.

(7) On Gus Lanier's land, about 7 miles south-southeast from Marquez on the "Hardy Seale" road, a community road lying between the roads leading from Marquez to Flynn and to Venetia:

(a) A bed containing about 2500 cubic yards is along this road and is about 100 yards southeast of an electric transmission line.

(b) A bed containing about 5000 cubic yards lies along a northeast slope of wooded hill across ravine from (a) about 300 yards to the southwest.

(c) Another bed was reported to be on Jake Watson's land, 1 mile north of Clear Creek bridge on Venetia-Flynn road.

(d) Indications of small gravel beds were noted in the vicinity of Clear Creek Church about 4 miles northwest of Flynn on the Marquez road.

All the beds listed under (6) are in the same vicinity, and none of them perhaps is more than a mile from Clear Creek, a stream which flows the entire year and from which water for washing gravel could be obtained. In each case, however, it would have to be pumped from one-half to 1 mile and up 75 to 100 feet.

(7) On Albert Carver's land, 100 yards west of the Longhollow-Friendship road, three-fourths of a mile northwest of Longhollow School, and about 5 miles northwest of Marquez. Approximately 2000 cubic yards under 2 acres of land and 6 inches thick, carrying 50 to 80 percent silt and soil.

(8) In road leading to Wealthy 0.2 to 0.4 mile north of Old Spanish Road at a point near Burns Store about 2½ miles east of Navasota River. Perhaps 300 to 500 cubic yards.

(9) In road leading to Longhollow, three-fourths of a mile south of crossroad on sand flat half a mile west of Friendship Church. Approximately 1000 cubic yards, 1 foot thick.

(10) On A. T. Seale's land, 500 yards south of his house, and 1 mile south of Marquez, and about 200 yards from road opposite brick and plaster-curbed well. Approximately 1000 cubic yards of gravel on wooded hill, carrying large percentage of silt and soil.

Other possible beds not fully examined are the following:

(1) Gravel in road about 1 mile north of Longhollow School and 4½ miles northwest of Marquez.

(2) On west side of salt dome area, on M. R. Martin's and David Grayson's land, 4 miles northwest of Marquez on Sycamore Crossing road. This gravel contains so much clay, however, that it is probably of little use even for road plating.

(3) About one-fourth of a mile north of Birch Creek in Marquez-Personville road about 6 miles northwest of Marquez, gravel shows in road.

LIGNITE

The results obtained in this survey on lignite deposits have been incorporated in The University of Texas Publication 3818, The Geology of Leon County, Texas. This bulletin can be obtained from the Bureau of Economic Geology, Austin, Texas.