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MINERAL RESOURCE SURVEY
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REPORT ON THE MINERAL RESOURCES OF BASTROP COUNTY, TEXAS

by C. O. Nickell, Supervisor

INTRODUCTION

This mineral resource survey circular contains a resume of the results of a mineral resource survey of Bastrop County. The final reports and maps may be consulted, if more detailed information is desired, at the Bureau of Economic Geology, located at Main Campus, Geology Building, UT-Austin, Texas. The mineral resources examined are building stone, clay, lignite, and gravel. Additional information is given on geologic structure, river terraces, fossil localities, and water sands.

BUILDING STONE

The building stones used in Bastrop County are not, strictly speaking, of more than local value. They are, however, sufficiently indurated to be used for rock walls, rustic cottages, and various decorative uses in which the darker reds and browns are desirable. The stone so far used in this county has been obtained from the Carrizo conglomerate and the Queen City sandstone. Another stone that might possible be used is the Caldwell Knob oyster bed. The Carrizo conglomerate contains small pebbles of flint and feldspar. Those pebbles are not large enough to impair the shaping of the stone. The color varies from shades of brown into red with an occasional suggestion of purple in some of the harder sandy beds. A large amount of this stone is being obtained from a quarry on the south side of State highway No. 71, about 3 miles southeast of Bastrop. This stone is being used in the Bastrop State Park. Stone of somewhat similar quality may be obtained from the Kuykendall Hills north of Paige and from the "High Rock" area east of Red Rock. The Queen City sandstone resembles the more sandy beds of the Carrizo conglomerate but is somewhat softer. The Caldwell Knob oyster bed is seldom more than a foot in thickness and may be of a hardness sufficient for a novelty building stone. The amount available, however, is small.

Excavations for building stone were made at four localities as follows:

(1) On the J. H. E. Powell property north of State highway No. 71, 10.1 miles southeast of the MKT depot in Bastrop, and 2.7 miles northwest of the south end of Colorado River bridge at Smithville. This brown sandstone of Queen City age tops an escarpment and is about 8 feet thick. This bed was traced northwestward for more than a mile. The overburden, consisting largely of gravel, varies between 3 and 10 feet in thickness. This ledge of stone may not be sufficiently indurated for heavier structures where weight is a factor. It is more suitable for rock walls and decorative purposes.

(2) On the J. H. E. Powell property, north of State highway No. 71, 7.8 miles southeast of the MKT depot, and 5 miles northwest of the south end of Colorado River bridge at Smithville. This rock is considerably harder than that from the No. 1 locality and can be used for rustic cottages, such as those in the Pioneer Village in the Bastrop State Park.

(3 and 4) These two localities are on adjoining properties and will be described together. The stone is on the Jones Estate and the W. I. Higgins property. This locality may be reached by traveling southeastward from Bastrop on State highway No. 71 a distance of 3.3 miles from the MKT depot, thence south on a country road for a distance of about 4½ miles. The rock is a brown sandstone and conglomerate at the top of the Carrizo formation. The hardness and composition vary considerably, but much stone suitable for rustic cottages and walls is present.

In addition to the localities excavated, others are present which were visited. One of these in the Kuykendall Hills, about 3 miles north of Paige, is about 25 feet thick. A large amount of building stone similar to that already described could be obtained from this place.

Another 10-foot ledge of similar stone is located about 5 miles southeast of Red Rock and on the east side of Sandy Creek. An isolated point capped by this indurated layer is known locally as "High Rock." This outcrop is at present almost inaccessible.

CLAY

The clay resources of Bastrop County have been used at least since 1841, at which time Mr. T. B. J. Hill of Smithville made some bricks for his own use. Mr. Jung of Bastrop is reported to have made bricks between 1856 and 1861 out of clay from near the top of the hill east of Bastrop and south of the present State highway No. 71. Other clay products of pioneer days include jugs and clay pipes made near Bastrop and jugs and other stoneware made near McDade. At the present time the manufacture of clay products is concentrated in the area between McDade and Elgin. Flower pots and charcoal burners are made in large quantity by the McDade pottery. The Elgin-Standard and the Elgin-Butler companies make bricks and building tile. The clay used by these companies is associated with the lignite beds between Bastrop and Elgin. The clay is reported by the miners of lignite to vary between about 10 and 60 feet in thickness. These clays are exposed at the surface between Powell Bend on Colorado River and Butler station on the H. & T. C. railroad.

Clays have been examined at the following localities:

(1) Five miles southwest of Bastrop on the south side of Sandy Creek on the Sam Johnson property is a clay bed between 15 and 20 feet thick. The overburden varies between 3 and 5 feet over an area of about 20 acres. A sample of this clay submitted to the Bureau of Industrial Chemistry, The University of Texas, is reported on by Mr. David McKnight as follows:

"... This is a mottled gray-white clay with some limonite stains. No lime or pebbles. Medium hard, moderately plastic. Dries with moderate shrinkage to a good hard body. Fires to a light buff steel-hard body at a temperature slightly above 1000 degrees C. The fired body shows a fairly bad 'scum.' While the data from our tests are not conclusive on this point, the clay does not appear to offer possibilities as a fire clay. It would probably make a fair face brick if steps were taken to control the scumming tendency."

(2) The Lasher property, 5 miles south of Elgin, along the MKT railroad, on which, at one time, the Texas Fire Brick Company operated a plant. About 20 feet of gray clay is exposed above water level. Mr. R. W. McCreery, formerly manager of the brick plant, reports that the total thickness of this clay bed is between 30 and 40 feet. The overburden averages about 5 feet in thickness. A sample of this clay submitted to the Bureau of Industrial Chemistry of The University of Texas is reported on as follows:

"This is a smooth-grained, fairly hard, dark gray clay. No lime or pebbles. Moderately plastic, slightly more so than No. 1. Dries with fairly high, but not excessive, shrinkage to a good hard body. Fires with moderate shrinkage to a dirty buff body, becoming steel-hard above 1000 degrees C. and showing a good deal of scum at higher temperatures. The same observations as to value apply to this clay as to No. 1."

(3) On the Schwartz property, adjoining the Lasher property to the south, some auger holes were drilled. The same type of clay as is present on the Lasher property was found at depths ranging between 2 and 12 feet. It is estimated that about 34 acres is underlain by this type of clay.

(4) On the Eugene Nash property west of McDade near the terminal of the old Mowatt switch is a gray clay resembling that on the previous-mentioned property. Some of this clay is now being used at McDade for mixing with other clays. Auger holes in this area show 2 to 4 feet of overburden and in one hole 34 feet of clay. The following is a log of the 34-foot hole:

	Thickness	
	Feet	Inches
Brown sandy clay	0 to 3½	
Gray clay	6	
Gray clay, sandy, streaked brown	7	8
Lignite, brown		9
Gray sandy clay (gyp)	13	
Lignite, black	13	6
Clay, gray, tough	27	
Clay, light blue to gray	34	
Rock, (auger would not penetrate it).		

(5) On the J. W. Smith property, 3½ miles east of McDade, a 17-foot test hole shows gray clay to a depth of 17 feet, with an overburden averaging 4 or 5 feet in thickness. This clay is reported to be of exceptionally fine quality, and the product after burning is nearly white.

(6) On Henry W. Wolf property, 4 miles north of Butler station. This is a very tough, dark gray clay with about 2 to 5 feet of overburden above it. Only about 5 feet of clay was proven with the auger. The clay was so tough that it could not be successfully drilled with the type auger available.

(7) Three miles northwest of Bastrop at "Coal Bluff" on Colorado River there is an exposure of gray clay associated with outcropping lignite. This clay is very similar in appearance to that examined on the Johnson, Lasher, and Schwartz properties.

(8) Eight feet of clay is exposed along the highway east of Bastrop near the top of the hill at the contact of the Carrizo and Wilcox formations. This clay appears to be lenticular with no great areal extent. Clay of this type may have been used for coal products during pioneer days.

(9) East of Butler station and south of the highway some test holes were drilled. A gray clay similar to the type now being used by the Elgin-Butler and Elgin-Standard brick companies was found beneath 15 feet of soil and sandy clay. In some holes thin layers of lignite were encountered.

LIGNITE

The lignite area of Bastrop County lies smoothly north of the town of Bastrop and extends past Calvin station. The U.S. Geological Survey topographic sheet shows two mines, one north of Sayersville about 2 miles and the other west of McDade about 3 miles. These mines, however, have not been operated for many years. Nine companies were mining lignite about 1926 between Bastrop and Sayersville. At present, two companies, the Bastrop Lignite Company at Glenham station and the Waugh Coal Company at Calvin station, are the only producers. These two mines are now producing only a fraction of their capacity. The coal beds have never been satisfactorily mapped. To map these lignites properly would require test holes, many of which would be 250 feet deep. The equipment available for this project was insufficient to drill deep holes. The following log is from a drilled hole put down for information on lignite beds and was furnished by the Bastrop Lignite Company. This hole is located near Glenham station.

	Thickness in feet
Clay and sandy clay	0 to 49
Lignite and clay	50
Sand and clay	61
Lignite	62½
Sand and clay	80
Lignite	82½
Sand and clay	120
Lignite	124
Sand and clay	170½
Lignite	180½
Sand with a little clay	255½
Lignite	258½
Sand, loose, fine grained, unlimited amount of good water. (The Simsboro sand.)	

Of the six lignites listed, the No. 4 bed is the shallowest one which has been mined extensively. The No. 5 bed is the one being mined at present. Some production of lignite has been made in the past from the No. 6 bed, but much trouble has been occasioned by the water sand which lies beneath it.

GRAVEL

Gravel is found in terraces along Colorado River. These terraces have been given a number depending upon their position in reference to the present river level. Terrace No. 1 may be called the present flood-plain terrace. It is subject to numerous overflows and is not cultivated. This terrace appears to be built up entirely of silt and sand.

Terrace No. 2 includes most of the bottom land farms along the river. The upper 10 or 15 feet of this terrace is of river silt and sand with gravel in the lower part.

Terrace No. 3 is the next higher terrace and is well preserved in the vicinity of Utley post office, at a point 2½ miles west of Bastrop along State highway No. 71, and at Smithville. This terrace is the chief source of gravel in Bastrop County. The largest pit on this terrace is located north of the river, south of Colorado Chapel. The third major pit on this terrace is in the southwest part of Smithville.

Terrace No. 4 is well developed in the southwest part of Smithville and forms a flat with post oak growing upon it. This terrace probably corresponds to the Capitol terrace of Travis County.

Terrace No. 5, which corresponds to the Asylum terrace of Travis County, is the highest terrace. The gravel of this terrace is all siliceous material, chiefly flint and quartz. Considerable gravel has been used from local roadside pits located in this terrace.

Gravel on the south side of Walnut Creek and on the south side of Cedar Creek may be in part derived from terraces Nos. 4 and 5. These gravels were recommended for use on a W. P. A. servicing project south of Walnut and Cedar creeks.

WATER

During the duration of this project, water resources were not especially investigated. However, in connection with the lignites and clays a study was made of the Simsboro sand which has been intermittently traced across Bastrop County. Much of the outcrop of this sand is not traceable at the surface because of soil and terrace gravel coverage. The Simsboro sand is directly beneath the lignite-bearing horizon of the Wilcox group. The outcrop of this sand passes through Sayersville and parallels that of the lignite beds. The sand is water bearing southeast of the outcrop. Some questions as to the potability of this water have been raised. However, a well completed in the eastern part of the Bastrop State Park obtained a large supply of good water. There is a possibility that in the vicinity of faults some contamination by salty brines may have taken place in the Simsboro sand.