

MINERAL RESOURCE SURVEY
Circular No. 17

REPORT ON FULLER'S EARTH AND BENTONITE
IN ANGELINA AND CHEROKEE COUNTIES
by Joseph Johnson, Supervisor

Fuller's earth is being produced in the southern part of Angelina County by the Milwhite Company and by Bennett and Clark. Bentonitic clays are found in both Angelina and Cherokee counties.

Angelina County

Two miles north of Rodland on land owned by the Cameron Lumber Company of Waco about 200 acres was tested by drilling. At a depth of 4 or 5 feet in the drill holes bentonitic clay too tough to penetrate was encountered. A test pit was dug west of highway No. 35 to a depth of 22 feet, penetrating 18 inches of soil, 30 inches of red-brown clay, and 18 feet of bentonite. The entire thickness of bentonite could not be penetrated because of caving. Another test pit on the other side of highway No. 35 gives the same section.

This bentonite is of a light brown color, contains no grit, is fine-textured, and when moistened and rubbed between the fingers feels much like soft soap. Air-dried samples have a conchoidal fracture, slack readily in water, and have a very high water absorbing power. The commercial quality of this bentonite has not been determined.

Drilling along the principal highways and roads in the rest of the county failed to reveal commercial clays.

Cherokee County

A deposit of bentonite on the Durham and Polk farms south of Forest, about 80 acres in extent, has been investigated. An average of about 6 feet of overburden is found consisting of top soil and red clay interspersed with blue clay. The bentonite which is found beneath the red clay is fine-textured, waxy, contains no free silica, and when moistened and rubbed between the fingers feels much like soft soap. The bentonite as recovered is saturated with water. When dried it breaks with a conchoidal fracture and if placed in water slacks readily, absorbing roughly three times its volume of water.

In no case was it possible to penetrate the entire thickness of the deposit by auger, the maximum penetration being 9 feet. Assuming the deposit to be only 40 acres in extent, 9 feet thick, and the recovery 2500 tons per acre-foot, a conservative estimate of 900,000 tons is present.

Bentonite is present in an area of about 4 square miles east of Larrison Creek and in Forest.

Bentonite noticed in Mr. Miller Dial's well in Forest was investigated. The log of the well is as follows:

	Depth		Thickness	
	feet	inches	feet	inches
Soil	0		1	6
White clay tinged with red	1	6	3	6
Gray clay interspersed with gravel	5		4	6
Yellow sand	9	6	2	11
Light blue-gray clay (bentonite)	12	5	1	10
White closely packed sand	14	3	3	7
Light gray to dark gray clay (bentonite)	17	10	10	6
Bottom of hole	28	4		

Auger holes could penetrate the bentonite only a foot or two, so a pit 4 by 6 was dug to a depth of 18 feet on the adjoining Littlejohn property. The bentonite when dry slacks very rapidly, has a high absorption power, and good bleaching qualities. It will remove vegetable stains from the hands as well as indelible pencil stains.

To the east on the Littlejohn property the deposit is only 4 feet thick and has an average of 12 feet overburden which makes it non-commercial. Toward the eastern edge of this property the deposit lenses out.

A shell rock several inches thick and blue-gray in color on broken surfaces is found associated with the bentonitic deposits of this area and is a good indicator when searching for new deposits.

On the Proctorium property, 3½ miles south of Forest, two slopes covered by this type of rock were investigated. The following section was found:

	Thickness in feet
Overburden	2
Light gray bentonite	6
Shell rock	2
Gray bentonite	?

About 20 acres is underlain by bentonite.

Analyses

Samples of clay from the Littlejohn, Polk and Durham, and Proctorium properties were sent to the Monett Clay Company, Monett, Missouri, and were analysed by the Bruce Williams Laboratories, Joplin, Missouri, with the following results. The samples are numbered as follows:

	No. 244439 Littlejohn property: average sample from 18-foot shaft	No. 244440 Polk and Durham property: weathered sample	No. 244441 Proctorium property: sample from No. 2 Drill Hole
Ignition loss	11.36%	11.33%	13.62%
Silica	56.32%	58.14%	57.16%
Ferric oxide	6.97%	5.18%	5.18%
Alumina	18.11%	17.92%	18.82%
Titania	0.35%	0.42%	0.34%
Calcium oxide	0.58%	1.47%	0.34%
Magnesium oxide	4.21%	4.13%	2.48%
Sodium oxide	0.78%	0.53%	0.67%
Potassium oxide	1.32%	1.47%	1.19%
Undetermined	0.18%	0.21%	0.20%

The chief objection to the bentonites is the high ferric oxide content.