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Bureau of Economic Geology
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MINERAL RESOURCE SURVEY
Circular No. 42

The information contained in this circular was gathered by a unit of the WPA Geological Investigation Project, sponsored by The University of Texas, Bureau of Economic Geology. The purpose of this survey is to assemble information concerning the mineral resources of Texas and make it available to the public. It is hoped that this information will be a contribution to the industrialization of the State. The following report gives the results of work done in Jasper County by Work Project No. 18533, from November 25, 1941, to February 2, 1942.

BENTONITE AT OLD BROWNDELL TOWNSITE, NORTH JASPER COUNTY, TEXAS*

by George H. Shafer, Supervisor

INTRODUCTION

The purpose of the project in Jasper County was to locate and map deposits of bentonite and fuller's earth, clays used extensively in the refining of petroleum and for rotary drilling muds. Bentonitic clays are also used in the manufacture of soaps, insecticides, cosmetics, polishes, adhesives, ceramic glazes, absorbents, and in road, roofing, and floor materials.

Thanks are due Mr. W. G. Hugly, geologist with the Southwestern Settlement and Development Company, for his assistance and cooperation in furnishing valuable information pertaining to bentonite deposits in Jasper County. Thanks are also extended to the Southwestern Settlement and Development Company and to other landowners for allowing the project to operate on their properties.

GEOLOGY OF THE AREA

The Browndell bentonite deposit is located at the old townsite of Browndell, north Jasper County. The area is situated approximately 3 miles south of the surface contact between the Jackson and Catahoula formations, and rocks exposed at the locality consist of thin-bedded sandstones, more or less unconsolidated fine-grained sands, bentonitic clays, and impure lignite belonging to the lower Catahoula formation. High ridges and rounded hills separated by rather deep stream valleys make up a rolling topography.

The area is extremely "seepy", a condition resulting from sand and sandstone of high permeability immediately overlying impermeable bentonitic clay. The beds here dip gently to the southeast. The sandstone capping much of the bentonite mass is very discontinuous; it is thickest and more widespread at higher altitudes and is more abundant over the southernmost portion of the area. The sandstone is highly jointed, and the joint spaces at many places were sufficiently wide to enable a 3-inch auger to penetrate.

Erosional gullies appearing along the east side of the deposit have exposed the bentonite.

The Browndell bentonite is drab-green in color, breaks with a conchoidal fracture, and is very greasy to the touch. It contains small crystals of gypsum and is slightly calcareous. In bluff exposures the presence of iron oxide stains is more distinct than in core samples. Perhaps the most objectionable feature of the material from an industrial standpoint is its sand content, which is found to vary from almost none to an amount sufficient to render it of little commercial value. For the most part, however, the bentonite herein described is believed to be relatively free of excess sand.

The deposit of bentonite is highly lenticular in shape, but the average thickness is approximately 20 feet. The bentonite underlies approximately forty acres, occupying portions of the Bob Cochran farm, the W. C. Bryant farm, the H. C. Walker farm, the Kelly farm, and land belonging to the Southwestern Settlement and Development Company.

A blue-colored sand, weathering light blue-gray to almost white, immediately underlies the bentonite. This sand is very fine grained, ashy in places, and contains pyrite; in some places it was found to be slightly bentonitic. The thickness of this blue sand was not determined, but one test hole dug into it recorded 24 feet before the hole was abandoned. The overburden, much of it consisting of hard sandstone, ranges in thickness from 3 to 18 feet. An overburden of clay and unconsolidated sand covers areas not occupied by the sandstone.

The bentonite deposit was explored by means of auger holes, and trenching with picks and shovels was carried out over the southernmost portion of the area to supplement test hole digging.

The Browndell bentonite deposit is very conveniently located for shipment to market. The Santa Fe Railway is located only a few hundred feet east, where a siding is available. This feature will undoubtedly influence the development of the material to a great extent, since nearness to rail transportation is one of the chief factors for successful exploitation of such resources.

*Assistance in the preparation of these materials was furnished by the personnel of Work Projects Administration Official Project No. 165-1-66-695.

Figure 1 is a sketch map of the area showing relative position of test holes. The test holes appearing outside the broken-line area, shown by small dark circles, encountered very little or no bentonite. The figures appearing beneath the circles are the test hole numbers; those appearing above the circles indicate the relative altitudes of the test holes.

ACKNOWLEDGMENT

The following maps and cross section of the Browndell prospect were prepared by the Southwestern Settlement and Development Corporation, Houston, Texas, under the direction of Mr. W. G. Hugly, of the Land and Tax Department of the Corporation.

We express appreciation for the generous cooperation given by the Southwestern Settlement and Development Corporation and Mr. W. G. Hugly in granting us permission to use their data in this report.

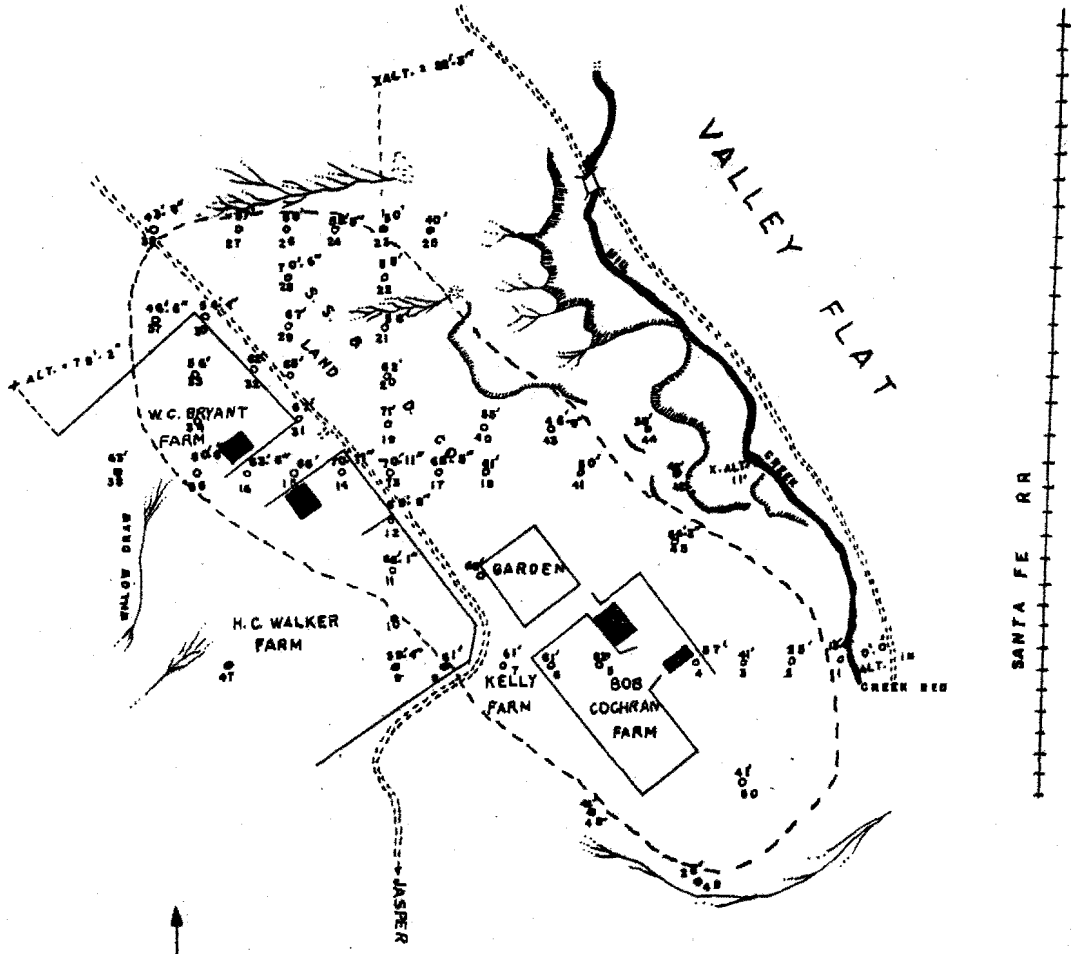
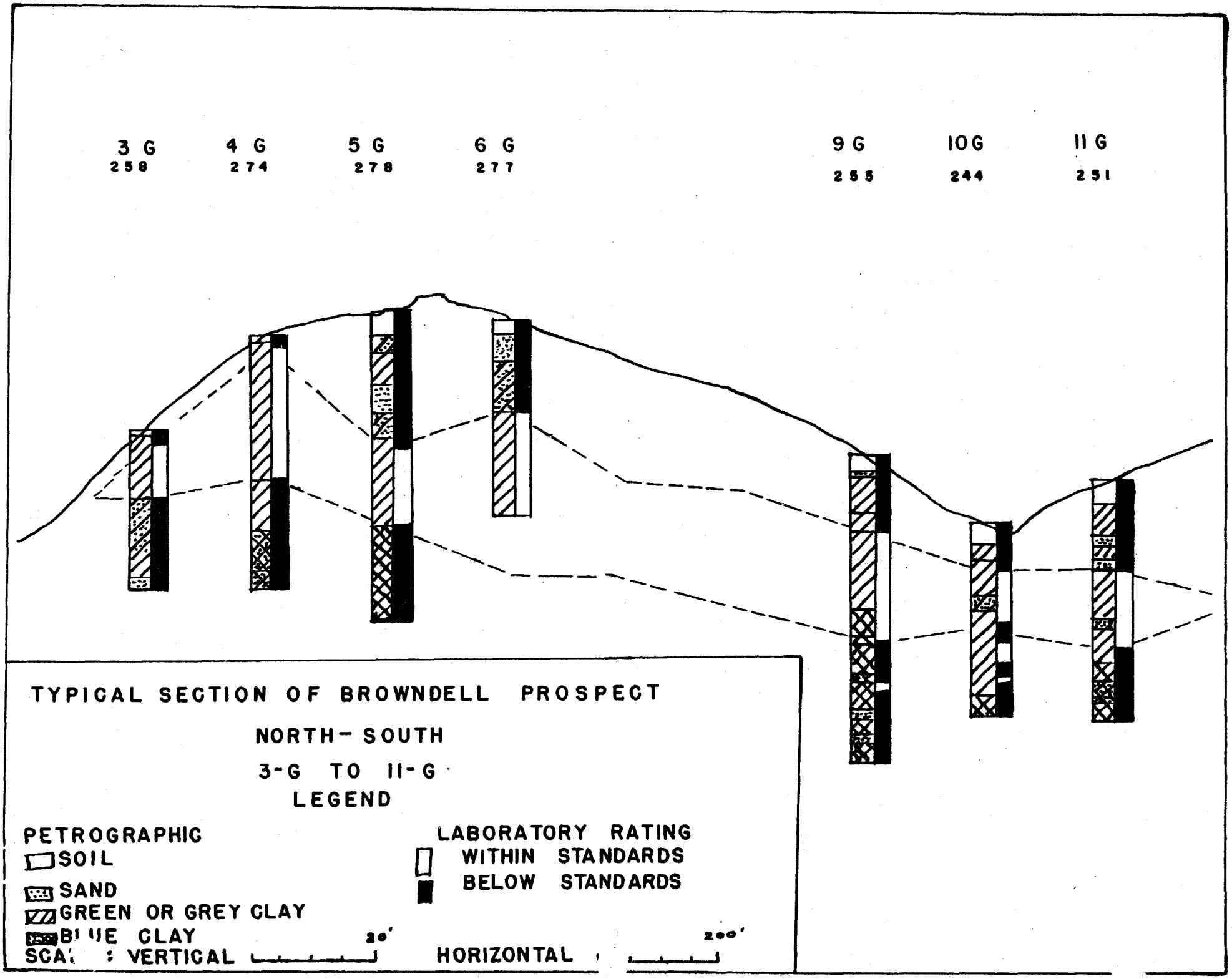
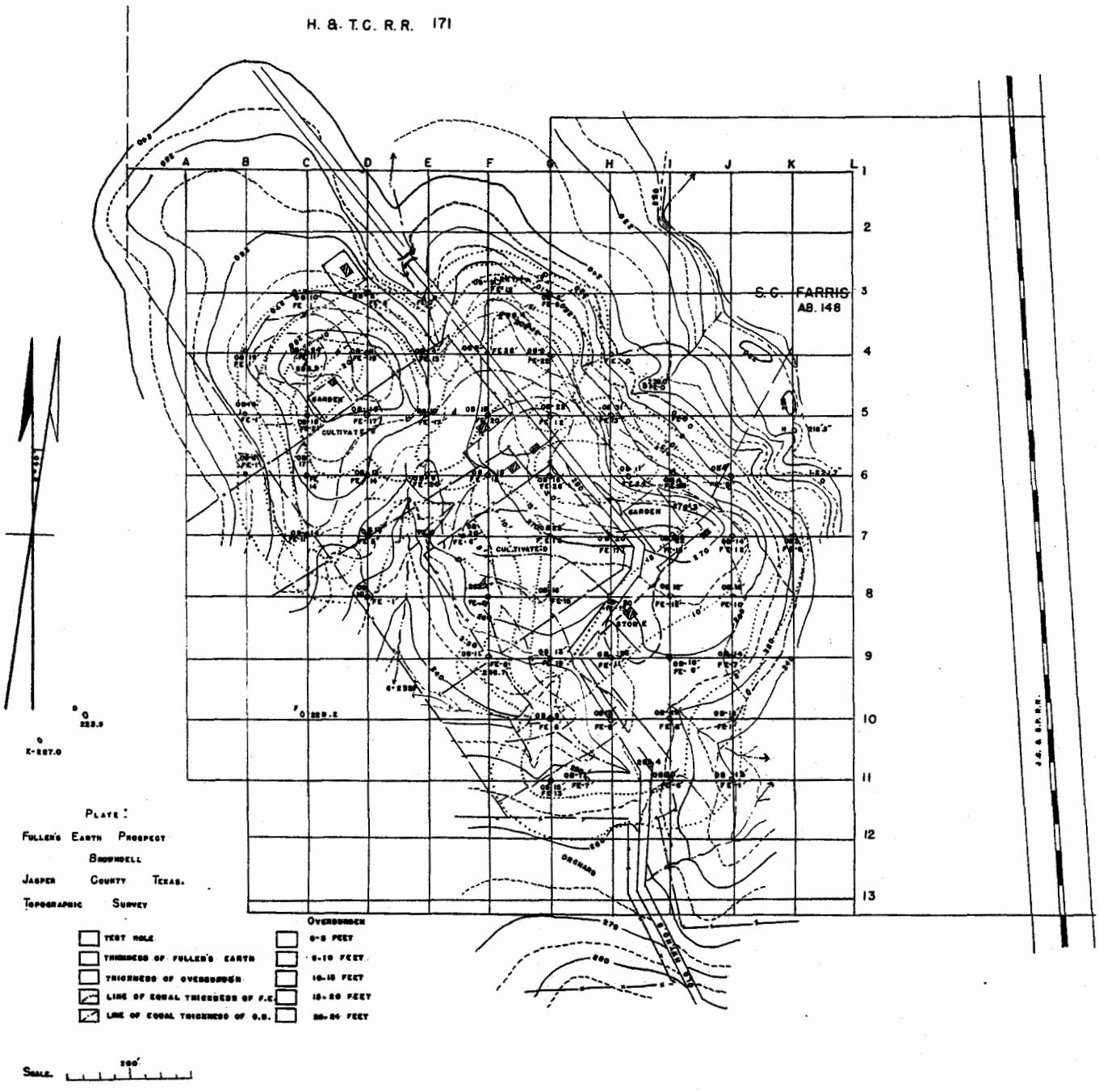


FIGURE 1

SKETCH SHOWING RELATIVE POSITION OF TEST HOLES DRILLED ACROSS A DEPOSIT OF BENTONITE AT THE OLD TOWNSITE OF BROWNDELL, NORTH JASPER COUNTY, TEXAS.

SCALE — 1 INCH = 400 FT.


3 G
258
4 G
274
5 G
278
6 G
277
9 G
255
10G
244
11 G
251
TYPICAL SECTION OF BROWNDELL PROSPECT
NORTH - SOUTH
3-G TO 11-G
LEGEND
PETROGRAPHIC
SOIL
SAND
GREEN OR GREY CLAY
BLUE CLAY
LABORATORY RATING
WITHIN STANDARDS
BELOW STANDARDS
SCALE : VERTICAL 20'
HORIZONTAL 200'


H. & T.C. R.R. 171
S.C. FARRIS
A8. 148
A B C D E F G H I J K L
1 2 3 4 5 6 7 8 9 10 11 12 13
CULTIVATED
GARDEN
ORCHARD
STORAGE
PLATE I
FULLER'S EARTH PROSPECT
BROWNELL
JASPER COUNTY TEXAS.
TOPOGRAPHIC SURVEY
TEST HOLE
THICKNESS OF FULLER'S EARTH
THICKNESS OF OVERBURDEN
LINE OF EQUAL THICKNESS OF F.E.
LINE OF EQUAL THICKNESS OF O.B.
OVERBURDEN
0-5 FEET
5-10 FEET
10-15 FEET
15-20 FEET
20-24 FEET
SCALE.
200'

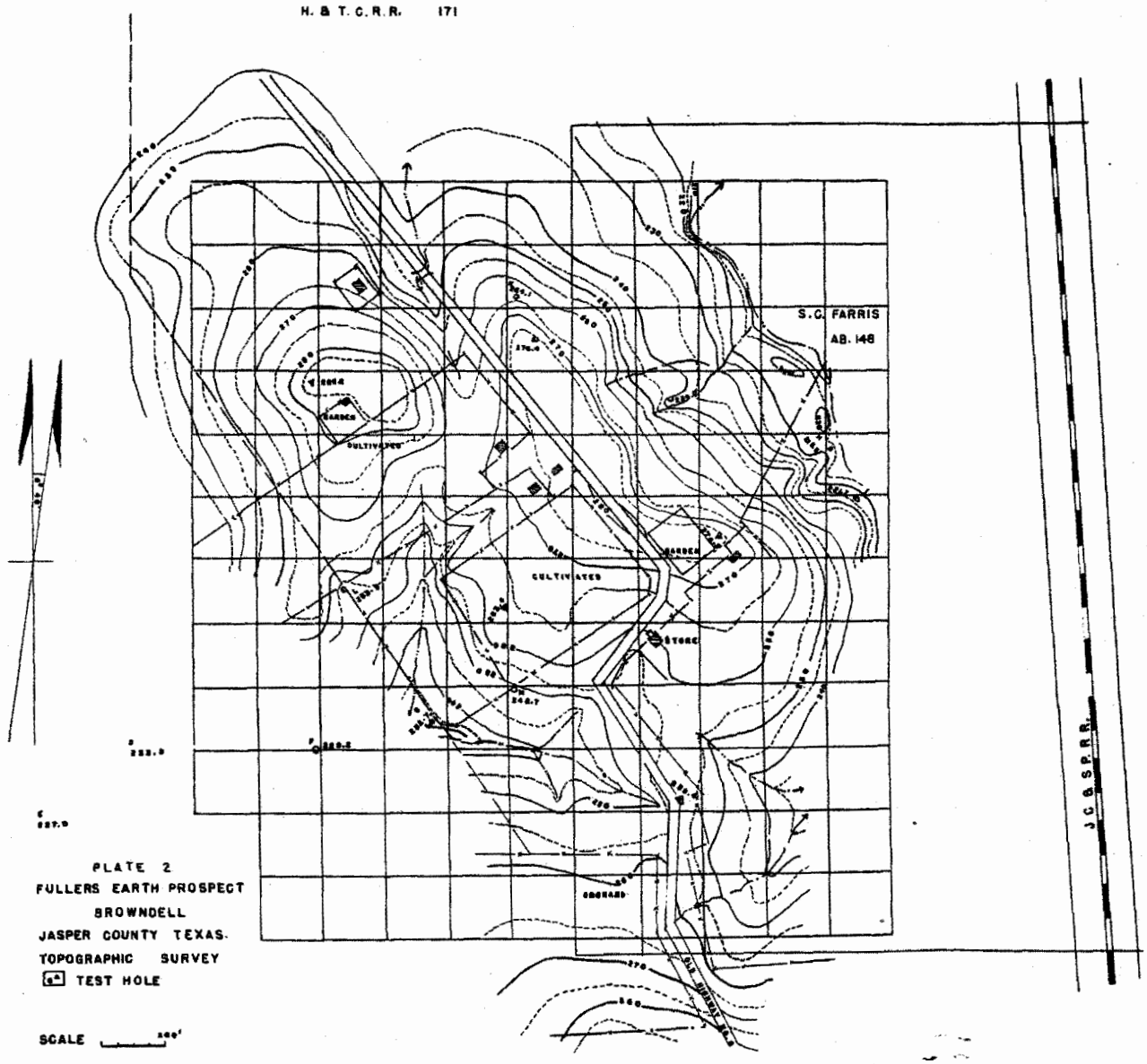


PLATE 2
FULLERS EARTH PROSPECT
BROWNDELL
JASPER COUNTY TEXAS.
TOPOGRAPHIC SURVEY
[6] TEST HOLE

SCALE 200'