UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

MINERAL RESOURCE POTENTIAL OF THE KISATCHIE HILLS WILDERNESS, NATCHITOCHES PARISH, LOUISIANA

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This report is preliminary and has not been reviewed for conformity with U. S. Geological Survey editorial standards and stratigraphic nomenclature.

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STUDIES RELATED TO WILDERNESS

Under the provisions of the Wilderness Act (Public Law 88-577, September 3, 1964) and related acts, the U.S. Geological Survey and the U.S. Bureau of Mines have been conducting mineral surveys of wilderness and primitive areas. Areas officially designated as "wilderness," "wild," or "canoe" when the act was passed were incorporated into the national Wilderness Preservation System, and some of them are presently being studied. The act provided that areas under consideration for wilderness designation be studied for suitability for incorporation into the Wilderness System. The mineral surveys constitute one aspect of the suitability studies. The act directs that the results of such surveys are to be made available to the public and be submitted to the President and Congress. This report presents the results of a geological and mineral survey of the Kisatchie Hills Wilderness in Kisatchie National Forest, Natchitoches Parish, Louisiana. The area was established as a wilderness by Public Law 96-560, December 1980.

MINERAL RESOURCE POTENTIAL

SUMMARY STATEMENT

Clay and sand are present in the wilderness and could be used in the construction industry; however, similar deposits are present elsewhere in the Kisatchie Hills. Some of the surface sand has been cemented by silica and is a quartzitic sandstone. Blocks of this sandstone have been used as decorative stone, but similar sandstone is present elsewhere in the Kisatchie Hills.

The wilderness is in an area of small southwest-trending oilfields, 40 acres or less in size, with reservoirs in sedimentary strata of the Wilcox Group. The wilderness is southeast of a group of larger oilfields with reservoirs in Cretaceous strata. Oil and natural gas were produced from a reservoir in the Wilcox Group (Gorum Field) about 2 mi south of the wilderness. Otherwise, oil and natural gas have not been reported from any of the exploratory wells drilled within 6 mi of the wilderness. Although closer spaced, deeper wells may discover additional small fields in the Wilcox or larger fields in the underlying Cretaceous and Jurassic strata, the potential for the occurrence of commercial quantities of oil or gas is low.

INTRODUCTION

The Kisatchie Hills Wilderness comprises about 9,120 acres in the Kisatchie National Forest, Natchitoches Parish, La. (figs. 1, 2). The wilderness can be easily reached by going southward from Derry or northward from Gorum along Louisiana State Highway 119. U.S. Forest Service Highway 59 marks the southern boundary and U. S. Forest Service Road 339 marks the western boundary. Old logging roads are now trails and provide access to the interior of the wilderness.

Figure 1. — INDEX MAP OF LOUISIANA

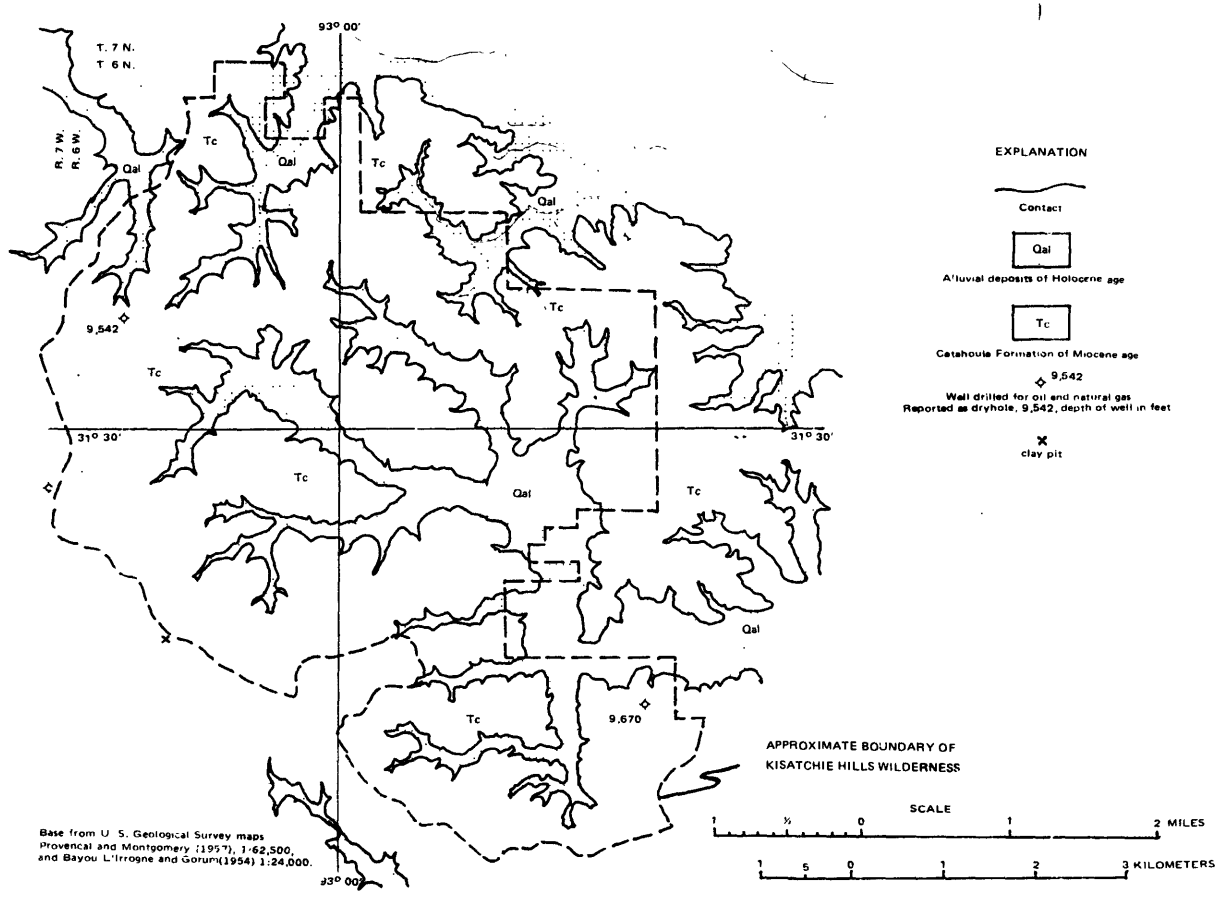


Figure 2. – GEOLOGIC MAP OF THE KISATCHIE HILLS WILDERNESS

The wilderness is forested with pine trees and a mixture of hardwood trees. Bayou Cypre is an eastward flowing stream that drains all but about 5 sq mi of the northern part of the wilderness. Altitudes range from about 375 ft above sea level in the western part of the wilderness to about 110 ft above sea level in the northwestern part (fig. 2). A relief of 265 ft in such a small area is unique when compared with the generally flat surface of the rest of Louisiana.

STRATIGRAPHY

Only two stratigraphic units are exposed in the wilderness (figs. 2, 3). The older unit is the Catahoula Formation of Miocene age and consists of interbedded sand, silt, and clay. Quartz, the dominant mineral in sand, ranges in size from very fine to coarse grained. The very fine to fine-grained sand is generally clayey, silty, and in some places, limy whereas the medium- to coarse-grained sand is generally more quartzose. All of the sand is light gray where fresh but the more clayey and limy sands tend to weather reddish brown. Some of the exposed quartzose sands have been cemented with secondary silica and are now quartzitic sandstone. Most of the silt is clayey and is light to medium gray where fresh and very light gray where weathered.

The younger stratigraphic unit in the wilderness is alluvium of Holocene age along the streams. The sediments in the alluvium are very light gray and consist mostly of very fine to coarse-grained quartz sand and minor amounts of clay and silt.

Alluvial terrace deposits of possible Pleistocene age were not noted along the streams in the wilderness. Newcome and others (1963, p. 56) made the following explanation: "In some places, particularly those adjacent to highland areas, the old valleys were completely obliterated by downcutting and widening of the more recent valleys, leaving no flanking terrace deposits."

STRUCTURE

The sediments in the Catahoula Formation dip southward at about 70 ft per mi (Newcome, p. 52). Normal faults may be present in or near the wilderness but have not been verified.

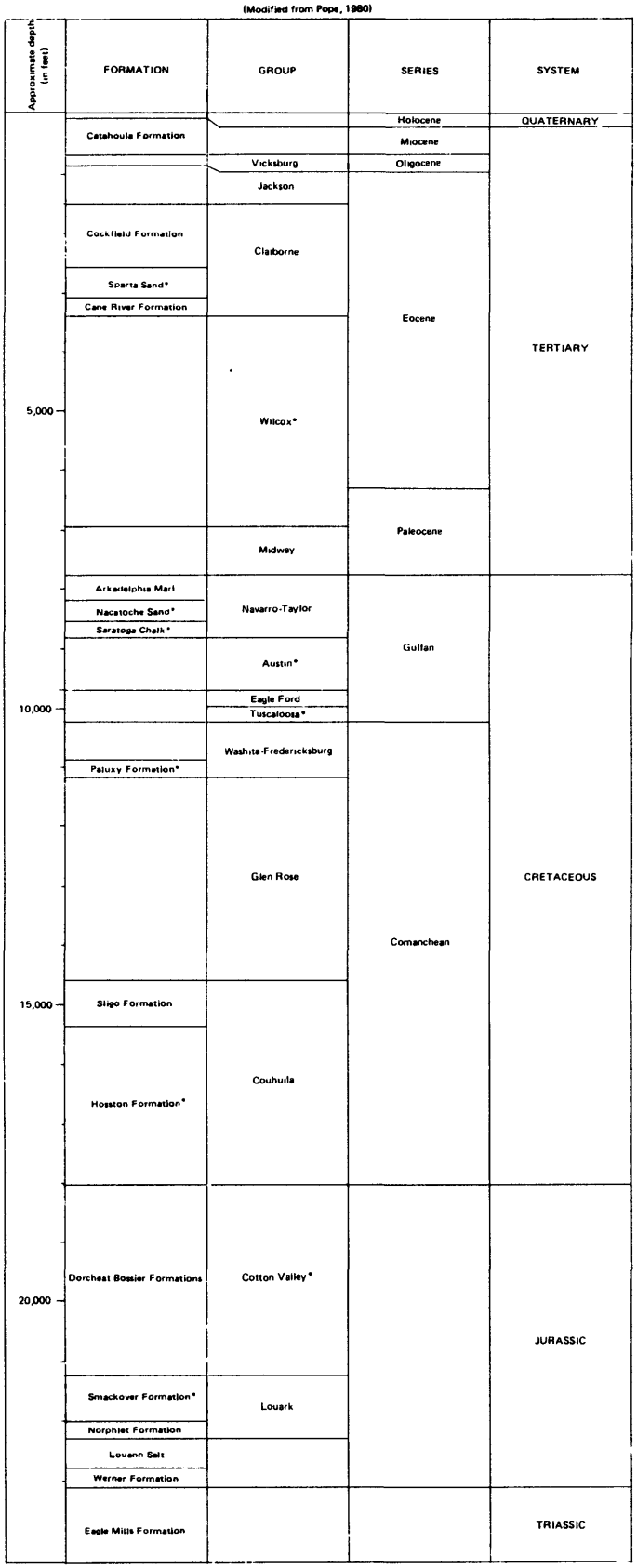
MINERAL RESOURCE POTENTIAL

A clayey and silty sand in the Catahoula Formation has been taken from a pit in NW 1/4 NW 1/4 NW 1/4, sec. 33, T. 6 N., R. 6 W. (fig. 2) and used as a "binder clay" in asphalt for roads. Other "binder clay" pits are present about 3 mi west of the wilderness in secs. 15 and 24, T. 6 N., R. 7 W.

The quartzose sand that has been cemented by silica to a quartzitic sandstone and used as a decorative stone in picnic areas, parks, flower beds, and building exteriors is present in areas outside the wilderness.

Figure 3. – GENERALIZED STRATIGRAPHIC SECTION IN VICINITY OF KISATCHIE HILLS WILDERNESS

(Modified from Pope, 1980)



* Formation or undifferentiated Group reported as producing oil and natural gas

OIL AND NATURAL GAS POTENTIAL

Oil and natural gas have not been discovered in the wilderness, nor have shows of oil or natural gas been reported from exploratory wells drilled within 6 mi, except for the oil and natural gas that was produced from a reservoir of Wilcox age in the Gorum Field about 2 mi south of the wilderness (fig. 4). The Gorum Field (now abandoned) is one of several very small oilfields discovered in a southwest-trending area that encompasses the wilderness. The wilderness is southeast of much larger fields that produce oil and natural gas from reservoirs mostly of Cretaceous age. Only six wells in or near the wilderness have penetrated all of the Wilcox Group and a part of the Cretaceous sediments. Potential reservoirs in the deeper Jurassic or older sediments have not been penetrated by any well. The probability of closer spaced deeper wells discovering oil and natural gas in the vicinity of the wilderness is low.

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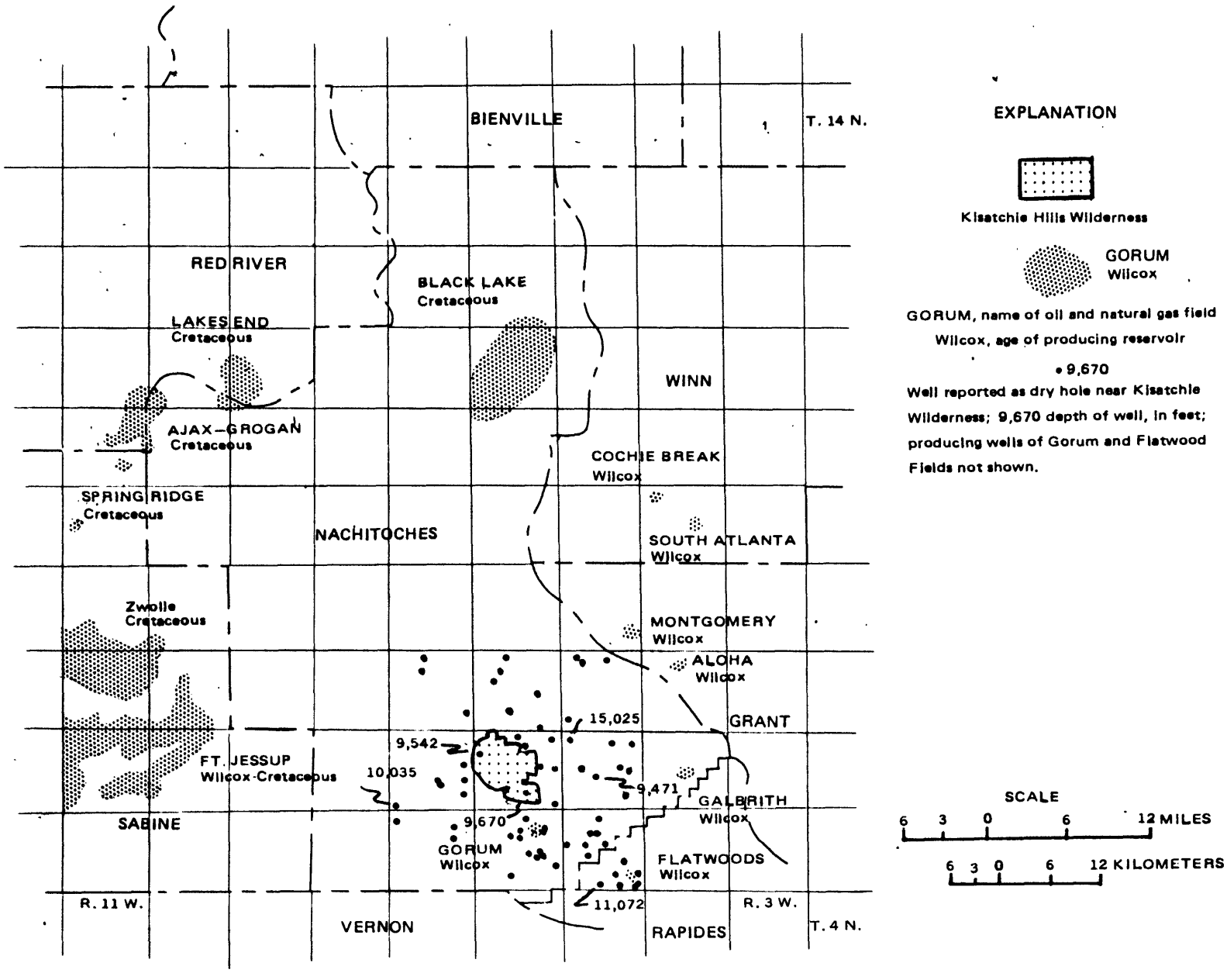

Figure 4. – OIL AND GAS FIELD MAP OF NATCHITOCHES PARISH AND VICINITY, LOUISIANA