CGR-062

STATE OF ARKANSAS

ARKANSAS GEOLOGICAL SURVEY

Bekki White, State Geologist and Director

COUNTY GEOLOGIC REPORT 062

GEOLOGIC REPORT

OF

PIKE COUNTY

by

Daniel S. Rains

and

William D. Hanson

Little Rock, Arkansas

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PREFACE

This report is an accompaniment to the 1:50,000 scale geologic map of Pike County, Arkansas. The 1:50,000 scale geologic map is a mosaic of smaller scale geologic maps, printed at a 1:50,000 scale. Underlined terms are defined in glossary. This publication is available on CD, on paper, and on Arkansas Geological Survey's website: www.arkansas.gov/agc/agc.htm

Geologic Report of Pike County, Arkansas

Introduction

Pike County is located in southwestern Arkansas (Fig. 1), has a population estimated at 10,824 and an approximate area of 600.62 mi^2 (1556 km^2) (US census 2010). The county is situated between latitude coordinates 34.350179^o and 34.943026^o, and longitude coordinates -93.94^o and -94.37^o (Plate 1). The highest elevation is about 1,780 ft. (542 m) above sea level, and occurs on Hogpen Mountain in the northwestern part of the county (Langley 7.5 min. quadrangle). The lowest elevation, approximately 240 ft. (73 m) above sea level, is located at the confluence of Antoine River and Wolf Creek in the southeast (Piney Grove 7.5 min. quadrangle). Surface water is abundant in Pike County. Major surface drainages include Little Missouri River- which feeds the 7,000 acre Lake Greeson-, Caddo and Antoine rivers, and Saline and Wolf creeks. The primary transportation route in and out of Pike County is US Highway 70. The remainder of the county is fairly accessible using state highways 8, 19, 26, 27, 29, and 84. At this time, there is no railroad access to Pike County.

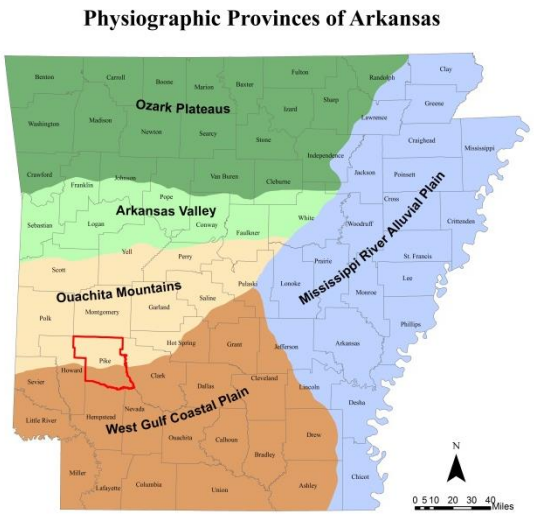


Figure 1: Location of Pike County. Also shown are the physiographic provinces of Arkansas

Pike County is roughly divided between two physiographic provinces: the Ouachita Mountains in the northern part of the county and the West Gulf Coastal Plain in the south (Fig. 1). The rock types exposed in these provinces are primarily sedimentary, but there are small bodies of igneous rock

exposed as well (Plate 1). The history of Pike County's rocks spans a long range of time.

Rocks of the Ouachita Mountains region of northern Pike County are between 488 and 299 million years old (Paleozoic Era). At that time southern Arkansas was an abyss where sediment accumulated in oceanic environments up to thousands of meters deep. Sandstone, shale, novaculite, and chert bedrock formed from this sediment. Around 300 million years ago, pressure from colliding plates in the earth's crust caused the bedrock to compress, deform, and fracture eventually raising it above sea level. Exposed above sea level, these folded beds of rock were slowly eroded into the ridges and valleys we see today. The prominent ridges are typically erosion-resistant rock, such as sandstone or novaculite, while the valleys are mostly easily-erodible rock, such as shale.

This period of erosion lasted about 150 million years and left a gap in the geologic record known as an unconformity. An unconformity is a period of time for which there is no representative rock. In Pike County, numerous unconformities are represented in the rock record, but only two of them represent extensive time spans (Fig. 2). At approximately 146 million years ago (Cretaceous Period), southern Arkansas including southern Pike County, subsided below sea level as the Gulf of Mexico was forming. At that time, sediment

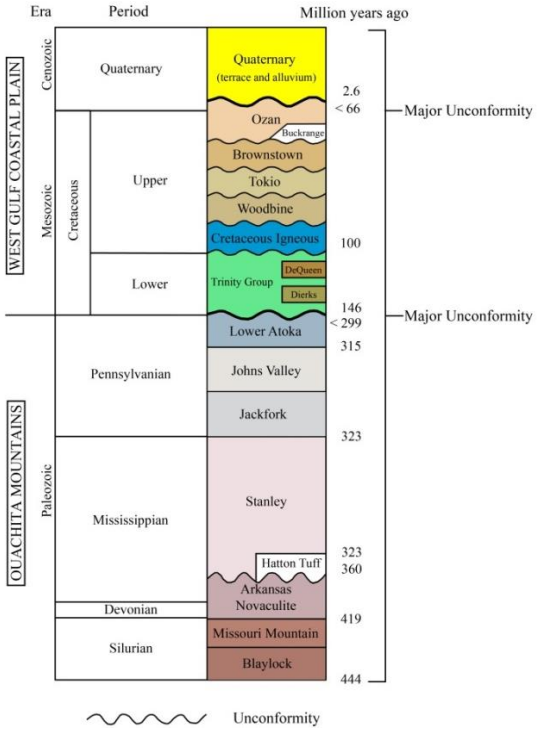


Figure 2: Stratigraphic column of Pike County

accumulated in a shallow sea that covered southern Arkansas. Eventually, that sediment became rock, but, unlike the older Paleozoic-era rock which was folded and faulted, the Cretaceous rock is still in flat layers (with the exception of the igneous rock which is not layered). This type of unconformity, where the younger strata are in a contrary orientation to the older strata, is known as an angular unconformity.

Cretaceous rock layers of southern Pike County typically strike east-west and dip gently to the south at about 1°. Unlike the older Paleozoic rocks, which are very hard, the Cretaceous rocks are, for the most part, poorly consolidated and therefore erode easily. Geologists divide Cretaceous rocks of Arkansas into lower and upper units at a minor unconformity that took place around 100 million years ago (Fig. 2). Both the upper and lower Cretaceous rocks were deposited in shallow nearshore marine environments between 146 and 66 million years ago. The Lower Cretaceous rocks consist mostly of cross-bedded sandstone, but include two intervals of fossiliferous limestone, interbedded gypsum, and a gravel unit, at the base. Upper Cretaceous rocks are of variable lithology notably including a diamond-bearing volcanic pipe known as a diatreme, but consist mostly of sand, clay, gravel, chalk, tuff, and marl.

The younger and second major unconformity in Pike County is still developing as the entire county has been above sea level, and subject to erosion, since the end of the Cretaceous Period: 66 million years ago. On this erosional surface, Quaternary (2.6 million years ago to present) sediment is being deposited today. The Quaternary "rock" units on the Geologic Map of Pike County (Plate 1) are not true rocks. They are sediment that has recently accumulated in stream valleys. Quaternary alluvium consists of sand, silt, clay, and gravel, deposited in floodplains and channels of modern streams. Quaternary terrace deposits have the same composition as alluvium, but were deposited in older higher-elevation floodplains and channels that streams occupied in the past.

Stratigraphy

Paleozoic (470 - 299 million years ago)

The Silurian aged (444 – 416 million years ago) Blaylock Formation is the oldest rock formation that is exposed at the surface in Pike County. It consists of tan to gray, fine- to medium-grained sandstone interbedded with black fissile shale. It rarely contains graptolite fossils and trace fossils. The Blaylock Formation is exposed in northern Pike County (Plate 1).

Also of Silurian age, the Missouri Mountain Formation was conformably deposited on the Blaylock Formation. It consists of shale interbedded with conglomerate, as well as novaculite and sandstone. Few identifiable fossils have been recovered from this unit. The Missouri Mountain Formation crops out in northern Pike County (Plate 1).

The Arkansas Novaculite was deposited, conformably, on the Missouri Mountain Formation between the Devonian Period and the Early Mississippian Period (416 to 347 million years ago). Three divisions of the Arkansas Novaculite are generally recognized. The lower division is white massive novaculite with some interbedded gray shale near the base. The middle division is greenish to dark-gray shale, interbedded with many thin beds of dark novaculite. The upper division is white, thick-bedded, and commonly calcareous. The Arkansas Novaculite crops out across northern Pike County (Plate 1). Though not mined in Pike County, novaculite is an important commodity quarried for application as an abrasive.

The Stanley Formation rests unconformably on the Arkansas Novaculite and spans part of the Mississippian age (about 347 – 318 million years ago). It's the most extensively exposed bedrock in Pike County (Plate 1). The Stanley is composed predominantly of grayish-black to brownish-gray shale with lesser amounts of thin-bedded to massive, fine-grained, gray to brownish-gray, feldspathic sandstone, dark green to black tuff (the Hatton Tuff), and chert. After

weathering, the sandstone is generally porous and brown and the shale is olive-gray.

The Jackfork Formation conformably overlies the Stanley Shale. It is Early Pennsylvanian age: 323 to 315 million years ago. It consists of thin- to medium-bedded, fine- to coarse-grained, brown, tan, or bluish-gray quartzitic sandstone with lesser amounts of brown silty sandstone, and charcoal-colored shale.

The Johns Valley Formation rests conformably on the Jackfork Formation. It was deposited during the Pennsylvanian Period, between 318 and 299 million years ago. It is composed of black shale with numerous intervals of brownish sandstone. It also contains small amounts of gray-black siliceous shale, and chert. The Johns Valley locally contains exotic boulders thought to have been deposited by mass wasting events.

The youngest Paleozoic rock in Pike County, the lower part of the Atoka Formation, was also deposited, conformably, during the Pennsylvanian age. The lower Atoka is a sequence of marine, mostly tan to gray silty sandstones, and grayish-black shales. Some rare calcareous beds and siliceous shales are known.

Cretaceous (146 – 66 million years ago)

The Lower Cretaceous Trinity Group has a wide range of lithologies: sand, gravel, clay, limestone, gypsum, and celestine. It is primarily composed of fine- to medium-grained, cross-bedded, white to red sandstone that is locally barite cemented. Clay of the Trinity Group though not abundant, is tan, light-gray, gray, and brown. The base of the Trinity Group is called the Pike Gravel and contains abundant gravel, mostly in the size range of 1 to 6 in. (2 – 15 cm). Above the gravel horizon and interbedded with the sandstone intervals are two limestone members: the Dierks Limestone and the DeQueen Limestone. The Dierks Limestone is 30 – 60 ft. (9 – 18 m) of fossiliferous limestone interbedded with green and gray calcareous clay. The oyster fossil *Ostrea franklini* (Fig. 3) is common in the

Dierks Limestone (Miser and Purdue, 1929). The DeQueen Limestone consists of up to 100 ft. (30 m) of interbedded fossiliferous limestone, calcareous clay, gypsum, and celestine. *Cassiope branneri* (Fig. 4) and *Ostrea franklini* are common fossils in the DeQueen Limestone. The DeQueen Limestone Member is also known for its dinosaur tracksites, though none have been discovered in Pike County. Asphalt-impregnated sands and gravels, when present in the Trinity Group, are found below the DeQueen Limestone.

Cretaceous igneous intrusions are composed of three main rock types: lamproite breccia tuff, lamproite lapilli tuff and Maar Epiclastics. The breccia tuff is composed of fragments of lamproite and other rock types. The lapilli tuff is largely composed of volcanic ash and dust and the epiclastic rock was formed from the mixing of the igneous rock types with the local sedimentary rock when the igneous rock was emplaced. In addition to the large diamondiferous Prairie Creek pipe located at Crater of Diamonds State Park, numerous smaller intrusive bodies, some of which are diamondiferous, have been mapped east of the town of Murfreesboro. Other intrusive bodies may, as of yet, be undiscovered.

Crater of Diamonds State Park visit:

http://www.geology.ar.gov/pdf/crater_diamond__sps_06_%2024_8.pdf

Figure 3: *Ostrea franklini.* Found in the Dierks and DeQueen Limestone Members

Figure 4: *Cassiope branneri* fossils collected from the Tokio Formation

The Woodbine Formation, also of Late Cretaceous age, rests unconformably on the Trinity Group. It is approximately 200 ft. (61 m) thick and consists of gravel, water-lain tuff, sand, and clay. The gravel is found at the base of the unit and can be up to 60 ft. (18 m) thick, but, is generally 20 ft. (6 m) thick. The average clast is about 2 in. (5 cm) in diameter, sub-rounded to rounded, and composed of chert or novaculite (Fig. 8). Some highly-altered igneous pebbles have also been noted in the basal gravel. The water-lain tuff is cross-bedded and blue to green on freshly broken surfaces. Weathering of the tuff produces distinctive, red, waxy clay.

The Tokio Formation rests unconformably on the Woodbine Formation and consists of clay, sand, and gravel. A gravel unit at the base of the formation is approximately 30 ft. (9 m) thick and consists of sub-rounded to rounded grains ranging from pebble to cobble-sized (Fig. 5). The average grain is about 1 in. (2.5 cm) in diameter and is typically composed of novaculite, chert, quartz, sandstone, or quartzite. The clay of the Tokio Formation is dark gray to almost white. The dark gray clay is fossiliferous and contains the gastropod *Cassiope branneri* (Fig. 4), as well as plant fragments, and plant and shell impressions. Some of the lighter-colored clay beds are altered volcanic ash known as kaolinite. The clay content of the unit increases westward. Sandstone of the Tokio Formation is fine- to medium-grained, sub-rounded to rounded, and cross-bedded. Glauconite and ilmenite are accessory minerals in the sandstone. The Tokio Formation is about 300 ft. (91 m) thick.

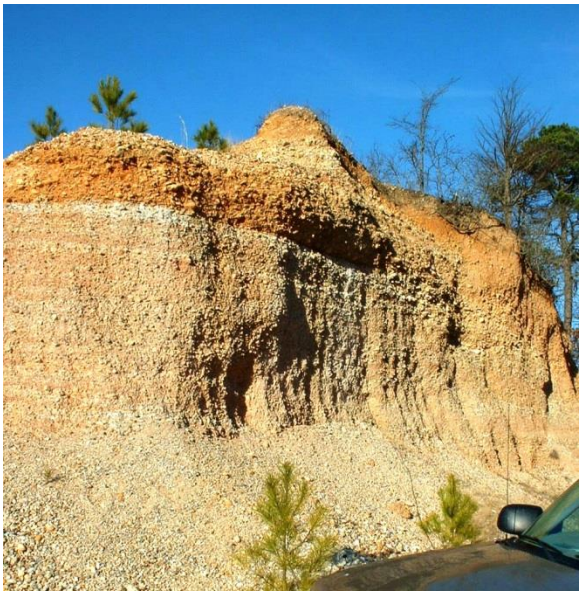


Figure 5: Gravel pit in the Tokio formation

The Brownstown Formation rests unconformably on the Tokio Formation and consists of fossiliferous, gray to dark gray marl and sandy marl. The most recognizable fossil in this unit is the oyster *Exogyra ponderosa* (Fig. 6). The Brownstown Formation, in Pike County, is about 250 ft. (76 m) thick.

Figure 6: *Exogyra ponderosa*

The Ozan Formation rests unconformably on the Brownstown Formation. It is marl, sandy marl, glauconitic marl, and sand. The Buckrange Sand Member, at the base of the unit, is about 20 ft. (6m) thick. This sandy interval contains glauconite, phosphate nodules, black chert, and shark's teeth. Marls of the Ozan Formation are dark gray and fossiliferous. Notable fossils include *Exogyra ponderosa* and *Ostrea falcatta* (Fig. 7) (Dane, 1929). Teeth and bones of the mosasaur, a large extinct marine reptile, have also been identified in the Ozan (Fig. 8 and 9). The Ozan Formation is approximately 200 ft. (61 m) thick.

Figure 7: *Ostrea falcatta*

Figure 8: Tooth of a mosasaur, an extinct marine reptile

Figure 9: Vertebrae of a mosasaur

Tertiary and Quaternary (66 million years ago to present)

All units in the county that are younger than Cretaceous, the Tertiary and Quaternary units, consist of unconsolidated sand, silt, clay, and gravel.

Mineral Resources

Current Mining

Currently, crushed stone, shale, and sand and gravel are the main industrial minerals being extracted in Pike County. Several Paleozoic units, including the Jackfork, Stanley, and Atoka formations, are suitable for producing crushed stone. Crushed stone is used in aggregate for road construction. Other uses include Rip Rap and ballast. Sand and gravel are intermittently mined in Pike County for local use. They are used as filler or in aggregate, though crushed stone is preferable for aggregate. Shale is used as fill material and as top dressing for secondary roads.

In addition to sand and gravel, crushed stone, and shale, Pike County has the distinction of having the only active diamond mine in the United States: Crater of Diamonds State Park. It's also the only place in the world where visitors, for a modest fee, are allowed to prospect for diamonds and keep what they find (Fig. 10). The diamonds were emplaced together with a volcanic lamproite pipe around 100 million years ago (Cretaceous Period). The volcanic pipe is believed to have violently erupted from the earth's mantle to its surface, a little south of present day Murfreesboro. The pipe is weathered, where it is exposed, and the diamonds are found in the soil formed by this weathering, on top of the intrusion. Several smaller igneous intrusions of similar age and

composition have been identified northeast of Crater of Diamonds State Park (Plate 1). Some of these smaller igneous bodies were prospected for diamonds, but, concentrations were determined to be sub-economic.

Fig. 10: 2.4-carat yellow diamond found at Crater of Diamonds State Park, 2009

Historical Mining

Naturally-occurring asphalt, also known as bitumen, is a thick, tacky, dark-colored to black mix of hydrocarbons that is concentrated when volatile compounds evaporate from crude oil. Asphalt has been identified in 4 parts of Pike County, but the only place it has been mined commercially is south of Pike City, southeastern Pike County (Plates 1 and 2). That operation was active from 1903 to 1906 and produced 4,815 tons of asphalt, which was used to pave roads in the Little Rock area (Stroud et al., 1969). Deposits occur in sandy beds of the Trinity group, between the Dierks Limestone and Pike Gravel members (Fig. 2).

Gypsum is a mineral consisting of calcium sulfate dihydrate ($CaSO_4 \cdot 2H_2O$) that has several important applications in construction, including the production of wall-board, plaster, and portland cement (Sharpe and Cork, 2006). Pike County, despite boasting the largest known bed of gypsum in Arkansas—12 feet (3.6 meters) thick and located at Plaster Bluff—has no active gypsum mines. As of the writing of this report, all gypsum mines in Pike County have been reclaimed. In the 1950s and 1960s, a company called Highland, operated a small gypsum mine in southwest Pike County, producing gypsum for the manufacture of cement, most of which was used for local construction (Stroud et al., 1969).

Manganese was mined sporadically in Pike County during the early 20th century. It's

typically found in fractures and joints associated with faults and folds in the basal Upper Arkansas Novaculite. Factors that have limited manganese production in the county include high phosphorous content, inconsistent ore grade, and irregular ore body geometry (Stroud et al., 1969).

Cinnabar (Fig. 11), the principal ore of mercury, is found in an east-west-trending belt across central Pike County that extends into Howard County, to the west, and Clark County, to the east. It's found in the Pennsylvanian Jackfork Formation, on the western end of the belt, and in the Mississippian Stanley Formation, on the eastern end. Deposits are located in fractures associated with the axes of folds as well as in fault gouge, quartz veins, and disseminated crystals in sandstone intervals (Williams, 1959). Seven of Pike County's mercury mines yielded greater than 500 76-lb (34.5 kg) flasks of mercury. The Parker Hill mine (Plate 2, sec. 1, T7S, R26W) was the most prolific of the mines, with 2,400 flasks extracted (Stroud et al., 1969). For the most part, activity ended by 1946 due to the richest ore having been depleted. Many of the old mine sites were flooded when Narrows Dam was constructed on the Little Missouri River to create Lake Greeson, between 1948 and 1950 (U.S. Army Corp of Engineers).

Fig. 11: Cinnabar (mercury ore) on quartz, Pike County, Arkansas (approximately .5 in. or 1.25 cm long)

Tripoli is a product that's used in the abrasives industry for grinding, polishing and sharpening. In Pike County, it forms as a result of weathering of the upper Arkansas Novaculite near its contact with the Stanley Formation. Once crushed, it's composed of microscopic angular quartz grains and is typically white to cream-colored (Stroud et al.,

1969). Mining of tripoli in Pike County has been sporadic and most of it has taken place in the northwest.

Other resources have been noted in the county but have never been commercially developed. Barite, which is utilized by the oil and gas industry in drilling mud, occurs throughout the county in multiple settings. There are veins and lenses of quartz with high barite contents in the Stanley Formation. Weathered shale from the same formation, locally, contains high-grade barite boulders. The igneous rocks of Pike County are locally mineralized with small barite veinlets.

Clay is another resource that's abundant in Pike County but hasn't been produced commercially. Beds of high purity kaolin, 18 - 64 in. (.5 – 1.6 m) thick, are exposed between the towns of Delight and Murfreesboro interbedded in the Tokio Formation (Fig. 12) (Herold and Heyl, 1942). Other types of clay, suitable for a variety of commercial purposes, are found throughout Pike County associated with shale of the Stanley Formation.

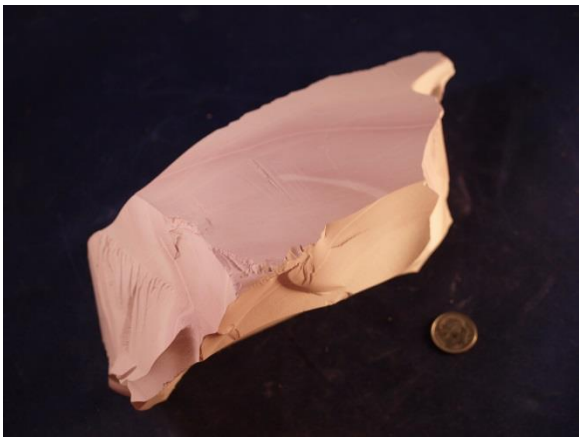


Fig. 12: Lavender kaolin clay of the Tokio Formation is prized for its beauty

Uranium was discovered in Pike County during the 1950s in the lower part of the Trinity Group (Howard et al., 1997). The discovery site is known as the Rankin Prospect. The uranium is found in carbonized wood fragments, interspersed in a silt interval, and is a product of alteration. Assays of the carbonized wood have yielded uranium concentrations as high as 24 percent. The specific uranium bearing minerals present have not been determined (Williams, N.F., 1959).

Water Resources

Surface water is the most important source of fresh water in Pike County. The majority comes from Lake Greeson, the only

large-scale water impoundment within the county. It's located on the Little Missouri River and regulated by Narrows Dam which also produces hydroelectricity. Other types of surface water resources include rivers, streams, springs, and ponds. The Caddo River satisfies the water demands of citizens in northeast Pike County.

Groundwater is an important Pike County fresh water resource, locally. Because the county's geology is complex and varies greatly by region, it's difficult to broadly characterize the ground water resources. Water well records indicate, in the Ouachita Mountains, the deformed and fractured bedrock provides groundwater in quantities suitable for domestic wells. Likewise, unconsolidated sand and gravel units in the West Gulf Coastal Plain are adequate for domestic needs. "Dry holes" are rare in Pike County though a few have been drilled, mostly in the West Gulf Coastal Plain. A typical well, in Pike County, is less than 250 ft. (76.2 m) deep and produces between 2 and 40 gallons (8 and 151 L) of water per minute. To access water well reports for a specific area in Pike County, or any other Arkansas county, visit: http://geology2.ar.gov/water/WaterWellDownload/TR/Pike

Fossil Fuel

The potential for fossil fuel extraction from the bedrock of Pike County, Arkansas is low. During the 1980s, Shell Exploration and Production Company drilled several wildcat wells, one of which was the Arivett well, Pike County. It was designed to test the hydrocarbon reservoir potential of two rock formations: the Mississippian/Devonian Arkansas Novaculite, and the Ordovician Big Fork Chert (subsurface only in Pike County). Results found three oil and gas shows in the entire Paleozoic rock section. They reported that the Arkansas Novaculite, in Pike County, is thermally over-mature and has low porosity—both unfavorable conditions for hydrocarbons. They suggested that the oil and gas which was generated in those rock formations in the past, migrated out of the area prior to deformation of the Ouachita

Mountains. Deformation of the Ouachitas would likely have created traps to capture the hydrocarbons, but, by the time the traps were created the hydrocarbons had escaped from the system (Godo et al., 2014).

Shell drilled another wildcat well in neighboring Clark County, Arkansas, to the east. The Rex Timber well was drilled to test the hydrocarbon potential of the Mississippian Jackfork and Pennsylvanian Stanley formations – both of which are found in Pike County. Those formations were also unfavorable as hydrocarbon reservoirs due to a lack of effective reservoir seals, and various porosity-inhibiting changes that the rocks have, apparently, undergone since their initial deposition (Godo et al., 2008).

Geohazards

Geohazards are risks that stem from geologic conditions and can threaten life, health, and property. Some occur rapidly, such as landslides, and their effects are local. Other types of geohazards, such as earthquakes, may affect an entire region. There are also more subtle and insidious geohazards. Expansive soils don't injure or kill people, but nevertheless over a period of time, can inflict property damage with significant cultural and financial impacts.

Flash floods occur when a large amount of rain falls quickly in an area with relatively narrow valleys causing stream-levels to rise to flood stage, typically for a brief period of time. Though their affect is local and short-lived, they can do a lot of damage quickly. The Ouachita Mountain section of northern Pike County, due to its elongate, narrowly-spaced ridges, is prone to flash flooding.

In central Pike County, many of the old cinnabar trenches and prospect holes have not been reclaimed. The tailings piles and pits, which contain small cinnabar specimens the miners disgarded, are attractive to rock and mineral collectors. However, they are also a falling hazard, particularly to the more accident-prone rock enthusiasts, and unsuspecting hikers.

Landslide potential is relatively low in Pike County, however, in areas that are underlain by shale or other poorly consolidated rock or sediment, the likelihood of landslide is higher. A good natural defense against landslides is vegetation. Stripping land of vegetation exacerbates slope instability and should be avoided when possible.

Pike County is not a region that most would consider earthquake prone, but some seismic events have been recorded in and around the area. In Pike County itself, only one seismic event has been reported. A magnitude 3 – 3.9 earthquake occurred, a little southwest of the town of Glenwood, in April, 1938.

In neighboring Clark County, to the east, there were 7 earthquakes in a two-day period in 1974. That series of seismic events is known as the Arkadelphia swarm, for its location south of the town of Arkadelphia. Magnitudes of those events ranged from 1.6 – 4.2. Those are not tremendous earthquakes but, people in eastern Pike County, 10 – 15 miles (16 – 24 km) west of the epicenters, may certainly have felt the shaking. There's no record of damage in Pike County from those earthquakes. The likelihood of a catastrophic earthquake in the Pike County area is very low.

Calcareous clays such as those found in the Brownstown and Ozan formations and parts of the Trinity Group, have the potential to shrink and swell. The foundations of buildings that are built on those marl units may be vulnerable to cracking and settling. It's advised that you consider the shrink/swell capacity of the soil on your property before constructing new structures. In some cases, it may be worth extra expense or effort to take steps, during construction, to mitigate the problems posed by expansive soils.

Finally, a significant geohazard threat to Pike County is the pollution of the water supply. Both groundwater and surface water are vulnerable to contaminants ranging from industrial sources, such as the Pegasus oil pipeline or agricultural runoff, to domestic contaminants, such as automotive and

household chemicals. Fresh water is a necessity for every person, plant, and animal in the county. Proper handling and disposal of waste and other potential contaminants and good agricultural and industrial practices are significant defenses against water pollution.

For additional information concerning the mineral commodities of Arkansas please refer to the agency's website: www.geology.ar.gov/minerals/mining_map.htm, and for more information about groundwater in Arkansas: www.geology.ar.gov/water/aquifer.ht

REFERENCES

Dane, C.H., 1929, Upper Cretaceous formations of southwestern Arkansas, Arkansas Geological Commission Bulletin 1, 215p.

Godo, T., Li, P., and Ratchford, M.E., 2008, Structural and Stratigraphic Analysis of the Shell Rex Timber No. 1-9 Well, Southern Ouachita Fold and Thrust Belt, Clark County, Arkansas, Arkansas Geological Survey, Information Circular 39A, 59 p.

Godo, T., Li, P., and Ratchford, M.E., 2011, Structural and Stratigraphic Analysis of the Shell Arivett 1-26 Well, Southern Ouachita Fold and Thrust Belt, Pike County, Arkansas, Arkansas Geological Survey, Information Circular 39B, 70 p.

Hanson, W.D., 1991, Titanium-bearing minerals of the Tokio Formation in southern Howard County, Arkansas, Memphis State University Masters of Science, Memphis, TN, 76 p.

Hanson, W.D., 1997, Heavy-mineral sands of the Tokio Formation in southwest Arkansas, Arkansas Geological Commission Information Circular 34, 40 p.

Hanson, W.D., 2006, Geologic Report of Sevier County, Arkansas Geological Commision County Geologic Report 133, 6p.

Harold, P.G., and Heyl, G.R., 1942, Kaolin Deposits of Southern Pike County, Arkansas: Arkansas Geological Survey, B-7, 38 p.

Hayes, C. W., 1903, Asphalt deposits of Pike County, Arkansas: U. S. Geological Survey Bulletin 213, p. 353-355

Howard, J.M., 2012, Mineral commodity database, Arkansas Geological Commission in-house data

Howard, J.M., Colton, G.W., and Prior, W.L., 1997, Mineral, fossil fuel, and water resources of Arkansas, Arkansas Geological Commission, Bulletin 24, 115 p.

McFarland, J.D., 2004, Stratigraphic Summary of Arkansas, Arkansas Geological Commission Information Circular 36, 39p.

Miser, H.D., and Purdue, A.H., 1929, Geology of the DeQueen and Caddo Valley quadrangles, Arkansas, U.S. Geological Survey Bulletin 808, 195 p.

Sharpe R., Cork G., 2006, Gypsum and anhydrite. In: Kogel J.E. et al., 7th ed., Industrial Minerals & Rocks, Society for Mining, Metallurgy, and Exploration, Inc, Littletown, CO, p. 519 - 540

Stroud, R.B., Arndt, R.H., Fulkerson, F.B., and Diamond, W.G., 1969, Mineral Resources and Industries of Arkansas, U.S. Bureau of Mines Bulletin 645, 418 p.

Williams, N.F., 1959, Mineral Resources of Arkansas, Arkansas Geological and Conservation Commission, Bulletin 6, p. 49

U.S. Census Data, 2010, http://quickfacts.census.gov/qfd/states.html

Glossary of terms

Aggregate – crushed stone.

Alluvium – unconsolidated material deposited by flowing water in streams and rivers.

Asphalt – a brown to black, viscous, liquid hydrocarbon.

Barite – a mineral composed of barium sulfide.

Bedrock – the solid rock beneath the soil and loose sediment.

Calcareous – Containing significant calcium carbonate.

Chalk – a soft earthy, typically-white limestone, comprised primarily of the skeletons of microscopic marine organisms.

Chert – A hard dense sedimentary rock composed primarily of microscopic quartz crystals.

Consolidated – having undergone the process by which loose earth materials become firm and competent.

Cross-bedded – Arrangement of strata, inclined at an angle to the main stratification, that forms in flowing water due to the current.

Crust – The outermost layer of the earth.

Diatreme – a breccia-filled volcanic pipe formed by a gaseous explosion.

Feldspathic – said of a rock or mineral aggregate containing feldspar.

Fossiliferous – Containing fossils.

Karst – A type of landscape that forms in limestone, dolostone or gypsum by dissolution of bedrock, and characterized by sinkholes, caves, and underground drainage.

Limestone – A sedimentary rock composed primarily of the mineral calcite.

Marl – Marine sediment composed of a mixture of clay and calcite.

Mass Wasting – A general term for the downslope movement of soil and rock material under the direct influence of gravity.

Massive – Said of a rock that lacks bedding: homogenous.

Novaculite – A sedimentary rock composed, almost entirely, of microcrystalline silica, notable for its density and hardness, and similar to chert.

Physiographic province – A region of which all parts are similar in geologic structure and climate and which has had a unified geomorphic history; its relief features differ significantly from those of adjacent regions.

Sandstone – A sedimentary rock largely composed of sand-sized grains.

Sediment – loose, solid, clastic material.

Sedimentary – A type of rock composed of sediment that has been lithified.

Shale – A type of sedimentary rock that is typically laminated, and composed primarily of clay particles.

Siliceous – said of a rock that contains abundant silica.

Strata – Layers of rock.

Terrace – A level surface above a river's floodplain that represents the dissected remnants of an abandoned floodplain, formed at an earlier time in the stream valley's evolution.

Thermally over-mature – said of a rock that has been exposed to high temperatures unfavorable for hydrocarbon generation.

Tuff – A general term for consolidated pyroclastic rock.

Unconsolidated – Sediment that is not cemented together.

West Gulf Coastal Plain – A physiographic province in southwestern Arkansas characterized by a south-sloping plain of gently-rolling hills.

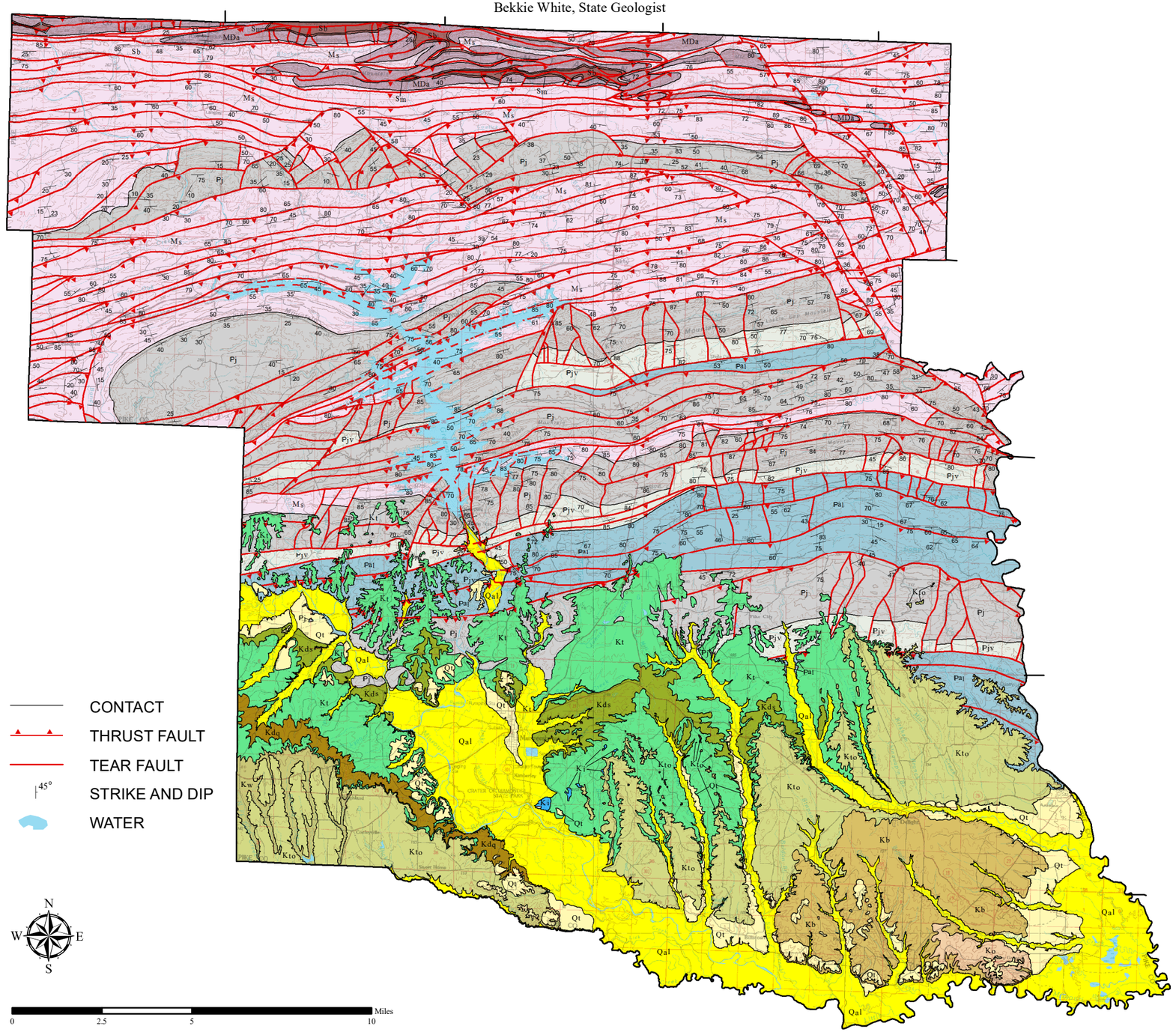
Wildcat well – An exploratory well drilled for oil or gas on a geologic feature that hasn't been previously proven productive.

Many of the above definitions are taken in part or paraphrased from "Dictionary of Geological Terms", third edition, American Geological Institute, 1984.

Geologic Map of Pike County, Arkansas

Geology by Boyd R. Haley, William D. Hanson, Charles G. Stone, Benjamin F. Clardy, and Jennifer R. Perkins
2016
Digital Compilation by Daniel Rains
Arkansas Geological Survey
Bekkie White, State Geologist

Digital County Geologic Map
Pike County, Arkansas
CGM-AR-62



CONTACT
THRUST FAULT
TEAR FAULT
45° STRIKE AND DIP
WATER

N W E S

0 2.5 5 10 Miles

0 2.5 5 10 Kilometers

Qal **Alluvium** *(Quaternary)* – Variably sized gravel overlain by unconsolidated sand, silt, and clay.

Qt **Terrace Deposit** *(Quaternary)* - Generally grade from basal gravel to silt and clay at the top.

Ko **Ozan Formation** *(Upper Cretaceous)* - Sandy marl, marl, and sandy glauconitic marl.

Kb **Brownstown Marl** *(Upper Cretaceous)* - Dark-gray calcareous clay, marl, sandy marl, fossiliferous limestone, gravel and sand.

Kto **Tokio Formation** *(Upper Cretaceous)* - Cross-bedded sand, gravel, gray clay, and volcanic ash.

Kw **Woodbine Formation** *(Upper Cretaceous)* - Water-laid, cross-bedded tuffs, tuffaceous sands, gravel, and red and gray clay.

Ki **Igneous Rock** *(Cretaceous)* – Lamproite: breccia, tuff, and magmatic variaties. Locally diamond -bearing. Greenish-black. Weathers reddish-brown.

Kt / Kdq / Kds **Trinity Group** *(Lower Cretaceous)* - Sand, gravel, clay, limestone, asphalt, and evaporite deposits. Members exposed include the Dierks Limestone Lentil and the De Queen Limestone Member.

Pal **Atoka lower** *(Pennsylvanian)* - A sequence of marine, mostly tan to gray silty sandstones and grayish -black shales.

Pjv **Johns Valley Formation** *(Pennsylvanian)* - Consists of black shale with numerous intervals of brownish s andstone.

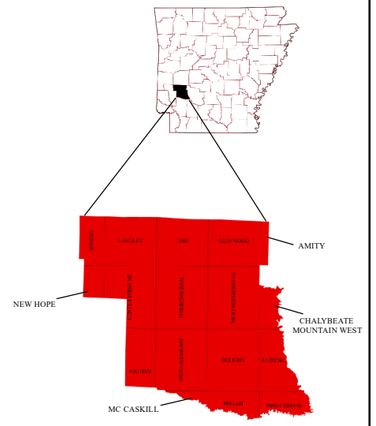
Pj **Jackfork Formation** *(Pennsylvanian)* - Thin to massive-bedded, fine to coarse-grained, brown, tan, or bluish-gray quartzitic sandstone with subordinate brown silty sandstones and gray-black shale.

Ms **Stanley Formation** *(Mississippian)* - Composed predominantly of grayish-black to brownish-gray shale, with lesser amounts of thin to massive-bedded, fine-grained, gray to brownish-gray feldspathic sandstone, dark green to black tuff and black chert.

MDa **Arkansas Novaculite** *(Mississippian-Devonian)* – White to dark-colored, locally calcareous novaculite interbedded with shale.

Sm **Missouri Mountain Formation** *(Silurian)* - Shale interbedded with conglomerate, novaculite, and sandstone.

Sb **Blaylock Formation** *(Silurian)* - Consists of tan to gray, fine- to medium-grained sandstone interbedded with black fissile shale.



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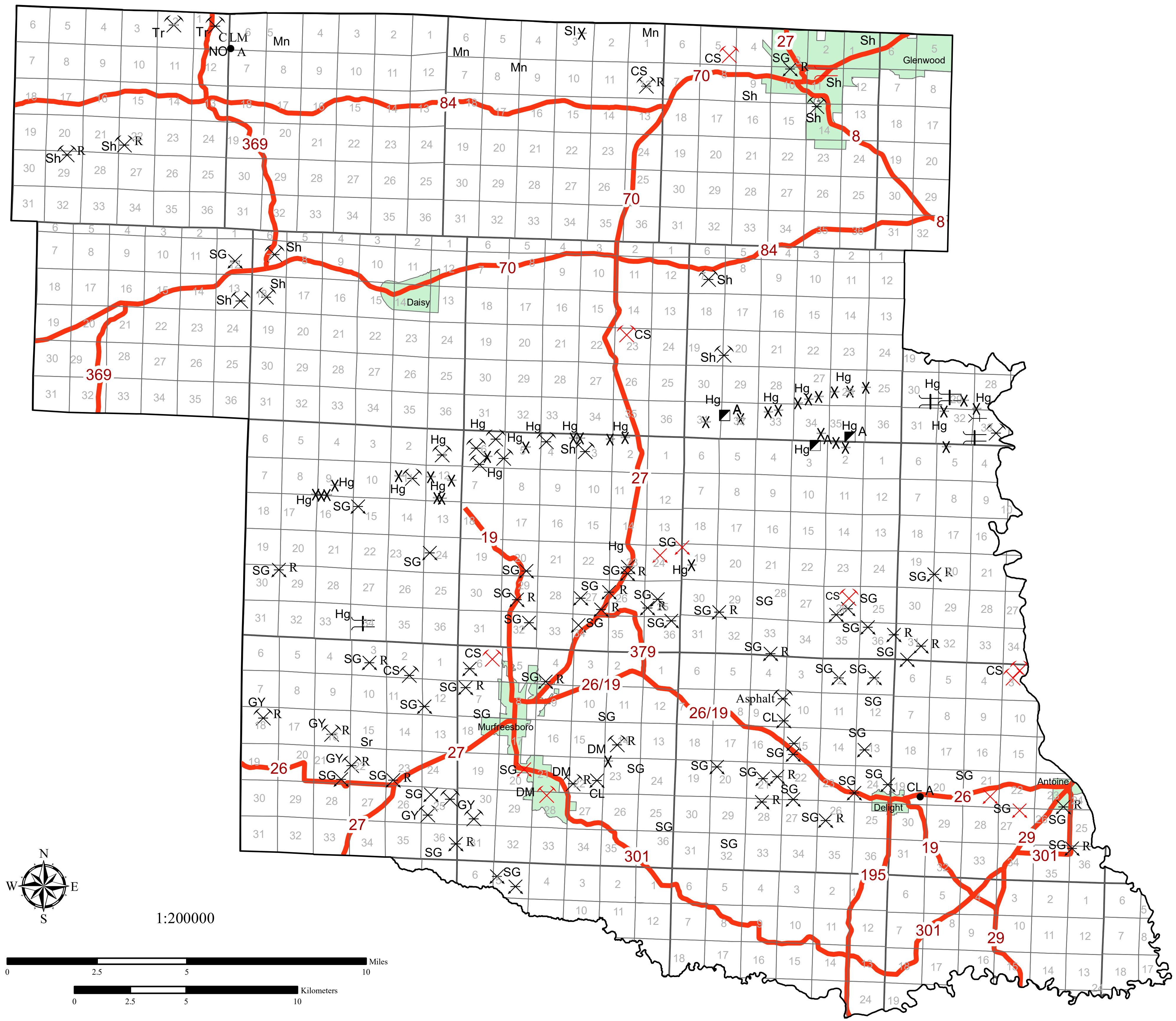
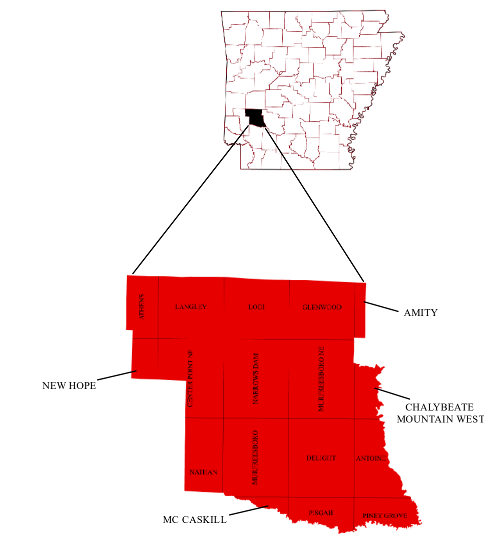
ARKANSAS GEOLOGICAL SURVEY

Pike County Mineral Commodities

Compiled by Daniel S. Rains
2017
Arkansas Geological Survey
Bekki White, State Geologist





Symbols

- Adit, Abandoned
- CLM, Abandoned
- Cut, Abandoned
- Deposit, Abandoned
- Mine/Quarry, Abandoned
- Mine/Quarry, Active
- Mine/Quarry, Reclaimed
- Pit, Abandoned
- Pit, Active
- Pit, Intermittent
- Pit, Reclaimed
- Prospect, Abandoned
- Shaft, Abandoned
- Highway

Commodites

Asphalt	Asphalt
Clay	CL
Crushed Stone	CS
Diamond	DM
Gypsum	GY
Maganese	Mn
Mercury	Hg
Novaculite	NO
Sand and Gravel	SG
Shale	Sh
Slate	Sl
Strontium	Sr

References

Howard, J.M., 2012, Mineral commodity database, Arkansas Geological Survey in-house data

Hanson, W. D. and Rains, D. S., 2016, Mineral Commodity database updates, Arkansas Geological Survey in-house data

LOCATIONID	COUNTY	COMMODITY	TOPO MAP	SECTION	TOWNSHIP	RANGE	LAT	LONG	MINE/ SITE NAME	AKA	OPERATOR	CONTACT	ADDRESS	PHONE #	ROCK UNIT	STATUS	DATASOURCE	DATE	NOTES
3983	Pike	asphalt	Delight	9	8S	24W	34.07255	-93.55962	Open cut mine						Trinity Gp	Ab	USBM Bull. 645	09/12/01	4815 tons of asphaltic sands produced
3984	Pike	asphalt	Delight	36	7S	24W	34.09131	-93.51926	Deposit						Trinity Gp	U	USBM Bull. 645	09/12/01	asphalt in 3-5 foot bed of sand
3985	Pike	asphalt	Murfreesboro	8*	8S	25W	34.07337	-93.68152	Occurrence						Trinity Gp	U	USBM Bull. 645	09/12/01	asphalt impregnates Pike Gravel member of Trinity; *lat/lon is estimated from description in USBM Bull. 645; USBM Bull. 645 states geology, but location puts it in the alluvium, unless there is a creek outcrop
3986	Pike	asphalt	Delight, Murfreesboro	1*	8S	25W	34.08371	-93.61953	Well						Trinity Gp	U	USBM Bull. 645	09/12/01	trace of asphalt in well; *lat/lon estimated from only section description in USBM Bull. 645
3987	Pike	barite	Lodi, Glenwood	1	5S	25W	34.34009	-93.62965	Prospect						Stanley	U	USBM Bull. 645	09/12/01	quartz and barite lense in outcrop in Stanley Formation adjacent to contact with Arkansas Novaculite
3988	Pike	barite	Narrows Dam	17	6S	25W	34.23366	-93.68330	Occurrence						Stanley	U	USBM Bull. 645	09/12/01	gray crystalline vein barite in residual clay developed on Stanley Formation, probably inundated by Lake Greeson during high water; small pit dug, no barite found
3989	Pike	barite	Murfreesboro	26*	8S	26W	34.03346	-93.74195	Occurrence						Trinity Gp	U	USBM Bull. 645	09/12/01	loose masses in soil weathered from barite-cemented Trinity; less than 2 feet thick; *lat/lon estimated from description in USBM Bull. 645
3990	Pike	clay	McCaskill, Murfreesboro	4*	9S	25W	33.99595	-93.68091	Stanley prospect						Tokio	U	USBM Bull. 645, AGC Bull. 7	09/12/01	27 inches of kaolin under 2-25 feet overburden; estimated 1900 tons; *lat/lon estimated from description in USBM Bull. 645
3991	Pike	clay	Delight	10*	8S	24W	34.06217	-93.55716	Kanatzer Hill prospect						Tokio	U	USBM Bull. 645, AGC Bull. 7, AGC 1976 Worksheet	09/12/01	18 inches of kaolin; estimated 2400 tons; *lat/lon estimated from description in USBM Bull. 645 and examination of AGC worksheet
3992	Pike	clay	Delight, Murfreesboro	24	8S	25W	34.03818	-93.61843	Adams West prospect						Tokio	U	USBM Bull. 645, AGC Bull. 7	09/12/01	50 inches of kaolin under 3-30+ feet overburden; estimated 20,000 tons; properties of fuller's earth
3993	Pike	clay	Delight	24	8S	25W	34.03818	-93.61450	Adams East prospect						Tokio	U	USBM Bull. 645, AGC Bull. 7	09/12/01	53 inches of kaolin under 1-30 feet overburden; estimated 25,000 tons; properties of fuller's earth
3994	Pike	clay	Delight	19	8S	24W	34.03818	-93.60979	Southern Kraft prospect						Tokio	U	USBM Bull. 645, AGC Bull. 7	09/12/01	58 inches of kaolin under 3-15 feet overburden; estimated 4000 tons
3995	Pike	clay	Delight	32*	8S	24W	34.00466	-93.59052	P. Buster domestic well						Tokio	U	USBM Bull. 645, AGC Bull. 7	09/12/01	120 inches of kaolin under 30 feet overburden; *lat/lon estimated from description in USBM Bull. 645
3996	Pike	clay	Delight	9	8S	24W	34.06118	-93.56712	Domestic well						Tokio	U	USBM Bull. 645, AGC Bull. 7	09/12/01	24 inches of kaolin encountered in shallow wells
3997	Pike	clay	Antoine	19	8S	23W	34.03268	-93.49258	Wolf Creek deposit						Tokio	Ab	USBM Bull. 645	09/12/01	red plastic clay, 2 feet thick with 4-6 feet of gravel and sand overburden; red bathroom tile
3998	Pike	clay	Nathan	21	8S	26W	34.04607	-93.78063	Deposit						Woodbine	U	USBM Bull. 645	09/12/01	3 feet bentonitic clay under 18 feet overburden
3999	Pike	clay	Murfreesboro	22	8S	25W	34.03930	-93.65478	Twin Knobs	Clay pit					Tokio	Ab	AGC Bull. 7, Topo map 1970, AGC 2007 field data	08/09/01	30-64 inches of kaolin under thin to 20 feet overburden; estimated 6000 tons
4000	Pike	diamond	Murfreesboro	21, 28	8S	25W	34.03281	-93.67429	Crater of Diamonds State Park	Prairie Creek pipe, Mauney mine, Ozark mine, Arkansas mine					Igneous	A*	USBM Bull. 645; Topo map, 1970	08/09/01	*former site of 2 diamond mining operations early in 20th century, now a fee-pay diamond collecting area as Crater of Diamonds State Park
4001	Pike	diamond	Murfreesboro	14	8S	25W	34.05357	-93.64011	American		Star Resources Corporation	J. David Edwards	2000 S. Dairy Ashford, Suite 510, Houston, TX 77077	281-870-9882	Igneous	R	ADEQ, AGS field data	06/26/01	property owner is International Paper Company, lease has expired to Star Resources
4002	Pike	diamond	Murfreesboro	14	8S	25W	34.05593	-93.64353	American Extension		Star Resources Corporation	J. David Edwards	2000 S. Dairy Ashford, Suite 510, Houston, TX 77077	281-870-9882	Igneous	Ab	AGS field data	06/26/09	exploration trench filled and reclaimed, lease dropped by Star Resources
4003	Pike	diamond	Murfreesboro	22	8S	25W	34.03766	-93.66151	TK 1	Riley	Star Resources Corporation	J. David Edwards	2000 S. Dairy Ashford, Suite 510, Houston, TX 77077	281-870-9882	Igneous	R	ADEQ, AGS field data	06/26/01	property owner is International Paper Company, lease has expired to Star Resources
4004	Pike	diamond	Murfreesboro	22	8S	25W	34.04025	-93.65717	TK 2	Twin Knobs 2	Star Resources Corporation	J. David Edwards	2000 S. Dairy Ashford, Suite 510, Houston, TX 77077	281-870-9882	Igneous	Ab	AGC 2007 field data	01/16/07	property owner is International Paper Company, lease has expired to Star Resources
4005	Pike	diamond	Murfreesboro	14	8S	25W	34.05629	-93.64370	Kimberlite prospect			International Paper Co.			Igneous	Ab	USBM Bull. 645, AGC 2007 field data	09/11/01	the Black Lick, American, and Kimberlite sites are all part of one dike-form body as determined by drilling; just separate exposures
4006	Pike	diamond	Murfreesboro	23	8S	25W	34.04628	-93.64435	Black Lick prospect		Star Resources Corporation	J. David Edwards	2000 S. Dairy Ashford, Suite 510, Houston, TX 77077	281-870-9882	Igneous	Ab	USBM Bull. 645, 1995 STATEMAP geologic map	09/11/01	extends under the hill to the northeast into sec. 14, lease dropped by Star Resources
4007	Pike	diamond	Murfreesboro	23	8S	25W	34.04088	-93.63299	Timberland occurrence			International Paper Co.			Igneous	U	AGC open-file data	06/19/06	less than 5 acres, discovered in the late 1980s, never tested
4008	Pike	gypsum	Nathan	16	8S	26W	34.05697	-93.77907	Highland Gypsum		Highland Gypsum	C. W. Harrison	PO Box 69, Linsay, OK 73052	405-756-8305	Trinity Gp	R	ADEQ, AGS open-file data	06/26/01	as of 2008
4009	Pike	gypsum	Nathan	21, 22	8S	26W	34.04440	-93.76927	Old Highland mine						Trinity Gp	R	USBM Bull. 645, Topo map 1970	08/09/01	noted by 4 mine symbols on topo map; multiple beds of massive gypsum
4010	Pike	gypsum	Nathan	18	8S	26W	34.06225	-93.81123	Mine						Trinity Gp	R	USBM Bull. 645, Topo map 1970, Google earth 2009	08/09/01	~40 acres, contoured grassy pasture and lakes, multiple beds of massive gypsum, adjacent house
4011	Pike	gypsum	Nathan	18	8S	26W	34.06466	-93.81522	Mine						Trinity Gp	R	USBM Bull. 645, Topo map 1970, Google earth 2009, AGS 2009 field	08/09/01	~ 35 acres, heavy cedar tree cover, large lake
4012	Pike	gypsum	Murfreesboro	25	8S	26W	34.02461	-93.73193	Mine						Trinity Gp	Ab	AGC 2007 field data	01/16/07	linear pond on mine site, weathered gypsum on tailings piles
4013	Pike	gypsum	Murfreesboro	25	8S	26W	34.02734	-93.73421	Prospect pit						Trinity Gp	Ab	AGC 2007 field data	01/16/07	pond now occupies site
4014	Pike	gypsum	Murfreesboro	25	8S	26W	34.02763	-93.73371	Prospect pit						Trinity Gp	Ab	AGC 2007 field data	01/16/07	pond now occupies site
4015	Pike	gypsum	Murfreesboro	25	8S	26W	34.02720	-93.73346	Prospect pit						Trinity Gp	Ab	AGC 2007 field data	01/16/07	irregular pond
4016	Pike	gypsum	Murfreesboro	25	8S	26W	34.02735	-93.73286	Prospect pit						Trinity Gp	Ab	AGC 2007 field data	01/16/07	tree covered
4017	Pike	gypsum	Murfreesboro	25	8S	26W	34.02895	-93.72717	Mine						Trinity Gp	Ab	AGC 2007 field data	01/16/07	2-3 acres irregularly shaped, pond in deepest part, pine tree cover
4018	Pike	gypsum	Murfreesboro	25	8S	26W	34.03101	-93.72118	Development on outcrop						Trinity Gp	Ab	USBM Bull. 645, AGC 2007 field data, Google earth 2007	09/11/01	large area of disturbance displayed on Google earth image centered on this lat./lon.
4019	Pike	gypsum	Murfreesboro	30*	8S	25W	34.02320	-93.70948	Plaster Bluff						Trinity Gp	Ab	USBM Bull. 645, 1995 STATEMAP geologic map	09/11/01	bed of gypsum 9 feet thick; *lat/lon given is for location per USBM Bull. 645 description, however, this area is mapped as alluvium, it is probable that the actual location is south of this site, just across the river on Plaster Bluff
4020	Pike	gypsum	Murfreesboro	31, 32	8S	25W	34.01290	-93.70860	Deposit						Trinity Gp	U	USBM Bull. 645	09/11/01	drilled area underlain by bedded gypsum extends also into sec. 36, T8S, R26W; over 1,000 acres, estimated reserves are 19 million tons under from 50 to 150' of overburden
4021	Pike	manganese	Langley	6*	5S	26W	34.34219	-93.81813	Still mine	Sausman adit					Arkansas Novaculite	Ab	USBM Bull. 645	09/12/01	100 tons high-grade hand sortable ore and 16,000 tons of 9.5 percent manganese ore (low grade); *lat/lon estimated from description in USBM Bull. 645
4022	Pike	manganese	Glenwood	1*	5S	25W	34.33687	-93.62149	Unnamed prospect on Reynolds Mountain						Arkansas Novaculite	Ab	USBM Bull. 645	09/12/01	reported that 1.5 carloads of hand-picked ore was shipped; *lat/lon estimated from description in USBM Bull. 645
4023	Pike	manganese	Glenwood	6*	5S	24W	34.33858	-93.61676	Featherstone mine						Arkansas Novaculite	Ab	USBM Bull. 645	09/12/01	psilomelane and limonite in fractures and nodular manganese in clay; 40 tons ore produced; *lat/lon estimated from description in USBM Bull. 645
4024	Pike	manganese	Lodi	5*	5S	25W	34.33335	-93.70485	Brushy Mountain mine						Arkansas Novaculite	Ab	USBM Bull. 645	09/12/01	Stalactitic psilomelane and cement or veins in breccia; 1000 tons of concentrates shipped; *lat/lon estimated from description in USBM Bull. 645
4025	Pike	manganese	Glenwood	18	5S	23W	34.30584	-93.51376	Frank Brunson prospect						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	sparse manganese oxide with iron oxide
4026	Pike	manganese	Glenwood	1*	5S	24W	34.32850	-93.51834	Watkins-White prospect						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	seams and veins of wad and psilomelane with limonite; *lat/lon estimated from description in USBM Bull. 645
4027	Pike	manganese	Glenwood	6*	5S	24W	34.33936	-93.61646	Reynolds Mountain prospect						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	veins, psilomelane, manganite, brown iron oxide; *lat/lon estimated from description in USBM Bull. 645
4028	Pike	manganese	Lodi, Glenwood	1	5S	25W	34.33824	-93.62353	Kettelberger prospect	Reynolds Mountain prospect					Arkansas Novaculite	U	USBM Bull. 645	09/12/01	pyrolusite and manganite; estimated 400-500 tons raw ore and 200-250 tons +40 percent concentrate; *lat/lon estimated from several quarter quarter section descriptions in USBM Bull. 645
4029	Pike	manganese	Lodi	9	5S	25W	34.32519	-93.68126	Fagan mine						Arkansas Novaculite	Ab	USBM Bull. 645	09/12/01	thin veins of sparse manganite with iron oxide
4030	Pike	manganese	Lodi	8	5S	25W	34.32927	-93.70028	Bear Mountain prospect						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	psilomelane and manganite lenses along bedding
4031	Pike	manganese	Lodi	5, 8	5S	25W	34.33082	-93.70719	Brushy Mountain prospect						Arkansas Novaculite	U	USBM Bull. 645	04/29/03	stalactitic psilomelane and cement or veins in breccia
4032	Pike	manganese	Lodi	11*	5S	26W	34.32262	-93.75000	W. T. White prospect						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	brown and red iron oxide in clay; *lat/lon estimated from description in USBM Bull. 645
4033	Pike	manganese	Lodi	11*	5S	26W	34.32262	-93.75000	N. F. White prospect						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	thin seams of psilomelane and manganite; *lat/lon estimated from description in USBM Bull. 645
4034	Pike	manganese	Langley	10	5S	26W	34.32743	-93.77775	Rattlesnake prospect						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	few limonite and psilomelane veins, max. width 9 inches
4035	Pike	manganese	Langley	6	5S	26W	34.34103	-93.82162	Prospect No. 3						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	psilomelane with minor wad and limonite in clay zone 7 feet wide
4036	Pike	manganese	Langley	5	5S	26W	34.34120	-93.81226	Prospect No. 2						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	small pockets and veins of wad mixed with clay
4037	Pike	manganese	Langley	6	5S	26W	34.34099	-93.82354	Risner Mountain prospects						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	very thin veins of psilomelane, limonite, and ferruginous manganese oxide
4038	Pike	manganese	Langley	3	5S	26W	34.34288	-93.76600	R. M. Cogburn prospect						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	boulders of novaculite display small veins and pockets of psilomelane
4039	Pike	manganese	Lodi	5, 6	5S	25W	34.33292	-93.70945	North American Manganese Co. mine						Arkansas Novaculite	Ab	USBM Bull. 645	09/12/01	pockets of psilomelane with inclusion of pyrolusite in novaculite; estimated 18,000 tons of 10 percent manganese ore
4040	Pike	manganese	Langley	8, 9	5S	26W	34.32824	-93.79421	Joseph Kehr prospect						Arkansas Novaculite	U	USBM Bull. 645	09/12/01	psilomelane in breccia zone and narrow veins in fractures associated with faults; estimated 1670 tons milling ore to yield 334 tons of 25-40 percent manganese concentrates
4041	Pike	mercury	Center Point NE	8, 16	7S	26W	34.15349	-93.78769	Prospect 4						Stanley	Ab	AGC IC 23	08/13/01	1 shaft and 2 partially filled trenches
4042	Pike	mercury	Center Point NE	16	7S	26W	34.15306	-93.78489	Prospect 5						Stanley	Ab	AGC IC 23	08/13/01	bulldozed area
4043	Pike	mercury	Center Point NE	9	7S	26W	34.15328	-93.78209	Hudgins prospect						Stanley	Ab	AGC IC 23	08/13/01	bulldozed area and several filled shafts
4044	Pike	mercury	Center Point NE	9	7S	26W	34.15718	-93.77831	Prospect 7						Stanley	Ab	AGC IC 23	08/13/01	bulldozed area
4045	Pike	mercury	Nathan	34	7S	26W	34.10143	-93.76395	Muddy Fork Mining Company						Jackfork	Ab	AGC IC 23	08/13/01	trenches and caved in stope
4046	Pike	mercury	Narrows Dam	11	7S	26W	34.16103	-93.74391	West Gap Ridge prospect		Mercury Mining Co.				Stanley	Ab	AGC IC 23	09/11/01	stope, trenches, pit with drift, and small open cut
4047	Pike	mercury	Narrows Dam	11	7S	26W	34.16073	-93.74074	Gap Ridge mine		Southwestern Quicksilver Corp.; Arkansas Quicksilver Mines, Inc.				Stanley	Ab	AGC IC 23, USBM Bull. 645, Topo map 1969	09/11/01	water-filled stope, several open cuts; cinnabar and antimony; nearly 900 flasks produced
4048	Pike	mercury	Narrows Dam	12	7S	26W	34.16087	-93.73158	Eastern part of Gap Ridge prospect		Arkansas Quicksilver Co., Arkansas Quicksilver Mines, Inc.				Stanley	Ab	AGC IC 23	09/11/01	several pits on both sides of ridge and 1 drift; cinnabar
4049	Pike	mercury	Narrows Dam	12	7S	26W	34.15956	-93.72147	South Mill Mt. Prospect		Cinnabar Mining Co., Arkansas Quicksilver Co., Inc.				Jackfork	Ab	AGC IC 23	09/11/01	most workings underwater, exposed workings consist of several trenches; cinnabar; no production records
4050	Pike	mercury	Narrows Dam	12	7S	26W	34.15218	-93.72633	Prospect 12						Jackfork	Ab	AGC IC 23	09/11/01	few small digs exposing fresh rock; cinnabar
4051	Pike	mercury	Narrows Dam	12	7S	26W	34.15244	-93.72855	Parker prospect	Big Six Mining Co.	McNaughton Mercury, Big Six Mining Co.				Jackfork	Ab	AGC IC 23	09/11/01	4 shafts, 1 covered; cinnabar; incomplete records give a production of 25 flasks
4052	Pike	mercury	Narrows Dam	1*	7S	26W	34.17031	-93.72620	Parker Hill mine		Southwestern Quicksilver Co., Mercury Producers, Inc., Arkansas Quicksilver Mines, Inc.				Stanley	Ab	USBM Bull. 645, AGC IC 23	09/12/01	shaft and winze with several levels, deepest shaft in district; *covered by Lake Greeson; 2400 flasks produced
4053	Pike	mercury	Narrows Dam	6	7S	25W	34.16735	-93.71133	Parnell Hill mine		Southwestern Quicksilver Co., Mercury Producers, Inc., Arkansas Quicksilver Mines, Inc.				Stanley	Ab	AGC IC 23, USBM Bull. 645, Topo map 1969	09/11/01	some workings under lake, several cuts and a caved shaft; cinnabar and stibnite; about 500 flasks produced
4054	Pike	mercury	Narrows Dam	6	7S	25W	34.16658	-93.70803	Yenglin mine						Stanley	Ab	AGC IC 23	09/11/01	2 trenches with reports of 6 additional cuts and a shaft; cinnabar and metacinnabar; reported production of 10 flasks of mercury
4055	Pike	mercury	Narrows Dam	6	7S	25W	34.16928	-93.70535	Hopkins prospect						Stanley	Ab	AGC IC 23	09/11/01	trench; cinnabar; 45 tons of good ore produced
4056	Pike	mercury	Narrows Dam	6	7S	25W	34.17125	-93.70508	United States Mercury Co. mine	Hintze prospect, U. S. Mine	United States Mercury Co.				Jackfork	Ab	AGC IC 23, USBM Bull. 645, Topo map 1969	09/11/01	shaft with drifts; cinnabar; 161 flasks production, USBM lists 900 flasks
4057	Pike	mercury	Narrows Dam	6	7S	25W	34.17278	-93.70683	Hale mine		Hales Mining and Development Co.				Jackfork	Ab	AGC IC 23, Topo map 1969	09/11/01	shaft with drifts and stope; cinnabar; 133 flasks of mercury produced
4058	Pike	mercury	Narrows Dam	6	7S	25W	34.16881	-93.69869	Isabell West mine						Stanley	Ab	AGC IC 23	09/11/01	several small trenches and digs; cinnabar and metacinnabar
4059	Pike	mercury	Narrows Dam	6	7S	25W	34.16906	-93.69628	Isabell mine		Craig Mining Co.				Stanley	Ab	AGC IC 23, Topo map 1969	09/11/01	4 shafts, some water-filled; one with a drift; cinnabar; 36.5 flasks of mercury produced
4060	Pike	mercury	Narrows Dam	6	7S	25W	34.17692	-93.70027	Yantis mine						Jackfork	Ab	AGC IC 23, Topo map 1969	09/11/01	filled shaft and small pit; cinnabar; no production records
4061	Pike	mercury	Narrows Dam	5	7S	25W	34.17318	-93.68541	Lowery and James prospect						Stanley	Ab	AGC IC 23	09/11/01	pit, several trenches and a shaft; cinnabar
4062	Pike	mercury	Narrows Dam	4	7S	25W	34.17598	-93.67554	Old Argentine mine						Stanley	Ab	AGC IC 23	09/11/01	2 shafts, one filled and several small trenches and digs; cinnabar and native mercury
4063	Pike	mercury	Narrows Dam	4	7S	25W	34.17696	-93.66231	Prospect 24						Stanley	Ab	AGC IC 23	09/11/01	2 trenches; cinnabar
4064	Pike	mercury	Narrows Dam	3	7S	25W	34.17702	-93.65895	Funderburk prospect						Stanley	Ab	AGC IC 23	09/11/01	2 trenches and 3 pits; cinnabar; 4 flasks of mercury produced; visited in 2009, easternmost trench filled with concrete refuse, minor native mercury samples collected at westernmost trench; type locality for artsmithite
4065	Pike	mercury	Narrows Dam	3	7S	25W	34.17654	-93.64451	Cox prospect						Stanley	Ab	AGC IC 23	09/11/01	trench and several small prospect pits; no cinnabar noted
4066	Pike	mercury	Narrows Dam	2	7S	25W	34.17719	-93.63709	Prospect 27						Stanley	Ab	AGC IC 23	09/11/01	few small prospect pits and trenches; traces of cinnabar
4067	Pike	mercury	Murfreesboro NE	19	7S	24W	34.12594	-93.60437	Pike City prospect						Jackfork	Ab	AGC IC 23, Topo map 1970	09/11/01	bulldozed area extending 1200 feet east-west and 50 feet north-south with numerous hand dug pits showing high-grade ore; 2 map symbols on each end of this area on the topo map; cinnabar; lat and lon is equidistance between the 2 map symbols
4068	Pike	mercury	Murfreesboro NE	31	6S	24W	34.18387	-93.59790	Prospect 29		Union Mining Co., Central Mercury Mining and Development Co.				Stanley	Ab	AGC IC 23	09/11/01	water-filled shaft with drifts and laterals and two trenches; cinnabar; 3 flasks of mercury reported produced
4069	Pike	mercury	Murfreesboro NE	32	6S	24W	34.18636	-93.58877	Mac-Holmes mine	Capponetto mine, Valley mine	Holmes and McElwaine, Valley Mining Co.				Stanley	Ab	AGC IC 23, USBM Bull. 645	09/11/01	2 water-filled caved shafts with more recent bulldozer work and small pits due north of site; cinnabar; 330 flasks of mercury produced; includes a shaft immediately to the west reported to be the Interstate Mill prospect; USBM Bull. 645 lists about 500 flasks produced
4070	Pike	mercury	Murfreesboro NE	32	6S	24W	34.18679	-93.58218	Research Mining Co. prospect						Stanley	Ab	AGC IC 23	09/11/01	2 shafts, one filled; cinnabar; no production records
4071	Pike	mercury	Murfreesboro NE	32	6S	24W	34.18649	-93.58879	Section 32 mine		Superior Mining Co., Mercury Mining Co., Mercury Producers, Inc.				Stanley	Ab	USBM Bull. 645	09/12/01	shaft with drifts and crosscuts; cinnabar; 600 flasks produced
4072	Pike	mercury	Murfreesboro NE	20	7S	24W	34.12688	-93.58809	Occurrence 32						Jackfork	Ab	AGC IC 23	09/11/01	cinnabar on roadside
4073	Pike	mercury	Murfreesboro NE	33	6S	24W	34.18791	-93.56765	Prospect 33						Stanley	Ab	AGC IC 23	09/11/01	occurrence of cinnabar
4074	Pike	mercury	Murfreesboro NE	33	6S	24W	34.18881	-93.56267	Prospect 34						Stanley	Ab	AGC IC 23	09/11/01	3 trenches and a pit; cinnabar
4075	Pike	mercury	Murfreesboro NE	27	6S	24W	34.19173	-93.55302	Prospect 35						Stanley	Ab	AGC IC 23	09/11/01	trench along with a few small pits and digs; cinnabar
4076	Pike	mercury	Murfreesboro NE	27	6S	24W	34.19332	-93.54793	Prospect 36						Stanley	Ab	AGC IC 23	09/11/01	shaft; no cinnabar noted
4077	Pike	mercury	Murfreesboro NE	3	7S	24W	34.17448	-93.54446	Wall Rock shaft		Mid-Continent Quicksilver Corp.				Jackfork	Ab	AGC IC 23	09/11/01	water-filled shaft and pit; cinnabar; shaft produced 275 tons of 5-8 pound ore and pit produced 50 tons of 15-18 pound ore
4078	Pike	mercury	Murfreesboro NE	3	7S	24W	34.17559	-93.54265	Prospect 38						Jackfork	Ab	AGC IC 23	09/11/01	bulldozed area 50 by 200 feet; cinnabar
4079	Pike	mercury	Murfreesboro NE	27	6S	24W	34.19439	-93.54295	Prospect 39						Stanley	Ab	AGC IC 23	09/11/01	2 trenches and 2 water-filled shafts opposite sides of drainage; cinnabar
4080	Pike	mercury	Murfreesboro NE	2	7S	24W	34.17568	-93.53434	Prospect 40						Jackfork	Ab	AGC IC 23	09/11/01	water-filled shaft and bulldozed area; cinnabar
4081	Pike	mercury	Murfreesboro NE	26	6S	24W	34.19615	-93.53528	Prospect 41						Stanley	Ab	AGC IC 23	09/11/01	water-filled shaft, trench and bulldozed area; cinnabar
4082	Pike	mercury	Murfreesboro NE	2	7S	24W	34.17619	-93.53025	Prospect 42						Jackfork	Ab	AGC IC 23	09/11/01	several prospect trenches over the strike of the rock for 0.25 miles; cinnabar; 50 tons of 15-18 pound ore recovered
4083	Pike	mercury	Murfreesboro NE	35	6S	24W	34.17791	-93.52760	Wall Mountain shaft mine		Mid-Continent Quicksilver Co., Wright and Guess				Jackfork	Ab	AGC IC 23	09/11/01	caved shaft and pit, with nearby numerous pits, trenches and shafts; cinnabar; shaft produced 400 tons of 10-12 pound ore and later production of 75-80 flasks of mercury
4084	Pike	mercury	Murfreesboro NE	26	6S	24W	34.19653	-93.52775	Palmer prospect						Stanley	Ab	AGC IC 23	09/11/01	group of trenches and shafts; cinnabar
4085	Pike	mercury	Murfreesboro NE	25	6S	24W	34.19817	-93.51996	Prospect 45						Stanley	Ab	AGC IC 23	09/11/01	few trenches and pits; cinnabar
4086	Pike	mercury	Chalybeate Mountain We	32	6S	23W	34.18859	-93.48186	Prospect 48		Arkansas Quicksilver Co., Mid-Continent Quicksilver Corp., Ozark Quicksilver Corp.				Jackfork	Ab	AGC IC 23	09/12/01	2 open pits, water-filled shaft, several trenches extending east-west on north side of ridge, lat.-lon. is for center of workings; cinnabar; 13 tons of 20 pound ore and 40 tons of 7-9 pound ore produced
4087	Pike	mercury	Chalybeate Mountain We	5	7S	23W	34.17427	-93.48084	Clark prospect						Jackfork	Ab	AGC IC 23	09/12/01	3 filled pits; cinnabar
4088	Pike	mercury	Chalybeate Mountain We	29	6S	23W	34.19350	-93.48128	Bemis Hill 2, cut 2		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc.				Jackfork	Ab	AGC IC 23	09/12/01	open cut with water and adjacent bulldozed area; cinnabar; 315 tons of 15-18 pound ore
4089	Pike	mercury	Chalybeate Mountain We	29	6S	23W	34.19507	-93.48040	Bemis Hill 2, cut 6		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23	09/12/01	trench; cinnabar; 55 tons of 10-12 pound ore
4090	Pike	mercury	Chalybeate Mountain We	29	6S	23W	34.19430	-93.47904	Bemis Hill 2, cuts 3 and 5		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23	09/12/01	pit and open cut; cinnabar; 96 tons 14-16 pound ore
4091	Pike	mercury	Chalybeate Mountain We	29	6S	23W	34.19257	-93.47952	Bemis Hill 2, cut 4		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23	09/12/01	water-filled shaft; cinnabar; 20 tons 12-15 pound ore
4092	Pike	mercury	Chalybeate Mountain We	29	6S	23W	34.19310	-93.47228	Bemis Hill 2, recent cut prospect		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23	09/12/01	trench and recent bulldozer clearing; cinnabar
4093	Pike	mercury	Chalybeate Mountain We	33	6S	23W	34.18585	-93.46741	Bemis Hill 2, cut 1		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23	09/12/01	1 major and several smaller trenches; cinnabar and native mercury; no production figures available
4094	Pike	mercury	Chalybeate Mountain We	28	6S	23W	34.18980	-93.46615	Bemis Hill North prospect		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23	09/12/01	water-filled cut and water-filled shaft; cinnabar
4095	Pike	mercury	Chalybeate Mountain We	28	6S	23W	34.19004	-93.46459	Bemis Hill	Black Tunnel, Ozark, Big Red	Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23, USBM Bull. 645	09/12/01	adit and adit with trench across stream; cinnabar; over 1600 flasks produced
4096	Pike	mercury	Chalybeate Mountain We	28	6S	23W	34.19016	-93.46323	Bemis Hill Tunnel No. 1		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23	09/12/01	caved tunnel with stope to surface up hill; on other side of hill are pits and trenches; cinnabar
4097	Pike	mercury	Chalybeate Mountain We	33	6S	23W	34.18384	-93.46231	Bemis Hill 3		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23	09/12/01	large cut and caved adit with many trenches and pits; cinnabar; incomplete reports indicate 75 tons of 12-14 pound ore and 140 tons of 10-12 pound ore
4098	Pike	mercury	Chalybeate Mountain We	33	6S	23W	34.18875	-93.46114	Bemis Hill Tunnel No. 2		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23	09/12/01	tunnel completely through hill with stope to surface and many pits and trenches; cinnabar
4099	Pike	mercury	Chalybeate Mountain We	33	6S	23W	34.18658	-93.45992	Bemis Hill Glory Hole		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23	09/12/01	open pit with adit reaching Tunnel No. 2 and several other open cuts and small prospect digs; cinnabar; 145 flasks of mercury produced from about 2500 tons of ore
4100	Pike	mercury	Chalybeate Mountain We	33	6S	23W	34.18609	-93.45822	Bemis Hill Stop No. 2		Arkansas Quicksilver Co., Mid-Continent Quicksilver Co., Mercury Mines, Inc				Jackfork	Ab	AGC IC 23	09/12/01	pit with dump; cinnabar
4101	Pike	novaculite	Langley	6	5S	26W	34.34748	-93.83124	Hall #1, Hall #2	OQC #231	Hall's Arkansas Oilstones, Inc.	Richard Hall	1800 Amity Road, Pearcy, AR 71964	501-525-8595	Arkansas Novaculite	Ab	ADEQ, USDA Forest Service, Google earth 2010	06/26/01	mining claim converted to contract 08/93, 10 acres; MSHA notes as "closed in 1995", extension date is now past by 6 months 07/08, appears unreclaimed on Google earth imagery
4102	Pike	sand & gravel	Antoine	27	8S	23W	34.02718	-93.44420	Wolf Creek	ADEQ permit ARROOC-15	Wolf Creek Sand & Gravel	Larvis Harris	255 Highway 29S, PO Box 126, Antoine, AR	870-379-2195	Alluvium/Terrace	A	ADEQ, AHTD, MSHA 2002, AGS 2009 field data	06/26/01	the active pit is in section 27 as seen on Google earth 2009, entrance and office is in section 26, 147 acres in this property, permit for 10 acres mining
4103	Pike	sand & gravel	Murfreesboro	20	8S	25W	34.04280	-93.68521	Prairie Creek		Prairie Creek Gravel Company	Al Terrell	Rt 1 Box 368A, Murfreesboro, AR 71958	870-285-2703	Alluvium	A	ADEQ, 1995 STATEMAP geologic map	06/26/01	deposit as of 2007, active permit through ADEQ
4104	Pike	sand & gravel	Nathan	3	8S	26W	34.08536	-93.76069	Muddy Fork Creek		John & Emogene Cothren	John Cothren	Rt 4 Box 117C, Nashville, AR 71852	870-285-3689	Alluvium	R	ADEQ, AGS 2009 field data, Google earth 2009	06/27/01	
4105	Pike	sand & gravel	Antoine	36	8S	23W	34.01184	-93.41867	Gravel pit						Terrace	R	1976 AGC Worksheet, Topo map 1975, Google earth 2009	07/20/01	pasture
4106	Pike	sand & gravel	Antoine	23	8S	23W	34.02864	-93.42282	Gravel pit						Terrace	R	1976 AGC Worksheet, Topo map 1975, Google earth 2009	07/20/01	small pond
4107	Pike	sand & gravel	Antoine	31	7S	23W	34.09343	-93.49234	Gravel pit						Tokio	R	1976 AGC Worksheet, Topo map 1975, Google earth 2009, AGS 200	07/20/01	1/8 acre grass covered small open cut
4108	Pike	sand & gravel	Antoine	21, 22	8S	23W	34.03278	-93.45849	Gifford-Hill Delight pit	Hanson Industries pit					Terrace/Alluvium	A*	2001 AGC Field Notes	11/14/01	Hanson purchased from Gifford-Hill and then closed, *permit active but plant has been removed and site appears abandoned, no reclamation
4109	Pike	sand & gravel	Antoine	20	7S	23W	34.12146	-93.48611	Gravel pit						Tokio	R	1976 AGC Worksheet, Topo map 1975, Google earth 2009	07/20/01	Timberland
4110	Pike	sand & gravel	Antoine	20	7S	23W	34.12243	-93.48608	Gravel pit						Tokio	R	1976 AGC Worksheet, Topo map 1975, Google earth 2009	07/20/01	Timberland
4111	Pike	sand & gravel	Antoine	6	8S	23W	34.08794	-93.49918	sec 6 gravel pit						Tokio/Terrace?	Ab	AGS 2009 field data	02/26/09	~5 acres, recently Ab, 20' gravel 2 beds, 4 pictures in County file
4112	Pike	sand & gravel	Nathan	21	8S	26W	34.03848	-93.77046	Gravel pit						Tokio	Ab	1995 STATEMAP geologic map, Topo map 1970, AGS 2009 field data	08/09/01	1/8th acre, shallow cut, trash dumped on site
4113	Pike	sand & gravel	Nathan	21	8S	26W	34.03813	-93.77409	Gravel pit						Tokio	Ab	1995 STATEMAP geologic map, Google earth 2009	12/19/01	
4114	Pike	sand & gravel	Nathan	30	7S	26W	34.12263	-93.80511	Gravel pit						Trinity Gp	R	1995 STATEMAP geologic map, Topo map 1970, Google earth 2009	08/09/01	pasture
4115	Pike	sand & gravel	McCaskill	5	9S	25W	33.99518	-93.68903	Gravel pit						Tokio	Ab	AGC 2005 field data, 1976 AGC geologic worksheet	12/16/05	filling with junk
4116	Pike	sand & gravel	McCaskill	5	9S	25W	33.99925	-93.69793	Gravel pit						Tokio	Ab	AGC 2005 field data, 1976 AGC geologic worksheet	12/16/05	
4117	Pike	sand & gravel	Murfreesboro	34	7S	25W	34.10127	-93.65911	Gravel pit						Trinity Gp	I	1995 STATEMAP geologic map, Topo map 1970, AGS 2009 field data	08/09/01	~10 acres, probable paper co. property from style of gate, 2 pictures in County file
4118	Pike	sand & gravel	Murfreesboro	32	7S	25W	34.10043	-93.68269	Gravel pit						Trinity Gp	A	AGS 2009 field data, Google earth 2009	02/26/09	~10 acres, equipment on site, 2 pictures in County file, gate was open day of visit, paper company type gate
4119	Pike	sand & gravel	Murfreesboro	29	7S	25W	34.11461	-93.68968	Gravel pit						Trinity Gp	Ab	AGS 2009 field data	02/26/09	1/2 acre
4120	Pike	sand & gravel	Murfreesboro	27	7S	25W	34.10666	-93.65024	Gravel pit		Beavart Farm				Trinity Gp only?	A	AGS 2009 field data	02/19/09	1 acre, two gravel units, upper is orangy and coarser and lower unit is sandy gravel and gray color, 2 digital images in county file
4121	Pike	sand & gravel	Murfreesboro	27	7S	25W	34.10757	-93.64828	Gravel pit		Beavart Farm				Trinity Gp	R	1995 STATEMAP geologic map, Topo map 1970, Google earth 2009	08/09/01	pasture and trees with junked farm equipment on site
4122	Pike	sand & gravel	Murfreesboro	27	7S	25W	34.11285	-93.65543	Gravel pit		Beavart Farm				Trinity Gp	Ab	1995 STATEMAP geologic map, Topo map 1970, Google earth 2009	08/09/01	minor vegetation
4123	Pike	sand & gravel	Murfreesboro	27	7S	25W	34.11211	-93.65819	Gravel pit						Trinity Gp	Ab	1995 STATEMAP geologic map, Topo map 1970, Google earth 2009	12/19/01	did not walk in to visit, access road gated a mile south of site
4124	Pike	sand & gravel	Murfreesboro	26	7S	25W	34.11461	-93.64433	Gravel pit						Trinity Gp	R	1995 STATEMAP geologic map, Topo map 1970, Google earth 2009	08/09/01	tree farm
4125	Pike	sand & gravel	Murfreesboro	25	8S	26W	34.03221	-93.73033	Gravel pit			Cecil Spanhank	20 Primrose Lane, Murfreesboro, AR		Tokio	I	AGC 2007 field data	01/16/07	used only on personal property
4126	Pike	sand & gravel	Murfreesboro	23	7S	25W	34.12217	-93.63554	Gravel pit						Trinity Gp	R	1995 STATEMAP geologic map, Google earth 2009	12/19/01	tree covered
4127	Pike	sand & gravel	Murfreesboro	23	7S	25W	34.12470	-93.63467	Gravel pit						Trinity Gp	R	1995 STATEMAP geologic map, Google earth 2009	12/19/01	tree covered
4128	Pike	sand & gravel	Murfreesboro	23	7S	25W	34.12486	-93.63535	Gravel pit						Trinity Gp	Ab	1995 STATEMAP geologic map, AGS 2009 field data	12/19/01	
4129	Pike	sand & gravel	Murfreesboro	23	7S	25W	34.12465	-93.63604	Gravel pit						Trinity Gp	Ab	USBM Bull. 645, Topo map 1970, Google earth 2009, AGS 2009 field	08/09/01	tree covered
4130	Pike	sand & gravel	Murfreesboro	4	8S	25W	34.07855	-93.67093	Gravel pit						Trinity Gp	R	1995 STATEMAP geologic map, Google earth 2009	12/19/01	pasture
4131	Pike	sand & gravel	Murfreesboro	4	8S	25W	34.07907	-93.67787	Gravel pit						Alluvium	R	Topo map 1970, 1995 STATEMAP geologic map, Google earth 2009	06/19/06	small pond
4132	Pike	sand & gravel	Murfreesboro	32	7S	25W	34.10193	-93.68317	Gravel pit						Trinity Gp	Ab	1995 STATEMAP geologic map, AGS 2009 field data	12/19/01	
4133	Pike	sand & gravel	Murfreesboro	29	7S	25W	34.11134	-93.68920	Gravel pit						Trinity Gp	R	1995 STATEMAP geologic map, Google earth 2009	12/19/01	pasture
4134	Pike	sand & gravel	Murfreesboro	29	7S	25W	34.11508	-93.68891	Gravel pit						Trinity Gp	R	1995 STATEMAP geologic map, Google earth 2009	12/19/01	tree farm
4135	Pike	sand & gravel	Murfreesboro	29	7S	25W	34.11585	-93.68857	Gravel pit						Trinity Gp	Ab	1995 STATEMAP geologic map, Google earth 2009	12/19/01	edge of highway
4136	Pike	sand & gravel	Murfreesboro NE	19	7S	24W	34.13293	-93.60883	Gravel pit						Trinity Gp	A	2003 STATEMAP Project	10/14/03	Pike gravel in basal Trinity
4137	Pike	sand & gravel	Murfreesboro NE	24	7S	25W	34.12971	-93.61967	Gravel pit						Trinity Gp	A	2003 STATEMAP Project	10/14/03	Pike gravel in basal Trinity
4138	Pike	sand & gravel	Center Point NE	15	7S	26W	34.14860	-93.76680	Gravel pit						Trinity Gp	Ab	1976 AGC Worksheet, Topo map 1970, AGS 2009 field data	08/13/01	2 acres, minimal grass and pines
4139	Pike	sand & gravel	Glenwood	10	5S	24W	34.32672	-93.55759	Gravel pit						Alluvium	R	Topo map 1979, Google earth 2009	09/06/01	wooded area
4140	Pike	sand & gravel	Narrows Dam	24	7S	26W	34.12994	-93.73185	Gravel pit						Alluvium	Ab	Topo map 1969, AGS 2009 field data	09/11/01	1/2 acre, 6' excavation
4141	Pike	sand & gravel	Murfreesboro	25	8S	26W	34.03174	-93.73155	Gravel pit						Alluvium	Ab	AGS 2009 field data	02/26/09	1 acre, 6' excavation
4142	Pike	sand & gravel	Delight	24	8S	24W	34.03737	-93.50817	Gravel pit						Tokio	Ab	Topo map 1970, Google earth 2009, AGS 2009 field data	09/12/01	3/4 acre, 20' highwall, natural pine revegetation
4143	Pike	sand & gravel	Delight	21	8S	24W	34.04029	-93.56207	Gravel pit						Tokio	R	Topo map 1970, Google earth 2009	09/12/01	tree farm
4144	Pike	sand & gravel	Delight	9, 10	8S	24W	34.06294	-93.55899	Gravel pit						Tokio	Ab	Topo map 1970, Google earth 2009, AGS 2009 field data	09/12/01	1/8 acre, 6' highwall, natural pine revegetation
4145	Pike	sand & gravel	Delight	29	7S	24W	34.10671	-93.59070	Gravel pit						Tokio	R	Topo map 1970, Google earth 2009	09/12/01	clearcut tree farm
4146	Pike	sand & gravel	Delight	25	7S	25W	34.10647	-93.62427	Gravel pit						Trinity Gp	R	Topo map 1970, Google earth 2009	09/12/01	pasture
4147	Pike	sand & gravel	Delight	25	7S	25W	34.10761	-93.62469	Gravel pit						Trinity Gp	R	AGS 2009 field data	02/26/09	pasture
4148	Pike	sand & gravel	Delight	25	7S	25W	34.10882	-93.62480	Gravel pit						Trinity Gp	R	AGS 2009 field data	02/26/09	pasture
4149	Pike	sand & gravel	Delight	25	7S	25W	34.11178	-93.62065	Gravel pit						Trinity Gp	Ab	Google earth 2009, AGS 2009 field data	02/26/09	1/2 acre
4150	Pike	sand & gravel	Delight	35	8S	24W	34.01588	-93.54034	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	bare ground
4151	Pike	sand & gravel	Delight	26	8S	24W	34.01806	-93.54138	Gravel pit						Tokio	R	STATEMAP geologic map 2000, Google earth 2009	12/06/01	building now on site
4152	Pike	sand & gravel	Delight	26	8S	24W	34.02268	-93.53839	Gravel pit						Tokio	R	STATEMAP geologic map 2000, Google earth 2009	12/06/01	pasture
4153	Pike	sand & gravel	Delight	27	8S	24W	34.03117	-93.55433	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	natural vegetation
4154	Pike	sand & gravel	Delight	27	8S	24W	34.01904	-93.54382	Gravel pit						Tokio	R	Topo map 1970, Google earth 2009	02/04/09	pond
4155	Pike	sand & gravel	Delight	28	8S	24W	34.03004	-93.56951	Gravel pit						Tokio	R	STATEMAP geologic map 2000, Google earth 2009	12/06/01	tree farm
4156	Pike	sand & gravel	Delight	20	8S	24W	34.04416	-93.59140	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	mature pine growth
4157	Pike	sand & gravel	Delight	21	8S	24W	34.03954	-93.56906	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	natural pine regrowth
4158	Pike	sand & gravel	Delight	24	8S	24W	34.03376	-93.52338	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	natural pine regrowth
4159	Pike	sand & gravel	Delight	24	8S	24W	34.03394	-93.52447	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	natural pine regrowth
4160	Pike	sand & gravel	Delight	13	8S	24W	34.05137	-93.51967	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, AGS 2009 field data	12/06/01	road access abandoned
4161	Pike	sand & gravel	Delight	15	8S	24W	34.05377	-93.55411	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, AGS 2009 field data	12/06/01	
4162	Pike	sand & gravel	Delight	15	8S	24W	34.04934	-93.55429	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	old clear cut regrowth
4163	Pike	sand & gravel	Delight	1	8S	24W	34.08047	-93.51518	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	natural pine regrowth
4164	Pike	sand & gravel	Delight	2	8S	24W	34.08043	-93.53227	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	natural pine regrowth
4165	Pike	sand & gravel	Antoine	6	8S	23W	34.08801	-93.49991	Gravel pit						Tokio	Ab	STATEMAP geologic map 2000, AGS 2009 field data	12/06/01	
4166	Pike	sand & gravel	Delight	36	7S	24W	34.09793	-93.50575	Gravel pit						Tokio	R	STATEMAP geologic map 2000, Google earth 2009	12/06/01	pasture
4167	Pike	sand & gravel	Delight	36	7S	24W	34.10101	-93.51831	Gravel pit						Trinity Gp	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	natural pine regrowth
4168	Pike	sand & gravel	Delight	33	7S	24W	34.09001	-93.56556	Gravel pit						Trinity Gp	R	STATEMAP geologic map 2000, Google earth 2009	12/06/01	Timberland
4169	Pike	sand & gravel	Delight	26	7S	24W	34.10600	-93.53377	Gravel pit						Trinity Gp	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	bare ground
4170	Pike	sand & gravel	Delight	26	7S	24W	34.10848	-93.52810	Gravel pit						Trinity Gp	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	natural vegetation
4171	Pike	sand & gravel	Delight	36	7S	25W	34.10082	-93.61480	Gravel pit						Trinity Gp	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	natural vegetation
4172	Pike	sand & gravel	Delight	36	7S	25W	34.10306	-93.61411	Gravel pit						Trinity Gp	Ab	STATEMAP geologic map 2000, Google earth 2009	12/06/01	
4173	Pike	sand & gravel	Delight	25	7S	25W	34.10736	-93.62456	Gravel pit						Trinity Gp	R	STATEMAP geologic map 2000, Google earth 2009	12/06/01	pasture
4174	Pike	sand & gravel	Delight	25	7S	25W	34.10860	-93.62492	Gravel pit						Trinity Gp	R	STATEMAP geologic map 2000, Google earth 2009	12/06/01	pasture
4175	Pike	sand & gravel	Delight	25	7S	25W	34.11171	-93.62066	Gravel pit						Trinity Gp	R	STATEMAP geologic map 2000, Google earth 2009	12/06/01	
4176	Pike	sand & gravel	Center Point NE	12	6S	27W	34.24736	-93.82774	River gravel pit						Alluvium	Ab	USBM Bull. 645	09/12/01	alluvial gravels from Little Missouri River bottomland used in building of Narrows Dam
4177	Pike	sand & gravel	Murfreesboro	12	8S	26W	34.06786	-93.73371	River gravel pit						Alluvium	Ab	USBM Bull. 645	09/12/01	mislocated in USBM Bull. 645 as in R27W; river alluvium from Little Missouri River
4178	Pike	sand & gravel	Murfreesboro	6	8S	25W	34.08068	-93.71541	Gravel pit						Alluvium	Ab	USBM Bull. 645, Topo map 1970, 1995 STATEMAP geologic map	09/12/01	used in construction of Narrows Dam, extends south marginal to river into section 7
4179	Pike	sand & gravel	Murfreesboro	6	8S	25W	34.08326	-93.71191	Gravel pit						Alluvium	Ab	1995 STATEMAP geologic map, Topo map 1970	12/19/01	used in construction of Narrows Dam, extends south marginal to river into section 7
4180	Pike	sand & gravel	Murfreesboro	7	8S	25W	34.07637	-93.71321	Gravel pit						Alluvium	Ab	1995 STATEMAP geologic map, Topo map 1970	06/19/06	used in construction of Narrows Dam, extends north marginal to river into section 6
4181	Pike	sand & gravel	Murfreesboro	20	7S	25W	34.12297	-93.68476	Gravel pit						Trinity Gp	Ab	USBM Bull. 645, 1995 STATEMAP geologic map, Topo map 1970, AG	09/12/01	clayey gravel; estimated 150,000 tons of reserves, undeveloped at time of publication of USBM Bull. 645, ~1 acre, few pines natural growth
4182	Pike	sand & gravel	Murfreesboro	36	8S	26W	34.01229	-93.71801	Gravel pit						Tokio	R	USBM Bull. 645, 1995 STATEMAP geologic map, Topo map 1970, Go	09/12/01	estimated 70,000 tons reserves; undeveloped at time of writing of USBM Bull. 645, replanted with pine trees
4183	Pike	sand & gravel	Murfreesboro	23	8S	26W	34.03681	-93.74839	Gravel pit						Tokio	Ab	USBM Bull. 645, Topo map 1970, Google earth 2009	09/12/01	estimated 65,000 tons reserves in deposit in USBM Bull. 645; gravel pit shown on topo map, pond
4184	Pike	sand & gravel	Murfreesboro	23	8S	26W	34.03792	-93.74868	Gravel pit						Tokio	R	AGS 2009 field data, Google earth 2009	02/26/09	~5 acres, 7' highwall, some grass and small pine trees
4185	Pike	sand & gravel	Murfreesboro	7	8S	25W	34.07311	-93.71513	Gravel pit		R.D. Plant Contracting Co., Inc.	Bobby Plant	200 Court St., Murfreesboro, AR 71958	870-285-3101	Alluvium	R	AGS open-file data, Google earth 2009	02/05/09	west side of river, pond
4186	Pike	sand & gravel	Murfreesboro	7	8S	25W	34.07370	-93.71372	Gravel pit		R.D. Plant Contracting Co., Inc.	Bobby Plant	200 Court St., Murfreesboro, AR 71958	870-285-3101	Alluvium	R	AGS open-file data, Google earth 2009	02/05/09	west side of river, pond
4187	Pike	sand & gravel	Murfreesboro	7	8S	25W	34.07413	-93.71170	Gravel pit		R.D. Plant Contracting Co., Inc.	Bobby Plant	200 Court St., Murfreesboro, AR 71958	870-285-3101	Alluvium	R	AGS open-file data, Google earth 2009	02/05/09	east side of river, pond
4188	Pike	sand & gravel	Murfreesboro	7	8S	25W	34.07548	-93.71100	Gravel pit		R.D. Plant Contracting Co., Inc.	Bobby Plant	200 Court St., Murfreesboro, AR 71958	870-285-3101	Alluvium	R	AGS open-file data, Google earth 2009	02/05/09	east side of river, pond
4189	Pike	sand & gravel	Murfreesboro	7	8S	25W	34.07576	-93.71269	Gravel pit		R.D. Plant Contracting Co., Inc.	Bobby Plant	200 Court St., Murfreesboro, AR 71958	870-285-3101	Alluvium	R	AGS open-file data, Google earth 2009	02/05/09	east side of river, pond
4190	Pike	sand & gravel	Murfreesboro	7	8S	25W	34.07688	-93.71266	Gravel pit		R.D. Plant Contracting Co., Inc.	Bobby Plant	200 Court St., Murfreesboro, AR 71958	870-285-3101	Alluvium	R	AGS open-file data, Google earth 2009	02/05/09	east side of river, pond
4191	Pike	sand & gravel	Murfreesboro	7	8S	25W	34.07778	-93.71130	Gravel pit		R.D. Plant Contracting Co., Inc.	Bobby Plant	200 Court St., Murfreesboro, AR 71958	870-285-3101	Alluvium	R	AGS open-file data, Google earth 2009	02/05/09	east side of river, pond
4192	Pike	sand & gravel	Murfreesboro	7	8S	25W	34.07850	-93.71421	Gravel pit		R.D. Plant Contracting Co., Inc.	Bobby Plant	200 Court St., Murfreesboro, AR 71958	870-285-3101	Alluvium	R	AGS open-file data, Google earth 2009	02/05/09	east side of river, pond
4193	Pike	sand & gravel	Murfreesboro	6	8S	25W	34.07959	-93.71443	Gravel pit		R.D. Plant Contracting Co., Inc.	Bobby Plant	200 Court St., Murfreesboro, AR 71958	870-285-3101	Alluvium	R	AGS open-file data, Google earth 2009	02/05/09	east side of river, pond
4194	Pike	sand & gravel	Murfreesboro	6	8S	25W	34.08050	-93.71528	Gravel pit		R.D. Plant Contracting Co., Inc.	Bobby Plant	200 Court St., Murfreesboro, AR 71958	870-285-3101	Alluvium	R	AGS open-file data, Google earth 2009	02/05/09	east side of river, pond
4195	Pike	sand & gravel	Murfreesboro	6	8S	25W	34.08276	-93.71318	Gravel pit		R.D. Plant Contracting Co., Inc.	Bobby Plant	200 Court St., Murfreesboro, AR 71958	870-285-3101	Alluvium	R	AGS open-file data, Google earth 2009	02/05/09	east side of river, pond
4196	Pike	shale	Narrows Dam	3	7S	25W	34.17490	-93.65885	Shale pit						Stanley	Ab	1976 AGC Worksheet, Topo map 1969, AGS 2009 field data	09/11/01	3/4 acre, natural vegetation
4197	Pike	shale	Murfreesboro NE	7	6S	24W	34.24212	-93.59694	Shale pit						Stanley	Ab	AGS 2009 field data	02/26/09	1/4 acre, large pine trees
4198	Pike	shale	Murfreesboro NE	7	6S	24W	34.24247	-93.59570	Shale pit						Stanley	Ab	AGS 2009 field data	02/26/09	1/4 acre, water-filled
4199	Pike	shale	Murfreesboro NE	20	6S	24W	34.21145	-93.58919	Woodall Creek shale pit						Atoka	Ab	1976 AGC Worksheet, Topo map 1970, AGS 2009 field data	09/11/01	1/4 acre, lower Atoka, I picture in County file
4200	Pike	shale	Center Point NE	13	6S	27W	34.23198	-93.82500	Shale pit						Stanley	Ab	Topo map 1970, Google earth 2009	08/13/01	natural vegetation
4201	Pike	shale	Center Point NE	18	6S	26W	34.23361	-93.81249	Shale pit						Stanley	Ab	1976 AGC Worksheet, Topo map 1970, Google earth 2009	08/13/01	natural vegetation
4202	Pike	shale	Langley	7	6S	26W	34.25095	-93.80854	Shale pit						Stanley	Ab	1976 AGC Worksheet, Topo map 1970, Google earth 2009	08/13/01	natural vegetation
4203	Pike	shale	Athens	22	5S	27W	34.29468	-93.88230	Shale pit						Stanley	R	Topo map 1980, AGC 2009 field data	08/13/01	2 acres, grass
4204	Pike	shale	Athens	22	5S	27W	34.29382	-93.88089	Shale pit						Stanley	R	Google earth 2009, AGS 2009 field data	02/05/09	3 acre pond
4205	Pike	shale	Athens	29	5S	27W	34.29056	-93.91012	Shale pit						Stanley	R	AGS 2009 field data	02/26/09	1/4 acre, grass
4206	Pike	shale	Glenwood	14	5S	24W	34.31229	-93.54462	Howell Road shale pit						Stanley	Ab	AGS 2009 field data	02/19/09	~1 acre, linear cut parallel to road, some grass, 2 pics in digital file
4207	Pike	shale	Glenwood	11	5S	24W	34.32553	-93.54021	Condo hillside cut						Stanley	A	AGS 2009 field data	02/19/09	1/8 acre next to condos on hillside in Glenwood, equipment on site, I pic in digital image file
4208	Pike	shale, slaty	Lodi	3	5S	25W	34.33863	-93.65798	Deposit						Missouri Mountain	U	USBM Bull. 645, AGC Cogeo map	09/12/01	red slatey shale prospected; no reserves calculated; listed in Bull. 645 as Stanley (?), but no red shale in Stanley, mapped later as Missouri Mountain
4209	Pike	slate	Lodi	3	5S	25W	34.33814	-93.66261	Perkins Property prospect						Arkansas Novaculite	Ab	Slates of AR	03/21/02	red slate deposit about 20' thick, interbeded with flinty shales; *lat./lon. estimated from description in Slates of AR
4210	Pike	stone, crushed	Lodi	12	5S	25W	34.32013	-93.62785	Gravel pit*			Potshot Hunting Club			Arkansas Novaculite	R	Topo map 1979, AGC 2004 & 2009 field data	11/22/04	*mislabeled as gravel pit on topo map; a deposit of large scree blocks of novaculite from hill to the north was mined and crushed on site, now reclaimed as a deer camp, 1 picture in County folder
4211	Pike	stone, crushed	Antoine	3	8S	23W	34.08139	-93.44500	Pennington-Winter Construction		Pennington-Winter Construction				Atoka	I	AGC MP 18D, Topo map 1975	07/06/01	Lower Atoka
4212	Pike	stone, crushed	Narrows Dam	23	6S	25W	34.21944	-93.63667	R. D. Plant Quarry	David Baumgardner Pit & Plant	R. D. Plant Construction Company, Inc.	Robert D. Plant, Jr.	604 North Washington, Murfreesboro, AR 71958		Jackfork	A	AGC MP 18D, MSHA 2002	07/06/01	
4213	Pike	stone, crushed	Murfreesboro	2	8S	26W	34.08111	-93.74139	R. D. Plant Beavert Quarry	Beavert Quarry Souter Construction	Souter Construction				Jackfork	Ab	AGC MP 18D, Topo map 1970, AGS 2009 field data	07/06/01	site abandoned, gated and road overgrown
4214	Pike	stone, crushed	Murfreesboro	6	8S	25W	34.08782	-93.70119	M & P Power Equipment	D & D Construction Company,Duffield quarry Souter Construction					Jackfork	I	AGC MP 18D	07/06/01	
4215	Pike	stone, crushed	Delight	26	7S	24W	34.11333	-93.52778	Delight Quarry	Little Rock Quarry	Carter Construction Company				Jackfork	I	AGC MP 18D	07/06/01	
4216	Pike	stone, crushed	Glenwood	5	5S	24W	34.33260	-93.58760	ADEQ permit 541	Jenkins Quarry	Jenkins Sand and Gravel Co.			870-356-3176	Arkansas Novaculite	A	AGS 2009 field data	02/19/09	~10 acres, 1 main cut, 2 pics in county file, planerite in zone 100' long by 7' wide of shattered thin bedded novaculite
4217	Pike	strontium	Nathan	15*	8S	26W	34.05345	-93.76761	Prospect pit						Trinity Gp	U	USBM Bull. 645	09/12/01	prospect pit contains celestine and strontianite; *lat/lon estimated from description in USBM Bull. 645
4218	Pike	tripoli	Langley	1	5S	27W	34.34523	-93.83571	Quarry						Arkansas Novaculite	Ab	USBM Bull. 645, Topo map 1980, Google earth 2009	09/12/01	bare ground
4219	Pike	tripoli	Langley, Athens	1, 2, 3, 4*	5S	27W	34.34751	-93.85918	Mines						Arkansas Novaculite	Ab	USBM Bull. 645	09/11/01	series of small mines; white to light cream tripoli; 8-foot thick bed; *lat/lon estimated from description in USBM Bull. 645
4220	Pike	tripoli	Lodi, Langley	1, 2	5S	26W	34.34034	-93.74255	Deposit						Arkansas Novaculite	U	USBM Bull. 645	09/11/01	8-foot bed of tripoli