The Petroleum Industry in Alabama, 1999-2007

State Oil and Gas Board
Oil and Gas Report 3U

STATE OIL AND GAS BOARD OF ALABAMA

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THE PETROLEUM INDUSTRY IN ALABAMA, 1999–2007

OIL AND GAS REPORT 3U

by

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with contributions by

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Tuscaloosa, Alabama
2009

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August 1, 2009

The Honorable Bob Riley
Governor of Alabama
Montgomery, Alabama

Dear Governor Riley:

It is with pleasure that I make available to you this report entitled *The Petroleum Industry in Alabama, 1999–2007*, by Douglas R. Hall and David E. Bolin, which has been published as Oil and Gas Report 3U by the Geological Survey of Alabama.

This report was prepared to supply the public and industry with information on the development of the petroleum industry in Alabama with special emphasis on exploration and production activities from 1999 through 2007. These data will be useful to landowners as well as individuals or companies planning property evaluation or oil and gas exploration programs in the state. Other data and information are available on the State Oil and Gas Board web site: http://www.ogb.state.al.us.

Respectfully,

Berry H. (Nick) Tew, Jr.
State Geologist and
Oil and Gas Supervisor

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By

Douglas R. Hall and David E. Bolin

INTRODUCTION

The Oil and Gas Report 3 series of publications was initiated in 1977, and its purpose is to document the history of oil and gas development in Alabama and to provide periodic updates of significant hydrocarbon exploration and production activities in the State. Although the content of these reports has been enhanced, the format has remained basically unchanged. These reports typically contained information that was treated as uniformly as possible from year to year so that the data reflected the actual events of each calendar year. In the past, this series of publications has served as the principal means of disseminating those data and information.

The last report in this series was published in 2001 and contained detailed information for 1997 and 1998. Therefore, in order to provide continuity, this report will focus on the oil and gas activities since 1998. However, the format of this report has been modified from that of previous reports for several reasons.

First, the agency has greatly enhanced its presence on the World Wide Web since the last report was published. With the launching in 2006 of a user-friendly, state-of-the-art web site, detailed exploration and production information as well as other data are now readily available electronically. Because of its accessibility and functionality, the web site has become the method of choice for obtaining detailed information and data about industry activities. This shift in information and data dissemination provides an opportunity to focus less on exploration details and more on industry statistics and trends over time in the State.

A second reason to reformat the report is to provide a more explicit report on the activities and operations of the agency. In the past, reported levels of industry activities in the State could be implicitly interpreted as a measure of the workload of the Board and its technical staff during a given time period but did not always adequately document the issues addressed or significant accomplishments made by the agency. Therefore, a section has been added to the end of the report that summarizes the Board's current organization, regulatory developments, and significant accomplishments and initiatives during the applicable time period.

HISTORICAL OVERVIEW

STATE SUMMARY

Alabama became an oil-producing state in 1944 with the discovery of oil in the Gilbertown Field in Choctaw County. Since that time, the oil and gas industry in the State has continued to grow, develop, and evolve. During the 1970s and 1980s, the industry experienced rapid growth with the development of numerous oil and gas fields. With the discovery of offshore gas reserves in the late 1970s and development of coalbed methane gas resources in the 1980s, industry activity and production increased dramatically. By the end of 2007, a total of 15,505 permits to drill wells had been issued by the State Oil and Gas Board. Alabama, with a total of 6,531 producing wells, is currently ranked 15th in the nation in the production of liquid hydrocarbons and 11th in the production of natural gas.

Although permits to drill oil and gas wells have been issued in all six oil and gas regions (fig. 1), the Southwest Alabama Region, the Black Warrior Basin Region, and the Appalachian Fold and Fault Region are currently the only three producing regions in the State, except for one well producing a

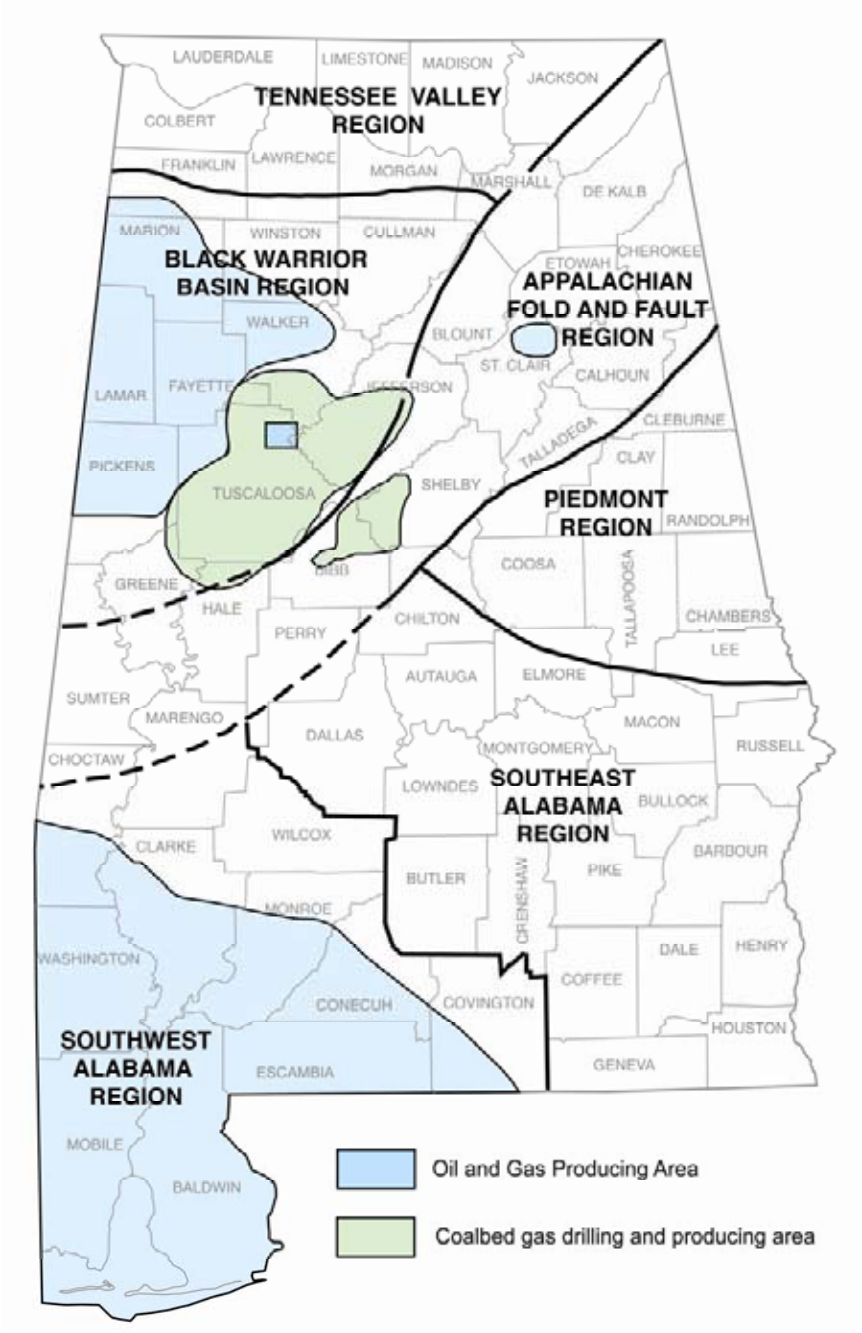

Figure 1.—Oil and gas regions in Alabama.

small amount of gas for residential use in the Tennessee Valley Region. The Southwest Alabama Region is the State's most productive region and the most active area of conventional exploration (plate 1), whereas the Black Warrior Basin Region is the most active area overall because of coalbed gas exploration (plate 2).

For many years, the principal target zone for most onshore wells in the Southwest Alabama Region has been the Jurassic Smackover Formation (plate 1). Other onshore exploration objectives are the Norphlet Formation and the sands of the Haynesville Formation of Jurassic age, the Tuscaloosa Group of Cretaceous age, and

shallow sands of Miocene age. In offshore Mobile and Baldwin Counties, the target zones are the Norphlet Formation and Miocene sands (plate 1). In the Black Warrior Basin Region, the primary conventional exploration targets are sands of Mississippian and Pennsylvanian age (plate 2). Other conventional exploration zones are Devonian and Cambrian-Ordovician-age strata. The Pottsville Formation of Pennsylvanian age continues to be explored for coalbed gas in Tuscaloosa, Jefferson, Shelby, Bibb, Hale, Greene, Pickens, and Walker Counties. Exploration in the Appalachian Fold and Fault Region has also increased due to the discovery of gas in the Conasauga Formation of Cambrian age (plate 3).

In addition to areas presently being explored, other regions in Alabama such as the Tennessee Valley Region, where the State's first gas production occurred during the early part of the century, and the Appalachian Fold and Fault Region, which currently produces coalbed gas from the Pottsville Formation and natural gas from the Conasauga Formation, have potential for additional discoveries. Also, in the Black Warrior Basin Region, horizons deeper than those presently productive appear to have good potential.

CONVENTIONAL DEVELOPMENT

SOUTHWEST ALABAMA REGION

ONSHORE

The first known well drilled for oil in southwest Alabama was the Cullom Springs well drilled in 1884 about 1 mile west of Bladon Springs in southeastern Choctaw County. The well reportedly produced considerable quantities of gas. In 1944, 60 years and approximately 350 wells later, Alabama became an oil-producing state with the discovery of the Gilbertown Field in Choctaw County. The Gilbertown Field produces from the Cretaceous-age Selma Chalk and Eutaw Formations.

Additional Cretaceous fields were discovered during the early 1950s with the most significant being the Citronelle Field in Mobile County. Discovered in 1955, the Citronelle Field produces from a series of Lower Cretaceous sands at depths ranging from 10,014 to 10,827 feet. The field has produced nearly 170 million barrels of oil through the end of 2007 and accounts for 39 percent of the State’s cumulative oil production.

In 1967, exploration in Choctaw County was accelerated with Alabama's first discovery of oil from the Smackover Formation in the Toxey Field. Subsequent to that discovery, Choctaw County has become one of the major oil-producing areas in the State.

The discovery of the Flomaton Field in 1968 in Escambia County marked the first discovery of hydrocarbons in the Norphlet Formation of Jurassic age in Alabama and resulted in increased exploration efforts in that area. During the 1970s, 32 new fields or pools were established in the Southwest Alabama Region. Discoveries were made primarily in the Smackover Formation of Jurassic age, but discoveries were also made in the Jurassic Norphlet Formation. There were several major fields discovered during this period including the Hatter’s Pond and Chunchula Fields in Mobile County, the Big Escambia Creek, Little Escambia Creek, and Fanny Church Fields in Escambia County, and the Womack Hill Field in Choctaw and Clarke Counties.

Production types included oil, gas, and gas-condensate, some of which contained hydrogen sulfide, a poisonous gas which must be removed from the hydrocarbons before they can be marketed. Consequently, several gas cleansing facilities had to be constructed before commercial production could begin.

In 1979, gas was discovered in Miocene-age sands in southern Baldwin County. This discovery of shallow sweet gas led to an extensive exploration program in Baldwin County which eventually expanded into southern Mobile County and the State’s coastal waters. Ultimately, more than 50 fields or pools were established for Miocene-

age sands in the onshore area of southern Baldwin and Mobile Counties.

Exploration continued at a rapid pace during the 1980s. Several discoveries were made in the Cretaceous-age sediments of Escambia and Baldwin Counties, but the Smackover continued to be the primary exploration target in the region. In 1986, oil was discovered in Monroe County in sands of the Haynesville Formation resulting in an extensive exploration play for Haynesville sand production in Monroe, Conecuh, Covington, and Escambia Counties. A total of 33 fields or pools have been established for Haynesville sand production with the majority being in Monroe County.

The Jurassic-age Smackover and Norphlet Formations continued to be important exploration targets during the 1990s. Exploration and development for Haynesville and Cretaceous oil reservoirs, as well as gas deposits in Miocene age sediments, also continued during this time.

OFFSHORE

The earliest exploratory wells in Alabama's offshore waters were drilled in Mobile Bay by Gulf Refining Company in late 1951 and early 1952. These two early wells were plugged and abandoned at depths of 10,000 and 11,000 feet, respectively, after failing to encounter any significant shows of oil and gas. More than 27 years lapsed before another test well was drilled, but this next attempt was successful and led to the active drilling and development of large gas reserves lying more than 20,000 feet below coastal waters (plate 1).

On June 21, 1978, Mobil Oil Corporation received a permit from the State Oil and Gas Board to drill a test well near the mouth of Mobile Bay to a depth of 21,500 feet. This was the first exploratory well in State offshore waters to test potential reservoirs of Jurassic age, which are the most prolific oil and gas producing horizons in the onshore region of southwest Alabama. On October 9, 1979, the well reached a total depth of 21,113 feet, and on November 28, 1979, the well was tested at a rate of 12.2 million cubic feet of gas per day from the Norphlet Formation.

Following this initial discovery, which was later named the Lower Mobile Bay-Mary Ann Field, high bonuses were paid by operators to explore and develop the hydrocarbon resources beneath State and adjacent Federal waters. In March 1981, a total of $449 million was received by the State in bids for the rights to develop 13 offshore tracts consisting of 55,054 acres, with one tract receiving a bid amounting to more than $31,000 per acre. In February 1982, the Federal government leased the oil and gas rights to 17 tracts near Alabama's State waters for bonus monies totaling almost $219 million. Another Federal lease sale of 13 tracts off the Alabama coast in May 1983 resulted in bonuses totaling almost $41 million. In August 1984, the State received more than $347 million from leases awarded on 19 offshore tracts consisting of approximately 75,000 acres. Special trust funds, which were merged into one fund in 2001, were established for income generated from the leasing of and production from Alabama's offshore tracts, and these funds now total nearly $3 billion.

Through 2007, a total of 81 wells had been drilled in Alabama’s coastal waters: 48 of these wells were permitted to test the Norphlet Formation below a depth of 20,000 feet; the two earliest wells were drilled to test undifferentiated rocks of Cretaceous age; and 31 wells targeted shallow Miocene gas reservoirs generally at depths of less than 3,500 feet. Operators have experienced a high success rate in drilling wells in Alabama coastal waters. Of the 48 Norphlet wells drilled, 41 have tested gas, and of the 31 Miocene wells drilled, 26 have tested gas. Twenty-one gas fields have been established in the coastal waters of the State with nine being productive from the Norphlet Formation and twelve producing from sands of Miocene age.

Production capabilities for individual wells range from a few million to more than 110 million cubic feet per day, and the original recoverable reserves for the established

fields are estimated to be more than 5 trillion cubic feet of gas.

BLACK WARRIOR BASIN REGION

The search for oil and gas in the Black Warrior basin began in the early 1900s. In 1909, a test well drilled in search of coal in Fayette County encountered oil shows at depths of less than 500 feet. Two deeper test wells were drilled that flowed gas at estimated rates of 1.6 and 4.5 million cubic feet of gas per day. By 1917, more than 40 wells had been drilled in the area. The largest initial rate reported was 6 million cubic feet of gas per day at a pressure of 800 psi. Most of the early drilling in the Black Warrior basin was in the Fayette Field area which was connected by pipeline to a distribution system at Fayette, Alabama, where the gas was either used or in some cases wasted.

For more than 60 years following the discovery of the Fayette Field, oil and gas exploration in the Black Warrior basin was slow and sporadic. Between 1940 and 1970, only about 100 wells were drilled in the basin. Small gas fields in Marion County, such as the Hamilton and Whitehouse Fields, were discovered and did produce gas for a time.

In 1970, the discovery of the East Detroit Oil Field in the "Carter" sand triggered new drilling activity in the Black Warrior basin of Lamar County. In 1972, discovery of gas in the West Fayette Field of Fayette County intensified exploration activity in the basin. In 1973, discoveries of gas in the Jasper and Nauvoo Fields in Walker and southern Winston Counties enlarged the areas of exploration in the basin.

The completion of gas pipeline facilities in Fayette and eastern Lamar Counties in June 1977 established a market outlet for previously shut-in gas wells and triggered a rapid increase in drilling activity. During the 1970s, approximately 54 new fields or pools were established. Discoveries were primarily in Fayette and Lamar Counties, but discoveries were also made in Winston and Tuscaloosa Counties. Discoveries were made principally in the “Carter” and “Lewis” sands of Mississippian age, but several sand zones within the Pottsville Formation were also completed as productive gas reservoirs.

The 1980s was a time of intense exploration in the Black Warrior basin. Approximately 182 new fields or pools were established during this time. Thirty-three new fields or pools were established in 1985 alone. Mississippian-age sands in Fayette and Lamar Counties were the primary targets, but hydrocarbons were also discovered in Pennsylvanian-age sands. During the 1980s, exploration efforts also expanded into Pickens, Tuscaloosa, Franklin, Walker, and Marion Counties. The most significant field established during this time was the North Blowhorn Creek Oil Field which produces oil from the “Carter” sand of Mississippian age.

New discoveries decreased during the 1990s, when 50 new fields or pools were established. Fayette and Lamar Counties continued to be the area of most intense exploration and sands within the Mississippian- and Pennsylvanian-age strata continued to be the primary exploration targets, although production from Devonian-age strata was established in the Molloy Field in Lamar County in 1996.

APPALACHIAN FOLD AND FAULT REGION

Drilling activity in the Appalachian Fold and Fault Region began in 1917 and 1918 when five shallow test wells ranging in depths from 165 to 255 feet were drilled on the Aldrich dome in the Cahaba basin in southeastern Jefferson County. Three of these wells reportedly had an estimated productive capacity of 75 to 100 thousand cubic feet of gas per day (Mcfd), although these figures were not verified. In 1919, Dixie Gas Company attempted to drill a deeper test well to the Hartselle Sandstone, but the attempt was abandoned when drilling tools were lost at 2,523 feet.

Since the 1960s, the primary conventional exploration targets in the Appalachian Fold and Fault Region have been the deep Cambrian-Ordovician zones. Deep tests have been drilled in Sumter, Greene, Tuscaloosa,

Blount, Shelby, Hale, St. Clair, and Bibb Counties at depths ranging from 3,000 to over 21,000 feet. The deepest well drilled in the region reached a record depth of 21,476 feet. This well was a re-entry of the Haggerman #1 Well (Permit No. 1040-A) drilled in Sumter County.

The geology in the Appalachian Fold and Fault Region is structurally very complex. Thrust faults and asymmetrical anticlines and synclines make interpretation of the area very difficult.

TENNESSEE VALLEY REGION

Surface occurrences of oil in the form of tar springs and asphaltic sandstones and limestones are numerous throughout the Tennessee Valley. Such occurrences probably led to Alabama's first exploration for oil and gas in 1865 in Lawrence County. S. F. Peckham, in his special report on petroleum for the Tenth United States Census, reported that Jonathon Watson "drilled wells in Alabama in 1865, and got oil in two of them." In the late nineteenth century, the presence of oil-bearing rocks and tar springs created a certain amount of interest in the Tennessee Valley, and several companies were organized to drill test wells. From 1890 to 1892, Moulton Valley Oil Company drilled six wells in Lawrence County. One of these, the Goyer No. 1, was estimated to have tested 25 barrels of oil per day (BOPD) and 40 Mcfd. However, the well never produced commercially.

Early in the twentieth century, activity in the Tennessee Valley was concentrated in Madison County. From 1903 to 1905, seven wells were drilled near Hazel Green. Four wells encountered gas in rocks of Ordovician age at depths ranging from 310 to 375 feet. From 1906 to 1908, 13 wells ranging in depths from 278 to 300 feet were drilled near Huntsville, and a gas horizon was developed in seven wells in Ordovician limestone. The Hazel Green and Huntsville Fields reportedly supplied gas to the city of Huntsville between 1903 and 1908.

Between 1910 and 1970, drilling activity was very slow, with less than 100 wells being drilled in the entire region. Although oil and gas shows were common, no commercial discoveries were made. During 1978 and 1979, Strahan Oil and Gas Company, Inc., drilled 18 wells in Lawrence and Franklin Counties. These were shallow, low-pressure wells, some of which tested small volumes of gas. One of these wells, the Roy Craig No. 1 Well (Permit No. 2661) in west-central Lawrence County, still produces a small amount of gas from the Stones River Group of Ordovician age.

In 1979, Saga Petroleum U.S., Inc., drilled the Skidmore 36-1 No. 1 Well (Permit No. 2794) in southeastern Morgan County. This well was drilled to a depth of 7,668 feet and encountered granitic rock of probable Pre-Cambrian age at a subsea elevation of 7,035 feet. Although plugged as a dry hole, this well provided valuable subsurface information for future exploration.

During the 1980s and 1990s, less than 50 wells were drilled in the Tennessee Valley Region. There has been no commercial production of oil or gas except for gas production near Huntsville in Madison County between 1903 and 1908. Despite the lack of commercial production from the area, the Tennessee Valley Region cannot be ruled out as a possible area where commercial oil and gas accumulations might be found.

SOUTHEAST ALABAMA REGION

The Southeast Alabama Region has limited oil and gas potential because the sedimentary rock succession in most of the region is relatively thin, and structures and impermeable beds necessary to trap hydrocarbons are generally absent. The petroleum source rocks and reservoir rocks present throughout much of southwest Alabama are not present in the Southeast Alabama Region. Also, many of the structural traps for hydrocarbons in southwest Alabama are associated with the Louann Salt, which is absent in southeast Alabama. The sedimentary rocks throughout much of southeast Alabama are underlain by igneous and metamorphic rocks similar to those exposed on the surface in the Piedmont Region, with

the exception of the Houston County area which is underlain by Paleozoic sedimentary rocks of the Suwannee basin. Although no commercial quantities of hydrocarbons have been discovered to date in the Suwannee basin, the potential for this area remains relatively unknown. About 80 wells have been drilled in the Southeast Alabama Region since exploration began there in the 1920s.

DRILLING AND PRODUCING DEPTHS AND RECORDS

The total measured depths of conventional oil and gas wells drilled in Alabama range from a few hundred feet to more than 24,000 feet. The well depths have been grouped into 50-foot intervals, and the total number of wells and the number of productive wells for each interval are depicted in figure 2. The intervals with the largest number of wells occur near the center of the chart between 11,000 and 12,000 feet. The wells drilled to these depths are predominantly Citronelle Field wells located in Mobile County. Wells drilled in the Little Cedar Creek Field in Conecuh County are also in that depth range. The locations of other selected "spikes" in well numbers are noted in text boxes with the predominant counties indicated in bold.

In south Alabama, the "spike" in well numbers between 11,000 and 12, 000 feet provides a clear demarcation line for geologic target zones. At shallower depths, the wells target Miocene and Cretaceous horizons, while Jurassic formations are the zones of interest at greater depths. In north Alabama, the principal targets are Pennsylvanian- and Mississippian-aged horizons between 1,500 and 7,000 feet.

Nearly 64 percent of all conventional wells were drilled to depths of less than 11,000 feet. As noted from figure 2, the majority (86 percent) of those shallow wells had total depths of less than 6,000 feet. Forty percent of the wells drilled to less than 11,000 feet were completed as productive wells, while fifty percent of the wells drilled to greater depths were productive.

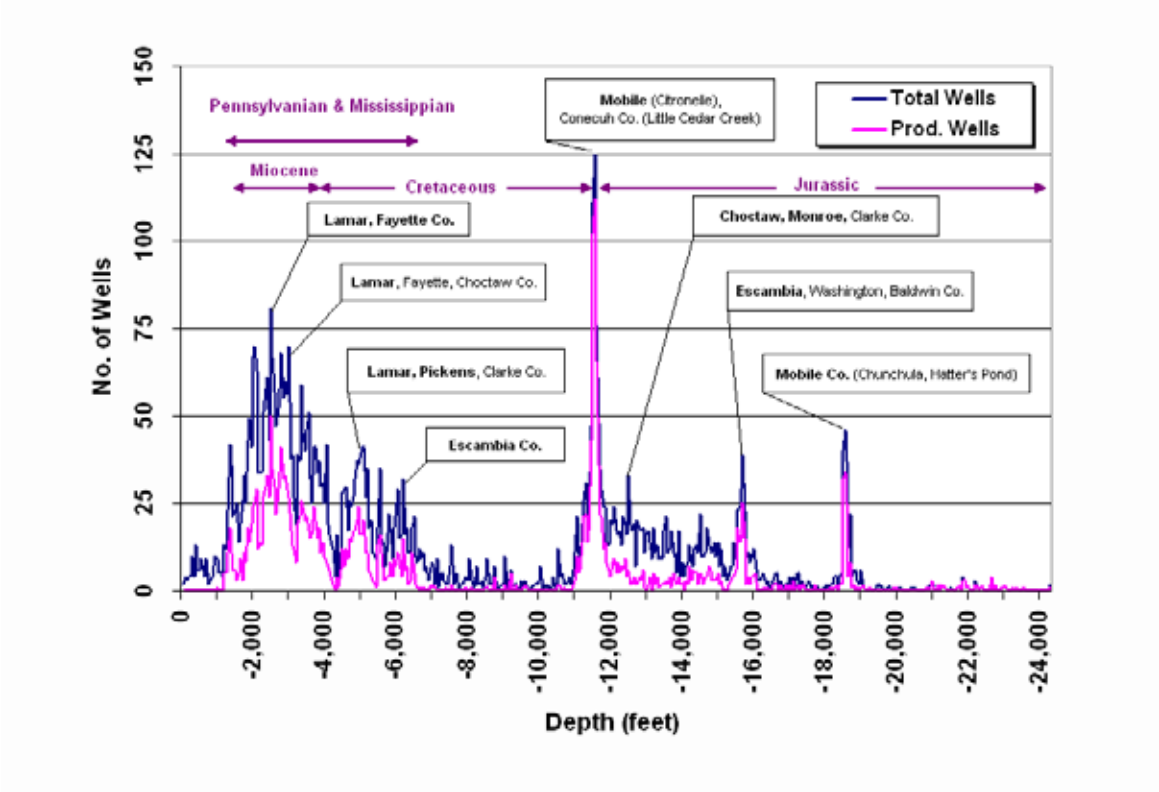

Figure 2.—Total measured depths of conventional oil and gas wells drilled in Alabama.

As noted earlier, at least one well has been drilled to a measured depth of more than 24,000 feet. However, depth records are generally based on true vertical depth rather than measured depth. Accordingly, the deepest well drilled onshore in Alabama was the J. Hagerman 9-11 No. 1 Well (Permit No. 1040-A), which was drilled in 1992 to a true vertical depth of 21,476 feet in Sumter County. The deepest well in the State's coastal waters was the State Lease 624 No. 1 Well (Permit No. 4436-OS-24) drilled by Exxon Corporation in State Tract 114. It was drilled to a true vertical depth of 22,163 feet.

The deepest well to establish commercial production in Alabama is also located in the State's coastal waters in State Tract 112. Exxon Corporation's State Lease 537 No. 2 Well (Permit No. 10121-OS-53) produced gas from the Norphlet Formation at a depth of 21,805 feet. The deepest onshore well to establish production was located in the Chunchula Field in Mobile County. The International Paper Co. 17-7 No. 1 A-B Well (Permit No. 2062-B-1) was completed in the Smackover at a depth of 18,689 feet.

UNCONVENTIONAL GAS DEVELOPMENT

COALBED METHANE

Most of the early efforts to degasify coals prior to mining involved the drilling of vertical wells and the venting of the produced gas to the atmosphere. Research performed by the U.S. Bureau of Mines during the 1960s and early 1970s provided valuable information that helped to set the stage for mining companies to begin the degasification of coal seams in advance of underground mining operations. In the late 1970s and early 1980s, the U.S. Department of Energy sponsored the Methane Recovery from Coalbeds Project, and resulting research in the coal basins of our nation provided important additional data useful in the evaluation of the commercial potential for producing coalbed methane. In addition, beneficial research of coalbed methane reserves and producibility from deeply buried coal seams was performed under the sponsorship of the Gas Research Institute. On a local level, the State Oil and Gas Board and Geological Survey of Alabama have conducted a number of studies and published reports on the coals and coalbed methane resources of the State.

The first permit for a coalbed methane well in Alabama was issued in May 1980. The Pleasant Grove Field, which was established in July of the same year, was Alabama's first coal degasification field. In 1983, the State Oil and Gas Board of Alabama established the nation's first comprehensive rules and regulations governing the drilling for and production of coalbed methane gas resources. These rules have served as a model for other states.

A total of 22 coal degasification fields have been established by the State Oil and Gas Board through 2007. Twenty of the established fields are located in the Black Warrior basin and two are located in the Cahaba basin of the Appalachian Fold and Fault Region. The Black Warrior basin of Alabama has the longest development history of all basins in the U.S. for coalbed methane resources.

The Brookwood, White Oak, and Oak Grove Coal Degasification Fields are developed in areas of active underground mining, and both vertical drilling and horizontal drilling of wells are utilized in these areas of underground mine operations. The remaining 19 fields have been developed for the purpose of establishing commercial production of coalbed methane in areas where underground mines are not planned in the foreseeable future.

The commercial production of coalbed methane in Alabama has increased since the earliest wells were drilled in 1980. Production now ranges between 114 and 116 billion cubic feet annually, or approximately 36 to 40 percent of the total gas production in the State. At the end of 2007, over 8,000 coalbed methane wells had been drilled in Alabama, and approximately 5,200 of these wells, which is a 75 percent increase over 1999 numbers, were producing from 13 established

fields. Most of the wells are located in the Black Warrior basin and in Tuscaloosa and Jefferson Counties. The cumulative production of this valuable resource through 2007 was 2 trillion cubic feet.

SHALE GAS

Exploration for shale gas is a new trend in Alabama. Shale gas projects in other parts of the country, such as the development of the Barnett Shale in the Fort Worth basin in Texas, have added substantial gas reserves to the nation's resource base. In Alabama, shale gas development is in its infancy. Exploration for shale gas in the State has been performed primarily in the Appalachian Fold and Fault Region, but shale gas exploration has also occurred in the Black Warrior Basin Region.

Drilling for shale gas has been challenging due to the unique geologic conditions encountered in the area. Problems include lost circulation, swelling of clays, and well bore drift. Rock units in much of the shale gas play area are highly folded and faulted making geologic interpretations difficult. Thrust faults, which are low-angle reverse faults, can cause an exaggerated thickness as a result of stacking of faulted strata.

UNDERGROUND GAS STORAGE

In 1993, the Board established the State's first gas storage facility in Washington County. The facility is operated by Bay Gas Storage Company and stores gas underground in a solution-mine cavity in the McIntosh Salt Dome. Since the development of the first cavity storage facility in Washington County, three additional storage facilities operated by Bay Gas Storage Company have been established in the McIntosh Salt Dome area. In 2000, Freebird Gas Storage, LLC, established the East Detroit Gas Storage Facility as the first reservoir storage facility in Lamar County, which uses a depleted Carter sandstone gas reservoir of Mississippian age as the storage horizon (table 1). In 2000, the State Oil and Gas Board of Alabama established rules and regulations governing the underground storage of gas in reservoirs and the underground storage of gas in solution-mined cavities.

Table 1.—Gas storage facilities in Alabama

Facility Name	County	Date Est.	Working Gas Capacity (Bcf)	Storage Zone
Salt Dome Storage				
Bay Gas Salt Dome Gas Storage Facility No. 1	Washington	1993	2	Salt
Bay Gas Salt Dome Gas Storage Facility No. 2	Washington	2000	4	Salt
Bay Gas Salt Dome Gas Storage Facility No. 3	Washington	2005	5.4	Salt
Bay Gas Salt Dome Gas Storage Facility No. 4	Washington	2007	--[1]	Salt
Reservoir Storage Facilities				
East Detroit Gas Storage Facility	Lamar	2000[2]	9.14	Carter sandstone

[1]Under construction

[2]Expanded in 2005

REGIONAL DEVELOPMENTS, 1999 – 2007

SOUTHWEST ALABAMA REGION

Between 1999 and 2007, 14 new fields were established in the South Alabama Region (table 2). Three of these fields, East Cedar Point, East Heron Pass, and North Saxon Bay, are located in the State's coastal waters. All three were completed in sands of Miocene age. The other newly established fields were completed in Jurassic-age sediments. Two of the fields, West Wild Fork Creek in Escambia County and Dunbar Creek in Choctaw County, produce gas condensate. The remainder of the Jurassic fields produce oil either from the Cotton Valley, Haynesville (Frisco City sand), or Smackover Formations.

In addition to the new fields discovered, three new Jurassic pools were established in existing fields and two existing pools were redefined (table 3). The productive interval of the Lower Cotton Valley Oil Pool in the North Rome Oil Field, initially established in 2001, was expanded in 2002. In South Carlton Field, the Pilot and Massive sands were combined into one oil pool when the field was unitized in 2005.

Table 2.—New oil and gas fields established in the Southwest Alabama Region, 1999–2007

Field	County	Date field established	Producing horizon	Hydrocarbon type
Juniper Creek	Conecuh	2001	Smackover	Oil
North Robinson Creek	Escambia	2002	Smackover	Oil
Camp Creek	Covington	2002	Cotton Valley	Oil
North Saxon Bay	Baldwin	2003	Amos	Gas
East Cedar Point	Mobile	2004	Luce	Gas
East Heron Pass	Mobile	2004	Escambia	Gas
Brushy Creek	Monroe	2005	Frisco City	Oil
Northwest Hall Creek	Escambia	2005	Smackover	Oil
East Chitterling Creek	Escambia	2006	Smackover	Oil
Northwest Canaan Church	Escambia	2006	Smackover	Oil
West Wild Fork Creek	Escambia	2007	Smackover	Gas Condensate
Dunbar Creek	Choctaw	2007	Smackover	Gas Condensate
West Catawba Springs	Escambia	2007	Smackover	Oil
West Chitterling Creek	Escambia	2007	Smackover	Oil

Table 3.—New pools established in existing fields in the Southwest Alabama Region, 1999–2007

Field	County	Date pool established	Producing horizon	Hydrocarbon type
Frisco City	Monroe	1999	South Frisco City, Baas	Oil
North Rome	Covington	2001	Lower Cotton Valley	Oil
North Rome	Covington	2002[1]	Cotton Valley	Oil
South Carlton	Clarke and Baldwin	2005[2]	Pilot-Massive	Oil

[1] Lower Cotton Valley Oil Pool redefined

[2] Pilot and Massive Oil Pools combined

Seven unitized areas were established in the Southwest Alabama Region between 1999 and 2007 (table 4). Five were for Jurassic fields, one was for a Miocene field in the State's coastal waters, and one was for a field producing from Cretaceous-age sediments. Two of the Jurassic units and the South Carlton Unit, which is unitized in the Cretaceous, have begun injection of fluids to increase ultimate recovery of oil.

BLACK WARRIOR BASIN REGION

Thirteen new fields, including 19 new pools, were established in the Black Warrior Basin Region between 1999 and 2007 (table 5). In addition, 10 new pools were established in existing fields (table 6). Of the 29 new pools established, 3 were oil pools, 1 was a combination oil and gas pool, 24 pools were gas pools, and 1 was coalbed methane. Mississippian- and Pennsylvanian-age sands were the primary reservoirs established, but gas production was also established in Devonian-age sediments in the Star Gas Field in Lamar County, and one coalbed methane field, the Short Creek Field, was established in Jefferson County.

Six new unitized areas were also established in the Black Warrior Basin Region between 1999 and 2007 (table 7). Five of the unitized areas were located in existing coalbed methane fields. One unitized area, the Southeast Bluff Upper Carter Oil Unit was established in the Bluff Oil Field for the purpose of implementing secondary recovery using a waterflood.

In addition to conventional and coalbed development in the Black Warrior Basin Region, Denbury Onshore, LLC, drilled a horizontal well, the Burns 29-2 (Permit No. 14303-BH), in Lamar County to a measured depth of 7,089 feet (true vertical depth of approximately 4,900 feet) and tested gas from the Floyd Shale. The well flowed at a rate of 80 Mcfd with a tubing pressure of 100 psi on an open choke.

Choctaw Geological Enterprises, an MBCI Enterprise, drilled a Conasauga shale test in Cullman County. The Haynes Farms, LLC, 26-8 No. 1A Well (Permit No. 15288), was drilled to a total depth of 8,320 feet and is currently shut in. Geomet, Inc., has also drilled a well, the Montgomery 06-07-04 (Permit No. 15481), in Cullman County to a

Table 4.—New unitized areas established in the Southwest Alabama Region, 1999-2007

Unit	County	Unitized interval	Date unit established (revisions)	Approved injection fluids (date begun)
Saxon Bay	Baldwin	North Meyer Sand	May 1, 1999	None
Frisco City	Monroe	South Frisco City Sand	February 1, 2000	Fresh water and salt water
Southwest Canaan Church	Escambia	Smackover	October 1, 2001	Fresh water and salt water (9/2002)
West Canaan Church	Escambia	Smackover "A" and "B" Pools	April 1, 2002	Fresh water and salt water
Little Cedar Creek	Conecuh	Smackover	January 1, 2005 (October 1, 2007[1])	Gas (10/2007), water
East Womack Hill	Clarke	Smackover	July 1, 2005	None
South Carlton	Clarke and Baldwin	Pilot-Massive	October 1, 2005	Fresh water and salt water (8/2006)

[1] Last redetermination approved. For a complete listing of redeterminations in the Little Cedar Creek Field, refer to the Board Order Summary on the Board's web page.

Table 5.—New oil and gas fields established in the Black Warrior Basin Region, 1999-2007

Field	County	Date field established	Producing horizon	Hydrocarbon type
North Higdon Church	Lamar	2000	Nason	Gas
County Line	Lamar and Pickens	2000	Carter, Lewis	Gas
Southeast Fairview	Lamar	2001	Carter	Oil, Gas
Short Creek	Jefferson	2001	Pottsville Coal Interval	Coalbed Methane
Academy Church	Lamar	2002	Box, Chandler, Gilmer "A"	Gas
Reedy Creek	Lamar	2002	Carter	Gas
East Mt. Zion	Lamar	2002	Lewis	Gas
Southeast Chicken Swamp Branch	Pickens	2003	Lewis	Gas
Asbury Church	Lamar	2003	Chandler, Carter, Sanders	Gas
Vernon	Lamar	2004	Carter	Gas
Northeast Kennedy	Lamar	2005	Lewis	Gas
Lazy Creek	Pickens	2006	Carter, Millerella	Gas
Nettles Branch	Marion	2007	Evans	Oil

Table 6.—New pools established in existing fields in the Black Warrior Basin Region, 1999-2007

Field	County	Date pool established	Producing horizon	Hydrocarbon type
South Kennedy	Lamar	1999	Fayette	Gas
Star	Lamar	2000	Devonian	Gas
Yellow Creek	Lamar	2000	Box	Gas
Mt. Zion	Lamar	2000	Box	Gas
County Line	Lamar and Pickens	2000	Benton, Fayette	Gas
North Blowhorn Creek	Lamar	2001	Gilmer	Oil
Southeast Watson Creek	Lamar	2004	Millerella	Oil
Wiley Dome	Tuscaloosa	2005	Ordovician	Gas
Coal Fire Creek	Pickens	2006	Nason	Gas

depth of 1,998 feet. At the end of 2007, no test results had been reported.

APPALACHIAN FOLD AND FAULT REGION

Exploration efforts for shale gas have been primarily in the Appalachian Fold and Fault Region, although some shale gas wells have also been drilled in the Black Warrior Basin. The Floyd Shale of Mississippian age, the Chattanooga Shale of Devonian age, and the Conasauga Formation of Cambrian age have been the primary targets of recent exploration efforts for shale gas. Shale gas completions have been attempted in both vertical and horizontal wells. Drilling for shale gas has occurred in Pickens, Lamar, Tuscaloosa, Blount, St. Clair, and Etowah Counties.

The Big Canoe Creek Field was established in the Appalachian Fold and Fault Region in 2007 (table 8). This field, which produces from the Conasauga Formation of

Table 7.—New unitized areas established in the Black Warrior Basin Region, 1999-2007

Unit	County	Unitized interval	Date unit established (revisions)	Approved injection fluids (date begun)
Brookwood Unit 7	Tuscaloosa	Pottsville Coal Interval	April 1, 2001	None
Deerlick Unit 1	Tuscaloosa	Pottsville Coal Interval	November 27, 2002	None
Deerlick Unit 2	Tuscaloosa	Pottsville Coal Interval	October 1, 2003	None
Brookwood Unit 7A	Tuscaloosa	Pottsville Coal Interval	September 1, 2004	None
Southeast Bluff Upper Carter	Fayette	Upper Carter Sand	November 1, 2005	Fresh water and salt water (1/2007)
Oak Grove Unit 6	Jefferson	Pottsville Coal Interval	June 21, 2006	None

Table 8.—New oil and gas fields established in the Appalachian Fold and Fault Region, 1999-2007

Field	County	Date field established	Producing horizon	Hydrocarbon type
Big Canoe Creek	St. Clair	2007	Conasauga Formation	Gas

Table 9.—New unitized areas established in the Appalachian Fold and Fault Region, 1999-2007

Unit	County	Unitized interval	Date unit established (revisions)	Approved injection fluids (date begun)
Cahaba Unit 1	Shelby	Pottsville Coal Interval	February 1, 2005 (September 1, 2006)	None
Cahaba Unit 2	Shelby and Bibb	Pottsville Coal Interval	September 1, 2006	None

Cambrian age is the first shale gas field established in Alabama. Temporary spacing units of 320 acres have been established for the field. Once sufficient technical data become available, permanent spacing units will be established. The field comprises 40 square miles, and 14 wells have been drilled in the field through 2007. Flow rates range from 26 to 233 Mcfd of gas.

Also in 2007, Geomet, Inc., drilled two wells in Blount County. The Wittmeier 19-15-01 Well (Permit No. 15386) was drilled to a total depth of 2,060 feet and tested 74.6 Mcf of gas from the Chattanooga Shale. A second well drilled by Geomet, Inc., the Wittmeier 30-03-02 (Permit No. 15436), also tested gas at a rate of 56.6 Mcfd from the Chattanooga Shale.

Two areas in the Gurnee Coal Degasification Field were unitized between 1999 and 2007 (table 9). The units are named the Cahaba Units 1 and 2. No fluids are being injected as a part of the unitization plan.

TENNESSEE VALLEY REGION

There have been no fields established in the Tennessee Valley Region of the State. Drilling in this area continues to be infrequent, but oil and gas shows have been encountered in numerous wells. Conventional exploration projects have been undertaken in the area, and the possibility of oil or gas reservoirs being discovered in the area remains good.

PIEDMONT REGION

Prospects for oil and gas discoveries in the Piedmont Region of the State are low. Igneous and metamorphic rocks, which are generally not associated with hydrocarbon deposits, are exposed at the surface. The temperatures and pressures associated with the formation of igneous and metamorphic rocks would probably destroy any hydrocarbons that might have been generated. However, seismic studies conducted in Georgia and North Carolina indicate that crystalline rocks were thrust over sedimentary rocks equivalent to those of the Appalachian Fold and Fault Region. Additional studies of the sedimentary rocks underlying these crystalline rocks are needed before the region's hydrocarbon potential can be totally eliminated.

SOUTHEAST ALABAMA REGION

No discoveries have been made in the Southeast Alabama Region. The sedimentary rock cover in this area is thin, and geologic structures such as those that exist in the Southwest Alabama Region are generally absent. Wells are occasionally drilled in this area, but no commercial discoveries have been made.

EXPLORATION AND PRODUCTION STATISTICS AND TRENDS, 1999–2007

DRILLING PERMITS AND FOOTAGE

PERMITS

Drilling activity in Alabama remains brisk with the majority of permits being issued for coalbed methane wells (fig. 3). Historically, 200 to 400 drilling permits have been issued in a typical year. During the past six years, increased exploration has resulted in approximately 500 drilling permits typically being issued, with more than 700 wells permitted in 2006. In recent years, drilling activity in the Southwest Alabama Region has

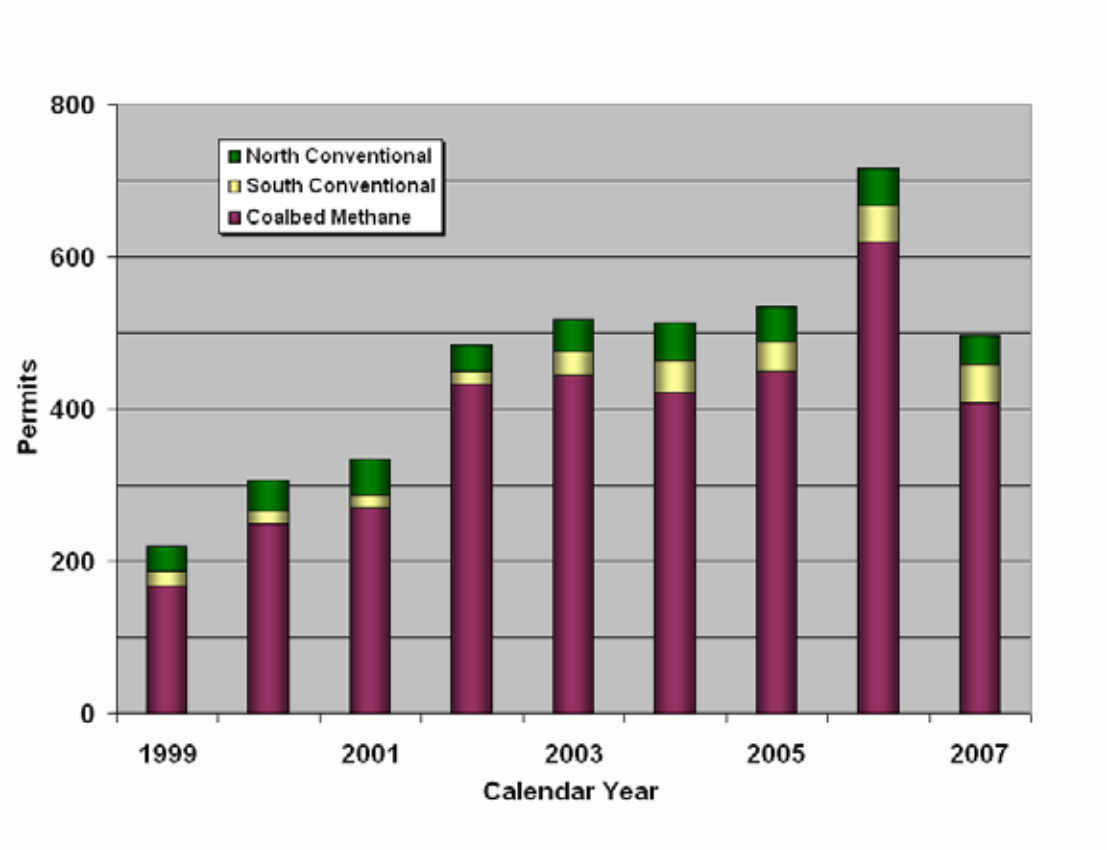

Figure 3.—Drilling permits for exploratory wells by well type in Alabama, 1999-2007.

increased primarily due to the development of the Smackover oil reservoir in the Little Cedar Creek Field in Conecuh County, along with additional development in Escambia County. Exploration and development of conventional hydrocarbon resources in the Black Warrior Basin Region has remained fairly steady with relative highs for both conventional and coalbed permits issued in 2006.

FOOTAGE

As would be expected, the total footage drilled for oil and gas wells correlates with the number of permits issued and the number of wells drilled. Prior to 2002, the number of wells drilled was less than 300, and the drilling footage was less than 700,000 feet. Since that time, the number of wells drilled has averaged more that 400 annually, and the drilling footage has ranged from a low of approximately 1.0 million feet in 2002 and 2003 to a high of 1.9 million feet in 2006 (fig. 4).

FIELDS, POOLS, AND UNITS

Through 2007, the State Oil and Gas Board has established 380 fields containing 580 pools. There are 20 coalbed methane fields located in the Black Warrior Basin Region and two coalbed methane fields in the Appalachian Fold and Fault Region. There are 18 defined gas-condensate fields located in the Southwest Alabama Region. Statewide, there are 331 conventional gas pools and 209 oil pools. There are 253 gas pools in the Black Warrior Basin that are completed predominantly in Mississippian- and Pennsylvanian-age sands and 75 gas pools in the Southwest Alabama Region which have produced from the deep Jurassic Norphlet Formation in the State's coastal waters or Miocene age sands which have produced from both the State's coastal waters and the southern portions of Mobile and Baldwin Counties. In addition to the two coalbed methane fields, the Appalachian Fold and Fault Region has one oil field and one gas field.

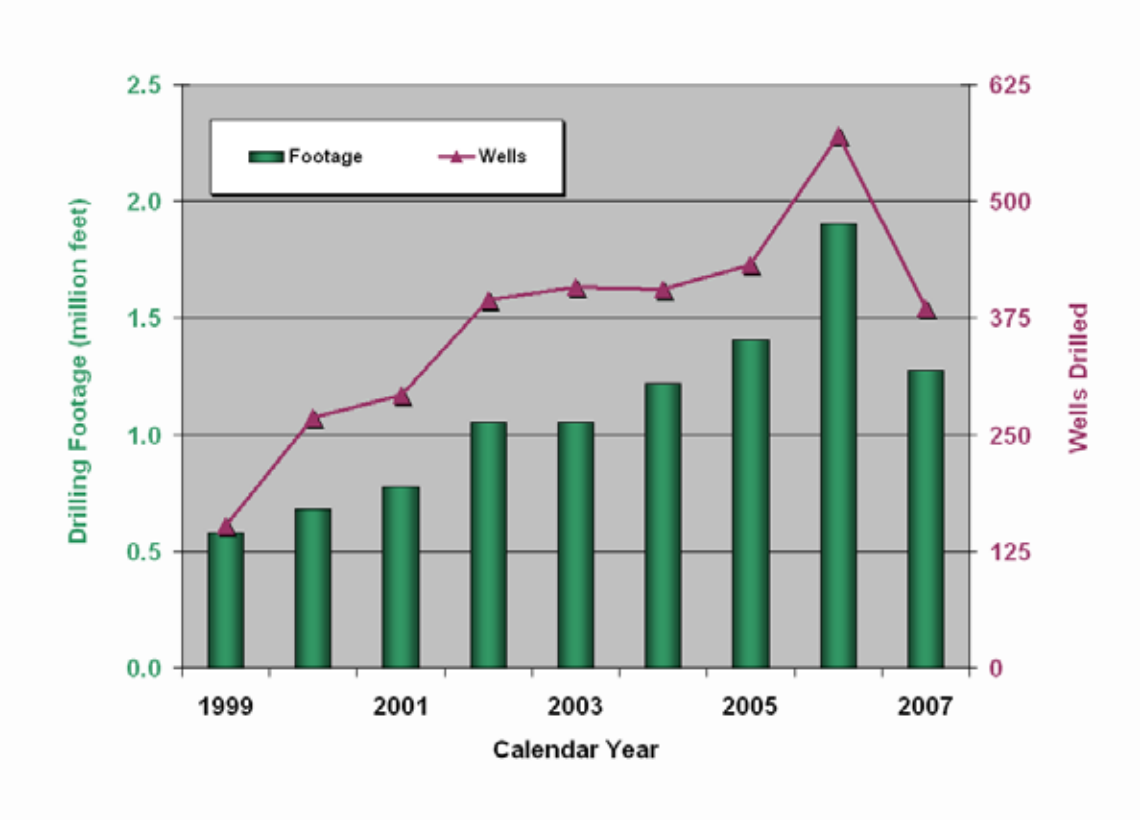

Figure 4.—Total drilling footage and number of wells drilled in Alabama, 1999-2007.

Through 2007, 89 unitized areas have been established in Alabama. In the Southwest Alabama Region, 53 unitized areas have been established which include 15 units in the State's coastal waters. Twenty-five unitized areas have been established for coalbed methane areas, and 11 have been established for conventional fields in the Black Warrior basin.

Between 1999 and 2007, 15 new unitized areas were established in the State. There were 7 coalbed methane unitizations (5 in the Black Warrior basin and 2 in the Appalachian Fold and Fault Region). Also, in the Black Warrior basin, a portion of a conventional oil field was unitized. Seven unitized areas were established in the Southwest Alabama Region including one unitized area in the State's coastal waters.

OIL AND GAS PRODUCTION

PRODUCING WELLS

As a result of the exploration and development activities since 1998, the total number of producing wells has increased dramatically. In December 1998, there were 4,265 producing wells in the State. By the end of 2007, that number had increased to 6,531 wells, representing a 53 percent increase.

The number of producing wells can be broken down into five categories: flowing oil wells, other oil wells, onshore gas wells, offshore gas wells, and coalbed methane wells. With the exception of the coalbed methane wells, the number of wells in each category remained relatively constant from the end of 1998 through 2007. The number of flowing oil wells typically ranged from 70 to 80 during that period, reaching a high of 104 in December 2007. The number of other oil wells remained around 740. Onshore gas wells ranged from 420 to 440, while offshore gas wells ranged from 47 to 51.

At the end of 1998, a total of 2,972 coalbed methane wells had been drilled. Since that time, 200 to 350 new coalbed methane wells have been drilled each year. By the end of 2007, nearly 5,200 coalbed methane wells were classified as producers. This number accounts for 80 percent of all producing wells in the State and represents nearly a 75 percent increase in this category since 1998.

PRODUCTION VOLUMES

Prior to 1995, production of liquid hydrocarbons (oil and condensate) totaled more than 18 million barrels per year. By 1999, the annual liquids production had declined to 11 million barrels. This trend continued through 2004 when the total oil and condensate production reached a low of 7.4 million barrels (fig. 5). Condensate production has continued to decline as a result of the reservoirs in the major gas-condensate fields in the Southwest Alabama Region reaching the mature stage of their productive life. Increases in oil production between 2004 and 2007 can be attributed principally to the continued development of the Little Cedar Creek Field in Conecuh County.

Natural gas production peaked in 1994 at more than 461 Bcf. By 1999, the total gas production had dropped to less than 423 Bcf. As noted in figure 5, gas production has exhibited a steeper rate of decline since 2003 as a result of further declines in offshore and coalbed methane production levels.

GAS PRODUCTION BY WELL TYPE

During the period of 1999 to 2007, the two main sources of the produced gas in Alabama have been wells located in State waters and coalbed methane wells. The remainder of the gas has been produced by onshore conventional wells (fig. 6). Although in decline, gas production from the State's coastal waters accounted for 50 percent or more of the State's total production from 1999 through 2003. By 2007, that percentage had dropped to approximately 46 percent of the State's total.

Coalbed methane gas production volumes increased from 114.66 Bcf per year in 1999 to 121.44 Bcf in 2004, representing an actual 5.9 percentage increase. However, because of the declines in gas production from other well types, the coalbed methane gas percentage increased from 27 percent of

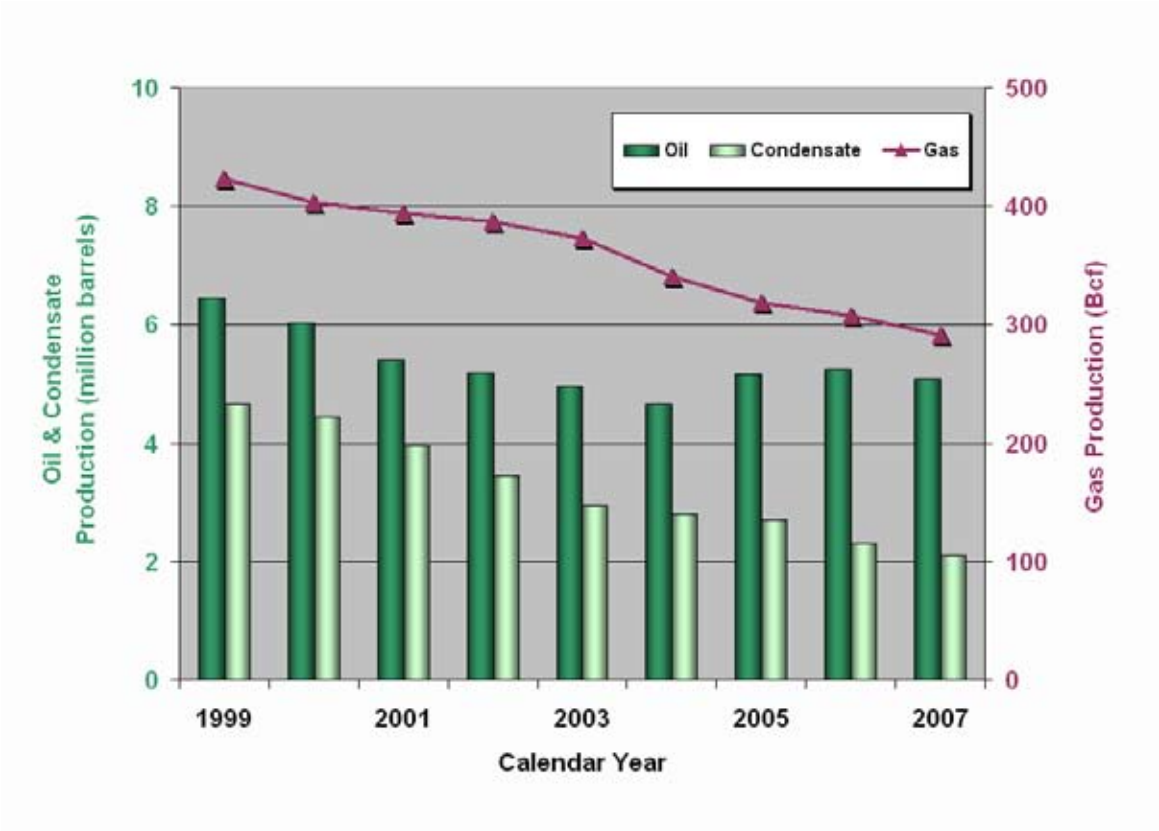

Figure 5.—Oil, condensate, and gas production in Alabama, 1999-2007.

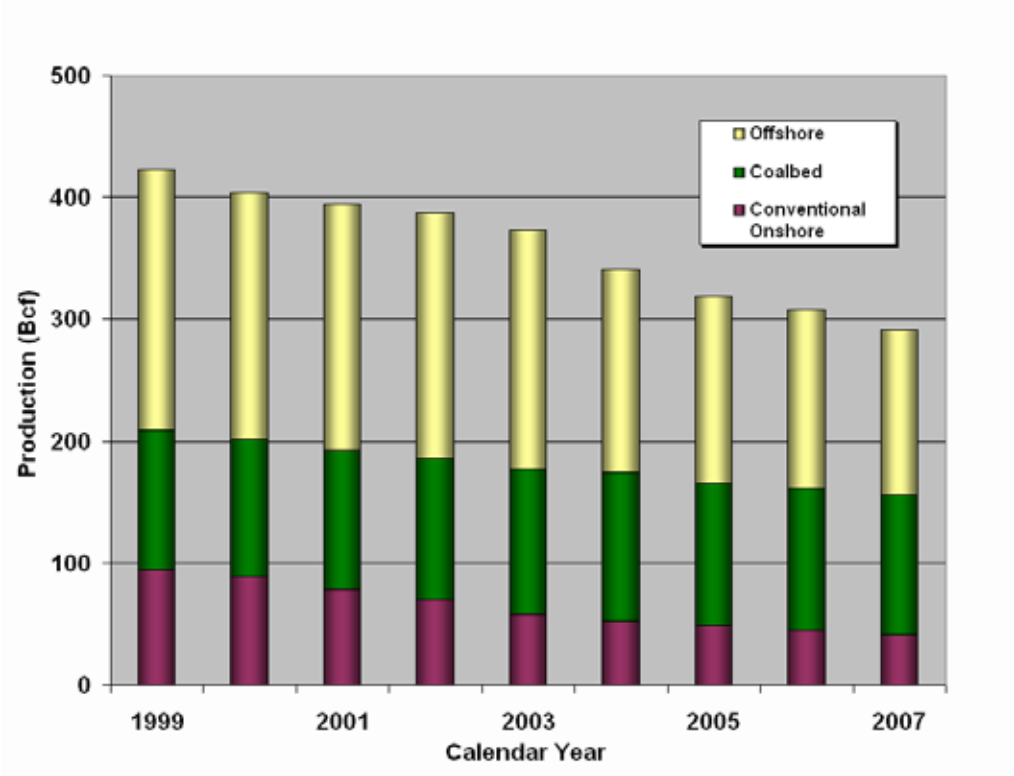

Figure 6.—Natural gas production from offshore, coalbed, and conventional onshore wells in Alabama, 1999-2007.

the State's total gas production to 35.6 percent in 2004. Although annual coalbed methane production had declined to less than 115 Bcf, its percentage of the State total had increased to 39.5 percent in 2007.

Gas production from the State's conventional onshore reservoirs has decreased from 94.4 Bcf of gas in 1999 to 41 Bcf of gas in 2007. This decrease represents a change from 22.3 percent of the total gas to 14.1 percent during the time period.

GAS DISPOSITION

Figure 7 depicts the disposition of gas produced in Alabama. Gas used for repressuring reservoirs as a part of enhanced recovery projects has fallen significantly. This is due to the mature nature of several major field-wide units (such as Chatom, Chunchula, and Hatter's Pond) in the Southwest Alabama Region. These units are now in "blow down" which means that they have ceased injecting gas and are recovering the remaining hydrocarbons. Nonhydrocarbon gases (such as hydrogen sulfide, carbon dioxide, and nitrogen) have also decreased proportionately due to the decrease in overall production volumes. Marketed gas has fallen from 373.7 Bcf in 1999 to 260.5 Bcf in 2007, representing a 30 percent decrease over this time period, but still accounts for the largest component of the disposition. Lease fuel use has increased during this time period due to increases in producing well numbers.

Flared gas volumes are somewhat variable from year to year depending on the number and type of new wells completed for production and the proximity of those wells to the existing pipeline infrastructure. As one would expect, this final category is the smallest component of the disposition.

GAS PRODUCTION MILESTONES

The offshore and coalbed methane segments of Alabama's oil and gas industry recently reached major milestones in the production of natural gas. Offshore wells located in State coastal waters have produced more than 3 trillion cubic feet of gas since production began in 1987. That milestone

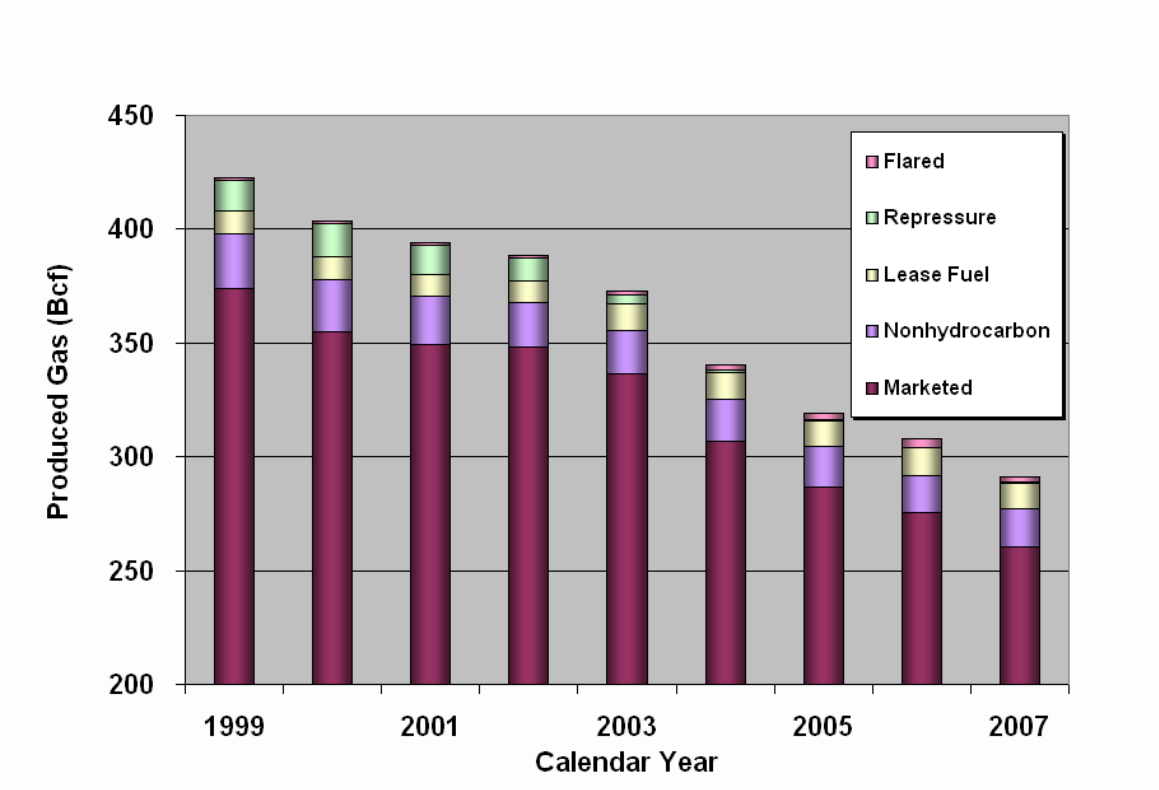

Figure 7.— Disposition of produced gas in Alabama, 1999-2007.

was reached in October 2007. Gas production from coalbed methane wells surpassed the 2 trillion cubic feet mark in December of that year. Coalbed methane production was first reported to the State Oil and Gas Board in 1980.

By 1992, offshore and coalbed methane wells had become the principal contributors to the State's natural gas production. As a result, Alabama became one of the top ten gas-producing states that same year. Since that time, offshore wells have typically produced 50 percent of the State's natural gas each year. During the same time period, annual coalbed methane production initially accounted for approximately 25 percent of the State's production and has steadily increased to nearly 40 percent in 2007. Cumulative production from these two industry segments represents 60 percent of the total natural gas produced in the State since the Oil and Gas Board was established in 1945.

The number of wells and production characteristics are extremely different between these two types of wells. Coalbed methane wells currently account for 80 percent of the State's 6,500 producing wells. Each well produced an average of 63 thousand cubic feet per day during 2007. In contrast, 50 offshore wells had average daily production rates of 10.3 million cubic feet during that year. Individual wells, located in State waters and producing from world class gas reservoirs at depths of more than 20,000 feet, have tested at rates of more than 100 million cubic feet of gas per day.

NATIONAL RANKING

Alabama first became an oil- and gas-producing state in 1944. By 1985, the State had become one of the top 16 oil- and gas-producing states in the country. In 1992, following the establishment of offshore gas wells and coalbed methane wells as significant new sources of gas production, the State became one of the top 10 gas-producing states. During the same time period, Alabama had moved up to thirteenth in liquids production. From 1994 through 1998, the State was ranked ninth in gas production but had slipped from thirteenth to fourteenth in liquids production. In 1999, the State remained ninth in gas production, but its liquids production decreased to fifteenth in the country and has held steady since that time. Alabama's ranking among gas-producing states remained at ninth through 2003 before slipping to tenth in 2004 and 2005 and eleventh in 2006.

OIL AND GAS REVENUES

SEVERANCE TAXES

Alabama's severance tax on oil and natural gas production comprises two separate taxes, a production tax and a privilege tax. The collection of these taxes is administered by the Severance Tax Section of the Sales, Use and Business Tax Division within the Alabama Department of Revenue.

Historically, the total oil and gas severance tax collected annually has generally ranged from $45 million to $65 million. As shown in figure 8, more than $90 million has been generated in six of the last seven years. For the last three years, annual tax revenues have exceeded $142 million, with a record $161 million being collected in 2006. These substantially higher revenues since 2000 reflect significantly higher oil and gas sales prices that have more than offset the observed declines in production volumes during the same time period.

OFFSHORE REVENUES

The principal source of the oil and gas proceeds is royalty payments from the sale of natural gas produced by wells in State waters and other Gulf of Mexico wells located within 3 miles of the offshore State-Federal boundary in Federal waters. Additional sources of offshore oil and gas revenue include the investment income from the Alabama Trust Fund and the offshore portion of the severance taxes. Since the Trust Fund was established in the mid-1980s, more than $2.8 billion of investment income generated from Trust Fund revenues has been paid into the State's General Fund account.

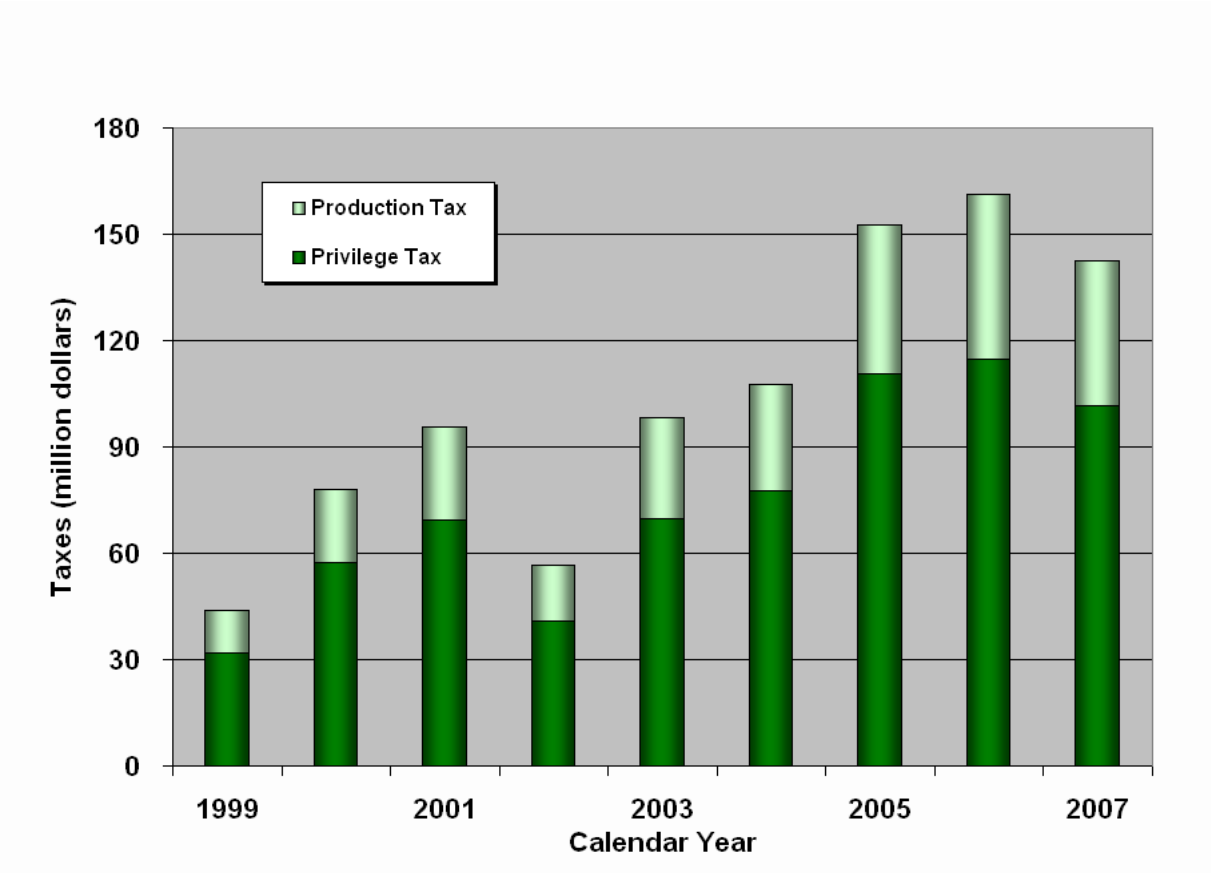

Figure 8.—Severance taxes collected from oil and gas production, 1999-2007.

Prior to 1999, the total of these offshore production revenues was typically $200 million to $300 million each year. In six of the last seven years, the annual State offshore revenue has ranged from nearly $400 million to nearly $500 million (fig. 9). Record revenues of more than $493 million were collected in 2005. As expected, year-to-year comparisons from 1999 through 2007 for offshore revenues follow the same general trend as noted for severance taxes.

TRUST FUND REVENUES

The Alabama Trust Fund was established as a repository for oil and gas proceeds generated by production royalties and lease sale bonus monies from offshore tracts for the future benefit of the citizens of the State. These proceeds serve to build up the Fund balance. Since the mid-1980s, the balance has grown to nearly $3 billion by the end of 2007. The investment of the fund principal provides an annual revenue stream from $100 million to nearly $150 million, which is transferred to the State's General Fund account for immediate use.

The oil and gas proceeds, which are directly dependent on production volumes and sales prices, are more variable than the investment income. Since 1999, the annual proceeds have ranged from nearly $120 million to a record high of more than $326 million in 2006 (fig. 10).

COMBINED CONTRIBUTION

When the severance tax is combined with the offshore revenues, the total oil and gas monies collected by the State have averaged about $534 million per year for the last five years. This amount is equivalent to about 29 percent of the State's General Fund appropriation for the Fiscal Year 2008.

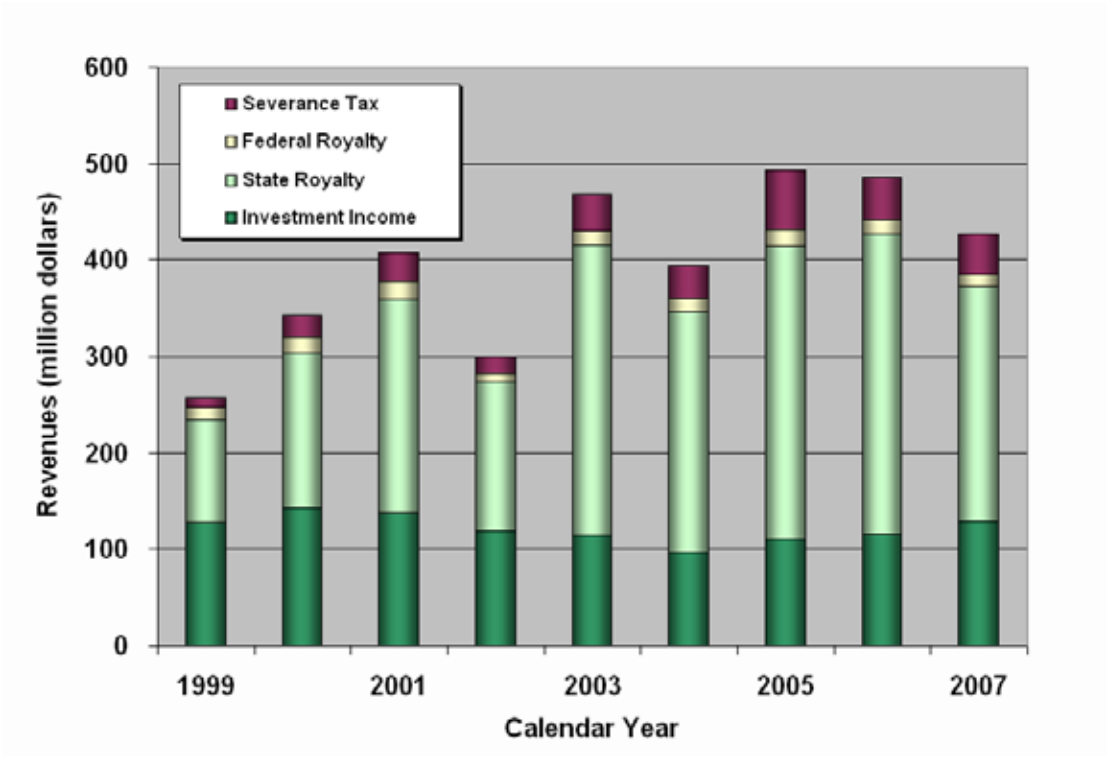

Figure 9.—Revenues generated from production of gas from wells located in Alabama's coastal waters, 1999-2007.

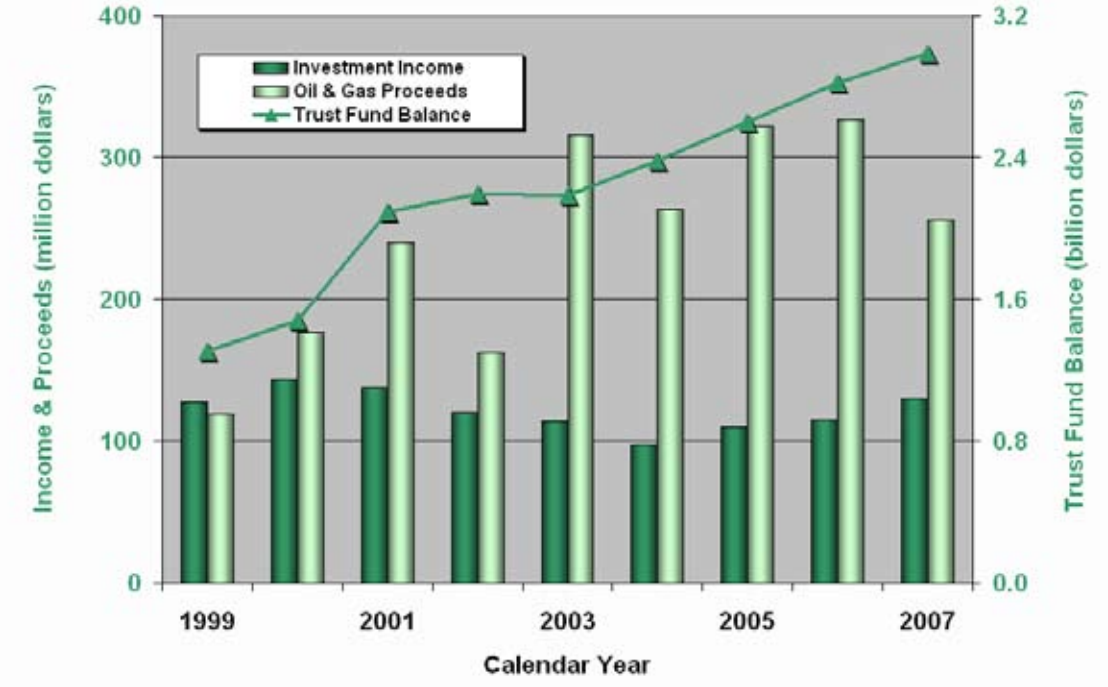

Figure 10.—Alabama Trust Fund revenues and fund balance, 1999-2007.

OIL AND GAS BOARD ONLINE RESOURCES

WEB PAGE ORGANIZATION

The homepage of the combined Geological Survey of Alabama/Oil and Gas Board web site serves as the portal to the Board's online resources. As stated earlier, the web site has now become the method of choice for obtaining detailed information and data about industry activities from the Board's official records. Because the web site is a key component in the dissemination of oil and gas data and information, it is important for potential users to be familiar with and understand its structure and organization. To that end, a brief explanation follows.

The basic framework for each page consists of three areas or columns (fig. 11). The left column occupies about one quarter of the page width and is reserved for navigation links to major sections or topics within the web site. The center portion of the page contains selections for data queries, drop-down boxes for or links to pertinent data or information, results of queries, or, otherwise, the requested information. "Quick Links" to outside agencies or data, along with other general information, are maintained in the right column. Once a user moves beyond the homepage, the right column also contains either general agency contact information or staff contacts that relate to the information or data presented on a given page.

NAVIGATION LINKS

The Board's navigation links are organized such that only the three most accessed links are shown on the homepage (fig. 12). These links are "Activity Report," "Hearings," and "Databases." However, all

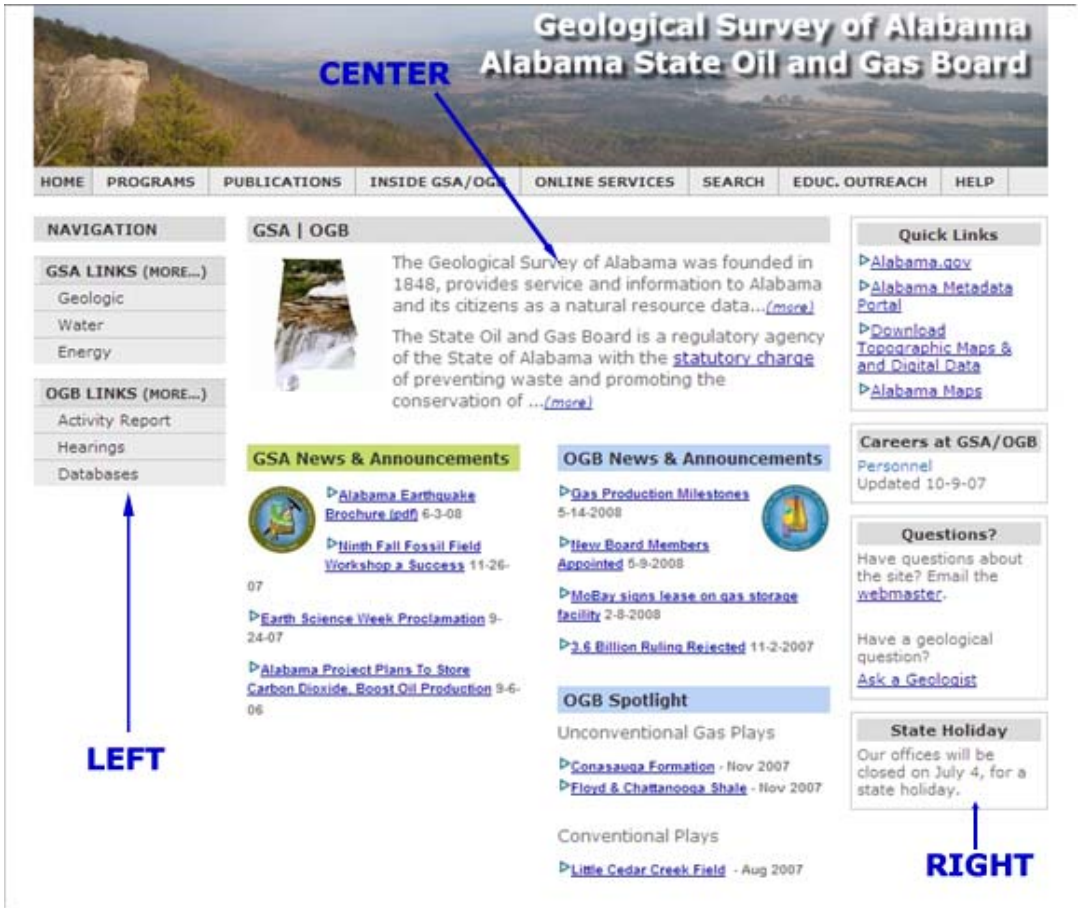

Figure 11.—Computer screenshot denoting the basic framework of the combined Geological Survey of Alabama/Oil and Gas Board web site.

Figure 12.—Computer screenshot illustrating the major navigation links for Oil and Gas Board information on the combined Geological Survey of Alabama/Oil and Gas Board web site.

the Oil and Gas Board links can be accessed from the homepage by clicking on the heading, “OGB LINKS (MORE…).”

ACTIVITY REPORT

The “Activity Report” link takes the user to the Board’s weekly summary document of permitting, drilling, and completion activities. The activities associated with each well are organized alphabetically first by county, then by field within each county, and finally by permit number. Following the activities section of the report is a section containing a listing of wells permitted during the previous week. All newly reported activities since the previous report are highlighted in a bold font to allow the user to quickly and easily identify the most recent activities.

HEARINGS

Linking to the “Hearings” section of the web page brings up a series of five “tabs” related to the public hearings conducted periodically by the Board (fig. 13). The first tab contains a schedule of those meetings, along with pertinent filing dates. A listing of future meetings for which an agenda has been established can be viewed by clicking on the second tab, entitled “Agendas.” Each meeting date in the list is hyperlinked to a document containing the docket items for that hearing. Once a hearing is held, the results of that meeting are generated for each docket item and added to that document. The link to the document is then moved from the “Agendas” tab to the “Results” tab.

Moving to the “Orders” tab brings up a secondary level or subset of tabs that provides access to orders issued by the Board or to summaries of information contained in each of the orders. Within the subset, the first tab, labeled “Board Orders,” allows the user to search for individual Board orders by year. At the end of 2007, all orders from 1997 through 2007 were available in this manner.

The second sub-tab, “Board Order Summaries,” links the user to a brief summary description of each order issued by the Board since it was established in 1945. The summaries can be sorted either by the year the order was issued or by oil and gas field name.

Selecting the “Previous” tab takes the user back to the first level of tabs associated

Figure 13.—Computer screenshot highlighting the tabs related to public hearings on the combined Geological Survey of Alabama/Oil and Gas Board web site.

with hearings and displays the "Schedule" tab information. Once the user has returned to the first level of tabs, he has access to the official transcripts of the Board's public hearings through the "Transcripts" tab. The transcribed minutes of each hearing from 1998 to the present are available on the web site for viewing or downloading.

These features within the Hearings section of the web site can be particularly useful to an individual who is interested in Board actions related to a specific field. The user can find a given item of interest from the Board Order Summaries list for the field in question and note the hearing date and Board Order number in the summary for that item. By knowing the hearing date, the user can find the transcript for the hearing conducted on that date and review the complete transcript for that docket item, including the testimony of expert witnesses. Likewise, the specific language and stipulations of the Board Order can then be reviewed by selecting the year the order was issued under the "Orders" tab, moving to the order in question, and opening the file.

DATABASES

The "Database" link takes the user to a list of databases generated and maintained by the Board's staff. Principal among these are the "Well Records" and "Production" databases. Other available databases include "Engineering" (PVT), "Fields & Pools," "Field-wide Units," "Cores," "Companies," and "Well File Forms." With the exception of the Well File Forms, all databases are searchable by multiple parameters contained in the specific database. The "Well File Forms" search is limited to the well permit number. In all database queries, the parameter entered is submitted as a wildcard search string.

The "Well Records" database is the principal source of well-specific information and data within the web site. Choosing the "Well Records" link brings up a choice of ten different database parameters to use for a data query. An additional option available to the user is to "View Last 50 Permits." This option is particularly useful to those individuals who need to track recent well drilling permit activity.

Based on the parameter selected, a preliminary list of well records that satisfies the query filter is generated and displayed. Any given record can then be selected from the list in order to view a summary of that well's data that are on file with the Board. At this point, the preliminary well list can be printed or the entire contents of each well record can be dumped to an Excel spreadsheet.

Each well record is organized by a series of six tabs (fig. 14). The "General" tab displays general information about the well including well name, operator name, field name, well type, and well status. The "Location" tab contains latitude and longitude coordinates as well as distances from section lines, along with township and range. Total drilling depth and important dates associated with the well, such as permit and spud dates, are contained in the "Drilling" tab.

The "Geologic" tab includes a listing of geophysical logs available for the well and a summary of information relating to samples and cores taken. Reference elevations associated with the well are also found under this tab. Well construction information and well testing data are located in the "Engineering" tab. The "Forms" tab contains links to scanned images of all Oil and Gas Board Forms filed by the operator for each well. If the user knows the permit number of the well, scanned images of the forms for that well can be accessed directly through the "Well File Forms" database rather than going through the "Well Records" database.

Three additional options are located above the six tabs in the "Well Records" database display area. The first option is "Printable Copy," which allows the user to view and print out all information contained in the six tabs on a single page. The second option is the "Online Map" feature of the web site. Clicking on this link opens up a window containing an ArcGIS map in the vicinity of the selected well. An expanded treatment of the "Online Map" feature is given later in this publication. The last option above the tabs is "Production." Choosing this option generates a monthly production data summary that is displayed in table format for the selected well.

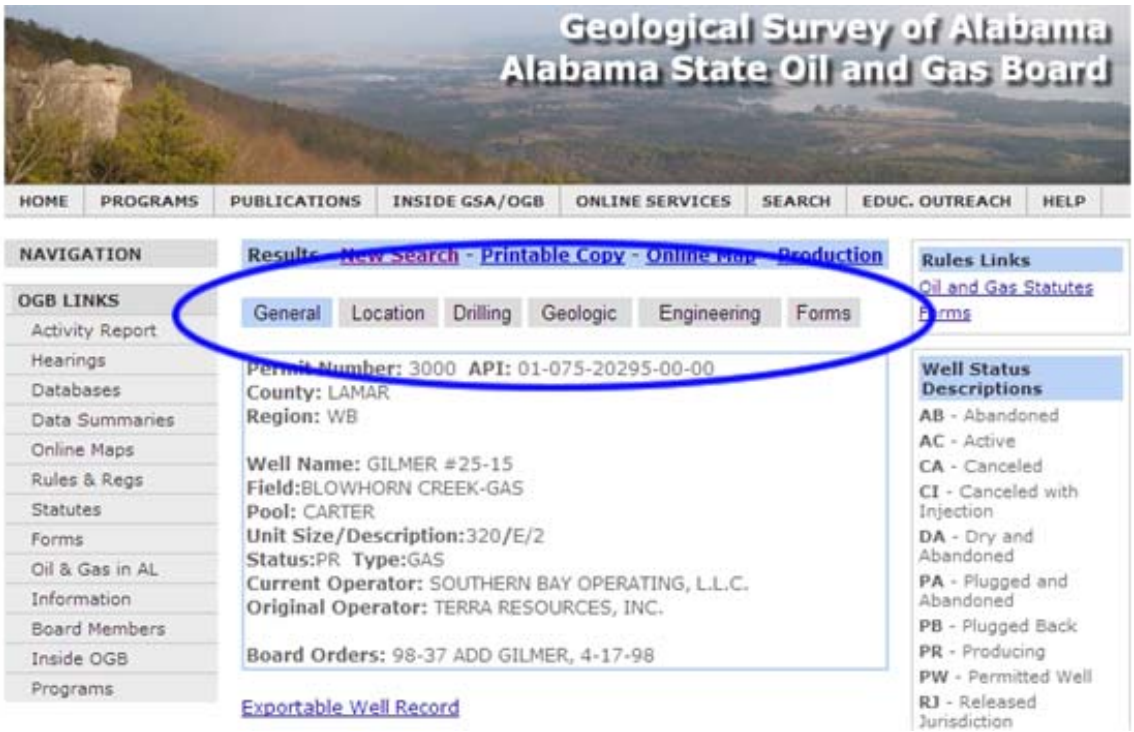

Figure 14.—Computer screenshot highlighting the tabs associated with the well records database on the combined Geological Survey of Alabama/Oil and Gas Board web site.

The “Production” database navigation link provides access to the Board’s production records. These records are maintained for individual wells, fields and pools, operators, field-wide units, and processing plants. The individual well production records are searchable by permit number, field name, operator name, well name, or pool name. Other record types are filtered based on the name of the entity type (field, operator, etc.) selected.

The results of an individual well production search are displayed such that the well’s monthly production can be exported to an Excel spreadsheet or viewed in table or chart formats. For wells that produced from more than one pool, monthly production summaries from each pool as well as the total production from the well are available. In a similar manner, production totals for fields are presented in table and chart formats either for individual pools or by field. Both tables and charts can be exported to either an Excel spreadsheet or to an Acrobat (PDF) file by selecting the desired export format at the top of the page and then clicking on “Export.” The PDF file is the preferred method for printing the tables and charts.

The remaining databases are searchable on the web site in the same manner as described for the Well Records and Production databases. A query on the “Fields & Pools” database returns a list of all named pools for the field or fields that satisfy the search parameter. Clicking on the link for a given pool will display pertinent information regarding the field and pool to include summary data for the discovery well. Above that information on the same page are links to view monthly production data for the pool or for a combined total for all pools in that field. The user can also link to and view the current Special Field Rules for the field from the same page.

The results of a data query on the “Companies” database are structured and presented in the same manner as the “Fields and Pools” results. Likewise, the user can link to and view the Organization Report (Form OGB-5) as well as the corporate records of the Alabama Secretary of State for each active operator from the “Companies” results page.

ONLINE MAPS

The Online Maps link from the web site provides the user with a web-based method for viewing Alabama’s Oil and Gas GIS data (fig. 15). Once the link is clicked, a new browser window is launched, and the map system begins to load. Once fully initiated, dockable windows that contain map tasks, search results, map contents, navigation, and an overview map will be displayed on the left side of the screen. These windows are expandable and movable to allow the user to view window contents fully. On the right is the main map window, and a toolbar used for map manipulation will be located at the top.

Initially, the map shows the entire State and the oil- and gas-producing regions of Alabama. Once the user begins to navigate around the map, layers will become active and then inactive when threshold scales are reached or passed. For example, by zooming down into a specific area, layers such as field boundaries, field-wide unit boundaries, wells, and well units will become visible while others, such as the oil- and gas-producing regions, will turn off. Layers can be turned off and on manually by checking and unchecking the layers in the “Map Contents” window frame.

Online maps have tools and tasks that can be invaluable for exploring both the spatial and attribute oil and gas GIS data. Pan and zoom tools allow users to maneuver around the map to locate specific areas of interest. Attribute data searches allow users to search GIS attribute databases efficiently and effectively. Complex database queries can also be created and run against the well records database using the “Query Tool.”

A “Layout Printing” task is also available with the online maps. Each map generated can be exported to a number of graphical formats. Some of these formats include PDF, Adobe Illustrator, JPG, and PNG. Predefined templates are provided at different page sizes

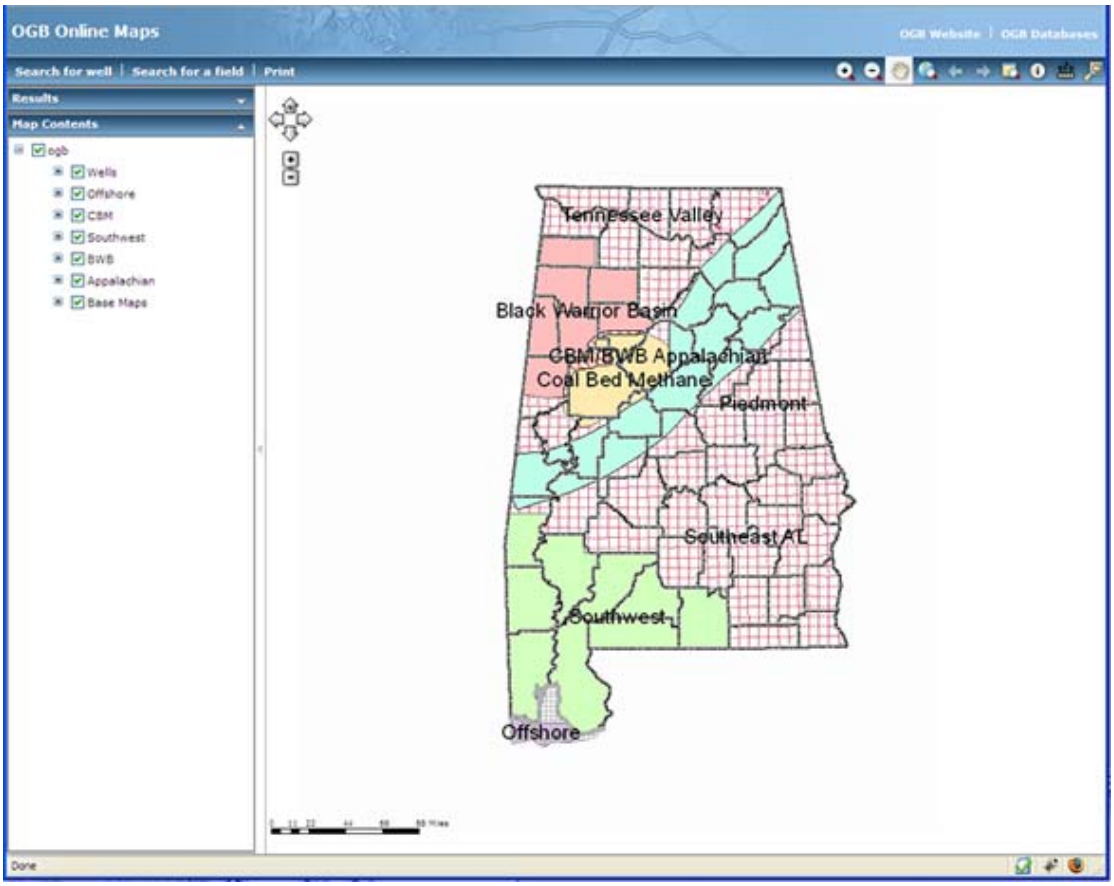

Figure 15.—Computer screenshot depicting the online maps page on the combined Geological Survey of Alabama/Oil and Gas Board web site.

to allow for high quality maps to be generated, all within the online environment.

OTHER LINKS

The remaining Oil and Gas Board Links are informational in nature and generally can be grouped into three categories: legal, industry, and agency. The legal category comprises the "Statutes" and "Rules & Regs" links. A complete listing of the State's oil and gas laws can be accessed by clicking on the "Statutes" link. Similarly, all of the current rules and regulations promulgated by the Board can be viewed through the "Rules & Regs" link.

Information about the oil and gas industry in the State is available through two links. The first link, "Oil & Gas in AL," provides a historical perspective of the development of the oil and gas resources in the State as well as graphical overviews of various industry indicators for the past ten years. The "Data Summaries" link contains oil and gas summary data in chart and PDF formats for the areas of "Permitting and Drilling," "Production," and "Revenues."

The agency-related links include "Forms," "Board Members," "Inside OGB," and "Programs." The user can access and download the Board's Oil and Gas Board Forms through the "Forms" link. The other links include, but are not limited to, brief biographical sketches of Board members, access to a staff directory, and a description of the major program areas of the agency.

The last major Oil and Gas Board Link is "Information." This link offers a secondary or alternative route to obtain information or data that are accessible through other links. These data and information are grouped into "Regulatory Info," "Oil and Gas Info," and "Board Hearings" categories.

STATE OIL AND GAS BOARD

HISTORY

The State Oil and Gas Board of Alabama was established in 1945 to regulate the development of the State's petroleum resources. The creation of the Board was the culmination of the previous 80-year period of intermittent oil and gas development that at times included wasteful practices. The Board was established to prevent waste and ensure the conservation of the State's petroleum resources while protecting correlative rights of owners.

Alabama became an oil-producing state with the first commercial discovery of oil at Gilbertown in Choctaw County in February 1944. In May 1945, the Legislature created the Board in its present form, which consists of three members appointed by the Governor for staggered terms of six years each and the State Geologist, as State Oil and Gas Supervisor, serving as ex officio secretary of the Board.

Walter B. Jones, third State Geologist of Alabama, became the first State Oil and Gas Supervisor and served in this capacity until his retirement in 1961. Other State Geologists and Oil and Gas Supervisors following Jones have been Philip E. LaMoreaux, who served from 1961 to 1976; Thomas J. Joiner, who served from 1977 to 1981; Ernest A. Mancini, who served from 1982 to 1996; and Donald F. Oltz, who served from 1996 to 2002. Berry H. (Nick) Tew, Jr., is the present State Geologist and State Oil and Gas Supervisor. Through the end of 2007, 23 people had been appointed and served as Members of the State Oil and Gas Board. Active Board Members at the end of 2007 were Gaines C. McCorquodale (Chairman), M. Stephen Dampier, and Rebecca Wright Pritchett.

For more information on the history of the State Oil and Gas Board of Alabama, consult Oil and Gas Report 19, "A History of the Origins and the Early Years of the State Oil and Gas Board of Alabama." Numerous other publications regarding the petroleum resources in the State by the Board and the Geological Survey of Alabama are available. A listing of these publications can be generated through the agency web site by clicking on “Publications” and searching by keyword for “oil.”

CRITICAL ROLE

Crude oil and natural gas account for more than 60 percent of the energy consumed in the United States. While Alabama’s population is ranked 23rd in the nation, our total per capita energy consumption is 7th. Therefore, the ready availability of crude oil and natural gas supplies within the State is paramount to our continued security and economic well being.

The oil and gas industry in Alabama is a major contributor in the development and production of oil and gas resources in the United States. Currently, our State is ranked 11th in the nation in natural gas production and 15th in crude oil production. The State Oil and Gas Board, as the State oil and gas regulator, plays a critical role in the ability of this industry to function. The Board guides the development of these resources and oversees the infrastructure that allows production of the State’s hydrocarbon resources.

Principal duties of the Board include issuing drilling permits; establishing and enforcing rules and regulations; establishing fields, well spacings, and production allowables; authorizing transportation of hydrocarbons for sale; insuring safe operations; conducting public hearings; and promoting resource development. Without a functioning regulatory agency, well permits could not be issued, ultimately resulting in the termination of exploration and development for new sources or supplies of oil and natural gas. Likewise, continued production from existing wells could not be assured if the Board and its staff were not available to grant approvals and authorizations when needed and to oversee the infrastructure and the safety of associated operations.

In addition to the national energy and security implications, the State’s oil and gas industry generates substantial revenues for the direct benefit of the citizens of the State.

In a typical year, $250 to $500 million is received by the State as a result of oil and gas production. Therefore, the oil and gas industry is a significant contributor to the State's economy. Without a functioning Board to oversee and regulate the industry, those much needed revenues would be drastically reduced.

MISSION STATEMENT

It is the mission of the State Oil and Gas Board of Alabama to promote conservation and prevent waste of Alabama's oil and gas resources, while ensuring the protection of the State's ground-water resources and environment, through the promulgation and enforcement of rules and regulations and regulatory actions at public hearings that protect correlative rights of owners and other stakeholders and provide for safe and orderly development. In support of that regulatory mission, the Board's technical staff collects and archives information and well records, including geological, geophysical, and engineering data, in readily available formats that provide a valuable resource for use in the evaluation of petroleum fields and individual wells and for the development of new prospects for oil and gas exploration.

The staff also provides technical expertise in support of the appointed members of the State Oil and Gas Board, the Oil and Gas Supervisor, and other state agencies. The agency is guided by the principles of consistency, fairness, and efficiency in its interactions with oil and gas resource stakeholders and others.

AGENCY ORGANIZATION

GENERAL STRUCTURE

Since its inception, the State Oil and Gas Board of Alabama has been integrally linked with its sister agency, the Geological Survey of Alabama. This linkage comes primarily from the dual responsibilities assigned to that agency's head, the State Geologist, who also serves as the Oil and Gas Supervisor for the Board and directs the daily operations of both agencies. Both agencies share common administrative units, such as Personnel, Property Management, and Accounting and Purchasing. However, the two agencies have separate and distinct organizational structures relative to the technical or programmatic functions of the agencies. Historically, the technical staff of the Board has been organized by the Supervisor in a manner that accomplishes the agency's mission while taking into consideration staffing levels, workloads, levels of industry activity, priorities, and funding levels.

ORGANIZATIONAL CHANGES, 1999–2007

After Dr. Berry H. Tew, Jr., became the Oil and Gas Supervisor in October 2002, he implemented some minor modifications to the Board's organizational structure. One of the principal changes made was to rename the Production and Engineering Division to the Technical Operations and Ground Water Protection Division. Similarly, the Underground Injection Control Section within that Division became the Technical Evaluations and Ground Water Protection Section. These changes were made to more accurately reflect the comprehensive nature of the work being performed within the division and to raise public awareness as to the importance given to groundwater protection by the agency. Staff activities associated with field operations and public hearings were administered through the Compliance and Hearings Division.

Following the retirement of the Deputy Director in 2003, that position remained vacant through December 2006. During that time, the Assistant Supervisors for the two Divisions reported directly to the Supervisor. In January 2007, the Deputy Director position was filled, and the Information Technology & Records Management Division was created (fig. 16). The establishment of this third division reflects the growing importance of computer technology within the agency and is consistent with its strategic goal to fully develop and implement an electronic commerce initiative.

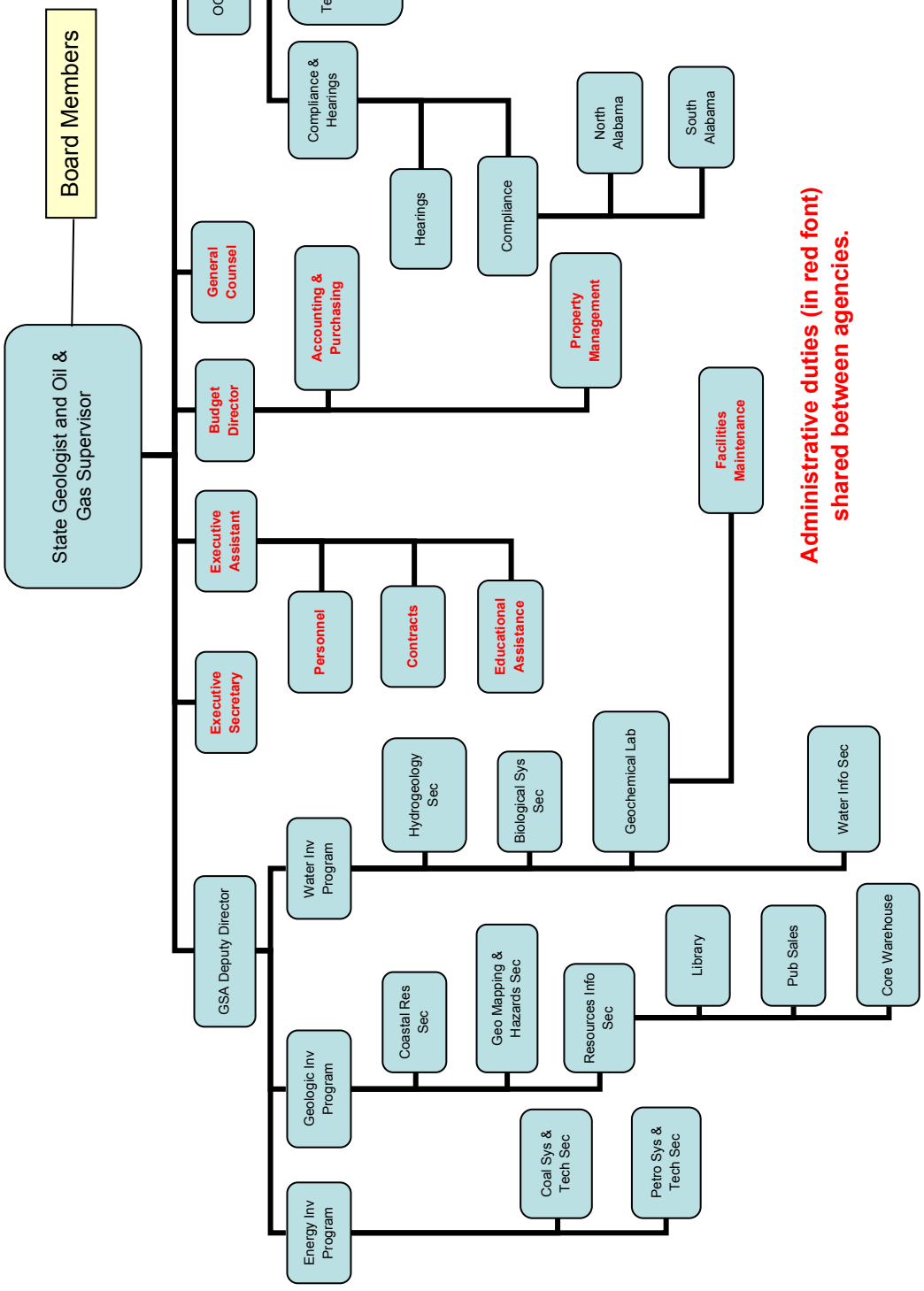

Figure 16.—Organizational chart for the State Oil and Gas Board and Geological Survey of Alabama, 2007.

REGULATORY DEVELOPMENTS

HISTORY

The Alabama Legislature enacted the first oil and gas statute for the State in 1911. The Legislature, in Act No. 1 of the 1945 Acts of Alabama, established the Oil and Gas Board. The position of State Geologist had been established in 1848, and in the 1945 Act, the Legislature provided that the State Geologist would serve as the State Oil and Gas Supervisor. Since 1945, the Alabama Legislature has periodically revised and amended the State's oil and gas statutes.

Initial orders promulgated under the 1945 oil and gas statutes were adopted on September 3, 1946, and published as "Order No. 1, General Order Prescribing Rules and Regulations Governing the Conservation of Oil and Gas in Alabama," effective October 1, 1946. In Order No. 73-1, effective January 26, 1973, the Board promulgated Alabama's first rules and regulations governing the drilling, producing, and pipeline operations in submerged offshore lands. In Order No. 76-100, issued on August 13, 1976, effective October 1, 1976, the Board promulgated new rules and regulations. In that Order, the Board repealed Order No. 1 and all amendments thereto, and adopted new rules and regulations. That Order further provided that Order No. 73-1, relating to rules and regulations governing drilling, producing, and pipeline operations in submerged offshore lands of Alabama, remain in effect except for amendments to Rule OS-7. The Alabama legislature, in 1981, enacted the Alabama Procedure Act which provided for uniform statewide regulations. At that time, the Board's rules and regulations officially become known as the State Oil and Gas Board of Alabama Administrative Code.

Since the issuance of Order No. 76-100, the Board has adopted various amendments to the rules and regulations. A significant amendment to Order No. 76-100 occurred on February 3, 1984, when the Board issued Order No. 84-31, effective May 29, 1984, promulgating the nation's first rules and regulations governing the permitting, drilling, and production of coalbed methane gas.

GENERAL DEVELOPMENTS, 1999–2007

On May 16, 2000, following the issuance of Board Order No. 2000-80 and No. 2000-104, the Board repealed all prior rules and regulations governing onshore lands, submerged offshore lands, and coalbed methane gas operations. Also, included in these new rules and regulations were two new sets of rules and regulations governing the underground storage of gas in reservoirs and the underground storage of gas in solution-mined cavities. Since May 16, 2000, the Board has adopted various amendments to the rules and regulations. The current edition of the rules and regulations was last amended on October 16, 2007. The current Alabama statutory law concerning oil and gas is available on the Board's web site under the navigation link, "Statutes."

LEGAL ISSUES—HYDRAULIC FRACTURING OF COALBEDS

The U.S. Environmental Protection Agency (EPA) granted primary enforcement authority (primacy) to the Board for its Class II Underground Injection Control (UIC) Program in 1982. The approval was made pursuant to Section 1425 of Part C of the Safe Drinking Water Act (SDWA), as amended, upon the Board's demonstration that it had an effective program to protect underground sources of drinking water from underground disposal or injection operations (Class II wells) associated with oil and gas production in Alabama.

In 1994, the Legal Environmental Assistance Foundation (LEAF) petitioned EPA to withdraw approval of the Alabama UIC program. LEAF alleged that the Alabama program was deficient because it did not regulate hydraulic fracturing activities associated with methane gas production and such regulation was required under the SDWA. In 1995, EPA denied the petition because it determined that hydraulic fracturing did not fall within the definition of "underground injection" under the SDWA.

Following EPA's denial of the petition, LEAF petitioned the Eleventh Circuit Court of Appeals for a review of EPA's order. LEAF contended that EPA's interpretation of the regulations was inconsistent with the SDWA. The Eleventh Circuit agreed with LEAF and issued a decision in 1997. Under their decision, hydraulic fracturing of coalbeds in Alabama came under the jurisdiction of the federal SDWA.

Under the direction of the EPA in 1999, the Board promulgated regulations addressing hydraulic fracturing of coalbeds. The new regulations constituted a revision of Alabama's UIC program, which EPA approved in January 2000.

In the Energy Policy Act of 2005, Congress amended the SDWA to change the definition of "underground injection" to exclude hydraulic fracturing operations. The effect of the amendment is to place jurisdiction and authority over hydraulic fracturing operations with the states. Hydraulic fracturing operations in Alabama, therefore, are under the jurisdiction and authority of the Board.

STATE AND NATIONAL ADVISORY BOARDS AND COMMITTEES

Dr. Berry H. Tew, Jr., as State Geologist/Oil and Gas Supervisor, serves on numerous advisory boards and committees. Examples of such participation at the State level include the Alabama Board of Licensure for Professional Geologists, the Alabama Permanent Oil and Gas Study Committee, and the Coastal Resources Advisory Committee. He also serves as one of Alabama's Natural Resources Trustees. At the national level, Dr. Tew has assumed various leadership roles in organizations such as the Interstate Oil and Gas Compact Commission, the Association of American State Geologists, and the Outer Continental Shelf Policy Committee, an advisory board to the Secretary of the Interior. For details regarding participation in these organizations, as well as a more complete listing of such participation by Dr. Tew and other members of the staff, the reader is referred to the Survey/Board web site.

SIGNIFICANT ACCOMPLISHMENTS AND INITIATIVES, 1999–2007

SMART PLAN DEVELOPMENT AND IMPLEMENTATION

During the past four years, the Board has successfully developed and implemented a strategic goals plan within a statewide strategic planning framework known as SMART (Specific, Measurable, Accountable, Responsive, Transparent) Governing. The plan is consistent with Governor Bob Riley's strategic priorities and is designed to allocate limited resources to achieve key goals and to measure performance.

For Fiscal Year 2007, the first primary goal established by the agency was to "effectively and efficiently provide technical (engineering and geological) and legal expertise and support to the Oil and Gas Board in order to promote conservation of state oil and gas resources and to provide for regulation and compliance of the oil and gas industry in Alabama." The second primary goal was to "expand online services to provide accessible (user friendly) data regarding oil and gas resources and operations."

Workload measures included number of wells regulated and number of applications for permit to drill. Efficiency performance measures included cost per well serviced, wells serviced per staff member, as well as percentage of drilling permit applications and hydraulic fracture applications completed within a specified time period.

PERSONNEL

The ability to maintain an adequate staffing level of qualified personnel to carry out the agency's mission pursuant to its legislative mandates has historically been a challenge. From 1986 to 2000, the number of staff members declined by approximately 45 percent due to resignations and retirements. During this time period, the principal personnel objective was to retain the

remaining qualified staff members. The agency lacked sufficient financial resources to hire replacement staff. The total number of Board employees reached an all-time low of 33 in 2000. Additionally, after 2000, it became increasingly apparent that a large majority of the remaining staff would be eligible for retirement within the next five years, thus adding to the urgent need to replenish the staffing level.

Following increased levels of General Fund appropriations in recent years, the Board has made a concerted effort to rebuild its staffing level to address current workload demands and to prepare for anticipated retirements. As a result, the number of staff members had risen to 45 by the end of 2007. The percentage of Board employees eligible to retire within the next five years dropped from 54.5 percent in 2000 to 37.8 percent in 2007. This latest number is comparable to the 2007 statewide percentage, 31.3 percent, of state employees eligible for retirement.

GEOLOGICAL SURVEY OF ALABAMA/OIL AND GAS BOARD WEB SITE

A new, user-friendly, web site was developed and launched to the public in 2006. The site incorporates state-of-the-art web page development technology to include the use of dynamic web pages, a more robust database structure, and integration of Geographic Information Systems maps. These enhancements have provided improved functionality resulting in easier electronic access to substantially more of the Board's records and official data. Additionally, the web site serves as a homepage for both the State Oil and Gas Board and our sister agency, the Geological Survey of Alabama.

Because of its improved functionality and ready accessibility, the web site has now become the method of choice for obtaining detailed technical and regulatory information and data about industry activities in the State. This paradigm shift in information and data dissemination provides an opportunity to make more efficient use of the Board's staff and resources while facilitating the efforts of the industry to develop new oil and gas prospects in the State. Furthermore, the web site serves as the cornerstone of the agency's ongoing electronic commerce initiative. As the Board moves forward in implementing its e-commerce program, the web site will also serve as the platform for electronic permitting and reporting activities.

DOCUMENT IMAGING PROJECTS

Documents submitted to the Board become official public records and must be maintained in accordance with established State policies. These records are accessed and utilized by the public as well as the staff on a daily basis. For these reasons, it is critical that the records are secure and available for such purposes in the future. To that end, the Board's staff has initiated document imaging projects to provide additional records security.

The first major project, undertaken in 2001, was to generate digital images of all of the well geophysical logs. Historically, the Board has required the operator of each well to submit two hardcopies of all logs to the agency for its records. In the past, these hardcopies were used to make reproductions on request, and the second copy served as a back-up copy for security purposes. In November 2007, the staff completed the scanning of all well logs on file, generating more than 49,100 digital files. Following the scanning of the back files, the digital file served as the back-up copy, and the second hardcopy was no longer maintained. Since that time, this document imaging project continues in a maintenance mode with new geophysical logs being scanned as they are received.

Multiple benefits and increases in efficiency have been realized from this project. First, the digital image files are more secure and do not require the physical space previously occupied by the second hardcopy. Secondly, on-demand reproductions by the public now simply require identification of the digital file for the requested geophysical log and sending that file to a specialized printer, thereby reducing staff time to a minimum. Also, once the public learned that digital files

were available, orders for those files have exceeded orders for the hardcopy reproductions.

In 2006, the staff commenced a second major document imaging project to electronically capture all of the official Oil and Gas Board Forms that have been completed and submitted to the Board for each permitted oil and gas well. The scanned images are then made available to the staff and the public through the Board's web site. Newly generated images are placed on the Board's web site on a weekly update basis. As in the case of the well log images, the benefits of the project include enhanced security of and accessibility to the information and data. Substantial progress has been made in scanning the forms in existing well files, and imaging of those records is expected to be completed in 2008.

A third project, begun in 2007, is the electronic scanning of the Board's official orders. The initial goal in this project is to generate digital images of all of the Board's orders since 1996. Once that goal is reached, the staff will begin to electronically scan prior year orders, working backwards from 1997 until digital images of all orders have been obtained. As the digital files become available, they will be posted to the Board's web site for public access. As noted in other document imaging projects, the principal benefits relate to security and accessibility.

SPECIAL STUDIES

As noted earlier in this report, the principal revenue source for the Alabama Trust Fund is royalty payments from the sale of natural gas produced by wells in State coastal waters. Because the Trust Fund has become an important source of both present and future funding for the State, it is critical that State officials be able to project the future revenue stream for the Fund. To that end and with support of the Administration and the Legislature, the State Oil and Gas Board and the Geological Survey of Alabama are engaged in an ongoing study of natural gas reserves and resources in offshore State waters. The multi-year, in-depth, assessment project, which began in 2006, incorporates all available geological, geophysical, and engineering data and information for these reservoirs.

The staff's technical analysis through the end of 2007 indicates that optimal development of existing deep Jurassic fields will result in an additional recovery of nearly two billion cubic feet of natural gas. It is estimated that shallow Miocene reservoirs will contribute at least an additional 27 billion cubic feet. Under the optimal development scenario, production is projected to extend through the year 2032.

EDUCATIONAL OUTREACH

The staff of the Geological Survey of Alabama/State Oil and Gas Board is actively involved in a multifaceted educational outreach program. One of the principal mechanisms for outreach is through the Adopt-A-School program. Our agencies have been actively involved in the program since 1993 and have partnered with Westlawn Middle School since 2000. Through our partnership, we have sponsored a variety of educational activities such as providing classroom speakers, honoring student achievements, participating in teacher appreciation days, participating in special programs to encourage learning and develop career interests, and providing job-shadowing opportunities. As a result, the agencies have been recognized as a "Very Involved Partner" in the Adopt-A-School Program.

The staff of the Geological Survey of Alabama/State Oil and Gas Board also conducts additional outreach activities selected through an internal Education Committee. The committee is an informal volunteer group of staff members dedicated to supporting high-quality science education in the State of Alabama. The group raises money principally through funds generated from an annual charity golf tournament. The net proceeds from the last five tournaments have totaled nearly $24,000.

This money is used in a variety of ways, but always with the goal of improving science education. Some of the outreach activities of

the committee include financial and technical support for freshwater protection education projects, state science and engineering fairs, the Legacy *Envirobowl*, and other science-education events in the State. For additional details regarding such activities, the reader is referred to the Educational Outreach section on the agencies' web site.

CONCLUSION

In summary, the petroleum industry in Alabama continued to thrive and expand from 1999 through 2007. During that period, significant hydrocarbon exploration, production, and storage activities include drilling permits being issued at twice the historical rates; producing wells increasing 53 percent; 28 new oil and gas fields, 47 new pools, and 15 new unitized areas being established; and gas storage facilities being substantially expanded. Shale gas exploration was also initiated in the Black Warrior Basin and Appalachian Fold and Fault Regions.

Although annual gas and condensate production continued to decline, major gas production milestones were achieved by 2007 for offshore and coalbed methane production. In recent years, the statewide declining trend in oil production has been reversed principally by increased production resulting from the addition of new wells in the Little Cedar Creek Oil Field area in Conecuh County.

Alabama's petroleum industry also continued to generate substantial revenues to the direct benefit of the citizens of the State. These revenues come primarily from severance tax collections and production royalty payments. Record oil and gas prices in recent years have more than offset production declines to produce record annual revenues. Since 2003, the combined contribution of these revenues has annually averaged more than $534 million.

The State Oil and Gas Board plays a critical role in the ability of this industry to function efficiently and to produce the oil and gas resources of the State in a safe and prudent manner. The mission of the Board is to promote conservation and prevent waste of resources while protecting the rights of interested parties, as well as protecting the environment.

In addition to its legislative mandates as the state regulator for oil and gas resource development, the Board has successfully developed and implemented major initiatives and achieved significant accomplishments in a number of areas from 1999 through 2007. These areas include developing and implementing a strategic goals plan within a statewide framework; rebuilding staff levels; developing and launching a state-of-the-art web site; generating digital images of the Board's records for security and accessibility; conducting special technical studies; and conducting a multifaceted educational outreach program.

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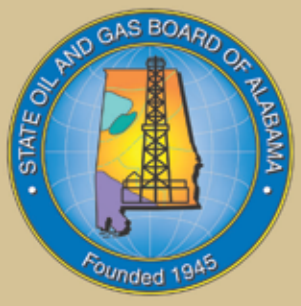
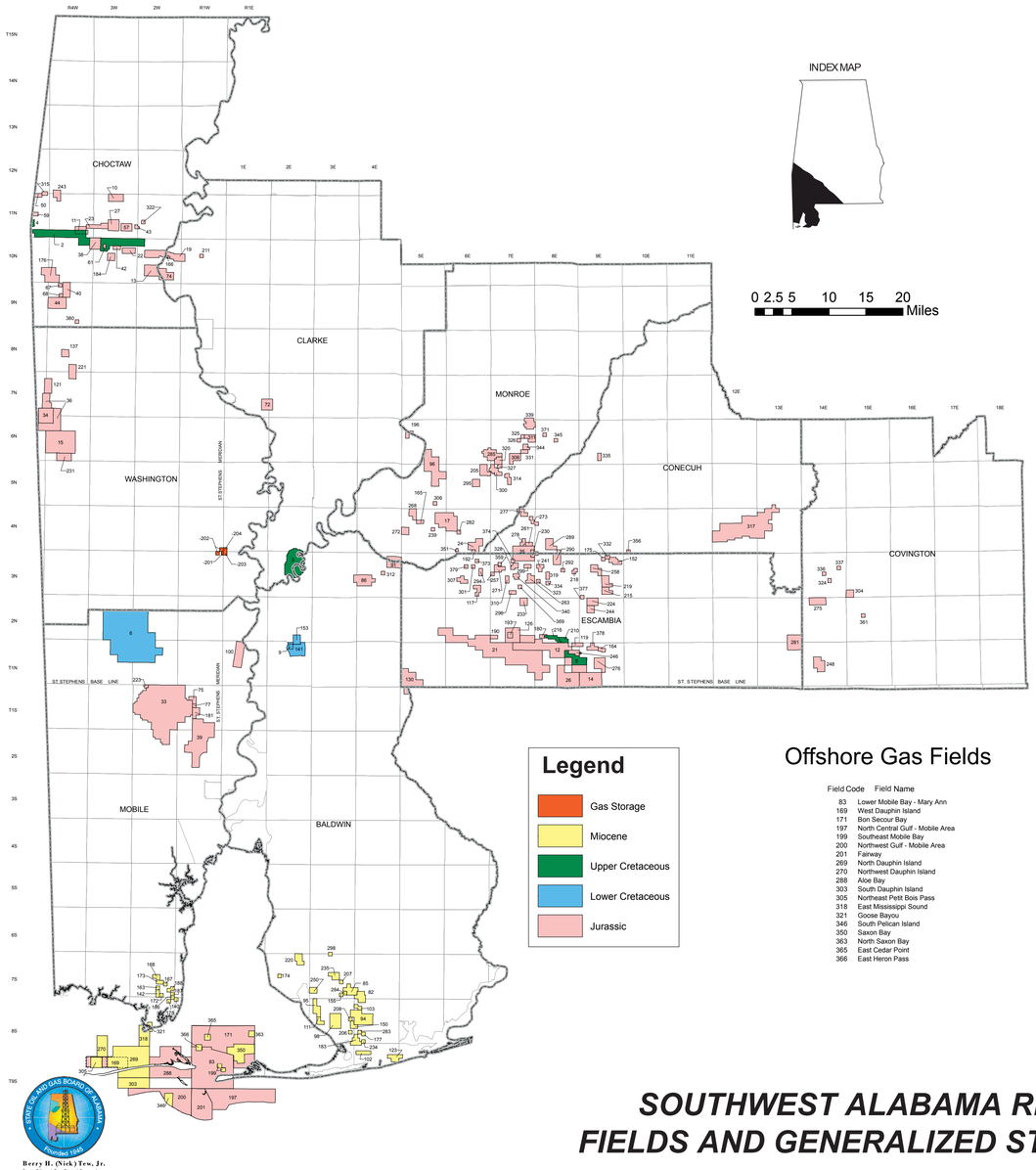


State Oil and Gas Board
Oil and Gas Report 3U

Oil and Gas Fields in the Southwest Alabama Region



Berry H. (Nick) Tew, Jr.
State Oil and Gas Board Supervisor

Onshore Oil and Gas Fields

Field Code	Field Name	Location	Field Code	Field Name	Location
2	Gilbertown	T11N,R4W	207	Schoolhouse Branch	T7S, R3E
3	South Carlton	T3N, R2E	208	North Cooper's Landing	T8S, R3E
4	Langsdale	T11N, R5W	210	Foshee	T2N, R8E
5	Pollard	T1N, R8E	211	Pace Creek	T10N, R1W
6	Citronelle	T2N, R3W	215	Hanberry Church	T3N, R9E
9	Tensaw Lake	T1N, R2E	216	West Foshee	T2N,R8E
10	Tovey	R11N, R3W	218	Wallace	T3N, R8E
11	Choctaw Ridge	T11N, R4W	219	South Burnt Corn Creek	T3N, R9E
12	Flomaton	T1N, R8E	220	Green Branch	T7S, R2E
13	Turkey Creek	T10N, R2W	221	Crosbys Creek	T8N,R4W
14	Little Escambia Creek	T1N, R9E	223	Gulf Crest	T1S, R2W
15	Chatom	T6N, R4W	224	Wild Fork Creek	T2N, R9E
17	Uriah	T4N, R5E	230	East Barnett	T4N, R7E
19	Womack Hill	T10N, R2W	231	Southeast Chatom	T6N, R4W
21	Big Escambia Creek	T1N, R7E	233	Smiths Church	T2N, R7E
22	Barrytown	T10N, R3W	234	East Swifts Landing	T8S, R4E
23	North Choctaw Ridge	T11N, R3W	235	North Schoolhouse Branch	T7S, R3E
24	Vocation	T4N, R6E	239	Palmers Crossroads	T4N, R5E
26	Fanny Church	T1N, R8E	241	Broken Leg Creek	T3N, R8E
27	Sugar Ridge	T11N, R3W	243	West Okatuppa Creek	T11N, R4W
33	Chunchula	T1S, R2W	244	South Wild Fork Creek	T2N, R9E
34	Copeland Oil	T6N,R5W	246	Osaka	T1N, R8E
35	Barnett	T4N, R7E	248	West Falco	T1N,R14E
36	Copeland Gas	T6N, R4W	250	North Magnolia River	T7S, R3E
38	Mill Creek	T10N, R3W	257	East Huxford	T3N, R7E
39	Hatter's Pond	T2S, R1W	258	West Appleton	T3N, R9E
40	Silas	T9N, R4W	261	Northeast Barnett	T4N, R7E
42	West Barrytown	T10N, R3W	263	North Smiths Church	T3N, R7E
43	Wimberly	T11N, R3W	268	North Wallers Creek	T4N, R5E
44	Zion Chapel	T9N, R4W	271	Robinson Creek	T3N, R7E
50	Melvin	T11N, R5W	272	Mineola	T4N, R5E
57	Chappell Hill	T11N, R3W	273	Northwest Range	T4N, R7E
59	Bucatunna Creek	T11N, R5W	275	North Rome	T2N, R14E
61	Little Mill Creek	T10N, R3W	276	Jernigan Mill Creek	T1N, R9E
67	Puss Cuss Creek	T9N, R4W	277	East Corley Creek	T4N, R7E
68	Souwilpa Creek	T9N, R4W	278	North Barnett	T4N, R7E
72	Stave Creek	T7N, R1E	281	Hickory Branch	T2N, R13E
74	West Bend	T10N, R2W	282	South Uriah	T4N, R6E
75	Cold Creek	T1S, R1W	283	Oak	T8S, R4E
77	South Cold Creek	T1S, R1W	284	East Magnolia Springs	T7S, R3E
82	Foley	T7S, R4E	285	North Frisco City	T6N, R6E
85	West Foley	T7S, R3E	289	Southwest Range	T4N, R8E
86	Blacksher	T3N, R4E	290	Dean Creek	T3N, R8E
91	Little River	T3N, R4E	292	South Dean Creek	T3N, R8E
94	Pleasant View	T8S, R4E	294	Big Spring Creek	T3N, R6E
95	South Weeks Bay	T8S, R3E	295	Megargel	T5N, R6E
96	Loxetts Creek	T5N, R5E	296	Northwest Smiths Church	T3N, R7E
98	Skunk Bayou	T8S, R3E	298	Marlow	T6S, R3E
100	Movico	T1N, R1E	299	Canaan Church	T3N, R7E
102	East Oyster Bay	T9S, R4E	300	Southeast Frisco City	T5N, R7E
103	South Foley	T8S, R4E	301	Chitterling Creek	T3N, R6E
111	Cypress Point	T8S, R3E	304	Pleasant Home	T3N, R15E
117	Huxford	T3N, R6E	306	Baileys Creek	T5N, R5E
119	Chavers Creek	T1N, R8E	307	West Huxford	T3N, R6E
121	Red Creek	T7N, R4W	308	North Excel	T6N, R7E
123	Gulf State Park	T9S, R4E	310	East Robinson Creek	T3N, R7E
126	Sizemore Creek Oil	T2N, R7E	311	Monroeville	T6N, R7E
130	Perdido	T1N, R5E	312	Horseneck Creek	T3N, R4E
137	Healing Springs	T8N, R4W	314	Southwest Excel	T5N, R7E
140	Point Judith	T8S, R1W	315	Northeast Melvin	T12N, R5W
141	Hubbard's Landing	T1N, R2E	317	Little Cedar Creek	T4N, R12E
142	Bayou Jonas	T7S, R2W	319	Gravel Hill Church	T3N, R8E
150	Cooper's Landing	T8S, R3E	320	Jones Mill	T6N, R7E
152	Appleton	T3N, R9E	322	Thornton Springs	T11N, R2W
153	Latham	T2N, R2E	323	Narrow Gap Creek	T3N, R8E
155	Magnolia River	T7S, R3E	324	Teel Creek	T3N, R14E
163	North Bayou Jonas	T7S, R2W	325	West Monroeville	T6N, R7E
164	Catawba Springs	T1N, R9E	326	Southwest Monroeville	T6N, R7E
165	Wallers Creek	T4N, R5E	327	East Frisco City	T5N, R7E
166	South Womack Hill	T10N, R2W	328	West Canaan Church	T3N, R7E
167	St. Paul's Church	T7S, R2W	331	South Ollie	T6N, R7E
168	Bellingrath Gardens	T7S, R2W	332	Northwest Appleton	T3N, R9E
172	East Bayou Jonas	T7S, R2W	334	South Gravel Hill Church	T3N, R8E
173	North Delchamps	T7S, R2W	335	Robbins Branch	T6N, R9E
174	Barnwell	T7S, R2E	336	Mobley Creek	T3N, R14E
175	Burnt Corn Creek	T3N, R9E	337	South Copeland Creek	T3N, R14E
176	Gin Creek	T10N, R5W	339	North Monroeville	T6N, R7E
177	Brights Creek	T8S, R4E	340	Southwest Canaan Church	T3N, R7E
178	Heron Bayou	T8S, R2W	344	Ollie	T6N, R7E
180	Hall Creek	T2N, R8E	345	Drewry	T6N, R8E
181	Turnerville	T1S, R1W	351	Little River Lake	T4N, R8E
183	Swifts Landing	T8S, R4E	356	Juniper Creek	T4N, R10E
184	Southwest Barrytown	T10N, R3W	359	North Robinson Creek	T3N, R7E
186	North Heron Bayou	T7S, R2W	361	Camp Creek	T2N, R15E
187	Mon Louis Island	T7S, R2W	369	Northwest Hall Creek	T3N, R7E
188	North Mon Louis Island	T7S, R2W	371	Brushy Creek	T6N, R8E
190	Little Rock	T2N, R7E	373	East Chitterling Creek	T3N, R6E
192	South Vocation	T4N, R6E	374	Northwest Canaan Church	T3N, R7E
193	Sizemore Creek Gas	T2N, R7E	377	West Wild Fork Creek	T3N, R9E
196	Barlow Bend	T6N, R5E	378	West Catawba Springs	T1N, R9E
205	Frisco City	T5N, R6E	379	West Chitterling Creek	T3N, R6E
206	North Swifts Landing	T8S, R3E	380	Dunbar Creek	T9N, R4W

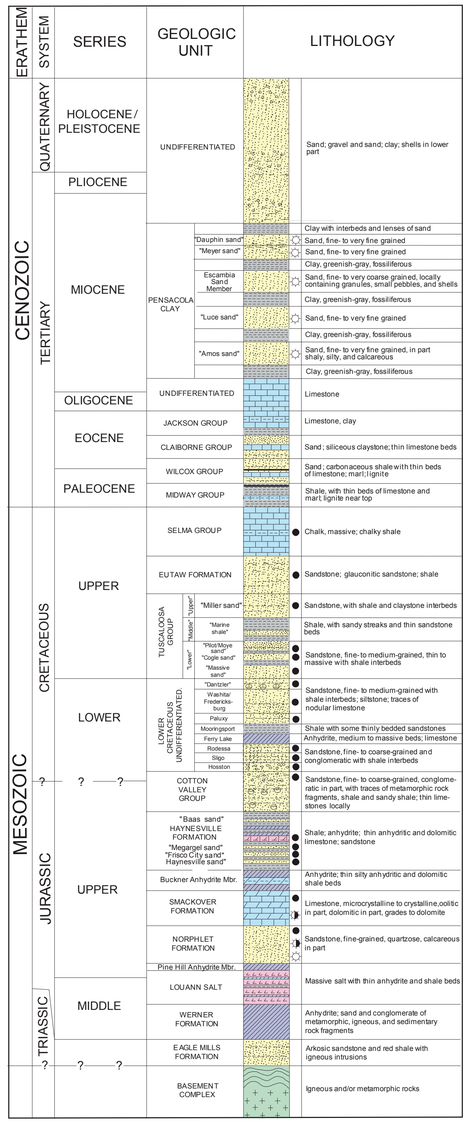
Offshore Gas Fields

Field Code	Field Name
83	Lower Mobile Bay - Mary Ann
169	West Dauphin Island
171	Bon Secour Bay
197	North Central Gulf - Mobile Area
199	Southeast Mobile Bay
200	Northwest Gulf - Mobile Area
201	Fairway
269	North Dauphin Island
270	Northwest Dauphin Island
288	Aloe Bay
303	South Dauphin Island
305	Northeast Petit Bois Pass
318	East Mississippi Sound
321	Goose Bayou
346	South Pelican Island
350	Saxon Bay
363	North Saxon Bay
365	East Cedar Point
366	East Heron Pass

Onshore Gas Storage Facilities

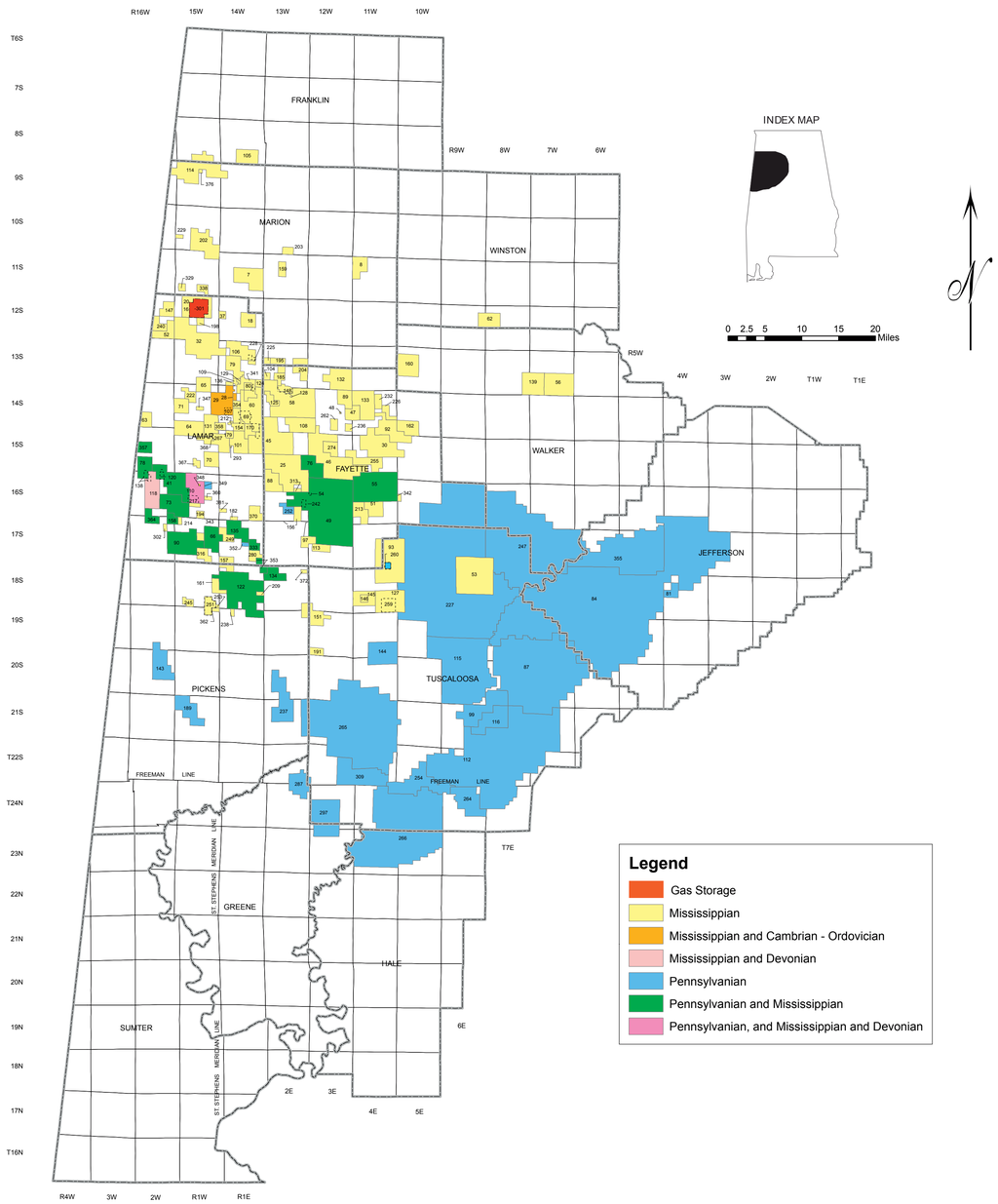
Facility Code	Facility Name	Location
-201	Bay Gas Storage Facility 1	T3N, R1E
-202	Bay Gas Storage Facility 2	T4N, R1W
-203	Bay Gas Storage Facility 3	T3N, R1E
-204	Bay Gas Storage Facility 4	T4N, R1E

Generalized Stratigraphic Column of the Southwest Alabama Region



SOUTHWEST ALABAMA REGION OIL AND GAS FIELDS AND GENERALIZED STRATIGRAPHIC COLUMN

Oil and Gas Fields in the Black Warrior Basin Region



Legend

- Gas Storage
- Mississippian
- Mississippian and Cambrian - Ordovician
- Mississippian and Devonian
- Pennsylvanian
- Pennsylvanian and Mississippian
- Pennsylvanian, and Mississippian and Devonian

Conventional Oil and Gas Fields

Field Code	Field Name	Location
7	Hamilton	T11S, R14W
8	Whitehouse	T11S, R11W
16	East Detroit Oil	T12S, R15W
18	Dug Hill	T12S, R14W
20	East Detroit Gas	T12S, R15W
25	West Fayette Gas	T15S, R13W
28	Fairview Gas	T14S, R14W
29	Fairview Oil	T14S, R14W
30	Davis Chapel	T15S, R11W
32	Beaverton	T13S, R15W
37	Henson Springs	T12S, R14W
41	Star Gas	T16S, R15W
45	Blooming Grove	T15S, R13W
46	Musgrove Creek	T15S, R12W
47	Hubbertville	T14S, R11W
48	Sand Springs	T14S, R12W
49	McCracken Mountain Gas	T16S, R12W
51	Berry Junction	T16S, R11W
52	Wesley Chapel	T12S, R16W
53	Wiley Dome	T18S, R9W
54	McCracken Mountain Oil	T16S, R12W
55	Bankston	T16S, R11W
56	Jasper	T13S, R7W
58	Bluff Gas	T14S, R13W
60	Blowhorn Creek Gas	T14S, R14W
62	Nauvoo	T12S, R8W
63	Cut Bank Creek	T14S, R16W
64	Watson Creek	T15S, R15W
65	Moscow	T14S, R15W
66	Millport	T17S, R15W
69	Blowhorn Creek Oil	T14S, R14W
70	Hells Creek	T15S, R15W
71	Military Grove	T14S, R15W
73	McGee Lake	T16S, R16W
76	North Fayette	T15S, R12W
78	Molloy	T15S, R16W
79	Armstrong Branch	T13S, R14W
80	North Blowhorn Creek Oil	T14S, R14W
88	Southwest Fayette	T16S, R13W
89	Studhorse Creek	T14S, R12W
90	Fernbank	T17S, R15W
92	Northeast Davis Chapel	T14S, R11W
93	Lexington	T17S, R11W
97	Blakely Creek	T17S, R13W
101	Little Hells Creek	T15S, R14W
104	Kirk Branch	T13S, R13W
105	Pilot Hill	T8S, R14W
106	Beaver Creek Gas	T13S, R14W
107	Brush Creek	T14S, R14W
108	Bethel Church	T14S, R13W
109	North Fairview Oil	T13S, R14W
110	Mt. Zion Gas	T16S, R15W
113	Newtonville	T17S, R12W
114	Bluegut Creek	T9S, R15W
118	Yellow Creek Gas	T16S, R16W
120	Star Oil	T16S, R16W
122	Coal Fire Creek Gas	T18S, R14W
124	North Bluff	T14S, R13W
125	Bluff Oil	T14S, R13W
127	Northside	T18S, R11W
128	Central Bluff	T14S, R13W
129	North Fairview Gas	T13S, R14W
131	East Watson Creek	T14S, R15W
132	Happy Hill	T13S, R12W
133	Boxes Creek	T14S, R11W
134	Lubbub Creek	T18S, R13W
135	Kennedy	T17S, R14W
136	Northwest Fairview	T13S, R14W
138	Yellow Creek Oil	T16S, R16W
139	West Jasper	T13S, R7W
143	Woolbank Creek	T20S, R16W
145	Binion Creek Gas	T18S, R11W
146	Binion Creek Oil	T18S, R11W
147	West Detroit	T12S, R16W
148	Wayside Oil	T14S, R13W
151	Dunn Creek	T19S, R12W
154	South Brush Creek	T14S, R14W
156	West McCracken Mountain	T16S, R13W
157	Mt. Carmel	T17S, R14W
158	Mud Creek Gas	T17S, R16W
159	Woods Creek	T11S, R13W
160	Eldridge	T13S, R10W
161	Board Tree Branch	T18S, R15W
162	Tanyard Creek	T14S, R10W
170	Corinth	T14S, R14W
179	Oakes Chapel Gas	T15S, R14W
182	Cooper Creek	T16S, R14W
185	McDonald Branch	T13S, R13W
189	Big Creek	T21S, R15W
191	Cleveland Creek	T19S, R12W
194	Mt. Olive Church	T16S, R15W
195	Coffee Creek	T13S, R13W
198	Southeast Detroit	T12S, R15W
202	Watts Creek	T10S, R15W
203	Poplar Log Church	T10S, R13W
204	Sugar Creek	T13S, R13W
209	Coal Fire Creek Oil	T18S, R14W
212	West Brush Creek	T14S, R14W
213	Pine Knot Creek	T16S, R11W
214	Mud Creek Oil	T17S, R15W
217	Mt. Zion Oil	T16S, R15W
222	North Military Grove	T14S, R15W
225	West Coffee Creek	T13S, R13W
226	Isom Creek	T14S, R11W
228	Beaver Creek Oil	T13S, R14W
229	Bexar	T10S, R15W
232	East Boxes Creek	T14S, R11W
236	Sipsey River	T14S, R12W
237	Sneads Creek	T21S, R13W
238	Linebarger Creek	T19S, R14W
240	East Splunge	T12S, R16W
242	Cains Ridge	T16S, R13W
245	Buncomb Creek	T18S, R15W
249	West Kennedy	T16S, R14W
251	Chicken Swamp Branch Gas	T18S, R15W
252	Scareum Mountain	T16S, R13W
253	Chicken Swamp Branch Oil	T18S, R15W
255	Heartline	T15S, R11W
262	Hubbert Mill Creek	T14S, R12W
267	Southeast Watson Creek Gas	T15S, R15W
274	Hopewell	T15S, R12W
280	Little Coal Fire Creek	T17S, R14W
293	Oakes Chapel Oil	T15S, R14W
302	Ebenezer Church	T17S, R16W
313	West Fayette Oil	T16S, R13W
316	Driver Creek	T13S, R14W
329	Aston Branch	T11S, R15W
333	South Kennedy	T17S, R14W
338	Mount Joy Church	T11S, R15W
341	North Blowhorn Creek Gilmer Gas	T13S, R14W
342	West Berry	T16S, R10W
343	West Millport	T17S, R15W
347	Northeast Watson Creek	T14S, R15W
348	Hightogy	T16S, R15W
349	Christian Chapel	T16S, R15W
352	North Higdon Church	T17S, R14W
353	County Line	T17S, R14W
354	Southeast Fairview	T14S, R14W
357	Academy Church	T15S, R16W
358	Reedy Creek	T14S, R14W
360	East Mt. Zion	T16S, R15W
362	Southeast Chicken Swamp Branch	T19S, R15W
364	Asbury Church	T17S, R16W
367	Vernon	T15S, R15W
368	Southeast Watson Creek Oil	T15S, R15W
370	Northeast Kennedy	T16S, R14W
372	Lazy Creek	T18S, R13W
376	Nettles Branch	T9S, R15W
381	North Kennedy	T16S, R14W

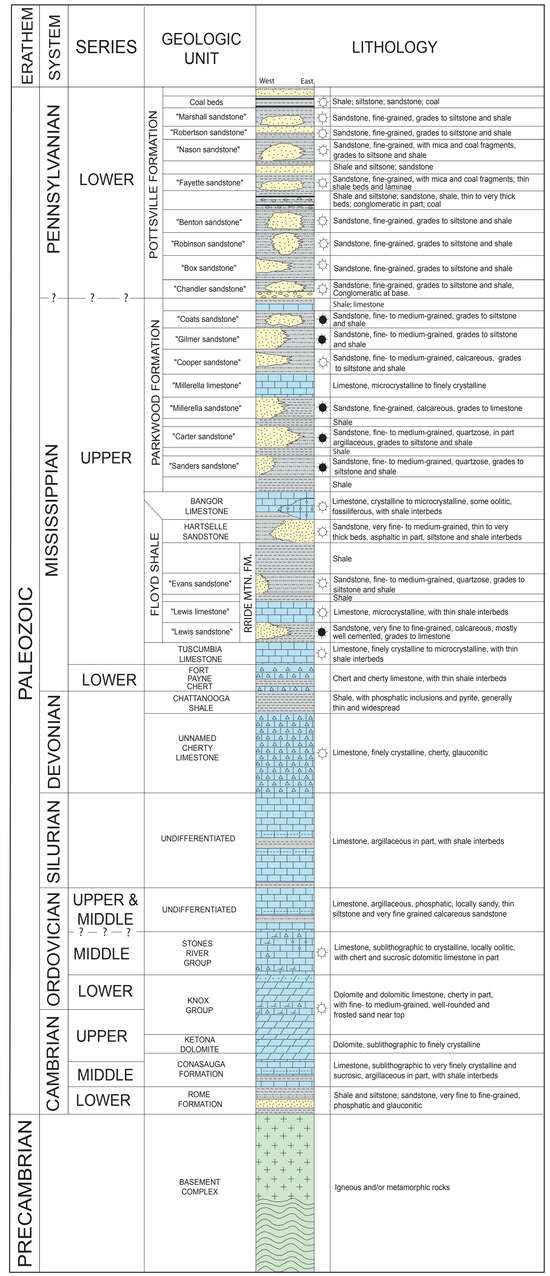
Coalbed Methane Fields

Field Code	Field Name	Location
81	Pleasant Grove	T18S, R4W
84	Oak Grove	T18S, R6W
87	Brookwood	T20S, R8W
99	Holt	T21S, R9W
112	Cedar Cove	T22S, R9W
115	Deerlick Creek	T20S, R9W
116	Peterson	T21S, R8W
144	Carrolls Creek	T19S, R11W
227	Blue Creek	T18S, R9W
247	White Oak Creek	T17S, R8W
254	Little Sandy Creek	T22S, 10W
259	Wolf Creek	T18S, R11W
260	Boone Creek	T17S, R11W
264	Big Sandy Creek	T24N, R6E
265	Robinson's Bend	T21S, R12W
266	Moundville	T23N, R5E
287	Taylor Creek	T22S, R13W
297	Little Buck Creek	T24N, R3E
309	Thornton Creek	T22S, R11W
355	Short Creek	T17S, R5W

Gas Storage Facility

Facility Code	Facility Name	Location
-301	East Detroit Gas Storage Facility	T12S, R15W

Generalized Stratigraphic Column of the Black Warrior Basin Region



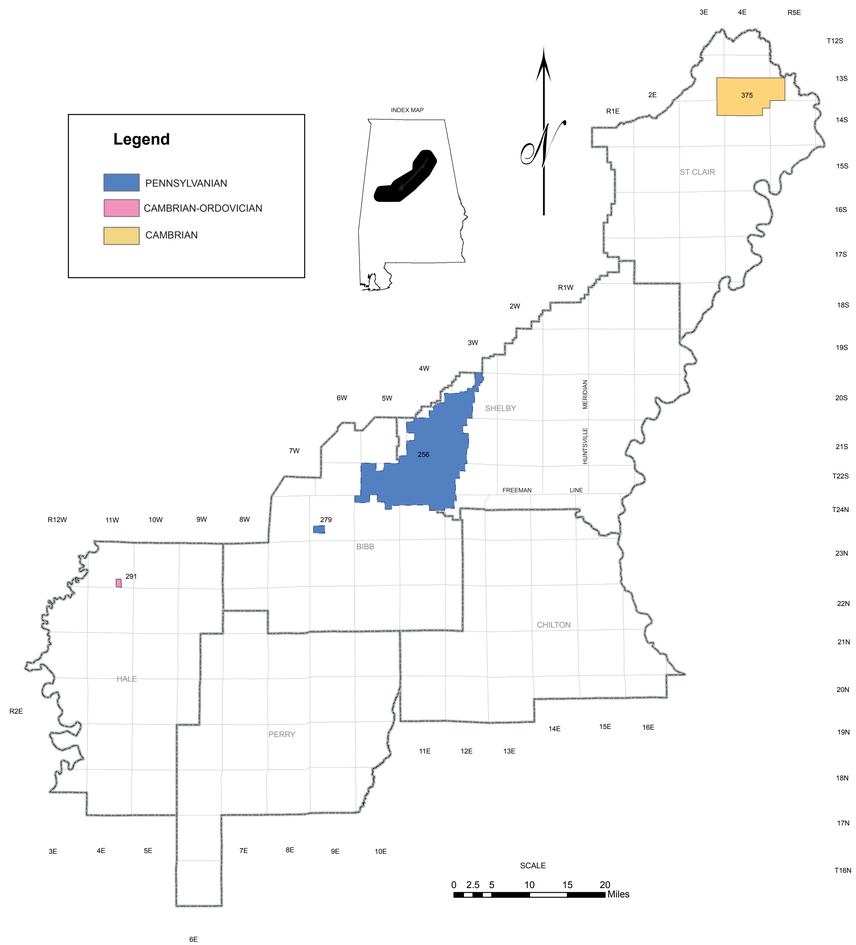
EXPLANATION

- Sandstone
- Conglomeratic Sandstone
- Siltstone or Shaly Sandstone
- Shale or Clay
- Coal beds
- Limestone
- Argillaceous Limestone
- Oolitic Limestone
- Chert
- Cherty Limestone
- Dolomite
- Dolomitic Limestone
- Cherty Dolomite
- Sandy Dolomite
- Metamorphic Rock
- Igneous Rock
- Oil and Gas
- Gas

Berry H. (Nick) Tew, Jr.
State Oil and Gas Board Supervisor

BLACK WARRIOR BASIN REGION OIL AND GAS FIELDS AND GENERALIZED STRATIGRAPHIC COLUMN

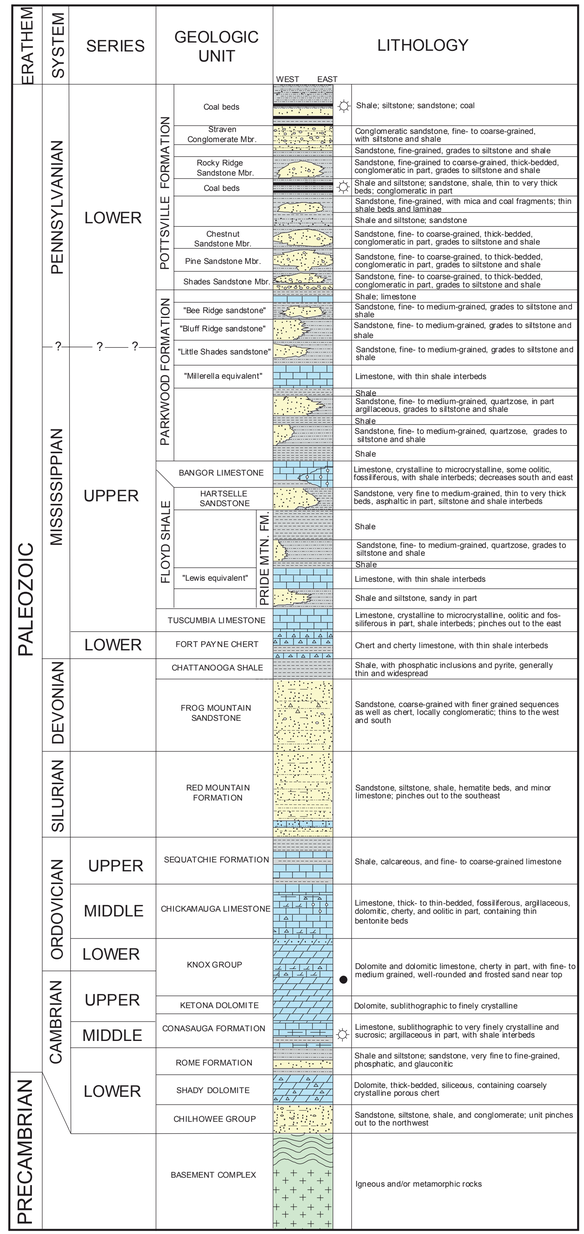
Oil and Gas Fields in the Appalachian Fold and Fault Region



Oil and Gas Fields

Field Code	Field Name	Location
256	Gurnee (coalbed methane)	T21S, R5W
279	Scottsville (coalbed methane)	T24N, R9E
291	Hardin Creek (oil)	T23N, R4E
375	Big Canoe Creek (shale gas)	T13S, R4E

Generalized Stratigraphic Column of the Appalachian Fold and Fault Region



APPALACHIAN FOLD AND FAULT REGION OIL AND GAS FIELDS AND GENERALIZED STRATIGRAPHIC COLUMN

Berry H. (Nick) Tew, Jr.
State Oil and Gas Board Supervisor