Alabaster Caverns State Park
Resource Management Plan
2013 [Updated February 2015]

Woodward County, Oklahoma

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It is the purpose of the Resource Management Plan to be a living document to assist with decisions related to the resources within the park and the management of those resources. The authors’ desire is to assist decision-makers in providing high quality outdoor recreation experiences and resources for current visitors, while protecting the experiences and the resources for future generations.

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Abbreviations and Acronyms

ADAAG ........................................................... Americans with Disabilities Act Accessibility Guidelines
CDC .................................................................................................................. Centers for Disease Control
CLEET .......................................................... Council on Law Enforcement Education and Training
CPSC ............................................................. Consumer Product Safety Commission
GIS ............................................................................................................... Geographic Information Systems
GPS ........................................................................................................... Global Positioning System
EPA ............................................................... Environmental Protection Agency
MCL ............................................................................................................ Maximum Contaminate Level
NAAQS .......................................................... National Ambient Air Quality Standards
NAWQA ..................................................... National Water Quality Assessment Program
NEPA ............................................................... National Environmental Policy Act
NPRM ........................................................................................... Notice of Proposed Rule Making
ODWC ........................................................ Oklahoma Department of Wildlife Conservation
OSU ........................................................................................................... Oklahoma State University – Stillwater
OTRD ............................................................ Oklahoma Tourism and Recreation Department
OWRB ........................................................................................ Oklahoma Water Resources Board
PBCR .................................................................................................. Primary body contact recreation
pH ........................................................................................................... potential for hydrogen ions
ppm ........................................................................................................ parts per million
R ............................................................................................................ Range
RMP ....................................................................................................... Resource Management Plan
SCORP ........................................................ Statewide Comprehensive Outdoor Recreation Plan
T ........................................................................................................... Township
USFWS ............................................................ United States Fish and Wildlife Service
USGS .............................................................. United States Geological Survey
WBDO ................................................................................................ Waterborne Disease Outbreak
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Mission Statement of the Oklahoma Tourism and Recreation Department

The mission of the Oklahoma Tourism and Recreation Department is to advance Oklahoma’s exceptional quality of life by preserving, managing, and promoting our natural assets and cultural amenities.

Vision Statement

The vision of the Oklahoma Tourism and Recreation Department is to promote and enhance tourism throughout the state; protect and preserve the environment and natural resources; educate the public about Oklahoma’s people and places; provide exceptional customer service to all citizens and visitors; create a team environment in which all employees are successful, productive, and valued; embrace and seek diversity in our workforce and those we serve.

OTRD Values

- Responsibility and leadership
- Respect
- Quality
- Exemplary customer service
- Balance and self-fulfillment
- Teamwork and communication
- Flexibility
- Creativity and innovation
- Coordination
- Commitment
- Integrity
Figure 0.1 – Main entrance into the cave for cavern tour
Chapter 1 – Introduction

Resource Management Plan: Purpose and Process

The Resource Management Plan (RMP) program and policy is to document management responsibilities to balance the use of water and land resources as they relate to recreation; in this instance, Alabaster Caverns State Park. As a guiding plan, the RMP seeks to propose long-term policies that limit adverse impacts to critical resources while providing protection and management of fish, wildlife, and other natural and cultural resources. In addition, the RMP will provide guidelines for public health and safety, public access, and a wide variety of outdoor recreational opportunities.

The purpose and scope of the RMP is to provide background information, identify the policies and goals governing the management of Alabaster Caverns State Park and its incorporated resources, summarize the plan’s components, and provide descriptive and historical information related to the project.

The ultimate purpose of the RMP is to establish a management framework for the conservation, protection, enhancement, development, and use of the physical and biological resources at Alabaster Caverns State Park. With regard Alabaster Caverns State Park, the RMP is to:

- Provide managers and decision-makers with long-term direction and guidance for the successful management of the resources at Alabaster Caverns State Park;
- Ensure that management of the resources is compatible with authorized purposes;
- Ensure that recreation experiences and facilities are compatible with other environmental resources;
- Ensure that planned developments are based on public need and the ability of the environmental resources to accommodate such facilities and use; and
- Resolve issues and concerns related to management of the environmental resources.

Planning Process

The planning process for preparation of this Resource Management Plan included discussion between research staff at Oklahoma State University (OSU) and management personnel from Oklahoma State Parks. In addition, the process incorporated (1) the acquisition of archival information from libraries, state parks, books, research reports, and other sources; (2) interviews of state park personnel; (3) records provided by state park management; (4) input from members of the public through surveys, comments cards, and focus groups; and (5) searches of the internet for information that expanded on other archives.

The purposes of public involvement are to inform the public and solicit public response regarding their needs, values, and evaluations of proposed solutions. Public involvement programs are designed not only to meet state and federal regulations, but also to include
interested individuals, organizations, agencies, and governmental entities in the decision-making process. Techniques used for public involvement include interviews, workshops, advisory committees, informational brochures, surveys, and public hearings. The process of public involvement is important to help strengthen the relationship between public and government agencies involved in the proposed plan. The relative success of public involvement techniques and the participation of supporting government agencies regarding the program as a whole is indicated by how well informed the public is and by how much the public has contributed to making environmentally sound, feasible decisions that are supported by a significant segment of the public. The public involvement process for the Alabaster Caverns State Park RMP is incorporated into the text of this document.

The original concept in preparation of an RMP is a federal action that requires compliance with the National Environmental Policy Act (NEPA); therefore, the public involvement process must fulfill the RMP and NEPA requirements as well as those of other entities. Oklahoma State Parks has committed the agency to follow a similar model at the state level for all state parks.

Using several public involvement methods to gain insight into the concerns of the public and governmental agencies potentially affected by provisions of the Alabaster Caverns State Park RMP, representatives from OSU compiled and analyzed the data. The public involvement process offered citizens and various interest groups information about the project and its potential impacts. This course of action was used to gather information, ideas, and concerns regarding the different issues to be compiled and addressed to determine issues of public concern. The issues were then evaluated resulting in alternative solutions and recommendations for the park.

Finally, the RMP process included integration of global positional system (GPS) technology into Geographic Information System (GIS) software to document features and attributes within the park. This component of the process permits an on-going record of facilities with their respective attributes, locations, and conditions. As a result, the GPS and GIS components of the RMP process are integral to on-going implementation and application of the planning effort.

**Agencies Involved**

In 2006, Oklahoma State Parks, through the Oklahoma Tourism and Recreation Department (OTRD), contracted with Oklahoma State University to prepare Resource Management Plans for each park. This agreement has been renewed annually since 2006. The current agreement specified Alabaster Caverns State Park during 2012 – 2013, and the intent of the agreement is to continue the RMP process across all state parks in Oklahoma.

The RMP agreement became effective July 1, 2012 between Oklahoma Tourism and Recreation Department and Oklahoma State University. Following a meeting between OTRD and OSU staff, information, reports, and comment cards were provided to OSU for review. In accordance with the RMP contract, OSU performed research services and delivered reports to OTRD concluding with a written plan for Alabaster Caverns State Park in June 2013.

The authority for the agreement between OTRD and OSU is based upon Title 74 § 2213 as authorized by Engrossed Senate Bill 823 of the 2005 session: “The Commission may contract for
the study, analysis, and planning as reasonably necessary to aid in determining the feasibility of leasing, selling or privately managing or developing the property or facilities under the control of the Commission. The Commission shall be exempt from the competitive bidding requirements of the Competitive Bidding Act for the purpose of soliciting, negotiating, and effectuating such a contract or contracts.”

Further, this authority is specified in Title 74 § 2215 which states: the Division of State Parks, subject to the policies and rules of the Commission shall formulate, establish, maintain, and periodically review, with public participation, a resource management plan for each state park. The resource management plan, upon approval by the Commission, shall be considered a guide for the development, utilization, protection, and management of the state park and its natural, cultural, historic, and recreational resources.

**Figure 1.1 – Visitor Center, Gift Shop, and Nature Center in Alabaster Caverns State Park**
Almost everyone is intrigued with caves. Exploring the depths and imagining how the caves were formed millions of years ago or experiencing the different varieties of plant and animal life that exist within their walls. Alabaster Caverns is no exception. The park is home to the largest gypsum cave in the world with guided tours. Massive boulders of alabaster are visible in varied colors of pink, white and even pure black. Nature created the underground site 200 million years ago when the area was covered by an inland sea. A perennial stream that flows through the cavern is fed by lateral tunnels and seepage from the roof. What is now a tiny brook was once a roaring river as evidenced by the sculptured gypsum formations.

Gypsum isn’t all you’ll find in Alabaster Caverns. There are five species of bats found in the cavern. Some are solitary while others live in colonies. Roosting sites provide daytime shelter and a place for non-migrating bats to hibernate during the winter months. The Mexican Free-tailed bat migrates from Mexico to Alabaster Caverns area in the spring to bear young and returns to Mexico in the fall.

**Park Facilities:**

- **Camping** - Alabaster Caverns State Park offers 23 campsites for the RV and tent camper with two campgrounds, dump stations, comfort stations and showers nearby.

- **RV Camping** - Mesa Campground offers 10 semi-modern sites with water and electricity and one handicapped accessible pull through site.

- **Tent Camping** - Mesa Campground offers 4 tent sites. Canyon Campground offers 8. Water and comfort stations are nearby.

- **Water Cave Camping** - will accommodate from 3 to 15 campers and requires reservations and a deposit. A cooking grill and picnic table are nearby.

- **Group Picnic Pavilions** - The park has two group pavilions with water and electricity, located in the Mesa campground. The pavilions will accommodate 30 to 45 persons, and can be reserved up to one year in advance. There is a fee for the group pavilions. Six smaller covered picnic tables are located near the Visitor Center. They can accommodate up to 15 people.

**Recreational Opportunities:**

- **Cavern Tours** - Guided tours of the main cavern are offered on the hour from 9am to 4pm. From Memorial Day weekend through Labor Day, a 5:00 pm tour is available. There are no tours on Thanksgiving and Christmas. There is an admission charge for tours.

- **Visitors** - Taking the tour should wear comfortable walking shoes and a light jacket. The average cavern temperature is 50 degrees. The cavern tour is a ¼ mile walk with stair steps throughout and is not recommended for visitors with mobility or respiratory problems, heart conditions or claustrophobia.

- **For the adventure-seeker** - we offer wild caving! Explore one or more of the four undeveloped caves in the park from April through September. You must have the required safety equipment and you must purchase a permit at the Visitor Center. Please call the park office for a copy of the rules and regulations.

- **Trails** - Alabaster Caverns State Park has four hiking trails. Each trail has a varied type of terrain and could be challenging for some hikers. Please inquire about the degree of difficulty before hiking. Old Two Toes nature trail is 3/4 mile long. The Freedom Interpretive nature trail and the Little Black Bear nature trail is 1/2 mile in length. Raptor’s Roost Nature Trail is 2/3 mile long.

- **Outdoor Amphitheater** - Located south of Mesa Campground, the amphitheater seats approximately 40 guests. Interpretive programs can be scheduled or visiting groups may use the amphitheater.

- **Visitor Center/Gift Shop** - The Visitor Center offers information and exhibits on local wildlife, artifacts, rocks and minerals. Purchase a souvenir from the gift shop as a reminder of your park visit.

- **Dining and Lodging** - Stables Cafe & Cantina and Cedar Canyon Lodge - The privately owned restaurant and lodge is located within ¼ mile of the park.

For information on nearby state parks or other attractions, visit TravelOK.com

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Chapter 2 – Project Description

About Alabaster Caverns State Park

The Division of State Parks, a part of the Oklahoma Tourism and Recreation Department, is governed by the laws of the state of Oklahoma. These laws define the authority for the Division and the context in which individual state parks are managed. Title 74 § 2214 of the Oklahoma Statutes states that the Division of State Parks shall, subject to the policies and rules of the Commission:

1. Conserve, preserve, plan, supervise, construct, enlarge, reduce, improve, maintain, equip and operate parkland, public recreation facilities, lodges, cabins, camping sites, scenic trails, picnic sites, golf courses, boating, and swimming facilities, and other similar facilities in state parks reasonably necessary and useful in promoting the public use of state parks under the jurisdiction and control of the Commission;

2. Supervise the management and use of state properties and facilities under the jurisdiction of the Commission. The Commission may adopt rules to lease concessions in any state-owned facility if the Commission deems it feasible;

3. Authorize those employees in the Park Manager job family classification series, as established by the Oklahoma Office of Personnel Management, to maintain administrative control over all facilities, programs, operations, services, and employees in the park to which they are assigned; and

4. Enforce the rules and policies governing the use of and conduct of patrons in all recreational facilities and properties of the Commission.

Purpose and Significance of Alabaster Caverns State Park

An initial requirement of the RMP process is the development of a purpose statement for the property under consideration. The process selected for the development of resource management plans for state parks requires purpose statements and statements of significance for each park. These statements drive the decisions as to planning for the respective parks, since individual parks in the state park system do not have identical purposes or intents.

At the initiation of this project, a purpose statement for Alabaster Caverns State Park did not exist. As a result, it was necessary that one be developed. Research staff from OSU worked with OTRD staff, representing Alabaster Caverns State Park and the broader agency, to develop a draft purpose statement. During that process staff created the following statement.

Alabaster Caverns State Park provides for the protection and public enjoyment of the natural, scenic, geological, and ecological values that exist within the park property with particular emphasis upon the largest public gypsum cavern in the world. As unique and distinctive resources, Alabaster Caverns define the principal
attraction for the park and must be sustainably managed for the enjoyment of the visiting public, including education of the visiting public, conservation of the caves for research and science, protection of the flora and fauna, while providing a safe recreational experience for visitors.

Similarly, in response to requests from the research staff, OTRD personnel, in cooperation with the research staff, developed a statement of significance for Alabaster Caverns State Park. That statement follows:

Alabaster Caverns State Park protects, manages, and provides public access to distinctive and unique gypsum caves, the largest caves of this type with public accessibility. Alabaster Caverns State Park provides and manages the geological and recreational resources present on the property and protects these resources for future generations and maintains a major role in environmental monitoring, cooperation in education and interpretation, and provision of adventure recreation appropriate to the environment.

Figure 2.1 demonstrates the inter-relationship of purpose and significance statements with the mission of the management agency in decisions related to a given park or property. This model has been developed by the National Park Service to assure consistency between the mission of the National Park Service and the operation of their respective properties. In a similar manner, park purpose statements and park significance must be consistent with the mission of the Oklahoma Tourism and Recreation Department.
Geographic Location of Alabaster Caverns State Park

Alabaster Caverns State Park is located south of the town of Freedom, across the Cimarron River in Woodward Country. The park is located just 6 miles south of Freedom on Hwy 50, 1/2 mile east on Hwy 50A, or 20 miles north of Mooreland on Hwy 50.

Figure 2.2 – Alabaster Caverns State Park Woodward County, Oklahoma
Inset detail for Woodward County from Google Maps
Woodward serves as a commercial trade center and major transportation corridor in northwest Oklahoma. Woodward County is the crossroads for several highway corridors through this portion of the state. Federal highways 183 and 270 combine with State Highway 3 along a general southeast to northwest route through Woodward County, somewhat parallel to the North Canadian River. Federal Highway 412 is the major east-west route through the center of Woodward County. All of these routes flow through the city of Woodward, as do additional state highways (34 and 15 in particular).

Woodward is the county seat, with a population of 11,853. Maps of Oklahoma identify a number of small communities in the county including Fort Supply, Tangier, Sharon, Mutual, Quinlan, and Mooreland.

Alabaster Caverns State Park is located 6 miles south of Freedom on 50 and ½ miles east on Highway 50A. It also accessible along paved routes via State Highway 50 through Mooreland, 20 miles north from the park.

**Community and Regional Context**

**Brief History of Woodward County**

The following history of Woodward County was written by Dianna Everett for the Oklahoma Historical Society and retrieved from the website for the Oklahoma Historical Society (http://digital.library.okstate.edu/encyclopedia/entries/w/wo017.html).

“Located in northwestern Oklahoma, Woodward County encompassed 1246.01 square miles of land and water area in the year 2000. Bordering counties include Harper and Ellis counties on the west, Dewey on the south, Woods on the north, and Major on the west. Woodward County is part of the Osage Plains, within the Western Red Prairies physiographic region and Gypsum Hills subregion, and its western side is technically within the Great Plains proper. Historically, the environment was one of rolling plains, grassy prairies, and in places, gypsum hills. The land is drained by three waterway systems. The Cimarron River, which forms part of the county’s boundary with Woods County, collects the groundwater of the northwestern section. The North Canadian bisects the county from northwest to southeast. A northward-flowing tributary of the North Canadian, Wolf Creek, is dammed south of Fort Supply to form Fort Supply Lake. Creeks in the southern part of the county drain into the main (South) Canadian. The eastern and northwestern portions of the county have gypsum hills. Extending from Harper through Woods and Woodward counties is the five-thousand-acre Big Salt Plain. An extremely large gypsum cave, located eighteen miles north of Mooreland, forms a significant geologic feature and is protected as part of Alabaster Caverns State Park. Boiling Springs State Park, west of Woodward, comprises 820 acres surrounding natural springs.

Native peoples used the area for subsistence for thousands of years. Archaeologists have found evidence of the presence of Folsom-era big game hunters in adjacent Harper County at the Waugh Site near Laverne and at the Cooper Bonebed Site. In the 1986-92 period, investigations at the Burnham Site, just across the Cimarron River in Woods County, suggest human presence
in the region and use of its resources fourteen thousand years ago or even earlier. Archaeological surveys for highway construction near Mooreland in the 1950s exposed the Hedding Site and the Richards Site, both with evidence of habitation and house construction that may date from time of the Late Prehistoric Plains Village farmers in western Oklahoma, A.D. 800 to 1400. At least sixty-three sites had been identified by the mid-1980s. There is some speculation that the expedition led out of New Mexico by Don Juan de Oñate in 1599 passed through the area. In more modern times, various Plains tribes such as the Plains Apache, Comanche, Kiowa, Cheyenne, and Arapaho traversed the area, seeking buffalo, deer, and other game and gathering plants and also trading with Comancheros and other whites. In 1838 a significant battle took place on Wolf Creek (in Ellis or Woodward county) between Plains Indians, with Kiowa and Comanche against Cheyenne and Arapaho.

From the mid-nineteenth century future Woodward County was part of a well-used military transportation corridor that was important to frontier defense. Several U.S. Army expeditions evaluated the area in 1857 and 1860. In November 1868 Camp (later Fort) Supply, was established as a depot in Lt. Col. Alfred Sully’s impending Seventh Cavalry campaign against the Cheyenne. From Camp Supply, Col. George A. Custer took the field and engaged in the attack on Black Kettle’s camp on the Washita River in late November. Fort Supply became permanent, because of its location at the confluence of Union Creek and the Beaver (Cimarron) River. An important military pathway thereafter led from Fort Dodge, Kansas, south to Fort Supply and southwest through Ellis County to Fort Elliott in Texas, and another road ran southeast from the fort along the North Canadian and southward to Fort Cobb, near Anadarko. From 1876 through the 1880s massive herds of cattle passed through the southwestern corner of the county along the Great Western Trail from Texas to Kansas.

For non-Indians, ranching was the first viable economic activity in the western prairies of Indian Territory. By the 1840s the area that became Woods County lay in the western part of a “perpetual western outlet” that 1828 and 1835 treaties guaranteed to the Cherokees. Generally, they did not use the land, but after the Civil War leased it to Cherokee Strip Live Stock Association, cattlemen, most from Texas, who grazed herds of cattle there. Ranching operations within the present county's boundaries included J. W. Andres (or Andrews), Day Brothers, Dickey Brothers, Gregory, Eldred and Company, and New York Cattle Company.

Rail transportation came to the area in the 1880s and proved important in the county’s economic development after the Outlet opening. In 1886-87 the Southern Kansas Railway constructed a line southwest from Kiowa, Kansas, through the region and into Texas. The town of Woodward emerged where the railway crossed the military road, and the company constructed a station house and other depot buildings for the crew. A store also served local ranchers and travelers. The line, which facilitated settlement of the Outlet after the run, by 1899 was owned by the Atchison, Topeka and Santa Fe system and passed through Quinlan, Mooreland, and Woodward. A second rail line came two decades later, traversing the western part of the county from south to north. The Wichita Falls and Northwestern Railway, controlled by the Missouri, Kansas and Texas Railway, constructed a line from Elk City through Sharon, Woodward, and the town of Fort Supply to Forgan, in Beaver County, in 1911-12. Via both rail systems, crops could move
out of Woodward County to be marketed, and manufactured goods could supply farmers and town dwellers.

In September 1893, when the Cherokee Outlet opened for non-Indian settlement, Woodward County was created as County N, with Woodward the seat of government. The designation included present Harper and approximately half of Ellis and Woods counties. A year later, only 6 percent of the county had been settled; by 1902, because of the Free Homes Act of 1900, 83 percent was owned. In a November 6, 1894, election, the county took the town’s name. A courthouse constructed of brick was completed in 1901, and a fourth county courthouse was constructed in 1936-37. By designation in the state constitution in 1907, Woodward County was divided and its present boundaries delineated, and Woodward remained the county seat. In 1907 the county’s population stood at 14,959 and in 1910, at 16,592.

The county’s main income-producing activities have always been farming and cattle raising. Broomcorn, which was an important crop for many Oklahoma communities, was grown in abundance in Woodward County. In 1906, 380 rail cars of the product were shipped, and from 1912 through 1947 broom factories were active in Woodward and Mooreland. Castor beans were grown during World War I, and a plant processed them into oil used to lubricate airplane engines. Grain farming dominated, however. Wheat was the county’s primary crop. Before the advent of the 1930s drought, production comprised 1.2 million bushels on 1,365,000 acres in 1930. By 1934 that had shrunk to 481,000 bushels on 70,000 acres, but by 1960 the crop had risen to 1,982,000 bushels. The 1997 wheat crop comprised 2,616,213 bushels grown on 88,775 acres. Farms became less numerous but larger and more efficient. In 1910 there were 2,730, in 1930, 1,784, in 1950, 1,210, and in 1997, 800. Concomitantly, the size increased. In 1910, 1,320 farms were in the 160-acre category (a quarter section homestead), and only 17 were larger than 1000 acres. By 1997, only 119 were in the quarter-section size, but 206 were greater than 1,000 acres. Cattle raising has provided significant income as well. After 1893 settlement the big ranches, such as that of Charles and Hayden Kilgore, quickly ended, theirs in 1902. Small farm-ranch operations with small herds were the norm in the twentieth century. For example, by 1930, 40,256 head were raised on 1,609 ranches or farms. By 1997, 633 produced 78,168 head, but 35 of the producers actually created almost half of the total.

Because of the characteristics of the surrounding prairie-plains environment, in 1913 the U.S. Department of Agriculture established the Great Plains Field Station southwest of Woodward. Its initial purpose was to conduct research on sorghums and broomcorn, later adding grapes and other fruit, shelterbelt trees, wheat, and grasses for recovering abandoned farm land. As cattle raising assumed increasing importance, and with re-grassing the new goal, in 1978 the facility was renamed the Southern Plains Range Research Station and its mission changed to the study of rangeland beef production and grasses.

The agricultural depression that began after World War I and continued into the 1930s took a toll on Woodward County. Financial institutions failed in Mutual, Woodward, and Quinlan. The arrival of the Great Depression in late 1929 magnified the trouble. The automobile made people more mobile, and Woodward grew while smaller towns got smaller. The county’s population remained stable, however, after a drop to 14,663 in 1920. In 1930 it stood at 15,844 and grew to 16,270 in 1940. The federal government aided the depressed economy with the 1937
construction of Fort Supply Lake dam and with various Civilian Conservation Corps and Works Progress Administration projects.

The impact of the Great Depression was somewhat lessened by activity in the extractive industries. Mineral production in Woodward County has included salt, bentonite (fuller’s earth), and petroleum. Salt has been produced from the Big Salt Plain, a deposit that spans five thousand acres in Woodward, Harper, and Woods counties. It was first described in 1811 by George C. Sibley (during which expedition he also described the Great Salt Plain of Alfalfa County). Ezra Blackmon operated a salt works on the Big Salt Plain from the 1920s into the 1970s. Bentonite was known locally from the mid-1890s and was mined and used to make a cookware scouring product. In the early 1930s two plants opened. In 1932 eight miles northwest of Woodward the Texas Pacific Coal and Oil Company mined it and processed it at the Thurber Earthen Products Company plant. A second plant operated two miles east of Tangier into the 1940s. Bentonite is used primarily in petroleum filtration.

Petroleum exploration and drilling first took place, unsuccessfully, in Woodward County in 1903 and 1905 and recurred in the World War I years, again with little result other than temporary booms for small towns. In November 1956, however, a producing gas well was brought into production west of Woodward. Oil production gave the economy a much-needed transfusion and boosted Woodward’s population but not that of the county, which nevertheless declined overall to 14,383 in 1950 and 13,902 in 1960. Other industry included a plant that extracted iodine from oil-field brine, constructed north of Woodward in 1975, which soon provided nearly 14 percent of the nation’s supply of that gas.

One of the county’s most memorable historical events occurred on April 9, 1947. That evening, a massive tornado cut a two-mile-wide path from the Texas Panhandle through Ellis, Woodward, and Woods counties. In the town of Woodward, two hundred city blocks were demolished, with huge loss of life. The National Weather Service has ranked this storm as the deadliest and one of the strongest (F5 on the Fujita scale) tornadoes ever to occur in the state.

Woodward County remained sparsely populated during the last decades of the twentieth century. The population stood at 15,537 in 1970, grew with the oil boom to 21,172 in 1980, and shrank with its demise to 18,976 in 1990. Incorporated towns of Woodward County in 2000 included Woodward, Sharon, Mutual, Mooreland, Quinlan, and Fort Supply. Other rural communities included Belva, Curtis, Tangier, West Woodward, Gerlach, Keenan, Richmond, and Cedardale. Many others had risen as the population grew in the 1890s and early 1900s but have since vanished. Often, these dispersed rural settlements indicated the location of a post office or a rural schoolhouse that served a surrounding district. At one time, 264 school districts existed in the county before it was divided. In 2000 the U.S. Census defined the population as 92.4 percent white, 4.7 percent Hispanic, and 2.6 percent American Indian and recorded 18,486 inhabitants of Woodward County. Cooper and Fort Supply Wildlife Management Areas are operated by the Oklahoma Department of Wildlife Conservation. Dick T. Morgan, attorney and register of the U.S. Land Office at Woodward from 1904 to 1908, and Philip Ferguson, rancher and bank president, resided in Woodward County. Both represented the area in the U.S. House of Representatives. Regional and county history are illustrated at the Plains Indians and Pioneers Museum, located in Woodward.”
Demographic and Socioeconomic Conditions and Impact

The U.S. Bureau of Census provides summary data related to the demographic profile of the residents of Woodward County. The 2010 Census provided the statistical basis for the detail related to the population of Woodward County in 2012.

The following tables provide this summary based upon data retrieved during March 2013 from http://factfinder2.census.gov.

Table 2.1 – Population of Woodward County

<table>
<thead>
<tr>
<th>Year</th>
<th>2000</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodward County</td>
<td>18,803</td>
<td>20,081</td>
</tr>
</tbody>
</table>

The population of Woodward County has increased at a rate of 6.8% over the past ten years, returning to the 1980 population addressed by Everett in the history of Woodward County. Whereas the 2010 census placed the population at 20,081, the estimate for 2012 had shown an increase to 20,105 persons.

Woodward County shows a population with little diversity by race, demonstrated by 91.6% of the population being White. This percentage is much higher than that demonstrated within the state of Oklahoma. By contrast and related to ethnicity, Woodward County presents a population with a higher percentage of Hispanic residents (9.6%) than is true across Oklahoma (8.2%). This composition of the population is rooted in historic settlement of the area and in recent employment activity. This employment pattern may also be reflected in the higher percentage of males living in Woodward County than is true in the general population.

In summary, the residents of Woodward County are slightly older than the general population of Oklahoma, with a higher percentage of one race (White). However, the residents of Woodward County also reflect a higher percentage of Hispanic ethnicity than is true across the state of Oklahoma. These patterns affect recreation behavior and resource demand from the local populace.

Table 2.2 on the following page provides detail on the population characteristics of Woodward County. Of particular note is the median age in Woodward County at 37.2 years, whereas the state of Oklahoma shows a median age of 36.3 years. Woodward County is younger than the population of several of the surrounding counties, although slightly older than the state population in general. However, this composition of population affects the local workforce and recreation activity, as well as educational opportunities throughout the county.
Table 2.2 – Demographic Characteristics of the Population

<table>
<thead>
<tr>
<th>Factor</th>
<th>Woodward County</th>
<th>Oklahoma</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number (Percent)</td>
<td>Number (Percent)</td>
</tr>
<tr>
<td>Sex and Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>10,598 (52.7%)</td>
<td>1,816,749 (49.4%)</td>
</tr>
<tr>
<td>Female</td>
<td>9,507 (47.3%)</td>
<td>1,858,590 (50.6%)</td>
</tr>
<tr>
<td>Median age (years)</td>
<td>37.2</td>
<td>36.3</td>
</tr>
<tr>
<td>Under 18 years of age</td>
<td>4,863 (24.2%)</td>
<td>911,484 (24.8%)</td>
</tr>
<tr>
<td>18 years of age and over</td>
<td>15,242 (75.8%)</td>
<td>2,762,318 (75.2%)</td>
</tr>
<tr>
<td>65 years of age and over</td>
<td>2,890 (14.4%)</td>
<td>491,422 (13.5%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>18,422 (91.6%)</td>
<td>2,720,135 (72.2%)</td>
</tr>
<tr>
<td>Black or African American</td>
<td>212 (1.1%)</td>
<td>267,179 (7.4%)</td>
</tr>
<tr>
<td>American Indian/Alaskan Native</td>
<td>536 (2.7%)</td>
<td>259,809 (8.6%)</td>
</tr>
<tr>
<td>Asian</td>
<td>158 (0.8%)</td>
<td>61,581 (1.7%)</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Islander</td>
<td>3 (0.0%)</td>
<td>3,967 (0.1%)</td>
</tr>
<tr>
<td>Two or more races</td>
<td>436 (2.2%)</td>
<td>263,896 (7.2%)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Of any race</td>
<td>1,937 (9.6%)</td>
<td>302,167 (8.2%)</td>
</tr>
</tbody>
</table>

Table 2.3 on the following page reports the household characteristics of the population in Woodward County. The aging nature of the population is again revealed with a much higher percentage of households in Woodward County (26.8%) having one or more members of the household over the age of 65 when compared to the general population of Oklahoma (9.9%). Census data showed that Woodward County had a similar percentage of vacant housing units (13.4%) to that across the state. However, during preparation of the RMP, research staff found that housing in Woodward County was extremely limited. Numerous oil and gas field crews were long-time occupants of hotels and motels. The state parks also showed higher occupancy from long-term renters and several private rental properties expanded during this period.

25
Table 2.3 – Household Characteristics in Woodward County

<table>
<thead>
<tr>
<th>Household Related Factor</th>
<th>Woodward County Number (Percent)</th>
<th>Oklahoma Number (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of households</td>
<td>7,654</td>
<td>1,421,705</td>
</tr>
<tr>
<td>Population in households</td>
<td>18,841 (93.8%)</td>
<td>3,563,497 (96.9%)</td>
</tr>
<tr>
<td>Households with a child or children under 18</td>
<td>5,347 (33.7%)</td>
<td>425,149 (29.9%)</td>
</tr>
<tr>
<td>Households with person 65 years and over</td>
<td>2,055 (26.8%)</td>
<td>140,851 (9.9%)</td>
</tr>
<tr>
<td>Occupied housing units</td>
<td>7,654 (86.6%)</td>
<td>1,421,705 (86.5%)</td>
</tr>
<tr>
<td>Vacant housing units</td>
<td>1,184 (13.4%)</td>
<td>222,523 (13.5%)</td>
</tr>
<tr>
<td>Owner occupied housing units</td>
<td>5,448 (71.2%)</td>
<td>969,959 (68.2%)</td>
</tr>
<tr>
<td>Renter occupied housing units</td>
<td>2,206 (28.8%)</td>
<td>451,746 (31.8%)</td>
</tr>
</tbody>
</table>

Another characteristic on which the population of Woodward County differs from that across Oklahoma is household income. The median household income in Woodward County is slightly higher than the statewide average. Median household income as reported by the U.S. Bureau of Census may be somewhat misleading: by definition 50% of the population in the county is above the median income level and 50% is below that number. The mean household income in Woodward County is $59,000, an indication that a small number of households are doing quite well, while a large number of households may be at the lower end of the income base. One-hundred-fifty-eight households in Woodward County (3.1%) reported incomes exceeding $200,000, whereas 1,890 (36.7%) reported household incomes below $50,000.

It is important to recognize that 6.5% of the population of Woodward County is identified as being below federal poverty guidelines. The percentage of households below poverty levels and the percentage of individuals in those households are lower than the comparable statistics for the state of Oklahoma. It can be concluded that the residents of Woodward County are higher than the comparable financial characteristics for Oklahoma.

Table 2.4 – Financial Characteristics in Woodward County

<table>
<thead>
<tr>
<th>Characteristic or Factor</th>
<th>Woodward County</th>
<th>Oklahoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median household income</td>
<td>$43,530</td>
<td>$42,979</td>
</tr>
<tr>
<td>Households below poverty level</td>
<td>6.5%</td>
<td>11.9%</td>
</tr>
<tr>
<td>Individuals below poverty level</td>
<td>12.4%</td>
<td>16.2%</td>
</tr>
</tbody>
</table>
Residents of Woodward County also present education characteristics that are associated with the financial status of the county. In Woodward County, the greatest variation from the statewide educational pattern is shown in the transition between high school and college. Woodward County residents exceed state percentages in educationally attainment through “some college, no degree.” However, beyond that level, residents of Woodward County lag behind state educational achievement levels. Education levels have been shown to be highly correlated with other economic measures.

**Table 2.5 – Education Characteristics in Woodward County**

<table>
<thead>
<tr>
<th>Educational Attainment</th>
<th>Woodward County Number (Percent)</th>
<th>Oklahoma Number (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,694 persons 25 years of age and above</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 9th grade</td>
<td>694 (5.2%)</td>
<td>115,248 (4.8%)</td>
</tr>
<tr>
<td>9th to 12th grade, no diploma</td>
<td>1,396 (10.5%)</td>
<td>232,987 (9.8%)</td>
</tr>
<tr>
<td>High school diploma or equivalency</td>
<td>4,963 (37.2%)</td>
<td>775,478 (32.6%)</td>
</tr>
<tr>
<td>Some college, no degree</td>
<td>3,450 (25.9%)</td>
<td>559,367 (23.5%)</td>
</tr>
<tr>
<td>Associate’s degree</td>
<td>501 (3.8%)</td>
<td>159,557 (6.7%)</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>1,897 (14.2%)</td>
<td>362,043 (15.2%)</td>
</tr>
<tr>
<td>Graduate or professional degree</td>
<td>430 (3.2%)</td>
<td>176,139 (7.4%)</td>
</tr>
</tbody>
</table>

**Table 2.6 – Employment Characteristics in Woodward County**

<table>
<thead>
<tr>
<th>Characteristic or Factor</th>
<th>Woodward County Number (Percent)</th>
<th>Oklahoma Number (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population in the labor force (16 years and over)</td>
<td>15,777 (62.1%)</td>
<td>1,806,858 (63.0%)</td>
</tr>
<tr>
<td>Employed</td>
<td>9,333 (95.9%)</td>
<td>1,674,765 (92.3%)</td>
</tr>
<tr>
<td>Private wage and salary workers</td>
<td>6,959 (74.6%)</td>
<td>1,260,965 (75.3%)</td>
</tr>
<tr>
<td>Government workers</td>
<td>1,633 (17.5%)</td>
<td>285,562 (17.1%)</td>
</tr>
<tr>
<td>Self-employed (non-incorporated business)</td>
<td>704 (7.5%)</td>
<td>124,013 (7.4%)</td>
</tr>
<tr>
<td>Unpaid family workers</td>
<td>37 (0.4%)</td>
<td>4,225 (0.3%)</td>
</tr>
</tbody>
</table>
Another demographic factor that is highly correlated with financial characteristics and educational characteristics is employment. The employment figures for Woodward County are reported in Table 2.6 on the preceding page. As of 2010, Woodward County reported unemployment to be approximately 3.7% as compared with a statewide 7.7%, better conditions than nationally at this time. Therefore, employment levels for Woodward County may have been higher than those reported by the Census Bureau.

Another demographic factor that assists in understanding the local population is related to persons with disabilities. The 2010 census reported that among those persons in Woodward County between the age of five and seventeen, there are 68 individuals (1.9%) of the population with a disability. This percentage increases in the population from ages 18 to 64 years to 9.5% or 1,104 individuals. Among those persons aged 65 years or more, 46.1% or 1,316 individuals have one or more disabilities.

In summary, Woodward County comprises a rural area with approximately 16.1 persons per square mile as compared to an average of 50.3 for Oklahoma. The largest community in the county (Woodward) reports slightly more than 60% of the populace for Woodward County. That population shows an average household income above the statewide average; a smaller percentage of Woodward County residents are below the poverty level than is true statewide; the county shows relatively less diversity by race than is true in the statewide population. The residents of the county have achieved educational levels beyond high school diplomas at lower percentages than is true statewide.

**Competing and Complementary Recreational Opportunities**

Woodward County is located in the northwestern quadrant of Oklahoma and just east of the panhandle of the state, in which the population and recreational opportunities are relatively limited compared to some other counties in the state. Woodward County residents have access to recreation for the public, but with relatively limited options except for the state parks and a few local parks in the larger communities.

Boiling Springs State Park, another state park in Woodward County, is southwest of the cavern area. As one of the original Oklahoma State Parks, Boiling Springs encompasses a unique environment of hardwood forests, springs, and streams contrasting with the surrounding plains. The springs feed into a small lake, and facilities for picnicking, camping, boating, swimming, and fishing are readily available. The Civilian Conservation Corps historical structures are considered as major attractions of the park.

Fort Supply Wildlife Management Area (WMA) is located northwest of Boiling Springs and managed by the Oklahoma Department of Wildlife Conservation. This wildlife management area covers approximately 5,500 acres of land and is located west of highway 270 (northwest of the city of Woodward). Pheasant, quail, deer, turkey, rabbit, furbearers, dove, and waterfowl are identified as game species in the area for hunters (ODWC, 2013). In addition, Fort Supply Reservoir, nearby, also provides fishing, boating, swimming, and camping opportunities for recreational use. Both Fort Supply WMA and Fort Supply Reservoir are shown in Figure 2.3.
Figure 2.3 – Map of Fort Supply WMA and Fort Supply Reservoir
Source: ODWC (2013)
The City of Woodward operates several parks, although the only park that attracts non-resident visitors who may also visit Alabaster Caverns State Park is Crystal Beach Park. Crystal Beach offers facilities for picnics, cookouts, fishing, walking, tennis and golf. Playgrounds provide additional attraction for a range of visitors. Crystal Beach Lake includes walking trails and opportunities for fishing. In addition, Crystal Beach pool and aquatic center provide opportunities for swimming that may exceed those available at Boiling Springs State Park.

Several private campgrounds have developed in the surrounding area. However, the level of service and amenities offered by these businesses varies greatly from the quality of the recreation experience offered by Alabaster Caverns State Park and Boiling Springs State Park.

A complementary resource benefiting Alabaster Caverns State Park is the Great Plains Trail of Oklahoma, a cooperative venture of several organizations including Oklahoma Wildlife and Prairie Heritage Alliance, Oklahoma Department of Wildlife Conservation, Oklahoma Tourism and Recreation Department, Playa Lakes Joint Venture, Oklahoma Economic Development Authority, High Plains RC&D, and Great Plains RC&D. Alabaster Caverns is an identified stop on the Sand Hills Loop and the Bats and Bluffs Loop of the Great Plains Trail, highlighted because of the caves, gypsum capped bluffs, gorges, canyons, and bats along these routes.

The Great Plains Trail is marked along Oklahoma highways with signs as shown in Figure 2.4. In addition, visitors traveling the trail benefit from printed materials, web-based materials, and additional support information to enrich the travel experience along the route.

![Figure 2.4 – Great Plains Trail sign](image)

![Figure 2.5 – Map of Sand Hill Loop of the Great Plains Trail](image)
Regional and Park History

The following history of Alabaster Caverns State Park was preserved by Fred S. Barde Collection, Library Resources Division and retrieved from the website for the Oklahoma Historical Society (http://digital.library.okstate.edu/encyclopedia/entries/A/AL002.html). Figures included in the following material are incorporated directly from this citation and credited to the Oklahoma Historical Society.

Alabaster Caverns State Park, located in Woodward County six miles south of Freedom near State Highway 50, encompasses one of the world’s largest gypsum caves open to the public. An inland sea covered the area over two hundred million years ago during the Permian Age. The water evaporated and left large deposits of gypsum and other minerals. An upheaval of the earth raised the gypsum bed close to the surface, and over time, water streams tunneled caverns through the formation. The caverns contain an abundance of crystals of selenite and white and pink gypsum as well as deposits of rare black alabaster. The main cavern is three-fourths of a mile long, with a maximum height of fifty feet and width of sixty feet. It branches into numerous caves with uniquely named boulder formations, such as “Ship’s Prow,” and into chambers called “Devil’s Kitchen” or “Crystal Vault.” The cavern temperature ranges from 52° F to 58° year round.

No official record of first discovery has surfaced to date; however, the caverns once served as safe haven for outlaws. Evidence suggests that the first known exploration of the caves occurred in 1898. Hugh Litton homesteaded the area during the Cherokee Outlet Run of 1893. In the 1920s and 1930s various individuals leased the land comprising Alabaster Caverns and allowed limited touring of the locally known “Bat Caves” for a nominal fee. Public tours of the cavern increased with the 1939 purchase and renovation of the caverns by Englishman Charles Grass. Grass preferred to call the natural wonder “Alabaster Caverns.”

Due to Grass’s failing health, in late 1952 five businessmen from Freedom and members of the Waynoka Railroad Labor League spearheaded a movement for the State of Oklahoma to purchase the cavern land. Oklahoma purchased the two hundred acres from Grass on September 1, 1953, for thirty-four thousand dollars, at which time the caverns came under the jurisdiction of
the Oklahoma Planning and Resources Board (forerunner to the current Oklahoma Tourism and Recreation Department). After additions to the property, the state reclassified the area as a state park in 1956. It served as a nuclear fallout shelter in the mid-1950s.

The cavern also provides shelter to five species of bats. With the bat population fluctuating up to ten thousand, tourists can encounter the cave myotis, western big-eared bat, eastern pipistrelle, western big brown bat, and Mexican free-tailed bat throughout the year. The park lies inside Cedar Canyon and provides facilities for picnicking, riding, hiking, and, with proper equipment, “wildcaving” of the five undeveloped caves in the park. Alabaster Caverns has developed into one of Oklahoma’s most popular tourist stops with over forty thousand visitors per year.

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**Natural Resources in the Park**

**Climate and Air Quality**

Using the Koeppen classification of climate types, Woodward County is in the humid subtropical zone, a moist, mid-latitude climate with mild winters. Most of Oklahoma is classified in this same humid subtropical climate. Average precipitation for Woodward County is 25.88 inches per year. This precipitation may include about 12.7” of snow annually, with the balance of precipitation occurring largely from thunderstorms during the spring and summer. Temperatures average 58°F, with the coldest average temperature occurring in January (35°F) and the warmest average temperature occurring in August (78°F). The highest recorded temperature in Woodward County occurred June 12, 1917, in Mutual at 115°F. Similarly, the lowest recorded temperature (-24°F) occurred in Woodward on January 4, 1947.

Winds from the south to southwest are quite dominant, averaging just over eleven miles-per hour. Relative humidity, on average, is 62% during the day. During the year, humidity is highest in May and June and lowest in August. Winter months tend to be cloudier than summer months. The percentage of possible sunshine ranges from an average of about 65% in winter to nearly 85% in summer. The growing season in Woodward County averages about 191 days annually.

Thunderstorms occur on about 46 days each year, predominantly in the spring and summer. During the period 1950 – 2003, Woodward County recorded an average of six tornadoes per year. Woodward County typically has about six events each year of hail exceeding one inch in diameter. As information collection has improved, both the number of reported tornadoes and the number of severe hail events have increased (OK Climatological Survey).

The Pollution Information Site (Scorecard) reports that 88% of all days in Woodward County show good air quality, with the primary pollutants being particulate matter (PM-2.5 and PM-10). Having said that, according to the Clean Air Task Force website, Woodward County is at the 80th percentile for PM-2.5 and 90th percentile for PM-10 emissions placing it among the “dirtiest counties in the United States” (Clean Air Task Force).
Archeology of Alabaster Caverns State Park

The Oklahoma Archeological Survey (2012) reports no archeological sites in Woodward County. That does not mean that there is nothing of value from an archeological perspective within the County or within Alabaster Caverns State Park. As documented in the history of Woodward County, several adjoining counties have significant archeological sites. It is possible that additional sites may be found although modern human activity reduces the likelihood of significant finds within the park boundaries.

Topography

The following information of Woodward County in Oklahoma was derived from a report of *Ground Water Resources of Woodward County, Oklahoma* prepared by Wood and Stacy for the Oklahoma Water Resources Board (1965). Figures included in the following material are incorporated directly from this citation and credited to the water report.

The report indicated that Curtis and Ham (1957) characterized the land surface of Woodward County in five geomorphic units of topography: Central Redbed Plains, Cimarron Gypsum Hills, Western Sandstone Hills, Western Sand-Dune Belt, and High Plains (Figure 2.6).

- The Central Redbed Plains, which constitute the surface of the red beds in much of central, south-central, and northwestern Oklahoma, is identified in Woodward County as a narrow band ranging in altitude from about 1,450 to 1,600 feet along the south side of the Cimarron River.
- The Cimarron Gypsum Hills, also called the Gypsum, or “Gyp” Hills, rise abruptly 100 to 300 feet above the Central Redbed Plains, forming a steep northeastward-facing escarpment. Early settlers, traveling westward across the plains, referred to this group of hills as "the first line of hills" because they form an unbroken ridge, extending in a northwesterly direction. When viewed from above, the hills exhibit a rugged relief because of the many steep-walled canyons being cut by headward-eroding tributaries of Cimarron River.
- The Western Sandstone Hills geomorphic unit is composed chiefly of easily eroded beds of sandstone and shale which geologists have referred to the Whitehorse Group and Cloud Chief Formation. In Woodward County the North Canadian River has separated this unit into two areas. North of the river, altitudes in the unit range from 1,800 to 2,100 feet, and the hills form a northwest-trending ridge that serves as the drainage divide between the North Canadian and Cimarron Rivers. The ridge has weathered to form a series of rounded sandstone hills.
- The North Canadian River valley has been referred to the Western Sand-Dune Belt because it is largely covered by sand that has been blown by the prevailing southerly winds into hummocky dunes or sand hills. In most places the dunes or sand hills are more or less stabilized by vegetation, and randomly oriented sand dunes 10 to 30 feet in height are separated by relatively flat sand-covered basins or depressions of various sizes.
The High Plains geomorphic unit of southwestern Woodward County is part of an extensive fluvial plain that stretches northward from western Texas and southeastern New Mexico, across northwestern Oklahoma, western Kansas and Nebraska, and into southwestern South Dakota. This vast plain is often described as monotonously flat because, from a distance, minor features resulting from the erosive actions of wind and water are not apparent.

Figure 2.6 – Topological map of Woodward County, Oklahoma
Source: Wood and Stacy (1965), modified after Curtis and Ham (1957)
Geology

Most of Woodward County and all of Alabaster Caverns State Park are situated in the Anadarko Shelf of the Cherokee Platform as shown in Figure 2.7. According to Charpentier (2010) the North Canadian River separates Woodward County with the Anadarko Shelf of the Cherokee Platform to the north and the Anadarko Basin to the South.

![Figure 2.7 - Geological regions in Oklahoma](source: Charpentier (2010))

To the north of the North Canadian River, the major rock formations are from the Permian period, also identified as the Paleozoic period. However, within the river corridor, the major rock formations are from the Quaternary period, known as the Cenozoic period.

Detail of the geology of Alabaster Caverns State Park serves as the opening discussion in Oklahoma Geological Survey Guide Book XV: Alabaster Caverns and Woodward County, prepared by Myers, Gibson, Glass, and Patrick (1969). The following geological information of Woodward County and Alabaster Caverns State Parks are incorporated directly from this citation and credited to the geological survey report (Figure 2.8, 2.9 & 2.10).

The oldest formation exposed in Woodward County is the Flowerpot Shale, named for Flowerpot Mound in Barber County, Kansas. It consists primarily of red shale with thin interbedded layers and cross-cutting stringers of gypsum. The shale is relatively easily eroded and, as a result, cliffs or scarps are formed. An excellent exposure of the Flowerpot is along the south side of the Cimarron River near Freedom; in Alabaster Caverns State Park it can be seen in the lower part of Cedar Canyon.

Overlying the Flowerpot Shale is the Blaine Formation, named for Blaine County, Oklahoma. The Blaine Formation has four members, the oldest of which is the Medicine Lodge Gypsum, named for the Medicine Lodge River and the town of Medicine Lodge in Barber County, Kansas. The Medicine Lodge Gypsum is approximately 25 feet thick, has a 1-foot-thick dolomite at its base, and is overlain by unnamed shale, 13 feet thick. Resting upon the shale is the Nescatunga Gypsum (named for exposures along Nescatunga Creek in Comanche County,
Kansas), which is 13 feet thick. It has a 1-foot-thick dolomite bed at its base and is overlain by 7 feet of unnamed shale. Above the shale is the 13-foot-thick Shimer Gypsum (named for Shimer township in Comanche County, Kansas), with a 2-foot-thick dolomite bed at its base. This gypsum is overlain by 4 feet of shale. At the top of the Blaine Formation is the 4-foot-thick Haskew Gypsum, named for a township in northwestern Woodward County.

The shales of the Blaine are easily eroded and, hence, form escarpments (cliffs); the gypsum layers are resistant and form a series of benches (ledges), and, as a result, the Blaine Formation appears as a series of steps along the sides of valleys. Figure 2.10 shows the stratigraphic level of Alabaster Caverns in the lower part of the Blaine Formation and illustrates the bench-forming gypsums in the park area.

![Figure 2.8 – Alabaster Caverns and the upper room cave](source)


![Figure 2.9 – Domes of Alabaster Caverns State Park](source)
Figure 2.10 – Stratigraphic level of Alabaster Caverns within the Blaine Formation

Source: Myers, Gibson, Glass, & Patrick (1969)
Soil

The Natural Resources Conservation Service (NRCS) gathers data and prepares custom soil resource reports for specific areas. In each report they define various terms related to soils and the related capacities. Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series. Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An undifferentiated group is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, are an example.

Some surveys include miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example of a miscellaneous area (NRCS, 2010).

Material about soils in the study area provides background information about suitability for recreational development.

Soil Suitability for Recreation Development

Table 2.12 and Figure 2.11 on the following pages detail soils at Alabaster Caverns State Park. There are three dominant soils within the park boundaries. The majority of Alabaster Caverns State Park is Knoco-Cottonwood-Rock outcrop complex with 3 to 20 percent slopes (59.5%). This is primarily situated in the west, north and southwest portions of the park. This area now includes some camping areas and nature/scenic view areas.
The second large soil complex, slightly higher than 20% of the park, is composed of Vernon-Knoco complex with 5 to 12 percent slopes. This soil is located through much of the central portion of the park along with the stream. This soil complex is now utilized for some of the campgrounds, much of the picnic area, and other day use activity.

The third soil dominant complex is Vernon clay loam, with 5 to 8 percent slope. This soil is primarily across the southern portion of the park with limited development other than trails and some roadways.

For recreational development, the soils of Alabaster Caverns State Park show major limitation for camp areas across the majority of the park property. Paths and trails for foot traffic are only limited in the center of the park along the stream, and rest of the areas in the park are somewhat or not limited for trail development. Alabaster Caverns State Park is limited for picnic areas and playground facilities as well, because the majority of the park property has limitations of development in terms of the soil complex.

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>SaC</td>
<td>St. Paul silt loam, 3 to 5 percent slopes</td>
<td>3.7</td>
<td>1.9%</td>
</tr>
<tr>
<td>VcC</td>
<td>Vernon clay loam, 3 to 5 percent slopes</td>
<td>21.7</td>
<td>10.9%</td>
</tr>
<tr>
<td>VcD</td>
<td>Vernon-Knoco complex, 5 to 12 percent slopes</td>
<td>40.5</td>
<td>20.4%</td>
</tr>
<tr>
<td>Vp</td>
<td>Knoco-Cottonwood-Rock outcrop complex, 2 to 20 percent slopes</td>
<td>118.2</td>
<td>59.5%</td>
</tr>
<tr>
<td>WoD</td>
<td>Woodward loam, 5 to 8 percent slopes</td>
<td>14.7</td>
<td>7.4%</td>
</tr>
<tr>
<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td><strong>198.8</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

*Table 2.7 – Legend for soil map of Woodward County, OK*

Source: Natural Resource Conservation Service
Figure 2.11 – Soil map of Alabaster Caverns State Park
Hydrology

Woodward County straddles portions of five watersheds, four of which cross the state’s borders into the surrounding states. These watersheds are shown in Figure 2.12 and identified as follows:

- 11050001 - Lower Cimarron-Eagle Chief; state(s): KS, OK
- 11090201 - Lower Canadian-Deer; state(s): OK, TX
- 11100201 - Lower Beaver; state(s): OK, TX
- 11100203 - Lower Wolf; state(s): OK, TX
- 11100301 - Middle North Canadian; state(s): OK

The watershed of immediate proximity to Alabaster Caverns State Park is the Lower Cimarron-Eagle Creek. This watershed (11050001) extends along the Cimarron River covering the northeast portion of Woodward County. All water from the county flows in a general southeastward direction into either the Cimarron River or the North Canadian River. The Lower Wolf watershed terminates in Woodward County at Fort Supply Lake northwest of Woodward.

Surface waters in all of these watersheds have been identified as having impairments from lack of dissolved oxygen, sulfates, and enterococcus bacteria. In addition, the Lower Cimarron-Eagle Creek shows impairments for cadmium, fish bioassessments, thallium, Dieldrin, oil and grease, turbidity, lead, and fecal coliform.

Vegetative Cover

Alabaster Caverns State Park is in the Bluestem-Grama Prairie using the Kuchler Vegetation Classification. The area is in the Temperate Steppe division and the Great Plains Steppe and Shrub province (Figure 2.13).

The Lenihan Vegetation Classification identifies these areas with slightly different descriptors. North of the North Canadian River, Woodward County is in the South Mixed Grass Prairie.
(including Alabaster Caverns State Park), while south of the North Canadian River, the county is identified as Tall Grass Prairie.

The vegetation associated with this area is identified as sandsage grassland and mixed grass eroded plains. This vegetation provides habitat for a variety of wildlife, with the addition of the forest associated with the park property. Eastern Red Cedar is invasive in this environment. Other vegetation and plants in Alabaster Caverns State Park are showed in Figure 2.14 and 2.15.
Wildlife

Nuisance Species

Oklahoma Natural Areas Registry Program (2013) researched the wildlife and geographic features in Western Oklahoma, where diverse species live as their permanent or temporary habitats. The following information was directly derived from *Focus in Oklahoma's Rare Habitats: Gypsum Caves*.

Although bats are what come to mind when most people think of cave dwellers, many animals take advantage of the habitat available in an underground passage. Other mammals, including the raccoon, red fox, and southern plains woodrat, have all been found to take refuge in gypsum caves.

Birds may utilize gypsum caves too; not surprisingly, both the barn owl and great horned owl have been associated with caves in western Oklahoma. Salamanders are common inhabitants of eastern caves, but only the tiger salamander is found in caves of western Oklahoma (Figure 2.16). Invertebrates take advantage of the cooler temperatures and increased...
moisture found in gypsum caves. Biologists have found several species of terrestrial snails, crickets, flies, beetles, and spiders in Oklahoma’s gypsum caves.

Few of the animals in gypsum caves live solely underground. Most venture out into the open or at least to the cave entrance. The zone around the cave opening is influenced by the interior cave climate: cooler temperatures, higher humidity, and lower light. Consequently, a different group of plants grow here than on the adjacent mixed grass prairie, such as liverworts, ferns, and algae.

Oklahoma’s gypsum caves may not possess spectacular formations, but their unique habitat in the arid grasslands of western Oklahoma makes them important conservation targets.

**Endangered or Threatened Species**

At present there are no state-listed threatened or endangered species listed for Woodward County. However, there are federal-listed threatened and endangered species that might be present in Woodward County, Oklahoma. Endangered species are animals and plants that are in danger of becoming extinct. Threatened species are animals and plants that are likely to become endangered in the foreseeable future. There are two federally listed endangered species in Woodward County, including the Whooping Crane (*Grus americana*) and Interior Least Tern (*Sternula antillarum*). Piping Plover (*Charadrius melodus*) and the Arkansas River Shiner (*Notropis girardi*) are classified as threatened species in federal level. Lesser Prairie Chicken (*Tympanuchus pallidicinctus*) and Arkansas Darter (*Etheostoma cragini*) are reported as federal-listed the candidate species under evaluation and might present in the county as well.

According to Oklahoma Department of Wildlife Conservation (2013), the Whooping Crane (Figure 2.17) is the tallest bird in North America at a height of nearly five feet. This endangered crane passes through Oklahoma each spring and fall during migration. The decline of Whooping Crane populations resulted from the loss of shallow wetland habitat for their nesting and their wintering ranges. It also was affected by unregulated market hunting in the 1800s before modern wildlife conservation laws were passed.

The Interior Least Tern (Figure 2.17) is the smallest member of the gull and tern family in North America. They breed in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems, and their winter home is unknown, but probably includes coastal areas of Central and South America (US Fish & Wildlife, 2013).

Oklahoma is an important location for piping plover to migrate from its north nesting habitat to its south winter ground. The following information about Piping Plover and Arkansas River Shiner was prepared by U.S. Fish and Wildlife Service (2013) and ODWC (2013).

In Oklahoma, the piping plover (Figure 2.18) is a biannual migrant, traveling between its nesting habitat to the north of Oklahoma (the Great Plains population nests from Kansas to southern Canada), and its wintering grounds on the gulf coast. Migration through Oklahoma is likely to occur from March-May and July-September. The Great Plains population of piping plover was federally listed as a threatened species on December 11, 1985 (50 CFR 21784). During migration, piping plovers have been documented in many areas of Oklahoma from the panhandle to the eastern border and probably migrate through or over all of Oklahoma (USFWS, 2013).
The Arkansas River Shiner (Figure 2.18) inhabits the shallow braided channels of wide sandy prairie rivers in the Arkansas River system. At the present time, nearly all of the remaining Arkansas River Shiners occur in the Canadian River in Oklahoma, western Texas and eastern New Mexico. A small population may persist in the Cimarron River in Oklahoma, and an isolated population occurs in the Pecos River in southwestern Texas where they were accidentally introduced. The population of Arkansas River Shiner has 80% decline since 1950s. The reasons for this dramatic population dropping might associate with reservoir construction and the removal of water from the watershed for irrigation and household use.

It is unlikely that any of these endangered or threatened species are present within Alabaster State Park. These species may be present along the Cimarron River north of the park’s boundaries.

*Figure 2.17 – Endangered species in Woodward County, Oklahoma*
(Left: Whooping Crane; Right: Interior Least Tern)
Source: ODWC & USFWS

*Figure 2.18 – Threatened species in Woodward County, Oklahoma*
Light: Piping plovers; Right: Arkansas River Shiner
Source: ODWC & USFWS
Bats of Alabaster Caverns State Park

Bats of Alabaster Caverns State Park written by Dr. Bryan P. Glass is one of the documents in *Oklahoma Geological Survey Guide Book XV: Alabaster Caverns and Woodward County* (1969). Eight species of bats occur in the Alabaster Caverns State Park area. Two of these, the red bat (*Lasiusurborealis*) and the hoary bat (*L. cinereus*), are migrant tree-dwelling species that may be seen from time to time in the trees within Cedar Canyon. The former is fairly abundant and probably lives in the canyon every summer. The latter is quite rare and probably occupies the canyon only occasionally during the warmer part of the year. The remaining species are cave dwellers. One is a migrant; the others are resident throughout the year.

- **Cave myotis (Myotis velifer)**
  This is the most common species in Alabaster Caverns and is usually referred to as “little brown bat,” a name which is more properly applied to a different species not occurring in western Oklahoma (Figure 2.19). *Myotis velifer* lives in the cave throughout the year. Great masses of these bats usually hibernate in the main tunnel near the cavern entrance, where they are easily seen by visitors. They rear their young in the cave, and the females form a maternity colony that is a dense aggregation of bats in a restricted location. Formerly, one of these aggregations occupied Bat Dome, but in recent years the females have used an inaccessible part of the cave, presumably where there is less disturbance. The number of individuals of this species in Alabaster Caverns cannot be stated precisely, but it is at least 4,000 and may be several times that number.

- **Big brown bat (Eptesicus fuscus).**
  This species occupies the cave throughout the year, but is much less numerous than the Cave Myotis. It is solitary except when the females aggregate to form maternity colonies. The females often leave the cave and occupy buildings at this time, but males are in the cave throughout the year. The best place to see them is in over-head crevices just inside the entrance.

- **Big-eared bat (Plecotus townsendi)**
  Like the big brown bat, this species occupies the cavern throughout the year and is solitary except for maternity aggregations. It is a small species, but its huge ears (more than an inch in length) and its long fluffy fur make it appear larger. When the bat is asleep, the ears are curled backward and downward on the sides of the head. Maternity aggregations of the big-eared bat may cover the ground beneath them with droplets of condensed moisture.
• Pallid bat (Antrozous pallidus)
This species was first reported from Oklahoma (east of Cimarron County) to be in Alabaster Caverns. It is a large bat with big ears, and its body is pale brown above and white underneath. This species hides itself in open crevices in cliffs during the day, but resorts to caves for temporary roosting places at night, between intervals of feeding. It has been detected only entering or leaving the cavern after dark, never sleeping during the day.

The pallid bat hibernates in caves, forming aggregations in narrow over-head cracks. It probably hibernates in Alabaster Caverns, as it is known to do in adjoining parts of Kansas, but no hibernating colony has been found in Oklahoma.

• Eastern Pipistrelle (Pipistrellus subflavus)
This species has been seen only once in Alabaster Caverns, where it was hibernating. It was in the lower part of the cavern, where the air is very damp. Nothing is known of its summer habits in the Great Plains. The species is nowhere common in western Oklahoma, the few specimens known having all been taken from damp caves or tunnels. In the eastern United States, the species is common. It hibernates singly in caves during the winter but moves out and lives in trees during the summer. When hibernating, like Plecotus townsendi, it seems to be partial to humid places where moisture condenses on its fur. Its distribution in western Oklahoma is probably limited by the availability of suitably damp hibernating sites.

• Mexican Free-tailed Bat (Tadarida brasiliensis mexicana)
This bat belongs to a family that is peculiar in that half of the tail projects beyond the free border of the tail membrane (Figure 2.20). It is a non-hibernating species that migrates northward from the American tropics in spring to rear its young in temperate latitudes and returns to the tropics in the fall. It is present in western Oklahoma only from April to October.

The free-tailed bat is mainly aggregated into maternity colonies during summer and is famous in Oklahoma for the spectacular size attained by these groups, which comprise millions of bats. They require large caves with high ceilings because of the structure of their wings, which necessitates a drop in order to attain flying speed. A large colony of these bats formerly occupied the front room of Alabaster Cavern, but disturbance, principally the installation of lights, has caused them to abandon it. The dispersal of the bats was a necessary preliminary to opening the cavern to the public because the heat generated by their bodies, as well as the odor of the guano accumulated on the floor, made the atmosphere in the room quite stifling.

Now the species uses the cavern only briefly during the spring and fall migration periods, when groups of several thousand bats may use the cavern for a day.
or two at a time. However, individuals fly in and out of the cave every night and presumably roost there briefly between feeding flights.

**Accessibility**

The Oklahoma State Parks Division strives for accessibility for those with disabilities in all its park locations and facilities and has an access plan for the Division. Many parks and facilities were designed and constructed before the passage of the 1990 Americans with Disabilities Act (ADA), and well before the Americans with Disabilities Act Accessibility Guidelines (ADAAG) were developed. Further, by its very nature, the natural environment may not lend itself to easy access for those with mobility impairments.

The technical provisions of the ADA permit deviation from the stated guidelines. These provisions allow deviation from full compliance if accessibility cannot be provided because (1) compliance would cause substantial harm to cultural, historic, religious or significant natural features or characteristics; (2) substantially alter the nature of the setting or purpose of the facility; (3) require construction methods or materials that are prohibited by federal, state or local regulations or statutes; or (4) would not be feasible due to terrain or the prevailing construction practices.

In 2007, the United States Access Board issued a Notice of Proposed Rule Making (NPRM) for outdoor developed areas. These rules and their associated interpretations have direct bearing on the consideration of access in Alabaster Caverns State Park. The minimum requirements found in the NPRM for outdoor developed areas are based on several principles developed through the regulatory negotiating process. They include (U.S. Access Board, 2009):

1. **Protect the resource and environment**
2. **Preserve the experience**
3. **Provide for equality of opportunity**
4. **Maximize accessibility**
5. **Be reasonable**
6. **Address safety**
7. **Be clear, simple, and understandable**
8. **Provide guidance**
9. **Be enforceable and measurable**
10. **Be consistent with Americans with Disabilities Act Accessibility Guidelines (as much as possible)**
11. **Be based on independent use by persons with disabilities**

Trails that currently exist in the recommended properties are all natural surfaces, although several of the properties have hard surface sidewalks in the developed areas. Any one designated trail may make use of all or several surface types. If major trail redesign or construction were to occur, it would be important to ensure compliance with the ADA standards where appropriate. The NPRM addresses ten provisions that must be considered related to trail accessibility. These provisions are:

1. **Surface – must be firm and stable**
2. Clear tread width – minimum of 36 inches
3. Openings in surface – may not permit passage of sphere one-half inch in diameter
4. Protruding object – minimum of 80” of clear headroom above the trail
5. Tread obstacles – cannot exceed a maximum of two inches
6. Passing space – minimum of 60” by 60” at intervals of 1000’ or less
7. Slope – addresses cross slope and running slope
8. Resting intervals – at least 60” in width
9. Edge protection – not necessarily required, but may be provided
10. Signage – information on distance and departure from technical provisions

An example of possible signage for trails as suggested by the National Center on Accessibility is shown in Figure 2.21. As of 2010, no specific signs have been designated for universal communication related to accessible trails. However, these signs communicate the concept of accessibility in outdoor developed recreation spaces that include trails.

Other considerations related to access for persons with disabilities include “Braille trail” concepts that allow persons with visual limitations to enjoy the features of a trail. This is particularly true if the trail is interpretive in nature, with signs communicating information related to natural, cultural, historic, or other significant topics related to the park environment.

In an effort to fully disclose the extent of accessibility within state parks, the Oklahoma State Park Division developed terms to describe two levels of access; these terms are used in State Parks publications: accessible and usable.

*Accessible* indicates that the park “substantially complies with the Americans with Disabilities Act Accessibility Guidelines (ADAAG). The facility is connected with a barrier-free-route-of-travel from an accessible parking area.”

*Usable* indicates that the “facility allows significant access. Some individuals with disabilities may have difficulty and need assistance. Due to topography and the primitive nature of some sites, parking and connecting routes may not be accessible to all with disabilities” (OTRD, 2007).

OTRD began development of the properties at Alabaster Caverns State Park before the passage of the ADA; thus, many of the established structures do not meet the explicit requirements of the law. In several locations, OTRD has added accessible restrooms, developed hard surface campsites, installed walkways, upgraded playgroups, and made other efforts to improve accessibility.
The natural terrain of Alabaster Caverns State Park varies considerably and is quite rocky; in addition, the environment includes vulnerable animal species. The caverns, by their very nature, make accessibility difficult for persons with mobility limitations and certain health limitations. Full access to certain areas of Alabaster Caverns State Park would cause severe damage to the resources. Thus, ADAAG-defined accessibility to every area of the park is not practical, nor necessarily desirable.

Throughout Alabaster Caverns State Park, it will be necessary to maintain vigilance regarding accessibility. In addition and in light of continuous updating, new rule-making, and interpretation of rules on-going vigilance related to accessibility is required.

An example of this rule-making and interpretation took effect March 15, 2011 under the Department of Justice ruling that specified “other power-driven mobility devices” (OPDMD) that could be used on trails by individuals with mobility limitations. At present, the expectation is that the operating entity (OTRD) shall “make reasonable modifications in policies, practices, or procedures to permit the use of other power-driven mobility devices by individuals with mobility disabilities, unless the public entity can demonstrate that the class of OPDMD cannot be operated in accordance with legitimate safety requirements that the public entity has adopted based on actual risks” (American Trails, 2011). Such consideration may be necessary for Alabaster Caverns.
Chapter 3 – Current Status of the Resource

Recreational Development

Alabaster Caverns State Park is a park property full of natural, environmental, scenic, geological, and ecological resources with emphasis on the largest public gypsum caverns in the world. The early exploration of the caverns occurred in late 1890s and early 20th century when various private property owners allowed limited tours to visit these caves. The State of Oklahoma purchased the caverns and associated land in the early 1950s and Alabaster Caverns State Park was designated as an Oklahoma State Park in 1956. The property documents related to purchase, release, and operational agreement of the state park are presented in the appendix.

The map on the following page, Figure 3.2, provides an overview of the features of Alabaster Caverns State Park. The park boundaries include 200 acres of land and the accessible part of Alabaster Caverns is 2,300 feet long and has a maximum width of 60 feet and a maximum height of 50 feet. This cavern is the major tourism attraction on the park property (Myers et al., 1969). Other recreational amenities, such as campgrounds, day use areas, trails, and other facilities are also in the park. These facilities are detailed in the following discussion. The following presentation and discussion of the recreation development is organized on a west to east tour through the park. The visitor enters Alabaster Caverns State Park along Highway 50A heading east from Highway 50. The sign (Figure 3.1) along Highway 50 at the entrance to the park provides visitors with clear information regarding the presence and location of the park. This sign was installed during 2014 in an effort to establish uniform signs branding Oklahoma State Parks.

Figure 3.1 – Sign at Alabaster Caverns State Park entry
Figure 3.2 – Map of Alabaster Caverns State Park

ALABASTER CAVERNS STATE PARK
(ADDITIONAL PARK INFORMATION ON BACK)
Summary of the Property at Alabaster Caverns State Park

As briefly discussed earlier, the state of Oklahoma purchased 200 acres of property near Freedom, Oklahoma from private landowners in 1953. This property was designated as Alabaster Caverns State Park in 1956 and has been managed as a state park since that time. Earlier property owners utilized the caves for guided tours as early as Oklahoma statehood in 1907. However, Mr. Charles Grass acquired the property in the 1940s and made improvements to the property to support tourism.

In addition to the caves and other landforms present on the property, there was a natural bridge on the northern portion of the park. That bridge eroded over time, eventually being seriously damaged by wind and rain in 1992. In light of safety concerns, the bridge was demolished. The design of the arched rock group (Figure 3.9 on page 58) in the park’s playgroup was selected to recognize this natural bridge of days past.

The summary of the property at Alabaster Caverns is included in documents in the appendix. However, state ownership of the property for Alabaster Caverns State Park is an important asset to assure its management and protection. In summary, the property documents show:

- 1953: Oklahoma acquires 200 acres from Charles Grass
- 1956: Alabaster Caverns State Park is officially designated

Park Entry

Upon entry into Alabaster Caverns State Park, the entry road (state highway 50A) leads a visitor to the park office/visitor center within a quarter mile. This entry is well-maintained with welcoming signage which indicates “dogs are to be on a leash” and mowed grasses along the roadsides. A sanitary dump station with information sign is located on the left side of the roadway (Figure 3.3). In this location, the sanitary dump station is easily accessible to campers as they exit the park.

![Figure 3.3 - Welcome sign and RV dump station at the entry](image)

Left: Welcome sign; Right: RV dump station
Park Office/Visitor Center

The park office in Alabaster Caverns State Park is a building serving multiple purposes. It is located in the area where both day use visitors and overnight campers have easy access (Figure 3.4). The park office not only serves as a visitor center for visitor to pay for the cavern tour and to gather park information, but also displays some educational objects for visitors to get familiar with the geology and wildlife in the park. The office and visitor center is supported with about 20 parking spaces in front of and west of the office with reasonable space to maneuver (Figure 3.5). The space is essential due to the number of buses that enter and exit the park. These parking spaces are primarily used by day visitors or visitors for temporary parking during cave tours. The park office is ADA accessible, including parking space.
Outside of the park office, there is a waiting area with a cactus garden for cavern tour participants and other visitors to gain more information about the route of the tour, geology of the caverns, and wildlife in the park through using interpretive signs (Figure 3.6). These interpretive panels are able to “get visitors ready” for the tour by emphasizing the uniqueness of the caverns and information regarding the scientific facts of the natural feature.

**Figure 3.6 – Interpretive signs nearby the office**

**Day Use Area**

The day use area of Alabaster Caverns State Park is on the west side of the park office/visitor center, where it is convenient for cavern tour visitors to picnic under shelters. The pavilion area includes: one large pavilion for a maximum capacity of 30–40 people and several smaller picnic shelters close to the cave tour entrance. The pavilions on the lower and upper levels are connected by walkways and stairways. These picnic shelters on multiple levels require visitors to access the lower levels via stairways. Picnickers may spend an hour or more on property, utilizing a picnic table or the individual shelter, the playground, the restroom, or other amenities. For these visitors, there is no fee for access. Visitors at this location often walk to the north to view the valley from the overlook area (Figure 3.8).
Immediately west of the day use area and pavilions, an overlook area is identified as a scenic overlook for visitors to enjoy the view of the valley from above and the landscape extending to the horizon. A sign of warning for park visitors reminds them to not remove any rocks, plants and animals on the park property as shown in Figure 3.8.

A private gypsum mining operation outside of the park boundaries can be clearly seen from the scenic overlook spot. Although this mining operation is outside the park, the operation does adversely affect the aesthetic appeal for views to the northeast. The mining operation expanded during the preparation of the RMP, increasing the visual impact within a year. The primary impact is the visual disturbance of the canyon rim.
An additional feature at the overlook is the trailhead for the nature trail leading beyond the canyon rim and linking to numerous trails below. The area is also marked as “Nature’s Classroom,” discussed further in later portions of the RMP.
Mesa Campground and Deer Run Campground

The campground located just south of the park office/visitor center is identified as Mesa Campground. Mesa Campground is across the entry road from the park office and primarily provides semi-modern facilities, with electric and water, for RV campers. The sign of the campground is easily seen from the main road entering the park and indicates other amenities, such as playground and dump station, are also available on site (Figure 3.9). There are 11 identified campsites in this campground area. Nine RV campsites are grouped inside a loop offering shade for most of the campsites. A tenth campsite is outside the loop parallel to the entry drive. This site was utilized by a campground host throughout preparation of the RMP. An eleventh RV campsite is designed as an ADA accessible site located to the north of the site utilized by the campground host and across the entry road. The ADA accessible site does not offer shade. Picnic tables, grill stations, and lantern hangers are provided on each site.

Figure 3.9 – Mesa Campground
Top left: Entrance sign
Top right & Middle: Campsites in use
Bottom Three: Playgroup layout
To the north of the entry drive and north of Mesa Campground there is a restroom and shower building that serves the entire upper park level. Day visitors and campers utilize this facility. Campers from all campground locations were observed coming to this central restroom and shower facility, due in part to the amenities provided within the building. This restroom is accessible, with the ramp extending some distance from the main building in order to comply with accessibility requirements. A bulletin board on the east side of the restroom provides additional information for park visitors.

An additional feature of Mesa Campground is shown in Figure 3.11. South of the main campground is a memorial Oklahoma Redbud planted in memory of victims of the Murrah Building bombing. This type of memorial is common in state parks in the northwestern part of Oklahoma.

In this location south of Mesa Campground, the memorial is also along the route to Wilson Amphitheater.
Wilson Amphitheater, on the south of the Mesa Campgroup area, provides an outdoor open-space for park visitors and campers to enjoy performance in a natural environment, including an open performance stage and approximately 40 audience seats with a large lawn area. However, this area is not in compliance with ADA standards (Figure 3.12).

**Figure 3.12 – Amphitheater near Mesa Campground**

<table>
<thead>
<tr>
<th>Campground amenity</th>
<th>Mesa campground</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-modern campsites (Water, electricity)</td>
<td>11 sites</td>
</tr>
<tr>
<td>Unimproved (no utilities)</td>
<td>4 sites</td>
</tr>
<tr>
<td>ADA compliant</td>
<td>1 site</td>
</tr>
<tr>
<td>Restroom</td>
<td>1</td>
</tr>
<tr>
<td>Playgroup</td>
<td>1</td>
</tr>
<tr>
<td>Amphitheater</td>
<td>1</td>
</tr>
</tbody>
</table>

On the eastern edge of the Mesa Campground, there is a large open space named Deer Run Group Tent Site on the park map. This area is designed for tent or group campers with a large picnic pavilion and field shower facility. This camping was designed for 8 tent sites, but may accommodate up to 30 tents capacity. A typical tent site is shown in Figure 3.13, as is use of these sites by campers who prefer to use tents. The capacity of the picnic pavilion in this area is approximately 40-50 people.

**Table 3.2 – Campground Detail for Deer Run Campground**

<table>
<thead>
<tr>
<th>Campground amenity</th>
<th>Deer Run Camp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-modern sites (water and electricity)</td>
<td>0</td>
</tr>
<tr>
<td>Unimproved (no utilities)</td>
<td>8 sites (up to 30 sites)</td>
</tr>
<tr>
<td>Shower station</td>
<td>1</td>
</tr>
<tr>
<td>Pavilion (electricity and water)</td>
<td>1</td>
</tr>
</tbody>
</table>
Canyon Campground

Canyon Campground is located in the northeast of the park property and Canyon Road is the only access to this campground. A gate is installed for controlling vehicle access to the open caves and Canyon Campground (Figure 3.14). On the Canyon Road to the canyon campground, several smaller open caves are free access to the public, such as Owl Cave and Bear Cave. Visitors are able to see these cave signs on the Canyon Road directing them to each open cave. These open caves include minimal development for the public to explore the natural environment. Canyon Road is quite steep and is not intended for large vehicles. There is limited turning space at the base of the Canyon.

Figure 3.13 – Amenities in Deer Run Campground
Top left: Tent in a campsite; Top right: Field shower
Bottom: Picnic pavilion

Figure 3.14 – Canyon Road with gate
Compared to Mesa Campground, the Canyon Campground is located in a relatively remote area including a creek and a less developed environment. Trails radiate from Canyon Campground, particularly to the west leading to various caves. This campground is primarily designated for tent or primitive camping only and no RVs or buses are allowed here. A basic restroom is located on the main road within Canyon Campground. This restroom is not in full compliance with current ADA standards, but is usable for persons with mobility limitations.

Several campsites in this area are developed along a creek and several bridges were built for visitors easy to access the campground. As can be seen on Figure 3.15, one of the bridges over the creek between the main road and the campsites has a handrail, while the other does not. Even though the water level of the creek is usually low, there are safety issues related to flooding or to falls from the bridge.

**Figure 3.15 – Canyon Campground surrounding areas**

Left top: Sign of the campground; Right top: Restroom on the Canyon Road
Middle: Creek around the campground; Bottom two: Bridge to the campsites
There are several features of the campsites in this area: (1) eight campsites offer tent camping with fire ring/grill and picnic table in this location; (2) the campsite locations along the creek include some that are partially shaded and partially in open grassy area; (3) a few of the campsites are located by the road and are easier to access. The campsites located along with the creek are heavily used sites leading to compaction of soils, loss of ground cover, and erosion issues adjacent to the creek. As can be seen in Figure 3.16, areas surrounding picnic tables and other flat surfaces are denuded by visitor activities, overuse, and weather conditions.

Figure 3.16 – Canyon Campground: Campsites
Top: Campsite by road in shade; Middle: Campsite denuded
Bottom: Campsite near the creek
The development of Canyon Camp is documented in Figure 3.16 and Table 3.3. Although somewhat dated, a set of swings, not in compliance with CPSC standards, is provided west of the creek. The light pole has fallen and electrical wire is handing over the swing, both of which might cause additional hazards for park visitors. Passing by the swing set, there are steps to a picnic area surfaced with concrete, the site of the former swimming pool in Alabaster Caverns State Park. This picnic area is supplied with several picnic tables and a ramp for access.

**Figure 3.17 – Development on Canyon Campground Area**
Top left: Swing not ADA-compliant; Top right: Light pole beside swing
Bottom left: Steps to Picnic Area; Bottom right: Hard surface and tables

**Table 3.3 – Campground Detail for Canyon Campground**

<table>
<thead>
<tr>
<th>Campground amenity</th>
<th>Canyon Camp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semi-modern sites (water and electricity)</td>
<td>0</td>
</tr>
<tr>
<td>Unimproved (no utilities)</td>
<td>8 sites</td>
</tr>
<tr>
<td>Comfort station (restrooms)</td>
<td>1</td>
</tr>
<tr>
<td>Playgroup (Swing)</td>
<td>1</td>
</tr>
</tbody>
</table>
Cave Tour

The cave tour in Alabaster Caverns State Park is provided by the park staff year around with the exception of Thanksgiving Day and Christmas Day. Since March 1st, 2013, the tour price for senior citizens (62 years old or over), adult (13-61 years old), and youth (6-12 years old) are $8.00, $10.00, and $7.00 dollars respectively. The fee for active duty military with current military identification is $8.00 and children of age 5 or under is free, but tickets are required to join the tour. The cave tour with interpretation service is approximately 40 to 50 minutes long. Walking with park staff in the largest cavern, visitors are allowed to take pictures, having interactive opportunities with park staff for more detailed information about the caverns and the wildlife within (Oklahoma Tourism and Recreation Department, 2013).

The lighting system is one of the important investments at Alabaster Caverns State Park in recent years for safety purposes and enhancing the visual quality for tour visitors. As shown in Figure 3.19, the hand bars in the canyon entry incorporate installed lights for safety reasons. Hand rails are essential for good footing in this humid cave environment. The cavern stream normally contains a water flow.

Special lighting systems were also installed in various locations in the largest cavern for the cavern tour to emphasize the beauty of massive selenite crystals (Figure 3.20). The lighting was being upgraded during preparation of the RMP. However, significant attention has been given to
the environmental impact of lighting in a cave environment and to the safety for visitors. Most cave tours include an experience without light, allowing the visitor to truly experience the darkness of a cave.

The cave tour requires reasonable aerobic health and mobility on the part of visitors. Information provided to potential visitors details these requirements and the cool temperatures experienced within the cave.

The cave tour ends at a series of steps leading upward to the surface. At the end of the cave tour, all the visitors take the park tram back to the park office since unauthorized vehicles are not allowed on the road leading south from Mesa Campground toward the cave exit. Figure 3.21 shows the exit of the cave and the tram of the tour.
**Emergency Heliport**

The tram road loops past the exit from the cave and returns to the main park roadway leading to Mesa Campground. A spur from this loop extends for a short distance to the south. As with the tram roadway, this spur is restricted in access to authorized vehicles only. The spur terminates in an open field marked with a wind-sock. This area is identified as a heliport for emergency evacuations if required. In conversations with park personnel, they indicated that the heliport has never been used.

![Figure 3.22 – Heliport](image)

**Park Residence and Maintenance Area**

Returning to the park office/visitor center vicinity, a park residence is located at the western end of the main parking lot as shown in Figure 3.23. This residence is located to the north of the entry road into Alabaster Caverns State Park and is visible from the access road. Its location is close to the park office and a quarter mile away from maintenance area. The park residence was occupied at the time of the preparation of the RMP.

The area east of the park office is primarily dedicated as a maintenance area, although portions of the property are planned for public access. As shown in Figure 3.24, there are three buildings in this maintenance area. The first building was a cavers’ preparation cabin, now scheduled for re-use as a educational and interpretive center for the park. Throughout the preparation of the RMP, this building is under renovation for the future displays. The present walkway leading to this building is demarcated by posts embedded in the ground. This walkway will be modified for accessibility and durability as construction continues.

![Figure 3.23 – Park residence](image)
Two buildings, one on either side of the future nature center, are used for maintenance purposes. As shown in Figure 3.24 a small shed and a barn are used to store maintenance equipment. Access to these buildings is provided along a roadway to the north of the buildings, with authorized access only for park personnel.

**Hiking/Walking Trails and Caves**

There are several trails within Alabaster Caverns State Park that offer varying levels of difficulty and varying experiences for the visitor. The first of these trails, named Nature’s Hand Trail, is shown in Figure 3.25 in the area near the park office and scenic overlook. This trail, also associated with an outdoor classroom for educational purposes, helps park visitors to experience and appreciate the beauty of the nature and wildlife within the area. The trail has a natural surface and is an easy walk. This trail would not be considered to be an accessible trail.

The second trail, the Canyon Trail, is a nature trail offering a short quarter mile loop through the short-grass prairie. The trail is augmented with several interpretive signs, focused mainly on birds likely to be seen in the area. In addition, a bird-watching blind has been constructed for visitors to unobtrusively enjoy the birds in the area.
Other trails within the park, such as Bear Cave Trail, Owl Cave Trail, and Ice Stalactite Trail, are connection trails to the designated wild caves and located on the way to Canyon Campground (Figure 3.26). These trails generally are short, within a quarter to a half mile and linear in design. These trails are rugged offering several opportunities to walk up and down canyons, experiencing the vegetation and panoramas at various elevations and in differing ecosystems. Since the trails are the connection to natural cave areas, they have limited development on the surface and are not considered as ADA accessible trails.

Several of these trails continue along the canyon to the west and eventually link with trailheads at the overlook area. As a result, it is possible to walk the canyon from the west park boundary to the Canyon Campground.
Figure 3.26 – Open caves and trails
Top Left: Ice Stalactite Trail; Top Right: Bear Trail
Middle left: Sign to Owl Cave; Middle right: Sign on the top of the Cave
Bottom left: Trail to Owl Cave; Bottom right: Owl Cave
Public Access and Entry Aesthetics

Public access to Alabaster Caverns State Park was discussed earlier. All vehicular access is from Highway 50 linking directly to Highway 50A. Highway 50A extends from Highway 50 directly into Alabaster Caverns State Park and terminates within the park.

The area near the entrance to Alabaster Caverns State Park is agricultural south of the highway, fitting for the short-grass prairie environment. Essentially, as far as the eye can see, a visitor to this area will experience the open prairie, mesas, and canyons. There are several ranches along the various routes leading to Alabaster Caverns State Park. Relatively few commercial sites are present outside of Freedom.

A private cabin and lodge business with restaurant and rodeo facility is located at the intersection of Highway 50 and 50A, the road of park entry. Throughout the time of preparation of the RMP, this structure has been operating (Figure 3.27). In fact, the cabins increased in number during the preparation of the RMP, with addition of several campsites. The cabins, campsites, and lodge appeared to be occupied most of the time by oil and gas field crews.

Most visitors to Alabaster Caverns State Park are likely to have some knowledge of the park’s location prior to a visit. Incidental visitation for travelers along Highway 50 is somewhat unlikely unless that traveler is a local resident. Limited highway information is provided until visitors see the park sign at the intersection with the entry road with the exception of ODOT directional signs at Highway 50 and Highway 412.

Figure 3.27 – Cedar Canyon Lodge
Park Visitation

Attendance records have been kept since the opening days of the park. It should be noted that counting park visitors is an inaccurate process. Technically, every person entering the park is a park visitor, but not all of those visitors are recreational visitors. At Alabaster Caverns State Park, every person who drives Highway 50A into the park is a park visitor, although that visitor may only experience the aesthetic and environmental values associated with the park. At Alabaster Caverns State Park a certain percentage of the visitors recorded in the park would include park staff, vendors, and members of the general public entering the park to utilize the restroom or for other purposes. Other aspects of park visitation can be calculated more accurately. This would include those situations in which there is an exchange of a fee for a specific service. As a result, the following discussion reports total visitation to Alabaster Caverns State Park and specific usage of particular areas within the park. For clarity in understanding of visitation patterns, total park visitation is presented in the following discussion. This would include campers, day visitors, and members of cave tours.

Recreational Use of Park Facilities

Visitation for Alabaster Caverns State Park has trended “flat” over the past five years as shown in Table 3.4. Presently, an estimated 20,000 people or more visited Alabaster Caverns State Park annually. The number includes day visitors and overnight visitors. The day visitors include pass-through sightseers, campers, those on cave tours, and many other educational and recreational visitors. Overnight visitors include RV and tent campers who spend one or more nights within Alabaster Caverns State Park.

Determining the number of campers and members of cave tours is more accurate than is the calculation of total general visitors to the park. Total visitors are calculated based on traffic counters and a proxy variable for number of occupants in vehicles passing entry points into the park. Total number of visitors should not be interpreted as “individuals” in that numerous individuals are repeat visitors to the park on a daily, weekly, monthly, or annual basis.

Table 3.4 – Camping and Total Visitation

<table>
<thead>
<tr>
<th>Fiscal year</th>
<th>Day visitors</th>
<th>Overnight Guests</th>
<th>Total Visitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>18,982</td>
<td>968</td>
<td>19,981</td>
</tr>
<tr>
<td>2009</td>
<td>22,426</td>
<td>1,500</td>
<td>23,606</td>
</tr>
<tr>
<td>2010</td>
<td>20,730</td>
<td>973</td>
<td>21,821</td>
</tr>
<tr>
<td>2011</td>
<td>21,000</td>
<td>953</td>
<td>22,105</td>
</tr>
<tr>
<td>2012</td>
<td>20,586</td>
<td>925</td>
<td>21,669</td>
</tr>
</tbody>
</table>
Based on the figures in Table 3.4, it is apparent that visitation during the recent five-year period peaked in 2009, in both day visit and overnight categories. In all likelihood, the decline in visitation is a reflection of economic conditions during the past few years and the price of gasoline. This pattern has also been seen in several other parks across Oklahoma.

It is difficult to identify exactly how many campers are individually associated with a registration. In the campgrounds, records are maintained of the number of campsites rented. As demonstrated in the photographs presented, it is fairly common for one campsite rental to include a recreational vehicle and one or more tents. In addition, it is common for multiple motorized vehicles to be associated with a single campsite rental. Logically, group size associated with a single campsite rental can vary greatly.

### Table 3.5 – Camping at Alabaster Caverns State Park

<table>
<thead>
<tr>
<th>Fiscal year</th>
<th>Type of campsite</th>
<th>Campsites rented</th>
<th>Campsites available*</th>
<th>Occupancy rate on campsites</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>Unimproved campsites</td>
<td>560</td>
<td>6,935</td>
<td>8.1%</td>
</tr>
<tr>
<td></td>
<td>Improved campsites</td>
<td>408</td>
<td>3,814</td>
<td>10.7%</td>
</tr>
<tr>
<td>2009</td>
<td>Unimproved campsites</td>
<td>612</td>
<td>6,935</td>
<td>8.8%</td>
</tr>
<tr>
<td></td>
<td>Improved campsites</td>
<td>438</td>
<td>3,814</td>
<td>11.5%</td>
</tr>
<tr>
<td>2010</td>
<td>Unimproved campsites</td>
<td>583</td>
<td>6,935</td>
<td>8.4%</td>
</tr>
<tr>
<td></td>
<td>Improved campsites</td>
<td>393</td>
<td>3,814</td>
<td>10.2%</td>
</tr>
<tr>
<td>2011</td>
<td>Unimproved campsites</td>
<td>619</td>
<td>6,935</td>
<td>8.9%</td>
</tr>
<tr>
<td></td>
<td>Improved campsites</td>
<td>334</td>
<td>3,814</td>
<td>8.8%</td>
</tr>
<tr>
<td>2012</td>
<td>Unimproved campsites</td>
<td>531</td>
<td>6,935</td>
<td>7.7%</td>
</tr>
<tr>
<td></td>
<td>Improved campsites</td>
<td>384</td>
<td>3,814</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

*Based on number of total sites, either improved or unimproved, less 5% for maintenance

Table 3.5 presents the campsite rentals for the past five years. These sites are defined as improved or unimproved, for which the category of improved sites are semi-modern site design. There is no modern campsite within the park property. Eleven semi-modern campsites, including one ADA compliant site, and at least 20 unimproved campsites are defined in the park. The number of campsites available is an estimate, calculated based on number of sites of a given category multiplied by 365 and reduced by 5% for days on which individual sites may have been
unavailable due to maintenance or construction. The 5% reduction is unlikely to actually occur, but is used as a basis for calculation in all the Resource Management Plans.

The occupancy rate on unimproved campsites is hindered by extremes of weather since these sites do not have electricity. In addition, Canyon Campground may be closed during the winter.

Public Perception of Alabaster Caverns State Park

At the time of preparation of this resource management plan, the authors reviewed numerous websites and marketing sources related to Alabaster Caverns State Park, which were provided by private sources. Further, private citizens and visitors to Alabaster Caverns State Park maintain personal blogs, social networking sites, and online reviews that address their experiences and visits to the park. These blogs often were associated with activities such as cave tours, camping, and hiking activities but addressed Alabaster Caverns State Park in some manner. Examples of comments from visitors include:

- We stopped by here on the advice of a friend and it was the highlight of our quick trip to Oklahoma. It was the middle of the week the middle of March and we got a private tour of the cave with no rush. What a treat. Our tour guide was so experienced and had a great sense of humor. We can only imagine what the area must look like in the summer. We had been through many other kinds of formations so this cave was very unique. Worth stopping at! (Tripadvisor: March, 2013)

- There is a tour every hour on the hour. We paid $10 for adults and $7 for kids. The cave tour was a bit quick. They have a timeline to keep the group together. The tour is 3/4 mile long exiting a different location than the entrance. We saw bats. At one point during the tour they turn off all the lights and let you experience complete darkness. I have before never seen rocks like these. (Tripadvisor: March, 2013)

- It was my first time there. By explored, I mean that I had a guide. I've been to several caves and caverns in the past and this was one of the most unusual. There are no stalactites or stalagmites. I was told that is because rather than limestone this cavern is formed with gypsum. A great cave adventure. (Tripadvisor: August, 2012)

- Was 55 degrees in cavern while 102 degrees outside. Very pleasant. Guide was nice and knew lots about the caverns. (Tripadvisor: August, 2012)

- We hiked over 10 miles through the multiple hiking trails and we saw more caves than in the first visit. Bear Cave, Owl Cave, Water Cave, and the toured cave. A very good experience. We even waited outside the large toured cave at just before dusk and were able to view hundreds of bats exiting the cave to feed. It was one of the coolest things I have ever seen. We will plan a trip back when my husband can go. It was very cool. The only thing negative I can say is that there was some mix up and although the school paid for electricity in the pavilion atop the hill, the park did not turn it on until day 2. Needless to say, the adults missed the opportunity to make coffee up the hill and we had to travel downhill to get it in the morning. Otherwise, a very good time. (Yelp: May, 2011)

- My daughter’s 5th Grade Class went camping here for 2 nights and it was absolutely amazing. Plan on bringing the family back to enjoy the beautiful scenery and wildlife. (StateParks.com: May 2011)
User Evaluations of Alabaster Caverns State Park

The most formal and scientific evaluations for Alabaster Caverns State Park were generated during the 2003 park visitor survey (Caneday & Jordan, 2003). These evaluations were the result of on-site interviews with park visitors contacted at various locations throughout the park. The analysis of the data from these interviews was reported by category of type of visitor: day visitor or camper. Although dated, this visitor survey is the most recent thorough analysis of attitudes and opinions represented by visitors to Oklahoma state parks. Since contacts were made at public locations throughout the park, the determining factor for classification of the visitors was their respective place of lodging during the visit on which they were contacted.

Day visitors to Alabaster Caverns State Park were familiar with the park, averaging one or more visits per year. Almost 48% of all day visitors interviewed were repeat visitors to the park. The most frequent recreational activities reported by these day visitors were hiking and walking. Day visitors tended to be satisfied with their experiences at the park, showing the least satisfaction with public toilets in the park. The park was the primary destination for most of the day visitors, who were motivated to visit the park to be with friends or family.

Day visitors tended to be in groups, ranging up to five individuals, with the most common grouping of day visitors being three members. The day visitors contacted during the survey tended to be white, non-Hispanic with a high school education or above. They ranged in age from 22 to 57 years of age, with a median of 41 years of age; they included fourteen males and six females. Since these individuals were day visitors, most had traveled 140 miles to get to Alabaster Caverns State Park, and distances ranged from 6 to 566 miles. However, many of the day visitors indicated they were staying in the area and had traveled much further on the trip during which they were surveyed.

Campers at Alabaster Caverns State Park were also quite familiar with the park in that approximately 60% of respondents were repeat visitors. These visitors tended to get to Alabaster Caverns State Park once a year. These campers participated in a wide range of recreation activities, but most frequently they walked or hiked, camped and just relaxed in the park. Campers expressed great satisfaction with the facilities provided in the park.

Alabaster Caverns State Park was the primary destination for three-quarters of the campers contacted in the survey. They chose to visit the park to relax or rest and to be with friends or family, with the single highest factor in motivation being “enjoy nature.” The vast majority of the campers were white and non-Hispanic. In addition, the campers were similar to other visitors in that they presented a high school education as the highest level achieved.

Campers reported having traveled an average of 215 miles on their visit to Alabaster Caverns State Park, although the median distance traveled was 150 miles and the mode was 30 miles. This would indicate that about half of the visitors traveled at least two hours to visit the park, while the other half were more local in point of origin.
**Park Management**

Over the years of operation, the management structure for Alabaster Caverns State Park has changed at the direction of leadership within OTRD from Oklahoma City. However, Alabaster Caverns State Park has been quite stable in organization and operation throughout the years.

Alabaster Caverns State Park is currently included in and administered through the Western Region of Oklahoma State Parks. This intermediate management structure allows park management to work with regional oversight as an intermediary or in direct contact with the Oklahoma City office. As with all state parks in Oklahoma, personnel, purchasing, contracting, and all other aspects of operation are governed by Oklahoma state statutes, policies, and procedures.

**Staffing**

Staffing for Alabaster Caverns State Park has been fairly stable over the past five years, with minor reduction of permanent staff for one year and reduction of seasonal staff by one person since 2008. During preparation of the RMP, Alabaster Caverns State Park was staffed by at least four permanent and at least six seasonal staff members between 2008 and 2012. The Regional Manager spoke for the park and provided the necessary data for the RMP. Table 3.6 documents the staffing pattern for Alabaster Caverns State Park in the past five years.

<table>
<thead>
<tr>
<th>Fiscal year</th>
<th>Permanent salaried staff</th>
<th>Seasonal park staff</th>
<th>Total park staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>5</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>2009</td>
<td>5</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>2010</td>
<td>5</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>2011</td>
<td>4</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>2012</td>
<td>5</td>
<td>6</td>
<td>11</td>
</tr>
</tbody>
</table>

Alabaster Caverns State Park is one of the few parks in Oklahoma State Park system providing tour service for the visitors, and the tour service is part of park staff’s daily responsibility. Having stable and quality staffing is not only essential for informed communication, minimal staff turnover offers visitors a better recreational experience through interactions with informed and experienced staff members, reaching the goals associated with educational, scientific, geographic, and ecological values that exist within the park property.
Revenue and Expenses

Data related to revenue and expense at Alabaster Caverns State Park was provided by the park management, the Western Regional Manager and augmented with material from the central OTRD office. Table 3.7 reports this revenue and expense data for the past five years.

The principal revenue sources for Alabaster Caverns State Park are cave tours and campsite rentals with small amounts from pavilion rentals. Most other services within the park are supported through state appropriations and allocation of state budgeted funds. Within the expense of the park, operating expense is reflected in operation of general maintenance and operations of buildings, mowing and other grounds maintenance, and related park operations, while personal expense is reflected in staffing of park employees and other staffing related expense. As shown in Table 3.7, the personnel expense of the park has been more than double the other operating expenses since 2008, and even though the operating budget was decreasing, the personal expense consistently has remained steady over the past five years. The difference between the park revenue and expense ranged from $180,000 to $200,000, except the year of 2011.

Table 3.7 – Expense and Revenue at Alabaster Caverns State Park

<table>
<thead>
<tr>
<th>Fiscal year</th>
<th>Expense</th>
<th>Revenue</th>
<th>Difference Revenue - expense</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008 Total</td>
<td>$400,612</td>
<td>$220,076</td>
<td>($180,536)</td>
</tr>
<tr>
<td>Personnel Expense</td>
<td>$281,842</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Expense</td>
<td>$118,770</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009 Total</td>
<td>$379,957</td>
<td>$191,457</td>
<td>($188,500)</td>
</tr>
<tr>
<td>Personnel Expense</td>
<td>$269,587</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Expense</td>
<td>$110,370</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010 Total</td>
<td>$366,713</td>
<td>$167,643</td>
<td>($199,070)</td>
</tr>
<tr>
<td>Personnel Expense</td>
<td>$275,838</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Expense</td>
<td>$90,875</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011 Total</td>
<td>$312,544</td>
<td>$176,859</td>
<td>($135,685)</td>
</tr>
<tr>
<td>Personnel Expense</td>
<td>$244,934</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Expense</td>
<td>$67,610</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012 Total</td>
<td>$354,912</td>
<td>$172,517</td>
<td>($182,395)</td>
</tr>
<tr>
<td>Personnel Expense</td>
<td>$269,531</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Expense</td>
<td>$85,381</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hazards Analysis – Natural and Operational

Any recreational activity includes the exposure to hazards, and the probability of specific risks may increase in many outdoor settings. In most current discussions related to hazard and risk, hazards are defined as conditions or events. Risk is the likelihood of injury resulting from a given hazard and is typically defined as a probability of adverse effects from those conditions or events. Everything people do exposes them to hazards. It is how people conduct themselves that
determines the risk. An agency or site risk management plan addresses potential loss from anticipated hazards.

**Natural Hazards**

As with all natural areas, Alabaster Caverns State Park includes a number of hazards. Some of those hazards are natural and related to such things as topography, flora, and fauna. Some of the hazards are structural or related to design; other hazards are operational in nature.

Natural hazards in Alabaster Caverns State Park include the caves, the wildlife, flora and fauna, as well as a number of other natural conditions or events. In addition, the development of facilities encourages visitors to interact with the natural environment, encouraging people to participate in recreation in an outdoor setting. For example, trails invite visitors to engage the varied terrain and, while signage exists, distressed hikers can occur in heat of summer. Quite commonly, the visitor is not informed of the various hazards and is not prepared for the risks involved in their interactions. Alabaster Caverns State Park does an excellent job of informing visitors regarding potential risks associated with trail activity and the rigors of the cave tours. Due to the topography of Alabaster Caverns State Park, it is possible for an individual to become “lost” on property, but that is an unlikely occurrence. Heat, thirst, and exposure present greater risks for most visitors.

Among the natural hazards present in the park are those associated with weather events. The National Climatic Data Center reports a variety of such hazards by county over several years. These hazards include hail, floods, thunderstorms with accompanying wind and lightning, tornadoes, heavy snow, ice, excessive heat, and drought. Staff members are prepared to notify park visitors in the event of severe weather, but appropriate shelter is limited. At the present time, neither signage nor printed visitor materials provide severe weather information to park visitors. Park management indicated they communicate with campers in the event of severe weather.

Other natural hazards are related to life forms in the natural environment. Any time people are hiking and recreating in an outdoor environment, a chance exists that they will inadvertently encounter such wildlife; this is the case in Alabaster Caverns State Park. The park and forest encompass an environment suitable for venomous snakes including the copperhead and various species of rattlesnakes. Park staff and visitors reported occasional sightings of venomous snakes, but there are no recent records of any adverse encounters between people and snakes within the park.

A number of mammals common to the park are subject to rabies. They include raccoons, opossums, skunks, badgers, and bats. Additional animals include armadillos and the possibility of coyotes, bobcats, and mountain lions, although these are less likely.

The prairie and grassland environment in and around Alabaster Caverns State Park is home to mosquitoes, ticks, and spiders, all of which may be hazards or present hazards to recreational visitors. The Brown Recluse spider and the Black Widow are native to Woodward County. Both spiders have produced adverse effects for humans in recreational settings (and other environments). Brown Recluse spiders were observed in outdoor structures during preparation of
the RMP, but Black Widow spiders were not observed. In addition, ticks are known carriers of a number of serious diseases in humans.

The 2002 Statewide Comprehensive Outdoor Recreation Plan (Caneday, 2002) stated:

An “environmental problem” of increasing occurrence in Oklahoma in recent years is related to ticks and tick-transmitted diseases. Although there are a number of tick-transmitted diseases, the most frequent occurrence is shown by Rocky Mountain spotted fever, Lyme disease, and Tularemia. A number of factors are related to this increased occurrence of disease including demographics, living preferences, and recreational behavior. Oklahoma has experienced significant increases in tick-transmitted diseases over the past decade. While most of these diseases can be treated, the diseases can also be life threatening. Participants in outdoor recreation are among those who encounter the ticks and who contract the tick-transmitted diseases. A concerted, unified effort is necessary to educate the recreational visitor regarding the results of recreational behaviors.

At the time of the writing of the 2002 SCORP, the author contacted the Centers for Disease Control (CDC) in Atlanta regarding rumors (at that time) of a mosquito borne virus, West Nile virus. The CDC assured Caneday that Oklahoma would not experience West Nile virus within the five-year period covered by the 2002 SCORP (2002-2007). However, by summer 2003, Oklahoma was experiencing cases of West Nile virus among horses and humans. Often these resulted from outdoor recreation activity, and that pattern is continuing. Equine activity is excluded from Alabaster Caverns State Park, but does occur outside park boundaries.

Some plants are also hazardous to some individuals and the risk varies by degree of exposure and response to that exposure. Poison ivy is among those potentially hazardous plants at Alabaster Caverns State Park.

Another potential natural hazard in a recreation environment is waterborne disease. As stated in the 2002 Statewide Outdoor Recreation Plan (SCORP) for Oklahoma (Caneday, 2002):

Since 1971, Federal agencies (CDC and EPA) have maintained a collaborative surveillance system for collecting and reporting data related to occurrences and causes of waterborne-disease outbreaks (WBDOs). As an environmental hazard, waterborne diseases have always been present in the United States; however, outbreaks linked to drinking water have steadily declined since 1989. By contrast, the number of outbreaks linked to recreation activity has increased (Center for Disease Control). It is not clear whether this is due to increased outdoor recreation activity, larger numbers of people involved in outdoor recreation, or greater hazard present in the water environment. CDC reports for 1995 – 1996 have shown that the exposure to the disease occurred in lakes in 59% of waterborne-disease outbreaks of gastroenteritis associated with recreational water. Equal percentages (27%) of Cryptosporidium parvum and Escherichia coli as the etiologic agent were reported during that period.

Alabaster Caverns State Park receives its potable water from Woodward County Water District #1. As with all water supplies, there is the potential to be a host for waterborne disease through
the drinking water provided on-site. Such a risk is no greater for a park visitor than would be true in a private residence. For those individuals caving or spelunking in the public caves, ground waters may be the host for waterborne diseases. This would also be true for water in the creek associated with Canyon Campground.

**Operational Hazards**

Operational hazards include those vulnerabilities to park staff, the park system, or the state of Oklahoma that exist as a result of management or operation of the resource and application of policy. Management and operational decisions are made on a daily basis and are affected by budgets, prioritization within the state park system, staffing patterns, local and state politics, and other external influences.

At present, emergency fire service and other emergency services are provided by surrounding communities. Emergency response time is estimated to be 10 to 15 minutes. Such emergency services are provided by the Freedom volunteer fire department. A heliport is also available in the park which offers an option for medical emergency transport to Woodward (Figure 3.28). Through the preparation of the RMP, the heliport has never used for medical emergency. The game warden for Woodward County provides law enforcement assistance, as does the Woodward County sheriff’s office.

As part of the data collection for the development of this RMP, the researchers conducted several on-site visits to Alabaster Caverns State Park. Common issues that could be dangerous for visitors include trails and bridges. Sections of some of the trails throughout Alabaster Caverns State Park show erosion and tripping hazards. As noted, one of the bridges in Canyon Campground lacks a railing.

Further, weather-related events (e.g., thunderstorms, lightning, ice storms, and strong winds) in Oklahoma often result in tree and limb damage throughout the park. The locations in which downed trees and limbs have immediate impact on visitors include the camping areas, trails, and day use areas. Currently, Alabaster Caverns State Park does not have a formal limb management or tree replacement program; this is common throughout the state park system. Park staff members attend to downed trees and limbs as they discover them and/or are notified of the hazard. Cedar invasion occurs throughout the park, while vegetation management covers public areas only.

**Law Enforcement**

For most Oklahoma State Parks, CLEET certified rangers and reserve-CLEET certified rangers are responsible for primary activity related to law enforcement within the boundaries of the park. At present under the staffing and management provided through Alabaster Caverns State Park,
there are no CLEET certified rangers available for Alabaster Caverns State Park, although there was one reserve-CLEET officer until 2008 as shown in Table 3.8. As a result, enforcement of applicable laws at Alabaster Caverns State Park relies on the support and cooperation of the Woodward County sheriff and the game warden in the appropriate jurisdiction.

### Table 3.8 – Ranger Staff at Alabaster Caverns State Park

<table>
<thead>
<tr>
<th>Fiscal year</th>
<th>CLEET Certified</th>
<th>Reserve CLEET</th>
<th>Total ranger staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2009</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Table 3.9 – Citation and Incident Reports at Alabaster Caverns State Park

<table>
<thead>
<tr>
<th>Calendar year</th>
<th>Incident Reports</th>
<th>Citations Issued</th>
<th>Arrests</th>
<th>Combined Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2009</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>2010</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2011</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Citation records for Alabaster Caverns State Park were provided by park management. During the most recent five year period, although there have been a few incidents in most years, no citations or arrests occurred during that period. Based on conversations and review of these incident reports, many of the records are associated with domestic disputes, alcohol consumption, and vehicle operation within the park. The numbers and types of incidents and citations at Alabaster Caverns State Park are lower than those occurring in most of Oklahoma’s state parks. Comparing with other state parks in Oklahoma, Alabaster Caverns State Park has a relatively low reported incident record, with only occasional events in the past five years (Table 3.9).
Policy-Related Exposures

Some aspects of management of hazard risk are incorporated into law enforcement. Park rangers are the law enforcement personnel for the Oklahoma Tourism and Recreation Department, although they frequently have cooperative (mutual aid) agreements with county sheriffs and the Oklahoma Highway Patrol. Law enforcement authority for Oklahoma State Park Rangers is authorized by state statute as follows (Title 74 § 2216, 2005):

Park rangers, when commissioned, shall have all the powers of peace officers except the serving or execution of civil process, and shall have in all parts of the state the same powers with respect to criminal matters and enforcement of the laws relating thereto as sheriffs, highway patrolmen [sic] and police officers in their respective jurisdictions and shall possess all immunities and matters of defense now available or hereafter made available to sheriffs, highway patrolmen, and police officers in any suit brought against them in consequence of acts done in the course of their employment, provided, however, they shall comply with the provisions of Section 3311 of Title 70 of the Oklahoma Statutes.

In parks with CLEET certified or reserve certified personnel, written logs are maintained by park staff to document incidents. In addition to the regular log, staff members complete incident reports when notified of property damage or personal injury to visitors or staff. While the incident reporting form requires information regarding personal injury or property damage, the process does not appear to require follow-up with the reporting party.

In terms of wildlife, while a formal management plan does not exist, staff operates under an agreed-upon plan approved by the Oklahoma Division of Wildlife Conservation (ODWC). As an important natural resource in the park, the vulnerable and endangered species in the area lack a management plan other than classification by ODWC and USFWS.

Perhaps one of the most essential operational hazards related to the public is the concern that cell phones and radios have limited to sporadic service in rural areas, and possibly within the park. During the preparation of the RMP, research staff members were able to acquire and maintain cell phone signals at some locations within Alabaster Caverns State Park, generally above the canyon. Thus, in case of injury, illness, fire, or other emergency, park visitors with personal cell phones may not be able to contact necessary emergency services. Those without personal cell phones or with inadequate signals must use a landline based telephone to call emergency personnel.

Waste Management

The relatively concentrated area of development at Alabaster Caverns State Park still demands multiple programs in waste management. There are two primary concerns related to waste management within the park: solid waste and liquid waste.

Solid waste is transported off-site under a multi-year contract with City of Freedom. Dumpsters have been located at strategic points within the park. Visitors are expected to dispose of waste properly in these dumpsters.
Liquid waste is managed on-site through four septic systems for the park residence, the park office/visitor center, and campground areas in Alabaster Caverns State Park. The park residence has its own system; the Canyon Campground comfort station has its own system; one septic system serves the RV dump station; the fourth system serves the park office, the Mesa Campground, and its comfort station.

Park management did not express any concerns or problems with waste management at Alabaster Caverns State Park. As with any area that is utilized by the public, some trash and litter is present within the park, although Alabaster Caverns State Park was quite free of litter except along some of the trails in the canyon. This solid waste presents a visual detraction, but presents limited problems other than clean-up of the area.
Chapter 4 – Alternatives and Preferred Plans

Overview and Summary

In this Resource Management Plan, background is provided related to Alabaster Caverns State Park. When analyzed, this information raises several issues for consideration. These issues are presented in the following discussion with alternatives for management to consider. In each case, based on the available information a preferred alternative is identified.

Issues and Alternatives

Issue Statement 1: Qualification and branding as a state park

One of the central issues for consideration related to each of the properties being reviewed during the Resource Management Plan project is qualification and branding as a state park. That question may not be as apparent for Alabaster Caverns State Park as for other properties, but several aspects of management as a complex, developed park require resolution of this issue for this property.

What is a state park? Jordan and Caneday addressed this question in an earlier report for OTRD as a part of the state park visitor study in 2003 (Caneday and Jordan). As stated in that report –

> The research team believes that the term “state park” should mean something specific. The term, “state park,” should identify a property distinctively through management practices, quality of experience and appearance to the public. The research team believes that visitors to Oklahoma “state parks” should know immediately that they are in a State Park because of the distinctive “branding” apparent to the visitor and deliberately intended by management. The research team believes that the Oklahoma Tourism and Recreation Department must jealously guard the use of the term “state park” in much the same manner as companies protect symbols of intellectual property.

An example of resource qualifications for specific classifications can best be demonstrated through the National Park Service. For a property to be classified as a National Park there must be (1) evidence of national significance for a natural, cultural, or recreational resource, (2) management of the property must be feasible, and (3) the property must be suitable within the mission, purpose, and system of the National Park Service.

By contrast, other classifications of National Park Service properties include National Monuments, National Recreation Areas, and National Preserves. National monuments must be significant natural, cultural, or recreational resources, but may be managed by entities other than the National Park Service. National preserves are limited to significant environmental resources and may vary in ownership and management of the resource. National recreation areas, including
Chickasaw National Recreation Area in south-central Oklahoma, are managed for more intensive recreation in outdoor settings.

OTRD policy related to acquisition of property uses some of this language, thereby establishing a general pattern of resource qualification. These criteria include (1) state-wide significance for natural beauty, uniqueness, or other recreational and resource preservation purposes, and (2) sites which will improve the overall availability of public recreation facilities to the recreating public while possessing resource significance (Oklahoma Tourism and Recreation Commission, 1988).

In addition, branding and classification of properties within the Department has varied over the years. Minutes of the Oklahoma Planning and Resource Board (a precursor to the Oklahoma Tourism and Recreation Commission) from September 18, 1953 record the passing of a motion defining state parks, state recreation areas, state memorials, and state monuments. That variation in descriptive classification was changed by legislation during the 1980s.

Applying the national concepts to state parks in Oklahoma and utilizing the earlier definitions in Oklahoma, it could be concluded that a state park must (1) have a significant statewide natural, cultural, or recreation resource, (2) be feasible to manage by the agency, and (3) be suitable within the mission, purpose, and statewide system of state parks. If this set of qualifications is applied to Alabaster Caverns State Park, it could be concluded that:

1. Alabaster Caverns State Park provides public access to distinctive and unique gypsum caves, the largest caves of this type with public accessibility. Alabaster Caverns State Park provides and manages the geological and recreational resources present on the property and protects these resources for future generations and maintains a major role in environmental monitoring, cooperation in education and interpretation, and provision of adventure recreation appropriate to the environment.
2. Alabaster Caverns State Park is feasible to manage within the agency and fits within the mission of Oklahoma State Parks. In many ways, Alabaster Caverns State Park has not been spoiled by over-management and certainly not by over-development. Alabaster Caverns State Park is truly a valuable property as a classic state park.
3. Alabaster Caverns State Park property fits within the mission of OTRD and the park’s stated purpose as a pre-eminent property with natural, scenic, geological, and ecological, values that relate to conservation deserving of protection and management for the present and future generations.

As a result, the research team recognizes the value of Alabaster Caverns State Park as a state park.

Alternatives

A. Retain Alabaster Caverns State Park as an integral property in the Oklahoma State Park system;
B. Divest Oklahoma State Parks of its involvement with Alabaster Caverns State Park;
C. Outsource management of Alabaster Caverns State Park to some other agency;
D. No change – continue management as at present.

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Preferred alternative:

Alternatives A and D: Retain Alabaster Caverns State Park as an integral property in the Oklahoma State Park system and continue management as an Oklahoma State Park.

**Issue Statement 2: Buffer zone for Alabaster Caverns State Park**

Alabaster Caverns State Park needs a buffer zone, with particular emphasis on (1) visual buffering across the canyon, (2) easement for cave egress onto private property, (3) monitoring of seismic activities within the caverns as affected by outside activity, and (4) “fracking” and environmental impacts of the density of oil and gas wells.

The cave environment is an extremely sensitive ecosystem and Alabaster Caverns State Park is a unique and valuable resource. At present, as mentioned in the RMP, gypsum mining across the canyon presents an adverse visual impact for visitors. During preparation of the RMP, research staff spoke with a local resident and landowner related to the property owner on which the mining is taking place. That individual assured research staff that the landowner wants the mine site reclaimed upon termination of activity. Oklahoma State Parks must insist upon reclamation of the site and exclusion of further mining within the canyon.

Presently cavers occasionally trespass onto private properties as they exit public caves accessed from within Alabaster Caverns State Park. Cave systems are intricate. These entrances affect the health of the cave system. Oklahoma State Park must consider acquisition of adjoining properties which may include these additional cave entrances or negotiate agreements for the protection of such natural cavities. In addition, visitors exiting onto private property should be granted some legal protection or immunity.

Seismic activity has been monitored at Alabaster Caverns State Park based on the premise that seismic activity is an important factor in understanding cave systems. Park personnel reported that monitoring equipment needs to be repaired or replaced. This should be a high priority for the protection of the caverns. Monitoring of seismic activity would include an assessment of activity in the surrounding area.

Woodward County and adjacent counties have experienced a dramatic increase in oil and gas activity in recent years, augmented by hydraulic fracturing (“fracking”). Such activity has the potential for adverse impacts upon the cave systems and the underground water table. Alabaster Caverns State Park needs protection as do other cave systems in northwest Oklahoma.

**Alternatives**

A. Negotiate a visual easement for the landscape surrounding Alabaster Caverns State Park with the intent of assuring a natural mesa and canyons habitat and topography (Figure 4.1 on the following page);

B. Acquire adjoining properties that include cave entrances with the intent of protecting the integrity of the cave system or negotiate protective agreements with present landowners;

C. Repair or replace essential seismic monitoring equipment within Alabaster Caverns State Park so that on-going monitoring can be resumed;
D. Work with appropriate agencies to monitor hydraulic fracturing and other practices, as well as water use outside the park boundaries;
E. No change – continue management as it is.

Preferred alternative:

Alternatives A, B, C, and D: Seek to establish a buffer zone around Alabaster Caverns State Park to protect its resources. This may include negotiation of a visual easement for the landscape surrounding Alabaster Caverns State Park with the intent of assuring a natural mesa and canyons habitat and topography; acquisition of adjoining properties that include cave entrances with the intent of protecting the integrity of the cave system or negotiate protective agreements with present landowners; repair or replacement of essential seismic monitoring equipment within Alabaster Caverns State Park so that on-going monitoring can be resumed; and work with appropriate agencies to monitor hydraulic fracturing and other practices, as well as water use outside the park boundaries.
Issue Statement 3: Environmental impact in Canyon Campground
The principal attraction of Alabaster Caverns State Park for park visitors is the unique resource in the park: caverns. These caverns must be sustainably managed for the enjoyment of the visiting public, including education of the visiting public, conservation of the caves for research.
and science, protection of the flora and fauna, while providing a safe recreational experience for visitors. In other words, resource protection and conservation is the primary role of the park; recreation is secondary, but offers wild caving and camping to the public. Research staff believes Oklahoma State Parks took a step in the right direction by eliminating the former Halloween programming to permit a focus on the primary propose of Alabaster Caverns State Park.

However, camping activity causes some negative environmental impacts in several sensitive areas (Figure 4.2 on the preceding page). This is particularly evident with the over-used campsites along the stream in the canyon area. These negative environmental impacts in these areas include erosion of the stream bank, compaction of soils, and loss of natural vegetation. Best practices related to camping in undeveloped areas, including Leave No Trace principles, suggest a 100’ minimum distance from a campsite to a water source. While this would change the traditional use of Canyon Campground and meet with some public resistance, a change in practice is essential for the health of the environment. This also would permit an important educational opportunity for Oklahoma State Parks in aiding visitors to understand the relationship between visitor behavior and the natural environment. In addition, it would be an opportunity for Oklahoma State Parks to implement best resource management practices and to become a model for other park systems.

Alternatives

A. Reduce present impacts caused by over-use and restore the Canyon Campground to more natural conditions;
B. Eliminate camping in Canyon Campground;
C. No change – continue management as it is.

Preferred alternative:

Alternative A: Reduce present impacts caused by over-use and restore the Canyon Campground to more natural conditions.

**Issue Statement 4: Caverns environment and health of bat community**

The caverns in the Alabaster Caverns State Park are important habitat for bats. Federal regulations related to bats and bat colonies affect or may affect public access to the caverns. As a result, policies related to cave tours and the presence of visitors in the caves must be in compliance with Federal regulations. According to Oklahoma Response Plan for White-nose Syndrome (WNS) prepared by Oklahoma Department if Wildlife and Conservation (2012), white-nose syndrome (WNS) is a devastating, emergent disease afflicting hibernating bats that has spread from the northeast to the central United States at an alarming rate. Since 2006, U.S. Fish and Wildlife Service biologists and partners estimate that at least 5.7 to 6.7 million bats across multiple states have now died from WNS. The disease is named for the white fungus (Geomyces destructans) seen on the muzzles, ears, and wings of affected bats. This disease poses a serious threat to bats that hibernate in caves.
The presence of the fungus on one bat was “suspect positive” in northwest Oklahoma in May 2010. Disease surveillance conducted in the same area of northwest Oklahoma during the winter of 2010-2011 yielded negative results from specimens collected.

Alabaster Caverns State Park has cooperated with ODWC and other governmental agencies and institutions monitoring of multiple environmental measures, including health of the bat community and changes in cave environment.

Alternatives

A. Restrict the public caves from human use until there is a better understanding of the source of White-nose Syndrome;
B. No change – continue management as it is.

Preferred alternative:

Alternative B: No change – continue management as it is including the on-going cooperation in monitoring of the health of the bat community.

**Issue Statement 5: Adjoining property and day-use only operation**

There are private businesses and private developments adjacent to Alabaster Caverns State Park. As can be seen in several pictures in the previous chapters, the private cabin and lodge business, located at the corner of Highway 50 and High 50A, provides an overnight lodging option and other services for park visitors, including restaurant, cabin and lodge, and rodeo facility.

At present Cedar Canyon Lodge and Stables is a good and appropriate neighbor. However, that facility and the property has potential value as an expansion of Alabaster Caverns State Park. During preparation of the RMP, park staff and research staff considered the option of making the present park property into a day-use area only. If such were to occur, the current properties associated with Cedar Canyon Lodge and Stables would become attractive for overnight lodging under Oklahoma State Park management. Managing Alabaster Caverns State Park as a day-use only property would have several possible benefits. First, removal of camping from the Canyon Campground would permit improved security for the critical resources and environmental integrity of the canyon, caves, and creek. Secondly, removal of Mesa Campground and use of that area for day-time activity only would provide more open space within the park. Third, significant expenses are incurred for utilities for campground operations. These could be reduced with a day-use only policy.

Whether the adjoining property is acquired by the state or not, good relationships must be maintained with the owners of Cedar Canyon Lodge and Stables. Their presence affects the aesthetic qualify of a visit to Alabaster Caverns State Park. The private business is part of the park environment.

Alternatives

A. Sustain good working, neighborly relationships with ownership at the Cedar Canyon Lodge and Stables;
B. Maintain vigilance for development or expansion that may adversely affect the park environment;
C. Maintain vigilance for opportunities to acquire this and other adjoining properties for the protection and buffering of Alabaster Caverns State Park.
D. No change – continue management as it is.

Preferred alternative:

Alternative D: No change – continue management as it is. This means continuing with present levels of commitment to alternatives A and B, while considering alternative C.

**Issue Statement 6: Green practices related to energy and conservation**

Within the past few years Americans have begun to take conservation practices seriously. On behalf of citizens and as a representative of the park and recreation profession, a field with a strong connection to the environment, Oklahoma State Parks has initiated several practices that are intended to conserve energy and other resources. This has been initiated with energy efficient lighting in the cave, comfort stations, and office structures, and needs to be expanded to other management practices.

Among the many possible areas that would benefit from conservation practices are: (1) park policies related to mowing, maintenance, debris removal, and waste disposal; and (2) recycling opportunities for the entire operation and its guests.

At present, state laws do not encourage a state agency to recycle waste or trash products, especially when private citizens generate (and thereby ‘own’) those materials. Inventory management and accounting procedures prevent the sale of, or revenue production from, recycled materials. However, volunteer groups such as a possible “Friends of Alabaster Caverns State Park” are permitted to serve as an agent for the collection and sale of recyclable materials. Another challenge to the establishment of a recycling program is the difficulty in finding a consistent market for the various products that might easily be recycled: glass, aluminum, and paper. These challenges do not lessen the desirability of establishing a recycling program in the state park system.

Alabaster Caverns State Park can have a significant role in modeling and educating other managers and guests regarding best management practices. One state park in Oklahoma, Keystone State Park, has been eco-certified. Alabaster Caverns State Park should be a leader in this effort as well.

**Alternatives**

A. Seek to change state accounting regulations to permit operation of the recycling program by park staff;
B. Encourage the development of a “Friends of Alabaster Caverns State Park” to create, implement, and evaluate a comprehensive recycling program throughout the park;
C. No change – continue management as it is.
Preferred alternative:

Alternative B: Encourage the development of a “Friends of Alabaster Caverns State Park” to create, implement, and evaluate a comprehensive recycling program throughout the park.

Issue Statement 7: Staffing and employment difficulties

Staffing and employment in park systems is a nationwide issue in the United States especially during the era of recession with budget cuts and reduction in governmental work forces. The Oklahoma State Parks system has been affected by the economic crisis and Alabaster Caverns State Park experienced similar staffing adjustments in response to budgetary appropriations.

During a meeting in preparation for the RMP, the state park employees mentioned the challenge of staffing and employment in the park system related to find appropriately skilled and qualified candidates for position classifications. This includes the difficulty of finding properly qualified individuals with competitive wages and salaries. It also includes the limitation of affordable housing for employees in a remote, rural environment. As a result, the difficulty of staffing also becomes a serious issue limiting attraction of potential interns.

Alternatives

A. Offer competitive wages for full-time and seasonal employees;
B. Offer internship opportunities for college students with reasonable housing options;
C. No change – continue management as it is.

Preferred alternative:

Alternatives A and B: As budgets permit, offer competitive wages for full-time and seasonal employees and offer internship opportunities with reasonable housing options.

Issue Statement 8: Pricing for instate and out-of-state guests

Presently OTRD operates under a policy of pricing a given good or service similarly for all guests. There is no distinction in pricing of goods and services between in-state residents who visit an Oklahoma State Park and out-of-state residents who visit and enjoy the same facilities and events. There is a distinction in that the in-state residents pay a significant tax burden which then subsidizes OTRD and the state parks. As a result, the in-state residents subsidize the recreation experience of out-of-state guests. It is readily acknowledged that the out-of-state guests benefit the local economy with their expenditures. However, if a guest at a local park resides outside the extent of the local economy, the dollars spent by a resident or an out-of-state guest have equal economic impact in direct measures, indirect measures, and induced measures.

Just as at Beavers Bend State Park and Lake Murray State Park on the southern border, Alabaster Caverns State Park enjoys visitation by a significant number of guests from Kansas and other states, as well as those from within Oklahoma. This pattern of visitation is likely to occur at a
number of other state parks near the interstate borders and for parks that offer attractions differing from what is available outside of the state of origin for the guests.

Many states have instituted a pricing differential to benefit in-state residents. For example, Texas requires vehicle permits for all vehicles entering its parks. Texas residents pay a lower price for the vehicle permits than do out-of-state residents, including Oklahomans who visit Texas.

Tourism is a business that includes intriguing interactions between the host community and its guests. OTRD must sustain a positive relationship between its parks, the staff in those parks, the surrounding community, in-state taxpayers, and guests, some of whom come from out of state. Pricing of goods and services is a sensitive variable in that relationship.

Alternatives

A. Review the pricing of tours and camping provided by Oklahoma State Parks with consideration for state of residence as a factor in establishment of those prices;
B. Consider implementing entry fees at premium locations within Alabaster Caverns State Park for all guests utilizing those locations;
C. No change – continue management as it is.

Preferred alternatives:

Alternative A: Review the pricing of tours and camping provided by Oklahoma State Parks with consideration for state of residence as a factor in establishment of those prices.

Recommendations beyond the Issues

Recommendation 1: OPDMD on park trails

Rule-making and interpretation of guidelines related to accessibility of trails in outdoor recreation settings took effect March 15, 2011 under the Department of Justice ruling that specified “other power-driven mobility devices” (OPDMD) could be used on trails by individuals with mobility limitations. At present, the expectation is that the operating entity shall “make reasonable modifications in policies, practices, or procedures to permit the use of other power-driven mobility devices by individuals with mobility disabilities, unless the public entity can demonstrate that the class of OPDMD cannot be operated in accordance with legitimate safety requirements that the public entity has adopted based on actual risks” (American Trails, 2011).

Policies related to operation of power-driven mobility devices in Alabaster Caverns State Park will have to be developed and published. Motorized maintenance vehicles have been utilized within the park and are utilized on the trails. It is likely that these policies will have to address such OPDMD as golf carts (both electric and gas) and other personal motorized mobility devices. While several trails are not accessible by current mechanical means, technology is changing dramatically and new OPDMD may be introduced that will permit individuals greater mobility.
These policies should have uniformity throughout the Oklahoma State Park system unless specific local conditions provide a basis for variation from the standard policy. At Alabaster Caverns State Park, the trails and public access to those trails are highly desirable features of the park. As technology changes and rule-making progresses, the trails at Alabaster Caverns State Park will receive an increased variety of users.

**Recommendation 2: Canyon Campground**

Canyon Campground is a favorite place for many visitors to Alabaster Caverns State Park. However, Canyon Campground shows such levels of over-use and abuse that it is problematic for Oklahoma State Parks. Much has been written about parks being “loved to death.” In contrast, if visitors truly loved this canyon, their behaviors and expectations would be very different from present practice.

Park management and policies will have to direct visitor behavior and activity in Canyon Campground. Oklahomans and most visitors to Oklahoma State Parks are ill-informed regarding appropriate practices for camping along creeks or in primitive areas. Campsites should be moved further from the creek. If camping is allowed to continue in Canyon, efforts should be initiated to rehabilitate compacted and denuded soils and erosion must be reduced.

Maintenance efforts must also focus on aspects of Canyon Campground that have been overlooked. Throughout the preparation of the RMP, an electrical light pole lay at a 45° angle with dangling wires (Figure 3.17, page 64). Lack of attention to such situations within the park grants permission to visitors to behave in undesirable ways.

**Recommendation 3: General park clean-up**

As with all Oklahoma State Parks, Alabaster Caverns State Park has experienced a reduction in budget and personnel. This reduction in person hours has reduced available time for several basic maintenance tasks. While the majority of Alabaster Caverns State Park was clean and tidy, the area below the canyon rim, along the trails, into the various caves, and in Canyon Campground showed a different condition. Cans, plastic bottles, plastic bags, and various other litter items detract from the experience within the park and present potential problems for wildlife.

Youth groups, scout troops, church groups, and others who visit Alabaster Caverns State Park should be recruited for a “park clean-up day.” Such an event could be scheduled each spring and each fall. Participants could be provided an in-kind award (e.g. no-cost camping, no-cost cave tour) for their service. Alabaster Caverns State Park needs a good cleaning!

**Recommendation 4: Vegetation management plan**

As is true in many Oklahoma State Parks and across the state, Alabaster Caverns State Park is experiencing an invasion by Eastern Red Cedars. Presently, vegetation management is active in public areas of the park only. As is suggested in Recommendation 3, volunteer groups should be recruited and trained to aid with removal of cedars in other areas of the park.

Removal of cedars offers several benefits. First, the fuel load for potential wildfire is greatly enhanced by the invasion of cedars. Reducing that fuel load is an important consideration.
Secondly, cedars require large amounts of water and reduce available ground water for other species. Removing the cedars would permit an opening of the vegetative cover to permit other species to thrive.
References


Appendix A – Documents related to the property

- 1953 contract for purchase of 200 acres
- 1953 warranty deed
- 1953 quit claim deed
WHEREAS, the Twenty-Fourth Session of the Legislature, under Enrolled Senate Bill No. 208, duly approved by the Governor of the State of Oklahoma, on June 6, 1953, the Oklahoma Planning and Resources Board were authorized to purchase a tract of land situated in Woodward County, Oklahoma, described as follows, to-wit:

SK of Section 28, and the NW ¼ of NW ¼ of Section 33, all in Township 26 North, Range 18 West, near the town of Freedom, Oklahoma, and in which there is now situated and partially developed a series of underground caves and caverns known as Alabaster Caverns, and which said tract of land, it is agreed by the owner, Charles Grass, is to be conveyed to the State, said owner to reserve the exclusive right to mine subject to the approval of the Oklahoma Planning and Resources Board and mining sites to be approved by the Director of State Parks and with the clear understanding that the mining operation(s) are not to interfere with the use of the land for public recreation purposes or in the use and development of the cave(s) or cavern(s), manufacture and process Alabaster Cavern products either at the cavern site or other points to be selected by said owner, for a period of twenty (20) years from this date, said owner, however, to pay to the Oklahoma Planning and Resources Board a royalty of 10% on all manufactured products which are sold, said payments to be made on the first day of each month following said sales and said owner to permit the Oklahoma Planning and Resources Board to have free access to his books and records for the purpose of ascertaining from said records the amount due the Oklahoma Planning and Resources Board as such royalty; and owner agrees, at the end of said twenty (20) year period, that said owner, or his successors in
interest, will transfer unto the State of Oklahoma all of his
interest in the trade-mark "Cave Craft".

WHEREAS, under the terms of said Act, the Oklahoma
Planning and Resources Board is authorized to acquire said
tract of land for the State and for the use and benefit of
the Oklahoma Planning and Resources Board as a State Park,
and to pay therefor the sum of Forty Thousand Dollars ($40,000.00),
payable out of the General Revenue Fund of the State of Oklahoma
as and when the same would accrue and be deposited in said
General Revenue Fund from the revenues derived by the State
after June 30, 1953; and

WHEREAS, in order that this purchase may now be con-
ssummated according to the terms thereof, it is agreed that the
said Charles Grass will immediately execute and have acknowledged
a warranty deed conveying said 200 acres above described, to the
State for the use and benefit of the Oklahoma Planning and Re-
sources Board; said deed when so executed and acknowledged will
be placed in the Bank of Woodward, Woodward, Oklahoma, together
with one copy of this contract and said Bank of Woodward, it is
agreed shall act as Escrow Agent of both parties hereto and
shall retain said deed until the purchase price is paid to said
Bank for the use and benefit of Charles Grass, and upon the pay-
ment of said purchase price said Bank will deliver said deed to
the Oklahoma Planning and Resources Board.

IT IS FURTHER AGREED AND UNDERSTOOD that under said
deed and conveyance and the agreements herein, the State shall
have any and all improvements now on said land, excepting one
propane tank on the surface of said land, which is permanently
affixed thereto, together with any and all subterranean struc-
ture within the caves or caverns where said Alabaster Caverns
are now located.

IT IS FURTHER AGREED AND UNDERSTOOD that in case Charles
Grass shall die prior to the time of the payment of all of the pur-
chase price agreed herein, then the State may pay any balance of said purchase price to said Bank as Escrow Agent for said Charles Grass, to his estate, but the death shall not interfere with said deed and transfer of said title.

IT IS FURTHER AGREED AND UNDERSTOOD that the said Charles Grass shall submit to the Attorney General’s office all abstracts and supplements thereof, brought down to the date of this contract and this agreement is made subject to the approval of such title under said deed.

IN WITNESS WHEREOF, said parties hereunto set their hands this 24th day of September, 1953.

OKLAHOMA PLANNING AND RESOURCES BOARD
BY: [Signature]
Chairman

ATTEST:
[Signature]
Secretary

[Signature]
CHARLES GRASS
WARRANTY DEED
(Statutory Form—Individual)

KNOW ALL MEN BY THESE PRESENTS:

THAT Charles Grass, a single man

part Y of the first part, in consideration of the

sum of One Dollar and other valuable consideration and other valuable considerations, in hand paid, the receipt of which is hereby acknowledged, do hereby grant, bargain, sell and convey unto The State of Oklahoma

part Y of the second part, the following described real property and premises situate in Woodward County, State of Oklahoma, to-wit:

The Southwest Quarter of Section Twenty-eight (28), and the Northwest Quarter of the Northwest Quarter of Section Thirty-three (33), all in Township Twenty-six (26) North, Range Eighteen (18) W.I.M., SUBJECT, however, to the right to mine alabaster from said caverns for the purpose of manufacture, granted to Charles Grass by second party, in a contract of even date herewith,

together with all the improvements thereon and the appurtenances thereunto belonging, and warrant the title to the same.

TO HAVE AND TO HOLD said described premises unto the paid part Y of the second part, its heirs and assigns forever, free, clear and discharged of all and from all former grants, charges, taxes, judgments, mortgages and other liens and incumbrances of whatsoever nature.

Except oil and gas lease of record and except valid mineral conveyances of record if any.

Signed and delivered this 1st day of September, 1953.

Charles Grass

INDIVIDUAL ACKNOWLEDGMENT

STATE OF Oklahoma, County of Woodward

Before me, a Notary Public in and for said County and State, on this 1st day of September, 1953 personally appeared Charles Grass, a single man

My commission expires 2-13-57

Notary Public
A.P.T. Form 152

NOTE—This form is supplied by THE TITLE GUARANTY DEPARTMENT OF THE AMERICAN-FIRST TRUST CO., Oklahoma City for the convenience of ATTORNEYS. No legal instrument or form should ever be prepared by anyone other than an Attorney.
INDIVIDUAL ACKNOWLEDGMENT

STATE OF ____________________________________________ County of ____________________________ SS.

Before me, a Notary Public in and for said County and State, on this ______ day of ______________ 19 ______,
personally appeared _____________________________________________

To me known to be the identical person ______ who executed the within and foregoing instrument, and acknowledged to me
that ______ executed the same as ______ free and voluntary act and deed for the uses and purposes therein
set forth.

Given under my hand and seal the day and year last above written.

My commission expires _____________________________

Notary Public
QUIT CLAIM DEED

INDIVIDUAL FORM

THIS INDENTURE, Made the 29th day of September, A.D. 1953,

between ______ Charles Grass, a single man ______

and ______ The State of Oklahoma ______

of the first part.

and ______ of the second part.

Witnesseth, that said party ______ of the first part, in consideration of the sum of

One Dollar and other valuable considerations

to him ______ in hand paid, the receipt of which is hereby acknowledged, do hereby quitclaim, grant, bargain,
sell and convey unto the said party ______ of the second part all ______ his ______ right, title, interest, estate, and every
claim and demand, both at law and in equity, in and to all the following described property situate in

Woodward ______ County, State of Oklahoma ______, to wit:

The Southwest Quarter of Section Twenty-eight (28); and the Northwest Quarter of the Northwest Quarter of Section Thirty-three (33), all in Township Twenty-six (26) North, Range Eighteen (18) W.I.M., SUBJECT, however, to the right to mine albaster from said caverns for the purpose of manufacture, granted to ______ Charles Grass ______ by second party, in a contract of even date herewith,

(It is the purpose of this quit claim deed to confirm a deed to the State of Oklahoma bearing the date of September 1, 1953.)

together with all and singular the hereditaments and appurtenances thereunto belonging.

To Have and to Hold the above described premises unto the said ______ The State of Oklahoma ______

its ______ heirs and assigns forever, so that neither ______ he ______ the said

Charles Grass, a single man ______
or any person in ______ his ______ name and behalf, shall or will hereafter claim or demand any right or title to the said premises or any part thereof; but they and everyone of them shall by these presents be excluded and forever barred.

In Witness Whereof, the said party ______ of the first part has ______ hereunto set ______ his ______ hand.

the day and year first above written.

Charles Grass

STATE OF OKLAHOMA

COUNTY OF WOODWARD ______} SS:

INDIVIDUAL ACKNOWLEDGMENT

Oklahoma Form

Before me, the undersigned, a Notary Public in and for said County and State on this ______ 29th ______ day of

September ______ 1953 ______, personally appeared ______ Charles Grass ______, a single man ______

to me known to be the identical person ______ who executed the within and foregoing instrument and acknowledged to me that ______ he ______ executed the same as ______ his ______ free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

My commission expires ______ Dec. 26, 1955 ______

Virginia Luellen __________ Notary Public.
INDIVIDUAL ACKNOWLEDGEMENT (Oklahoma Form)

STATE OF __________________________, County of __________________________, ss:

Before me the undersigned, a Notary Public, in and for said County and State, on this ______ day of ______, 19____, personally appeared ____________ who executed the within and foregoing instrument and acknowledged to me that _______ executed the same as _______ free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

My commission expires: __________________________ Notary Public.

INDIVIDUAL ACKNOWLEDGEMENT (Oklahoma Form)

STATE OF __________________________, County of __________________________, ss:

Before me the undersigned, a Notary Public, in and for said County and State, on this ______ day of ______, 19____, personally appeared ____________ who executed the within and foregoing instrument and acknowledged to me that _______ executed the same as _______ free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

My commission expires: __________________________ Notary Public.

CORPORATION ACKNOWLEDGEMENT (Oklahoma Form)

STATE OF __________________________, County of __________________________, ss:

On this ______ day of ______, A. D., 19____, before me, the undersigned, a Notary Public in and for the county and state aforesaid, personally appeared ____________ to me known to be the identical person who signed the name of the maker thereof to the within and foregoing instrument as its _______ President and acknowledged to me that _______ executed the same as _______ free and voluntary act and deed, and as the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

My commission expires: __________________________ Notary Public.

NOTE: When instrument is executed by a corporation, the corporate name must be shown and instrument signed by its President or Vice-President and attested by its Secretary or Assistant Secretary and the Corporate Seal affixed.

QUIT CLAIM DEED

FORMAT: NO. ______, IMPR. NO. ______, COUNTY OF ______, STATE OF ______

RETURN TO

By

TO

STATE OF

Country of

day of ______, 19____, a Notary Public in and for said County and State on this ______

personally appeared ____________ who executed the within and foregoing instrument by _______ mark in my presence and in the presence of _______ as witnesses and acknowledged to me that _______ executed the same as _______ free and voluntary act and deed for the uses and purposes therein set forth.

In Witness Whereof, I have hereunto set my hand and official seal the day and year last above written.

My commission expires: __________________________ Notary Public.

NOTE: The signature by mark of a lessee who cannot write his name must be witnessed by two witnesses, one of whom must write lessee's name.