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Carlton Landing Phase I Archaeological Survey

Eufaula Lake, Oklahoma

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United States Army
Corps of Engineers
Tulsa District

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CDM Smith

Sensitive archaeological information has been redacted from this report in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentiallyity of cultural resources locations.

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Section 1
Summary

1.1 Introduction

A total of five sites were examined in this report. Three were revisits (34PS166, 34PS167, and 34PS168) and two were newly discovered sites (34PS553 and 34PS554).

1.2 Site 34PS166

Site 34PS166 is a Late Archaic site identified by Perino and Caffey (1980a:100) during their shoreline survey of Eufaula Lake. The site was documented by them as lying on a low sandy hill extending into the lake from a point of land. Artifacts recovered by them included one broken mortar and they observed three groups of burned rock. The site was heavily eroded and not recommended for further study.

1.2.1 Interpretation

Despite not recovering any prehistoric artifacts to collaborate the findings of Perino and Caffey, the site remains identified as a small lithic scatter with burned rock possibly dating to the Late Archaic. However, a historic component has been added to the site definition. Analysis of the historic artifacts shows that the historic component dates from the early-to-mid twentieth century. The site was likely a domestic site consisting of a small household with associated outbuilding. The site was probably occupied up to and then abandoned during the creation and subsequent inundation of Eufaula Lake.

1.2.2 National Register Status

No buried deposits or stratigraphy remain at the site. As a result, the site has limited research potential and is not considered potentially eligible for listing on the National Register of Historic Places (NRHP) under Criterion D. Criteria A, B, and C do not apply. No further archaeological work is recommended for the site.

1.2.3 Recommendations

No further archaeological work is recommended for site 34PS166.

1.3 Site 34PS167

Site 34PS167 is a Late Archaic site identified by Perino and Caffey (1980a:100) during their shoreline survey of Eufaula Lake. They located the site on a low sandy hill with large areas of burnt rock on the east face of the site. Artifacts recovered by them included a Marshall point made from an unidentified heat-treated chert, an elongated slab mortar, and they observed large areas of burned rock. Although the site has been subjected to erosion Perino and Caffey believe that the site area inland held research potential and warranted further study.

1.3.1 Interpretation

Shovel turns inland from the shoreline did not reveal any additional artifacts or cultural features and only one additional prehistoric lithic was observed along the eroding Eufaula Lake shoreline. Additionally, burned rock clusters are still present on the hard clay shoreline surface.

The site remains identified as a light lithic scatter dating from the Late Archaic cultural period.

1.3.2 National Register Status

Burned rocks are visible along the shoreline. However, no buried deposits were found. The site lacks stratigraphy. As a result, the site has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D. Criteria A, B, and C do not apply. No further archaeological work is recommended.

1.3.3 Recommendations

No further archaeological work is recommended for site 34PS167.

1.4 Site 34PS168

Site 34PS168 is a Late Archaic site identified by Perino and Caffey (1980a:100) during their shoreline survey of Eufaula Lake. The site was located by Perino and Caffey on a low sandy hill and point of land and had scattered burnt rock on the beach. Artifacts recovered by them included an early unnamed dart point made of Barren Fork chert, three flakes of Ogallala chert, one flake of novaculite, one flake of Alibates flint, and two flakes of Woodford chert. They also observed scattered burnt rock. Perino and Caffey did not recommended the site for further study due to heavy erosion.

1.4.1 Interpretation

Shovel turns inland from the shoreline did not reveal any additional artifacts or cultural features. However, a number of lithic artifacts including debitage and tools were observed along the eroding Eufaula Lake shoreline. Two base fragments possibly date from the Late Archaic.

Site 34PS168 is a medium-density, prehistoric scatter possibly representing a Late Archaic occupation. However, it is difficult to draw conclusions of settlement activities and structure from so few artifacts.

1.4.2 National Register Status

No buried deposits or features other than the potentially burned rocks were found. As a result, the site has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D. Criteria A, B, and C do not apply. No further archaeological work is recommended for the site.

1.4.3 Recommendations

No further archaeological work is recommended for site 34PS168.

1.5 Site 34PS553

Site 34PS553 is a newly discovered site.

1.5.1 Interpretation

Site 34PS553 is a low-density, prehistoric scatter from an undetermined cultural context. It represents a short-term occupation by an unidentified cultural group. It is difficult to draw conclusions of settlement activities and structure from so few artifacts. Since no diagnostic material was recovered it is not possible to assign the occupation to any cultural or temporal period.

1.5.2 National Register Status

No features or buried deposits were found. As a result, the site has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D. Criteria A, B, and C do not apply. No further archaeological work is recommended for the site.

1.5.3 Recommendations

No further archaeological work is recommended for site 34PS53.

1.6 Site 34PS554

Site 34PS553 is a newly discovered site.

1.6.1 Interpretation

Analysis of the historic artifacts shows that the historic component dates from the early-to-mid twentieth century. The site was likely a domestic site consisting of a residence. The site was probably occupied up to and then abandoned during the creation and subsequent inundation of Eufaula Lake.

1.6.2 National Register Status

No features or buried deposits were found. As a result, the site has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D. Criteria A, B, and C do not apply. No further archaeological work is recommended for the site.

1.6.3 Recommendations

No further archaeological work is recommended for site 34PS54.

1.7 Conclusion

Site 34PS166 is a multi-component site with both Late Archaic and early-to-mid twentieth century occupations. Site 34PS167 and 34PS168 are both small lithic scatter associated with Late Archaic cultures. Site 34PS553 is a small lithic scatter associated with an unidentified cultural group. And site 34PS554 is a historic site dating from the early-to-mid twentieth century. The historic component of site 34PS166 may be related to site 34PS553 though they are spatially separated.

Based on the research potential remaining for these five sites, none of them are eligible for listing on the National Register.

Section 2
Introduction

This report describes the field and laboratory methods and the results of a Phase I full coverage pedestrian archaeological survey conducted at the request of the U.S. Army Corps of Engineers (USACE) by archaeologists from CDM Smith for the proposed lease of USACE property at the proposed Carlton Landing development at Eufaula Lake, Pittsburg County, Oklahoma.

2.1 Project Description

USACE, Tulsa District intends to update the Eufaula Lake Shoreline Management Plan (SMP) and to supplement the lake Master Plan (MP). An Environmental Impact Statement (EIS) is required to address the impacts of the SMP update and MP supplement from a lake-wide perspective.

During EIS scoping process, the Tulsa District received one project specific request that would require a lease of government property and several requests for specific zoning under the SMP update. The EIS evaluates the potential project-specific environmental effects of the Carlton Landing development proposal at the reservoir and the associated proposed lease of government property.

The Phase I full coverage pedestrian archaeological survey presented in this report was conducted in compliance with the National Historic Preservation Act (NHPA) and National Environmental Policy Act (NEPA) requirements that draft EISs be prepared concurrently and integrated with environmental analyses and related surveys and studies required by other federal statutes (40 CFR 1502.25).

2.2 Cultural Resources Terminology

Various terms can be used to describe cultural resources. Those used in this report are:

- Historic Properties: this term means “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places” (36 CFR 800.16(1)(1)). In this report, the term means resources that have been evaluated and determined eligible for listing in the National Register.
- Cultural Resource: This term means any archaeological, built environment resources, or traditional cultural property, regardless of National Register eligibility.
- Traditional Cultural Property: This term means any area of religious significance for any group or culture.
- Built Environmental Resource: This includes building, bridges, foundations, walls, and other structures or objects constructed after European-American contact and remaining above ground.
- Archaeological Resource: This includes archaeological sites and artifacts.

2.3 Project Sponsor and Regulatory Agency

This work is being conducted in compliance with Section 106 of the NHPA (36 CFR 800), with the objective of identifying any National Register-eligible historic properties within or near the study area that might be affected by proposed undertakings.

The primary federal law governing the preservation of cultural resources is Section 106 of the NHPA. In Oklahoma, the Section 106 process is overseen by the Oklahoma State Historic Preservation Office (OKSHPO) housed at Oklahoma Historical Society (OHS). At the federal level, the Section 106 process is overseen by the Advisory Council on Historic Preservation (ACHP).

Specifically, Section 106 of the NHPA requires that federal agencies take into account effects of their undertaking on historic properties. An undertaking is a project, activity, or program funded in whole or under jurisdiction of a federal agency, including those carried out on behalf of a federal agency, requiring federal financial assistance or requiring federal permits.

In accordance with NHPA Section 106 and 36 CFR Part 60, all resources over 50 years old must be evaluated to determine if they meet specific eligibility criteria established by the National Park Service (NPS). Historic properties are considered eligible for the National Register if they meet one or more criteria for significance and retain integrity.

Section 106 applies to all resources already listed in the National Register, to resources formally determined to be eligible for listing, and to resources not formally determined eligible but that meet specified eligibility criteria. This means that resources that have not yet been listed, and even resources that have not yet been discovered, can be considered eligible for listing in the National Register under NHPA Section 106.

2.4 Project Location

Eufaula Reservoir is located in the upper Arkansas River basin, on several major tributaries which come together prior to entering the Arkansas River (**Figure 2-1**). **Figure 2-2** shows the area of potential effect (APE) on the 1971 Longtown, OK USGS 7.5' quadrangle, and **Figure 2-3** shows the APE on a 2010 National Agricultural Inventory Program aerial photograph. These major tributaries include the North Canadian River, South Canadian River, Deep Fork River, and Gaines Creek, all of which come together in east-central Oklahoma immediately south of the Arkansas River. Associated counties in east-central Oklahoma include Haskell, Latimer, McIntosh, Okmulgee, and Pittsburg Counties.

2.5 Archaeological APE Description

36 CFR Part 800 requires the establishment of proposed areas of potential effects (APE), which are defined as the "geographical area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties" (36 CFR 800.16(d)).

The APE for this project consists of the Carlton Landing development proposed lease area of 228 acres (92 hectares) of federal property managed by the USACE at Eufaula Lake.

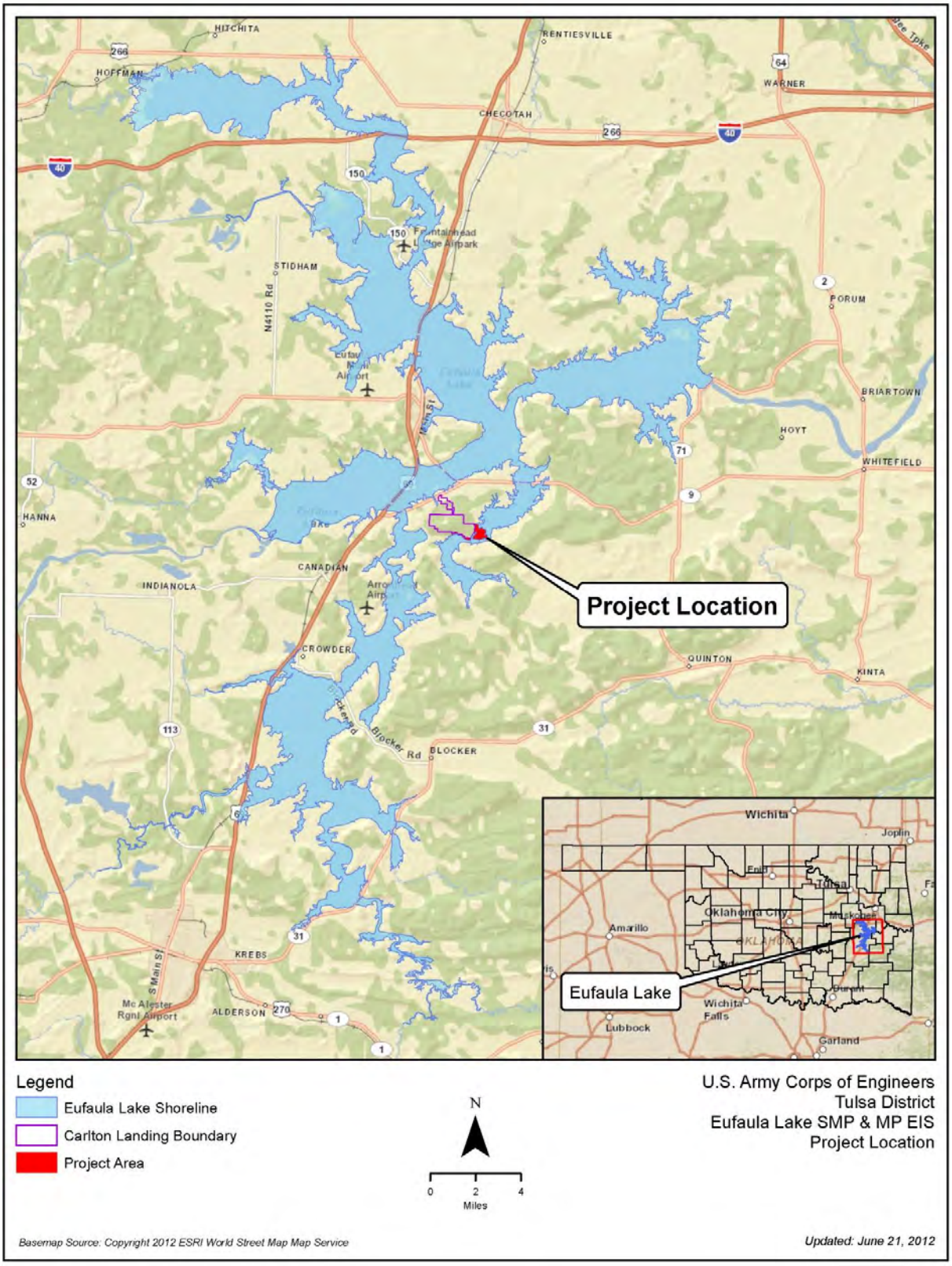

Figure 2-1. Project Location

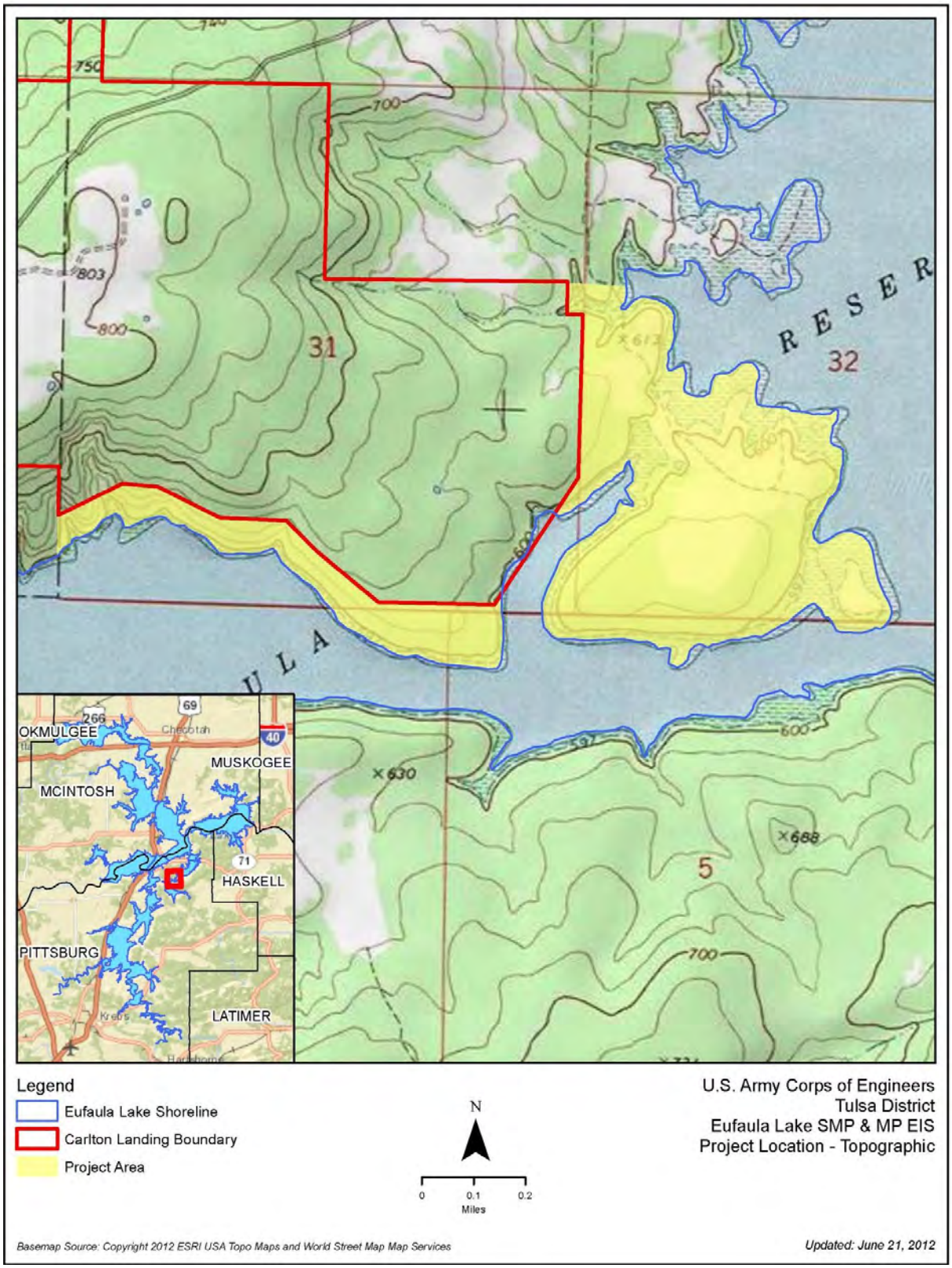

Figure 2-2. USGS Topographical Maps showing Project Location

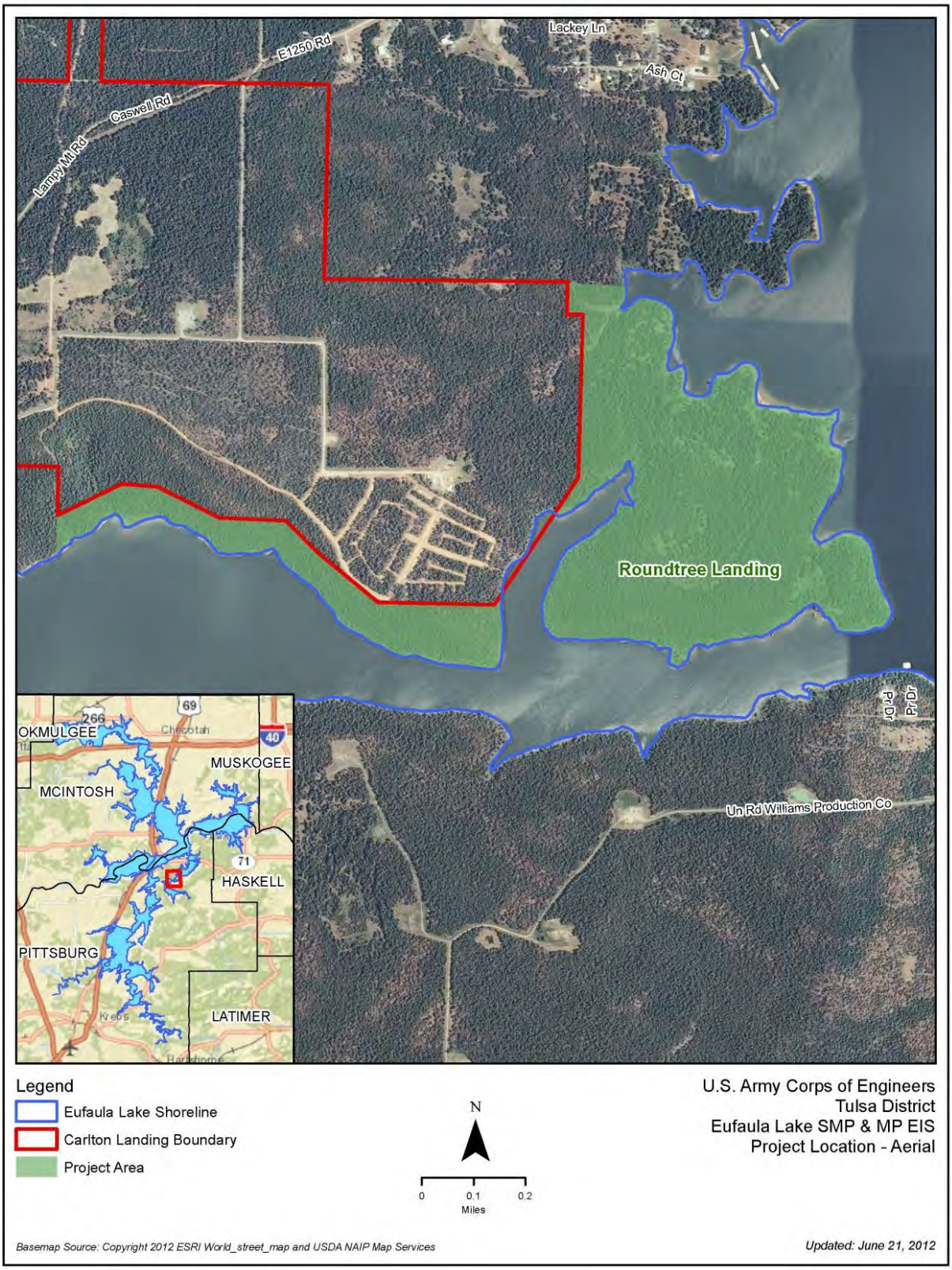

Figure 2-3. 2010 NAIP Aerial Photograph showing Project Location

2.6 Personnel

The personnel for this project included archaeologists from the Lexington, Kentucky, office of CDM Smith.

2.6.1 Principal Investigator

The principal investigator for the Phase I full coverage pedestrian archaeological survey was Mr. J. Howard Beverly, MA, RPA.

2.6.2 Field Crew

The field crew consisted of J. Howard Beverly, RPA, GISP, Dona Daugherty, Chris Rankin, and Mackenzie Sutton. Mr. Beverly served as the field director and planned, coordinated, and supervised all field activities. He also prepared the final report, maps, and formatted the report.

2.6.3 Laboratory Crew

The laboratory analysis was coordinated by Tracey Sandefur. Prehistoric artifact analysis was conducted by David McBride, RPA. Historic artifact analysis was conducted by Tracey Sandefur.

2.7 Records Research

The archaeological files held by the USACE, Tulsa District office, were reviewed by J. Howard Beverly, GISP, RPA, and Robert W. Ball, RPA, on January 2nd and the 3rd, 2012.

The archaeological site files and records housed at the Oklahoma Archaeological Survey, University of Oklahoma, Norman, were accessed and researched on January 5th, 2012.

2.8 Curation

All field notes, maps, forms, and artifacts will be curated at the USACE, Tulsa District office, Tulsa, Oklahoma.

2.9 Archaeological Resources Protection Act

Under the Archaeological Resources Protection Act (ARPA), information about the specific location of archaeological sites presented in this report is exempt from public disclosure in order to protect fragile cultural resources (36 CFR296.18).

2.10 Conclusion

This section has presented an introduction to the Phase I full coverage pedestrian archaeological survey conducted by a CDM Smith archaeologist for the proposed lease of USACE property at the proposed Carlton Landing development Eufaula Lake, Pittsburg County, Oklahoma. The lead federal agency and appropriate regulations were identified and reviewed. The APE was defined along with the members of the archaeological field and laboratory crews. Finally, the dates of background research and the curation facility were identified.

Section 3
Environment

This section begins with an overview of the natural and cultural setting of eastern Oklahoma and Eufaula Lake in order to provide an understanding of archaeological information presented later in the section. The natural setting of the area includes geological and climatological attributes and floral and faunal characteristics.

3.1 Physiography and Geology

Oklahoma is located in the southern Great Plains. Of the 50 states, it is the twentieth largest, encompassing an area of 69,903 square miles. About 1,224 of these square miles consist of water. The terrain of the state is mostly plains and it varies from fairly flat in the western portion to rolling in the central and eastern portions. As the surface progresses from east to west towards the Rocky Mountains beyond, there is general slope upward. Hilly areas are found scattered across the state and may rise up to 600 feet or less above the surrounding countryside. These hilly areas include the Wichita Mountains in the southwest part of the state, the Arbuckle Mountains in the south-central part, and the Ouachita Mountains in most of the southeast. Peaks may rise up to 2,000 feet. In the east central part of the state the Arkansas River Valley contains mountains that rise several hundred feet above the plains. Extreme northeastern counties within the state are part of the Ozark Plateau and the western tip of the panhandle contains a portion of the Black Mesa complex. Elevations in the state range from 287 feet above sea level where the Little River exits in southeastern Oklahoma to 4,973 feet on Black Mesa near the New Mexico border (Arndt 2003).

The Prairie Plains where Eufaula Lake is found is a subdivision of the Central Lowlands province (Morris *et al.* 1986). USACE places the Eufaula Lake region as part of the Ozark Mountain-Arkansas River-Ouachita Mountain subregion of the Southwest Division (Sabo *et al.* 1990).

Geologically, Eufaula Lake lies within the province of the Arkoma Basin. This province includes a portion of eastern Oklahoma as well as a portion of southwestern Arkansas. The boundaries of the Arkoma Basin are marked by the Ozark Uplift to the north, the Oklahoma platform to the northwest, the Arbuckle Mountain Uplift to the southwest, and the Ouachita Mountains to the southeast. No naturally occurring raw stone material exists within this region, but there are alluvial chert gravels and cobbles found throughout the region, as well as sandstone that would have provided a variety of stone material for the prehistoric human inhabitants of this area (Wycoff 1980).

3.2 Soils

Most of the soils found in Oklahoma developed under the same formation processes and climate conditions. The differences in soils from one area to another are chiefly dependent on three factors: parent material, the topography where the soils are found, and the amount of time exposed to erosional forces.

There are six soil series found within the APE (**Figure 3-1**): Bengal-Clebit-Clearview complex, 5 to 30 percent slopes (EhE); Clearview fine sandy loam, 3 to 5 percent slopes, eroded (HaC2);Clebit-Clearview complex, 3 to 5 percent slopes (HhC);Counts loam, 0 to 1 percent slopes (CuA);Karma loamy fine sand, 3 to 8 percent

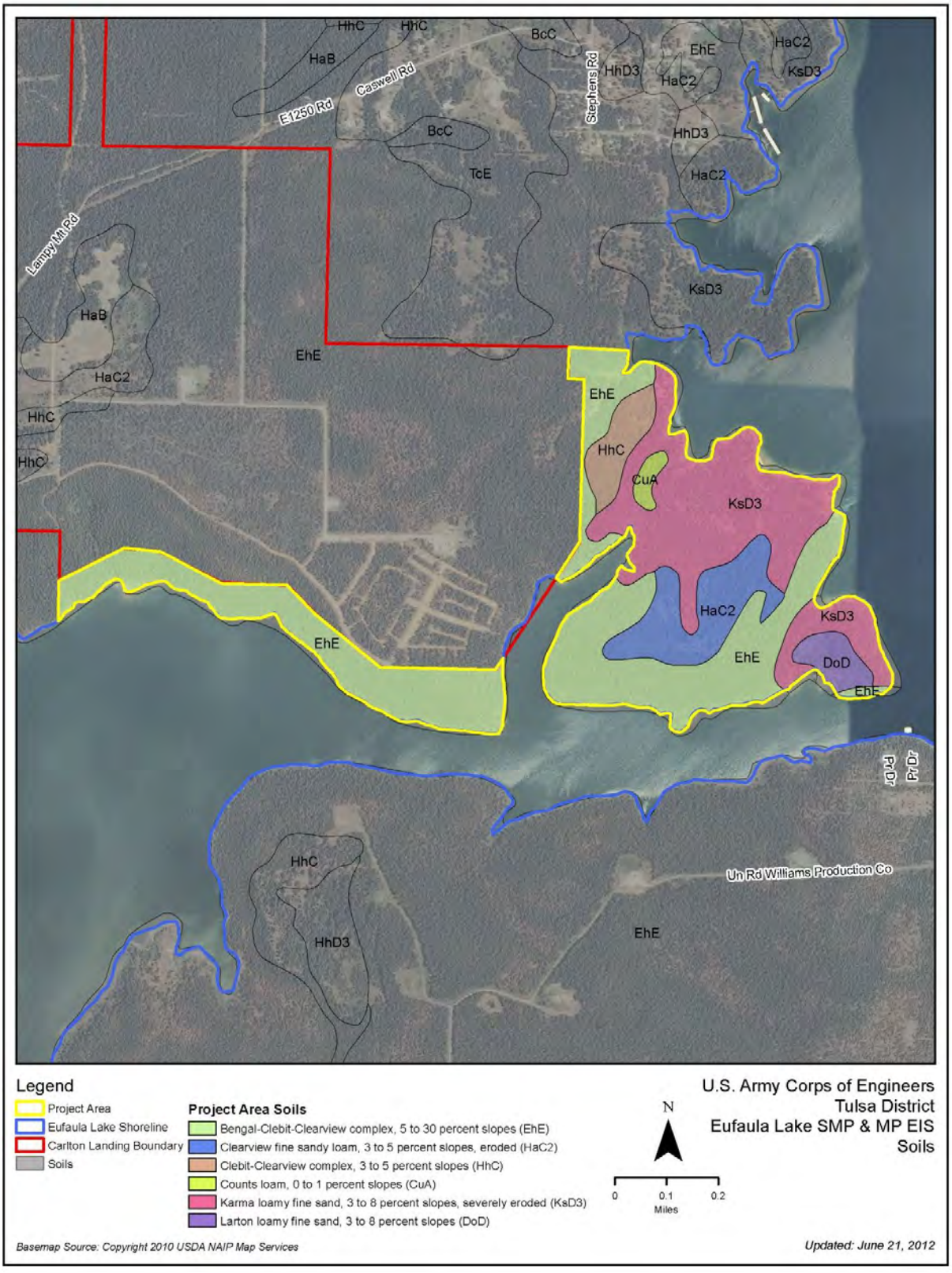

Figure 3-1. Soils Inside the Archaeological APE

slopes, severely eroded (KsD3); and Larton loamy fine sand, 3 to 8 percent slopes (DoD). Each of these six soils series are discussed individually below.

The Bengal-Clebit-Clearview complex soils, 5 to 30 percent slopes (EhE), are made up of three major components: Bengal (50%), Clebit (30%), and Clearview (20%). The Bengal soils are found on hillslopes, hills, and on uplands where the slope is between 20 and 30 percent. The soil is well drained, not flooded and is not ponded. The parent material consists of colluviums over clays residuum weathered from shale. Clebit soils are found on mountains where the slope is between 12 and 30 percent. They are well drained, not flooded, and not ponded. The parent material consists of gravelly residuum weathered from sandstone. Clearview soils are found on hillslopes, hills, and on uplands where the slope is between 8 and 12 percent. They are somewhat poorly drained, not flooded, and not ponded. The parent material consists of loamy residuum weathered from sandstone and shale (USDA 2012).

Clearview fine sandy loam, 3 to 5 percent slopes, eroded (HaC2) is made up of one major component – Clearview (95%), and one two minor components – Clebit (3 %) and Bengal, eroded (2%). Clearview soils are found on hillslopes, hills, and on uplands where the slope is between 3 and 5 percent. They are somewhat poorly drained, not flooded, and not ponded. The parent material consists of loamy residuum weathered from sandstone and shale (USDA 2012).

Clebit-Clearview complex, 3 to 5 percent slopes (HhC) is made up of two major and one minor component. The major components are Clebit (60%) and Clearview (35%). The minor component consists of Bengal (5%). Clebit soils are found on mountains where the slope is between 3 and 5 percent. They are well drained, not flooded, and not ponded. The parent material consists of gravelly residuum weathered from sandstone. Clearview soils are found on hillslopes, hills, and on uplands where the slope is between 3 and 5 percent. They are somewhat poorly drained, not flooded, and not ponded. The parent material consists of loamy residuum weathered from sandstone and shale (USDA 2012).

Counts loam soils, 0 to 1 percent slopes (CuA), consist of one major and one minor component. The major component is Counts (97%) and the minor component is Wrightsville (3%). Counts soils are found on paleoterraces and on valleys where the slope is less than 1 percent. They are moderately well drained, not flooded, and not ponded. The parent material consists of loamy alluvium and/or loamy colluviums over sandstone and shale (USDA 2012).

Karma loamy fine sand, 3 to 8 percent slopes, severely eroded (KsD3) soils consist of one major and one minor component. The major component is Karma, severely eroded (97%) soils, which are found on paleoterraces and on valleys where the slope is between 3 and 8 percent. They are well drained, not flooded, and not ponded. The parent material consists of loamy alluvium. The minor component consists of Larton, severely eroded (3%) (USDA 2012).

Larton loamy fine sand soils, 3 to 8 percent slopes (DoD), are made up of one major and one minor component. The major component is Larton (97%) soils that are found on paleoterraces and on valleys where the slope is between 3 and 8 percent. They are well drained, not flooded, and not ponded. The parent material consists of loamy and sandy alluvium and/or eolian deposits (USDA 2012).

3.3 Hydrology

Oklahoma lies entirely within the Mississippi River drainage basin. Two main rivers drain the state, the Arkansas, which drains the northern two-thirds of the state, and the Red River, which drains the southern

third of the state and also serves as its southern border. Principal tributaries of the Arkansas River are the Verdigris, Grand, Illinois, Cimarron, Canadian and North Canadian. The Washita and Kiamichi serve as the Red River's principal tributaries in Oklahoma, with the Little River flowing into the Red River after it crosses into Arkansas (Arndt 2003).

Eufaula Lake was authorized by the 1946 Rivers and Harbors Act. It was designed by the Tulsa District and built under USACE supervision. Construction was started in December 1956 and was completed for flood control operation in February 1964 and dedicated on September 25, 1964. It is located on the Canadian River upstream from its confluence with the Arkansas River and impounds the North Canadian River, Canadian River, Deep Fork of the Canadian River, Gaines Creek, and several smaller creeks (**Figure 3-2**).

Prior to the impoundment and the creation of Eufaula Lake, the APE was drained by Longtown Creek and some of its tributaries. Longtown Creek was located approximately 250 meters (m) (820 ft) to the south of the APE. It emptied into the Canadian River approximately 7,500 m (24,606 ft) north-north east of the APE (**Figure 3-3**).

3.4 Flora and Fauna

The following is taken directly from Ecoregions of Oklahoma by Woods, *et al.* 2005. In Oklahoma, there are 12 Level III ecoregions and 46 level IV ecoregions. Oklahoma's ecological diversity is strongly related to its varied climate, terrain, geology, soil, and land use. The study area lies within three Level III Ecoregions: Arkansas Valley, Central Irregular Plains, and Cross Timbers. Within these regions are Level IV subregions. They are all described below.

3.4.1 Arkansas Valley (Level III Ecoregion 37)

The Arkansas Valley (Ecoregion 37) separates the Ozark Plateau from the Ouachita Mountains. It is characteristically transitional and diverse. Plains, hills, floodplains, terraces, and scattered mountains all occur and the terrain is distinct from nearby ecoregions. A mix of oak savanna, prairie, oak–hickory–pine forest, and oak–hickory forest is native on uplands. Bottomland forest is native on floodplains and low terraces. Today, steep slopes are wooded and used for timber, woodland grazing, or recreation. Gently sloping uplands are used as pastureland or hay land. Cropland or pasturelands occur on bottomlands. Other main land uses include poultry farming, coal mining, and natural gas production. Land use tends to be the primary factor influencing stream quality in Ecoregion 37. Turbidity, total suspended solids, total organic carbon, total phosphorus, and biochemical oxygen demand values are higher than in neighboring ecoregions, but mean stream gradients and dissolved oxygen levels are lower. Ecoregion 37 has the richest fish fauna in Oklahoma. Fish communities usually contain many sensitive species; a sunfish- and minnow-dominated community exists along with large numbers of darters and catfishes. Common fishes include the bigeye, steelcolor, and redfin shiners, the orangethroat and redfin darters, and suckers including the creek chubsucker, golden and black redhorses, river carpsucker, spotted sucker, and smallmouth buffalo. Summer flow in small streams is often limited or nonexistent.

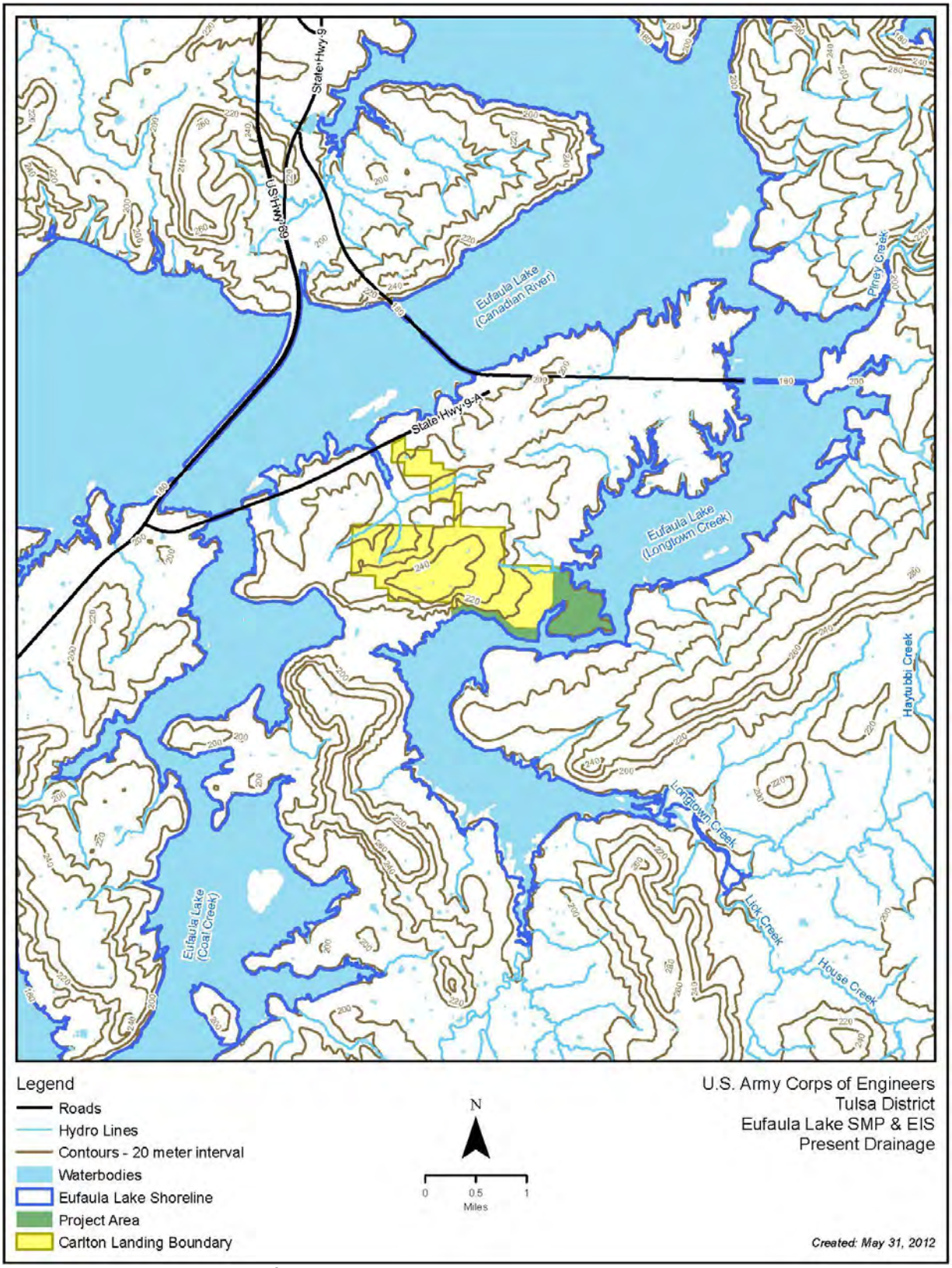

Figure 3-2. Present Drainage of the Study Area

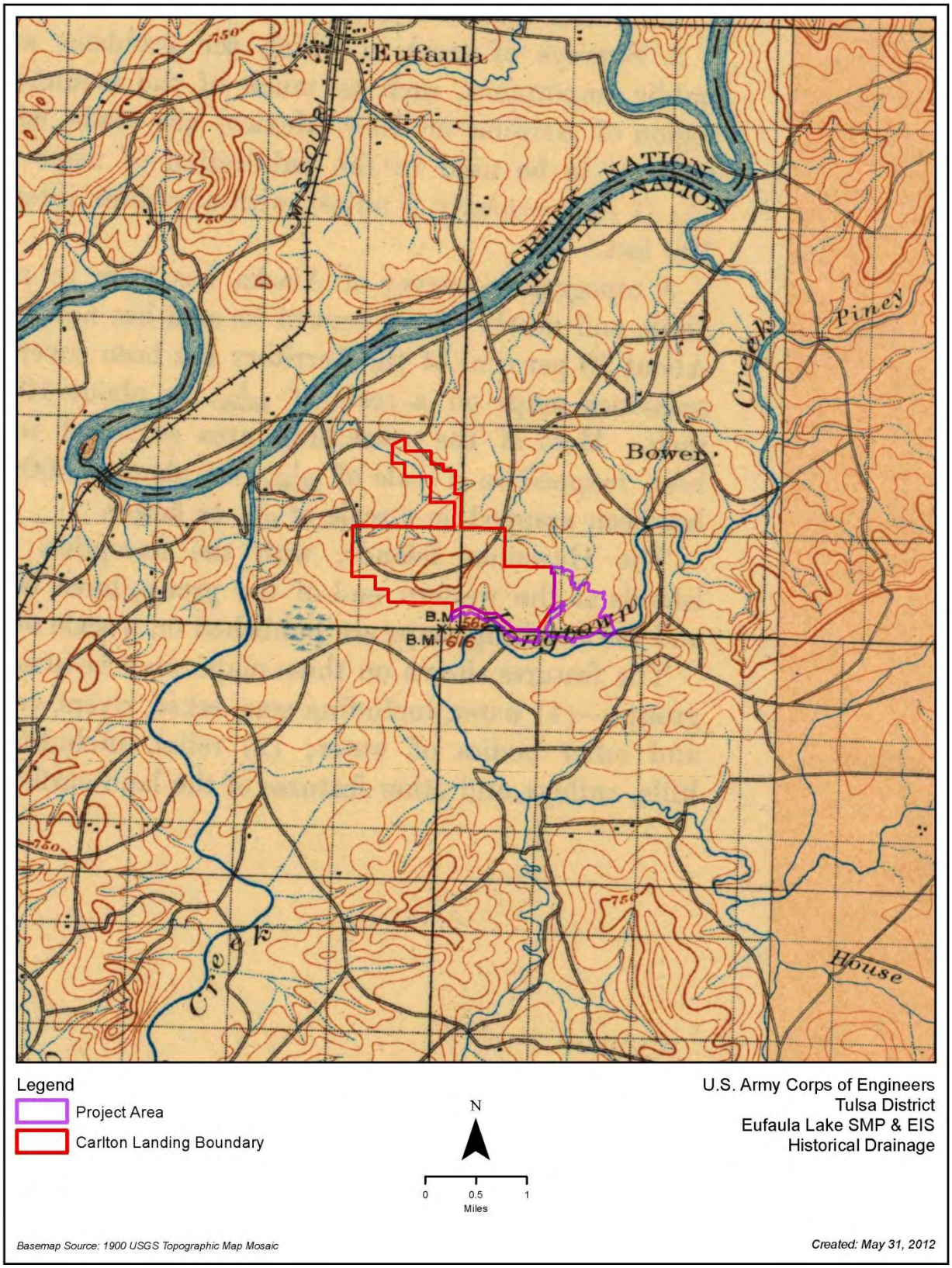

Figure 3-3. Historical Drainage of the Study Area

The Lower Canadian Hills (Level IV - 37e)

Ecoregion 37e is underlain by Pennsylvanian-age shale, sandstone, and coal. It acts as a transition between the drier Cross Timbers ecoregion to the west and moister parts of the Arkansas Valley ecoregion to the east. Native vegetation is a mixture of oak woodland, tall grass prairie, oak–hickory forest, and oak–hickory–pine forest. In general, wooded hills are more widespread than in the nearby Arkansas Valley Plains ecoregion and Osage Cuestas ecoregion. Prairies become more extensive in ecoregions to the west. Streams tend to have deeper pools and more habitat diversity than in the Northern Cross Timbers ecoregion. Fish and macroinvertebrate species richness is greater than in the Cross Timbers ecoregion, but less than in the rest of the Arkansas Valley ecoregion.

3.4.2 Central Irregular Plains (Level III Ecoregion 40)

Ecoregion 40 in Oklahoma is a belt of prairie that separates the Cross Timbers from the forests of the Boston Mountains and Ozark Highlands ecoregions. Interbedded Pennsylvanian-age shale, sandstone, limestone, and coal occur; the alternating hard-soft strata dip westward, forming nearly flat to irregular plains, low hills, and east-facing cuestas. The landform mosaic is distinct from the Flint Hills, Arkansas Valley, and Ozark Highlands ecoregions. Natural vegetation is mostly tall grass prairie, but forests and woodlands, dominated by post oak, blackjack oak, and black hickory, are native on stony hilltops. Today, Ecoregion 40 is a mix of rangeland, grassland, woodland, floodplain forests, and farmland; cropland is most extensive on nearly level plains, and overall, is more common than in Ecoregions 29, 37, 38, or 39. Rivers and streams typically have low gradients, slowly moving water, muddy banks, and meander in wide valleys. Stream substrates and habitats vary from a high quality, variable mix of conditions to silt- and mud-choked channels. Runoff from bituminous coal mining has degraded water quality and affected aquatic biota in a few streams. The redfin shiner, suckermouth minnow, redfin and orangethroat darters, smallmouth buffalo, river carpsucker, black and golden redhorses, spotted suckers, yellow and black bullheads, and flathead catfish occur; diversity and richness of aquatic fauna is markedly lower than in Ecoregions 38 and 39.

The Osage Cuestas (Level IV - 40b)

Ecoregion 40b is an irregular to undulating plain that is underlain by interbedded, westward-dipping sandstone, shale, and limestone. East-facing cuestas and low hills occur. Topography is distinct from the nearby Flint Hills (28), Ozark Highlands (39), and Cherokee Plains (40d). Natural vegetation is mostly tall grass prairie, but a mix of tall grass prairie and oak–hickory forest is native to eastern areas. Overall, the mosaic of natural vegetation is unlike the Cross Timbers (29) and Ozark Highlands (39). Today, rangeland, cropland, riparian forests, and on rocky hills, oak woodland or oak forest occur. Cropland is not as common as in Ecoregion 40d.

3.4.3 Cross Timbers (Ecoregion 29)

A mix of savanna, woodland, and prairie is native to the low hills, cuestas, ridges, and plains of Ecoregion 29, and separates the forests of eastern ecoregions from the prairies of drier, western ecoregions. The boundary between the Cross Timbers and the nearly treeless Central Great Plains coincides with the western limit of many mammals and insects. Post oak–blackjack oak woodland and savanna are native on porous, course-textured soils derived from sandstone; the percentage of blackjack oak increases westward. Tall grasses are native on fine-textured, moisture deficient soils derived from limestone, shale, or marl. Recent fire suppression has increased forest density and allowed eastern redcedar to invade many areas. Today, woodland, rangeland, pastureland, and several extensive, but declining, oil fields occur. Abandoned,

depleted farmland is common. The remaining cropland is largely restricted to valleys near channelized streams whose degraded habitat supports very poor assemblages of aquatic fauna. Two types of streams are common. The first is characterized by a mixture of shaded riffles, runs, and pools that have gravel or cobble substrates. The second stream type has lower gradients and is found downstream of the first; it is characterized by wide, shallow, sand-choked channels. In the summer, surficial flow is often absent from wide, sandy, lower reaches. Erratic stream flow has led to the construction of many reservoirs. Generally, stream conditions in Ecoregion 29 are more stressful for fish than in eastern Oklahoma, but less rigorous than in the west. As a result, Ecoregion 29 lacks many sensitive eastern fish species as well as some river species. Other species are shared with adjacent regions. Common minnows include the red, sand, and redfin shiners and the suckermouth minnow. The redfin and orangethroat darters, smallmouth buffalo, river carpsucker, black and golden redhorses, and channel and flathead catfishes occur in many streams.

Northern Cross Timbers (Level IV - 29a)

The hills, cuestas, and ridges of ecoregion 29a are naturally covered by a mosaic of oak savanna, scrubby oak forest, eastern redcedar, and tall grass prairie. Native on porous, course-textured soils derived from sandstone are post oak, blackjack oak, and understory grasses. Tall grass prairie naturally occurs on fine-textured soils derived from limestone or shale. Overall, far more oak savanna occurs than in the Central Great Plains, Flint Hills, or Central Irregular Plains ecoregions.

Floristic variety is less, vegetation is sparser, and the growing season is shorter than in the Eastern Cross Timbers (29b). Today, livestock farming is the main land use; cropland is less extensive than in Ecoregions 27 and 40, but rangeland is less widespread than in Ecoregion 28. Soils are highly erodible when disturbed. Large oilfields were developed in the early twentieth century; associated brine, drilling mud, and petroleum waste products have increased salinity in many streams. Streams are typically shallow and have sandy substrates; they are habitat poor and have lower fish and macroinvertebrate species richness than Ecoregion 37e. However, some stream reaches have deep pools, riffles, and bedrock, boulder, cobble, or gravel substrates; these reaches have greater species richness and more pollution-intolerant species than shallower streams in Ecoregion 29a.

3.5 Climate

Like all of the Great Plains, the climate of Oklahoma is known as continental. Warm air from the Gulf of Mexico often has a great effect on the state, particularly the southern and eastern portions. Humidity, clouds and precipitation are greater in the south than in the western and northern sections of the state. Summers in Oklahoma are generally long and hot. Quite the opposite is winter, which is short and less harsh than those in the northern Plains states. Extreme cold can occur, but generally only lasts a few days (Arndt 2003).

The mean annual temperature over the state ranges from 62 degrees Fahrenheit (F) along the Red River to about 58 degrees F along the northern border. It then decreases westward to 56 degrees F in Cimarron County. The eastern half of the state averages less than 15 days with triple-digit temperatures. Years without 100 degrees F temperatures are rare, ranging from about one of every seven years in the eastern half of the state. Temperatures of 32 degrees F or less occur, on average, about 60 days per year in the east. The average length of the growing season is about 225-230 days in the southern tier of counties and in the Arkansas River valley downstream of Tulsa. Although precipitation is quite variable on a year-to-year basis, average annual precipitation ranges from about 17 inches in the far western panhandle to about 56 inches in the far southeast (Arndt 2003).

In the counties that house Eufaula Lake, the average temperature in winter is 41 degrees F while in summer it is 80 degrees F. Total annual precipitation is about 41 inches, 60 percent of which falls between April and September.

3.6 Cultural Ecology

During the Wisconsin glacial era, Eastern Oklahoma was cooler and covered by a boreal forest of spruce and pine in the northern part and oak-hickory forests in the southeastern part. Large mammals like mammoth, giant ground sloth, sabertooth tiger, and others animals were abundant and hunted by early humans (Gilbert and Brooks 2000; Wyckoff 1984; Wyckoff and Brooks 1981).

As the climate gradually became warmer and drier (post 15,000 BP), many of the large game animals began to die out. By 10,000 BP, only the giant bison (*Bison antiquus*) remained of the previous megafauna. Trees gradually became fewer and more wooded areas of oak-pine were more scattered. Open forested areas eventually gave way to savannah grasslands, resulting in subsistence shift for early human hunters from a hunting society to a more collecting or gathering society. After 1,000 BP, the regional environment became drier and more similar to today's environment. Elk and bison once roamed the savannah, but were hunted out of the region in historic times (Gilbert and Brooks 2000; Wyckoff 1984; Wyckoff and Brooks 1981).

3.7 Conclusion

This section has presented a background review of the environmental conditions, both past and present, for the APE. Particular attention was given to the specific nature of the APE, including specific soils, past and present hydrology ecology, flora, fauna, and climate.

Section 4
Cultural Context, Previous Investigations, and Summary of Known Sites

This section provides an overview to the historic and prehistoric cultural contexts of Oklahoma and the study area and provides an overview of the known archaeological sites within the APE.

4.1 Prehistoric Period

The prehistoric cultural chronology of Oklahoma is divided into a series of periods that generally correspond to major shifts in subsistence procurement strategies, social organization, technology, and settlement patterning. They are also linked to distinct material cultural styles, particularly in projectile point shapes and (in later times) ceramic vessel form and decoration. These periods form a convenient framework for the discussion of human societies in North America.

Since the Late Pleistocene, humans have occupied all areas of the continental U.S., adapting to the regionally diverse ecosystems and the long-term changes brought about by human occupation. Only the past 500 years is historically documented in any fashion; most of the past 15,000 years can be documented only by the study of prehistoric sites. This period of prehistory is commonly divided into four major chronological periods.

This section examines general prehistory of the study area, which can be usefully divided into four major periods – Paleoindian, Archaic, Woodland, and Late Prehistoric. Each of these periods is discussed in the following sections.

4.1.1 Paleoindian Period

The Paleoindian period's beginning is uncertain, but recent discoveries have pushed the date to at least 1,000 years before the earliest Clovis site date, and the period continues to circa 8,000 B.C., coinciding with the end of the Pleistocene and the beginning of the Holocene (Maggard and Stackelbeck 2008). The Monte Verde Site, located in southern Chile, puts humans in South America by at least 11,000 B.C. (Dillehay 1997, 1989; Meltzer *et al.* 1997), suggesting that initial entry into North America would be around 14,000 to 15,000 years ago. Within the last two decades, the Clovis-first theory of a homogeneous 'founder' culture has been questioned. The theory points to a common culture colonizing the New World, resulting in similarities of archaeological expressions and human physiology. However, biological, skeletal, linguistic, and genetic studies do not support this theory, but instead imply that a range of diversity existed (Maggard and Stackelbeck 2008).

The earliest documented inhabitants of the continental U.S. crossed from Asia sometime before 11,000 B.C. However, the colonization of North and South America most likely varied in the rate of exploration and expansion, and may have consisted of multiple and separate migrations. These migrations may have involved various cultural groups, who may or may not have originated from different geographic regions (Bonnichsen and Turnmire 1999; Bryan 1991; Dixon 1999; Gruhn 1987, 2004; Maggard and Stackelbeck 2008; Merriwether 2002; Schurr 2004). The adaptation to a new climate and ecological condition would likely produce cultural variability as seen at the Nenana complex of Alaska, the Western-stemmed Tradition

of the Great Basin and Columbia Plateau, and maritime-focused coastal California sites (Maggard and Stackelbeck 2008). The above listed cultures are distinctly different than the traditional characterization of Clovis in their economic practices and technological traditions (Maggard and Stackelbeck 2008).

The arrival of humans in the region of the study area was probably linked to the movements of the Pleistocene glaciers. During the Paleoindian period, the last of these glacial advances and retreats, called Great Lakes Stadial (after 9,900 B.C.), occurred. A cooler, moister climate affected the composition and distribution of floral and faunal communities (Delcourt and Delcourt 1982; Klippel and Parmalee 1982).

The Clovis phenomenon may not have been the initial migration into the New World, but remains significant in how rapidly the people, technology, and/or economy spread across North America (Anderson *et al.* 1996; Meltzer 2002).

Early Paleoindian: Pre-Clovis

The Pre-Clovis period dates from sometime before 11,000 B.C. to 9,500 B.C. Cactus Hill is a stratified, multi-component site, located on a coastal plain of Southeastern Virginia. The site has a well-defined Clovis layer with fluted points, other tools, a hearth feature, and a radiocarbon date of ca. 8,900 B.C. Beneath the Clovis layer, several clusters of small quartzite flakes, small prismatic blades, blade cores, and retouched flakes were recovered. The quartzite came from locally-available cobbles. A charcoal concentration gave a radiocarbon age of 13,120 B.C. (15,070±70 BP), and soil samples collected yielded dates of 14,720 B.C. (16,670±730 BP) and 14,990 B.C. (16,940±50 B.P) (McAvoy and McAvoy 1997; Wagner and McAvoy 2004).

Meadowcroft Rockshelter is another example of pre-Clovis deposits. The site overlooks a tributary of the upper Ohio River, and consisted of stratified and multicomponent deposits that span the Late Pleistocene and Holocene (Adovasio *et al.* 1980, 1990, 1999; Adovasio and Pedler 2004). An unfluted, lanceolate-shaped projectile point was found from the lower levels of the shelter and was dated to 10,800 to 9.300 B.C. Small prismatic blades were also found in these lower strata. However, the site is controversial due to possible particulate and/or soluble contaminants in the lower deposits (Haynes 1980, 1987; Tankersley *et al*. 1987; Tankersley and Munson 1992).

There are two possible pre-Clovis sites in Oklahoma. The Burnham site in northwestern Oklahoma contains the remains of possible Bison chenyi and possible stone tools and flakes (Hofman 1989; Hofman and Graham 1998; Wyckoff 1999). The Cooperton site in Kiowa County dates to around 15,000 B.C. and contains broken mammoth bones found in association with possible anvil and hammerstones (Anderson 1975).

Early Paleoindian: Clovis

The Clovis culture dates from ca. 9,500 B.C. to 8,800 B.C., and is widely documented throughout North America (Anderson *et al.* 1996; Haynes 2002; Tankersley 1990a). Clovis projectile points are the hallmarks of the early part of the Paleoindian period. The hafted bifaces are distinctively lanceolate-shaped and often fluted. In addition to the Clovis point, unifacially and bifacially chipped tools such as knives, scrapers, spokeshaves, end scrapers with spurs, drills, and gravers have also been recovered (Boldurian and Cotter 1999; Frison 1999; Haynes 2002; Sanders 1990; Stanford 1999). Clovis points were multifunctional and often displayed resharpening along the distal margins of the blade (Boldurian and Cotter 1999; Ray 2003). Archaeologists infer that tools of wood, bone, and shell were used, although their preservation is rare in the archaeological record. A number of these tools were manufactured for the killing and butchering of

extinct fauna, including megafauna. At the Domebo site in Caddo County, Clovis points were found in association with a mammoth (Leonhardy and Anderson 1966).

The Clovis groups are characterized as big game hunters (Kelly and Todd 1988; Tankersley 1990b, 1996). Big game was exploited at the Kimmswick site in Missouri and the Coats-Hines site in Tennessee (Breitburg *et al.* 1996; Graham *et al.* 1981). However, the diverse local environment of eastern Northern America may have provided a foraging strategy that consisted of a wider range of options (Dincauze 1993; Meltzer 1993; Walker and Driskell 2007). At the Kimmswick site, small mammals, fish, reptiles, and birds were all exploited along with big game (Graham *et al.* 1981; Graham and Kay 1988). In fact, the overall Clovis subsistence strategy appears to rely less on big game and more on a variety of subsistence choices (Cannon and Meltzer 2004; Collins 2007; Kornfield 2007; Meltzer 1993).

Middle Paleoindian

The Middle Paleoindian phase ranges from ca. 9,000 B.C. to 8,500 B.C., and was a time of great climatic change, leading to the extinction of most species of Pleistocene mega-fauna (Anderson *et al.* 1996; Delcourt and Delcourt 1981; Grayson 1987; McWheeney 2007; Morse *et al.* 1996). The change in the environment lead to a more intense reliance on small game and locally available plant sources (Walker 2007). The Middle Paleoindian lithic toolkits reflect this subsistence change in the wider range of tool types, such as limaces, spurred end scrapers, and a wide selection of flake tools. In addition, the toolkits relied more on local sources of chert, often of a lower quality. The increase in the utilization of local materials could represent a more settled lifestyle.

During the Middle Paleoindian phase, a shift from direct to indirect percussion in fluting technology has also been noted (Morrow 1996; Ray 2003). The Middle Paleoindian projectile point forms include Folsom, Midland, and Cumberland. Cumberland points, also similar to Clovis points, are usually longer and narrower with lateral proximal edges that expand slightly, giving it a 'fishtail-like' appearance (Justice 1987; Ray 2003; Tankersley 1996). Cumberland points were also often resharpened (Ray 2003).

Two Folsom sites have been excavated in Oklahoma. The Cooper site in Harper County is an example of a Folsom complex bison kill site. A large number of Folsom points were found in association with the bison remains (Early and Sabo 1990). Many of the artifacts recovered from the Cooper site were made from exotic chert from as far away as 1,000 miles (Sabo and Early). The Waugh site is a limited kill site and processing area thirty miles from the Cooper site. One partially articulate animal, a hearth, projectile points and a scraper were recovered from the site (Bement 1999; Early and Sabo 1990).

Late Paleoindian

The Late Paleoindian period dates to ca. 8,500 to 7,500 B.C. During this period, the usage of local raw materials continues to be evident, with the overall quality of the chert material continuing to decrease. In addition, basal thinning replaces channel fluting, and the overall size of projectile points is reduced (Ray 2003). The toolkit is even more diverse than that of the Middle Paleoindian period. It includes beveled and backed bifaces, unifacial and flake scrapers, adzes, retouched flakes, and drills/perforators (Goodyear 1999; Morse 1997; Tankersley 1996).

The bifacially-flaked, lanceolate forms associated with the late Paleoindian period lack the characteristic flutes seen in the Early and Middle periods (Ray 2003; Tankersley 1996). At Kentucky sites, two stylistic clusters exist, Lanceolate Plano and Dalton, with the Lanceolate Plano being less common (Justice 1987; Ray 2003). The Dalton cluster includes the Beaver Lake, Quad, and the classic Dalton types (Justice 1987).

Dalton cluster points are often identified by a 'fish-like' appearance, exhibiting extensive and even beveled resharpening above the haft element (Ray 2003; Tankersley 1996). The Beaver Lake types, though similar to Cumberland points, are shorter and narrower with the absence of flutes (Ray 2003). Quad points also demonstrate a 'fish-like' shape, but are short and wide and have basal ears that usually project from the widest section of the point (Ray 2003).

Dalton components have been located in eastern Oklahoma (Early and Sabo 1990; Wyckoff and Bartlett 1995). At the Packard site in Mayes County, a Dalton component was found and dated to after 11,500 B.C. (Wyckoff and Bartlett 1995). Wyckoff and Bartlett (1995) find that Folsom and Dalton material cultures were partially contemporaneous in Oklahoma and that Folsom cultures were adapted to grasslands and bison hunting while Dalton cultures were adapted to open forests and deer hunting.

4.1.2 Archaic Period

The Archaic period includes a long span of time during which important cultural changes took place. Because of the growing evidence for the existence of such transitional cultural manifestations, it is agreed generally that Archaic cultures evolved from late Paleoindian expressions of the Southeast and Midwest (Funk 1978:19). These manifestations probably occurred in response to environmental changes that took place at the close of the Pleistocene. The Archaic period is customarily divided into three sub-periods: Early (7,500-5,000 B.C.); Middle (5,000-3,000 B.C.); and Late (3,000-300 B.C.). Nevertheless, it is important to keep in mind that archaeologists often differ in opinion about these temporal boundaries, and they are best used only for general comparative purposes (Jefferies 2008).

During the Early Archaic, the last glaciers retreated and the arctic-like boreal forest began developing into the eastern deciduous forest. By the Middle Archaic, the environment was warmer and drier than it is today. In response to the changing climate and associated changes in plant and animal life, Late Archaic peoples developed a more diversified subsistence strategy. This included hunting, plant food gathering, fishing, and- in some areas- the beginnings of plant domestication in a planned seasonal round exploitation strategy. Caldwell (1958:6-18) has called this Archaic subsistence approach "primary forest efficiency." This strategy appears to have been a continuation of what had begun in the Middle and Late Paleoindian phase, and then continued well into the Woodland period.

The Early Archaic Period

The limited amount of Early Archaic material found at most sites and the general absence of middens, features, and burials, suggests that most occupations were of short duration. Early Archaic social units were small, probably consisting of bands comprised of related individuals. The relatively high percentage of projectile points in Early Archaic assemblages made from non-local cherts suggests that social groups were highly mobile. Items manufactured from non-local chert would have been incorporated into tool kits when groups traveled near the source areas. Some tools manufactured from certain kinds of high quality chert were used and curated for an extended period of time and later discarded far from the source area (Binford 1979; Jefferies 1990:151; 2008).

According to Jefferies (2008), except for the adoption of new projectile point styles, Early Archaic tool kits are nearly identical to those of the Paleoindians. The scarcity of tools associated with the preparation of plant foods and fishing in the early part of the Archaic indicates that hunting was probably still the major subsistence activity (Dragoo 1976:II).

As with the Paleoindian period, there are few Early Archaic sites in Oklahoma. The Packard site in Mayes County, which also had a Dalton component, contained an Early Archaic component. Other Early Archaic sites include the Quince Site and the Pumpkin Creek site (Early and Sabo 1990).

The Middle Archaic Period

The environment during the Middle Archaic sub-period was dryer and warmer than modern conditions. By the beginning of the Middle Archaic period, environmental remnants of the Pleistocene had disappeared and animal and plant communities more closely resembled those present at the time of European-American contact. Pollen records indicate that drier climatic conditions associated with the Hypsithermal interval reached their maximum around 6,500 B.P. (King and Allen 1977).

Increasing regionalization of artifact inventories and the addition of new artifact classes and projectile point styles implies the development of extensive exploitation strategies. The Middle Archaic is marked by the introduction of groundstone artifacts manufactured through pecking, grinding, and polishing. A number of these groundstone tools, such as manos, mortars and pestles, and nutting stones, are interpreted as plant food processing artifacts, indicating an increasing utilization of plant food resources during the Middle Archaic.

There is limited information on the Middle Archaic in Oklahoma. Sites in eastern Oklahoma have artifact assemblages that are similar to neighboring states. In other regions, the Middle Archaic was a period of population increase (Jefferies 2008; Stafford and Cantin 2008). The population in Oklahoma apparently dropped dramatically during this period perhaps due to a drastic climate change (Wyckoff 1995).

Three cultural horizons are dated to the Middle Archaic period. The Calf Creek culture is characterized by the Calf Creek point which has deep basal notching and basal grinding. Wyckoff (1995) believes the Calf creek culture appeared and disappeared quickly and is not linked to any other culture. Most of the sites are located along creeks or on small knolls (Wyckoff 1995).

The second cultural horizon, the Tom's Brook culture dates to between 4,000 B.C. and 3,000 B.C. and is characterized by projectile points including Johnson, Fairland, Big Sandy, Duncan, and Marcos. The third cultural horizon is the Caudill culture which is sometimes found overlying the Tom's Brook components. Caudill culture projectile points include Table Rock, Calk Creek, and Smith (Early and Sabo 1990).

The Late Archaic Period

The Late Archaic was a time of continued cultural expansion and growing complexity. Dragoo (1976:12-15) has discussed several Late Archaic traditions for the Eastern Woodlands. Their distinctiveness stems from varied regional responses reflected in material culture. Straight-stemmed, basal-notched, or contracted-base projectile point types characterize the Late Archaic. Judging from the greater number of sites that have been recorded, an increase in population can be postulated. Evidence of longer and more intensive site occupation suggests, in some cases, extended habitation within an area.

Aside from hickory nuts, a variety of other nuts, fruits, and seeds were exploited. The increased dietary significance of certain starchy seeds, such as goosefoot, marshelder, and knotweed, has been noted in the Eastern Woodlands (Cowan 1985:229-230). These seasonally available food resources were exploited at appropriate times during the social group's annual settlement/subsistence cycle. Group organization and movement were structured to efficiently accomplish these tasks. The occasional presence of native and

tropical cultigens at some sites suggests that some Late Archaic groups were experimenting with horticulture (Chomko and Crawford 1978; Cowan *et al.* 1981; Watson 1985).

The Late Archaic in northeastern Oklahoma consists of the Lawrence Phase (Early and Sabo 1990). Late Archaic components are found in open sites and in rock shelters. The Lawrence Phase is divided into two sub-phases. The earlier sub-phase includes Frio-like points and Table Rock Stemmed points while the late sub-phase consists of Marshall, Williams, Marcos, Afton, Palmillas, Ellis, Morhiss and Frio-like points (Early and Sabo 1990). Lawrence Phase populations were taking advantage of the increasing deer populations and were also exploiting other animal species including beaver, raccoon, skunk, and squirrel. There was also an increase in foraging for native plant food and tropical cultigens. Plant remains found at Lawrence Phase sites include squash, gourd, maygrass, knotweed, and goosefoot (Early and Sabo 1990).

The Late Archaic in the Arkansas River Valley and Northern Ouachitas of Oklahoma is represented by the Wister Phase (Early and Sabo 1990). The Wister Phase is identified by midden or 'black mound' sites in the Poteau and Fourche Maline Creek valleys (Early and Sabo 1990). The Wiser Phase midden mounds are described as base camps. The sites contain various features including pits, hearths, rock concentrations, dog burials, and human burials (Early and Sabo 1990). The subsistence strategy focused on deer and hickory nuts, but turtle, turkey, small mammals, fish and mollusks were also exploited (Early and Sabo 1990). Projectile point types found in Wister assemblages include Gary, Marshall, Marcos, Lange, Williams, and Pamillas.

4.1.3 Woodland Period

Although initially there was very little difference between Late Archaic and Woodland period settlement, over the two millennia of the period, Woodland cultures eventually diverged sharply from their Archaic beginning. The Woodland period development produced burial mounds and earthwork enclosures. These went along with intensification in the earlier efforts at plant domestication present in the Archaic period, the development of fired clay ceramic containers (first used as ceremonial containers, later used more widely), and the intensification of trade with distant regions of the Midwest in materials used specifically as burial offerings.

The Woodland period is customarily divided into Early (300 B.C. – A.D. 1), Middle (A.D. 1 – A.D. 400), and Late (A.D. 400 – A.D. 1000) sub-periods. Of these, the Early Woodland is the least known, but reflects its Archaic origins. The Middle Woodland was characterized by large burial mounds and earthwork complexes that are termed "Adena" and have counterparts north of the Ohio River. Towards the end of this sub-period, a few sites reflect the Hopewellian cultural fluorescence, best known again from Ohio in the major earthworks of the Scioto valley. During the Late Woodland, a distinctive cultural adaptation developed with similar regional variants. In Oklahoma, the Early Woodland is combined with the Late Archaic and the Middle and Late Woodland are combined and discussed by phases.

Early Woodland

The Early Woodland in Oklahoma is not well defined. It is described as a continuation of the Late Archaic (Early and Sabo 1990). In the Arkansas River Valley and Ouachita area the Early Woodland would be part of the Wister Phase (Early and Sabo 1990).

Middle Woodland and Late Woodland

Little is known about the Woodland period in the regions of Oklahoma. The Woodland period is also described as a transitional period with ceramic assemblages added to the earlier Archaic assemblages. In the Ozarks the Delaware A, Cooper, and Delaware B foci correspond to the Middle Woodland (Early and Sabo 1990). Delaware A assemblages included Gary and Langtry projectile points and Delaware Plain and Cordmarked pottery (Johnson and Johnson 1998). The Cooper Focus artifact assemblages consist of Cooper points and Snyder-like points. The Cooper ceramic assemblage consists of Cooper Zone Stamped, Ozark Zone Stamped, Cowskin Dentate Stamped and Honey Creek Plain (Early and Sabo 1990). Havana Hopewell material recovered from Cooper Focus sites indicates at least a limited participation in extraregional social networks (Early and Sabo 1990). The Delaware B focus follows Delaware A and Cooper. The artifact assemblages are similar with the addition of shell and limestone tempered sherds and Caddoan material (Early and Sabo 1990).

In the northern Ouachita Mountains the Fourche Maline phase is the Woodland component. The Fourche Maline phase is a continuation of the Wister phase (Early and Sabo 1990). The diagnostic artifacts include a thick-walled grog- or clay tempered pottery called Williams Plain, Gary points, and double-bitted chipped stone axes (Galm 1984; Early and Sabo 1990). The Fourche Maline phase components are usually midden deposits indicating intense use of the sites. The subsistence pattern for the phase is not significantly different from the Late Archaic period. There may be more emphasis on plant foods based on the increased quantities of grinding stones (Early and Sabo 1990).

4.1.4 Late Prehistoric Period

The Late Prehistoric period in eastern Oklahoma is a Mississippian manifestation which dates to between 1000 BP and 300 BP. New forms of social integration emerged in the southeast and mid-continent. Mississippian society is characterized by hierarchical social organization. Local and regional mound centers, which were ruled over by religious and political elites, are the most obvious evidence of this development. The distinct regional manifestation of the Mississippian culture in eastern Oklahoma is known as the Arkansas Valley Caddoan Tradition (Early and Sabo 1990). This tradition is divided into three phases: the Harlan Phase (1000 BP -800 BP; the Spiro Phase (800 BP – 550 BP); and the Fort Coffee Phase (550 BP – 300 BP).

Harlan Phase

The development of the mound centers and mortuary ceremonialism in the Arkansas River Valley in Oklahoma is marked by the Harlan Phase. Major sites for this phase include the Harlan site and the Spiro site. The Spiro site became an important regional center during this phase. The curation of the remains of the honored dead in mortuary buildings was the principle activity at the site (Early and Sabo 1990). During the Harlan Phase shell was introduced for tempering ceramics. Woodward Plain ceramics with grog- and clay-temper still dominated the assemblages. New ceramic forms such as jars and bowls appear during this phase. Ceramic types include Arkadelphia Engraved, Crockett Curvilinear, Spiro Engraved, Smithport Plain, and Powell Plain. The lithic assemblage included small projectile points including Scallorn, Reed, Ashley, and Pocola. Larger projectile points included Gary, Langtry, and Ellis (Early and Sabo 1990). Other artifacts included bone and copper covered wooden hairpins, copper beads and hair ornaments, and bone and shell beads.

Spiro Phase

During the Spiro Phase the Spiro site became the paramount political and religious center in the Arkansas River Valley. Spiro became one of several ceremonial centers involved with the Southeastern Ceremonial Complex (Early and Sabo 1990). The artifact assemblage includes triangular arrow points with notched bases including Fresno, Washita, and Reed. Plain utilitarian ceramics almost entirely tempered with shell dominate the ceramic assemblage. Vessel forms include legged jars, miniatures, rim effigy bowls, hooded bowls and wide mouthed bottles (Early and Sabo 1990). The phase is also noted for the ritual objects such as engraved shell cups, gorgets, and copper plaques. Food remains for the phase included corn and hickory nuts. The animal remains included deer, turkey, turtle, fish, and mollusks (Early and Sabo 1990).

Fort Coffee Phase

During this phase there were significant changes in the social and economic organization. The Fort Coffee phase no longer had a strong social hierarchy and the associated ritual activity. Mound construction ceased. The society shifted its orientation from eastern connections to connections with Plains-oriented societies (Early and Sabo 1990). The artifact assemblage includes small notched and un-notched arrowpoints including Shelley and Talco types, shell tempered ceramics including Woodward Plain and Avert Engraved. The ceremonial artifacts associated with the Spiro Phase are absent. Corn and hickory nuts remained an important part of the subsistence strategy, but bison replaced deer as the primary meat source (Early and Sabo 1990). Climate changes during this period are seen as potential factors in the social changes. The migration of bison from the Plains heartland may have increased the availability of this food source (Early and Sabo 1990).

4.2 Historic Period

The historic period begins in the mid-1700s when French traders first entered into the region, and continues to the present with the creation of Eufaula Lake.

4.2.1 Early Explorers and Trail Blazers

In the mid-1700s, French traders first traversed the area along the Arkansas and Canadian Rivers as they attempted to find a route to Santa Fe (New Mexico) in order to establish trade with the Spanish (Stout and Baxter 1986:7). Due to ensuing political upheavals and changes in ownership of territories, trade was not always feasible.

In the 1820s, trade with Santa Fe resumed which led to several expeditions across the area, this time with Americans. Mistaking the Canadian River for the Red River, Major Stephen Long's party in 1820 came upon Standing Rock, as it came to be known. The rock rose approximately 65 feet above the water in the middle of the Canadian River and was a sandstone formation eroded from the cliffs north of the Canadian River. In 1830 Captain B.L.E. Bonneville noted the formation in reporting on lands along the Canadian River (Harkey 1992:187). It became a landmark for travelers throughout the 1800s but is now under the lake waters. Capt. Bonneville's mission in 1830 was to scout out the lands of eastern Oklahoma for the proposed removal of Native American tribes.

In 1839, Josiah Gregg led an expedition to find a southern route to Santa Fe from Fort Smith, Arkansas for trading purposes, hoping it would be faster than the Santa Fe Trail through Kansas. Gregg's trail led southwesterly through the area intersecting the Creek town of North Fork on the Canadian River (Stout and Baxter 1986:24-25).

When the discovery of gold in California led to a rush of settlers heading west, travelers used Gregg's trail to leave from Fort Smith, stopping for supplies in North Fork town. In 1849 Captain Randolph Marcy was tasked with escorting 500 emigrants bound for California to as far as Santa Fe. Capt. Marcy traveled along the southern bank of the Canadian River and passed over Gaines and Coal Creeks (Morris 1993:5).

Aside from east-west trails through this area, a north-south trail was established in the 1830s. Settlers from Midwestern states, bound for settlements in Texas, entered Indian Territory from Missouri and traveled south, crossing the North Fork of the Canadian River near North Fork town. This trail became known as the Texas Road; however, it was also used by Texas cattlemen to drive their cattle north to markets in Missouri and was known as the Shawnee Trail. The trail crossed the Rock and Coal Creeks north of present-day McAlester. After the Civil War, the cattle trail split to go west to markets in Wichita and Baxter Springs, Kansas and the portion through the study area became known as the East Shawnee Trail (Baxter 1986a:13).

4.2.2 Native Americans

In the 1830s, Native American tribes located in the southern states were pressured and then forced to move west to territory in what became Oklahoma. These tribes, Cherokee, Chickasaw, Choctaw, Creek, and Seminole, became known as the Five Civilized Tribes. The study area is included in the Creek and Choctaw allotment of lands in Oklahoma.

In 1820 the Treaty of Doaks Stand was signed by the federal government with the Choctaw tribe which set the stage for the eventual cession of Choctaw lands in Mississippi and removal to southern Indian Territory. The treaty was supposed to be an incentive for voluntary removal but had little effect (Baird *et al.* 1989:17). Forced removal came with the 1830 Treaty of Dancing Rabbit Creek. Land between the Canadian River to the north and Red River to the south with the state of Arkansas to the east was provided to the Choctaws. In 1837 the Chickasaw tribe joined with the Choctaws and settled on the western portion of the Choctaw allotment. The land provided to the Choctaws was the Ouachita Mountain range which had rich bottomlands and timbered foothills (Hoefling 2008:7).

In 1825 the Lower Creeks under Chief McIntosh signed a treaty to remove to lands in Indian Territory that were between the Arkansas and Canadian Rivers. In 1832, Upper Creeks and any Lower Creeks that remained in Alabama signed a treaty under Chief Opothleyahola to remove to Indian Territory. The Creek tribe was split between the Lower Creeks, so named due to the location of their towns in coastal areas primarily in Georgia, and Upper Creeks, located in the Appalachian areas. Lower Creeks had had more association with English settlers and often intermarried while Upper Creeks had had little association with settlers and tended to retain more traditional ways. When the Creeks were removed to Indian Territory, Lower Creeks primarily settled along the Arkansas and Verdigris Rivers while the Upper Creeks settled along the Canadian. Lower Creek farms, especially among those who had intermarried with white settlers, tended to be larger farms and used slave labor (Baird and Gebhard 1991:66-69).

The Canadian River served as the border between the Choctaw and Creek lands. While the Creeks heavily settled the Deep Fork, North Fork and Canadian Rivers area, the Choctaws did not settle the southern edge of the Canadian River as heavily as the Creeks settled the northern side. This was due, in part, to the southern side being part of the Chickasaw District until 1855. Choctaws tended to stay more in the eastern and southern portions of their allotted land where there was protection by U.S. forts. Eventually some Choctaws spread out and settled along the Texas and California Road areas where they could sell surplus crops and livestock to travelers on these trails.

Prior to removal, the Creeks were arranged in a system of "Towns". A typical town had an open public space or "town square" and a round building for meetings in the middle with brush arbors on the sides of the square. Family dwellings spread out from the public area and agriculture was practiced on communal plots surrounding the town. Upper Creeks typically recreated the town structures in Indian Territory that had existed before removal, but where the town squares had been used daily before removal, they tended to be used only for special ceremonies in Indian Territory. Over time, individuals moved further outward to establish their own agricultural plots but still identified themselves with a particular town (Baird and Gebhard 1991:70). In the study area, the public square at the town of Hichiti is now under lake waters and the Tukabatchee location is unknown but was reported to be on the north shore of the South Canadian River (Baird and Gebhard 1991:56, 99).

North Fork Town, so called because of its location on the north branch of the Canadian River, was established as a settlement town by the Creeks at the point where the Creek Trail of Tears ended along the Texas Road as it crossed the Canadian River. This town became a cultural focal point for the Creeks and also a commercial center serving travelers along the Texas Road. Trading stores within Indian Territory were primarily run by intermarried white settlers who had become citizens through their marriage to a tribal citizen. A post office, Micco (Creek for 'Chief'), was later established across the river from North Fork Town in 1853 (Morris 1993:5).

Dwellings among the Choctaw and Creek were typically log cabins with some having larger log houses (Baird and Gebhard 1991:73). A common Creek burial practice was to bury the dead under the dirt floor of the house. But the use of grave houses constructed in a community or family cemetery was also practiced and became the more accepted method. Grave houses were small, rectangular wood structures with a gable roof built over the grave. Another common practice was to bury personal possessions with the body (Baird and Gebhard 1991:108).

At first, Native Americans were resistant to Christian missionaries coming into their new territories. Eventually a few missionary groups were allowed into the territory, like the Methodists who constructed the Asbury Mission School just north of North Fork town. The purpose was to teach the children regular schoolwork and vocational skills. The site is now under lake waters. The tribes also established their own schools and many times taught in their own languages.

During the Civil War, the Confederates looked to the Five Civilized Tribes in Indian Territory as allies because they could provide food, horses, and soldiers to the Confederate cause and provide a bridge to the west. The issue divided the Creeks with the Choctaw and Lower Creeks who were slaveholders siding with the Confederates and the Upper Creeks siding with the Union. Early in the war, this division led to a camp of refugees loyal to the Union settling at the junction of Deep Fork and North Fork of the Canadian Rivers while the Confederates had control of the territory (Baird and Gebhard 1991:76). Many refugees even fled to Kansas. When Confederate fortunes reversed after 1863, Confederate sympathizers became the refugees and headed south to Choctaw territory.

The Texas Road was a supply route during the Civil War that both sides wanted to control. This led to a battle at Honey Springs near Rentiesville (north of the study area in northern McIntosh County) in July 1863 where Confederate forces under Native American Colonel Stand Watie tried to prevent a federal supply train from reaching Fort Gibson (Oklahoma Employment Security Commission n.d.:3). With the Confederate defeat, North Fork town and other homes and villages in the area were burned (Morris 1993:5).

After the war, the tribes as a whole suffered for having sided with the Confederates. A treaty with the federal government in 1866 forced the cession of their central and western lands for what became Oklahoma Territory, for the settlement of Plains Indian tribes. Within Indian Territory, the eastern portion of what became Oklahoma, tribes were forced to cede land for right-of-way to railroads (Baird and Gebhard 1991:78).

After unassigned lands in central Oklahoma Territory became available for settlement in 1889, the pressure for more lands to be opened led to Congress setting up the Dawes Commission in 1893 to negotiate with the Five Civilized Tribes for the cession or allotment and division of their lands within Indian Territory (Morris 1993:6). Allotment and cession occurred at different times in the coming decade as each tribe negotiated allotment separately. In order to speed the eventual cession of tribal lands, the 1898 Curtis Bill allowed for larger towns already established in Indian Territory to buy their lots from the tribes in order to officially incorporate as a town (Morris 1993:6). With the dissolution of Indian Territory, sovereignty of tribal governments was officially dissolved in the eyes of the federal government and all tribal citizens went through a process of enrollment in order to each receive their allotted 160 acres. Freedmen also received acreage as members of a tribe (Baird and Gebhard 1991:84). For the Choctaw, the coal fields in their territory were to be sold with proceeds spread among tribal members.

4.2.3 Railroads and Coal

Using the right-of-way grants provided to railroads to cross Indian Territory, the Missouri, Kansas & Texas Railroad (MK&T or Katy RR) became the first to cross the region from Kansas to Texas in 1872. The route they chose followed the Texas Road but may also have been influenced by the presence of coal in the area of the crossroads of the Texas and California Roads. J.J. McAlester recognized the value of the coal deposits and opened a store at the crossroads of the Texas and California Roads. After marrying a Chickasaw and thus becoming a member of the Chickasaw and Choctaw tribes with rights to land, he filed a claim on nearby coal fields. He then persuaded the Katy RR to route through the area by taking a wagonload of coal up to Kansas to persuade them to route past his store (Bryans 1990:6). The Osage Coal and Mining Company was the first to commercially mine coal in the area, with a mine located east of what became the city of McAlester. The company was owned by the railroad and leased the land from J.J. McAlester (Hoefling 2008:9).

As more mines were established, the primary owner/operator of the mines was the railroads and the primary customer for the coal was the railroads. Spur tracks were constructed to the various mines in the area that became Pittsburg County in the northwest corner of the Choctaw lands. It was named for the well-known coal mining town of Pittsburgh in Pennsylvania. The Choctaw Coal and Railway company rail line became the east-west connection between the Katy RR in McAlester to the Frisco rail line near the Arkansas border in 1889 (Hoefling 2008:19). At the turn of the century, the Choctaw Railway and Lighting Company extended a trolley line from McAlester east to the coal town of Hartshorne (Hoefling 2008:59).

After the turn of the century, more railroad-affiliated companies came onto the scene, owning the land but selling their coal only to the railroad, and smaller and mid-size companies began to consolidate their holdings (Bryans 1990:47). Railroads dominated the mines through the 1890s until independent mines could successfully establish a local market for their smaller production. A local market first became available with the influx of immigrant miners and then expanded with the opening of parts of Oklahoma Territory after 1889 and a dramatic influx of settlers (Bryans 1990:23). Smaller companies no longer had to depend on the railroads to buy their coal productions; they now had a larger market to sell to. One such

local mine within the study area is the Pocahontas Mine owned by Indian Coal and Mining Company (Pittsburg County Historical and Genealogical Society 1997:532).

At first, mines were strip pits which mined coal close to the surface with picks and shovels. Once the larger companies were established shaft mining became possible, which included a vertical opening from the surface down to the coal seam, which was then mined laterally. Most mines in the area were slope mines, which were constructed on outcrops on the hillsides and tunneled at an incline through the hill following the coal seam (Bryans 1990:36). Examples in the study area include the Boatright Slope Mine and the Milby and Dow Slope Mine located near Dow Lake. Support buildings on the surface for the mining operation might include a power house which had engine mounts for the hauling system, a machine shop for tools, tipples which sorted and loaded coal into rail cars, a powder house for explosives, office buildings, and an air shaft (Bryans 1990:63). Not much physical evidence has been left of the mines except dump piles, foundations of buildings and engine mounts, and flooded openings such as at the Pocahontas #1 Slope Mine site, which has the best collection of physical evidence in the study area.

The Choctaws did not labor in the mines, their business with mining included leasing the lands and gathering the royalties from the mining companies that were part of the lease agreements. They also collected fees for residence and business permits that were charged to non-citizens who wished to live and work on Choctaw lands.

To fulfill the labor needs for the coal fields, coal companies began bringing in labor, even paying for transportation for immigrants from other countries. Italians, Poles, Lithuanians, and Mexicans were the most numerous of the various ethnic groups that migrated to work the coal mines (Bryans 1990:31). The coal industry was the primary employer in Pittsburg County from the 1870s through the 1930s when demand for coal decreased. Workers at first lived in company houses and shopped at company stores. These were cheaply built dwellings and few remain. The George Dupuich House located north of Richville on Highway 31 near McAlester is an example of company housing that has survived. After the Curtis Bill in 1898 allowed towns to incorporate and especially after statehood, the immigrants began to build their own businesses and houses, many times in ethnic enclaves.

While the mines were in the Choctaw Nation they did not have to follow United States' mining safety regulations; thus, these were some of the most dangerous mines (Baxter 1986b:9-11). The fatality rate in the Choctaw mines constantly surpassed the national average. Miners were paid only for the coal they brought up so taking short-cuts was common, as they were not paid for activities such as shoring up mine roofs or securing rails. Also, deadly gases were sometimes unexpectedly released from the coal (Bryans 1990:38-39). An example of the mining disasters that happened in this era is the cave-in on September 4, 1914 that occurred at Union Coal Company's #1 mine just south of Adamson which killed 14 miners. In 1961, a monument with the names of the miners inscribed was dedicated at the abandoned mine (Pittsburg County Historical and Genealogical Society 1997:462).

Following World War I, the demand for coal gradually decreased for several reasons: the usage of oil and natural gas as fuel increased; railroads, typically the heaviest users, began switching to different fuel sources; and local market demand generally decreased with the Depression. By the 1930s only enough coal was mined in the area to serve the local markets. Towns built on coal mining lost population with some becoming mere ghost towns (Bryans 1990:58). There was a brief revival during World War II and the post war boom but not enough to revive the industry.

4.2.4 Towns and Outlaws

Several of the towns in the study area had interesting beginnings, many of which can trace their rise and fall to the industries that made them.

In 1872, during construction of the Katy RR, an area approximately three miles west of North Fork town was set up as a terminus for warehouse supplies and as a tent camp for workers in preparation for bridging the South Canadian River. Progress was halted with repeated washouts and collapses of the bridge supports. This delay quickly attracted merchants to the area as well as outlaws and thieves. The delay lasted only a month but by then a city had been born and was named Eufaula after a Creek town in Alabama. Those at North Fork town gradually moved to the new town site. By 1874 Eufaula had a post office and by 1892 the population was 500 (Morris 1993:5). The North Fork town site is now inundated by the lake and part of the eastern portion of Eufaula was forced to move when the lake was constructed.

Canadian, just south of Eufaula, was originally established as a Choctaw trading post but benefited from a railroad station for the Katy RR. The town faded when the cotton market declined (Pittsburg County Historical and Genealogical Society 1997:480). It is located across from the entrance to Arrowhead State Park, south of Eufaula.

Named in 1902 for its founder, Dr. William Crowder, Crowder was constructed at the junction of the north-south Katy and the east-west Fort Smith and Western (FS&W) rail lines. The FS&W was constructed between Fort Smith, Arkansas and Guthrie, Oklahoma to take advantage of the coal fields. The rail line was eventually abandoned in this area as the bridge across the South Canadian kept washing away and there was not enough rail traffic to keep it in repair. The town itself declined when the realignment of U.S. 69 in the early 1970s bypassed it and the Katy RR stopped passenger service (Pittsburg County Historical and Genealogical Society 1997:488). Situated south of Eufaula, it is located on the lake across from the Crowder Point Recreation areas.

Indianola's original town site was a trading post beginning at least in the 1870s, but in 1901 the citizens moved the town a few hundred yards north to be next to the Fort Smith and Western railroad. Indianola also faded when the cotton market declined (Pittsburg County Historical and Genealogical Society 1997:503, 505). Located southwest of Eufaula, it is on the southern banks of the South Canadian River, approximately where the river becomes Eufaula Lake.

Texanna, located along Duchess Creek north of the Canadian River, was founded in 1840 by Captain Dutch, chief of the Western Cherokee. This band of Cherokee was a small group that left for Indian Territory prior to forced removal and settled south of the Arkansas River. They were forced to leave in 1824 and settled in Texas but were again forced to leave in 1839 and resettled in the area just north of the Canadian River (Foreman 1949:252-267).

Adamson was established in 1907 by Peter Adamson as a coal mining town for the Adamson Coal Company. When the mine declined, so did the town (Pittsburg County Historical and Genealogical Society 1997:461). Adamson is located north of the junction of Gaines Creek and Brushy Creek, east of McAlester.

The community of Dow originated in 1892 from the miners' tent camp associated with the Dow Coal Company. Nearby Dow Lake was a popular recreational area (Hoefling 2008:53; Pittsburg County Historical and Genealogical Society 1997:491). Dow is located northwest of Haileyville.

The “twin cities” of Haileyville and Hartshorne, located southeast of McAlester, developed in the late 1890s as commercial centers for the surrounding mining camps. The cities were located on the Choctaw, Oklahoma and Gulf Railroad, later called the Rock Island Railroad, which served the coal mines (Pittsburg County Historical and Genealogical Society 1997:495).

Travel in the area changed from horse and wagon along the Texas Road to automobile along the Jefferson Highway which was constructed essentially along the old Texas Road in 1920. The Jefferson Highway was a transcontinental highway from Canada to New Orleans. It later was signed as U.S. 69 (Oklahoma Employment Security Commission n.d.:2). A toll bridge of steel and concrete was constructed across the South Canadian River in 1919, which later was a free crossing under the state highway system. Prior transportation across the river had been by boats and ferries (Harkey 1992:166).

Prior to statehood, Indian Territory relied on tribal laws and courts to maintain law and order. With its mountains, canyons, and caves, this region became an easy hideout for those escaping federal lawmen. Belle Starr, nicknamed ‘Queen of the Bandits’, headed a group of thieves and murderers during the 1880s and 1890s, an era of outlaws in this region (Morris 1993:6). Before and after the Civil War, a band of outlaws named the Quantrills roamed a region that stretched from Kansas to Texas. Belle Starr, an excellent horsewoman, became involved with the outlaw band, marrying several of its members at various times. One of their hideouts and meeting points was Cole Younger’s ranch at Younger’s Bend on the north bank of the Canadian River just east of the confluence of the South and North Canadian Rivers. Belle Starr later made this her home, which today is near the dam site north of the river, and she was buried there after being shot in the back after an argument with several outlaws (Oklahoma Employment Security Commission n.d.:4).

4.2.5 Agriculture

Agriculture has a large role in the history of Oklahoma, from the prehistoric peoples who practiced agriculture in floodplains to modern mechanized agriculture geared for a global economy.

Cotton

When the Choctaw and Creek resettled in Indian Territory in the 1830s, they brought with them agricultural traditions they had established in their native lands. This consisted primarily of family farms growing subsistence crops. Family farms typically had a log house and a barn with scattered, minor outbuildings. Some farms, primarily owned by white settlers who married into tribes, were larger commercial farms (Carney 1990:2) and some of the farms owned by Native Americans were larger due to the use of slaves brought with them during removal (Baird and Gebhard 1991:71). The tribes generally raised corn and cotton, mostly for personal consumption, with surpluses often sold to nearby government forts or to the white travelers on the roads to Texas or California.

With the coming of the railroad and an increase in white settlement beginning in the 1870s, cotton production boomed and with it cotton gins and cottonseed oil mills (Scarpino and Askew-Wilson 1986:5). Farms grew larger as more land was put into commercial crop production and more mechanized equipment became available. Mass-produced goods arrived in Indian Territory via the towns that were springing up along the rail lines and the railroads took out the raw materials such as cotton and coal for manufacturing.

In this region, cotton was the most important cash crop (Carney 1990:38). Eufaula had four cotton gins and a cotton oil mill by the turn of the twentieth century (Harkey 1992:7). Other notable cotton gins with

remnants still standing include the Cochrane and the Winston cotton gins in Hanna, located west of Indianola, and the Pierce cotton gin, south of Interstate 40.

Beginning in the 1920s, with improved local roads and the coming of the automobile, farmers increasingly sold their products or livestock directly to bigger markets in bigger cities via the railroad, bypassing small towns like Eufaula and its cotton gins (Carney 1990:61).

Farms in McIntosh County typically had high rates of sharecropping and tenancy on relatively small farms of around 40-80 acres for each sharecropper or tenant (Carney 1990:50). Beginning in 1927, the cotton market declined due to falling prices, continued drought, soil erosion, and the Great Depression (Pittsburg County Historical and Genealogical Society 1997:507). The prolonged drought in the first few years of the 1930s, combined with poor cultivation methods, led to depletion of the topsoil. The topsoil literally blew away with the winds; hence the term Dust Bowl was given to this region of the country. Therefore, unable to produce any crops, many of the sharecroppers and tenants left Oklahoma for jobs in California.

In 1938, Senator Joe Whitaker from Eufaula urged McIntosh County farmers to set up a soil conservation program through President Roosevelt's newly created U.S. Soil Conservation Service. Plots of land in this region were typically small due to the allotment system implemented in the 1890s. The owner, and later sharecroppers, wore out the land through continuous planting, not to mention the devastating effects of the Dust Bowl weather conditions. The land needed to revert to grassland for a few years to recover nutrients. Senator Whitaker set up the first soil conservation districts in Oklahoma, with McIntosh County as the first soil conservation project in the U.S. The First Soil Conservation District Dedication Site is located two miles northwest of Eufaula. A dedication ceremony was held December 2, 1939 to inaugurate a change in farming practices to return the land back to productivity and conserve soil and water (Curths 1980). This conservation district site was the first where soil conservation was demonstrated on a privately-owned farm, as opposed to university or government-owned farms. WPA workers planted grasses and black locust trees, filled in eroded areas, and converted fields to grass pastures (Harkey 1992:106). The soil conservation sites taught local farmers to use terracing, sodding, installation of ponds, and tree lots to combat erosion and soil depletion.

Cattle

Cattle ranching was introduced into eastern Indian Territory via the cattle trails. Texas cattlemen found the grasses of this region desirable to fatten cattle for market and began paying local tribes for grazing rights. Soon Native Americans themselves began cattle ranching, especially along the rich bottomlands of the Canadian and Arkansas Rivers (Carney 1990:49).

With the Reconstruction Treaties of 1866, a result of tribes siding with Confederate forces during the Civil War, tribes had to grant right-of-way for railroads to cross through the territory. Railroads facilitated the transportation of Texas cattle, as well as cattle owned by Native Americans within Indian Territory, to markets in Missouri and Kansas, which eliminated the need for the Texas Road (Baxter 1986a:6). The Texas Road continued to be used by local Choctaws to transport their cattle to regional markets, even after the railroad effectively ended the great cattle drives up from Texas (Baxter 1986a:13-14).

When the cotton market declined, many farmers turned to raising cattle and turned their eroded crop lands to pastureland. Although the lake waters flooded the prime grazing lands, ranches can still be found in the countryside surrounding Eufaula Lake.

4.2.6 Lake Building

Talk of damming the Canadian River actually began in the 1930s for flood control purposes. Later on, damming the river was seen as vital to the Arkansas River Navigation System, a plan that originated during the early 1940s to allow navigation from the Mississippi River into the Tulsa area. The Rivers and Harbors Act of 1946 became the catalyst needed for the construction of what became Eufaula Lake. The lake was authorized by Congress in 1946 and surveying and acquisition began soon after (Harkey 1992:60). The reservoir to be formed would not only serve navigation purposes for the Arkansas system but recreation, hydroelectric power, and flood control for the local population. President Johnson dedicated Eufaula Lake, the largest man-made lake in Oklahoma, on September 25, 1964.

There was considerable local opposition to the lake, mainly due to the acquisition of the most productive lands along the creek and river bottoms in the area. Small communities that were dependent on agriculture, such as Texanna, Brooken, Cathey, Crowder, Canadian, Blocker, Huttonville, Indianola, Richardsville, Bower and many more, stood to lose the most. The more valuable land became the timbered hills around the lake sold for vacation home plots instead of the bottomlands where crops such as cotton and corn were raised and livestock grazed (Harkey 1992:61).

USACE maintains the lake and its recreational facilities that were constructed soon after the opening. According to a promotional pamphlet, the following 20 recreational areas were available to the public by 1972, but several of them have never been developed (The Lake Eufaula Association 1972):

Belle Starr Park	Brooken Cove	Cardinal Point	Crowder Point East
Crowder Point West	Dam Site North	Dam Site South	Elm Point
Eufaula Cove North	Eufaula Cove South	Gaines Creek	Gentry Cove Creek
Hickory Point	Highway 9 Landing	Highway 31 Landing	Holiday Cove
Juniper Point	Mill Creek Bay	Oak Ridge	Porum Landing

These facilities typically contain boat ramps, picnic tables/shelters and fireplaces, swim beach and change houses, and RV hookups. Some have private marinas associated with them such as Belle Starr, Evergreen, and Number Nine marinas. Two state parks, Arrowhead and Fountainhead, were constructed with lodges, cottages, swimming pools and tennis, a golf course, two airstrips, and a restaurant.

4.3 Known Cultural Resources at Eufaula Lake

Eufaula Lake has been the subject of a number of archaeological surveys during the twentieth and twenty-first centuries. Looking at the history of archaeological research in relation to the time period when it was conducted, Guy (1990) suggests dividing it into chronological periods of excavation. The periods applicable to Eufaula Lake are: the WPA Period (1936-1941), the Reservoir Salvage Period (1946-1966), and the Cultural Resource Management Period (1967-onward).

4.3.1 Previous Archaeological Surveys

The WPA Period (1936-1941) was during a time when the Depression and the economic hardships therein led to increased looting of archaeological sites for items to sell for quick money. The Oklahoma Antiquity

Law was passed in 1936, in response to large-scale commercial looting of Spiro and other mound sites in the state. After the passage of this law, large work crews from the University of Oklahoma were sent out to excavate intact sites as part of the federal government's WPA depression relief program (Early and Sabo 1990:18). One of the first excavations undertaken in the Eufaula Lake area was conducted at the Eufaula (Groseclose) Mounds (34MI45) in McIntosh County (Orr 1941, 1942). The excavations were sponsored by the WPA and the Creek Indian Memorial Association. Orr compared the burial traits found at the Eufaula Mound, a ceremonial burial complex, with those from Spiro Mound, located 50 miles to the east. He concluded that the burial complex expressed at Spiro Mound was similar to those present at Eufaula Mound.

The Reservoir Salvage Period (1946-1966) produced large scale archaeological surveys related to lake construction (Oklahoma Archaeological Survey 1985:V-5). When Eufaula Dam and Lake was authorized by the Rivers and Harbors Act of 1946, it was not clear if it would be one large lake or three separate lakes. Potential lakes were Onapa, Canadian, and Gains Creek Reservoirs in addition to the encompassing Eufaula Lake. The Onapa Reservoir area included the North Canadian and Deep Fork rivers and their tributaries; the Canadian Reservoir area extended along the South Canadian River and its tributaries; and the Gaines Creek Reservoir area surveyed included the Eufaula Dam site and most of Gaines Creek and its tributaries. Eufaula Lake incorporates all three of these potential reservoirs. The initial archaeological survey was divided into two efforts. The Onapa and Canadian Reservoir area was surveyed by Wenner (1948) and the Gaines Creek Reservoir area was surveyed by Johnson (1950). A total of 118 sites were located by these two surveys. Wenner located 66 sites, 25 in the Onapa Reservoir area and 41 in the Canadian Reservoir area (Wenner 1948:3; Bell 1949:309). The survey of the Gaines Creek Reservoir area by Johnson identified a total of 52 sites (1950:3). In all, 13 of these sites (34HS1, 34LT2, 34MI23, 34MI24, 34MI27, 34MI30, 34MI31, 34MI45, 34MI48, 34PS5, 34PS18, 34PS31, and 34PS49) were recommended for further excavation.

In 1951, the University of Oklahoma tested six of the sites recommended for further excavations (34HS1, 34MI24, 34MI27, 34MI31, 34PS18, and 34PS49) along with an additional site (34PS28) that was not originally recommended (Proctor 1953). Although site 34PS28 was not originally recommended for further excavations by Johnson (1950), the site was chosen for further testing after burials were discovered by the land owner (Proctor 1953:49). These six sites were excavated in hopes of adding to the understanding of the prehistoric sequences and traits. However, the small data samples recovered from each site did not add to the overall understanding of known cultures, but did provide some information about the prehistory of the Eufaula Lake area in relation to the prehistory of Oklahoma (Proctor 1953:52).

Not a lot of additional archaeological work was conducted in the years following the initial surveys for Eufaula Lake (Oklahoma Archaeological Survey 1985:V-6). Archaeological finds and reports were generally limited to artifacts eroding out of the shoreline. At one point, when the level of the lake was 14 feet below the normal pool, a partial burial and related mortuary artifacts were observed eroding from the shoreline of Gaines Creek (Anderson 1968). In another location a cache of blades along with other lithic material was also observed eroding from the shoreline. The material was collected and described (Millsap and Dickson 1968). In contrast to these random findings, the purported village area associated with Eufaula Mound was mechanically stripped, but no prehistoric features resembling a village were found (Oklahoma Archaeological Survey 1985:V-6).

New environmental regulations by the federal government covering federally funded projects lead to an increase in the number of archaeological surveys being conducted (Oklahoma Archaeological Survey 1985:V-7). The Cultural Resource Management Period (1967-onward) defined by Guy to refer to the

development of a new archaeology in response to the enactment of several cultural resource protection laws. Much of the archaeological research conducted during this time, and presently, is driven by these new or newly-enforced federal and state laws and directives (Guy 1990:87), with an emphasis on reconnaissance surveys and testing of sites.

One of the first surveys in the Eufaula Lake area, following newly established environmental regulations was a survey conducted by the Oklahoma Historical Society in 1976, examined a new alignment for US Highway 69 that runs east-west through the reservoir (Lopez and Keith 1976, 1979). That survey resulted in the identification and subsequent excavation of the Plantation Site (34MI63), an early Caddoan settlement (Briscoe 1977).

As part of Executive Order 11593 that directed federal agencies to conduct inventories of cultural resources located on their property, USACE contracted with the Museum of the Red River to conduct an archaeological survey of the Eufaula Lake shoreline (Perino and Caffey 1980a, 1980b). Most of the sites identified by this survey were characterized as prehistoric open habitation sites without mounds and six sites that exhibited historic components.

A survey of 879 acres was conducted for three park areas at Eufaula Lake: Bell Star North and South; Highway 9 North, South, and East; and Porum Landing. The survey identified 11 archaeological sites. Three sites were relocated (34MI132, 34Mi133, and 34Mi134), and one was inundated (34MI94). Only one site (34MI134) was recommended as potentially significant (Largent 1994).

A survey conducted of five areas totaling 807 acres at Eufaula Lake resulted in the identification of nine new sites, one historic bridge, and revisited seven previously recorded sites. Four sites (34HS214, 34MI127, 34MI362, and 34MI362) were recommended as eligible for listing on the National Register. Additional excavations were recommended for three sites (34HS214, 34MI127, and 34MI362), and additional archival work was recommended at sites 34MI127, 34Mi361, and 34MI362 (McKay *et al*. 2003).

A survey of 357 acres the Crowder Point Recreational Area on the Gaines Creek branch of Eufaula Lake resulted in four isolated finds and two features, none of which were assigned site numbers (Rust and Raab 2004).

A survey of the 297 acre Highway 9 Landing Recreational Area and a survey of 200 acres at the Porum Landing Recreational Area resulted in no new sites (Hokanson and Fariello 2006).

A survey of the 182 acre Highway 32 Landing Public Use Area and a survey of the 178 acre Juniper Point Public Use Area did not identify any new sites (Berryman and Cheever 2008).

A reassessment of 40 known archaeological sites in McIntosh County determined that 38 were not eligible for listing on the National Register while two sites, 34MI233 and 34MI264, warranted further examination (Dowling *et al*. 2011).

4.3.2 Known Archaeological Sites

The 1995 Historic Properties Management Plan (HPMP) for Eufaula Lake lists 438 sites within the reservoir. Most of these sites are prehistoric (256), a few are historic (46), some have both historic and prehistoric occupations (101), and a couple cannot be ascribed a cultural occupation (26). The HPMP identified two sites (34MI84 and 34PS10) that have been listed on the National Register of Historic Places (NRHP), four

have been nominated but only three were listed in the plan (34MI9, 34MI57, 34MI85), and two (34MI114 and 34MI134) were considered eligible (Geo-Marine, Inc. 1995:1,17).

Since the 1995 HPMP review of known archaeological sites, a total of 52 additional sites have been recorded within the bounds of Eufaula Lake, bringing the total to 490. In addition to the sites listed above, sites 34MI9 and 34MI57 have been listed on the NRHP while sites 34MI334, 34PS96, 34PS329, and 34PS497 are considered eligible for listing on the NRHP.

Known Archaeological Sites within the APE

There are three known archaeological sites within the APE. These three sites are: 34PS166, 34PS167, and 34PS168 (**Figure 4-1**). Each of these sites is discussed individually below.

34PS166

Site 34PS166 was identified by Perino and Caffey (1980a:100) during their shoreline survey of Eufaula Lake conducted by the Museum of the Red River. The site is identified as lying on a low sandy hill extending into the lake from a point of land. Artifacts observed included three groups of burned rock and one broken mortar. Perino and Caffey concluded that the site is possibly associated with a Late Archaic culture consisting of three short-term habitation areas. The site was heavily eroded and not recommended for further study.

34PS167

Site 34PS167 was identified by Perino and Caffey (1980a:100) during their shoreline survey of Eufaula Lake conducted by the Museum of the Red River. The site is located on a low sandy hill with large areas of burnt rock on the east face of the site. Artifacts observed included large areas of burnt rock, a Marshall point made from an unidentified heat-treated chert, and an elongated slab Mortar. Perino and Caffey concluded that the site possibly is associated with a Late Archaic culture. Although the site has been subjected to erosion Perino and Caffey believe that the site area inland held research potential and warranted further study.

34PS168

Site 34PS168 was identified by Perino and Caffey (1980a:100) during their shoreline survey of Eufaula Lake conducted by the Museum of the Red River. The site is located on a low sandy hill and point of land, having scattered burnt rock on the beach. Artifacts observed included scattered burnt rock, an early unnamed dart point made of Barren Fork chert, three flakes of Ogallala chert, one flake of novaculite, one flake of Alibates flint, and two flakes of Woodford chert. Perino and Caffey concluded that the site possibly is associated with an Early and Late Archaic culture. The site was heavily eroded and not recommended for further study.

4.4 Conclusion

This section has presented an overview of the cultural context of the region. It also reviewed previous archaeological surveys within the area and reviewed three archaeological sites found within the APE.

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 4-1. Known Archaeological Sites within the APE

Section 5
Methodology

In this section, the methods employed during the course of this study are described. These methods include the fieldwork activities, their application in different portions of the archaeological APE reflecting conditions encountered, and an evaluation of their effectiveness in conducting initial National Register evaluation of the archaeological sites. Laboratory methods are discussed in Section 6 along with each site's assemblage and a discussion of their associated contexts of recovery and interpretation. This section also presents an overview of the requirements for nomination to the National Register of Historical Places.

5.1 Land Classification

According to the 2006 National Land Cover Database (MRLC 2012), there are six distinct land types within the APE (**Table 5-1**). These are: deciduous forest, evergreen forest, mixed forests, grassland/herbaceous, woody wetland, and open water. Each of these land types is described below.

Table 5-1. Land Classification found within the APE

Land Classification	Acres	Hectares
Deciduous Forest	68	27
Evergreen Forest	19	8
Mixed Forest	125	51
Grassland/Herbaceous	4	2
Woody Wetlands	4	2
Open Water	8	3

Deciduous Forest areas (**Figure 5-1)** are areas dominated by trees generally greater than 5 m tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species shed foliage simultaneously in response to seasonal change.

Evergreen Forest areas (**Figure 5-2**) are areas dominated by trees generally greater than 5 m tall, and greater than 20 percent of total vegetation cover. More than 75 percent of the tree species maintain their leaves all year. The canopy is never without green foliage.

Mixed Forest areas (**Figure 5-3**) are areas dominated by trees generally greater than 5 m tall, and greater than 20 percent of total vegetation cover. Neither deciduous nor evergreen species are greater than 75 percent of total tree cover.

Grassland/Herbaceous areas (**Figure 5-4**) are areas dominated by grammanoid or herbaceous vegetation, generally greater than 80 percent of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.

Figure 5-1. Example of Deciduous Forest Areas Found Inside the APE

Figure 5-2. Example of Evergreen Forest Areas Found Inside the APE

Figure 5-3. Example of Mixed Forest Areas Found Inside the APE

Figure 5-4. Example of Grassland/Herbaceous Areas Found Inside the APE

Woody Wetlands (**Figure 5-5**) are areas where forest or shrub land vegetation accounts for greater than 20 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.

Open Water areas (**Figure 5-6**) are areas of open water, generally with less than 25 percent cover of vegetation or soil.

5.2 Field Conditions

Approximately four percent of the APE (10 acres, 4 hectares) was not tested due to having an excessive slope (**Figure 5-7**). The remainder of the APE was subjected to archaeological testing.

5.3 Field Investigative Strategies

The field methodology developed for this project was designed to comply with the standards for a full coverage pedestrian survey as established by the USACE, Tulsa District. The field methodology is designed to identify archaeological sites by visual inspection of exposed ground surfaces and subsurface testing. Field investigations took place on May 1st though the 5th, May 7th through the 11th, and May 13th through the 15th, 2012 and were conducted within the APE. A total of 104 hours or 416 man hours was expended examining the APE. One rain day was observed on May 11th, 2012. The weather for the days of field investigation is summarized in **Table 5-2**. The weather data is from the McAlester Regional Airport in McAlester, Oklahoma, located approximately 30 miles south of the APE.

Table 5-2. Weather for Field Dates

Date	Min Temperature (F)	Max Temperature (F)	Precipitation (Inches)	Events	In-Field Observation
5/1/2012	63.0	84.0	0.0		
5/2/2012	68.0	82.0	0.0		
5/3/2012	69.1	88.0	0		
5/4/2012	72.0	84.9	0		
5/5/2012	66.9	88.0	0		
5/7/2012	64.0	81.0	0		
5/8/2012	54.0	71.1	0.57	Rain-Thunderstorm	Rain Late
5/9/2012	50.0	80.1	0		
5/10/2012	52.0	82.0	0		
5/11/2012	60.1	68.0	0.77	Rain	Rain
5/13/2012	57.9	79.0	0		
5/14/2012	54.0	78.1	0		
5/15/2012	51.1	82.0	0		

Figure 5-5. Example of Woody Wetland Areas Found Inside the APE

Figure 5-6. Example of Open Water Areas Found Inside the APE

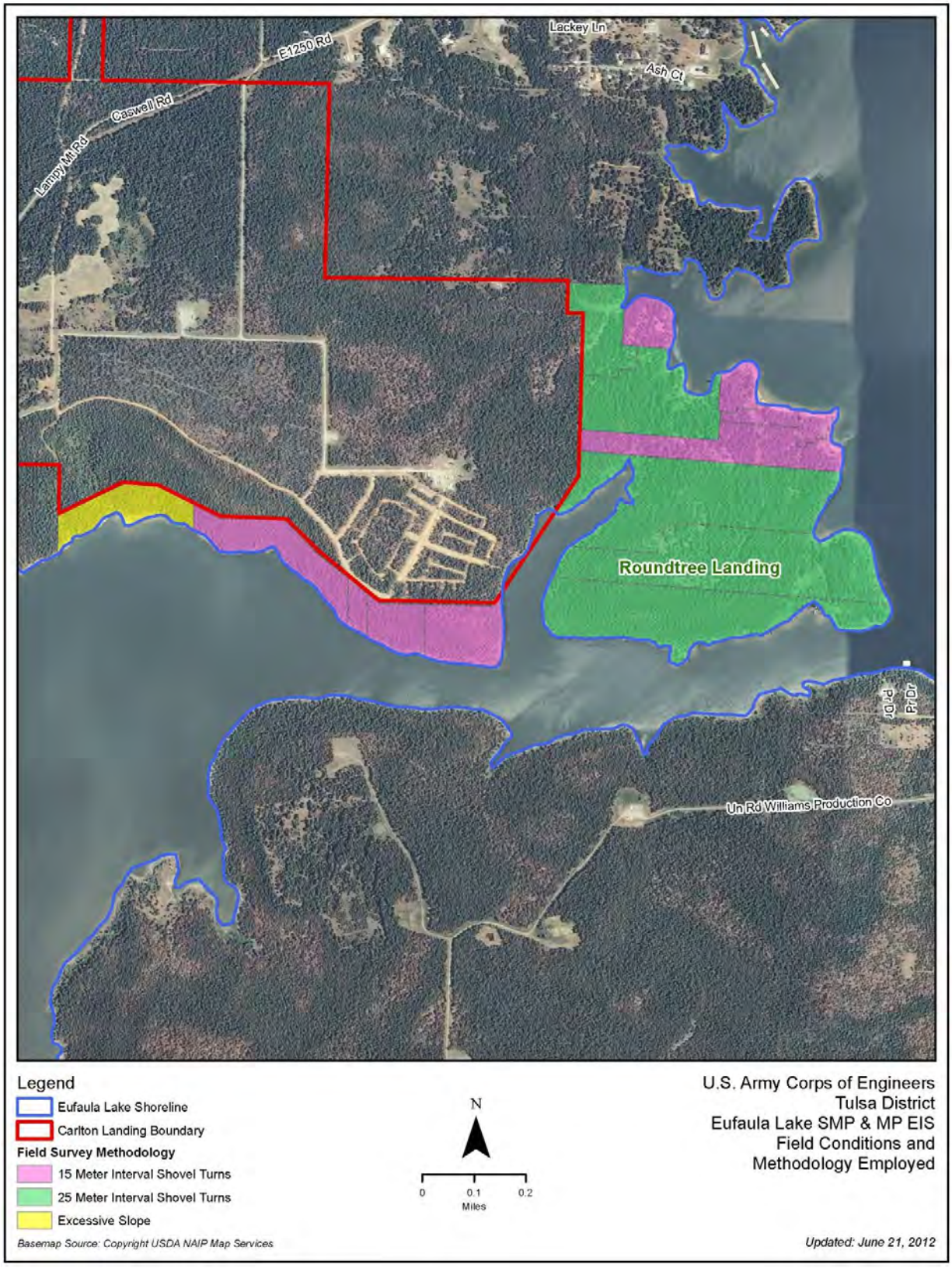

Figure 5-7. Field Conditions and Methodology Employed

5.3.1 Surface Inspection

In areas where there was good visibility of the ground surface (i.e. visibility greater than 30 percent) a visual inspection of the exposed ground surface was conducted. Intervals of 15 meters were maintained in these areas. If an archaeological site would have been encountered the intervals would have been shortened to 5 meters. The exposed ground would be systematically inspected and any artifacts encountered would have been be collected, bagged, and labeled with appropriate provenience and locational information and returned to the CDM Smith laboratory in Lexington, Kentucky, for analysis.

5.3.2 Shovel Turns

In areas where the ground visibility was poor (i.e. less than 30 percent), a sampling strategy composed of systematic shovel turns was implemented. A shovel turn is a spade-depth (approx. 30cm) turn of the surface soil to gain visibility of the surface. These turns are not screened but rather "chopped" or broken up and inspected for artifacts by hand. Initially, intervals of 15 meters were maintained between each shovel turn. However, given the rocky, steep, and wooded terrain and after consultation with USACE, Tulsa District Archaeologist Ken Shingleton, the interval spacing between probes was increased to 25 meters for the remainder of the project. **Figure 5-7** shows the different methodologies employed.

If a turn containing either artifacts or features was encountered, formal shovel test units were used. Formal shovel tests are screened and dug to at least 100 cm in depth (or to sterile, where depth of sterile has been verified through deeper tests in the area). Formal shovel tests are generally used for site delineation and evaluation to determine presence, depth, and extent of cultural resources, composition of soils and geomorphology, and other important information to gain a clearer understanding of the area.

The interval between the formal shovel test units was reduced to 15 meters and continued until two consecutive negative shovel test probes were encountered. All shovel test probes measured 30 by 30 cm (12 by 12 inches) in diameter and the soil was passed through a 6.35 mm (1/4 inch) dry mesh hardware screen. Remaining artifacts were collected, bagged, and labeled with appropriate provenience and locational information and returned to the CDM Smith laboratory in Lexington, Kentucky, for analysis.

5.3.3 Examination for Rock Shelters

When accessible, exposed rock faces were examined for the presence of rock shelters and other possible cultural features.

5.3.4 Site Boundary identification

Site boundaries were determined as accurately as possible for all sites by standard archaeological methods including shovel testing as described above and determination of the extent of artifact and cultural features on the surface. Shovel tests are used at historic sites with surface features to verify whether subsurface deposits exist or extend beyond surface materials.

5.4 GPS Equipment

The GPS field data recording device used during the examination of the APE was a Trimble Juno SB handheld data collector.

5.5 Evaluation of Field Methods Used

Shovel turns, formal shovel test units, and surface collection were used to identify and define approximate site limits within the APE. The methods were successful in identifying site location, delineating site boundaries, and obtaining a sample of cultural materials from the site.

5.6 National Register Evaluation of Archaeological Sites

Section 106 of the National Historic Preservation Act (NHPA) of 1966 requires federal agencies to take into account the effects of their undertakings on properties listed or eligible for listing in the National Register and to give the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. While it does not require the preservation of such properties, it does require that their historic or prehistoric values be considered in weighing the benefits and costs of federal undertakings to determine what is in the public interest. Section 106 is invoked when "any project, activity, or program that can result in changes in the character or use of historic properties" (36 CFR Part 800) and regardless of whether federal agency jurisdiction is direct or indirect.

Pursuant to the October 1992 Amendments to the NHPA (Section 110 of NHPA 1980, amended 1992) an "undertaking" means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including (A) those carried out by or on behalf of the agency; (B) those carried out with federal financial assistance; (C) those requiring a federal permit, license, or approval; and (D) those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency.

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- that are associated with events that have made a significant contribution to the broad patterns of our history; or
- that are associated with the lives of persons significant in our past; or
- that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- that have yielded, or may be likely to yield, information important in prehistory or history.

Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A; the property's specific association must be considered important as well. Often, a comparative framework is necessary to determine if a site is considered an important example of an event or pattern of events.

In order to qualify under Criterion B, the persons associated with the property must be individually significant within a historic context. As with all Criterion B properties, the individual associated with the property must have made some specific important contribution to history.

To be eligible under Criterion C, a property must meet at least one of the following requirements: the property must embody distinctive characteristics of a type, period, or method of construction, represent

the work of a master, possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction.

Criterion D requires that a property "has yielded, or may be likely to yield, information important in prehistory or history." Most properties listed under Criterion D are archaeological sites and districts, although extant structures and buildings may be significant for their information potential under this criterion. To qualify under Criterion D, a property must meet two basic requirements:

- The property must have, or have had, information that can contribute to our understanding of human history of any time period;
- The information must be considered important.

The use of Criteria A, B, and C for archaeological sites are appropriate in limited circumstances and have never been supported as a universal application of the criteria. However, it is important to consider the applicability of criteria other than D when evaluating archaeological properties. It is important to note that under Criteria A, B, and C the archaeological property must have demonstrated its ability to convey its significance, as opposed to sites eligible under Criterion D, where only the potential to yield information is required.

5.7 Conclusion

This section presented an overview of the environmental and field conditions of the APE and defined the field methods employed. Lastly, the criterion for nominating archaeological sites to the National Register was reviewed.

Section 6
Materials Recovered

In this section the laboratory procedures and analytic methods are discussed and the materials recovered are presented. The analytic methods involve the use of an artifact classification scheme that creates useful analytic categories for evaluating National Register eligibility. The artifact assemblages are also discussed with the site descriptions and results in Section 7.

6.1 General Laboratory Procedures

Artifacts recovered during field investigations were brought to the CDM Smith Archaeology Laboratory in Lexington, Kentucky, for cataloging and analysis. Materials were washed and sorted by general material type. The artifacts were then analyzed according to specific methods.

6.1.1 Analytical Methods: Prehistoric Artifact Assemblages

The analysis included tool analysis, raw material analysis, and mass analysis. These different techniques provide complementary data and permit the extrapolation of stronger inferences about the organization of lithic technology at the four sites. All excavated materials were subjected to these analytical methods, except where noted below.

All debitage was macroscopically examined for evidence of retouch and/or utilization. Those artifacts displaying retouch and/or utilization were then separated from non-utilized debitage. Additionally, all chipped stone artifacts were analyzed for presence of primary geologic or secondary incipient cone cortex and macroscopic evidence of thermal alteration. A typology of specimens was developed using standard techniques and definitions employed throughout eastern North America (*e.g.* Callahan 1979, Crabtree 1982, Odell 1996).

Bifaces

Bifaces are generalized bifacially flaked artifacts which may be blanks or preforms for morphologically distinct bifacial tools, or finished tools in their own right. Types of bifaces are based on technological attributes including flake scar patterns, edge sinuosity, width/thickness ratio, and edge angles. Callahan's biface production stages (1 through 5) are followed in this analysis (1979). Biface fragments include specimens too fragmentary to be placed in a stage according to the Callahan (1979) model.

Unifacial Tools

Unifacial tools are unifacially flaked artifacts which may be formal or expedient.

Retouched Flakes

Retouched flakes are flake tools that contain evidence of modification, either a result of intentional retouching or chipping of the flake to form a certain kind of edge, surface, or shape, the result of tool use (wear), or both (Andrefsky 1998: 77-80). All debitage was examined for evidence of utilization by viewing the flake margins of each specimen with a 10 x magnifying hand lens. Specimens with microflake or retouch scars, edge polish, or other evidence of utilization along their margins were set aside for analysis and description. The retouched flakes where placed within the following categories.

Side Scrapers

Side scrapers have the working edge situated along the long edge or edges of a flake. Side scrapers sometimes have a scalene triangular transverse cross-section and sometimes are backed on the edge opposite the working edge. Natural backing is a flat flake scar positioned to provide a finger hold or haft.

End Scrapers

End scrapers have a steep working edge at one or both ends. Sometimes trapezoidal in shape, they are most frequently made on early stage flakes and use the dorsal ridges for added strength.

Spokeshaves

Spokeshaves are sometimes referred to as notched scrapers or concave scrapers because the working edge is located in a concavity on the perimeter of the flake. Concavities on flake edges can also be produced unintentionally by trampling, but this damage is often irregular, with small notches created in functionally inappropriate places.

Gravers

Gravers are modified isolated sharp, pointed projections on a flake. This tool probably functioned as a piercing or scoring tool. Graver spurs are nearly always manufactured to make use of natural flake ridges for added strength. Gravers are distinguished from natural projections by their modification, situation in a functionally appropriate position, and presence of a flake scar ridge leading to the spur.

Combination Tools

These tools contain two or more tool elements. The types of combination tools recovered include side scrapers containing with either gravers or spokeshaves.

Cores

A core consists of any piece of raw material from which flakes, blades, or bladelets have been intentionally removed. Cores can be embryonic, such as a piece of natural unprepared raw material with scars, reflecting the detachment of one or more flakes (Crabtree 1982: 30). Cores must exhibit at least one negative flake scar and a striking platform. Cortex may be retained over some of the surface, although this depends on the number of flakes or blades removed. The presence of primary geologic cortex may indicate that the raw material was procured from outcrops, whereas secondary incipient cone cortex on the core surface could suggest that raw material was procured from a stream context. Exhausted cores, (i.e., those too small for further reduction) may have been discarded at a site after use; cores still fit for reduction may also have been stored at a site for later use. The simplest forms of cores are described by the number of core platforms and whether the negative removals indicate blade or flake production.

A polyhedral core (amorphous core) contains opportunistically located striking platforms and a resultant randomly generated shape. The tendency to remove flakes along existing ridges in the material usually results in a globular form in exhausted cores. It is the most common core type as it is often the final attempt of a knapper to extract the last usable flakes from a piece of material. By definition it is irregular in shape and can have any number of remaining usable or abandoned striking platforms.

A core fragment consists of a portion of a core that exhibits at least one negative flake scar and striking platform, and one or more large-scale fresh fracture surfaces on one or several sides of the core. Core fragments are generally small in size and cannot be reliably assigned to any of the above categories.

Lithic Debitage

One of the most ubiquitous artifact categories on prehistoric sites is lithic debitage, which is considered to include all the material produced from the initial reduction stage to the use/reworking stage. Debitage is produced during all stages of reduction, but the representation of each class as compared to the other classes provides insight into the types of lithic use that occurred at a specific location. All flakes, blades, chunks/shatter were analyzed according to platform facet and dorsal scar counts, presence of cortex, and macroscopic evidence of thermal alteration and/or utilization.

Flakes are pieces of debitage with two faces, a dorsal and a ventral. The dorsal surface can be partly or totally covered by cortex, but normally shows the scars from removals that were made before the flake was removed from the core. The ventral surface contains only the features related to the detachment of the particular flake.

Flake debitage produced in bifacial and unifacial technologies is divided into three major categories including primary flakes, secondary flakes, and tertiary flakes, and several subcategories based on specific morphological attributes. These lithic reduction categories follow classification stages proposed by Collins (1974), Flenniken (1978), Boisvert *et al.* (1979), Magne and Pokotylo (1981), Magne (1985), Ebright (1987), and Bradbury and Carr (1995) with some modifications. A brief description of each debitage category is provided.

> *Primary flakes* (primary and secondary decortication flakes) are those produced during the earliest stages of lithic reduction and result from the removal of cortex from the raw material. *Primary decortication flakes* are usually large and cortex is present on over 50 percent of the dorsal surface. *Secondary decortication flakes* contain cortex on less than 50 percent of the dorsal surface.
>
> *Secondary flakes* (interior and thinning flakes) result from the reduction and shaping of the initial biface. Secondary flakes characteristically display a well-developed bulb of percussion, one or more flake scars on the dorsal surface, and may exhibit platform preparation. *Interior flakes* generally have large, double faceted platforms perpendicular to the orientation of the flake. *Thinning flakes* may have multi-faceted platforms at an acute or obtuse angle to the flake's orientation and may show signs of crushing or battering in preparation for flake removal from the parent material.
>
> *Tertiary flakes* (late stage percussion and pressure flakes) result from the sharpening and/or reworking of tools or points. These flakes are generally very small with small striking platforms, often multifaceted and steeply angled. Tertiary flakes are usually underrepresented in artifact assemblages recovered with standard ¼ inch hardware mesh screens, as these flakes are frequently smaller than ¼ inch and pass through the screens.

Flakes struck from flake cores for further unifacial modification are generally indistinguishable from those produced in bifacial reduction. However, a formal, specialized unifacial technology is blade manufacture, which produces morphologically distinct artifacts.

> *Blades* are specialized flakes with more or less parallel or sub-parallel lateral edges which, when complete, are at least twice as long as wide (Owen 1982: 2). Blades contain at least one dorsal

crest but may contain two or more dorsal crests. Blades are associated with prepared cores and blade technique and are not produced randomly (Crabtree 1982:16).

Debitage displaying some flake characteristics are classified as *undetermined flakes* if they are too fragmentary to determine flaking stage.

Chunks/shatter are pieces of usable raw material with at least one freshly broken surface. Blocky and angular fragments are usually produced in the initial stages of flintknapping as a result of removing unstable areas of material from the core or blank. Chunks/shatter are distinguished from cores by the absence of negative flake scars and striking platforms. Natural processes may produce a small proportion of chunk/shatter.

Mass Analysis

Mass analysis focuses on the variables of size, shape, and presence of cortex on aggregate batches of debitage as a means of distinguishing various forms and characteristics of reduction within a lithic artifact assemblage. Because there are several disadvantages in using reduction stage classification exclusively to analyze flaking debris, data obtained from mass analysis can be used to compare with those gained from reduction stage classification to provide more solid interpretations of the lithic artifact assemblage (Ahler and Christensen 1983, Ahler 1989, Bradbury and Franklin 2000). Two general theoretical observations regarding flintknapping underlie mass analysis and are relevant to the current study:

Flintknapping is fundamentally a reductive technology, and the nature of this technology places predictable and repetitive size constraints on the byproducts (and products) produced. Most flakes produced early in reduction should be larger, and most flakes produced late in reduction should be smaller. Similarly, the frequency of flakes with cortex should be highest in early reduction and lowest in late reduction.

Variation in load application in the flintknapping procedure produces corresponding variations in both size and flake shape. Experimental data shows that percussion flaking, on the whole, is capable of producing flakes much larger in size than any produced by pressure flaking. Size grade distribution data provides a fairly direct measure of load application variation (Ahler 1989: 89-91).

For this project, all non-utilized debitage (flakes, flake fragments) were passed through a series of nested laboratory hardware cloth screens to sort by size. Size grades follow Stahle and Dunn (1982, 1984). The size grades are as follows:

Grade 0 includes specimens smaller than ¼ inch
Grade 1 includes specimens smaller than ½ inch but larger than ¼ inch
Grade 2 includes specimens smaller than 1 inch but larger than ½ inch
Grade 3 includes specimens smaller than 2 inches but larger than 1 inch
Grade 4 includes specimens larger than 2 inches

Flake debris from each provenience in each grade was weighed as an aggregate to the nearest tenth of a gram and then counted. One attribute, thermal alteration, was also recorded for the reduction debris. Thermal alteration is often intentional within the culture in order to change the properties of the chert in order to make the raw material more adept to tool production.

The presence of primary geologic cortex may indicate that the raw material was procured from outcrops, whereas secondary incipient cone cortex on the core surface suggests that raw material was procured from

a stream context. Research has shown that reduction analysis insufficiently provides data on the stage during which a flake was removed. However, by comparing frequency of occurrence of cortex on flakes, research indicates that a higher percentage of flakes during the initial stages of lithic reduction will have cortex and a lower percentage will have cortex during the final stages of lithic reduction. In addition, the amount of the flake covered in cortex is also an indicator of the stage during which the flake was removed, again more coverage indicates removal during the initial stages, and less coverage indicates later removal. Thus flakes with cortex were evaluated according to the following criteria:

Grade 1 includes specimens with primary geologic cortex over greater than 50 percent surface
Grade 2 includes specimens with primary geologic cortex over less than 50 percent surface
Grade 3 includes specimens with secondary conical cortex over greater than 50 percent surface
Grade 4 includes specimens with secondary conical cortex over less than 50 percent surface

All of these methods compose mass analysis. When taken together, they can provide extensive data on the methods of tool production.

Materials Recovered

A total of 161 lithic artifacts were recovered from three sites (36PS167, 34PS168, and 34PS553). Five were tools and 156 were lithic debitage (**Table 6-1** and **Figure 6-1**).

Table 6-1. Prehistoric Artifacts Recovered from 34PS167, 34PS168, and 34PS553

Site	Type	SG 0			SG 1			SG 2			Tools
		Boone	Ogallala	Woodford	Boone	Ogallala	Woodford	Boone	Woodford	Unidentified	Woodford
34PS167	Interior Flake								1		
34PS168	Base Fragment										2
34PS168	Biface Fragment										1
34PS168	Tip Fragment										1
34PS168	Retouched Flake										1
34PS168	Undetermined	1	2	8	5	2	37	1	1		
34PS168	Secondary Decordication						28		6		
34PS168	Interior Flake				3		10	2	7		
34PS168	Primary Decordication				2		5		1		
34PS168	Tertiary Fake			4			4				
34PS168	Thinning Flake						7				
34PS168	Shatter						6			2	
34PS553	Secondary Decordication						1				
34PS553	Thinning Flakes						2				
34PS553	Undetermined					2	6				

The tools consisted of two base fragments, one biface fragment, one tip fragment, and one retouched flake, all made from Woodford chert and showing no visible signs of being heat treated. The debitage consisted of 65 undetermined flakes, 35 secondary decordication flakes, 23 interior flakes, eight primary decordication flakes, eight tertiary flakes, eight shatter, and nine thinning flakes. A total of 134 were made

from Woodword chert, 14 made from Boone chert, six were made from Ogallala chert, and two were wade from an unidentified chert.

One base fragment may possible be a Kent or Gray point (**Figure 6-1**, D) and the other base fragment may possibly be an Edgewood point (**Figure 6-1**, E). These point types date from the Late Archaic cultural period (Bell 1958:20, 28; Bell 1960:60).

Figure 6-1. Prehistoric Lithics from 34PS168
A) Biface Fragment; B) Retouched Flake; C) Tip Fragment; D) Base Fragment; and E) Base Fragment

6.1.2 Analytical Methods: Historic Artifact Assemblages

Historic artifacts were cataloged according to the system of artifact-function association modified from South (1977). Since most if not all archaeologists initially classify artifacts with this functional system, results are comparable from state to state and region to region. All artifacts were assigned to the functional groups (*e.g.*, kitchen, architecture), then to a material class (*e.g.*, ceramic, glass, metal), then to a type (*e.g.*, base of bottle, jar lip), and then to a subtype (*e.g.*, color, decoration type). In the following discussion, each of the major categories of historic artifacts is defined. **Table 6-2** shows the proportions of these various groups or artifact classes recovered from sites 34PS166 and 34PS554.

Table 6-2. Historic Artifacts from 34PS166 and 34PS554

Functional Group	34PS166	34PS554	Total
Kitchen	30	60	90
Architectural		34	34
Other		24	24
Personal	3	8	11
Transportation	2	2	4
Job/Activity		1	1

Kitchen Group

This group consists of artifacts used in the preparation, consumption, and/or storage of foods and beverages. For the most part, this group comprises container glass and ceramics. As most of these are manufactured, there is significant variation in decorative style and manufacturing techniques over time. This chronological variation forms the basis for the assignment of individual sites to historic time periods. **Table 6-3** presents the kitchen group artifacts.

Table 6-3. Kitchen Group Artifacts

Class	Type	34PS166	34PS544	Total
Ceramic	Ironstone, White	2	20	23
Ceramic	Whiteware		3	3
Ceramic	Stonewere, Domestic	2		2
Ceramic	Porcelain		1	1
Glass	Bottle/Jar	28		28
Glass	Jar, Canning	21	3	24
Glass	Bottle	2	1	3
Glass	Table Glass, Tumbler		3	3
Glass	Table Glass, Hollowware	2		2
Metal	Jar Lid		1	1

Ceramics

Domestic ceramics are one of the most important chronologically diagnostic artifact categories from archaeological sites. In addition, these materials offer important clues to functional and social status variation among sites and cultural or ethnic components. Typically, ceramics are divided into two major groups: refined and unrefined earthenware. Refined earthenware was primarily used as serving vessels, such as dinner and tea services, or toiletry items. Refined wares treated here included porcelain, creamware, pearlware, whiteware, and ironstone. Unrefined earthenware was used for storage and food preparation, such as mixing bowls, churns, and milk pans. Unrefined wares treated here included redware, stoneware, and yellowware.

Ironstone, White

Ironstone refers to a semi-vitreous white-paste ware that contains china stone (petunse). Charles Mason began producing “Mason's Ironstone China” in England in 1813. Mason claimed his ware contained iron

slag. English ironstone began appearing on American sites during the 1840s. These heavy-bodied vessels often were decorated to imitate Chinese porcelain. After 1850, ironstone predominantly was undecorated, or was decorated with molded geometric, floral, or foliate motifs. American manufacturers began making refined, white-paste wares, including ironstone, during the Civil War. Two varieties of ironstone from the mid-to-late nineteenth century are now recognized: blue-bodied and white-bodied. Blue-bodied ironstone was manufactured by British, and perhaps, by American firms. White-bodied ironstone was made by both British and American firms, but primarily by British ones. The period of greatest popularity of embossed ironstone was 1840 to 1907 (Majewski and O'Brien 1987:20-21). The difficulties of assigning fragmentary ceramics to either whiteware or ironstone can result in an under-enumeration of ironstone and an over-enumeration of whiteware.

A total of 23 ironstone sherds were recovered from sites 34PS166 and 34PS554 (see **Table 6-2**). Three came from 34PS166 and 20 from 34PS554. All but two sherds, one from each site, are undecorated. Of these undecorated sherds, three are plate fragments, two are cup fragments (*e.g.* **Figure 6-2** A), one is from a saucer, and 15 are from unidentifiable vessels. The remaining decorated sherds include a base fragment with a faded decal from an unidentified vessel, and a tea cup rim fragment with an underglazed blue transfer print.

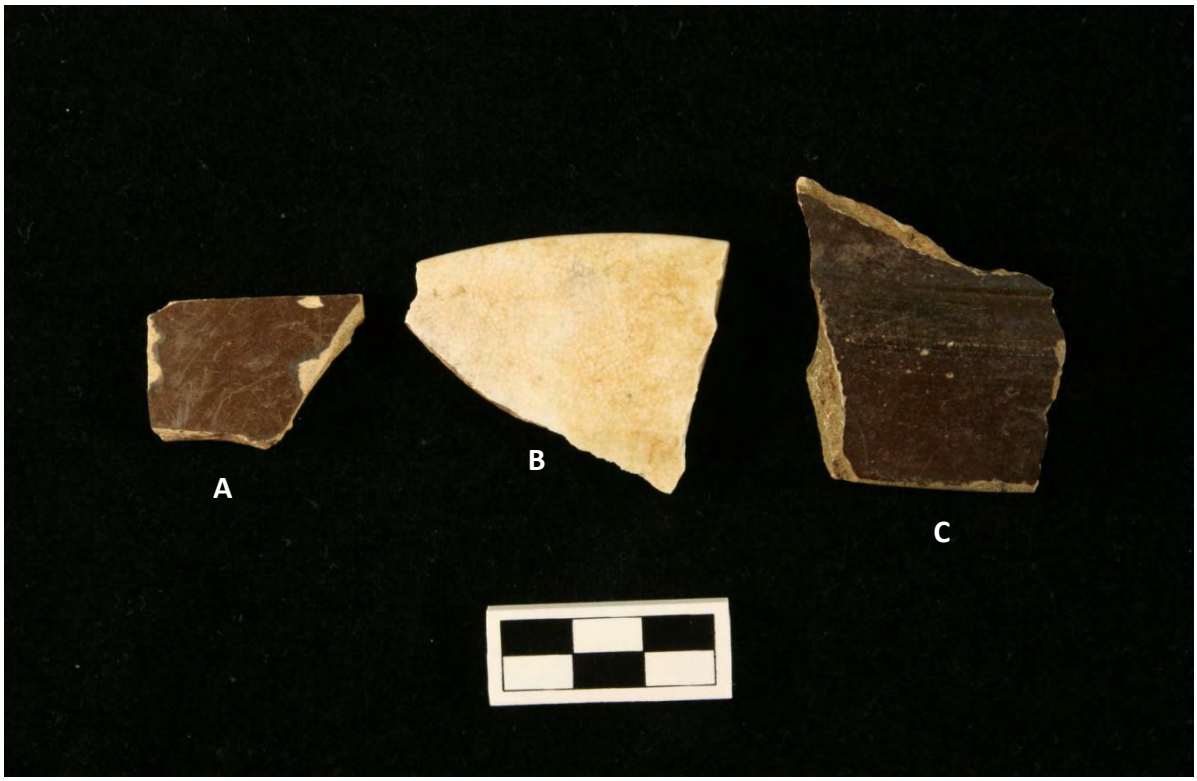

Figure 6-2 . Selected Kitchen Group Ceramic Artifact Examples
A) Domestic Stoneware, Body, Unidentified Hollowware, Albany Slipped; B) Ironstone Tea Cup Rim; c) Domestic Stoneware Churn, Rim, Albany Slipped

Whiteware

Whitewares are non-vitreous and semi-vitreous, white-paste earthenwares usually having a clear, colorless glaze. Whitewares were first manufactured in England circa 1800, had become popular by 1820, remained common throughout the 1800s, and are still being manufactured today. The period of greatest popularity

of whiteware was 1830 to 1890 (Majewski and O'Brien 1987:119-125; Miller 1980:16-17; Noel-Hume 1969:130-131; Price 1982). Whiteware occurs in virtually every decorative type that was available in the nineteenth century, and decoration type and style can be used as relative temporal indicators.

Only three sherds of whiteware were recovered from site 34PS554 (see **Table 6-2**). One shard is from the rim of a plate with floral hand painting. The other two sherds are each the body and a base fragment from an undecorated and unidentified vessel.

Stoneware

Stonewares are semi-vitreous wares, usually glazed, which were made in a great variety of thick, utilitarian forms. Stoneware paste ranges in color from red to buff to brown, and can turn grey during firing. Stoneware is primarily categorized by exterior surface treatment, the most common category of which is salt glazed. Stonewares were made in Europe by the seventeenth century, in England by the eighteenth century, and were in abundance in the United States, including Kentucky, by the mid-nineteenth century. In fact, stoneware effectively replaced redware as the utilitarian vessel type of choice. Consequently, the proportion of redware as compared to stoneware may be a general temporal indicator.

Due to the abundance of domestic stoneware manufacturers and the difficulty in attributing vessels to a particular manufacturer, stoneware is considered a poor chronological indicator on nineteenth century sites. However, two common slips used as glazes, Bristol and Albany, are useful for dating purposes. Albany slip ranges in color from light brown to black, and was ubiquitous in the Midwest from 1830 to 1900 (Phillippe 1990:80). Bristol slip is white and was introduced into the United States by the 1880s, frequently in combination with Albany slip until about 1920. Blue Bristol generally dates from 1915 on. After 1920, Bristol slip generally occurred alone (Lebo 1987:132).

Two stoneware sherds were recovered from site 34PS166 (see **Table 6-2**). One sherd is from a churn (*e.g.* **Figure 6-2**C) and the other is a body fragment from an unidentifiable vessel (*e.g.* **Figure 6-2** A). The surface treatment for both sherds consisted of a salt glazed exterior with Albany slipped interior.

Porcelain

Porcelains are vitreous white-paste, usually glazed, wares of a variety of compositions. Porcelain was a very expensive ware until the late nineteenth century and therefore is typically rare on sites. Moreover, porcelain on nineteenth century sites can include pieces made in North America, Great Britain, continental Europe, China, and Japan. Porcelains are divided into two basic types, hard paste and soft paste, with several varieties of each paste type. The difference between these is body composition and firing temperature. Hard paste porcelains are composed of kaolin and feldspathic clays and are fired at a high temperature. Chinese export porcelain is a hard paste variety that can be readily distinguished from European and Japanese hard pastes. The major period of Chinese export trade to America was circa 1784 - 1820 and declined sharply after 1830 (Palmer 1983:25). Painted underglaze wares were exported from England until 1840 and painted overglaze enamels were exported into the 1820s (Palmer 1983:16). Bone china is a type of soft paste porcelain that has been continuously produced since 1794. This ware is composed of feldspathic clays and calcined cattle bone fired at a lower temperature than hard paste porcelains. It appears with many decorative preparations, including underglaze blue painted, overglaze polychrome painted, gilding, transfer printing, luster, and decals. Because of the long history of manufacture, porcelain has limited potential as a temporal indicator (Majewski and O'Brien 1987:124-127).

Only one porcelain sherd was recovered from site 34PS554 (see **Table 6-2**). It is the base of a saucer with a faded floral decal still visible.

Glass

Container glass, like ceramic sherds, constitutes one of the most important components of a historic assemblage. Like domestic ceramics, these artifacts convey significant chronological, functional, and social information. Analysis offers an important source of data about the period of occupation of the site, the kinds of activities undertaken there, and potentially the social or ethnic status of the occupants. Studies of bottle glass have isolated the significant chronological characteristics of these vessels. Jars and other glass containers are discussed in a separate section.

Bottle/Jar Glass

European and American bottles were free blown and shaped to the vessel form, or were blown into simple dip molds. Dip molds are single component iron or wooden molds that give the body of the vessel its shape. These molds can only be square or cylindrical with the basal area being smaller or the same width as the shoulder area. Dip molds continued to be used as late as 1860 (Deiss 1981:12-18). Multipart molds having dip molded bodies (Rickett's molds) were produced into the 1920s (Jones and Sullivan 1985). To finish the neck of these early bottles, a glass-tipped rod (pontil) was attached to the bottle base to provide a means of holding it. Early types of finishing included fire-polished, flanged, folded, and applied string. All of these finishes persisted until the 1840s-1870s, when they were replaced by improved methods (Deiss 1981:18-24; Jones and Sullivan 1985; Jones 1971).

English bottle manufacturers used simple two-piece molds to make proprietary medicine bottles since the mid-1700s, and by 1800, American bottle makers were also using two-piece molds. These molds were hinged at the base or shoulder and may be referred to as open and shut molds. Bottles could be shaped in any form, such as square, round, or multi-sided. Consequently, polygonal bottle forms were very popular in the mid-nineteenth century (Deiss 1981:62). These molds enabled embossed lettering to be put on the fronts, backs, sides, and shoulders of the bottles (Jones and Sullivan 1985) and Gothic-style lettering was the most common style used until circa 1850 (Deiss 1981:48-49). Liquor flasks made in two-piece molds were introduced circa 1810 and were very popular by 1830. Embellished with a wide variety of molded or pictorial images, flasks remained popular until after the mid-1800s (Deiss 1981:62-65). Removable plates or panels that could be inserted into the mold were patented in 1867 (Jones and Sullivan 1985). These panels or plates were often embossed with the manufacturer name, product name, and city of manufacture, and could be used to personalize large shipments of bottles. This became popularly used on pharmaceutical and bitters bottles.

Two-piece molds were eventually eclipsed by multipart open and shut molds by 1850. These molds are similar to two-piece molds, but have a separate base plate. During the period 1840 to 1860, the two-piece and multi-part open and shut molds were the most popular mold types (Jones and Sullivan 1985). Vessel finishes (lip and necks) could still be hand formed by applying additional glass to the vessel and hand shaping a lip. By the 1820s, lipping shears were being used to shape the inside of the bottle, producing a standardized form known as an applied-tooled finish, which was most common from about 1840 to 1870.

Open and shut molds, dip molds, and multipart dip molds were all popularly used molds during the nineteenth century. Another mold, the turn-mold or turn-paste mold was developed and used in France on wine bottles as early as 1860 (Jones and Sullivan 1985). This mold type leaves no mold seams. In America,

this mold type was most frequently used for wine and other beverages from 1870 to the 1920s (Jones and Sullivan 1985).

Even though molds are the most often used method to establish the manufacturing date of glass vessels, changes in the glass formula and innovations in overall glass vessel manufacture can aid in establishing chronology. For example, although the soda-lime formula was in use to make moderately clear glass for many centuries, a modified form of the soda-lime formula was developed in 1864 that revolutionized the glass industry in that it was less brittle and could be molded, cut, and engraved easily (Jones and Sullivan 1985). Because of this new formula, decorated and highly colored glass became cheaper and easier to produce, allowing it to be affordable and subsequently popular after the 1870s (Jones and Sullivan 1985; Innes 1976). By 1880, manganese oxide was used in molten glass as a decolorizer. Glass containers made with manganese oxide turn purple or amethyst when exposed to sunlight. Selenium began replacing manganese oxide as a decolorizer by 1915, and the replacement was complete by 1918 (Deiss 1981:78-83). Selenium glass when exposed to ultraviolet rays becomes a straw yellow color.

Another turning point in the glass industry occurred between 1850 and 1860, with the development of a device called the snap case. This implement held the vessel while the neck and lip were finished. No longer was a pontil rod attached to the base of a glass vessel. Other innovations occurred to revolutionize glass production. By the 1870s, finishes incorporated in the mold had become common. This type, involving the reheating and tooling of the finish to eradicate mold seams on the lip, is referred to as the improved-tooled finish. Improvements in annealing ovens also helped to totally fuse the lip to the neck. Bottle lips were no longer distinctly separate bits of glass. Molds with incorporated finishes predominated until the early twentieth century, when automated glass vessel manufacture replaced less efficient processes (Deiss 1981:54-59).

By circa 1884 to 1892, semi-automatic manufacture of wide and small mouth containers was possible. The only difference between semi-automatic manufacture and automatic manufacture is the way that the melted glass is passed to the machine. In semi-automatic manufacture, the glass is introduced by laborers and in automatic manufacture; the glass is introduced mechanically to the machine. It was not until the perfection of the Owen's machine in 1903 that fully automatic bottle manufacture was possible. This machine leaves a distinct mark on the base of the vessel. By 1917, 50 percent of glass containers were made using this machine (Miller and Sullivan 1984). Vessels made using the Owen's machine are not found in archaeological contexts after 1970 (Miller and Sullivan 1984). Also, during the late nineteenth and early twentieth century, semi-automatic machines continued to be used and modified for automatic manufacture through the development of glass feeding devices like the Peeler Paddle Gob Feeder (Miller and Sullivan 1984). Vessels made by semi-automatic machines are indistinguishable from vessels made on other machines (except the Owen's machine). The precision of automatic manufacturing enabled the standardization of continuous thread finishes, and screw caps replaced other forms of nonpressurized sealing.

A total of 55 container glass fragments were recovered from sites 34PS166 and 34PS554 (see **Table 6-3**). There are twenty-four fragments of canning jars, 28 from unspecified bottles or jars, and 3 from bottles. Of particular interest among these fragments are three specimens that are readably dateable. One is an embossed [Perfect] Mason jar (**Figure 6-3** B) and dates from 1929 to 1954 (Toulouse 1971:403). Another fragment has Hazel Atlas marks with top number above 8223 and "A 2" below with a stippled base. It dates from 1940 to 1964 (Moir *et al*. 1987:274; Toulouse 1971:239). The last fragment is embossed with "Owens-IL" on the base and exhibits a valve mark and stippled pattern on base. It dates 1939-1945 (Busch

1983:196; Moir *et al*. 1987:274; Toulouse 1971:403). A total of 35 were machine made. Three are of amber glass, 1 is aqua, three are blue, and 25 are clear. Three canning jar lid liners made of opaque-white were also recovered. Two are embossed, one with "…L…" and the other with "…NUTI…" The remaining 21 bottle glass fragments are of an unidentified manufacture technique. Two of these are amber, one aqua, one blue-green, and sixteen clear. The last fragment is of solarized "Amethyst" glass. Munsey (1970:55) assigns the beginning manufacture of solarized glass at about 1880 and lasting until about 1918. And lastly, three glass fragments are from bottles. One fragment is a base with an Owens suction scar and "ILLINOIS" embossed on it and dates from 1929 to 1954 (Toulouse 1971:403). Another fragment is from the lip/neck part of a bottle. It has an oil style finish with a cork closure exhibiting a fuses lip created with an improved tool (**Figure 6-3** E). It dates from the 1870s to 1915 (Davis 1949:154-155; Fike 1987:3).

Figure 6-3. Selected Glass Artifacts
A) Aqua Colored Patent Medicine Machine Made Bottle Neck/Lip; B) Clear Colored Machine Made Canning Jar Body; C) Cobalt Machine Made Canning Jar Body; D) Opaque-White Machine Made Cream Jar Body; and E) Aqua Bottle with Fused Finished and Improved Tooled

Table Glass

The manufacture of glass tableware is a somewhat problematic process. In many cases, discerning the manufacture type is not helpful in answering questions concerning chronology. Processes used to make tableware were used over long periods of time. These processes include free blowing, press molding, optic molding, and pattern molding. Most of these methods are still used to lesser degrees today.

Free blowing is still used today to make tableware. Eighteenth and nineteenth century glass was also formed by hand. Usually these pieces are distinctive to specific glass houses and their age can be determined if the manufacturing house can be ascertained. For instance, table glass produced at the Stiegel glass house had a distinctive smoky color and specific stylistic motifs were patented and developed by glass houses for their use.

Although the process of press molding glass had been used to make door knobs and stemware feet, by the late 1820s, press molding hollowware became possible. Pressed glass made in the first few decades of the nineteenth century was often decorated with relief motifs, including classical busts, and a finely stippled or mat background that hid defects in the glass and mold seams. These highly decorated pieces, usually made using leaded glass, reflected light and were aptly referred to as "lacy glass". By the 1850s, improvements in manufacturing eliminated the need to hide defects. By the 1870s, the popularity of pressed glass increased as white, multi-colored, and other new shades of glass became affordable due to improvements in the glass formula (Deiss 1981:71-76; Davis 1949; Innes 1976; McKearin and McKearin 1948). The new glass formula resembled leaded formulas and was used extensively in press-molding after the 1870s. Consequently, press molded, leaded tableware is uncommon on American sites after 1870 (McKearin and McKearin 1948:395).

More elaborate combinations of decoration types and color became popular in press molded table glass after 1870 (Innes 1976). Carnival glass, for example, often given away as prizes at carnivals and fairs, was made by coating pressed glass with metallic paint to simulate more-expensive wares. Carnival glass was produced from the late 1890s to the 1930s (Deiss 1981:86).

Optic molding was used to make tableware during the eighteenth century. Optic molding, never a popular form of manufacture, was eclipsed by press molding early in the nineteenth century. By the late nineteenth century, optic molding had resurgence in popularity. This molding type was used predominantly for tableware, specifically tumblers. It is a distinctive molding style involving a two-stage process. The vessel is formed by blowing glass into a part-size mold. This gives the vessel a rudimentary shape and decoration on the interior of the vessel. The vessel is then placed in another mold that provides the final shape to the vessel. This type of molding is easy to identify as the interior of the vessel will often have a totally different decoration than the exterior of the vessel.

The process of pattern molding has been used for several centuries but was most popular in the late eighteenth and early to mid-nineteenth centuries (Jones and Sullivan 1985). This method involves two stages. Glass is blown into a mold that imparts the rudimentary shape and decoration to the vessel. Usually the decorations are simple ribs, panels, and stars. The partially blown vessel is then removed from the mold and its final shape is free blown. The enlargement of the vessel causes the decorations to become very diffuse.

Although these methods of manufacture alone are not useful in determining chronology, decorative style can be used to temporally place a vessel. Decorative styles changed over time in table glass. For example, after 1870 naturalistic designs featuring animals and flowers became popular, eclipsing the geometric motifs of the earlier part of the nineteenth century (Innes 1976).

A total of five fragments of table glass were recovered (see **Table 6-3**). One is a fragment of a tumbler made of cobalt blue and two fragments are made from solarized "Amethyst" glass. Munsey (1970:55) assigns the beginning manufacture of solarized glass at about 1880 and lasting until about 1918. The remaining two fragments are of an unknown manufacturing technique.

Architecture Group

Artifacts assigned to this group include all items associated with construction and hardware furnishings. The major categories of this group are described below. A total of thirty-four architectural artifacts were recovered, all from 34PS554. **Table 6-4** shows all architectural artifacts recovered.

Table 6-4. Architectural Group Artifacts

Class	Type	Subtype1	Subtype2	Subtype3	Color	34PS166	34PS544	Total
Glass	Flat				Aqua		2	2
Glass	Flat				Clear		22	22
Metal	Nail	Wire	5d				1	1
Metal	Nail	Wire	6d	Unaltered			1	1
Metal	Nail	Wire	7d	Unaltered			1	1
Metal	Nail	Wire	8d	Clinched			1	1
Metal	Nail	Wire	8d	Pulled			1	1
Metal	Nail	Wire	8d	Unaltered			1	1
Metal	Nail	Wire	9d	Unaltered			1	1
Metal	Nail	Wire	12d	Unaltered			1	1
Metal	Nail	Wire	Roofing	Unaltered			1	1
Other	Shingle	Asphalt					1	1

Flat Glass

Flat glass is presumed to have been used in window panes if no other function can be determined, such as for mirrors, table tops, picture frames, etc. Flat glass comprises an important, chronologically sensitive artifact. During the eighteenth century, flat glass appropriate for windows was cut from a large disk of glass, which was then cut into panes. By the early nineteenth century, glass manufacturers produced broad glass, which may be distinguished by a slight thickening toward the plate margin, one surface slightly more opaque than the other, and bubbles in the glass usually distorted in straight lines. In the late nineteenth century, machine-made glass, characterized by a uniform thickness, with occasional wavy lines of bubbles, was widely produced. In the early twentieth century, production of sheet pane glass eclipsed other manufacturing processes.

A total number of 24 shards of flat glass were recovered from 34PS554 (see **Table 6-4**).

Nails

Like ceramics and glass, nails form one of the most widespread categories of artifacts recovered from historic sites. As with many other materials, increasing industrialization has had a major impact on the manufacturing of nails and associated hardware. Archaeologists have devoted considerable attention to nails in order to identify their chronologically significant characteristics (Nelson 1968). These are identified by manufacturing process (wrought, cut, wire) and, when possible, their size.

Wire nails are made by cutting hardened steel wire and are round in cross-section. Wire nails were first produced in the 1850s, but were not commonly used until the 1880s. These are the dominant type manufactured today (Nelson 1968).

All the nails recovered from site 34PS554 were wire nails. Nine were wire nails and one was a roofing nail (see **Table 6-4**).

Other Building Materials

The other building materials category includes items made of various materials, including mortar, plaster, roofing materials, building stone, etc.

One piece of asphalt shingle was recovered from 34PS554.

Other Group Artifact

This category includes all materials that are not readily assignable to a major group or that are unidentifiable. Items in this category include, for example, unidentified rusted metal artifacts and fragments of synthetic materials such as plastic, etc. **Table 6-5** shows all other group artifacts recovered.

Table 6-5. Other Group Artifacts.

Class	Type	Subtype1	Subtype2	Subtype3	Color	34PS166	34PS554	Total
Glass	Unidentified				Aqua		2	2
Glass	Unidentified				Clear		3	3
Metal	Electrical	Flat	Copper				1	1
Metal	Fastener	Rivet	Coppery Alloy				1	1
Metal	Unidentified	Wire					2	2
Metal	Unidentified						1	1
Metal	Unidentified		Iron				5	5
Metal	Unidentified	Flat	Iron				7	7
Metal	Seam		Iron				2	2

A total of 24 other group artifacts were recovered, all from 34PS554 (see **Table 6-5**). Five were unidentified glass shards, one a flat copper electrical conductor, a copper alloy rivet fastener, two pieces of a potential seam from a can, two pieces of twisted round wire, seven fragments of a possible can, and six unidentified metal fragments.

Transportation Group Artifacts

Artifacts assigned to this category include those associated with any form of wheeled transport, and those associated with horse, mule, or ox harnessing and shoeing (Light 2000). **Table 6-6** shows all transportation group artifacts recovered.

Table 6-6. Transportation Group Artifacts.

Class	Type	Subtype1	Subtype2	Subtype3	Color	34PS166	34PS544	Total
Metal	Hood Ornament	Lead Alloy	Lady with Wings			1		1
Metal	Horse Shoe	Iron				1		1
Glass	Automotive	Window			Clear		2	2

Four transportation related artifacts were recovered (see **Table 6-6**). One is a badly decomposed metal hood ornament (**Figure 6-4)**. It may possibly be from a 1928 Chrysler. Another is an iron horse shoe (**Figure 6-5**). The remaining two items are thick, clear, automotive window glass.

Figure 6-4. Transportation Group Artifacts, Automotive Hood Ornament

Figure 6-5. Transportation Group Artifacts, Horse Shoe

Personal Group

This category includes objects typically reserved for one person's exclusive use, which often could be carried in a pocket or purse, such as smoking pipes, eyeglasses, clasp knives, gaming pieces, toys, jewelry, combs and brushes, coins, etc. (Bradley 2000). **Table 6-7** shows all personal group artifacts recovered.

Table 6-7. Personal Group Artifacts.

Class	Type	Subtype1	Subtype2	Subtype3	Color	34PS166	34PS544	Total
Ceramic	Container	Base	Flower Pot	Embossed/ Painted	Blue		1	1
Ceramic	Container	Body	Flower Pot	Undecorated			1	1
Glass	Bottle, Patent Medicine	Base	Machine Made		Aqua		1	1
Glass	Bottle, Patent Medicine	Body	Machine Made		Aqua		3	3
Glass	Bottle, Patent Medicine	Lip/Neck	Machine Made		Aqua	1		1
Glass	Bottle, Patent Medicine	Lip/Neck	Machine Made		Solarized		1	1
Glass	Jar	Lip/Neck	Machine Made		Cobalt Blue	1		1
Glass	Jar, Cream	Base/Body	Machine Made		Opaque-White	1		1
Glass	Jar, Cream	Body	Machine Made		Opaque-White		1	1

A total of eleven personal group artifacts were recovered (see **Table 6-7**). Two were flower pot fragments, one base fragment with decorative embossing and painted blue, and the other was an undecorated body fragment. Six pieces of two patent medicine bottles were recovered. One bottle is in 4 aqua colored fragments and embossed with "…WATER/…SON'S". The other bottle fragment is part of the lip/neck and is solarized. Munsey (1970:55) assigns the beginning manufacture of solarized glass at about 1880 and lasting until about 1918. Three pieces of an opaque-white cream jar were recovered (*e.g.* **Figure 6-3** D) and a single lip/neck fragment of a cobalt blue jar (**Figure 6-3** C).

6.2 Conclusion

A number of prehistoric and historic artifacts were recovered from the five archaeological sites. The artifacts varied in date from the Late Archaic to the early-to-mid twentieth century.

Section 7
Results

In this section, the results for the Phase I full coverage pedestrian archaeological survey are presented. Each finding is described, analyzed, and recommendations for National Register eligibility are given.

7.1 Results

Three previously documented sites (34PS166, 34PS167, and 34PS168), and two newly discovered sites (34PS553 and 34PS554), were located during the Phase I full coverage pedestrian archaeological survey. Their locations are shown in **Figure 7-1** and **Figure 7-2**. Each of these five sites are described and interpreted in this section.

7.1.1 Site 34PS166

As stated in Section 4, site 34PS166 is a Late Archaic site identified by Perino and Caffey (1980a:100) during their shoreline survey of Eufaula Lake. The site was documented by them as lying on a low sandy hill extending into the lake from a point of land. Artifacts recovered by them included one broken mortar and they observed three groups of burned rock. The site was heavily eroded and not recommended for further study.

Location and description

Site 34PS166 is located on the 1971 USGS Longtown, Oklahoma, 7.5' Quadrangle in **Figure 7-3** and shown atop an aerial photograph in Figure 7-4. The UTM coordinates (Zone 15 NAD 27) for the center of the site are [redacted], [redacted]. It is also located in the [redacted]. The site is located at 597 feet above mean sea level and is situated about [redacted] (**Figure 7-5**). The site measures 1.6 acres and is located [redacted]. Vegetation within the site area is wooded. Figure 7-6 shows the site area.

The location of the site was confirmed on May 4th, 2012, and systematic shovel turns and surface collection were conducted on May 5th, 2012. The weather for both of these days was sunny and humid with lows of 72 degrees F and 66.9 degrees F and highs of 84.9 degrees F and 88 degrees F respectively (see **Table 5-2**).

Stratigraphy

A total of 86 shovel turns at fifteen meter intervals were conducted across the area of site 34PS166. No cultural material was recovered from any of these shovel turns. Additionally, no subsurface cultural features were encountered.

There is no stratigraphy remaining at Site 34PS166. All artifacts were recovered from the ground surface or from the eroding shoreline of Eufaula Lake.

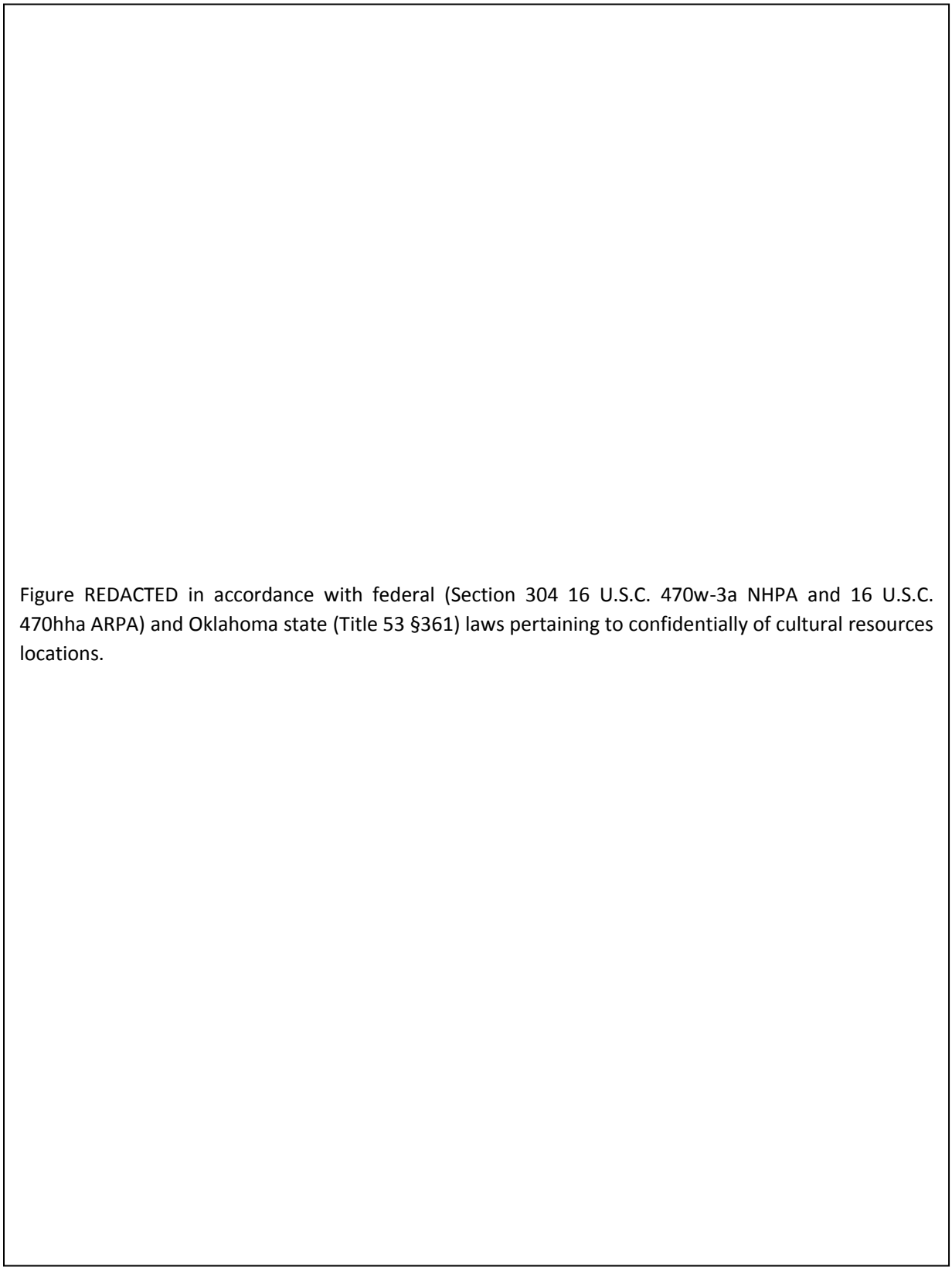

Figure 7-1. Location of Sites 34PS166, 34PS167, 34PS168, 34PS553, and 34PS554 on USGS Topographical Map

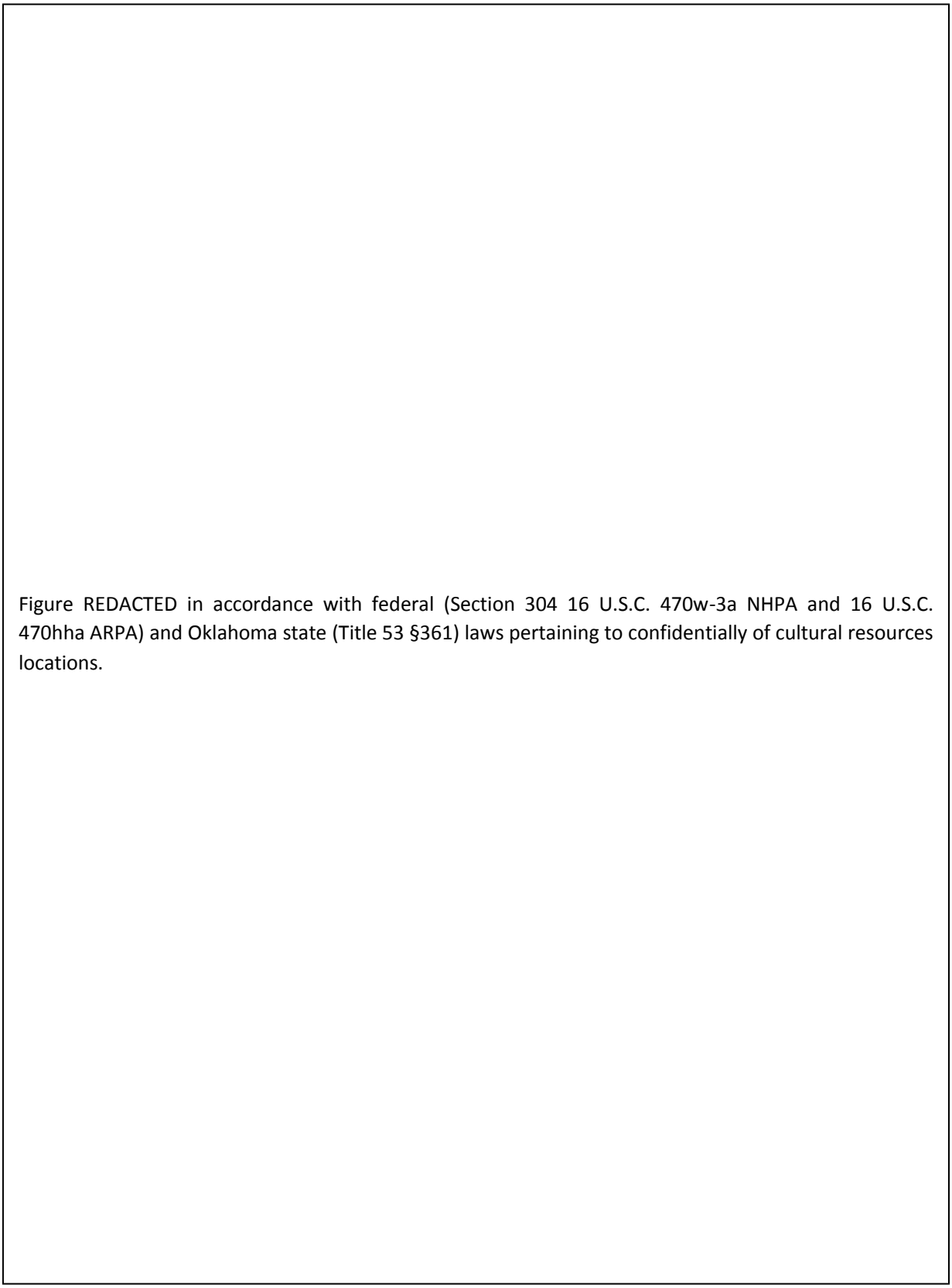

Figure 7-2. Location of Sites 34PS166, 34PS167, 34PS168, 34PS553 and 34PS554 on Aerial Photography

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-3. Location of Site 34PS166 and 34PS554 on USGS Topographical Map

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-4. Location of Site 34PS166 and 34PS554 on Aerial Photography

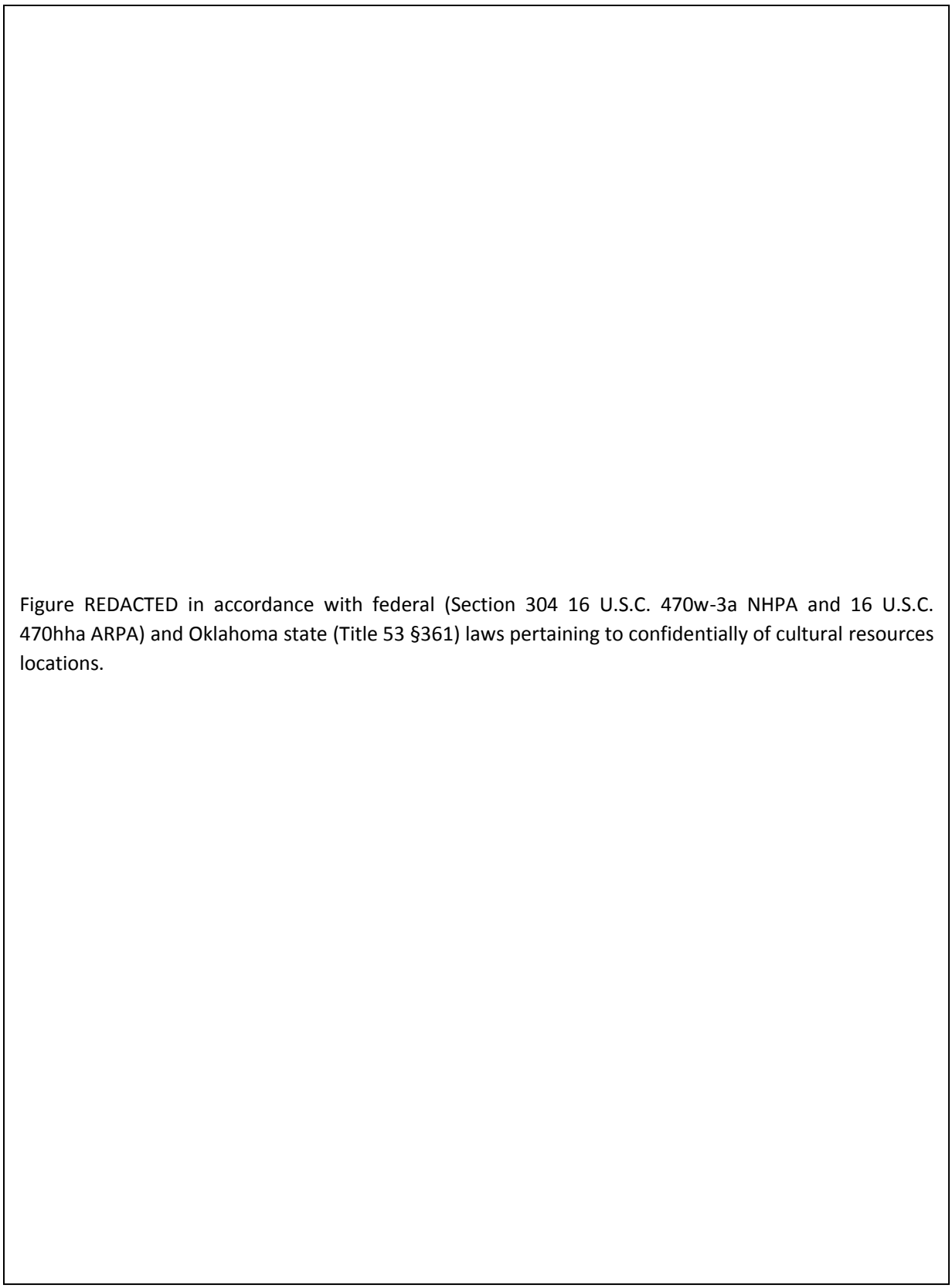

Figure 7-5. Site 34PS166 and 34PS554 field map

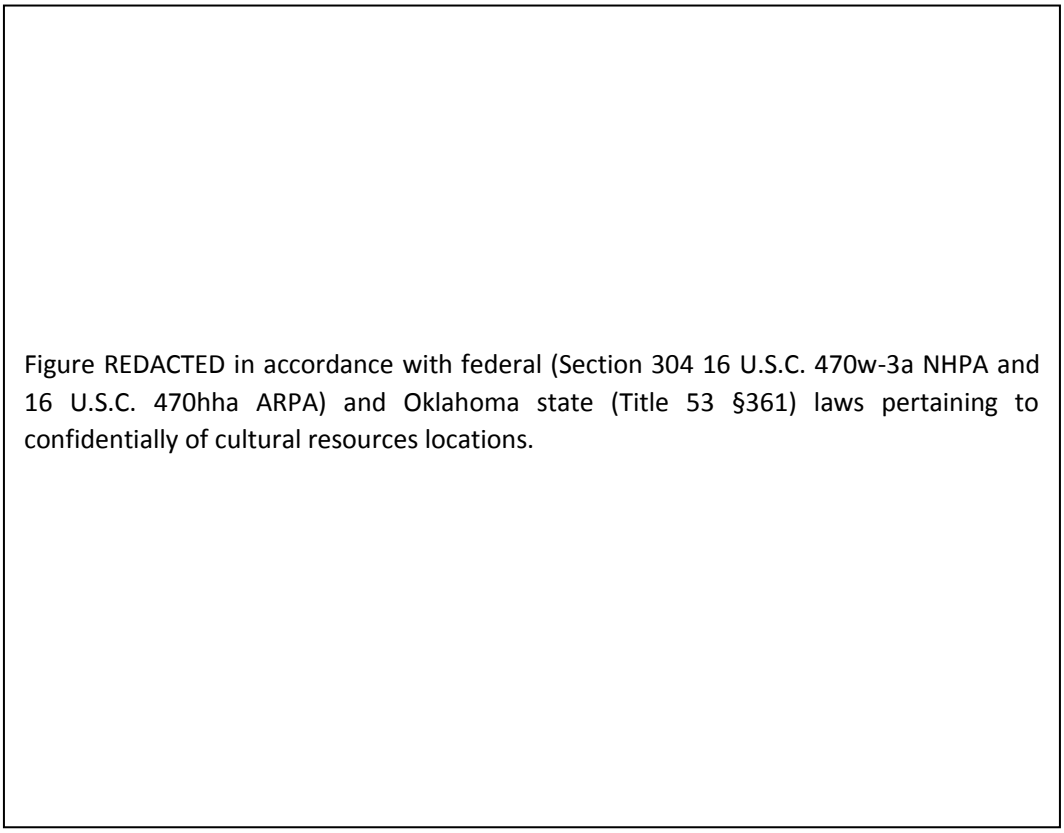

Figure 7-6. Field Conditions at Site 34PS166, showing Eroded Shoreline at Eufaula Lake

Features

A number of historic surface features were observed at the site. These include an abandoned roadbed (**Figure 7-7**), a rectangular outline of stones (Figure 7-8), a collection of sandstone gathered in a pile (**Figure 7-9**) and a possible chimney fall (**Figure 7-10**). Their location at site 34PS166 is shown in Figure 7-3 and Figure 7-4.

The abandoned roadbed is a single tract and runs east-west on the northern part of the site. It is not shown on any maps. It emerges from underwater on the eastern edge and continues to the west where it intersects with another single track road that is shown on the USGS Longtown quadrangle map (see Figure 7-3). The road most likely functioned as a farm access road.

The rectangular outline of sandstone is composed of what appears to be cut sandstone placed horizontally and diagonally in the ground to form a rectangular feature. At first glance the placements appeared to be header and footers for burials. But further investigation revealed additional stones under the forest duff and undergrowth that formed the rectangular pattern measuring 5 m by 3 m. These stones probably functioned as the foundation for a farm outbuilding.

Figure 7-7. Abandoned Roadbed Adjacent to Site 34PS166

Figure 7-8. Rectangular Arrangements of Sandstone Slabs at 34PS166

Figure 7-9. Sandstone Rock Pile at Site 34PS166

Figure 7-10. Possible Chimney Rubble at Site 34PS166

The pile of cut sandstone measured approximately 1 m by 3 m and was approximately 80 cm high. It probably represents field clearing activity where a nearby plot of land was cleared of the sandstone. Another possibility is that the pile represents building material, either collected for use in construction for structural elements like foundations, chimneys, or even walls. It may also be the result of demolition where the waste stones were placed in a pile as rubble.

A large pile of cut sandstone was observed on the surface in a semi-circular pattern with an irregular radius of approximately 1.5 m. It is possible that these stones were the location of a chimney. However, an investigation of the surrounding area did not reveal any additional structural features.

Artifact Analysis

A total of 35 artifacts were recovered from site 34PS166 (**Table 7-1**) and are described in Section 6. Most of the artifacts recovered were domestic in nature. This would tend to indicate that the site was an activity area associated with domestic kitchen activity. Additional artifacts associate with personal use such as medicine and cream jars also suggest that this area was used for domestic purposes. Lastly, the presence of two transportation related artifacts suggest that the area may also have been associated with transportation related activities such as stables or garages.

Table 7-1. Historic Artifacts Recovered from 34PS166

Group	Class	Type	Subtype 1	Subtype 2	Subtype 3	Surface
Kitchen	Ceramic	Ironstone, White	Rim	Plate	Undecorated	2
Kitchen	Ceramic	Ironstone, White	Rim	Tea cup	Underglazed Blue Transfer Print	1
Kitchen	Ceramic	Stoneware, Domestic	Body	Unidentified Hollowware	Albany Slipped	1
Kitchen	Ceramic	Stoneware, Domestic	Rim	Churn	Albany Slipped	1
Kitchen	Glass	Bottle	Base	Machine Made	Clear	1
Kitchen	Glass	Bottle	Lip/Neck	Fused Finish, Improved Tooled	Aqua	1
Kitchen	Glass	Jar, Canning	Base	Machine Made	Clear	4
Kitchen	Glass	Jar, Canning	Lid Insert	Machine Made	Opaque-White	1
Kitchen	Glass	Jar, Canning	Lip/Neck	Machine Made	Clear	11
Kitchen	Glass	Jar, Canning	Body	Machine Made	Blue	3
Kitchen	Glass	Jar, Canning	Body	Machine Made	Clear	2
Kitchen	Glass	Table Glass, Hollowware	Base or Rim	Machine Pressed	solarized	1
Kitchen	Glass	Table Glass, Hollowware	Body/Handle	Machine Pressed	Solarized	1
Personal	Glass	Bottle, Jar Patent Medicine	Lip/Neck	Machine Made	Aqua	1
Personal	Glass	Jar	Lip/Neck	Machine Made	Cobalt Blue	1
Personal	Glass	Jar, Cream	Base/Body	Machine Made	Opaque-White	1
Transportation	Metal	Automotive Hood Ornament	Lead	Lady With Wings		1
Transportation	Metal	Horse Shoe	Iron			1

Two additional artifacts/objects observed at the site but not collected include a gas stove (**Figure 7-11** and **Figure 7-12**) and a railroad tie with a spike embedded (**Figure 7-13**). The stove was manufactured by the United Stove Company of Ypsilanti, Michigan. Efforts to identify this particular stove, however, were not successful. It probably dates from the early to mid twentieth century prior to 1940. The railroad tie with the embedded spike probably functioned as an architectural and/or landscape element.

Figure 7-11. United Stove Company Gas Stove at Site 34PS166

Figure 7-12. Manufacture ID Tag on United Stove Company Gas Stove at Site 34PS166

Figure 7-13. Railroad Tie with Embedded Spike

Interpretation

Despite not recovering any prehistoric artifacts to collaborate the findings of Perino and Caffey (1980), the site remains identified as a small lithic scatter with burned rock possibly dating to the Late Archaic. However, a historic component has been added to the site definition. Analysis of the historic artifacts shows that the historic component dates from the early-to-mid twentieth century. The site was likely a domestic use consisting of a small household with associated outbuilding. The site was probably occupied up to and then abandoned during the creation and subsequent inundation of Eufaula Lake.

National Register Status

No buried deposits or stratigraphy remains at the site. As a result, the site has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D. Criteria A, B, and C do not apply. No further archaeological work is recommended for the site.

Recommendations

No further archaeological work is recommended for site 34PS166.

7.1.2 Site 34PS167

As discussed in Section 5, site 34PS167 is a Late Archaic site identified by Perino and Caffey (1980a:100) during their shoreline survey of Eufaula Lake. They located the site on a low sandy hill with large areas of burnt rock on the east face of the site. Artifacts recovered by them included a Marshall point made from an unidentified heat-treated chert, an elongated slab Mortar, and they observed large areas of burned rock. Although the site has been subjected to erosion, Perino and Caffey believed that the site area inland held research potential and warranted further study.

Location and Description

Site 34PS167 is located on the 1971 USGS Longtown, Oklahoma, 7.5' Quadrangle shown on **Figure 7-14** and shown on an aerial photograph in Figure 7-15. The UTM coordinates (Zone 15 NAD 27) for the center of the site are [redacted]. It is also located in the [redacted]. The site is located at 597 feet above mean sea level and is situated about [redacted] (**Figure 7-16**). The site measures one acre and is located [redacted] with large areas of burnt rock on the east face of the site. Vegetation within the site area is wooded. **Figure 7-17** and **Figure 7-18** show the site area.

The location of the site was confirmed on May 4th, 2012, and systematic shovel turns and surface collection were conducted on May 5, 2012. The weather for both of these days was sunny and humid with lows of 72 degrees F and 66.9 degrees F and highs of 84.9 degrees F and 88 degrees F respectively (see **Table 5-2**).

Stratigraphy

A total of 67 shovel turns at fifteen meter intervals were conducted across the area of site 34PS167. No cultural material was recovered from any of these shovel turns. Additionally, no cultural features were encountered.

There is no stratigraphy remaining at site 34PS167.

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-14. Location of Site 34PS167 on USGS Topographical Map

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-15. Location of Site 34PS167 on Aerial Photography

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-16. Site 34PS167 field map

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-17. Field Conditions at Site 34PS167

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-18. Field Conditions at Site 34PS167 Showing Eroded Shoreline

Features

Perino and Caffey reported that areas of burned rock were observed along the shoreline (1980a:100). During the resurvey of the site, areas of potentially burned rock clusters were also observed (*e.g.* **Figure 7-19**).

Figure 7-19. Potential Burned Rock at Site 34PS167

Artifact Analysis

A single prehistoric lithic artifact was recovered from site 34PS167 (**Table 7-2**) and is described in Section 6. It is an interior flake made from Woodford chert.

Table 7-2. Prehistoric Artifacts Recovered from 34PS167.

Type	Surface
Interior Flake	1

Interpretation

Shovel turns inland from the shoreline did not reveal any additional artifacts or cultural features and only one additional prehistoric lithic was observed along the eroding Eufaula Lake shoreline. Additionally, burned rock clusters are still present on the hard clay shoreline surface.

The site remains identified as a light lithic scatter dating from the Late Archaic cultural period.

National Register Status

Burned rocks are visible along the shoreline. However, no buried deposits were found. The site lacks stratigraphy. As a result, the site has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D. Criteria A, B, and C do not apply. No further archaeological work is recommended.

Recommendations

No further archaeological work is recommended for site 34PS167.

7.1.3 Site 34PS168

As discussed earlier in Section 5, site 34PS168 is a Late Archaic site identified by Perino and Caffey (1980a:100) during their shoreline survey of Eufaula Lake. The site was located by Perino and Caffey on a low sandy hill and point of land, having scattered burnt rock on the beach. Artifacts recovered by them included an early unnamed dart point made of Barren Fork chert, three flakes of Ogallala chert, one flake of novaculite, one flake of Alibates flint, and two flakes of Woodford chert. They also observed scattered burnt rock. Perino and Caffey did not recommended the site for further study due to heavy erosion.

Location and Description

Site 34PS168 is located on the 1971 USGS Longtown, Oklahoma, 7.5' Quadrangle shown on Figure 7-20 and shown on an aerial photograph in Figure 7-21. The UTM coordinates (Zone 15 NAD 27) for the center of the site are [redacted]. It is also located in the [redacted]. The site is located at 597 feet above mean sea level and is situated at [redacted] ([redacted]) (**Figure 7-22**). The site measures three acres and is located on a [redacted] with groups of burned rocks [redacted]. Vegetation within the site area is grass and trees. **Figure 7-23** and **Figure 7-24** show the site area.

The location of the site was confirmed on May 4th, 2012, and systematic shovel turns and surface collection were conducted on May 5th, 2012. The weather for both of these days was sunny and humid with lows of 72 degrees F and 66.9 degrees F and highs of 84.9 degrees F and 88 degrees F respectively (see **Table 5-2**).

Stratigraphy

A total of 31 shovel turns at fifteen meter intervals were conducted across the area of site 34PS168. No cultural material was recovered from any of these shovel turns. Additionally, no cultural features were encountered.

Because several diagnostic lithic artifacts were recovered from the eroding shoreline, three formal shovel test units (STP3, STP4, and STP5) were excavated to subsoil. STP3 and STP5 were excavated to subsoil at approximately 70 cm below surface but STP4 encountered a large rock at 17 cm below surface. The profile for STP5 is shown in Figure 7-25 and in a photograph in Figure 7-26. The stratigraphy for STP5 begins at the surface and extends to 11 cm and consists of a 10YR 4/2 dark grayish brown mottled with 10YR 4/3 brown silty sand. Below this is a 33 cm thick layer of 10YR 6/4 light yellowish brown mottled with 10YR 5/8 yellowish brown silty sand. Next is a 20 cm 10YR 5/8 yellowish brown mottled with 5YR 4/6 yellowish red silty sand with slight clayey texture. Following that layer is a 4 cm thick 5YR 4/6 yellowish red mottled with 7.5YR 5/6 strong brown sandy clay layer. At the base is a 2 cm thick 5YR 4/6 yellowish red mottled with 7.5YR 5/6 strong brown and 2.5Y 6/3 light yellowish brown sandy clay layer. No cultural material was

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-20. Location of Site 34PS168 on USGS Topographical Map

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-21. Location of Site 34PS168 on Aerial Photography

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-22. Site 34PS168 field map

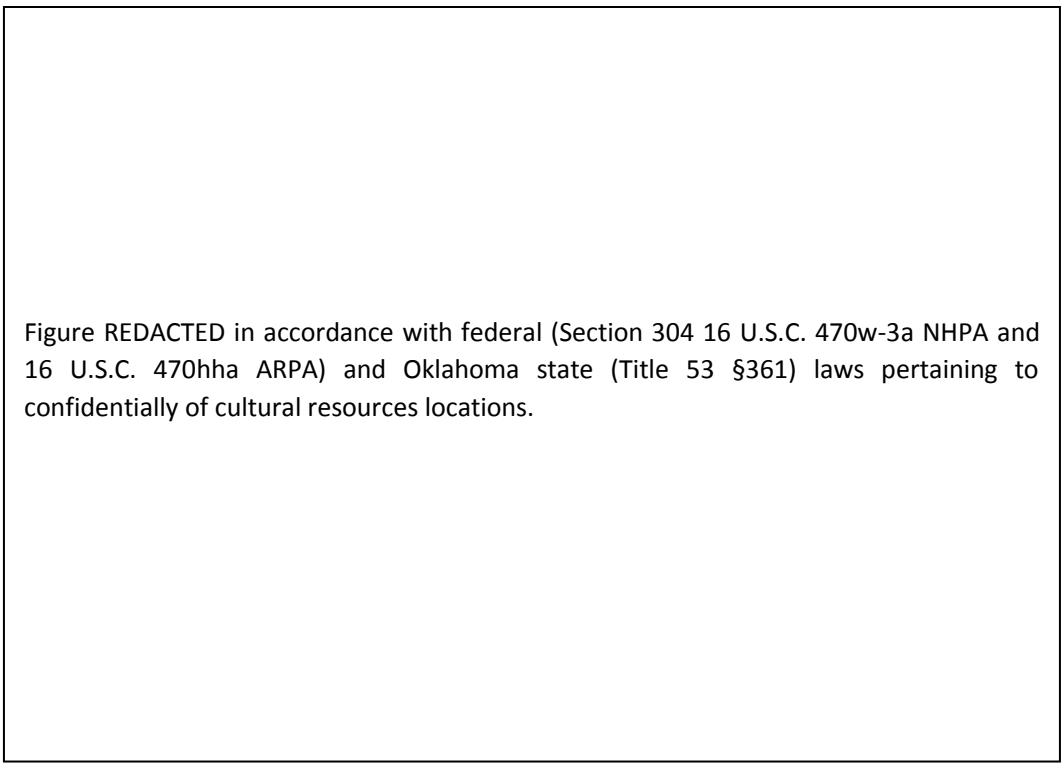

Figure 7-23. Field Conditions at Site 34PS168

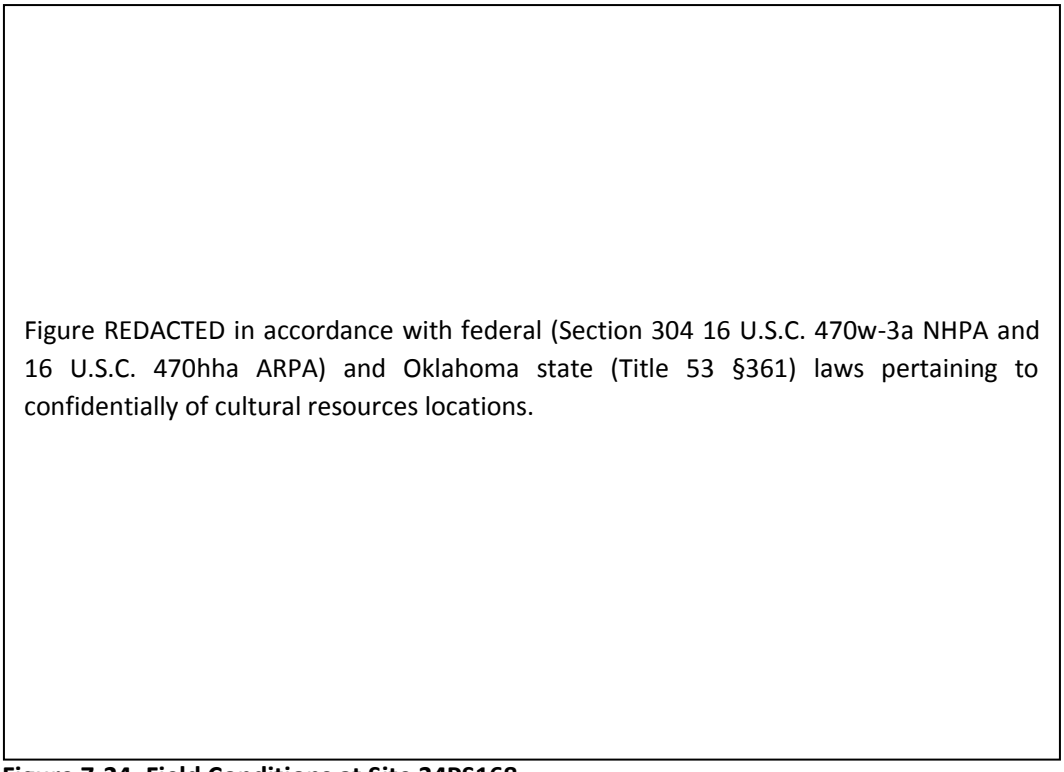

Figure 7-24. Field Conditions at Site 34PS168

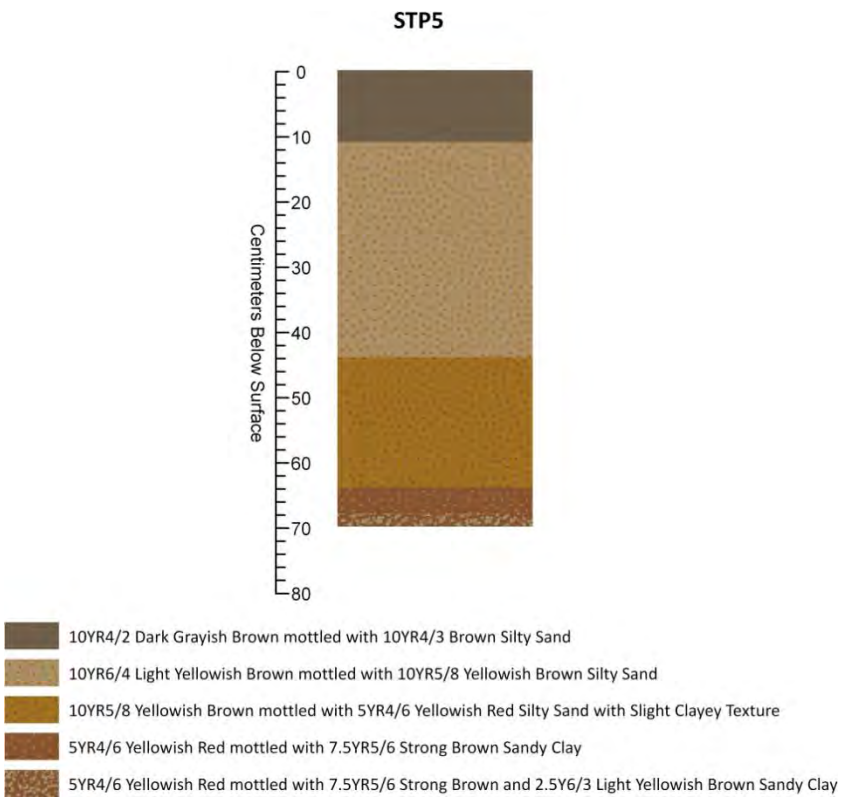

Figure 7-25. Stratigraphy of STP5 from Site 34PS168

Figure 7-26. Photograph of STP5 from Site 34PS168

Figure 7-27. Potential Burned Rock at Site 34PS168

recovered from these three formal shovel test units and no cultural features were encountered. These formal shovel test units showed that no cultural occupation layers remain at the site.

Features

Perino and Caffey reported that areas of burned rock were observed along the shoreline (1980a:100). During the resurvey of the site, areas of potentially burned rocks were also observed (*e.g.*Figure 7-27).

Artifact Analysis

A total of 149 prehistoric artifacts were recovered from site 34PS168 (**Table 7-3**). They are described in Section 6.

Table 7-3. Prehistoric Artifacts Recovered from 34PS168.

Tool/Debitage	Type	Surface
Tool	Base Fragment	2
Tool	Biface Fragment	1
Tool	Tip Fragment	1
Tool	Retouched Flake	1
Debitage	Undetermined	57
Debitage	Secondary Decordication	34
Debitage	Interior Flake	22
Debitage	Primary Decordication	8

Debitage	Tertiary Flakes	8
Debitage	Shatter	8
Debitage	Thinning Flakes	7

The tools consisted of two base fragments, one biface fragment, one tip fragment, and one retouched flake, all made from Woodford chert and showing no visible signs of being heat treated. The two base fragments possibly date from the Late Archaic cultural period (see **Figure 6-1**, D and E).

The debitage consisted of 57 undetermined flakes, 34 secondary decordication flakes, 22 interior flakes, eight primary decordication flakes, eight tertiary flakes, eight pieces of shatter, and seven thinning flakes. A total of 129 were made from Woodword chert, 14 made from Boone chert, four were made from Ogallala chert, and two were made from an unidentified chert.

Interpretation

Shovel turns inland from the shoreline did not reveal any additional artifacts or cultural features. A number of lithic artifacts including debitage and tools were observed along the eroding Eufaula Lake shoreline however. Two base fragments possibly date from the Late Archaic.

Site 34PS168 is a medium-density, prehistoric scatter possibly representing a Late Archaic occupation. It is difficult to draw conclusions of settlement activities and structure, however from so few artifacts.

National Register Status

No buried deposits or features other than the potentially burned rocks were found. As a result, the site has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D. Criteria A, B, and C do not apply. No further archaeological work is recommended for the site.

Recommendations

No further archaeological work is recommended for site 34PS168.

7.1.4 Site 34PS553

Location and Description

Site 34PS553 is located on the 1971 USGS Longtown, Oklahoma, 7.5' Quadrangle shown on **Figure 7-28** and shown on an aerial photograph in **Figure 7-29**. The UTM coordinates (Zone 15 NAD 27) for the center of the site are [redacted]. It is also located in the [redacted]. The site is located at 615 feet above mean sea level and is situated [redacted] (**Figure 7-30**). The site measures 0.2 acres and is located on [redacted]. Vegetation within the site area is trees. **Figure 7-31** and **Figure 7-32** show the site area.

The location of the site was identified on May 4th, 2012, and formal shovel probing was conducted on May 5th, 2012. The weather for both of these days was sunny and humid with lows of 72 degrees F and 66.9 degrees F and highs of 84.9 degrees F and 88 degrees F respectively (see **Table 5-2**).

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-28. Location of Site 34PS553 on USGS Topographical Map

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-29. Location of Site 34PS553 on Aerial Photography

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-30. Site 34PS553 field map

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-31. Field Conditions at Site 34PS553

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-32. Field Conditions at Site 34PS553

Stratigraphy

A total of 21 shovel turns at 15 meter intervals and 16 formal shovel test units at 7.5 m intervals were placed across the area of site 34PS553. The stratigraphy for the site is represented by STP1 R1 and shown in **Figure 7-33** and **Figure 7-34**. The stratigraphy consisted of a 10YR 3/2 dark brown loamy sand that extends from the surface to 5 cm below. The next layer is a 39 cm thick 7.5YR 4/6 strong brown sandy loam. The artifacts from the site were recovered from this layer. Below this is an 11 cm thick 5YR 5/8 yellowish red sandy loam, and at the base is a 7 cm thick 7.5YR 6/8 reddish yellow sand with decaying sandstone.

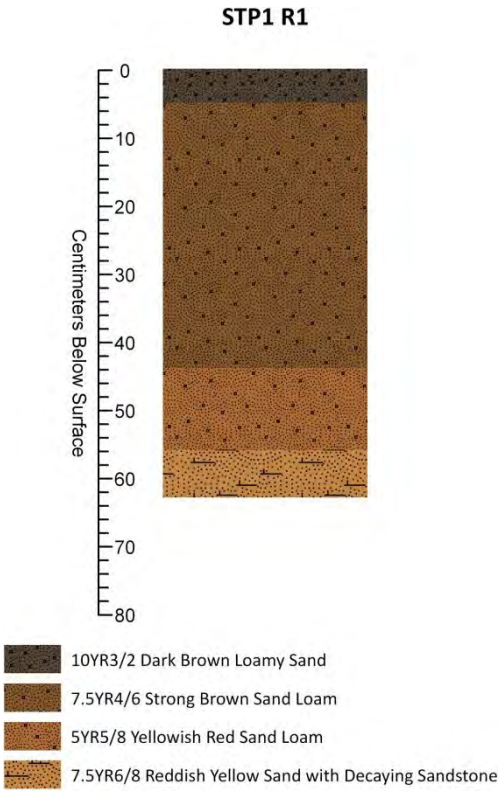

Figure 7-33. Stratigraphy of STP1 R1 from Site 34PS553

Figure 7-34. Stratigraphy of STP1 R1 from Site 34PS553

Features

No features were encountered at site 34PS553.

Artifact Analysis

A total of 15 prehistoric artifacts were recovered from 34PS553 (**Table 7-4**), which are described in Section 6. The artifacts consisted of one secondary decordication flake, 2 thinning flakes, and 8 undetermined flakes. Two of the artifacts were made from Ogallala chert and nine from Woodford chert. No tools or diagnostic artifacts were recovered.

Table 7-4. Prehistoric Artifacts recovered from 34PS553

Tool/Debitage	Type	STP1	STP1 R1	STP1 R5	STP1 R11
Debitage	Secondary Decordication		1		
Debitage	Thinning Flakes			2	
Debitage	Undetermined	1	3	3	1

Interpretation

Site 34PS553 is a low-density, prehistoric scatter from an undetermined cultural context. It represents a short-term occupation by an unidentified cultural group. It is difficult to draw conclusions of settlement activities and structure from so few artifacts. Since no diagnostic material was recovered it is not possible to assign the occupation to any cultural or temporal period.

National Register Status

No features or buried deposits were found. As a result, the site has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D. Criteria A, B, and C do not apply. No further archaeological work is recommended for the site.

Recommendations

No further archaeological work is recommended for site 34PS53.

7.1.5 34PS554

Location and Description

Site 34PS554 is located on the 1971 USGS Longtown, Oklahoma, 7.5' Quadrangle shown on **Figure 7-3** and shown on an aerial photograph on **Figure 7-4**. The UTM coordinates (Zone 15 NAD 27) for the center of the site are [redacted]. It is also located in the [redacted]. The site is located at 606 feet above mean sea level and is situated on [redacted] (**Figure 7-35**). The site measures 1.6 acres and is located on [redacted]. Vegetation within the site area is trees and grass. Figure 7-36 and **Figure 7-37** show the site area.

The location of the site was identified on May 10th, 2012, and formal shovel probing was conducted the same day. The weather for May 10th was sunny and humid with lows of 52 degrees F and a high of 82 degrees F (see **Table 5-2**).

Stratigraphy

A total of 14 shovel turns at 25 meter intervals and 38 formal shovel test units at 15 meter intervals were placed across the area of site 34PS554. The stratigraphy for the site is represented by the profile for STP2 shown in **Figure 7-38**. From the surface to 8 cm below is a 10YR 3/2 dark brown loamy sand. Below this is a 22 cm thick layer of 10YR 3/4 dark brown sandy loam. The artifacts from the site were recovered from within this layer. At the base is a 4 cm thick 5YR 4/4 reddish brown decaying sandstone layer.

Features

No features were encountered. However, domesticated plants were identified growing at the site (**Figure 7-39**).

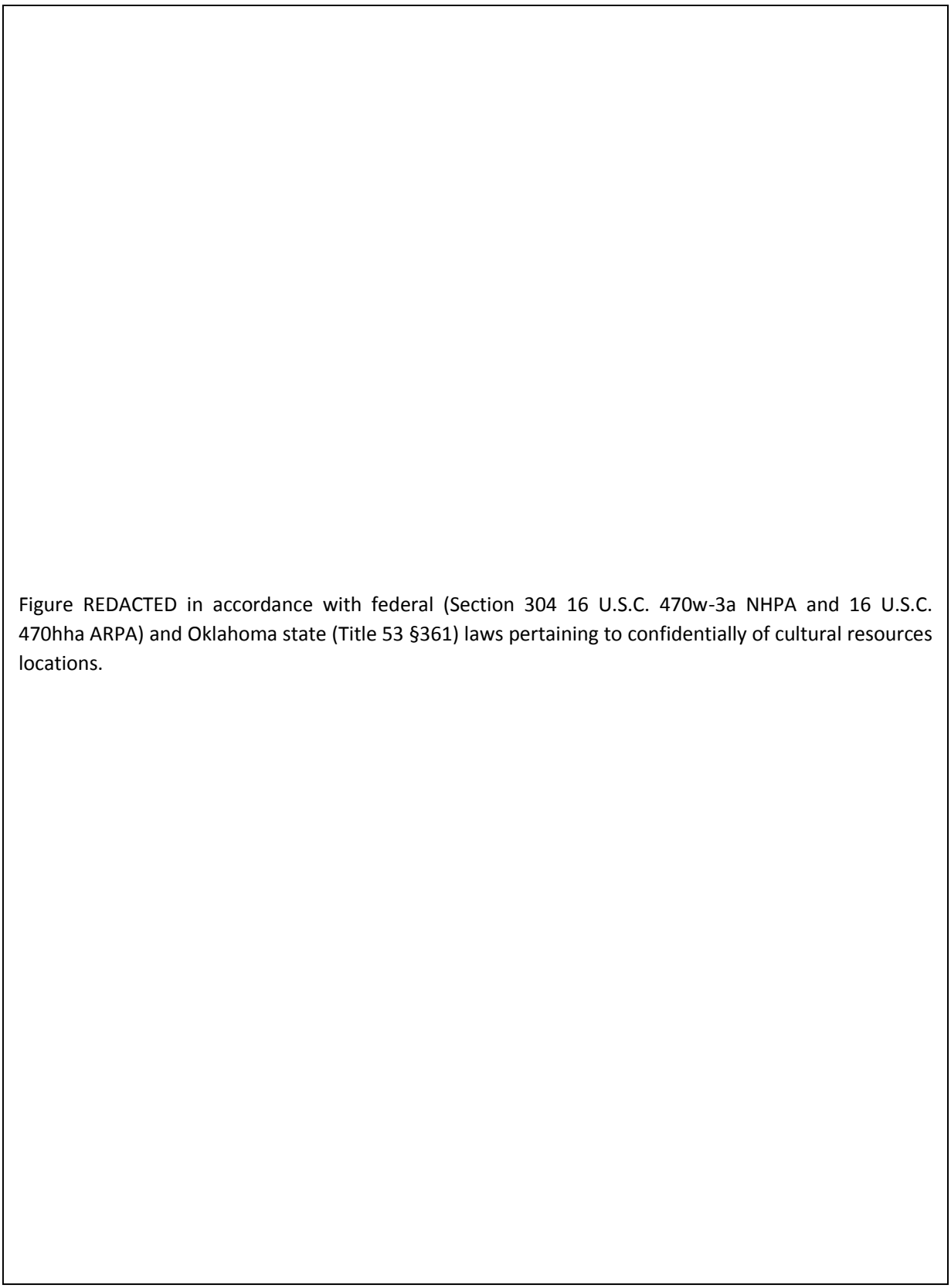

Figure 7-35. Site 34PS554 field map

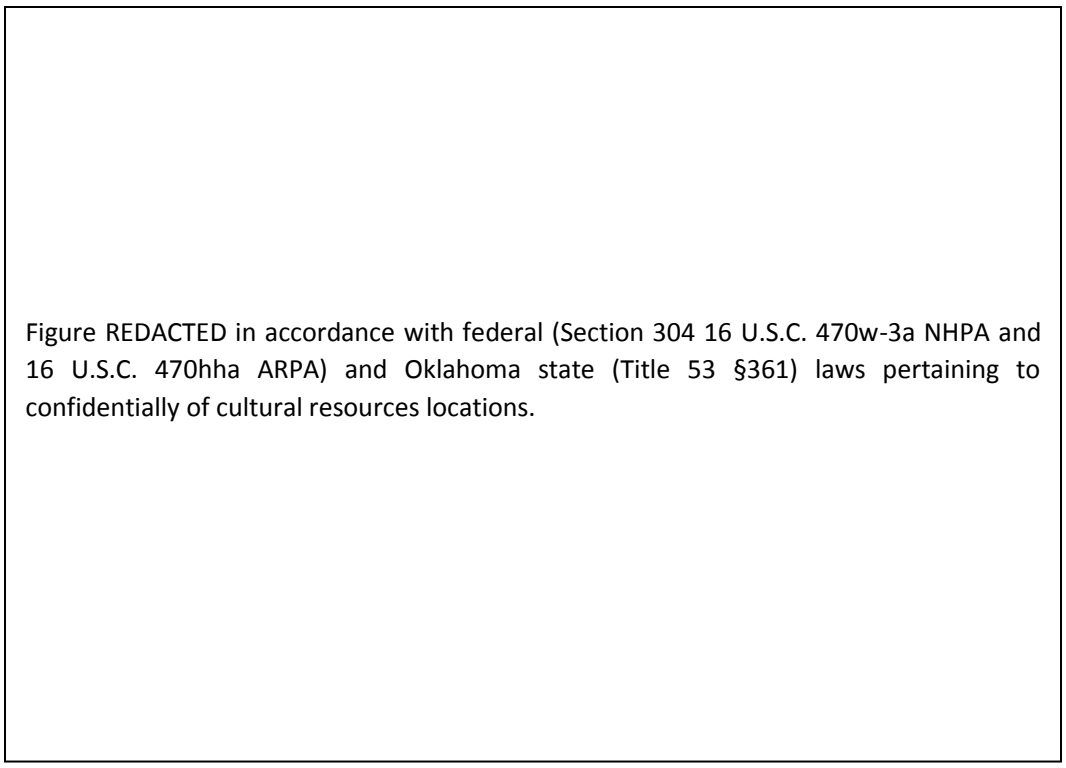

Figure 7-36. Field Conditions at Site 34PS554

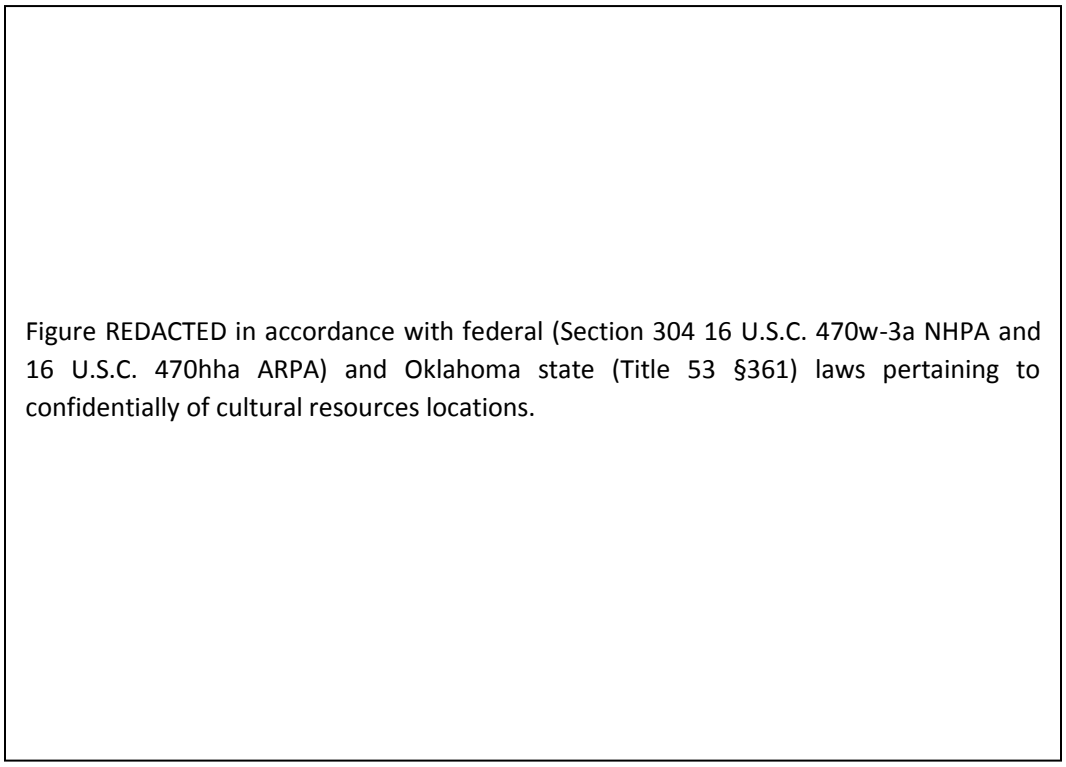

Figure 7-37. Field Conditions at Site 45PS554

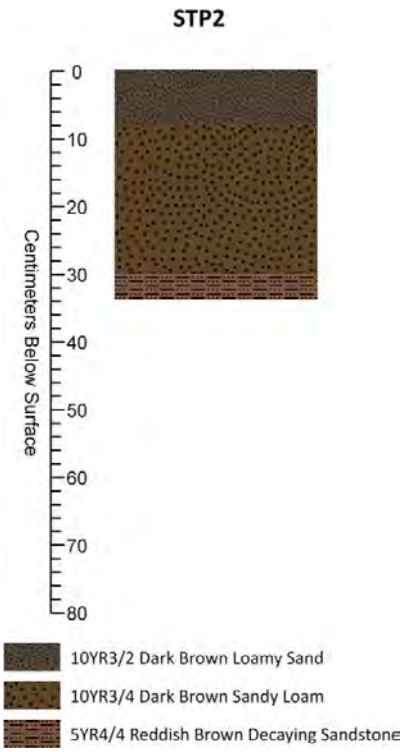

Figure 7-38. Stratigraphy of STP2 from Site 34PS554

Figure 7-39. Domesticated Plants at Site 34PS554

Artifact Analysis

A total of 129 historic artifacts were recovered from 34PS554. They have been previously described in Section 6 and a summary of the artifacts by shovel test unit is presented in **Table 7-5**.

The majority of the artifacts recovered from the site belong to the kitchen group (47 percent), followed by the architectural group (26 percent), the other group (19 percent), personal group (6 percent), transportation group (2 percent), and the job/activity group (1 percent). That a majority of the artifacts belong to the kitchen group may suggest that the site area was predominately used for domestic purposes. That the site area was also probably the location of a structure as evidenced by the percentage of architectural related artifacts recovered. Most of the artifacts date from the early-to-mid twentieth century.

Interpretation

Site 34PS554 is probably the location of one or even both of the structures seen in a map of the area created by the USACE in 1948 (Figure 7-40) (USACE 1948). The presence of architectural group artifacts lends support to this interpretation as do the presence of domesticated plants. Additionally, a Works Progress Administration map of Section 32 from 1936 (Figure 7-41) identifies probable land owners as either W L. Beit, Jr., J. E. Pearce, or J. H. Tusley (WPA 1936). The site was likely abandoned when USACE took possession of the property during the creation of Eufaula Lake.

National Register Status

No features or buried deposits were found. As a result, the site has limited research potential and is not considered potentially eligible for listing on the NRHP under Criterion D. Criteria A, B, and C do not apply. No further archaeological work is recommended for the site.

Recommendations

No further archaeological work is recommended for site 34PS554.

7.2 Conclusion

A total of five sites were examined in this section. Three were revisits (34PS166, 34PS167, and 34PS168) and two were newly discovered sites (34PS553 and 34PS554).

Site 34PS166 is a multi-component site with a Late Archaic and an early-to-mid twentieth century occupation. Sites 34PS167 and 34PS168 are both small lithic scatter associated with Late Archaic cultures. Site 34PS553 is a small lithic scatter associated with an unidentified cultural group. And site 34PS554 is a historic site dating from the early-to-mid twentieth century. The historic component of site 34PS166 may be related to site 34PS554 though they are spatially separated.

Based on the research potential remaining for these five sites, none of them are eligible for listing on the National Register.

Table 7-5. Historic Artifacts recovered from 34PS554.

Functional Group	Material Class	Type	Sub Type 1	Subtype 2	Subtype 3	STP2	STP2 R1	STP2 R2	STP2 R3	STP2 R7	STP2 R8	STP2 R11	STP2 R12	STP2 R13	STP2 R14	STP2 R15	STP2 R17	STP2 R19	STP2 R20	STP2 R26	STP2 R30	STP2 R32	STP2 R34	Total
Architectural	Glass	Flat	-	-	Aqua									1						1				2
Architectural	Glass	flat	-	-	Clear						1	15			2	4								22
Architectural	Metal	Nail	Wire	12d	pulled																		1	1
Architectural	Metal	Nail	Wire	5d	-											1								1
Architectural	Metal	Nail	Wire	6d	Unaltered									1										1
Architectural	Metal	Nail	Wire	7d	Unaltered										1									1
Architectural	Metal	Nail	Wire	8d	Clinched							1												1
Architectural	Metal	Nail	Wire	8d	Pulled									1										1
Architectural	Metal	Nail	Wire	8d	Unaltered							1												1
Architectural	Metal	Nail	Wire	9d	Unaltered											1								1
Architectural	Metal	Nail	Wire	Roofing	Unaltered													1						1
Architectural	Other	Shingle	Asphalt		-									1										1
Job/Activity	Other	Fence Staple	-	Unknown Manufacture	-					1														1
Kitchen	Ceramic	Ironstone, White	Base	Plate	Undecorated						1													1
Kitchen	Ceramic	Ironstone, White	Base	Unidentifiable Vessel	Decal						1													1
Kitchen	Ceramic	Ironstone, White	Base	Unidentifiable Vessel	Undecorated						1			1	1									3
Kitchen	Ceramic	Ironstone, White	Body	Unidentifiable Vessel	Undecorated	1					2			5	1				1	1				11
Kitchen	Ceramic	Ironstone, White	Rim	Cup	Undecorated								1					1						2
Kitchen	Ceramic	Ironstone, White	Rim	Saucer	Undecorated						1													1
Kitchen	Ceramic	Ironstone, White	Rim	Unidentifiable Vessel	Undecorated						1													1
Kitchen	Ceramic	Porcelain	Base	Saucer	Decal										1									1
Kitchen	Ceramic	Whiteware	Base	Unidentifiable Vessel	Undecorated							1												1
Kitchen	Ceramic	Whiteware	Body	Unidentifiable Vessel	Undecorated			1																1
Kitchen	Ceramic	Whiteware	Rim	Plate	Hand Painted															1				1
Kitchen	Glass	Bottle	Body	Machine Made	Clear						1													1
Kitchen	Glass	Bottle/Jar	Base	Machine Made	Clear									1	1									2
Kitchen	Glass	Bottle/Jar	Body	Machine Made	Amber				3															3
Kitchen	Glass	Bottle/Jar	Body	Machine Made	Aqua						1													1
Kitchen	Glass	Bottle/Jar	Body	Machine Made	Clear		1							1			1							3
Kitchen	Glass	Bottle/Jar	Body	Unknown Manufacture	Amber										1						1			2
Kitchen	Glass	Bottle/Jar	Body	Unknown Manufacture	Aqua										1									1
Kitchen	Glass	Bottle/Jar	Body	Unknown Manufacture	Blue-Green		1																	1
Kitchen	Glass	Bottle/Jar	Body	Unknown Manufacture	Clear			1	2	1		1			3				1			1	3	13

Functional Group	Material Class	Type	Sub Type 1	Subtype 2	Subtype 3	STP2	STP2 R1	STP2 R2	STP2 R3	STP2 R7	STP2 R8	STP2 R11	STP2 R12	STP2 R13	STP2 R14	STP2 R15	STP2 R17	STP2 R19	STP2 R20	STP2 R26	STP2 R30	STP2 R32	STP2 R34	Total
Kitchen	Glass	Bottle/Jar	Body	Unknown Manufacture	Solarized							1												1
Kitchen	Glass	Bottle/Jar	Rim	Machine Made	Clear															1				1
Kitchen	Glass	Jar, Canning	Body	Unknown Manufacture	Clear		1																	1
Kitchen	Glass	Jar, Canning	Lid Insert	Machine Made	Opaque-White												1							1
Kitchen	Glass	Jar, Canning	Lid Insert	Machine Made	Opaque-White						1													2
Kitchen	Glass	table glass, tumbler	Rim	machine pressed	Cobalt Blue	1																		1
Kitchen	Glass	Table Glass, Tumbler	-	Unknown manufacture	Clear					1	1													2
Kitchen	Metal	Jar	Lid	-	Zinc										1									1
Other	Glass	Unidentified	-	-	Aqua													2						2
Other	Glass	Unidentified	-	-	Clear									1		1		1						3
Other	Metal	Electrical	Flat	Copper	-															1				1
Other	Metal	Fastener	Rivet	Copper Alloy	-							1												1
Other	Metal	Seam	-	Iron	-													2						2
Other	Metal	Unidentified	Flat	Iron	-				1			3		1						2				7
Other	Metal	Unidentified	Wire	-	-										1			1						2
Other	Metal	Unidentified	-	Iron	-											5								5
Other	Metal	Unidentified	-	-	-					1														1
Personal	Ceramic	Container	Base	Flower Pot	Embossed/Painted										1									1
Personal	Ceramic	Container	Body	Flower Pot	undecorated													1						1
Personal	Glass	Bottle, Patent Medicine	Base	Machine Made	Aqua							1												1
Personal	Glass	Bottle, Patent Medicine	Body	Machine Made	Aqua							3												3
Personal	Glass	Bottle, Patent Medicine	lip/neck	-	solarized										1									1
Personal	Glass	Jar, Cream	body	machine made	opaque-white									1										1
Transportation	Glass	Window Glass	(blank)	Unknown Manufacture	clear					1	1													2
Total						2	3	2	6	5	13	28	1	15	16	12	2	9	2	7	1	1	4	129

Figure REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Figure 7-40. 1948 USACE Map with Sites 34PS166 and 34PS554

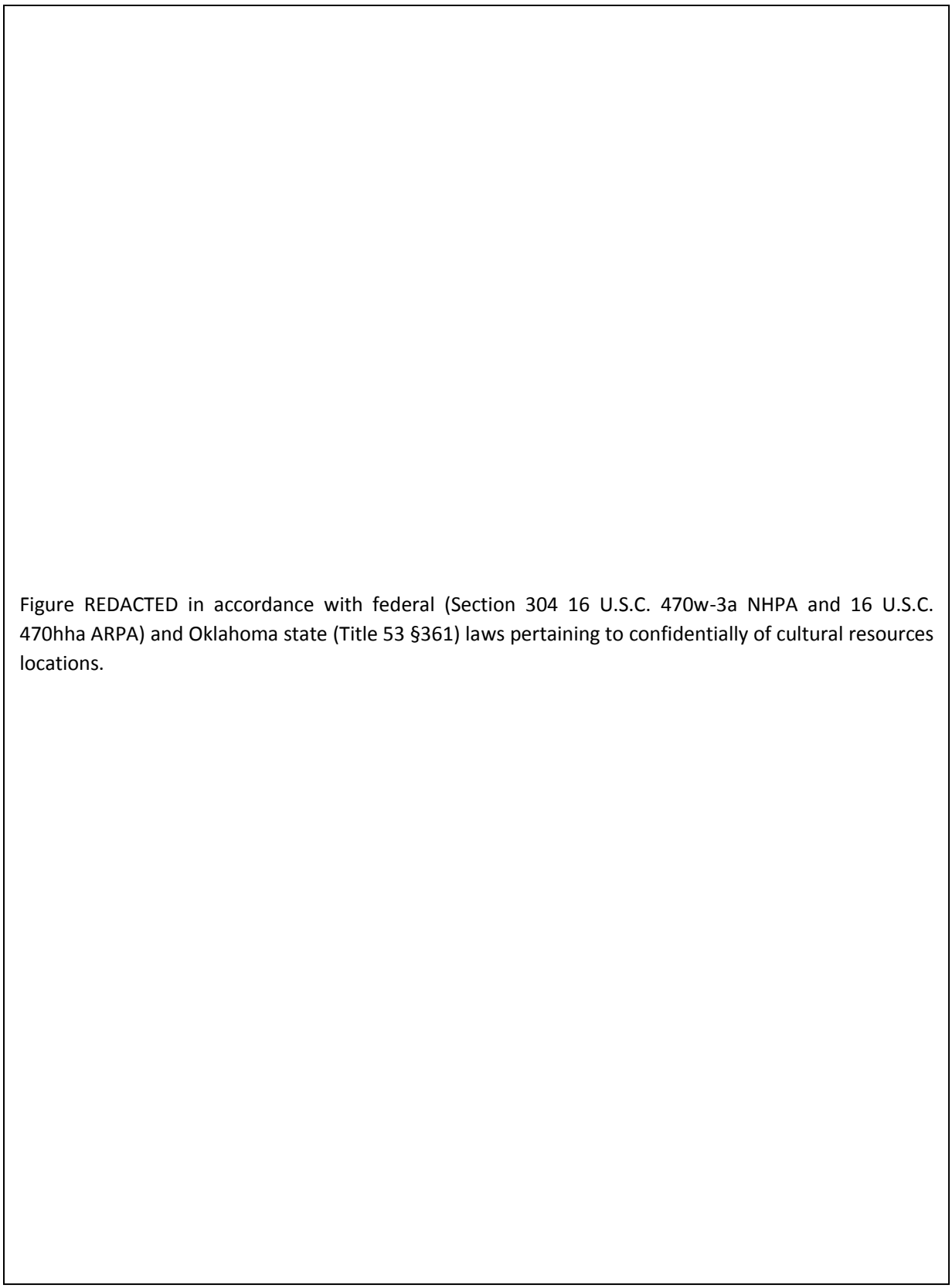

Figure 7-41. 1936 WPA Map with Sites 34PS166 and 34PS554

Section 8
Summary and Conclusion

In this section, the results for the Phase I full coverage pedestrian archaeological survey is presented. Each finding is described, analyzed, and recommendations for National Register eligibility are given.

8.1 Summary

A total of five sites were examined in this report and are summarized in **Table 8-1**. Three were revisits (34PS166, 34PS167, and 34PS168) and two were newly discovered sites (34PS553 and 34PS554). Site 34PS166 is a multi-component site with a Late Archaic and an early-to-mid twentieth century occupation. Site 34PS167 and 34PS168 are both small lithic scatter associated with Late Archaic cultures. Site 34PS553 is a small lithic scatter associated with an unidentified cultural group. And site 34PS554 is a historic site dating from the early-to-mid twentieth century. The historic component of 34PS166 may be related to site 34PS553 though spatially separated.

Table 8-1. Summary of Site Recommendations

Site	Site Type	Cultural Context	National Register Status
34PS166	Prehistoric/Historic	Archaic/Early to mid 20th Century	Recommended Not Eligible
34PS167	Prehistoric	Archaic	Recommended Not Eligible
34PS168	Prehistoric	Archaic	Recommended Not Eligible
34PS553	Prehistoric	Archaic	Recommended Not Eligible
34PS554	Historic	Early to mid 20th Century	Recommended Not Eligible

One last note must be made about relocating the sites identified by Perino and Caffey (1980a). Their survey was conducted "…along the shoreline and up to or above the projected flood level…" (Perino and Caffey 1980a:11). Their methodology involved the visual inspection of these areas and recovery of any artifacts present. The three sites they identified within the APE, 34PS166, 34PS167, and 34PS168, were identified using their methodology.

The descriptions for these three sites provided by Perino and Caffey suggest that each site is fairly sizeable and located along the shoreline. They even suggest that site 34PS167 may extend inland away from the shoreline, but did not test their hypothesis. According to the site cards on file at the OAS, site 34PS166 covers three acres; site 34PS167 covers several acres; and site 34PS168 covers three acres. In actuality, the site area may only have a couple of square feet along the shore line where the artifacts or burned rocks were observed. For example, site 34PS166 was identified by the presence of three groups of burned rock and one mortar, all visible at the time along the shoreline, not inland away from the shore. In their report, they did not provide accurate site boundaries and only UTM coordinates and Township/Range information for the site locations. The mapping provided by OAS is an interpretation of this information and locates the sites inland.

Attempts to relocate sites identified by Perino and Caffey should be approached with caution. Some sites may not have been actual sites lending themselves to rediscovery and the locations provided by OAS may be wrong.

8.2 Conclusion

Based on the research potential remaining for these five sites, none of them are eligible for listing on the National Register.

Section 9
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Appendix A
Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
A.D.	*Anno Domini*
AHPA	Archeological and Historical Preservation Act
APE	area of potential effect
ARPA	Archeological Resources Protection Act
B.C.	Before Christ
BP	before present
CFR	Code of Federal Regulations
cm	centimeter
E	east
EIS	Environmental impact statement
F	Fahrenheit
Ft	feet
HPMP	Historic Properties Management Plan
m	meter
MP	Master Plan
msl	mean sea level
N	north
N/A	not available
NE	northeast
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NW	northwest
OAS	Oklahoma Archeological Survey
OHS	Oklahoma Historical Society
p.m.	post meridiem
RPA	Registered Professional Archeologist
RR	Railroad
S	south
SE	southeast
SHPO	State Historic Preservation Officer
SMP	shoreline management plan
SW	southwest

SWT	Southwest Division, Tulsa District
U.S.	United States
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator coordinate system
W	west
WPA	Works Progress Administration

Appendix B

New Oklahoma Archaeological Survey Site Forms

The Oklahoma Archaeological Survey Site Forms have been REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

The Oklahoma Archaeological Survey Site Forms have been REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

The Oklahoma Archaeological Survey Site Forms have been REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

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The Oklahoma Archaeological Survey Site Forms have been REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Appendix C

Updated Oklahoma Archaeological Survey Site Forms

The Oklahoma Archaeological Survey Site Forms have been REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

The Oklahoma Archaeological Survey Site Forms have been REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

The Oklahoma Archaeological Survey Site Forms have been REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

The Oklahoma Archaeological Survey Site Forms have been REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

The Oklahoma Archaeological Survey Site Forms have been REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

The Oklahoma Archaeological Survey Site Forms have been REDACTED in accordance with federal (Section 304 16 U.S.C. 470w-3a NHPA and 16 U.S.C. 470hha ARPA) and Oklahoma state (Title 53 §361) laws pertaining to confidentially of cultural resources locations.

Appendix D
Artifact Catalog

Prehistoric Artifact Catalog

Site	Unit	Material Type	Tool Type	Subtype 1	Subtype 2	Deb SG	Raw Material	Cortex	HT	Length	Width	Thickness	Weight	Number	Comment
34PS168	Surface	Lithic	Debitage	Primary Decordication		2	Woodford	3	N				4.5	1	
34PS168	Surface	Lithic	Debitage	Secondary Decordication		2	Woodford	4	N				13.2	6	
34PS168	Surface	Lithic	Debitage	Interior Flake		2	Woodford		N				9.2	7	
34PS168	Surface	Lithic	Debitage	Undetermined		2	Woodford		N				2.1	1	
34PS168	Surface	Lithic	Debitage	Primary Decordication		1	Woodford	3	N				4.3	5	
34PS168	Surface	Lithic	Debitage	Secondary Decordication		1	Woodford	4	Y				1	1	
34PS168	Surface	Lithic	Debitage	Secondary Decordication		1	Woodford	4	N				23.2	27	
34PS168	Surface	Lithic	Debitage	Undetermined		1	Woodford		N				9.7	32	
34PS168	Surface	Lithic	Debitage	Undetermined		1	Woodford		Y				1.3	5	
34PS168	Surface	Lithic	Debitage	Shatter		1	Woodford		N				3.8	6	
34PS168	Surface	Lithic	Debitage	Interior Flake		1	Woodford		N				7.1	10	
34PS168	Surface	Lithic	Debitage	Thinning Flakes		1	Woodford		N				3.8	7	
34PS168	Surface	Lithic	Debitage	Tertiary Flakes		1	Woodford		N				0.9	4	
34PS168	Surface	Lithic	Debitage	Undetermined		0	Woodford	3	N				0.2	1	
34PS168	Surface	Lithic	Debitage	Undetermined		0	Woodford		N				0.5	7	
34PS168	Surface	Lithic	Debitage	Tertiary Flakes		0	Woodford		N				0.3	4	
34PS168	Surface	Lithic	Debitage	Shatter		2	Unidentified	3	N				12.4	2	
34PS168	Surface	Lithic	Debitage	Interior Flake		2	Boone		N				2.7	2	
34PS168	Surface	Lithic	Debitage	Interior Flake		1	Boone		N				1	3	
34PS168	Surface	Lithic	Debitage	Interior Flake		1	Boone		N				1	3	
34PS168	Surface	Lithic	Debitage	Undetermined		2	Boone		N				0.8	1	
34PS168	Surface	Lithic	Debitage	Undetermined		1	Boone		N				1.3	5	
34PS168	Surface	Lithic	Debitage	Undetermined		0	Boone		N				0.1	1	
34PS168	Surface	Lithic	Debitage	Primary Decordication		1	Boone	3	N				1.4	2	
34PS168	Surface	Lithic	Debitage	Undetermined		1	Ogallala		N				1	2	
34PS168	Surface	Lithic	Debitage	Undetermined		0	Ogallala		N				0.2	2	
34PS168	Surface	Lithic	Uniface	Retouched Flake			Woodford		N	18.41	16	2.34	1	1	
34PS168	Surface	Lithic	Biface	Base Fragment	Kent		Woodford		N	14.66	19.01	5.77	1.8	1	possibly Kent
34PS168	Surface	Lithic	Biface	Base Fragment	Edgewood		Woodford		N	19.05	18.27	4.67	1.5	1	possibly Edgewood
34PS168	Surface	Lithic	Biface	Tip Fragment			Woodford		N	12.64	114.78	5.06	0.7	1	
34PS168	Surface	Lithic	Biface	Biface Fragment			Woodford		N	15.44	21.88	5.96	2.5	1	stage 2-4
34PS167	Surface	Lithic	Debitage	Interior Flake		2	Woodford		N				0.8	1	
34PS553	STP1 R1	Lithic	Debitage	Undetermined		1	Woodford		Y				0.6	2	
34PS553	STP1 R1	Lithic	Debitage	Undetermined		1	Woodford		N				0.1	1	
34PS553	STP1 R1	Lithic	Debitage	Secondary Decordication		1	Woodford	4	N				0.5	1	
34PS553	STP1 R1	Lithic	Debitage	Undetermined		1	Woodford		N				0.3	1	
34PS553	STP1	Lithic	Debitage	Undetermined		1	Woodford		N				0.1	1	
34PS553	STP1 R 5	Lithic	Debitage	Thinning Flakes		1	Woodford		N				0.6	2	
34PS553	STP1 R5	Lithic	Debitage	Undetermined		1	Ogallala		N				0.6	2	
34PS553	STP1 R5	Lithic	Debitage	Undetermined		1	Woodford		Y				0.5	1	

Historic Artifact Catalog

Site #	STP/UNIT #	Functional Group	Material Class	Type	Subtype 1	Subtype 2	Subtype 3	#	Comments
34PS166	Surface	Kitchen	Glass	bottle	base	machine made	clear	1	Owens-IL with suction scar and ILLINOIS embossed = 1929-1954 (Toulouse 1971:403)
34PS166	Surface	Kitchen	Glass	bottle	lip/neck	fused finish, improved tooled	aqua	1	oil style finish w cork closure = 1870s-1915 (Davis 1949:154-155; Fike 1987:3)
34PS166	Surface	Kitchen	Ceramic	stoneware, domestic	rim	churn	Albany slipped	1	
34PS166	Surface	Kitchen	Ceramic	stoneware, domestic	body	unid hollowware	Albany slipped	1	
34PS166	Surface	Kitchen	Ceramic	ironstone, white	rim	plate	undecorated	2	
34PS166	Surface	Kitchen	Ceramic	ironstone, white	rim	tea cup	underglazed blue transfer print	1	runny, but not flow blue
34PS166	Surface	Transportation	Metal	hood ornament	lead alloy	lady with wings		1	possibly 1928 Chrysler (http://www.cadvision.com/blanchas/hood_ornaments/chrysler.html)
34PS166	Surface	Transportation	Metal	horse shoe	iron			1	
34PS166	Surface	Kitchen	Glass	jar, canning	base	machine made	clear	1	Owens-IL with valve mark and stippled pattern on base = 1939-1945 (Busch 1983:196; Moir *et al.* 1987:274; Toulouse 1971:403)
34PS166	Surface	Kitchen	Glass	jar, canning	base	machine made	clear	1	Owens suction scar = 1903+ (The number "4" is center bottom)
34PS166	Surface	Kitchen	Glass	jar, canning	base	machine made	clear	1	Hazel Atlas mark with top number above 8223 and A 2 below. Stippled base = 1940-1964 (Moir *et al.* 1987:274; Toulouse 1971:239)
34PS166	Surface	Kitchen	Glass	jar, canning	base	machine made	clear	1	Owens suction scar = 1903+ (The number "10" is center bottom)
34PS166	Surface	Kitchen	Glass	jar, canning	body	machine made	clear	1	"Ball" (script)/ PERFECT/ MASON = 1903+
34PS166	Surface	Kitchen	Glass	jar, canning	body	machine made	clear	1	[PER]FE[CT]/ MASON embossed = 1929-1954 (Toulouse 1971:403)
34PS166	Surface	Kitchen	Glass	jar, canning	body	machine made	blue	3	"O" embossed on one and "NE" embossed on one
34PS166	Surface	Kitchen	Glass	jar, canning	lid inset	machine made	opaque-white	1	embossed "L"
34PS166	Surface	Kitchen	Glass	jar, canning	lip/neck	machine made	clear	11	Standard thread closure = 1903+
34PS166	Surface	Kitchen	Glass	table glass, hollowware	base or rim	machine pressed	solarized	1	base or rim of large hollowware = 1880-1920
34PS166	Surface	Kitchen	Glass	table glass, hollowware	body/handle	machine pressed	solarized	1	handle broken off, but large enough suggestions large hollowware like punch bowl or pitcher
34PS166	Surface	Personal	Glass	bottle, patent medicine	lip/neck	machine made	aqua	1	double ring style finish with cork closure = 1903-1915 (Fike 1987:3; Holscher 1965:22)
34PS166	Surface	Personal	Glass	jar	lip/neck	machine made	cobalt blue	1	Standard thread closure. Melted, but probably cream jar = 1903+
34PS166	Surface	Personal	Glass	jar, cream	base/body	machine made	opaque-white	1	
34PS554	STP2 R8	Kitchen	Ceramic	ironstone, white	rim	unidentifiable vessel	undecorated	1	
34PS554	STP2 R8	Kitchen	Ceramic	ironstone, white	body	unidentifiable vessel	undecorated	1	
34PS554	STP2 R8	Kitchen	Ceramic	ironstone, white	body	unidentifiable vessel	undecorated	1	
34PS554	STP2 R8	Kitchen	Ceramic	ironstone, white	rim	saucer	undecorated	1	
34PS554	STP2 R7	Transportation	Glass	automotive glass		unknown manufacture	clear	1	
34PS554	STP2 R7	Job/Activity	Metal	Fence Staple		unknown manufacture		1	
34PS554	STP2 R8	Kitchen	Ceramic	ironstone, white	base	plate	undecorated	1	
34PS554	STP2 R7	Other	Metal	unidentified				1	
34PS554	STP2 R8	Kitchen	Ceramic	ironstone, white	base	unidentifiable vessel	undecorated	1	
34PS554	STP2 R8	Kitchen	Ceramic	ironstone, white	base	unidentifiable vessel	decal	1	green
34PS554	STP2 R8	Architectural	Glass	flat			clear	1	
34PS554	STP2 R8	Transportation	Glass	automotive glass		unknown manufacture	Clear	1	

Site #	STP/UNIT #	Functional Group	Material Class	Type	Subtype 1	Subtype 2	Subtype 3	#	Comments
34PS554	STP2 R12	Kitchen	Ceramic	ironstone, white	rim	cup	undecorated	1	
34PS554	STP2 R13	Kitchen	Ceramic	ironstone, white	body	unidentifiable vessel	undecorated	5	
34PS554	STP2 R13	Kitchen	Ceramic	ironstone, white	base	unidentifiable vessel	undecorated	1	
34PS554	STP2 R14	Kitchen	Ceramic	ironstone, white	body	unidentifiable vessel	undecorated	1	
34PS554	STP2 R14	Kitchen	Ceramic	ironstone, white	base	unidentifiable vessel	undecorated	1	curve, possibly a shallow bowl or plate
34PS554	STP2 R20	Kitchen	Ceramic	ironstone, white	body	unidentifiable vessel	undecorated	1	
34PS554	STP2 R26	Kitchen	Ceramic	ironstone, white	body	unidentifiable vessel	undecorated	1	
34PS554	STP2 R19	Kitchen	Ceramic	ironstone, white	rim	cup	undecorated	1	
34PS554	STP2	Kitchen	Ceramic	ironstone, white	body	unidentifiable vessel	undecorated	1	
34PS554	STP2 R14	Kitchen	Ceramic	porcelain	base	saucer	Decal	1	floral
34PS554	STP2 R13	Other	Glass	unidentified			Clear	1	
34PS554	STP2 R26	Kitchen	Ceramic	whiteware	rim	plate	hand painted	1	
34PS554	STP2 R2	Kitchen	Ceramic	whiteware	body	unidentifiable vessel	undecorated	1	
34PS554	STP2 R11	Kitchen	Ceramic	whiteware	base	unidentifiable vessel	undecorated	1	
34PS554	STP2 R8	Kitchen	Glass	bottle	body	machine made	Clear	1	
34PS554	STP2 R13	Architectural	Glass	flat			Aqua	1	
34PS554	STP2 R13	Architectural	Other	Shingle	Asphalt			1	
34PS554	STP2 R13	Architectural	Metal	nail	wire	6d	Unaltered	1	
34PS554	STP2 R13	Architectural	Metal	nail	wire	8d	Pulled	1	
34PS554	STP2 R13	Other	Metal	unidentified	flat	iron		1	
34PS554	STP2 R13	Personal	Glass	jar, Cream	body	machine made	opaque-white	1	
34PS554	STP2 R14	Personal	Ceramic	container	base	flower pot	embossed/painted	1	blue
34PS554	STP2 R13	Personal	Glass	jar, Cream	body	machine made	opaque-white	1	
34PS554	STP2 R14	Personal	Ceramic	container	base	flower pot	embossed/painted	1	blue
34PS554	STP2 R1	Kitchen	Glass	bottle/jar	body	machine made	clear	1	stippled body = 1940+
34PS554	STP2 R1	Kitchen	Glass	bottle/jar	body	unknown manufacture	blue-green	1	
34PS554	STP2 R7	Kitchen	Glass	bottle/jar	body	unknown manufacture	clear	1	
34PS554	STP2 R8	Kitchen	Glass	bottle/jar	body	machine made	aqua	1	
34PS554	STP2 R14	Architectural	Metal	nail	wire	7d	unaltered	1	
34PS554	STP2 R13	Kitchen	Glass	bottle/jar	base	machine made	clear	1	
34PS554	STP2 R13	Kitchen	Glass	bottle/jar	body	machine made	clear	1	machine pressed interior
34PS554	STP2 R14	Kitchen	Glass	bottle/jar	base	machine made	clear	1	Owen scar
34PS554	STP2 R14	Kitchen	Glass	bottle/jar	body	unknown manufacture	amber	1	
34PS554	STP2 R14	Personal	Glass	bottle, patent medicine	lip/neck	machine made	solarized	1	amethyst
34PS554	STP2 R14	Architectural	Glass	flat			clear	2	
34PS554	STP2 R14	Other	Metal	unidentified	wire			1	twisted
34PS554	STP2 R15	Other	Glass	unidentified			clear	1	
34PS554	STP2 R15	Architectural	Metal	nail	wire	9d	unaltered	1	
34PS554	STP2 R15	Architectural	Metal	nail	wire	5d		1	distal, 5d
34PS554	STP2 R15	Architectural	Glass	flat			clear	4	
34PS554	STP2 R15	Other	Metal	unidentified		iron		5	possible can
34PS554	STP2 R14	Kitchen	Glass	bottle/jar	body	unknown manufacture	clear	3	
34PS554	STP2 R14	Kitchen	Glass	bottle/jar	body	unknown manufacture	aqua	1	
34PS554	STP2 R17	Kitchen	Glass	bottle/jar	body	machine made	clear	1	

Site #	STP/UNIT #	Functional Group	Material Class	Type	Subtype 1	Subtype 2	Subtype 3	#	Comments
34PS554	STP2 R20	Kitchen	Glass	bottle/jar	body	unknown manufacture	clear	1	thick
34PS554	STP2 R26	Kitchen	Glass	bottle/jar	rim	machine made	clear	1	screw enclosure
34PS554	STP2 R26	Architectural	Glass	flat			aqua	1	
34PS554	STP2 R32	Kitchen	Glass	bottle/jar	body	unknown manufacture	clear	1	
34PS554	STP2 R34	Kitchen	Glass	bottle/jar	body	unknown manufacture	clear	3	
34PS554	STP2 R26	Other	Metal	unidentified	flat	iron		2	
34PS554	STP2 R26	Other	Metal	electrical	flat	copper		1	electrical connector?
34PS554	STP2 R19	Personal	Ceramic	container	body	flower pot	undecorated	1	flower pot
34PS554	STP2 R19	Other	Glass	unidentified			clear	1	
34PS554	STP2 R19	Other	Glass	unidentified			aqua	2	
34PS554	STP2 R2	Kitchen	Glass	bottle/jar	body	unknown manufacture	clear	1	
34PS554	STP2 R19	Architectural	Metal	nail	wire	roofing	unaltered	1	roofing nail
34PS554	STP2 R19	Other	Metal	unidentified	wire			1	
34PS554	STP2 R19	Other	Metal	seam		iron		2	can seams?
34PS554	STP2 R3	Kitchen	Glass	bottle/jar	body	machine made	amber	3	
34PS554	STP2 R3	Kitchen	Glass	bottle/jar	body	unknown manufacture	clear	2	
34PS554	STP2 R34	Architectural	Metal	nail	wire	12d	pulled	1	
34PS554	STP2 R11	Kitchen	Glass	bottle/jar	body	unknown manufacture	solarized	1	amethyst
34PS554	STP2 R11	Kitchen	Glass	bottle/jar	body	unknown manufacture	clear	1	
34PS554	STP2 R30	Kitchen	Glass	bottle/jar	body	unknown manufacture	amber	1	
34PS554	STP2 R1	Kitchen	Glass	jar, canning	body	unknown manufacture	clear	1	embossed with unknown letters
34PS554	STP2 R8	Kitchen	Glass	jar, canning	lid inset	machine made	opaque-white	1	
34PS554	STP2 R17	Kitchen	Glass	jar, canning	lid insert	machine made	opaque-white	1	embossed "…NUTI…"
34PS554	STP2 R3	Other	Metal	unidentified	flat	iron		1	
34PS554	STP2 R11	Personal	Glass	bottle, patent medicine	base	machine made	aqua	1	
34PS554	STP2 R11	Personal	Glass	bottle, patent medicine	body	machine made	aqua	3	embossed "…WATER/…SON'S/"
34PS554	STP2 R7	Kitchen	Glass	table glass, tumbler	rim	unknown manufacture	clear	1	
34PS554	STP2 R8	Kitchen	Glass	table glass, tumbler	rim	unknown manufacture	clear	1	rouleting around edge
34PS554	STP2 R11	Architectural	Metal	nail	wire	8d	unaltered	1	
34PS554	STP2 R11	Architectural	Metal	nail	wire	8d	clinched	1	
34PS554	STP2 R11	Other	Metal	unidentified	flat	iron		3	possible container
34PS554	STP2 R11	Architectural	Glass	flat			clear	15	
34PS554	STP2	Kitchen	Glass	table glass, tumbler	rim	machine pressed	cobalt blue	1	ribbed
34PS554	STP2 R11	Other	Metal	fastener	rivet	copper alloy		1	copper alloy rivet fastener

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