THE BOCA AND BEYOND: A 418 ACRE CULTURAL RESOURCES INVENTORY OF CAPULIN VOLCANO NATIONAL MONUMENT

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THE BOCA AND BEYOND: A 418 ACRE CULTURAL RESOURCES INVENTORY OF CAPULIN VOLCANO NATIONAL MONUMENT

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ABSTRACT

Between April 26 and 30, the Office of Contract Archeology, University of New Mexico, under cooperative agreement with the U.S. National Park Service, conducted a cultural resources inventory of approximately 418 acres within the Capulin Volcano National Monument in anticipation of a prescribed burn. The work was performed under Cooperative Agreement # H1200-09-0005, with fieldwork conducted under Contract # J1242090056 and preparation of the cultural resources report under Contract # J7160100002. The survey was performed at the request of Kimberly Struthers, Natural Resources Program Manager for Capulin Volcano National Monument. This survey encompassed all areas of the Monument except the shield of the volcano, and included a small area within the caldera. This survey resulted in the documentation of two new sites (LA 166197 and 166198), six previously documented sites (LA 48881—48883, LA 139608—139610), and 15 isolated occurrences. The sites include two cave sites, a Folsom lithic scatter, two Late Prehistoric lithic scatters, a pre-/proto-historic series of rock enclosures, a historic or modern rock wall and an AD 1920s—1940s campsite.
ACKNOWLEDGEMENTS

We would like to thank the Capulin Volcano National Monument and the U.S. National Park Service for allowing OCA the opportunity to participate in this project. We especially would like to thank Kimberly Struthers and the CAVO staff for their support and enthusiasm throughout the course of the undertaking. Completion of this project would not have been possible without the support of a hard-working and entertaining crew: Brian Cribbin, Tracy Steffgen and, last but not least, David Holtkamp. A special thanks to Ronald Stauber for compiling all the GIS data and drafting the figures, and to Donna Kay Lasusky for putting the report together.
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CHAPTER 1

INTRODUCTION

Between April 26 and 30, 2010, the Office of Contract Archeology, University of New Mexico (OCA) conducted an intensive cultural resources inventory of approximately 418 acres of the Capulin Volcano National Monument (CAVO), Union County, New Mexico. This work was conducted at the request of the National Park Service (NPS). The survey area encompassed all areas of the Monument except the shield of the volcano, and included a small level area within the caldera (Figure 1). This undertaking was performed in anticipation of a proposed controlled burn at the Monument. The work was performed under Cooperative Agreement # H1200-09-0005, with fieldwork conducted under Contract # J1242090056 and preparation of the cultural resources report under Contract # J7160100002.

The project area is located in Sections 4 and 5, Township 29N, Range 8E, and Sections 32 and 33, Township 30N, Range 8E. Legal descriptions for the areas surveyed are provided in Table 1.

The OCA crew for this project consisted of Brian Cribbin, David Holtkamp and Tracy Steffgen. Robin Cordero served as Project Director and field supervisor. Patrick Hogan served as the Principal Investigator. The field investigation utilized approximately 128 person-hours (16 person-days) of fieldwork. GIS data and graphics were compiled by Ronald Stauber. Kim Struthers, NPS Natural Resources Program Manager for CAVO, served as the point of contact.

This survey resulted in the discovery of two new sites, 15 isolated occurrences and redocumentation of six previously discovered sites. Of the 15 isolated occurrences, 11 are historical/modern and the remaining four are pre-/proto-historic chipped stone artifacts. The sites include a historical/modern wall (LA 166197), a historical campsite (LA 139609), two cave sites (LA 48881 and 48883), a Folsom and two Late Prehistoric flaked stone scatters (LA 166198, LA 48882 and 139610, respectively), and a series of rock enclosures (LA 139608). Site and IO locations are presented in the confidential appendices.
Figure 1  Project location map, Capulin Volcano National Monument.
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Table 1: Project location legals with acreage.
CHAPTER 2

ENVIRONMENT

CLIMATE

Historical data for the area were compiled from four regional weather stations: Des Moines, New Mexico (#292453, active 4/1/1916–6/30/1994), Capulin National Monument (#291454, active 4/1/1966–9/30/1979), Capulin 6 SSE (#291452, active 1/1/1930–12/31/1969), and Capulin (#291450, active 7/1/1995–12/31/2009) (Western Regional Climate Center, http://www.wrcc.dri.edu/). The average maximum temperature for the area is between 61.2 and 63.9°F, while the average minimum temperature is between 30.6 and 35.4°F. The warmest months are generally between June and August, with maximum temperatures averaging around 80.4 and 83.7°F in July. The coldest months are between December and February where average high temperatures are between 42.4 and 45.1°F in January. Average annual rainfall is between 15.68 and 17.83 inches, with the two-thirds to three-quarters of this precipitation falling between May and September. Average snowfall for the area is between 41.5 and 36 inches, although one station (Capulin 6 SSE, #291450) produced a result of only 16.5 inches. This snowfall occurs generally between September and May, with the heaviest snowfall occurring between November and April. Prevailing wind directions are generally from the south between mid-spring and early fall, shifting to the west in the winter, and north in late-winter/early spring.

GEOLOGY

Capulin Volcano is associated with the Raton-Clayton Volcanic Field of northeastern New Mexico and southeastern Colorado. This broader formation covers approximately 20,000 km² and includes approximately 125 cinder cones. Some, like Capulin Volcano, are associated with lava flows and a number of other types of vents (Dunbar 2005). This volcanic field has been episodically active over the past 9 MA, with significant activity occurring during the three most recent episodes of activity. Much of this activity has been dominantly basaltic, producing cinder cones and lava flows. This activity includes the Capulin phase, which encompasses the past 1.68 Ma, which has produced at least 16 eruptions including that of Capulin and its associated lava flows.

Capulin Volcano was formed approximately 56 ka, making it one of the youngest volcanoes in the Raton-Clayton Volcanic Field. Four separate lava flows are associated with the Capulin cone, with the earlier eruption flowing to the east and subsequent flows extending to the west.

SOILS

Four major soil mapping units are noted within the Monument: the Bandera Association, the Capulin-Apache Complex, the Raton-Rock Outcrop Complex, and the Fallsam Rock Outcrop Complex (Weindorf et al. 2007). The Bandera Association comprises the cinder cone, and these soils are very well drained, in part due to the steep slopes, which result in loose sediments that are not stable enough to support vegetation. The Capulin-Apache Complex is a series of deep, well-drained soils found on the footslopes and toeslopes along the east and south sides of the cone. The Fallsam-Rock Outcrop Complex comprises the gradual west slope of the Monument. These soils are derived from modified eolian and residuum weathered from basalt. The Raton-Rock Outcrop Complex is found on the northwest and west areas of
the Monument, and consists of shallow soils formed in weathered basalt. Slopes across the Monument vary between 0 and 74 percent with an average slope of around 25.1 percent.

VEGETATION

As noted in a 2003 natural resources inventory of the Monument (Johnson et al.), CAVO contains a wide range of geologic features resulting in a diverse vegetative community. The cinder cone itself is covered primarily in piñon-juniper woodland, while the remaining monument contains a mix of pinion-juniper woodland, ponderosa pine, and High Plains short-grass prairie. A total of 243 plant species have been positively identified within the Monument that include four trees, 17 shrubs, seven sub-shrubs, 32 grasses and 86 forbs. Common plants observed during the survey include one-seed and Rocky Mountain juniper (although the former is quite rare within the Monument), piñon and Ponderosa pine, Gambel oak, skunkbush sumac, gooseberry, snakeweed, hedgehog cactus, prickly pear cactus, big bluestem, three-awn, sideoats and blue grama, muhly grasses, goosefoot and amaranth.

FAUNA

The Monument is home to a diverse range of wildlife. These include 34 species of reptiles and amphibians, 73 bird species, including some migratory taxa, and 46 mammal species (Johnson et al., 2003; Blakesley et al., 2010). During the course of the CAVO survey, OCA personnel documented the presence of elk within the Monument based on the identification of a shed antler. Also observed was the presence of a gray fox and its den. Two groups of mule deer were regularly observed: a group of three does and three fawns, and a pair of bucks, in the western and southern Monument area.
CHAPTER 3

CULTURE HISTORY

by Robin M. Cordero and Brian Cribbin

This section is derived from a pre-contact culture history of southeastern Colorado by Dore (1993) and a discussion of the protohistoric period by Turnbow and Cribbin (2008:13–14), supplemented with recent work by Mitchell (1997), Zier and Kalasz (1999) and Mack (2009). Several cultural chronologies have been proposed for the Park Plateau region with most debate focusing on the post-AD 100 time period (Baker 1964; Dick 1963; Glassow 1980; Mack 2009; Wood and Bair 1980; Zier and Kalasz 1999). Where discrepancies in nomenclature arise for the post AD 100 period, precedence has been given to the terminology and dates used by Mack (2009), which provides the most recent re-evaluation of the Park Plateau’s cultural systematics and chronology.

PALEOINDIAN PERIOD

The Paleoindian period in the High Plains begins around 11,500 BP and continues until approximately 8000 BP (Gunnerson 1987). Although some spatial and temporal differences are inferred for human adaptation during this period, Paleoindians are generally characterized as small, band-level groups of highly mobile large-game hunters. Within the Arkansas River Basin, Paleoindian remains are rare and generally consist of localities with isolated projectile points and limited excavation data.

The Clovis complex (ca. 11,500–10,950 BP) provides the first temporally-distinct part of the Paleoindian period. Clovis sites are typically composed of mammoth skeletal remains with Clovis style projectile points, although remains of horse, camel, peccary, sloth, bison, caribou, wolf, deer, bear, pronghorn, rabbit, marmot and other rodents, as well as turtle, fish, bird and mollusks also have been associated with Clovis sites (Bryan 1991; Hester 1972; Stanford 1991; Willig 1991). Clovis sites in the Arkansas River Basin tend to occur around water sources, especially adjacent to playa lakes and Pleistocene-outwash stream terraces (Stanford 1991:6–7).

The Clovis complex is followed by the Folsom complex (10,950–10,250 BP) (Zier 1999a). Folsom sites are identified by the distinctive Folsom style projectile points and are generally associated with the extinct bison, Bison antiquus. Both Ingbar (1992) and Hofman et al. (1990:225–233) note that formalized tools are uncommon in Folsom assemblages. Frison (1983), Greiser (1985) and Cassells (1997) also argue that the Folsom subsistence base was varied and included a substantial vegetal component and a range of both small and large game. Raw materials often indicate long-distance transport of high-quality materials and high levels of group mobility (Zier 1999b). A well-developed bone tool industry that includes awls, needles, beads, possible projectile points, incised disks, possible fleshers, and antler tools also has been documented (Frison 1991; Frison and Bradley 1980; Gleichman and Gleichman 1989; Wormington 1957).

In many areas, the Plano period (ca. 10,250–7800 BP) follows the Folsom complex. The Plano period comprises multiple, overlapping projectile point forms that include Agate Basin (ca.10,000–9600 BP), Hell Gap (10,250–9500 BP), Alberta (9500–9000 BP) Cody (9300–8700 BP), Frederick (8400–8000 BP) and Prior Stemmed and Lovell Constricted (8500–7800 BP) in the Northern and Central Plains, and Plainview (ca. 10,250–9800 BP), Firstview (ca. 10,150–8500 BP), and Kersey (ca. 9000 BP) in the southern plains (Zier 1999a). Assemblages from this period suggest a continuation of the high levels of mobility and long-distance transport by small groups, though there appears to be some indication of coalescing of several bands in central locations, cyclical movements of groups, and/or regional trade
Black (1991), however, argues that two distinct traditions occurred during this period: a Plains influenced big-game hunting tradition and a Great Basin influenced Mountain tradition occurring west of the Front Range. Within the Arkansas River Basin and immediately surrounding areas, Plano sites are generally communal bison killing and processing localities (Zier 1999a). As with previous periods, a range of large and small game also were exploited as well as an increased use of vegetal products as indicated by the presence of groundstone.

**ARCHAIC PERIOD**

The Archaic is the least well represented of all periods in the High Plains. It is identified archeologically by the appearance of large notched spear or dart points around 7800 BP and ends with the appearance of pottery about 1850 BP (Zier 1999b). The Archaic is generally viewed as a period of continuity in terms of lithic industries, material culture and economy (Zier and Kalasz 1991). The Archaic adaptation is thought to represent a switch to a more generalized hunting and gathering economy following the extinction of Pleistocene megafauna and effects of the Altithermal. The presence of dart points indicates hunting of larger game was done primarily with atlatls. During the Paleoindian-Early Archaic transition, Dillehay (1974) and Butler (1997) noted the absence of bison on the plains of eastern Colorado (ca. 7500/6500–4500 BP) coinciding with the Altithermal which further increased Archaic groups’ reliance on deer and smaller game. Zier (1999b) notes that Early Archaic sites (ca. 7800–5000 BP) are sparse across the region with most sites occurring in upland environments, often associated with a proximity to water in high valleys and near passes through the Continental Divide. Early Archaic trends in the foothills and plains, however, are poorly understood as few sites are known and even fewer still have been excavated.

Middle Archaic sites (ca. 5000–3000 BP) in southeastern Colorado are common and occur across a range of geographical contexts. Hunting was thought to be done with spears or atlatl and darts, and evidence for the utilization of vegetal foods is correlated with the appearance of grinding stones. Lithic raw materials tend to be dominated by locally available stone and limited evidence for widespread movement of raw materials. Groundstone technologies appear expedient and unformalized. Residential sites are commonly adjacent to permanent and intermittent watercourses. Rockshelter sites dating to the Middle Archaic also are common in the foothills and plains areas with geological conditions that favor rockshelter formation. The use of basin-type structures is widespread during this period, and small, unlined hearths are common. The economy appears based on the exploitation of a wide range of ecological niches encompassing a broad-spectrum diet of both floral and faunal resources with an emphasis on leporids, deer and pronghorn (Zier 1999b).

Late Archaic sites (ca. 3000–1850 BP) are often found overlying Middle Archaic deposits and occur with a similar geographic distribution indicating a demographic continuum. Populations appeared to have expanded as a result of incipient population growth rather than migration from one or more core areas (Zier 1999b:130), although Mack (2009:129) notes that increased territorial circumscription also could have contributed to this population increase. Sites types and distributions indicate Late Archaic peoples were exploiting an even wider range of environmental setting than previously. Larger, more complex sites tend to occur along major waterways while smaller, less complex sites occur more often in upland areas. Zier (1999b:133) suggests this pattern may be an indication of the use of base camps with smaller, short-term limited activity localities.

Burned rock middens and hearths associated with seeds and groundstone are common features indicating more intensive processing of vegetal resources. Leporids appear to be the primary prey species, but prairie dog, other small rodents, deer, pronghorn, elk, and bison are also known from sites in the region (the last two are relatively rare). Botanical remains are dominated by goosefoot seeds with lesser quantities of pigweed, hackberry, purslane, prickly pear, hedgehog, dropseed, Indian ricegrass, and
sunflower. Corn is found at some Late Archaic sites (all rockshelters), with the earliest occurrences at ca. 2600 BP at Gooseberry Shelter, 1910 BP at Recon John Shelter, and 1820 BP at 5HF1109. However, corn does not appear to be a major dietary staple as evidence for its presence in the area is scant (Zier 1999b:136–137). Mack (2009:4.134) argues that based on excavations from the Vermejo River basin, Late Archaic site components reflect a “transitory but persistent occupation of the Park Plateau” with assemblages typically reflecting “short-duration residential and logistical encampments”.

### LATE PREHISTORIC STAGE

Kalasz et al. (1999) define the post-Archaic period as the Late Prehistoric Stage, which dates from AD 100 to 1725. This stage is characterized by the introduction of new technologies, significant changes in settlement, subsistence, trade and demographics. This stage is associated with the initial appearance of the bow-and-arrow and ceramic technologies, habitation structures with stone wall foundations, and intensive use of maize agriculture but, as stated by Kalasz and others, “the exchanges and/or innovations tied to these events are probably not going to occur at uniform rates across the context area” (1999:142). Increased trade with outlying areas is evidenced by the appearance of both Puebloan and Plains ceramics, but there remain questions concerning the local vs. non-local production of these wares (Habicht-Mauche and Sunseri 2009; Mitchell 1997).

The Late Prehistoric Stage is divided into three periods: Developmental (AD 100–1050), Diversification (AD 1050–1450) and Protohistoric (AD 1450–1725). Mack (2009) argues that “Developmental Period” causes confusion in this context since the same term has been used for the early Puebloan development in the Northern Rio Grande area. For that reason, Mack’s terminology is used here. The change is essentially “a cosmetic alteration” to the cultural chronology formulated by Kalasz et al. (1999:4.51).

#### Vermejo Period (Developmental Period)

This period begins at about AD 250/300 and extends to ca. AD 950/1000. Evidence from excavated sites suggests that cultures during this period developed from pre-existing Archaic populations. Maize pollen and macrofloral evidence is consistently present, though generally in low quantities, on most sites. However, the overall botanical evidence suggests a heavier reliance on wild plant resources than on domesticates (Kalasz et al. 1999:176). The faunal remains indicate that Vermejo Period populations exploited a range of large and small mammals, as well as migratory birds, amphibians, reptiles, arthropods (crayfish), fish, and freshwater mussels. The bow and arrow first appear sometime around AD 300–400, but the atlatl and dart was still used throughout this period. The later part of the Vermejo Period is marked by the introduction of ceramics into the region. Sherds are typically described as cord-marked wares with crushed-rock temper probably representing “conoidal-based jars constructed with a paddle and anvil technique” (Kalasz et al. 1999:173). Vessels are typically unslipped, though rare occurrences of orange or gray to white slipped vessels have been noted (Hunt 1975). Following Mack (2009), this period is subdivided into two phases: Ancho and Pedregoso.

**Ancho Phase (AD 250/300 to 600/650)**

Sites during this phase are characterized by shallow pit structures, typically excavated into south-facing hill slopes and ridge tops on upland benches, and ridges 40 to 50 m above canyon floors (Mack 2009:4.53). Evidence of cultivars is limited during this phase and is presumed to represent initial experimentation in cultivation. However, Mitchell (1997:53) cautions that it has not been determined if the maize present during this period was locally produced or traded. In either case, maize represented a
minor dietary component during this phase. Groundstone assemblages typically “consist of small manos, flat and concave grinding slabs, and basin metates” (Mack 2009:4.54). Also appearing in this phase are arrow points. The points vary morphometrically, and some points are morphologically similar to dart points. Mack suggests this variability indicates experimentation with bow and arrow technology. In addition, Ancho Phase populations exhibited a “working knowledge” of local resources as evidenced by the use of graphite, malachite and muscovite, which occur as “highly localized ‘resource patches’” (Mack 2009:4.55–56).

**Pedregoso Phase (AD 650/700 to 950/1000)**

After ca. AD 540, small communities developed along the Park Plateau and intensified their use of the canyon floors. Cultigens, especially maize but also beans and possibly cheno-ams and marshelder, are ubiquitous at Pedregoso Phase settlements and indicate a greater reliance on cultivation relative to the Ancho phase. Deep, bell-shaped storage pits and later (ca. AD 770–880) the appearance of pottery further indicate the need for bulk storage of surplus plant foods. Another major development during this phase is the appearance of circular masonry structures that are two to three times larger than Ancho phase pit structures. Also present are multi-structure compounds which Mack describes as consisting of two or more circular masonry structures with curvilinear enclosing walls that “were cobbled together to form multi-room domiciles” (2009:4.56–4.57). These architectural features suggest a shift in demographics towards larger households than during the Ancho phase and may represent precursors to Sopris phase multi-room architecture. Mack (2009), contrary to the interpretations of Dorshow (1997a), Glassow (1980), and Kalasz et al. (1999), also notes that the use of pit structures persists through the Pedregoso phase up to AD 1000’s indicating that a strict unilineal sequence of Vermejo Period architecture is not necessarily warranted.

The pottery from this period generally is manufactured with either an untempered sandy-silt clay or very silty clay with coarse sand temper (Mack 2009:4.57). Pottery at this time often exhibits impressions indicating that baskets often were used as pukis. Gunnerson (1959) notes that this basket-impressed pottery is found at a number of sites along the eastern side of the Sangre de Cristo Mountains from the Park Plateau south to the Upper Pecos area, including Forked Lightening Pueblo (LA672; Kidder and Shepard 1936, 2003), the Sewer Line site (LA118808; Nordby and Creutz 1993[cited in Mack 2009:4.58]) and Sitio Creston (LA4939; Wiseman 1975). Based on this tradition of using baskets to start utility wear construction, some researchers have cited the presence of these basket-impressed wares as evidence for a technological connection between the pre-AD 1000 pottery of the Upper San Juan and the eastern slopes of the Sangre de Cristo Mountains (Glassow 1980; Habicht-Mauche and Sunseri 2008; Mack 2009; see also Peckham 1990; Opplet 1999).

Many aspects of Pedregoso phase material culture are not restricted to this phase but exhibit continuity with Sopris phase material culture. For example, tubular bone beads are generally indistinguishable between these phases (Glassow 1980:77; see also Brown and Brown 1997; Mack and Cordero 2009), as are graphite geometrics and certain aspects of culinary pottery.

**Culebra Period (Diversification Period)**

This period dates from approximately AD 1050 to 1450 based on radiocarbon and archaeomagnetism dates (Kalasz et al. 1999). Based on ceramic cross-dating and architectural traits, Mack (2009) argues that the inception date for this period should be pushed backward to approximately AD 950/1000. He further notes that most of the Park Plateau had been abandoned by AD 1270, just prior to the onset of the “Great Drought” that resulted in widespread abandonment of the Four Corners area and population
increases in the Northern Rio Grande region (2009:4.112). Given this abandonment, Mack argues that the terminal date for the Culebra period should be adjusted to AD 1250/1300.

Kalasz et al. (1999) characterize this period as one in which populations were aggregating in larger numbers than during the previous Vermejo Period. As during the preceding Pedregoso Phase, populations exhibited a reliance on both cultivars and wild plant and faunal resources. Residential structures tend towards larger and more complex multi-room settlements that appeared to be occupied longer and used more intensively than structures of the preceding period. Population aggregation reached its peak during this period as evidenced by the number of architectural sites and aggregation of structures on these sites suggestive of village formation (Mack 2009:4.38). The mechanism for this increase in population density remains poorly understood. Given the continuity in technology and expansion of Pedregosa Phase agricultural practices, however, the transition from the Vermejo Period to Culebra Period is more likely the result of incipient population growth than of incursions by migrant populations.

Kalasz et al. (1999) subdivide this period into the Apishipa (AD 1050–1450) and Sopris (AD 1050–1200) phases. These two cultures apparently diverged from the same Vermejo Period population, with Apishipa accumulating greater Plains influences and Sopris accumulating greater Puebloan influences (Kalasz et al. 1999:189; Mitchell 1997:69). However, these distinctions have not been clearly defined, nor have interactions between the two groups been systematically investigated. As outlined below, the dates for Sopris Phase also have recently been reevaluated by Mack (2009).

**Apishapa Phase (AD 1050 to 1450)**

Kalasz et al. (1999) extend the geographic boundaries of this phase to encompass an area extending from the Fort Carson, Colorado area south along the eastern extent of the Park Plateau to the Cimmaron River Valley, then east to the Oklahoma Panhandle, and then north to John Martin Reservoir (Bent Co., Colorado) just downstream of the confluence of the Purgatoire and Arkansas Rivers. Apishapa architecture occurs both in rockshelter and open settings, with the former consisting of unmodified shelters and those with single walls oriented along the dripline and occasionally bisecting the structure. Open site architecture consists of curved rock walls, occasionally with vertically oriented slabs (Winter [1988:76] disputes this feature as a temporal indicator), horizontally coursed rock walls, and daub or clay. Postholes occur around the perimeter of the walls, occasionally with rock collars around their bases, and rarely as central roof supports. An earthen roof is inferred from the presence of daub impressed with sticks and grass. Lintz (1984:48) notes that many sites appear to be in fortified settings, such as atop “steep towers, buttes, vents or isolated mesa points [with] stone perimeter walls encompassing up to 37 structures.”

Apishapa artifact assemblages exhibit certain Plains Village manifestations such as side-notched projectile points, spatulate bone tools and bone wrenches, and cord-marked ceramics. Ceramic tradewares include ancestral Puebloan, Plains Village and possibly Sopris phase wares. Lithic raw materials tend to be procured from a variety of local sources and include a small amount of trade in materials, such as alibates dolomite from north Texas and obsidian from the Jemez Mountains. An emphasis on later stage tool manufacture and refurbishment is noted on many residential sites with bifacial blanks and large flakes serving as “highly portable cores” (Kalasz et al. 1999:211). Corner-notched Scallorn points are noted, though the presence of side-notched Reed/Washita points is ubiquitous at Apishapa sites. Manos tend to be one-handed and expedient in nature and are associated with flat slab or shallow basin metates.
Apishapa Phase populations likely practiced a mixed economy of horticulture and hunting-gathering given the variability in abundance of maize and absence of beans and squash at residential sites (Kalasz et al. 1999:217–218). While maize is consistently found in small quantities at open residential sites and occasionally in larger quantities at rockshelter sites, some researchers have hypothesized that maize may have been imported as a trade commodity (Lintz 1989; Kalasz et al. 1999). Contrary to this hypothesis is the fact that residential sites “tend to occur in association with major watercourse” which implies access to arable land for agriculture (Kalasz et al. 1999). Macrobotanical evidence from Apishapa sites indicate a wide range of plants were exploited and potentially stored. The limited faunal analyses appear to indicate exploitation of both small and large game, including bison. Butler (1997) suggests that smaller game, especially leporids, may have been a more significant resource than large mammals like deer and bison.

Sopris Phase (AD 950/1000 to 1250/1300)

As first defined by Dick (1963) and later refined by Wood and Bair (1980), the Sopris phase denotes a cultural phenomenon that extends across the Park Plateau and is most often characterized by rectilinear masonry structures and the presence of Puebloan pottery, especially Taos Black-on-White, Taos Incised and Taos Gray (Kalasz et al. 1999; Mack 2009; Mitchell 1997). The presence of Taos culinary wares is problematic in that Taos Gray and Sopris Plain are not altogether distinguishable (Ireland 1970, 1973; Wood and Bair 1980:188–189). Mitchell’s (1997) analysis of Sopris ceramics demonstrates that there are at least two compositionally distinct types of utility wares, one interpreted as locally produced and the other interpreted as Taos produced. The presence of a wide diversity of ceramic types also suggests significant interaction with the Northern Rio Grande area and, to a lesser extent, with the Southern Plains (Kalasz et al. 1999:232–233).

Interregional trade networks are also evidenced by the lithic raw materials imported to the Park Plateau. Alibates dolomite, closely associated with the contemporaneous Antelope Creek Phase in the Oklahoma and Texas Panhandle, is found in small quantities in the Trinidad Reservoir area (Kalasz et al. 1999:233). Obsidian sourcing studies indicate that trade in obsidian is primarily from the Jemez Mountains region as shown by the presence of El Rechuelos, Valle Grande, and Cerro Toledo obsidian at 5LA1416 and 5LA1211 (Shackley 1997). However, most lithic assemblages consist of locally available basalt, argillite and silicified shale (Kalasz et al. 1999:233).

Projectile point types tend to be of the small, corner-notched Scallorn type, though larger dart points of the Ellis or Trinity type also have been recovered on the Park Plateau. The presence of these dart points may indicate continued use of the atlatl, or scavenging and reuse of Archaic points for knives or other tools (Kalasz et al. 1999:233). Metates are generally grouped into one of three categories — slab, basin, and trough — with the latter occurring infrequently. Slab and basin metates are usually constructed of sandstone or quartzite, while trough metates are made from vesicular basalt. Manos range in size and shape from one hand-sized, round, unmodified and expediently used river cobbles to two hand-sized longer, rectangular and heavily modified slabs. Assuming that trough metates and two-hand rectangular manos are associated with maize preparation while slab and basin metates and one hand manos were for preparation of wild seeds, other plant parts, meat, and pigments, the low frequency of the former indicates maize was an important component to Sopris diet, but wild foods likely comprised a majority of the diet (Kalasz et al. 1999:233, 237–238).

The macrobotanical evidence further supports the notion that Sopris populations practiced a dual subsistence strategy of gathering wild foods and horticulture. Maize has been recovered from most Sopris phase sites, while beans have been identified at 5LA1216 (Puseman 1997). By contrast, a wide range of wild plants taxa has been recovered from many Sopris sites (Kalasz et al. 1999:237). Faunal assemblages
indicate Sopris peoples exploited a range of large and small game including rabbits, deer, pronghorn, bear, turkey, beaver, migratory and non-migratory waterfowl, and a wide range of small rodents (Cordero 2009; Henritze 1973a, 1973b, 1973c; Henritze et al. 1970; Henritze et al. 1974a, 1974b; Wood and Bair 1980).

Turner (1980) argues that the Sopris peoples represent an Athapaskan expansion into the Southwest, an interpretation that has been uncritically accepted by some researchers (e.g. Schlesier 1994:331) while others have been more cautious (Baugh 1994:275; Kalasz et al. 1999:230). The primary concerns with Turner’s interpretation are first that it is based on a single biological trait (presence of a tri-rooted mandibular first molar), and second that the methods employed assume only one of two options – either the Sopris peoples were affiliated with Athapaskan or Puebloan populations. He did not take into account the possibility of a Plains affiliation or, more importantly, a population that had developed in-situ from earlier people of the Park Plateau. Also, as alluded to by Karhu (1995:24), the small population sizes in the Trinidad area warrants the possibility that “unusual traits appear in higher than expected frequencies due to the process of genetic drift.” Scillaci (2009), in his craniometric analysis of Park Plateau skeletal remains, notes that the residents of the Park Plateau are distinct from both Plains and Puebloan populations, although the variation between populations overlaps indicating some degree of gene flow between the Sopris peoples and both Plains and Puebloan groups. Scillaci’s analysis does little to resolve the question of Athapaskan affiliation, however, as he did not include Athapaskan samples in his research.

**Protohistoric Period**

The Protohistoric Period (AD 1540–1832) spans the transition from prehistoric to historical times, an interval when historical records are limited, particularly with respect to Native American groups. The period encompasses the Spanish colonization of New Mexico and exploration of the southern Plains, and the migration of the Apaches and Comanches into the Southwest. European influence in southeastern Colorado was indirect and episodic in nature. No Spanish, French or American settlements were established in southeastern Colorado or northeastern New Mexico during this period, so the discussion here will be limited to Apache and Comanche occupations and to early Spanish exploration of the region.

The Navajo and Apache languages, along with Kiowa-Apache, form a linguistic subgroup termed Southern Athabaskan or Apachean, which is related to the northern Athabaskan languages of western Canada and central Alaska. Similarities and differences in the languages suggest that the northern and southern groups separated within the past 1000 years, and that the Apachean speakers arrived on the northern fringes of the Southwest by about AD 1400. The route of this migration is uncertain, with some scholars positing a Plains entry along the eastern flanks of Rocky Mountains and others favoring a model of entry through the intermountain region west of the Continental Divide. Within a century, the Kiowa-Apache began an eastward migration onto the Plains, while the ancestors of the Western Apache – closely followed by the Navajo – began drifting to the south and west. The Jicarilla settled in the mountains and Plains margins of northeastern New Mexico and southeastern Colorado, while the Lipan had moved onto the Plains of central and southeast Texas by the late seventeenth century. The ancestral Chiricahua and Mescalero moved southward through the Rio Grande Valley, probably during the sixteenth century. As they diverged, the Chiricahua moved into southwest New Mexico, southeastern Arizona and adjacent areas of Mexico, while the Mescalero ranged into southeastern New Mexico and northwestern Texas (Opler 1983).

The limited historical and archaeological evidence is generally consistent with this linguistic model. Early Spanish reports indicate that hunter-gatherers occupied much of the hinterland surrounding the Pueblo region by the late sixteenth century. Although it is difficult to neatly equate the various names used by the Spanish for these groups with modern tribal groups, most can be assigned with varying
degrees of certainty to Apachean speakers. In 1540, Coronado encountered what are presumed to ancestral Eastern Apache groups on the plains of northeastern New Mexico. They are described as dog nomads who hunted buffalo and lived in skin tents. By 1599, however, reports to Oñate indicate that some Jicarilla Apache bands had adopted agriculture and were living in pueblos like those of the Tewa. Early eighteenth century reports to the Plains of northeastern New Mexico describe small Apache villages with a variety of house types and irrigated fields located along the eastern edges of the Sangre de Cristo Mountains (Opler 1983).

In the Cimmaron district, Glassow (1980) defines two phases reflecting occupation of the area by the Jicarilla Apache. The earlier Cojo Phase is tentatively dated between AD 1500 and 1750. The identifying characteristic of the artifact assemblages is a thin-walled micaceous pottery, termed Ocate Micaceous. Cojo Phase sites include a number of rockshelters and open sites with wickiup-like structures or rock scatters with abundant ground stone implements. The remains of an Apache pueblo, the Glasscock Site, also has been excavated (Gunnerson 1987:108–109). This site is located on Ocate Creek, southwest of Cimmaron. It consists of six rooms in a rectangle and a seventh room attached to one side, forming an L. The walls are adobe with no openings, suggesting that access to the structure was from the roof. The associated ceramic assemblage consists largely of Ocate Micaceous but includes some Pecos glazeware and a few pieces of blue and white Puebla mojolica. The latter ceramics suggest that the Glasscock Site was occupied during the first decades of the 1700s (Gunnerson 1987:108).

On the Plains, stone circles or “tipi rings” and Ocate Micaceous or Perdido Plain pottery are considered the hallmarks of the Apache occupation. The latter pottery is named for the Ojo Perdido Site, a concentration of over 200 stone circles located on the plains northeast of Las Vegas, New Mexico. Gunnerson (1987:109) suggests that this site may have been a frequently used Faraon Apache camp occupied by groups moving between the plains and the pueblos of Pecos and Picuris. Spanish accounts indicate that, by the late seventeenth century, the Faraon Apache ranged over a large area of the plains from the Sandia Mountains eastward. Gunnerson speculates that their villages were most likely located along the Canadian River in the Texas Panhandle.

Tipi rings are also reported near Ute Dam (Hammack 1965), Fort Sumner (Jelinek 1967), and Los Esteros (Santa Rosa Lake) where a radiocarbon date of AD 1652 was obtained from a tipi ring at the Catfish Falls Site (Mobley 1981:20). These sites are presumed to reflect occupations by the ancestral Jicarilla. Rockshelter sites at Los Esteros also yielded Tewa Polychrome and late Rio Grande Glazewares, suggesting that the Santa Rosa area was also visited by Pueblo groups who moved onto the Plains to hunt buffalo and trade with the Plains Indians (Mobley 1981:19–21).

Both raiding and trading with the Pueblos appear to have been part of the Apache economy from their earliest arrival in the Southwest. Stuart and Gauthier (1981:316–318) argue that the cycles of trading and raiding are generally correlated with shifting climatic conditions. When climatic conditions were favorable, Pueblo groups traded surplus corn with the Plains groups for meat and hides. Drought conditions caused food shortages for both groups, however. Without surpluses for trade, the Plains groups resorted to raiding. In the seventeenth century, and especially after AD 1696, the Spanish administrators inherited this trading and raiding relationship with the Plains groups (Athearn 1992:44). A change resulting from the Spanish was that raids were increasingly directed toward obtaining horses. Use of horses spread rapidly among the Apaches during the mid-seventeenth century, increasing their mobility and becoming a focus of their raids.

In the 18th century, the Apaches, as well as the Spanish and Pueblos, faced new competitors with the arrival of the Comanches. The ancestral Comanche were among the Shoshone groups that had moved onto the Northwest Plains of Wyoming and developed a militaristic, buffalo-hunting economy by the sixteenth century. They began to acquire horses in the early 1700s and were fully equestrian within a few
decades. During this period, the Comanche moved rapidly into the Southern Plains, driving the Apache into the mountains in closer proximity to Spanish and Pueblo settlements. The Comanche were able to obtain firearms from the French and their Pawnee allies, as well as encouragement for raids against the Spanish. The raids against the Spanish, Pueblos, and Apaches provided horses for trade to Plains tribes further to the north and captives for the Spanish slave trade, both of which contributed markedly to the Comanche’s growing wealth and power (Shimkin 1986). By 1750, they largely controlled the plains of eastern New Mexico and the panhandle areas of Texas and Oklahoma. Spanish attempts to support the Jicarilla Apache as a buffer against direct Comanche encroachments on New Mexico failed (Athearn 1992:83).

During the 17th and early 18th centuries, the French and Spanish adopted different approaches to the challenge of controlling nomadic groups on the southern Plains. The Spanish strategy was to conquer and then Christianize some nomadic groups, and to settle them in agricultural villages to provide a buffer for the Spanish colony in New Mexico against incursions by the French and other Plains groups (Friedman 1982:235). Toward that end, repeated efforts were made to establish an outpost at el Cuartelejo, the disputed location of which is either in southeastern Colorado or western Kansas, and San Carlos near present-day Pueblo, Colorado (Athearn 1992:46, 69; Friedman 1982:238). The French preferred to expand their influence through trade, with settlement as a vague long-term goal (Athearn 1992:77). Competition between the Spanish and French in the borderlands ceased with the Peace of Paris in 1763, which ended the Seven Years War. Spain received Louisiana as part of the peace settlement, curtailing French influence in the region (Athearn 1992:140).

Even with waning French influence, the Spanish were not able to secure their colonial frontier later in the century. The Comanche proved a formidable force on the southern Plains, while the Utes controlled the mountains of south-central Colorado. In 1776, the Spanish crown reorganized its northernmost holdings in the Americas. A defense line of presidios was established across the continent between the Gulf of California and Texas, and the provinces to the north were placed under a Commandant-General based in Chihuahua, instead of Mexico City (Athearn 1992:163). Three years later, de Anza defeated a group of Comanche near modern-day Pueblo, Colorado (Athearn 1992:169–70). The combined effects of this defeat and the devastation caused by a 1780 outbreak of smallpox that spread through the native populations brought peace between the Spanish and Comanche by 1783 (Winter 1988:115). Nonetheless, the Crown never expanded its influence in southeastern Colorado.

After the United States purchased the Louisiana Territory from France in 1803, the only notable change was that American explorers and traders (rather than French) were crossing the plains and being arrested upon breaching Spanish territory (Athearn 1992:173). After the successful Mexican Revolution, and the subsequent change in border policy, the Santa Fe Trail resulted in frequent use of the Arkansas Valley by Americans (Friedman 1982:244). The Mountain Branch ran along the north bank of the Arkansas River before following the Purgatoire River to Raton Pass. American explorers viewed the Great Plains as a barren obstacle, although the Arkansas Valley proved a useful source area and transportation route for fur trappers up until the late 1830s (Friedman 1982:235).

**HISTORICAL PERIOD**

The historical period is marked by the establishment of permanent Euro-American settlement, and ended in the middle of the 20th Century. El Cuartelejo notwithstanding, neither the Spanish nor French established long-term settlements in southeastern Colorado or northeastern New Mexico. The first permanent, non-Native habitations in southeastern Colorado were two competing trade outposts established near the confluence of the Arkansas and Purgatoire Rivers in 1832 – one by John Gannt, the
other by Ceran St. Vrain and William Bent (Earls et al. 1987:96). William Bent twice shifted locations downriver, first near modern-day Las Animas, then near Lamar.

These outposts were part of a larger phenomenon associated with the westward expansion of the United States – the Santa Fe Trail. Stretching from Missouri to its eponymous western destination, this overland transportation route provided a tenuous pre-railroad link between the growing Midwest and the Southwest. The two forks of the trail diverge in western Kansas; the northern option followed the Arkansas River to Bent’s Fort, then to Raton Pass and along the eastern edge of the Rocky Mountains, while the shorter southern route diverged south to the Cimarron River. The latter option, while shorter, was considered more hazardous due to lack of water and higher risks of predation by local inhabitants (Oakes 1995:7).

During Spanish dominion over New Mexico, traders and explorers were treated as unfriendly incursions and often were jailed. While the Mexican government, which gained control in 1821, relaxed these restrictions on trade, it was not until the Mexican-American War (1846–48) that large volumes of traffic utilized the Santa Fe Trail. Colonel Kearney’s invasion of Northern Mexico generally followed the route (Earls et al 1987:96). After the war, a system of forts was built to secure the trail; Fort Union was the most notable in New Mexico. A significant branch of the trail was developed to connect this fort with Granada in easternmost Colorado; a route which threaded between Capulin Volcano and Sierra Grande (National Park Service 2004).

While the War Between the States did affect the Territory, the destruction of the Confederate supply train by Federal forces at Glorieta Pass minimized the direct effects (Swanson 1995:43). After the war, use of the Santa Fe Trail for transcontinental commerce continued until the entire mode of transportation was eclipsed by the expansion of the Atchinson, Topeka & Santa Fe Railroad in 1880 (Oakes 1995:9).

CAPULIN VOLCANO NATIONAL MONUMENT

The history of Capulin Volcano National Monument stretches back to 16 January 1891, when Congress set the mountain aside from the public land laws. This disposition was reinforced on 9 August 1916, when President Wilson created the National Monument by exercising Executive authority under the Antiquities Act of 1906. Congress elaborated on the Monument’s purpose twice – in 1962 to explicitly name the scenic and scientific value, and again in 1987 to change the name to include “volcano” (National Park Service 2006).

The use of Capulin as a tourist attraction, and the necessary road to the rim which would make it so, stem directly from the efforts of the second caretaker – Homer Farr (Hunner and Lail 2009). In 1925, he secured the assistance of Representative John Morrow in acquiring funding for the road. Improvements were also carried out under his leadership as a Civil Works Administration project under the New Deal. Continued infrastructure improvements have occurred on a regular basis since World War Two (Hunner and Lail 2009).
CHAPTER 4

SURVEY METHODS

PRE-FIELD RECORDS CHECK

On April 5, 2010, Robin M. Cordero performed a pre-field check of the New Mexico Cultural Resources Information System to identify previously documented sites in the project area. Six sites were identified as previously recorded: LA 48881, 48882, 48883, 139608, 139609 and 139610. Additionally, Mr. Cordero conducted a search for sites listed on the National Register of Historic Places. All requisite site documentation was obtained from the Archaeological Records Management Section of the Historic Preservation Division and from the Capulin Volcano National Monument office.

FIELD METHODS

The survey was conducted by personnel meeting the Secretary of the Interior’s Professional Qualification Standards as defined in the 36 CFR 61. The field supervisor has worked extensively in the Park Plateau area, in southeastern Colorado, and in northeastern New Mexico, and is familiar with the range of cultural resources found in the region.

During fieldwork, the survey area was systematically examined on foot by professional archeologists walking at intervals no greater than 15 m (50 ft). For the most part, the outer boundaries of the survey area were marked by readily identifiable fences. The interior boundary of the survey area was defined in the Statement of Work as all areas other than the steep slopes of the volcano. Depending on the slope of the volcano’s shield, this boundary varied from 7300 ft. to 7150 ft. Coordinates for the survey area’s outer boundaries also were entered into GPS units prior to the survey to ensure that the intended area was fully covered. All cultural resources encountered during this Class III intensive survey were recorded in accordance with NPS and State of New Mexico guidelines. In addition, Kim Struthers, CAVO Natural Resources Program Manager, and project contact for the NPS, requested that OCA personnel also survey a level area within the caldera of Capulin Volcano. This area was investigated on the final day of fieldwork.

As stipulated in the Scope of Work for the project, single undatable features or scatters with fewer than ten (10) artifacts that are not related to nearby sites were recorded as isolated occurrences (IOs). The locations of IOs were recorded using a Trimble GeoXT GPS unit, and the associated vegetation and topographic setting was documented.

When a site was encountered, the crew began by flagging artifacts and features to determine the site boundaries and the overall distribution of materials. A semi-permanent datum – a rebar stake with an aluminum cap stamped with the site's field number – was then set in place flush with the present ground surface to aid in relocation. Detailed narrative description of the site was prepared using appropriate ARMS site documentation forms. To supplement the narrative description, photographs were taken of the general site, a representative sample of the features, and a requisite sample of formal tools using a Canon S51s digital camera.

OCA employs a two-stage sampling strategy for in-field artifact analysis to obtain a representative sample that can be used to estimate the number, density, and diversity of artifacts occurring in a site or subunit. The specific sampling procedures employed vary depending on the size and character of the site.
Discrete samples are most commonly used to sample dense concentrations of artifacts such as midden deposits or chipping stations. The sampling units are quadrants or transects, the size of which varies to obtain the minimally acceptable sample size.

Flag samples are used to sample sites or proveniences with more diffuse artifact scatters. With this method, all or a set proportion of the artifacts at a site are flagged during the initial phase of site documentation. The analyst begins by recording a flagged artifact at one edge of the site or provenience. As only the larger artifacts tend to be flagged, the next closest artifact is then analyzed whether or not it has been flagged. In this manner, the analyst moves systematically across the site or provenience until all or a predetermined percentage of the artifacts have been recorded.

A rare-item sample is used in conjunction with both discrete and flag samples. Although the flag and discrete samples provided adequate documentation of commonly occurring artifact classes, rare items – formal tools and such temporally-sensitive artifacts as projectile points or decorated ceramics – are often under-represented. The rare-item sample ensured that these materials were documented, and that critical chronological and functional information was obtained.

The key attributes recorded for ceramics during in-field analysis are ware, type, and vessel form, with the data recorded as counts for each relevant set of attributes. Lithics are recorded on an item-by-item basis. The variables include artifact type, condition or completeness, the proportion of dorsal cortex, length, width, thickness, striking platform type, and evidence of utilized or retouched edges. Sketches and photographs also were used to further document morphology and/or use-wear patterns.

Artifact analysis at historical sites is limited largely to narrative description of datable and functionally diagnostic materials rather than systematic inventories. However, rough tallies are made of more common materials such as discarded implements, construction materials, bottle glass, cans, etc. to aid in interpreting site function. Trademarks and other potential temporal diagnostics are sketched and/or photographed.

Although not stipulated in the Statement of Work, at the request of Kim Struthers, projectile points encountered during the survey were collected and turned over to the CAVO office. The two projectile points identified were located on the site maps, their locations were pinpointed using the Trimble GeoXT, and the UTMs and site designation were provided to the CAVO office.
CHAPTER 5

SURVEY RESULTS

As a result of this survey, the OCA field crew documented a total of eight sites including six previously documented sites (LA 48881–48883, LA 139608–139610), and two new sites (LA 166197 and 166198). The new sites include a lithic and groundstone scatter dating to the Folsom period, and a historic/modern wall. In addition, the field crew also documented 15 isolated occurrences, including 11 historical and four pre/protohistoric artifacts. These cultural resources are described below.

PREVIOUSLY DOCUMENTED SITES

LA 48881 “Indian Cave” (OCA 1039-3)

LA 48881 is a large cave on the western face of a finger-like projection of malpais extending to the south (Figure 2). The cave entrance is approximately 15 m up the face of the lava flow, and it overlooks the CAVO Visitor’s Center to the west-southwest. The talus slope in front of the cave slopes downward at a 25–35°, to a nearly level terrace that extends for approximately 350 m to the west. A scatter of artifacts extends from the cave mouth to the base of the slope (Figure 3). Including this scatter, the site measures 26 by 23 m and covers a roughly 389 sq m area.

The site is in a parkland vegetative community with grassland extending to the west and a piñon-juniper overstory covering the immediate site area. Understory vegetation consists of trumpet gooseberry and Gambel’s oak, which are especially prevalent near the cave entrance, blue grama, and prickly pear cactus.

The mouth of the cave is 8.1 m across and roughly 1.4 m high at its peak (Figure 4). The cave itself (Feature 1) is 8.5 m deep measured from the dripline and a maximum of 6.95 m across. The ceiling is heavily sooted and a maximum of 2.06 m high. It slopes dramatically at the north, however, and the ceiling in the rear of the cave is less than 1 m high. The central part of the cave floor appears to be heavily disturbed but, in the rear and north half of the cave, the sediments appears largely intact as the floor surface is level. There is a large, rock-filled pit roughly 1.5 m in diameter near the center of the cavern (Figure 5). Although these large rocks could be roof fall, this interpretation is unlikely given that a) there is no evidence of sooting on the rocks in the pit, and b) there is little to no sediment between the rocks. The more probable explanation therefore is that the pit is an excavation unit (possibly associated with the 1970s NPS excavation), that was backfilled with rocks recovered from the cave fill.

The floor slopes upward at toward the mouth of the cave, and the sediments in this area also appear largely intact. A discrete ash dump with calcined faunal bone (Feature 2) was observed in this area. This dump measures approximately 60 cm in diameter and is located just inside the north half of the cave’s mouth. The ash has smeared towards the interior of the cave due to pedestrian traffic.

The exterior of the cave is partially bounded by two dry-laid masonry walls, each about five course high, walls extending from the north end of the cave. The outer wall forms a roughly 7.5 m long arc extending out 3.5 m from the dripline. The inner wall is straighter and about 6.5 m long. The two walls connect at their southern ends, leaving a 3 m wide opening between the cave mouth and the end of the wall. The area between the walls is nearly filled with sediments and forms a flattened area in front of the cave.
Figure 2  Site map of LA 48881, "Indian Cave".
Figure 3 Overview from the CAVO Visitor’s Center of LA 48881 with artifacts on slope partially flagged. Looking East.

Figure 4 Entrance to the LA 48881 cave, looking southeast.
Artifact Assemblage

Three artifacts were found inside the cave: an andesite bifacial chopper measuring 120 mm in diameter, a siltstone utilized flake, and an andesite flake fragment. All three were on a small natural shelf situated just inside the mouth of the cave.

Other flaked and ground stone artifacts were found on the talus slope below the cave. The groundstone includes five boulder grinding slicks; two basin metate fragments, one sandstone and one rhyolite; a sandstone mano fragment, and an unidentified groundstone fragment of sandstone. The flaked stone assemblage consists of two angular debris fragments, 25 flakes, four multi-directional cores, one bidirectional core, a utilized flake, and an andesite knife fragment. Lithic raw materials for the cores are basalt (40%), rhyolite (40%), and siltstone (20%); for the debitage, they are fine-grained quartzite (32.1%), medium-grained quartzite (3.6%), basalt (25%), andesite (17.9%), rhyolite (17.9%) and silicified shale (3.6%). Of the 18 observable flake platforms, 77.8% are single facet and the remainder are collapsed. Average flake size for the complete flakes is 34.6 mm with a range of 8 to 75 mm.
No cultural/temporal diagnostic artifacts were found during this survey, but Winter (1985) dates the site to the Plains Woodland and/or Plains Village period (i.e., Kalasz, Mitchell and Zier’s [1999] “Late Prehistoric Stage”). Presumably, this assignment was based on pottery and projectile points recovered from the site by NPS personnel.

Discussion

LA 48881 was first documented by NPS personnel in an undated and unattributed report describing an excavation that was probably conducted sometime in the 1970s. Although the report indicates that the cave’s interior had been significantly disturbed (assumed to be caused by looters), the cave floor was covered by approximately one to two feet of fill at that time. Artifacts, including projectile points and sherds were recovered from the site but no description of those materials is provided. Finally, the report notes that there was a section of wall bordering a small ledge on the south side of the cave entrance that had been destroyed by park visitors by 1973.

The site was revisited by Winter in 1985 as part of his Cimarron project, and he reports that there was up to 1 m of midden at the cave. His re-documentation of the site was minimal, however, and it is not clear if he was referring to deposits in the interior or exterior of the cave. The latter seems more likely given our observations. The NPS also conducted a site revisit in 1999. The report of that visit concluded that the cave had been completely excavated/vandalized down to bedrock, and that no fill remained within the cave. They also reported that only a few artifacts were found on the talus slope in front of the cave.

During this survey, special consideration was given to documenting the disturbances within the cave. As noted above, the deposits in the central part of the cavern clearly have been disturbed, as indicated by the uneven ground and the probable excavation unit backfilled with rock. This disturbance is most obvious in the parts of the cave where the ceiling is high enough to permit the use of a shovel. In contrast, there is little obvious disturbance in the rear and northern sections of the cave where the ceiling is low. Since pin flag probes indicate that at least 30–35 cm of sediments in those areas, it is possible that the cave still contains some intact cultural deposits. Given the conclusions of the NPS evaluation in 1999, however, it is also possible that the sediments in those areas are mixed, secondary deposits. Test excavations would be needed to definitively resolve this issue. Intact cultural deposits contained at least one feature are clearly present at the mouth of the cave, however.

The exterior of the cave contains a substantial archeological deposit that was previously only minimally documented. The five bedrock grinding slicks were relocated, and an additional 34 lithics and four pieces of groundstone were found on the slope. The sediments on the slope were substantially darker than the non-site areas, suggesting the formation of a well-developed midden. As a result of the partially de-vegetated condition of the slope and the high amount of foot traffic to the cave, cultural deposits on the slope are being destabilized, which has accelerated erosion of these sediments and the down-slope migration of artifacts.

Compared to LA 139610 and LA 166198, the flaked stone assemblage from LA 48881 contains a greater amount of locally available raw materials (basalt, andesite and rhyolite) and no cherts. Along with the abundance of bedrock grinding slabs, the high frequency of local materials may indicate that the cave was occupied for a longer duration, than sites like LA 139610 and 166198, which are inferred to be short-term campsites. The number of cores from locally available sources further indicates longer term use of the site as some appear to be exhausted. This would suggest the raw materials were procured locally and reduced over a long enough duration to be discarded at the site.
The site appears to be between 51 and 75% intact, with most of the disturbance occurring to the interior cave area. As noted above, about half of the cave’s interior has been significantly impacted by vandalism (looting) and poor excavations. However, previous recorders did not take into account the exterior cave area, which is largely intact and undisturbed. The primary disturbance to the site is from unrestricted pedestrian traffic into and out of the cave. This traffic will continue to destabilize the talus slope, especially since the scrub vegetation has been removed. Also, foot traffic inside the cave will result in significant damage to the ash dump documented in the cave deposits.

LA 48882 (OCA 1039-5)

This cave is located on the east side of a small finger of the malpais that extends to the north (Figure 6). This flow is approximately 5 m high, and roughly 50 m long with a width averaging 10 m across. The cave entrance is near the upper margin of the malpais (Figure 7). The talus slope below the cave extends for approximately 10 m with a gradual grade of around 15 to 20°. East from the talus slope is a shallow basin roughly 30 by 20 m that appears to be a vernal (seasonal) pool. Northeast of the site approximately 50 m is a prominent volcanic vent that rises 30 m high with LA 139608 at its apex. LA 48882 measures 10 by 9 m and covers a roughly 71 sq m area. Vegetation surrounding the site is parkland consisting of grassland with blue grama, sideoats grama, and ricegrass, and a juniper overstory with some Gambel oak and gooseberry.

The cave (Feature 1) is 5.2 m deep, measured from the dripline to rear wall, and 3.6 m across at its maximum. The cave entrance measures 2.8 m across and is 2 m high at the dripline. A 1.1 m high wall was constructed across the mouth of the cave approximately 1.2 m inside the dripline, and this wall reduced the height of the cave entrance to 1.5 m at its maximum. This wall was manufactured from dry laid basalt cobbles and scoria. The only artifact found inside the cave was a complete mano stashed against the wall. The remaining 4 m of length inside the cave comprises three areas: two benches along the north and south sides, and a depressed central area that extends from the constructed wall to the rear of the cave (Figure 8). The two benches are approximately 40 cm high; the northern bench is 90 cm wide and the southern bench, 80 cm wide. These benches reduced the floor width to 1.9 m across, and a height of approximately 1.6 m at its maximum. Multiple pin flag probes in the central area indicate that this part of the floor is covered by at least 35 cm of fill.

Artifact Assemblage

The artifact assemblage consists of four groundstone artifacts. Only one artifact, a complete quartzite one-hand mano, was found inside the cave. This mano measures 99 by 77 by 60 mm and exhibits a single ground surface. A second mano fragment was observed on the talus slope. This mano fragment was manufactured from rhyolite and exhibited a single use surface. A rhyolite basin metate fragment was found immediately downslope from the cave entrance. This fragment measured 90 mm wide and 90 mm thick, and exhibited a high degree of polishing. A small unidentifiable groundstone fragment of an unidentified volcanic rock was found near the base of the talus slope.
Figure 6 Site map of LA 48882.
Figure 7  Site overview of LA 48882, looking west-northwest.

Figure 8  Central interior of the LA 48882 cave, looking northwest from entrance.
Discussion

The site appears to have changed little since it was originally documented by Winter (1985). Unlike LA 48882, the interior of this cave shows no indication of looting or other modern disturbance aside from natural disturbances from fauna. A porcupine mandible was observed in the cave, and a small excavation, possibly by a canid or porcupine, was observed in the floor of the cave. As with previous revisits in 1993 and 2009 by NPS archeologists, OCA personnel documented only a small number of artifacts on the talus slope in front of the cave. This paucity of artifacts appears to be a result of the lack of pedestrian traffic to the cave and minimal erosion to the slope, rather than a low intensity of human activity. Ascribing a temporal affiliation for the occupation of this cave is difficult given the lack of temporally diagnostic artifacts. Although the cave may have been used during the historical period, the construction of the wall and resulting deposition outside the cave and covering the walls indicates some degree of antiquity for the wall, which is similar to those LA 48881.

This site is in excellent condition (76 to 99% intact) with no major site disturbances to either the exterior site area or cave interior. Pedestrian traffic appears minimal in the vicinity of the cave, and surface vegetation is largely intact.

LA 48883 (OCA 1039-1)

This site is a sparse scatter of flaked and ground stone artifacts situated on top of a low basalt flow on the southeast side of Capulin Volcano (Figure 9). The immediate site area has multiple large basalt boulders up to 2 m tall (Figure 10). The lava flow is approximately 2 m high and less than 30 m wide, extending to the south outside the park boundary. A two track fire road runs generally east-west just north of the site. This site measures 37 by 32 m and covers a roughly 941 sq m area.

The site vegetation is moderately dense to sparse, and is composed principally of a few piñon trees and an understory of blue grama, three-awn and yucca. Sediments across the site are generally less than 20 cm deep.

Artifact Assemblage

Winter (1985) originally documented the site as a small scatter of five chert and basalt flakes, a large biface, and a small red chert Fresno point (ca. AD 850–1750). A later revisit in 1999 documented additional projectile points and tool fragments, but descriptions of these were not provided. During this survey, only two flaked lithic artifacts were found: a complete flake of orange chert and a silicified shale flake fragment. Also identified was a basalt boulder grinding slick. Of these three artifacts, only the chert flake had been previously documented.

Discussion

As originally documented by Winter (1985), the scatter consisted of five flakes, a biface, and a projectile. All of the artifacts, except the point, were located at the base of one of the large boulders on site. When the site was revisited in 1999, NPS personnel in 1999 noted the presence of a few projectile points in addition to lithics. Most recently, NPS personnel revisited the site in 2009, but were unable to locate any artifacts at this location.
When the site was revisited during this survey, only one of the flakes documented by Winter was relocated. A bedrock grinding slick and a previously unrecorded flake were also found, however. In attempting to use Winter’s site map to relocate the previously documented artifacts, extensive rodent burrowing was noted around many of the large boulders in the site area. Extensive rodent burrowing was noted around many of the boulders in the site area and this and other bioturbation processes probably accounts for the differences in how the site appears to the archaeologists visiting at different times. That is, the bioturbation may alternatively expose and bury artifacts.

Based on the collective artifact assemblage documented at the site, the scatter most likely represents a short-term camp. The presence of the grinding slick supports this interpretation, as does the proximity of the artifacts to the boulders which would have provided some degree of shelter. As most of the artifacts appear to have been brought to the surface as a result of rodent burrowing, it seems likely that buried cultural deposits are present.

Overall, LA 48883 appears to be in good condition with disturbances limited to localized bioturbation in the vicinity of the larger boulders. The remainder of the site appears to be minimally impacted by erosion. Given the dispersed nature of the assemblage and difficulty by two independent groups of archaeologists in relocating and identifying artifacts, this site is only minimally at risk from damage by pedestrian traffic and looting.
LA 139608 (OCA 1039-4)

This site is a series of small masonry enclosures situated on top of a conical volcanic hill approximately 25 to 30 m high (Figure 11). The hill top is a relatively level area strewn with large basalt and scoria boulders and bedrock exposures (Figure 12). This upper level area measures approximately 30 m north-south by 10 m east-west, with the south end slightly more elevated than the north end. The southern and western slopes are very steep with a grade of over 35°, while the eastern and northern slopes are slightly less. This site measures 24 by 12 m and covers a roughly 225 sq m area.

Site vegetation consists of a sparse overstory of piñon and juniper with patches of dense Gambel oak. The understory is equally sparse, and includes gooseberry, sumac, blue grama, sideoats grama, Indian ricegrass and prickly pear. There is less than 10 cm of fill across the site.

The site consists of a series of six enclosures extending across the top of the hill. These enclosures are partially contiguous and are formed by dry laid blocks of scoria or basalt. The walls are generally between 0.4 and 0.6 m, although one is 1.1 m high (Figure 13). Individual enclosures vary from 1.16 m to 3.5 m across. There are no artifacts associated with these enclosures.

Discussion

LA 139608 was recorded by NPS personnel in 1999 as a series of nine rooms in a defensive position (although not necessarily a defensive site). A subsequent visit in 2009 relocated eight of these rooms, and noted the lack of artifacts at the site. As presently observed, the walls appear in good condition with some collapse of walls at the north end. Although nine rooms were originally documented, and eight relocated on a subsequent visit, OCA personnel were confident in their identification of only six enclosures at the site. While additional enclosures may exist, these were difficult to distinguish from the natural rock outcropping. This site likely did not function as a defensive site given the orientation of the walls and location of the rooms, as the slope with the easiest access (northeast and east slopes) was the side with few enclosures and limited visibility from those enclosures. A more likely alternative is that the site was a lookout for historic sheep herders, or possibly that it was used for ceremonial purposes by tribal groups using this area.

The site is in very good condition (76 to 99% intact) with minimal evidence for severe impacts to the site. The primary disturbance to the site is potential collapse of walls from pedestrian traffic. However, given the inaccessibility of the site and the presence of multiple intact walls, this potential threat is limited.

LA 139609 (OCA 1039-7)

This site is an old campground dating from the early- to mid-20\textsuperscript{th} century that consists of a freestanding fireplace and two discrete artifact scatters (Figure 14). The site is located at the head of a narrow valley with the base formed by a collapsed lava tube (Figure 15). The collapsed tube extends to the southwest and measures approximately 25 m across. There are low basalt ridges to the east and west of the site, while a small meadow extends to the north, and a large stand of Gambel oak bounds it on the south. The “Boca Trail” cuts through the west side of the site. The area is relatively level and well sedimented due to the formation of a natural retention wall on the south end that has served as a sediment trap. This site measures 23 by 11 m and covers a roughly 159 sq m area.
Figure 11 Site map of LA 139608.
Figure 12  Overview of south end of LA 139608.  Looking north.

Figure 13  Example of intact wall section on LA 139608.  Looking northeast.
Figure 14  Site map of LA 139609.
Site vegetation is parkland consisting of a mixed Ponderosa Pine, piñon, juniper and Gambel oak overstory, and an understory of big and little bluestem, mountain muhly, and blue grama. The overstory is primarily restricted to the peripheral site areas and immediately outside the site. Sediments are up to 40 cm deep.

The site is marked by Feature 1, a square masonry fireplace with two separate fireboxes, one on the north and one on the south side (Figure 16). The open fireplace measures 53 inches by 48 ½ inches, and is currently 71 inches tall. Additional rocks and mortar found at the base of the feature on the north side are probably debris from the collapse of the top of the chimney. The fireplace is constructed of coursed vesicular basalt, rhyolite, and scoria cobbles mortared with hand-mixed cement. On the south side, a semicircle line of rocks has been place around the firebox that extends to a maximum of 50 inches from the fireplace.

Artifact Assemblage

There is a large historical artifact scatter covering a 9 by 4 m area at the south end of the site. Artifacts in this concentration include a fragment of crockery, a low-fired historic ceramic, and two stoneware bowl fragments; four potted meat cans, a vegetable can, three large can lids, and two metal fragments; and 40 clear glass shards, three clear glass bottle bases, one cobalt blue glass base, 12 brown glass body shards, and one brown “Duraglas Way” bottle base with a makers mark dating to 1955. Other historical artifacts at the site include two small potted meat cans, a large vegetable can, a mid-sized meat can, and a solder dot can base. A single large quartzite flake fragment was the only pre-contact artifact observed on site.
Figure 16  Feature 1, fireplace, at LA 139609.  Looking northeast.

Discussion

This site was originally documented in 1998 by NPS personnel. It was reported as a scatter of tin cans and a single standing fireplace dating to between 1920 and 1940. A later NPS visit in 1999 noted that the “Boca Trail” followed the old access road into the site area and wound around the chimney.

During this survey, we documented a substantially larger and more variable artifact scatter than initially reported. As noted during the previous site revisit, the fireplace is in good condition. One minor discrepancy was noted in the original documentation in that there were two separate fireboxes in the fireplace, a feature not previously reported. This feature suggests the campsite was intended to be used by multiple groups. The artifact scatter suggests the site was used as early as the 1920s with a terminal date that appears to be later (post-1955) based on the Duraglas mark. The single lithic artifact likely represents an isolated artifact.

The site is in good condition. Although a trail crosses through the site, this increased visibility and access to the site does not appear to have significantly affected the artifacts or fireplace.
LA 139610 (OCA 1039-8)

This is a dual component site encompassing a Late Prehistoric lithic scatter and a masonry wall that was probably built during the historical period (Figure 17). The site encompasses a series of four sediment catchment basins forming a terraced slope that extends downslope generally to the east (Figure 18). This site sits atop the western edge of a prominent malpais and, from the uppermost terraces, provides an expansive view of the region from the south to northwest. Each terrace is enclosed by a natural ridge of basalt that served to retain sediments in each basin. These catchment basins are 12−14 m in diameter except for Area 4, which is 6 m in diameter. Total elevation difference across the site is about 4 m. This site measures 49 by 43 m and covers a roughly 987 sq m area.

Site vegetation consists of a juniper, ponderosa pine, and piñon overstory with an understory of blue grama, sideoats grama, three awn, mountain muhly, big bluestem, Gambel oak, and gooseberry. Surface visibility at the site was 51−75% in Area 4 where a thick pine duff obscured almost the entire ground surface. Sediments are at least 30 cm deep in most areas of the site.

Feature 1 in Area 3 is a dry-laid masonry wall of local basalt cobbles (Figure 19). The wall is approximately four courses high and one course wide, and measures 4.25 m long, 0.59 m wide, and a maximum of 0.80 m high. Only a 2 m long segment remains intact. The wall extends between two large basalt boulders. There is a shallow (<20 cm deep) depression northwest of the wall. The depression is about 2 m in diameter and may be the remnants of some type of ephemeral shelter or blind.

Artifact Assemblage

The lithic artifacts in Area 1 consisted of 13 flakes, one of which was utilized. Eleven of the flakes were fine-grained quartzite, one was white chert, and one was red chert. There was no dorsal cortex on any of the flakes. All artifacts were fragmentary.

In Area 2, 12 flaked stone artifacts were identified including a complete Washita point of Jemez obsidian (Figure 20). Ten of the remaining are flakes and one is a utilized flake. In contrast to the assemblage in Area 1, almost half of the flaked stone debitage is chert while the remainder is fine-grained quartzite. Of the five flakes with intact platforms, three are single facet and two are collapsed.

Area 3 yielded eight pieces of debitage, almost entirely manufactured from quartzite. These included one angular debris fragment and six flakes, all of quartzite, and one red chert flake. Three of these flakes exhibited single faceted platforms, while two other flakes had collapsed platforms. Only two of these flakes were complete. In addition to the debitage, a small, oxidized sandstone metate fragment was found in Area 3. Only one artifact was identified in Locus 4, a complete brown chert flake with a single facet platform.

Discussion

The site was originally documented by NPS personnel in 2003 as a series of four windbreaks or blinds with a scatter of lithics that have gradually migrated downslope due to alluvial action. A later revisit in 2009 noted that only one windbreak/wall was clearly cultural although there appeared to be several natural blinds as well as a possible corral. Also noted during the revisit was the presence of a cairn that was possibly erected by fire crews doing thinning work.
Figure 17 LA 139610 site map.
Figure 18  Site overview of LA 139610 from west edge of Area 3. Looking east.

Figure 19  Masonry wall (at left) and associated depression (Feature 1) at LA 139610. Looking northwest.
In redocumenting the site for this survey, only one distinct wall with an associated depression was identified. The possible corral appeared to be one of the natural basalt ridges that form the edges of one of the terraces. Given the distinct differences in artifact assemblages from Areas 1, 2 and 3, they are unlikely to be artifacts eroded downslope from a single scatter, which would probably have resulted in greater homogeneity. More likely, the individual scatters represent distinct occupation episodes or discrete activity areas. The Washita point suggests that at least one of these use episodes dates sometime between AD 1200 and 1700. This point was collected and is curated at the CAVO NPS facility under catalog number CAVO 49.

There are no significant disturbances to the site. Recent vegetation clearing appears to have had a minimal impact to the site, although large amounts of cut brush were placed in artifact containing areas. The site’s visibility and accessibility does increase its potential for looting of surface artifacts, especially given the identification of an intact projectile point on the surface.

NEW SITE DISCOVERIES

LA 166197 (OCA 1039-2)

This site is a historical feature consisting of a rock wall with no associated artifacts (Figure 21). The wall is constructed at about midslope on the east side of a 7 m high lava flow that extends southwest from Capulin. A small basin extends south from the site. The “Lava Trail” runs past the site at the base of the slope. Slope across the site is approximately 30°. This site measures 4 by 3 m and covers a roughly 7 sq m area. Vegetation consists of piñon and juniper with an understory of Gambel oak and bunch grasses. Much of this vegetation has been burned.

Feature 1 is a rock wall than runs roughly northeast-southwest between two large boulders (Figure 22). The length of the wall is 5.9 m and the maximum height is 0.75 m. The wall was likely higher, but it has subsequently slumped into a 2.25 m wide pile on the southeast side of the wall. The wall is constructed of dry-laid local basalt cobbles.
Discussion

There are no associated artifacts or temporally diagnostic features associated with this site to indicate a date of construction. The wall is in a poor location for a hunting blind given the wide open plain in front of the wall. This wall also does not appear to have served as a drainage control as it occurs above the location of any incised channels, and there is no evidence of a channel at this location.

Major disturbances to the site are natural slumping of the walls downslope. The wall presently appears to be stable, and pedestrian traffic should have a minimal effect.
LA 166198 (OCA 1039-6)

This site is a sparse lithic scatter possibly dating to the Folsom period. The site consists of sediment-filled basin (Area 1) that measures 38 by 18 m on the northwest edge of a lava flow on the west side of Capulin Volcano (Figures 23 and 24). The site also includes a small 27 by 17 m bench (Area 2) located 20 m southeast and approximately 2 m below the level of the basin. The basin is formed by a depression in the basalt flow that created a natural sediment trap. The surface of the basin is densely vegetated with grasses, the exception being at the west end of the basin where an anthill has cleared a roughly 3 m diameter area. The site overlooks a wide valley to the north with a direct view of the Folsom Site, the type site for the Paleoindian Folsom Complex. To the east is a small, open glade. This site measures 81 by 45 m and covers a roughly 2656 sq m area.

Site vegetation consists of a juniper and piñon overstory with few trees occurring within the confines of the basin. The understory is comprised of blue grama, three-awn, and scrub oak. A series of pin flag probes in this basin revealed at least 40 cm of sediments.
Artifact Assemblage

A total of 24 artifacts were identified at LA 166198, most (21) of which are located in Area 1. The majority of the artifacts from Area 1 were found in the immediate vicinity of the anthill at the west end of basin. The peripheral artifacts include two groundstone fragments: a coarse-grained rhyolite fragment and a quartzite possible mano fragment. Also identified in the peripheral area was a quartzite utilized flake. The artifacts near the anthill consist of 17 pieces of debitage and a Folsom point midsection (Figure 25). These debitage includes three angular debris fragments, 12 flakes, and two microdebitage.
fragments. Additional microdebitage (10 to 15 pieces) was visible on the anthill but not recorded. Of the documented artifacts, fine-grained quartzite was most common (8), followed by chert (4), andesite (3), basalt (1), chalcedony (1) and silicified wood (1). One of the chert artifacts may be alibates dolomite, but the fragment was too small to accurately assess. Platform types include single facet (2), collapsed (2), cortical (1), and multifaceted (1). One artifact, a proximal quartzite flake fragment, has 100% dorsal cortex. The Folsom point midsection was manufactured from a gray chert. Area 2 contained a fine-grained quartzite flake fragment, a fine-grained quartzite utilized flake, and a proximal biface fragment manufactured from a pink chert.
Discussion

The association of the artifacts from Area 1 with the Folsom point fragment appears to be a strong one given their close proximity (within a 3 m diameter area) and large variability in raw material types observed surrounding the anthill. Although later occupations cannot be ruled out, the wide variety of raw materials, including several non-local materials, is suggestive of a Paleoindian site use. The ability to observe the Folsom Site and the surrounding landscape from this vantage is significant in that it would allow Folsom hunters to observe the locations of bison herds on the landscape. The presence of a point midsection indicates that points were reslotted at this location, a time consuming activity that is presumed to occur at a base camp or campsite location. The presence of microdebitage further indicates flaked stone tool production and/or tool resharpening occurred at this site, also activities that are typically conducted at campsites or base camps. Although not thoroughly documented, the microdebitage in the anthill contained a very high diversity of raw materials, and were primarily manufactured from silicified materials (silicified wood, various colored cherts and chalcedony).

The identification of most artifacts, especially microdebitage, in the area immediately surrounding the anthill, and almost no artifacts in the eastern 2/3 of the basin, suggests that either the activity area associated with this site was highly localized, or the sedimentation and subsequent stabilization by grasses has resulted in a stable, buried archeological deposit. This alternative is more likely given the large number of artifacts identified within a small area and within a highly localized, disturbed context.

The site is in very good condition with no major site disturbances except displacement of artifacts by ants. Pedestrian traffic appears to have had a minimal impact to the site as most of the surface vegetation appears stable. The Folsom point was collected and is curated at the CAVO NPS facility under catalog number CAVO 48.

ISOLATED OCCURRENCES

A total of 14 isolated occurrences comprising 25 individual artifacts were documented during this survey (Table 2). Most of these IOs (71.4%) are historical and post-date the 1940s. Many historical artifacts were located along the old fire road and may have been associated with the use of the old fire road.
<table>
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<td>1</td>
<td>Core, multi-directional. Fine grain rhyolite. 65 x 50 x 35 mm. 0% cortex.</td>
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<td>2</td>
<td>large metal can, possibly gasoline or syrup can, w/ spout; 8inx14in (wxl)</td>
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<td>3</td>
<td>Proximal flake. Chert, banded red. 25 mm wide x 12 mm thick. 1-25% cortex.</td>
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<tr>
<td>4</td>
<td>Oil can; lap and lock side seam; double church key opening; &quot;SAE&quot;; 5 1/2 in x 4 in (lwx)</td>
</tr>
<tr>
<td>5</td>
<td>(A) lard pail; lap and lock side seam; lapped end seam; pry off lid; eared; 5 in x 5 1/2 in (diam x ht)</td>
</tr>
<tr>
<td>6</td>
<td>Small pail w/ lap and lock side seam; button bails; no lid or handle; 6x5 in (ht x diam); &quot;EST-2AU&quot;</td>
</tr>
<tr>
<td>7</td>
<td>(B) Possible potted meat or bean can; 4 in x 4 3/4 in (diam x ht); lock and lapped side seam; lapped end; count: 3</td>
</tr>
<tr>
<td>8</td>
<td>Rect potted meat lid; knife opened; &quot;EST 2C&quot;</td>
</tr>
<tr>
<td>9</td>
<td>&quot;?L862&quot;</td>
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<tr>
<td>10</td>
<td>Small pail w/ lap and lock side seam; button bails; no lid or handle; 6x5 in (ht x diam); &quot;EST-2AU&quot;</td>
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<tr>
<td>11</td>
<td>glass globe fragment</td>
</tr>
<tr>
<td>12</td>
<td>sanitary can; knife opened; 4 3/4 x 3 in (ht x diam)</td>
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<tr>
<td>13</td>
<td>5 in x 5 1/2 in (diam x ht)</td>
</tr>
<tr>
<td>14</td>
<td>can opener opened; crimped end</td>
</tr>
<tr>
<td>15</td>
<td>Ponderosa pine with a roughly 50 cm by 30 cm area that has been heavily marked by a metal axe. Over 20 marks are noted, and bark has been removed from this area. Bark has partially grown over the axe marks at the margins of the area. These axe marks appear to be late historic to modern in origin.</td>
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</table>

Ponderosa pine with a roughly 50 cm by 30 cm area that has been heavily marked by a metal axe. Over 20 marks are noted, and bark has been removed from this area. Bark has partially grown over the axe marks at the margins of the area. These axe marks appear to be late historic to modern in origin.
CHAPTER 6

SUMMARY AND MANAGEMENT RECOMMENDATIONS

The intensive pedestrian survey of approximately 418 acres at Capulin Volcano National Monument resulted in the discovery of two new sites and 14 isolated occurrences. Six previously recorded sites were also re-documented. For the most part, the previously recorded sites appear to have changed little and most of the differences noted are probably related to the more rigorous documentation procedures employed for this survey. The exception is LA 48881 (“Indian Cave”). When the cave was last revisited in 1999, Anderson and Spude concluded that no intact cultural deposit remained at the site. During this survey, however, OCA documented the presence of substantial intact sediments within the cave, including an intact feature. An extensive midden deposit that included a number of artifacts was also found on the talus slope extending from the mouth of the cave. These findings indicate that there are still intact deposits at LA 48881 that have the potential of yielding significant information about the region’s prehistory.

One of the two newly discovered sites is LA 166197, which consists of a historical or modern rock wall. The site is highly localized and probably represents a single use episode, but the function of the wall is unclear. The other newly discovered site, LA 166198, is a small lithic scatter with a fragmentary Folsom point. It is situated in an area with an excellent overview of the surrounding terrain, including the Folsom Site bison kill (National Register #66000473). Given this setting, it is possible that LA 166198 encompasses the remnants of a Folsom campsite or game overlook. The site appears to be largely buried, however, and it is not clear from the surface remains that the Folsom point is directly associated with the other materials at the site. Consequently, it is possible that the Folsom point was collected and subsequently discarded by some later pre-contact group inhabiting the region.

Although only eight archaeological sites have been documented at the Monument, they span much of the history of human occupation in the region. The Folsom point at LA 166198 indicates occupation of the area by Paleoindian hunter more than 10,000 years ago. Four other sites are tentatively dated to the Late Prehistoric or Protohistoric periods, indicating sporadic use of the area between about AD 850 and 1700. LA 48881 may represent a seasonal occupation but the other sites are most likely short-term camps established by groups engaged in hunting or wild plant gathering. Two sites are historical in age, and reflect herding activities and early recreational use of the Monument during the late nineteenth and early twentieth centuries. The eighth site is of unknown age and function. It may be the result of herding activities, or possibly religious/ceremonial activities by one of the historically-known Native American tribes.

Significance Recommendations

LA 48881

This cave site is recommended as eligible for nomination to the National Register of Historic Places under Criterion (d) of 36 CFR 60. The site has been partially damaged due to looting and poor excavation methods. This damage appears to have affected only a portion of the cave deposit, however, and has not affected cultural deposits outside the cave. Within the cave, approximately 25 percent of the floor appears unaffected by the looting, and another 25 to 50 percent is only minimally impacted, as evidenced by the presence of an intact ash dump within the cave deposits that contains calcined bone. Previous visits to the site demonstrated an occupation of the site between AD 900 and ca. 1300. This period is
poorly understood in the region, and LA 48881 has the potential to increase our understanding of this period, including the apparent abandonment of the region in the AD 1300–1500 time frame. The presence of faunal remains and groundstone indicate the potential for this site to provide data not only on native subsistence strategies, but also on the history of biodiversity and the geographic distribution of species in the region. The presence of ceramics also indicates the potential for this site to yield data on early agricultural practices on the western Great Plains. Lastly, the talus slope extending outside the cave exhibits evidence of substantial archeological deposits that would contribute substantially to issues of resource procurement, lithic technology and use of local raw materials, and interregional trade.

**LA 48882**

This cave site is also recommended as eligible for nomination to the National Register of Historic Places under Criterion (d) of 36 CFR 60. This site has substantial information potential given its deep and remarkably intact sediments within the cave. Unlike many caves and rockshelters in the region, this cave exhibits no evidence of looting. As a result, this site may contain high resolution data regarding the pre-contact history of the region that could include subsistence and paleoenvironmental data. The dry nature of this cave also indicates that it may contain the remains of a range of perishable artifacts, such as basketry, sandals, textiles, and wooden implements, which are known from multiple rockshelter sites in the Philmont Scout Ranch, Trincheras, and Union County areas.

**LA 48883**

LA 48883 is recommended as eligible for nomination to the National Register of Historic Places under Criterion (d) of 36 CFR 60. The artifact scatter includes a Fresno point, which dates the site to the Late Prehistoric Stage (ca. AD 1200–1700). The site probably has intact subsurface deposits given that nearly all of the surface artifacts were found in areas of heavy rodent disturbance. The flaked stone assemblage also has a diversity of lithic raw materials, and analyses of these materials may provide information relating to the movements of mobile groups and/or regional trade patterns. Finally, the presence of a projectile point and grinding slick suggest that the site may yield data concerning subsistence activities.

**LA 139608**

LA 139608 consists of six masonry enclosures with no associated artifacts. These features may be related to livestock herding activities in the area or they could have religious/ceremonial significance for one of the Native American tribes that formerly occupied the region. If the site does in fact have significance for one or more tribes, then it would be eligible for nomination to the National Register of Historic Places as a traditional cultural property. Archival research and consultations with potential concerned tribes is needed to determine if LA 139608 is in fact a traditional cultural property before any determination can be made of the site’s register eligibility.

**LA 139609**

This site encompasses one of the few early standing structures constructed on the Monument. It is potentially eligible for nomination to the National Register of Historic Places under Criterion (a) of 36 CFR 60 in that it appears to be associated with the early public use of the Capulin Volcano National Monument. As such, it is related to the early development of the Monument and the National Park...
System, as well as to the development of tourism in the region. Additional documentary and/or oral history evidence is needed to confirm the association but if it can be demonstrated, then the site possesses sufficient integrity to convey and impression of the early visitor experience.

**LA 139610**

LA 139610 is recommended as eligible for nomination to the National Register of Historic Places under Criterion (d) of 36 CFR 60. The site encompasses three artifact concentrations that may represent distinct occupational episodes. Based on the presence of a Washita arrowpoint, one of these occupations can be tentatively dated to sometime between AD 1200–1700. Site integrity is excellent with minimal evidence of erosion across the site, which makes it likely that buried artifacts and/or features are present in the three areas. Thus there is the potential to recover datable materials and subsistence remains. Analysis of the artifact assemblages can provide additional information concerning the activities conducted at the site and the variety of lithic raw materials represented may provide information concerning regional mobility or trade patterns.

**LA 166197**

This site consists of a dry-laid masonry wall that was probably built during the historical period. As there are no associated artifacts, neither its age nor cultural affiliation can be established with any degree of certainty. Given this lack of association and the site’s limited data potential, LA 166197 does not appear to meet any of the National Register eligibility criteria, and is recommended as not eligible.

**LA 166198**

This site is recommended as eligible for nomination to the National Register of Historic Places under Criteria (d) of 36 CFR 60. LA 166198 was identified as a possible Folsom campsite based on the presence of a Folsom point fragment and a small lithic assemblage consisting largely of microdebitage. Although this assemblage is consistent with a Folsom occupation, much of the site is buried. Consequently, the possibility that the site is a later occupation, and that the Folsom point was collected and subsequently discarded by this later group, cannot be totally discounted. In either case, the site clearly has the potential to yield significant information beyond that documented during this survey.

**Management Recommendations**

Two primary activities have a direct effect on the cultural resources at Capulin Volcano National Monument. The first is the prescribed burn, which was the immediate impetus for this survey. Trees and brush already have been cut within the boundaries of the sites in anticipation of the prescribed burn, and those activities were monitored by NPS personnel. The second activity is the pedestrian impact caused by visitors to the Monument. The potential impacts to cultural resources resulting from these two activities are evaluated below for each site. The potential for interpreting cultural resources within the Monument is then considered.
The prescribed burn could significantly impact the archeological remains at this site. First, the heat generated from fires has the potential to damage many of the artifacts, especially the boulder grinding slicks. Some of these slicks already have fractured, and others exhibit signs of signs of surface exfoliation and flaking. Fires on this site could exacerbate and accelerate the rate of disintegration of these grinding slicks. Fires in or near the cave, could also contaminate the cultural deposits with modern charcoal. A more pressing concern within the cave, however, is the potential for a fire to cause additional rock to exfoliate or cleave from the ceiling. The second direct effect, impact from visitors, has contributed to the devegetated state of the talus slope, thereby accelerating erosion of cultural deposits. Pedestrian traffic has also resulted in damage to intact cultural features within the cave.

To minimize the effects of these activities, the site area should be excluded from the prescribed burn. It also is recommended that the previously cut brush be removed from the site to decrease the potential fuel load, especially at the mouth of the cave. If implemented, these two actions should result in no adverse effect to the site. To minimize the pedestrian impacts to the site, a walking trail could be established to the cave that would restrict and localize the pedestrian impact to the slope. Also, the NPS could enhance the prevalence of certain plant taxa that are already abundant at the mouth of the cave, such as gooseberry, which may limit the likelihood of individuals travelling “off-trail”. Lastly, deposits within the cave should be stabilized and protected, or access to the cave’s interior should be limited to avoid further degradation of the cave’s interior.

The lack of large fuel sources (i.e., trees, large branches, and cutting piles) at this site indicates little potential for significant heat damage to the site and the cave. Although these fires will remove vegetation from the site surface, potentially exposing it to erosion, the gradual nature of the slope suggests this erosion should be minimal. Pedestrian traffic to the site appears negligible, and any visual treatment of the site may increase the site’s visibility to park visitors. It is recommended that an inspection of the site be conducted prior to the prescribed burn to remove any brush and other medium to large fuel sources from the site.

The prescribed burn should have a minimal to no effect on the site as there is little fuel on-site. Pedestrian impacts are similarly minimal given the low visibility of artifacts and the apparent buried nature of the assemblage. It is recommended that no additional treatment of the site is necessary to mitigate either pedestrian impacts or the prescribed burn.

The site contains minimal vegetation for fuels, and any potential impacts from the prescribed burn should be minimal to no effect. It is recommended that no additional treatment is necessary for the prescribed burn. The relative difficulty in accessing the site likely limits pedestrian traffic and the effects of this traffic. Given the detail of previous documentations at the site, it is not possible to assess if any of the walls have collapsed since the site was initially recorded.
The site contains a thick stand of Gambel oak at its south end adjacent to the dense artifact scatter. A prescribed burn in this area may result in damage to the historic artifacts associated with the artifact scatter given the potential fuel load. It is recommended that the prescribed burn avoid this area if possible. If this is not possible, then it is recommended that the Gambel oak be cut and removed from the immediate vicinity of the artifact scatter to reduce the fuel load on site. The position of the walking trail through the site does result in a high degree of traffic through the site area. However, this traffic does not appear to have significantly affected the site, and no further mitigation is necessary.

This site area does not contain a substantial fuel load in the sedimented areas with the exception of Area 3, which contains large piles of cut brush. In addition, Area 4 contains a thick duff layer up to 4 cm thick. As a result, the prescribed burn would have a significant effect on the archeological remains in both Areas 3 and 4, and a minimal impact in Areas 1 and 2. It is recommended that the large piles of cut brush be removed from the site prior to the prescribed burn. If possible, the prescribed burn also should avoid this site. If avoidance is not possible, a monitoring plan should be drafted to ensure that the individual terraces do not undergo significant amounts of erosion prior to the establishment of new ground vegetation. Pedestrian traffic appears to have had a minimal impact to the site. The ground surface is moderately vegetated and there does not appear to be substantial amounts of erosion occurring to the site area. Trails also do not cross the site area, thereby also minimizing pedestrian traffic to the site. It is recommended that no further mitigation of pedestrian effects is necessary.

The prescribed burn should have no effect to this site’s integrity or data potential. Pedestrian traffic does not appear to have significantly affected the wall. No further treatment of this site is necessary.

Portions of this site area contain a moderate to heavy fuel load, especially on the lower slopes on the south site half and on the west site boundary. All cut brush should be removed from the site prior to the prescribed burn. If possible, the prescribed burn should avoid this site. If the area cannot be avoided, then monitoring should be conducted to ensure the primary site area does not undergo significant amounts of erosion prior to the establishment of new ground vegetation. Pedestrian traffic appears to have had a minimal effect on the site. Presently the walking trails do no extend through the site area. No additional mitigation of pedestrian effects is necessary.

**Interpretive Potential**

Although Capulin Volcano National Monument was established for its scenic quality and geological interest, the public is generally fascinated by past human cultures, as demonstrated by the visitation to Indian Cave (LA 48881). Interpreting the cultural resources within the Monument would therefore enhance the visitor experience, particularly since the Monument is one of the few venues available for educating the public about the fascinating but little known culture history of northeastern New Mexico.
Given the Park Service’s responsibility for the preservation of cultural resources, it is recommended that interpretation focus on LA 48881 and the development of interpretive materials for the Visitor’s Center, at least initially. The other sites are relatively non-descript; they are in lesser used areas; and are not endangered by erosion or other natural processes, so they can readily be preserved in place.

Additional research at the sites is needed in order to develop interpretive materials, however. Because of the limited funding available for the survey, the time available for the crew to document cultural resources was limited. More intensive study of the prehistoric sites by a team of specialists, coupled with the restudy of any collections from those sites, would provide a clearer understanding of the nature of the activities conducted within the Monument and hopefully more precise dating of the occupations. That information is needed to place the sites in a regional context linking aboriginal use of the Monument with other known sites. While some limited test excavations would greatly enhance that research, intensive in-field analysis of the surface materials would likely contribute the bulk of information needed.
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CONFIDENTIAL APPENDICES
### Table A1 NAD 27 Site UTM locations

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