

A Proposed Data Recovery Plan for LA 139021 along NM 300, Santa Fe County, New Mexico

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ADMINISTRATIVE SUMMARY

The Office of Archaeological Studies, Museum of New Mexico, proposes to conduct a data recovery program at LA 139021, Santa Fe County, New Mexico. The data recovery program will be undertaken at the request of the New Mexico Department of Transportation (NMDOT) to recover archaeological information from cultural deposits within an area of planned improvements to NM 300.

LA 139021 is a lithic artifact scatter and a charcoal stain within NMDOT land acquired from private resources. The site is adjacent to NM 300 in a piñon and juniper area at the toe of a north-trending slope. The project will be funded by the NMDOT.

MNM Project No. 41.734 (El Gancho DRP).

NMDOT Project No. TPM-0300(1)00, CN 2968.

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INTRODUCTION

At the request of Mr. Blake Roxlau, environmental program manager, New Mexico Department of Transportation (NMDOT), a data recovery program has been developed for LA 139021 (Fig. 1), a lithic artifact scatter and a charcoal stain on NMDOT land. In cooperation with the Federal Highway Administration (FHWA), NMDOT is proposing to rehabilitate and reconstruct a portion of NM 300 (Old Las Vegas Highway) between MP 0.48 and 6.1 from the intersection of NM 300 with Old Pecos Trail to the intersection of NM 300 and U.S. 285 in Santa Fe County, New Mexico. The project includes resurfacing the roadbed; adding turning lanes and a traffic signal in the location of County Road 36 and El Gancho Steaksmyth restaurant; extending drainage structures where the road will be widened; installing a guardrail, curb, and gutter at Harry's Roadhouse; relocating utility equipment; and paving the vending area near Old Pecos Trail intersection. Federal funds will be used for this project.

A cultural resource survey of the proposed project

area was conducted by C. Condie (2003) of the Quivira Research Center. Four archaeological resources, four historic buildings, and three isolated occurrences were recorded. Data recovery was recommended for one of the resources, LA 139021, a small lithic artifact scatter and charcoal stain within NMDOT land acquired from private sources.

LA 139021 is considered eligible to the *National Register of Historic Places* under Criterion D (36 CFR 60.4). Work performed by the Office of Archaeological Studies (OAS), Museum of New Mexico, is conducted in compliance with Section 106 of the National Historic Preservation Act (36 CFR Part 800), Executive Order 11593 (1972), and the Environmental Policy Act of 1969 (91.Stat 852). The *National Register of Historic Places* and the *State Register of Cultural Properties* have been consulted. No properties listed on, nominated to, or approved for submission to either inventory are located within the proposed project boundaries.

This report complies with the provisions of the Historic Preservation Act of 1966 as amended.

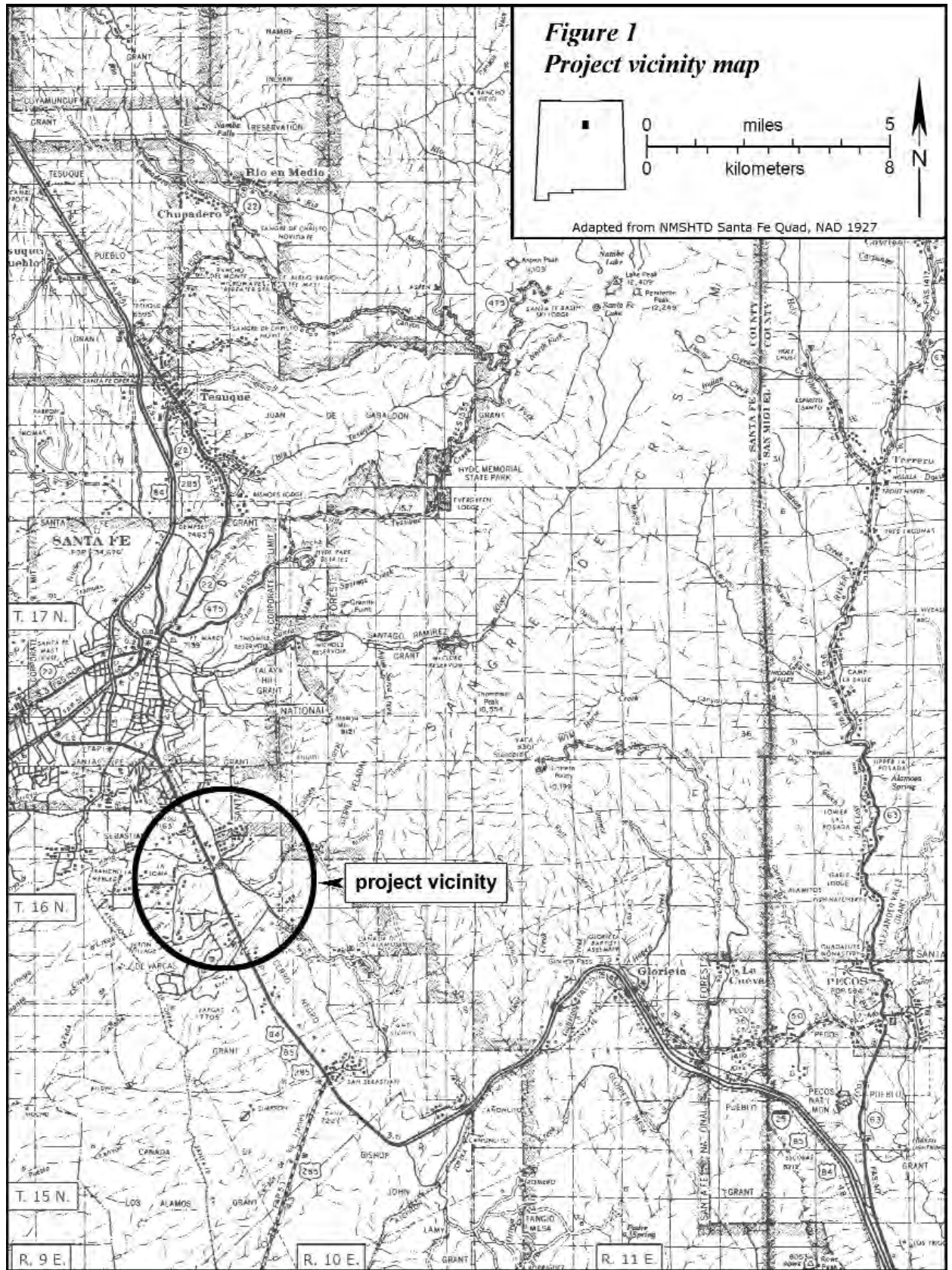
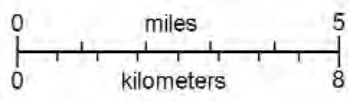
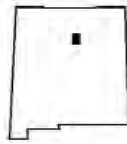


Figure 1
Project vicinity map



Adapted from NMSHTD Santa Fe Quad, NAD 1927

ENVIRONMENT

Archaeological investigations at Arroyo Hondo, located about one mile east of the project area, produced detailed overviews of regional physical and biological environments (Kelley 1980; Rose et al. 1981). The reader is referred to these references for discussions of environment relevant to the project area. More recent archaeological investigations were conducted in the Dos Griegos subdivision (Lang 1992). The New Mexico State Engineers Office has reports by more than 20 geologists, geophysicists, hydrologists, and engineers that have been involved with evaluating the geology and hydrology of the area in relation to subdivision growth in Santa Fe County (Grant 1997:3). These reports provide additional environmental overviews of the project area.

The immediate topography is characterized by the interface of two contrasting physiographic units. These units consist of the sharply rising foothills of the Sangre de Cristo Mountains and the rolling flatlands of the west-trending piedmont slope. The steep slopes contain shallow rocky soils and bedrock exposures of Precambrian granite, quartz, gneiss, schist, and diabase. The foothills are covered by rather dense growths of piñon and juniper woodland with patches of ponderosa pine and scrub oak. The crests of the foothills provide panoramic vistas of the surrounding territory. The piñon-juniper uplands had 135 of 271 plant species within the Arroyo Hondo pueblo catchment (Kelley 1980:60). Of these, 63 species are edible or have medicinal qualities. The woodland is also home to a wide range of animal species, including deer.

While the foothills are composed of metamorphic rock outcrops, broken mesa country east of the site contains complex sedimentary outcrops including limestones and shales of Pennsylvanian age, sandstones and shales of Permian and Triassic age, and sandstones and shales of Cretaceous age (Veneklasen 1983:2). Additional sedimentary rock including siltstones and conglomerates of Tertiary Eocene age are exposed along the escarpment and breaks overlooking Galisteo Creek. Metamorphic and sedimentary materials suitable for both ground stone and chipped stone technologies are potentially available in the nearby foothills environment.

The piedmont section abuts the foothills at about the 7,100 ft level. The piedmont surface, called the Plains surface, slopes toward the southwest at a grade approximating 100 to 120 vertical feet per mile (Veneklasen 1983:1). The Ancha formation covers much of the piedmont and is the predominant surface geologic feature in this section (Kelley 1980:19). The Ancha

formation completely covers earlier sedimentary and metamorphic formations and consists of silt, sand, and gravel to depths of 100 to 300 ft. The local Ancha formation contains abundant reworked cobbles primarily of metamorphic origin. The piñon and juniper woodland covering the piedmont is interspersed with open grassland meadows. The woodlands tend to decrease and the grasslands increase with the westward declining elevation. Pronghorn are still spotted in the open grasslands in the area. Jackrabbits and cottontails are common smaller mammals.

LA 139021 sits on the north side of a terrace adjacent to Arroyo Hondo at 2,195 m (7,200 ft). The generally west-flowing Arroyo Hondo cuts through three roughly parallel rows of foothills of the Sangre de Cristo mountain chain. The physiography of the district includes the floodplain and terraces of Arroyo Hondo, the gently rolling piedmont at the edge of Arroyo Hondo and the foot of the westernmost row of foothills of the Sangre de Cristo Mountains, and the foothills of the Sangre de Cristo Mountains. The spring-fed floodplain areas of the main Arroyo Hondo canyon seem to offer the greatest agricultural potential. Additional springs are found at Pueblo Wells in Canyon Ancho, 1 km west of Pueblo Alamo and at the spring-supported Chamisa Locita (LA 4), another large Coalition period pueblo. A windmill currently taps the spring, and the water is used for grazing purposes at or near Arroyo Hondo Pueblo (LA 12).

The general soil map of Santa Fe County places the project area in the Panky-Pojoaque-Harvey soil association (Maker et al. 1971:14-15, 22). Panky soils occupy the broad, gently sloping areas between drainages. The surface layer is a thin stratum of fine brown sandy loam, and the subsoil is an 18- to 24-inch-thick reddish brown heavy clay loam. More detailed soil maps show that the piedmont terrain surrounding the drainage consists specifically of the Silver-Pojoaque association, undulating soils (Folks 1975:47).

The project area has a semiarid climate. Historically, annual precipitation averaged 36 cm (14.4 inches), which is adequate for dry farming of corn and beans (Kelley 1980:29). Most of the precipitation occurs as intense summer thunderstorms that can produce severe runoff. The foothills tend to receive more rain (and snow) than the piedmont slope, and rains in the foothill catchment basins can produce unexpected high-energy flash floods in the lower piedmont floodplains. This was undoubtedly a reoccurring hazard faced by prehistoric floodplain farmers. The growing season ranges from 130 to 220 days and averages 170 days. The last spring frost usually occurs in the first week of May, and the first fall frost occurs around the middle of October.

ARCHAEOLOGICAL BACKGROUND

Charles A. Hannaford and Stephen C. Lentz

Dickson (1979), Viklund and Scheick (1989a, 1989b), Lang (1992), Marshall (1998), and Condie (2003) provide comprehensive archaeological overviews of the region. The following background concentrates on local prehistoric land use and settlement.

The New Mexico Cultural Resource Information System (NMCRIS) was used in a search for resources within the Seton Village 7.5' quadrangle (Fig. 1). The quadrangle comprises 38,648 acres, including foothill and piedmont topography. About 6,000 acres, or 16 percent of the quadrangle, has been surveyed for archaeological resources. Fifty-three projects recorded 67 sites, with a site density of about 1 per 89 acres. Most of the projects in the Seton Village quadrangle surveyed subdivisions from 1 to over 500 acres.

Previous research in the quadrangle indicate that the land has been used almost continuously beginning with the Early to Middle Archaic and extending to recent homesteading and cattle ranching. Anasazi components account for 40 percent ($n = 77$) of the recorded resources.

The Seton Village quadrangle has a high frequency of Anasazi site types and features, ranging in age from P II/III (A.D. 900-1300) to P IV (A.D. 1300-1600). Site types include important residential complexes such as Arroyo Hondo (LA 12), Pueblo Alamo (LA 8), and Chamisa Locita (LA 4), and small, special-use artifact scatters. Residential occupations are represented by an additional 13 components with architecture consisting of roomblock mounds and pithouse depressions. Three smaller isolated rooms may represent fieldhouse occupations. Hilltop shrines are associated with the three larger residential complexes. There are many small artifact scatters from the Anasazi period, some with apparent hearths, which most likely represent short-term resource-acquisition sites (Dickson 1979).

Large sites in the vicinity of the project area include Arroyo Hondo Pueblo (LA 12) and Upper Arroyo Hondo Pueblo (LA 76). By A.D. 1330, as the populations of Pueblo Alamo and Chamisa Locita were declining, Arroyo Hondo Pueblo was flourishing. The pueblo was occupied between A.D. 1300 and 1425 (Schwartz 1971, 1972; Schwartz and Lang 1973). The founding population was small and consisted of a few families who built one or two small roomblocks. These were composed of an alignment of masonry rooms along the edge of the 125 ft Arroyo Hondo gorge. With a permanent water source and arable land, the site grew rapidly, until by A.D. 1330 it covered nearly six acres and

included 24 two-story apartments around 10 plazas and more than 1,000 ground-floor rooms (Component I). Although the initial architecture of Arroyo Hondo was masonry, most of the walls were made of coursed adobe, and masonry only accounted for 2 percent of the overall architecture. Component I had five kivas, about one kiva for every two hundred rooms, but Component II had only one kiva. Most of the kivas were round and subterranean, although one was D-shaped and built into the corner of a roomblock (Creamer 1993).

During its heyday, Arroyo Hondo could have supported a population of about 2,000 individuals, who farmed extensively, exploited the abundant faunal resources, and whose trade and exchange network included contact with the Pacific coast (shells) and Mexico (live macaws). During the middle of the fourteenth century, however, the pueblo underwent an equally rapid depopulation and was virtually abandoned. The causes are not clear, but drought conditions and depletion of the local environment may have contributed to its decline. Skeletal remains suggest that the residents of Arroyo Hondo suffered from food shortages. Malnutrition coupled with disease resulted in the death of half of the children over the age of five. Pottery varied through time but was mostly dominated by Santa Fe, Poge, and Galisteo Black-on-white (Habicht-Mauche 1993). The lithic artifact data (Phagan 1993:205-215) are confusing, characterized by meaningless low-level statistics and tabulated functionally based artifact categories. Nothing is said about material types, or local or extralocal material sources, and interpretations of the assemblage are absent.

Sometime in the 1370s a new occupation began at Arroyo Hondo (Component II). The town was partly rebuilt but contained only nine roomblocks around three plazas and a single kiva. The population at that time has been estimated at between 250 and 550 individuals (Creamer 1993:152-153). Sometime after 1410, a catastrophic fire destroyed much of the settlement, and Arroyo Hondo was permanently abandoned about A.D. 1425 (Dickson 1979).

Marshall (1998:16-18) recorded another possible pithouse habitation site in the same general area during survey along U.S. 285. The site is recorded as an artifact scatter associated with one or two pit structures from the Coalition period. Test excavations verified that the site is an extended residential occupation contemporaneous with Pueblo Alamo (Post 1999:18-24). Dickson's (1979:32-33) survey of Arroyo Hondo Pueblo area recorded 29 early, 29 middle, and 24 late-phase Coalition period sites. Site types included limited-activity artifact scatters, pithouse sites, and pueblos of between 2 and 1,000 rooms. Outlying sites contemporaneous with Arroyo Hondo include LA 10609, LA 10610,

LA 10613, LA 10614, LA 191, LA 4, LA 8, and LA 76 (Dickson 1979:83). LA 76, or Upper Arroyo Hondo Pueblo, lies a few hundred meters east of LA 139021. This site is tree-ring dated to between A.D. 1287 and A.D. 1316 and was probably occupied during the first quarter of the settlement at the larger Arroyo Hondo Pueblo. It consists of 45-50 rooms surrounding several plazas and is adjacent to a permanent seep. LA 191 (Mocho) is a pithouse village dating to the Late Developmental period. Many of the other sites recorded during the survey were small structural sites from the Late Developmental or Classic times. They were field-houses, small structural sites, or pit structures similar to LA 115266, described below. LA 10621 was a Developmental period rockshelter.

LA 4 and LA 8 are just over five miles south of LA 139021. Pueblo Alamo (LA 8) was at the intersection of U.S. 285 and I-25. The coursed-adobe pueblo consisted of four to five single-story roomblocks with a linear layout. Excavations at Pueblo Alamo began with the work of Nels Nelson in 1915. Nelson excavated 25 to 30 rooms in the estimated 80- to 100-room pueblo (Nelson 1915). In 1971 the Museum of New Mexico conducted salvage excavations at the site for the construction of the I-25 interchange (Allen 1973). The interchange removed all but the extreme eastern and western tips of the pueblo. Some 60 rooms were salvaged during the project, including a subsurface pit room, three conventional kivas, and three or four conventional rooms remodeled into special-purpose "room kivas" (Allen 1973:7).

Architecture indicates that Pueblo Alamo had three broad periods of occupation. Distinct occupations are evidenced by the presence of at least one small Coalition period pithouse situated beneath later surface rooms, a major pueblo complex largely destroyed by widespread fire, and subsequent reconstruction of the pueblo complex. Santa Fe Black-on-white was the primary pottery type, followed by smaller amounts of Galisteo Black-on-white.

Pueblo Alamo apparently grew by general accretion with apparently no concern for grouping rooms around plazas (Allen 1973:11). However, the pueblo was almost completely consumed by fire sometime during the middle of the occupation. The date of the fire was not determined, and the pueblo may have been briefly abandoned after the event. Final abandonment was gradual and occurred sometime around A.D. 1300 (Allen 1973:14).

Chamisa Locita, or Pueblo Wells (LA 4), is about 1 km west of Pueblo Alamo. The 250-300-room adobe pueblo sits in a basin formed by the confluence of several minor arroyos. The site is situated on Gallina Arroyo rather than Cañada de los Alamos. Canyon

Ancho forms a gap in the foothills at this locality, and Gallina Arroyo drains eastward across the piedmont slope. Chamisa Locita consists of a long east-west mound with four perpendicular mounds extending to the south. Four additional mounds are clustered south of the main E-shaped pueblo. A circular depression represents a probable kiva. The multistoried pueblo covers a 350 ft north-south by 450 ft east-west area. Several nearly enclosed plazas are represented, contrasting with the linear layout of Pueblo Alamo. Nelson (1915) excavated 44 rooms, including a room with walls decorated with red painted lines and thin zigzag motifs. The Santa Fe Archaeological Society (1959) dug three additional rooms. Outside of these poorly documented projects, no recent excavations have been conducted at this important Coalition period pueblo. The ceramic artifacts suggest an occupation between A.D. 1200 and 1400 (Dickson 1979:118). Chamisa Locita and Pueblo Alamo are contemporary Coalition period village complexes, but Pueblo Alamo was apparently abandoned before Chamisa Locita.

In addition to the residential complexes, a hilltop shrine is located on the crest of a nearby isolated foothill (Hannaford 1998). The shrine, east of Chamisa Locita and south of Pueblo Alamo, consists of a circular ring of piled granite 11.5 m in diameter and averaging about 0.5 inches high. The hilltop commands a panoramic view of the surrounding region and both pueblos. The structure is similar to Pueblo "earth-navel" shrines found throughout the upper Rio Grande Valley. A similar hilltop shrine overlooks Arroyo Hondo (Ware 1991:15-16; see below). Pueblo Alamo and Chamisa Locita were occupied somewhat earlier than and contemporaneously with Arroyo Hondo Pueblo and Upper Arroyo Hondo.

The Dos Griegos subdivision was a 435-acre survey of piedmont slope, isolated foothill landforms, and Cañada de los Alamos terraces immediately north of the project area (Viklund and Scheick 1989b). The survey recorded 15 sites and 89 isolated occurrences. Most of the isolated occurrences are chipped stone artifacts consisting mainly of secondary flakes of chert, chalcedony, basalt, and both Jemez and Polvadera obsidian. Recorded sites span a period of time beginning with the Late Archaic and continuing into the Classic period. All of the sites except LA 75691 are interpreted as limited-activity loci associated with hunting and wild-plant collecting, expedient and formal tool manufacturing and maintenance, and agriculture (Viklund and Scheick 1989b:36). LA 75691 is considered a specialized hilltop shrine associated with the nearby sites of Pueblo Alamo and Chamisa Locita.

In 1999 the Office of Archaeological Studies performed a data recovery program along U.S. 285 at the second entrance to the El Dorado subdivision

(Hannaford 2000). LA 115266 is a multicomponent site consisting of an unknown prehistoric thermal feature, a Coalition period pit structure, and five associated extramural features. The data recovery program focused on the Coalition period component. Site elements consisted of a small pit structure with an informal hearth and a mealing station, an extramural remodeled posthole suggesting the presence of a ramada, a shallow pit interpreted as a storage facility, and three miscellaneous pits. The artifact assemblage included 24 chipped stone artifacts, three ground stone artifacts, 185 sherds, and 18 faunal fragments. The site was occupied seasonally by a mixed-gender household farming the Cañada de los Alamos floodplain. The duration of the occupation was probably eight to ten seasons, based on the expected

use-life of the pit structure and the breakage rates for the ceramic vessels. The site served as an intermittently utilized fieldhouse associated with the nearby contemporary village of Pueblo Alamo (Hannaford 2000).

The Galisteo Basin south of the project area saw a similar pattern of population growth and community aggregation. Important Coalition period sites include Manzanares (LA 1104), Piedra Lumbre Pueblo (LA 309), Lamy (LA 10), and the oldest sections of Pueblo Largo (LA 183). The Galisteo Basin became a major population center during the Classic period with the formation of a number of large pueblos between A.D. 1350 and 1475. Several of these pueblos, including San Cristobal, Galisteo Pueblo, and San Lazaro, remained important centers of Pueblo activity into historic times.

SITE DESCRIPTION

LA 139021 is on the toe of north-trending slope at an elevation of 2,195 m (7,200 ft) (Fig. 2 and Appendix 1). It consists of a sparse lithic scatter, five lithic artifacts (two of which are projectile points), and a charcoal stain measuring 0.5 by 0.3 m along the eastern margins of the site. The site measures 4 m (13 ft) southwest-

northeast by 3 m (10 ft) northwest-southeast, an area of 12 sq m (130 sq ft). Vegetation in the area consists of piñon, juniper, and native grasses.

No ceramic artifacts or structural components were observed. A metal site tag inscribed “QRA-NM-SF-03-02” is tied at 1.5 m (4.9 ft) on the north side of small piñon. The cultural-temporal affiliation of this possibly hunting and gathering site is unknown.

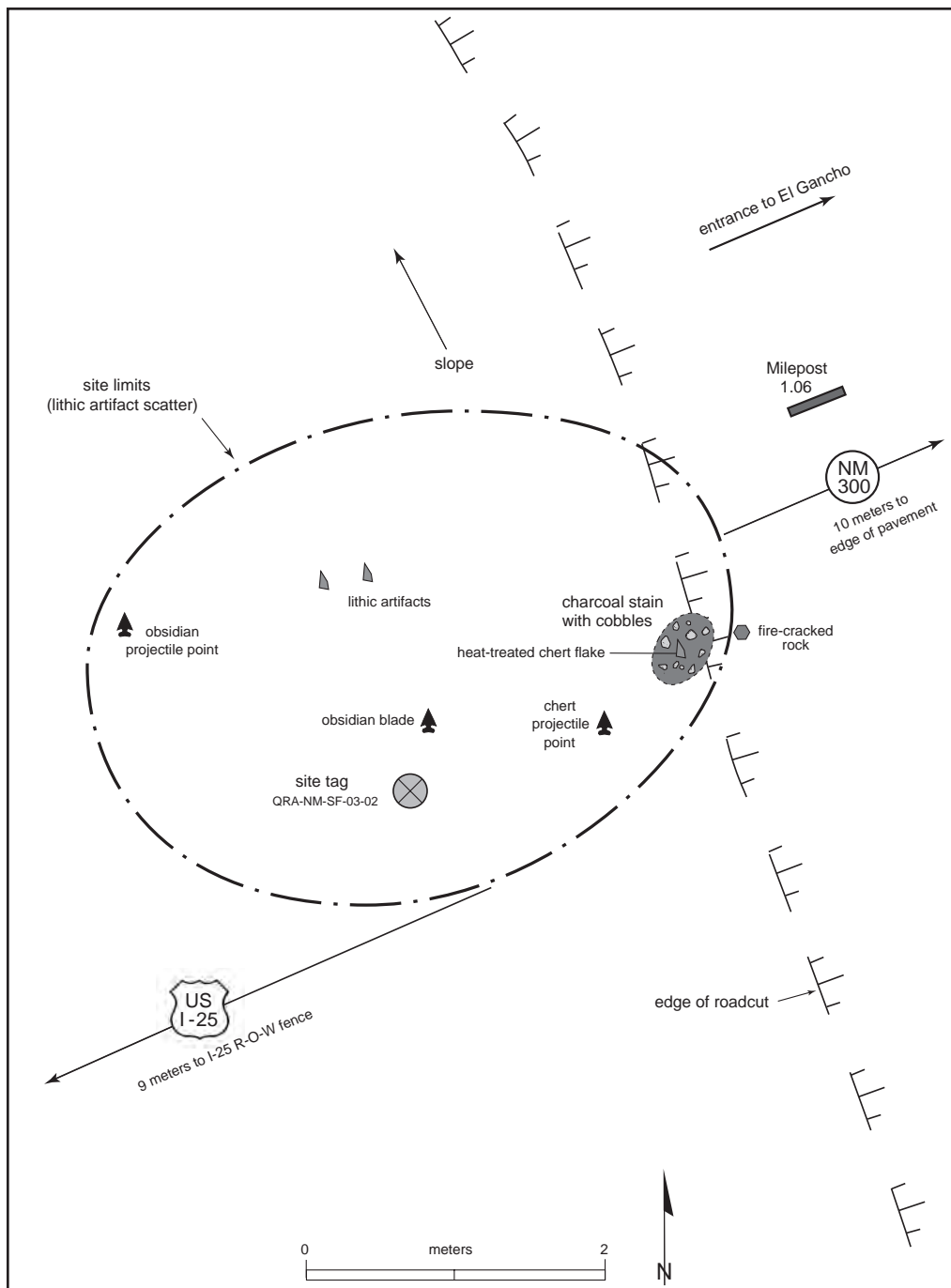


Figure 2. Site map, LA 139021.

DATA RECOVERY PLAN

Survey data for LA 139021 (Condie 2003:1-27) indicate short-term use of the site, perhaps as a camp for hunting and gathering. While the research potential of such a small site may seem limited, information from lithic scatters, and particularly associated thermal features, can provide important information on the logistical use of the area.

In hunting and gathering studies (Binford 1979, 1980; Vierra 1985; Vierra and Doleman 1984), two primary hunter-gatherer organizational strategies appear to predominate: the forager and the collector. In the foraging system, a group “maps onto” exploitable resources through frequent residential moves and adjustments in group size. Within this system there are two identified site types: short-term residential base camps and logistical sites.

The residential site is the terminus for all exploitive activities, and it is where the group resides when processing resources, maintaining and manufacturing tools, and performing other daily activities. The assemblage associated with this site type has been shown to be quite variable in content and includes debitage and implements associated with tool manufacture and maintenance, expended tools, and processing equipment. The internal site organization of a residential base should be differentially organized according to separate activity loci and residential units. In the foraging model, residential bases appear to exhibit relative redundancy of land use and are the location from which foraging groups depart.

Logistical sites are where specific activities take place. Sites of this category, particularly those generated during plant gathering and encounter hunting, may be archaeologically difficult to discern. On the other hand, sites created during intercept activities may also be used redundantly in the exploitation of the targeted resource. The assemblage associated with this type of site may include limited numbers of core reduction and tool production or maintenance debitage.

In a collector system, specialized task groups leave a residential location to procure a specific resource. Unlike the foragers, they know the location of a critical item and are not searching for resources on an encounter basis. Within a particular settlement system, geographical locations are seen as being more advantageous in fulfilling a site’s functional requirement. It appears that logistical site locations, in particular intercept locations, are reoccupied more often than residential locations. Reuse may be tied to the specific locational requirements of these sites for resource exploitation and monitoring. Occupants of these sites can predict the location

and time period when a resource can be utilized, as in the seasonal migration of a particular species. Residential sites appear to be reoccupied less frequently owing to greater flexibility in their locational options over the more rigid requirements of an intercept location.

SITE BOUNDARIES

Site dimensions and site boundaries are often problematic, especially from a management point of view. Condie (2003:19) states: “LA 139021 consists of a lithic scatter and a charcoal stain. The stain and the two projectile points seem like a super-abundance of cultural content for a site that only measures 12 m sq. which leads us to infer the existence of a once larger site.” In the field, the precise boundaries and exact dimensions of LA 139021 will have to be thoroughly defined. Likewise, its relationship to nearby larger aggregations such as Upper Arroyo Hondo (LA 76), Arroyo Hondo Pueblo (LA 12), Chamisa Locita (LA 4), and Pueblo Alamo (LA 8) should be determined.

TEMPORAL CONTEXT

What periods of occupation does the site represent?

Dating of the site is important for understanding region patterns of social and subsistence organization, and the relationship of the site to larger aggregations nearby, such as Upper Arroyo Hondo Pueblo (LA 76). Also, if possible, the site must be placed in the appropriate temporal framework to detect regional trends and changes in social and subsistence patterns. Minimally, the recovery and analysis of the artifact assemblage will add to the general fund of descriptive data concerning morphology, manufacture, and use of mobile hunting-and-gathering assemblages. Small sites that reflect a logistical resource procurement and processing strategy exist within a 2 km radius of Arroyo Hondo (Viklund and Scheick 1989a). LA 139021 initially appears to conform to that definition. Dating lithic scatters void of diagnostic artifacts once was a central theme among specialists in that field, notably researchers in hunter-and-gatherer studies. Subsequent experiments have shown that, all other things being equal, there are no substantive differences in the lithic assemblages between “sedentary” and “non-sedentary” groups, mobility being the critical variable. In other words, mobile Pueblo groups behave like Archaic or other mobile groups when engaged in similar subsistence strategies. Thus, it may be difficult to define the time period when the site was occupied on the basis of the chipped stone assemblage alone. Whether LA 139021 is contemporaneous with any of the surrounding larger

settlements may have to be determined through chronometric studies (see below). Statistical analysis of the artifact assemblage will quantify specific attributes and allow assessment of any mixture of activities within the site.

SOCIAL ORGANIZATION AND THE STRUCTURE OF LIVING SPACE

To address the above questions, it will be necessary to define intrasite spatial organization. Initial documentation shows that the site is a nonaggregated lithic artifact scatter composed of a few isolated lithic artifacts, two projectile points, and a possible thermal feature. The first tasks will be to relocate the diagnostic artifacts, delineate any possible activity areas, and define the feature. If activity areas or formal features are defined, it will be necessary to separate these into discrete occupational loci. This will be accomplished through site structure analyses. Is the spatial organization of the artifacts at LA 139021 the result of random artifact movement, such as drift, or eolian or alluvial movement; or can patterns be identified to indicate that localized subsistence activities were occurring at that location? Minimally, intrasite artifact patterning can provide information on limited-activity sites as determined by the artifacts in association with the feature. Optimally, the discovery of an activity surface or activity areas will provide information on site-structure activity diversity and site function. The site function will therefore be inferred from the lithic artifacts, and if present, faunal artifacts. Given the importance of a complete understanding of site activities, regional settlement, and social organization, data recovery will revolve primarily around identification.

The task of determining site structure will consist of piece-plotting the surface artifacts and removing overburden selectively to determine the extent of horizontal and vertical deposition. If necessary, exploratory units will be expanded if other features or complex subsurface definition are encountered. Should an occupation surface, an informal exterior activity area, or an upper level containing material remains be encountered, it will be identified and documented. It is unlikely that any substantial structural component exists at LA 139021. There is a remote possibility that postholes may be present, representing jacal construction. It is also possible that the scatter is surficial and no patterning can be discerned.

SUBSISTENCE ACTIVITIES

What food resources were exploited at LA 139021, and what does this information tell us about the poten-

tial of the local environment for farming, hunting and gathering, or a mixture of both?

The subsistence strategies of site occupants in the context of past environmental conditions can be assessed by the recovery and analysis of macrobotanical and faunal remains. These may be found in the site's only apparent thermal feature. For example, the presence of nonedible domesticated plant parts would suggest local farming practices, while the occurrence of only edible portions might suggest the import of plant foods. The presence of certain skeletal elements, such as skulls, vertebrae, or feet, may indicate that animals were hunted in proximity to the site. However, if these parts show evidence of extensive butchering, it may be evidence of food stress, since these are skeletal elements with low meat value. The array of formal and informal tools can also be used to infer the range of past subsistence pursuits.

By gathering information on regional and local agricultural potential as well as the availability of wild plant and animal foods, it should be possible to examine the interplay between population and resource availability during the period(s) of occupation. Regions that are extremely productive for hunter-gatherers might be marginal for farmers because of a lack of water or a short growing season. Conversely, some areas that are well suited to farming are marginal for hunter-gatherers because wild plant productivity is low or limited to very short seasons of availability. By reconstructing the regional environment, it should be possible to determine its suitability for both hunting-gathering and agriculture. It is evident that agriculture was successful in the area, as evidenced by the density of large agrarian sites in the immediate vicinity. Although some local piedmont soils are not suitable for agriculture, the area around Arroyo Hondo is well watered by the local spring, and agriculture was practiced historically until the 1950s (Kelley 1980:8-9)

PREHISTORIC ENVIRONMENT

What was the nature of the prehistoric environment when the site was occupied?

To answer these questions, data on the environment at the time of occupation will be collected. Site specific information can be inferred through the analysis of macrobotanical remains and faunal remains recovered during excavation. Macrobotanical and faunal remains will be retrieved by sampling the feature. Faunal remains will be retrieved through high-resolution screening. The macrobotanical samples will be identified by specialists. Evidence of seasonality will also be obtained, if available. Unfortunately, there is only a single feature from which to obtain this information. Flotation and faunal

samples (if present) will be obtained from the feature. The unfortunate reality, however, is that evidence for seasonality is usually so erratic that while it may be possible to document site use in a given season, data from other seasons may be absent or inconclusive.

SUMMARY OF RESEARCH OBJECTIVES

It is unrealistic to draw far-reaching conclusions from the limited sample anticipated from LA 139021. A preliminary examination by the OAS concluded that the site appeared fairly ephemeral: pea gravels characterized the upper strata (which usually means undisturbed

soil in the Rio Grande Valley). The only depth of cultural soil was in the hearth area, and none was evident in the cutbank above the shoulder of NM 300. At first view, LA 139021 appears to be a short-term resource-procurement site. It is likely that, at the very most, the OAS will be able to augment the body of information already collected by past investigators on logistical sites in the vicinity of large prehistoric pueblo settlements. The acquisition of base-line data will help refine our understanding of special-use locales in the area and may aid in generating models and hypotheses for further study.

FIELD AND LABORATORY METHODS

Investigation of LA 139021 will focus on the excavation of the hearth feature and the collection of lithic artifacts. Field and laboratory methods are geared to collecting site structure and artifact data that can be used to address the questions posed in the previous chapter.

EXCAVATION TECHNIQUES

The site surface will be reexamined, and the artifact scatter and feature will be pinflagged. The projectile points recorded in the survey documentation could not be relocated during a preliminary examination of the site by the OAS on July 8, 2002. These artifacts may have been buried or obscured by recent heavy rains. Prior to excavation, these projectiles will be relocated, possibly by lightly brushing the fine overburden and pea gravels to facilitate discovery. A 1 by 1 m grid system will then be superimposed within the limits of the surface artifact distribution. A main datum will be set in place from which horizontal and vertical controls will be generated. Excavation will be by strata where they exist. Two 1 sq m test pits will be used (the ratio of test pits to acreage is a 1 by 1 m test pit per acre). A 1 by 1 m test pit will be placed over the feature to determine the horizontal and vertical extent of the feature and the nature of the fill, and to recover artifacts and samples. Augers and coring tools will be used to search for subsurface features. Eleven auger tests will be excavated. If the excavation units or auger holes expose additional subsurface cultural remains or features, they will be expanded. All subsurface stratigraphy will be drawn and photographed. All excavated fill will be screened through 1/4-inch mesh hardware cloth. Shovels and hand tools will be the primary excavation implements, and more delicate hand tools, such as dental picks and brushes, will be used when appropriate. Excavation units will be backfilled to conform to the original ground surface.

MAPPING

A contour map of the site will be generated using an Electronic Distance Measurer (EDM), a laser Total Station, or a transit and a stadia rod. Contours, features, site boundaries, piece-plotted artifacts, and excavation areas will be mapped.

FEATURES

A 1 by 1 m test pit will be placed over the feature at LA 139021 to determine the horizontal and vertical

extent of the feature and the nature of the fill, and to recover artifacts and samples. Feature fill will be screened through 1/8-inch mesh hardware cloth. The feature will be excavated by halves to expose a stratigraphic profile. The excavation will then proceed by individual strata where they exist. Chronometric (radio-carbon, archaeomagnetic) and botanical (flotation, pollen) samples will be recovered from appropriate contexts. Flotation samples will be collected in 1 liter specimens. Pollen samples will only be recovered from unburned contexts. The feature will be thoroughly documented on standard OAS feature forms, drawn, and photographed.

LABORATORY ANALYSIS

All collected artifacts will be cleaned, sorted, and examined in the laboratories of the Office of Archaeological Studies. Analysis of each artifact material class will be conducted by standards established by the Office of Archaeological Studies.

DISPOSITION OF RECOVERED ARTIFACTS

Unless otherwise stipulated by landowners or land managers, all recovered artifacts will be curated in the Archaeological Research Collection (ARC) of the Laboratory of Anthropology, Museum of New Mexico. As a division of the Museum of New Mexico, the Office of Archaeological Studies maintains a curation agreement with the ARC.

Laboratory analysis will be conducted by the staff of the Office of Archaeological Studies and qualified professional consultants. The types of cultural materials and brief descriptions of the kinds of information desired from each are presented below. Analytical techniques to be used in the data recovery phase of this project are outlined in the testing results portion of this report.

LITHIC ARTIFACT ANALYSIS

Data from lithic artifact analysis is important to the investigation of LA 139021. Information concerning basic site function, mobility, and ties with other regions can be derived from these studies.

Chipped stone artifacts will be studied to provide data on material procurement and selection, activities, and alterations to enhance flaking quality. Certain attributes will be studied on all chipped stone artifacts. Material type and texture will provide data on selection and source, and determine if materials were procured nearby or from distant locations. Even though only a small sample of lithic artifacts were present at LA

139021, the site displayed a surprising variety of extralocal materials, primarily chert and Jemez obsidian. Heat treatment was evident, as was retouch and possibly utilization. The type of cortex present will also be used as an indicator of material origin: while some types suggest procurement at the source, others indicate secondary deposits. In conjunction with other studies, these data will provide information on mobility and ties with other regions. Chipped stone artifacts will be classified by morphology and presumed function, which will provide a basic categorization of activities employing chipped stone tools as well as a basis for more intensive analyses. The flakeability of some materials can be improved by heating, a process that is tied to reduction strategy and the suitability of materials for reduction. This technique can be an important aid in strategies aimed at formal tool production, while it is less important in strategies based on informal tool use. Evidence of heat treatment was observed by the OAS on two lithic artifacts at LA 139021. These artifacts will be examined for evidence of thermal alteration to enhance flakeability, or to determine whether they were discarded in the fire or are fire-cracked rock.

A range of other attributes will also be examined, depending on artifact morphology. Information on group mobility and tool production can be derived from an analysis of the reduction strategy employed. The reduction process produces three basic by-products: debitage, cores, and formal tools. Debitage and cores are the immediate by-products of this process, while formal tools are by-products that were modified to produce a specific shape. While the former categories provide information about the reduction strategy employed, the latter provide data on tool use. Thus, different attributes will be examined for each of these broad categories.

Debitage and cores will provide information on reduction strategies. Attributes used for this analysis will include debitage type, amount of cortical surface, artifact portion, and size. Cores will be morphologically identified by the direction of flake removals and the number of striking platforms, providing basic information on how they were reduced. Flakes are debitage that were purposefully removed from cores and can provide critical data on reduction technology. Hence, several attributes will be analyzed in this class of artifact, including platform type and modification, platform lipping, direction of dorsal scarring, and distal termination.

Formal tools will be identified by morphology and wear patterns. Informal tools will be identified by the presence of marginal retouch or use-wear patterns along one or more debitage edges. A binocular microscope will be used to identify and classify retouch and wear patterns on all tools, and utilized or retouched edge angles will be measured. All evidence of edge modifica-

tion will be recorded for informal tools, while evidence of use or modification unrelated to production will be recorded for formal tools. These attributes will provide information on activities employing chipped stone tools.

FAUNAL REMAINS

If nonhuman bones are encountered, faunal analysis will concentrate on identification of species, age, and bone elements to assist in documenting food procurement and consumption patterns. Evidence of processing, such as burning or roasting or cut marks, will also be recorded. These data will help determine season of occupation, and hunting and food processing and consumption patterns, and may provide information on the local environment at the time of occupation.

FLORAL REMAINS

Plant remains will be identified to the species level when possible and compared with floral data from other sites to help provide a clearer picture of plant use during the period(s) of occupation. Floral remains will also aid in determining seasonality. The discovery of both edible and nonedible parts from domesticates will be indicative of local production, while the lack of all but edible parts might suggest that domesticates were raised elsewhere and imported to the site. Both pollen and macrobotanical remains will be useful in reconstructing the local environment at the time of occupation. Botanical and charcoal samples will be collected by identified strata. Pollen samples will be collected in tandem with all flotation samples. Radiocarbon samples will be collected wherever possible.

HUMAN REMAINS

If human remains are encountered, they will be protected and left in place. If conditions are such that the remains cannot be protected, field treatment will follow procedures outlined by the laws and regulations of the State of New Mexico (Sec. 16-6-11.2 NMSA 1978; HPD Rule 89-1) and the Museum of New Mexico policy adopted January 17, 1991, and modified February 5, 1991, "Policy on Collection, Display, and Repatriation of Culturally Sensitive Materials" (SRC Rule 11).

The possibility of discovering burials during the data recovery effort seems remote. However, in the unlikely event that burials, associated burial goods, or isolated burial goods are found, excavation will cease, and consultations with appropriate parties will be initiated as prescribed by appropriate laws. If the remains are to be excavated, and interested parties express no specific excavation treatment, standard archaeological

excavation techniques will be employed. These include definition of the burial pit, use of hand tools to expose skeletal materials, mapping, photographing the position of the skeleton and any grave goods, and retrieval of soil for pollen analysis. If directed to do so, the OAS will excavate all human remains encountered to preserve them for culturally appropriate disposition. No person will be allowed to handle or photograph the remains except as part of scientific data recovery efforts. Photographs of sensitive materials will not be released to the media or general public. If the parties consulted have no specific desires for treatment of the remains, the remains will be submitted to the ARC for physical storage at the Department of Anthropology, University of

New Mexico. Remaining artifacts will be submitted to ARC for storage.

PUBLISHED REPORT

A report containing a summary of the test excavations, laboratory analyses, and recommendations for site management will be published by OAS upon completion of fieldwork and laboratory study. Attached to the report will be updated site record forms for the New Mexico Cultural Resource Information System, managed by the Archeological Records Management Section, Historic Preservation Division.

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