TESTING REPORT AND DATA RECOVERY PLAN FOR THE U.S. 285 POJOAQUE SOUTH PROJECT

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Museum of New Mexico

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ADMINISTRATIVE SUMMARY

In October of 1995 the Office of Archaeological Studies (OAS), Museum of New Mexico, performed intensive field evaluations on four cultural resource sites along U.S. 285 at the Pueblo of Pojoaque, Santa Fe County, New Mexico. The work was done at the request of the New Mexico State Highway and Transportation Department (NMSHTD). Twelve person-days were spent in the field.

Three sites--LA 835, LA 6579, and LA 101410--contain surface and subsurface remains within the proposed highway construction zone and are recommended for data recovery. The fourth site, LA 101415, lacks intact surface and subsurface remains and is not recommended for data recovery. All four sites are located on Pueblo of Pojoaque lands. This report describes the testing and evaluation procedures at the four sites and presents a data recovery plan for three sites.

MNM Project 41.611
NMSHTD Project NH-084-6(67)180, CN 3197, J 00122
BIA Permit No. BIA/AAO 95-010
Pueblo of Pojoaque letter of permission dated 8/21/1995

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INTRODUCTION

In July 1995, the New Mexico State Highway and Transportation Department (NMSHTD) requested that the Office of Archaeological Studies (OAS), Museum of New Mexico, test four archaeological sites for highway project NH-084-6(67)180 north of Santa Fe (Fig. 1). Sites LA 835, LA 6579, LA 101410, and LA 101415 had been identified by M. Marshall (1993, 1995) as lying within the proposed construction zone and required evaluation beyond the archaeological survey level.

The testing program, conducted by R. N. Wiseman (supervisor), Byron Hamilton, and John Zachman of the OAS, was done during the week of October 16-20, 1995. At that time, each site was visited, visually inspected in detail, and surface artifact inventories and auger testing performed as deemed appropriate. This report describes the activities at each site, presents the results of the evaluations, and makes recommendations for further work.

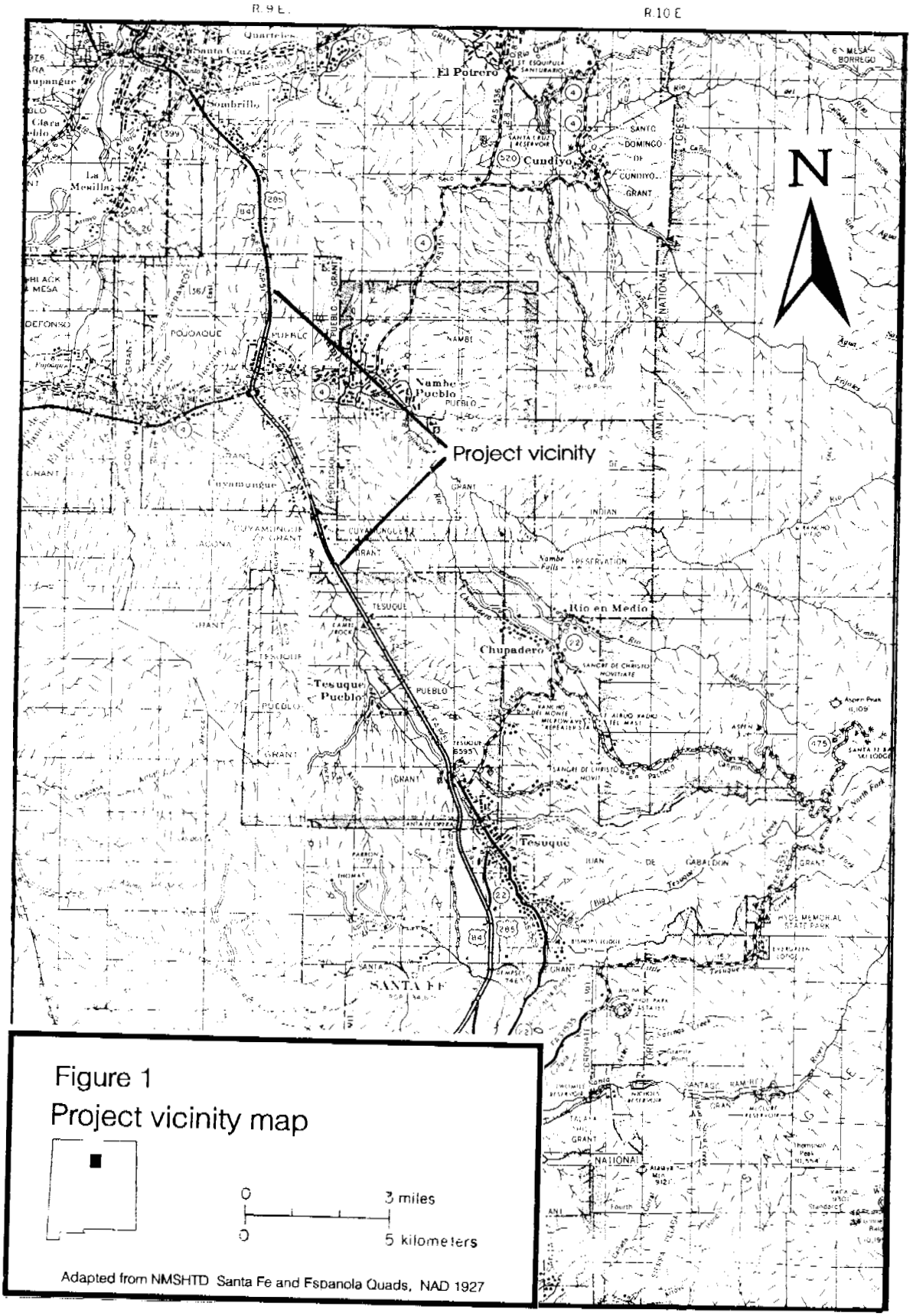

Figure 1
Project vicinity map

Adapted from NMSHTD Santa Fe and Espanola Quads, NAD 1927

ENVIRONMENT

The following section has been extracted from Anschuetz (1986).

Physiography

Pojoaque Pueblo is located in a fault-zone feature known as the Española Basin, one in a chain of six or seven basins composing the Rio Grande Rift, extending from southern Colorado to southern New Mexico (Kelley 1979:281). This basin, which is considered an extension of the Southern Rocky Mountain Province (Fenneman 1931), is enclosed by uplands of alternating mountain ranges and uplifted plateaus, and the Rio Grande flows along the long axis of the feature (Kelley 1979:281). The northern boundary of the Española Basin is composed of the eroded edge of the Taos Plateau. The Sangre de Cristo Mountains form the east edge, and the southern boundary is marked by the Cerrillos Hills and the northern edge of the Galisteo Basin. The La Bajada fault escarpment and the Cerros del Rio volcanic hills denote the southwestern periphery. The basin is bounded to the west by the Jemez volcanic field, and the Brazos and Tusas mountains form the northwestern boundary.

Elevations along the Rio Grande through the basin vary from 1,845 m in the north to 1,616 m in the south. Altitudes in the surrounding mountains reach 3,994 m in the Sangre de Cristos, 3,522 m in the Jemez Mountains, and 2,623 m in the Brazos and Tusas mountains (Kelley 1979:281).

The Española Basin is centered about the confluence of the Rio Grande and the Rio Chama, its principal tributary (Kelley 1979:281). This juncture is 18.4 km north of the present study area. The principal perennial drainages within the Pojoaque Pueblo Grant consist of the Rio Pojoaque and the Rio Tesuque, which have their headwaters in the Sangre de Cristo Mountains, 25.6 km to the southeast. Both drainages form narrow valleys that range between 400 and 800 m wide. These valleys merge just northwest of Pojoaque Pueblo, at which point the Rio Pojoaque flows west to the Rio Grande.

Geology

The Rio Grande Rift was established during the late Oligocene epoch (about 30 million years B.P.) when a cycle of crustal downwarping and extensional faulting succeeded a period of regional uplift (Kelley 1979:281). As the subsidence of the Española Basin proceeded through the Miocene and Pliocene epochs (about 3 to 25 million years ago), erosion from the Nacimiento, Jemez, and Brazos uplifts to the north and northwest and the mature Laramide Sangre de Cristo uplift to the east provided most of the sediments for what is known as the Santa Fe group, the prominent geologic unit within the Española Basin. Other sources of sediments of this geologic unit include volcanic fields in the Jemez, Brazos, and Sangre de Cristos mountain ranges. Formations within the Santa Fe group, such as the Tesuque formation, consist of deep deposits (over 1 km thick) of poorly consolidated sands, gravels and conglomerates, mudstones, siltstones,

and volcanic ash beds (Lucas 1984).

The Española trough was subjected to extensive tilting and faulting during the late Pliocene, after which time widespread tectonic stability occurred. The resulting geologic structure of the basin is characterized by west-dipping strata that are traversed by numerous north-trending normal faults. These stratigraphic characteristics, coupled with rapid sedimentation, allowed deposition to reach a maximum depth of 2 km at the western periphery of the basin. The subsequent erosion of upturned beds and elevated scarps has resulted in the highly dissected, rugged topography found in much of the project area (Kelley 1979; Lucas 1984).

A second notable geologic unit found in the vicinity of the project area is the Quaternary Valley and Arroyo alluvium (Lucas 1984). The Ortiz Pediment gravels once covered the Tesuque formation of the Santa Fe group. Because of extensive erosion, these gravels are now found only on isolated high ridges and hilltops, such as the Las Barrancas badlands area northwest of the Rio Pojoaque and Rio Tesuque confluence (see Kelley 1979, fig. 1). The Cerros del Rio volcanic field lies along the Cañada Ancha drainage southwest of the project area. This field extends some distance to the west and consists of a variety of volcanic features. The Quaternary Terrace gravels are river gravel deposits that are exposed in the bottoms of the tributary arroyos between the higher piedmont deposits and the lower valley bottom alluvium.

Climate

Latitude and altitude are the two basic determinants of temperature; however, altitude is the more powerful variable in New Mexico (Tuan et al. 1973). In general, mean temperatures decline faster with increased elevation than with increased latitude. Cold air drainage is a common and well-known feature of New Mexico valleys (Tuan et al. 1973). Narrow valleys create their own temperature regimes by channeling air flow. The usual pattern is warm up-valley winds during the day and cool down-valley winds at night. In contrast, shifts in temperature over broad valley floors are influenced by the local relief (Tuan et al. 1973).

Climatic data for the immediate Pojoaque area are unfortunately incomplete (see Reynolds 1956a, 1956b; Gabin and Lesperance 1977). The comparative data presented in the following discussion are taken from the Santa Fe and Española weather stations. The Santa Fe station, which is 24 km south of the study area, is at an elevation of 2,195 m. The Española station lies 12.4 km to the north at an elevation of 1,732 m. These stations, therefore, bracket the study area, which is at an elevation of 1,799 m.

The mean annual temperatures reported by the Santa Fe and Española stations are 48.6-49.3 degrees Celsius and 49.4-50.7 degrees Celsius, respectively (Gabin and Lesperance 1977). The climatological data further indicate that the study area conforms to the general temperature regime of New Mexico; that is, hot summers and relatively cool winters.

The average frost-free period (growing season) at Santa Fe is 164 days. The latest and earliest recorded frosts are May 31 (in 1877) and September 12 (in 1898) (Reynolds 1956a:251). In contrast, Española reports an average growing season of 152 days, with an extreme first frost date of September 12 (recorded in 1898) and a last frost date of June 6 (in 1927) (Reynolds

1956a:250). The shorter growing season for Española, which is approximately 450 m lower than Santa Fe, may be attributable, in part, to cold air drainage through the Rio Grande and Rio Chama valleys. Although a frost-free season of 130 days is sufficiently long to allow the growing of most indigenous varieties of maize through dry farming (Schoenwetter and Dittert 1968; Hack 1942), the unpredictability of late spring and early fall frosts creates agricultural risk. The best agricultural strategy is to plant late enough that seedlings will not erupt above the ground until after the last frost, but early enough that they will be able to fully mature prior to the first killing fall frost (Anderson and Oakes 1980).

Precipitation records from Santa Fe show an annual mean of 361-366 mm. In contrast, the lower Española area reports an annual precipitation mean of only 237-241 mm (Gabin and Lesperance 1977). Annual precipitation records from these stations, as from much of the northern Southwest, vary greatly from year to year. For example, a maximum of 630 mm of precipitation was recorded in Santa Fe during 1855, compared to a minimum of 128 mm in 1917 (Reynolds 1956b). The amount of precipitation is even more variable for any given month in successive years.

Late summer is the wettest season in the annual cycle of the study area, whereas June is one of the driest months. Precipitation records from Santa Fe and Española indicate that more than 45 percent of the mean annual precipitation falls between July and September (Gabin and Lesperance 1977). Although October is drier than September, it is nevertheless, the fourth wettest month of the annual cycle in the Española records. Significant precipitation (7.6 percent of the annual total) also falls in Santa Fe during this month. Late summer and fall moisture is derived from the Gulf of Mexico, when air masses from this region push inland to bring the economically important monsoons (Tuan et al. 1973:20). Summer rains tend to be violent and localized. This saturates the ground surface in the beginning of a storm, resulting in the loss of much of the moisture through runoff.

Moisture is also lost through evapotranspiration, the combined evaporation from the soil surface and transpiration from plants when moisture is unlimited (Chang 1959). Mean annual evapotranspiration losses are 859 mm in Santa Fe and 932 mm in Española (Gabin and Lesperance 1977), creating potential annual moisture deficits of 493 mm and 691 mm, respectively. June, which is a critical time for the germination of plants, suffers the greatest moisture deficits.

The above temperature, precipitation, and potential evapotranspiration data suggest that Pojoaque is climatologically a high risk area for dry-farm agriculture. The dates of the first and last frosts are unpredictable, and frost damage may result in significantly reduced crop yields in some years even though the long-term mean growing season is more than adequate for maize agriculture. Cold air drainage within the valleys increases the risk of frost damage. Precipitation levels are clearly not sufficient to overcome the deficits of potential evapotranspiration, and the amount of precipitation in any given year cannot be predicted from year to year, let alone from month to month. The seasonality of rainfall is a third problem since there may be too much moisture in the early fall when many agricultural plants need to dry for harvesting and storage.

Soils

Soils found within the project area fall into two geomorphic groups: soils of the Dissected Piedmont plain and soils of the Recent Alluvial valleys (Folks 1975). The former, which is most common, is composed of Pojoaque-Rough Broken Land association. Pojoaque soils are derived from Quaternary period surficial deposits, as well as mixed sandstone, shale and siltstone alluvium of the Tesuque formation of the Santa Fe group (Lucas 1984). These well-drained soils are characterized as moderately sloping to moderately steep (5-25 percent), deep, loamy and gravelly deposits that are often covered with lag gravels (Folks 1975:4). Pojoaque soils are intermingled with Rough Broken Land soils and most often occur on the ridgetops between drainages. This soil association is not used for farming today.

Soils of the Recent Alluvial valleys geomorphic group are composed of the El Rancho-Fruitland soil association. These deep, loamy soils, which commonly occur on the low terraces of the Rio Pojoaque and Rio Tesuque drainages within the vicinity of the study area, are derived from Tesuque Formation sedimentary rocks and Sangre de Cristo granitic rocks (Folks 1975:3). Slopes range from 0 to 5 percent. This soil association is used today for irrigated crops.

Flora

Pojoaque Pueblo is located in or near three habitat types: (1) piñon-juniper grasslands; (2) dry riparian; and (3) riparian/wetlands. Piñon-juniper grasslands, which support a variety of plant and animal species, is the most common habitat. The characteristic vegetation includes piñon, juniper, prickly pear, cholla, yucca, and several species of muhly and grama grass (Pilz 1984).

The dry riparian habitat occurs in arroyo bottoms, on arroyo banks, and in the level to nearly level floodplains adjacent to some of the wider drainages. In the project area this habitat occurs in the Calabasa Arroyo, Arroyo Cuma, and in a narrow finger of the Arroyo Ancho. Some of the more common plants found are rabbitbrush, fourwing saltbush, mountain mahogany, Gambel oak, Rocky Mountain beeplant, and numerous grasses, including Indian ricegrass, three-awn, side-oats gramma, and flax (Pilz 1984).

The riparian/wetlands habitat is found only along the perennial streams, such as the Rio Pojoaque and Rio Tesuque. Modern vegetation includes willow, cottonwood, salt cedar, rushes, and sedges (Pilz 1984). In the wider valley bottoms, ditch irrigation is practiced, including the area north of the present study area.

Fauna

Fauna found within the project area includes coyote, badger, porcupine, blacktailed jackrabbit, desert cottontail, spotted ground squirrel, and many species of birds. Mule deer and black bear are known to occur, but in low numbers (Pilz 1984). Use of the area by elk, black and grizzly bear may have been more common prior to the turn of the century (Carroll 1984:2).

CULTURAL HISTORY OVERVIEW

Stephen C. Lentz, James L. Moore, and Regge N. Wiseman

To place the prehistoric and historic developments of the Northern Tewa Pueblo area in perspective, a brief overview of the prehistoric background and a summary of archaeological work in the vicinity of the project area is given in the following section. The discussion is limited to the Pueblo period.

Chronology

Researchers in the Rio Grande area have perceived the developments in that area as departing from the traditional Pecos Classification (Kidder 1927). Wendorf and Reed (1955) have redefined the Pueblo I through Pueblo V periods based on the occurrence of ceramic types, changes in settlement patterns, economy, and other characteristics. The principal temporal intervals defined by Wendorf and Reed include the Developmental, Coalition, and Classic periods.

The Developmental Period (A.D. 600-1200)

The early portion of the Developmental period in the Northern Rio Grande dates between A.D. 600 and 900 and is comparable to the late Basketmaker III and Pueblo I periods of the Pecos Classification. Late Basketmaker sites are rare and tend to be small with a ceramic assemblage composed primarily of Lino Gray, San Marcial Black-on-white, and various plain brown and red-slipped wares. The majority of the documented early Developmental sites are in the Albuquerque and Santa Fe areas (Frisbie 1967; Reinhart 1967; Peckham 1984). Although the settlement of the Rio Grande drainage has typically been attributed to immigration from southern areas (Bullard 1962; Jenkins and Schroeder 1974), investigations north of Albuquerque suggest an in situ development of an indigenous population (Frisbie 1967; Lent et al. 1986).

Within the vicinity of the present study area, early Developmental sites are scattered along the Rio Tesuque and Rio Nambe drainages (McNutt 1969; Peckham 1984:276). Based on excavation data, early Developmental habitation sites are small villages of shallow, circular pithouse structures. The sites commonly feature between one and three pithouses (Stuart and Gauthier 1981), and rectilinear surface storage cists are often found in association. These pit structures appear to be more similar to San Juan Anasazi examples than those of the Mogollon, although San Juan architectural "elaborations" such as benches, partitions, and slab linings are absent (Cordell 1979:43).

Sites of the Developmental period tend to be located near intermittent tributaries of the Rio Grande, presumably for access to water and arable land. A preference for elevated settings near hunting and gathering resources is also exhibited, possibly because of their use as an overlook (Cordell 1979).

The transition to above-ground rectilinear and contiguous habitation structures is more apparent in the Santa Fe district (Wendorf and Reed 1955:140). However, McNutt (1969) reports the presence of pithouses in the Red Mesa component of the Tesuque Bypass site near modern Tesuque Pueblo. A late Developmental community, the Pojoaque Grant Site (LA 835), is composed of 12 to 15 small room blocks associated with a great kiva. Ceramics recovered through excavation in conjunction with tree-ring dates suggest an occupation between A.D. 800 and 1150 (Wiseman 1995). The variety of pottery and other materials of nonlocal origin associated with the site suggests that LA 835 may have served as a regional economic center (Stubbs 1954).

At the northeast juncture of the Pojoaque Pueblo access road and US 84/285 is LA 61, the ancestral component of Pojoaque Pueblo. The associated site complex consists of an extensive series of prehistoric Anasazi components and the historic and modern Tewa pueblo of Pojoaque. Pueblo occupation in the area began around A.D. 950, and has continued, with occasional abandonment, to the present day. Ceramics associated with the site include pottery from the Developmental, Coalition, and historic periods, i.e., mineral-painted wares, organically painted wares, Biscuit wares, Glaze wares, micaceous wares, historic Tewa polychromes, and polished black-on-red and buff types.

The Coalition Period (A.D. 1200-1325)

The Coalition period (A.D. 1200 to 1325) in the Northern Rio Grande is marked by a shift from mineral pigment to organic paint (primarily Santa Fe Black-on-white) in decorated pottery. There are substantial increases in the number and size of habitation sites coincidental with expansion into previously unoccupied areas. Although above-ground pueblos were built, pit structure architecture continued into the early phases of this period. Rectangular kivas, which are incorporated into room blocks, coexisted with the subterranean circular structures (Cordell 1979:44). Frisbie (1967) notes the shift away from less optimal upland settings and a return to the permanent water and arable land adjacent to the major drainages.

In the Northern Rio Grande, the Coalition period is characterized by two interdependent trends in population and settlement reflected in substantial population growth. These trends include a significant increase in the number and size of the habitation sites and the expansion of permanent year-round settlement by Anasazi agriculturalists into areas of greater latitude and elevation. The Chama, Gallina, Pajarito Plateau, Taos, and Galisteo Basin districts, which had been the focus of infrequent Anasazi use prior to A.D. 1100 to 1200, were intensively settled during this period (Cordell 1979). Among the representative sites of the Coalition period are LA 4632, LA 12700, and Otowi, or Potsuwii (LA 169).

The Classic Period (A.D. 1335-1600)

The Classic period (A.D. 1325-1600) postdates the abandonment of the San Juan Basin by sedentary agriculturalists. It is characterized as a time when regional populations may have reached their maximum size, and large communities with multiple plaza and room-block complexes were established (Wendorf and Reed 1955:13). The beginning of the Classic period in the Northern Rio Grande coincides with the appearance of locally manufactured red-slipped

and glaze-decorated ceramics in the vicinity of Santa Fe, Albuquerque, Galisteo, and Salinas after ca. A.D. 1315, and Biscuit Wares in the Pajarito Plateau, Santa Fe, and Chama areas (Mera 1935; Warren 1979). In the Santa Fe area, the Galisteo Basin saw the evolution of some of the Southwest's most spectacular ruins. Many of these large pueblos were tested or excavated by N. C. Nelson in the early part of the twentieth century (Nelson 1914, 1916). Possibly the first stratigraphic excavation in the United States was executed by Nelson on the room blocks and the midden of San Cristóbal Pueblo (LA 80). Other projects in the Galisteo area include those by Smiley, Stubbs, and Bannister (1953); the School of American Research (Lang 1977); a project at San Lázaro (LA 91, LA 92) by Southern Illinois University (Smiley 1988); and in the summer of 1992, a project at Pueblo Blanco for Northern Illinois University (Creamer n.d.). The majority of these Classic period sites were established in the early 1300s. By the late 1400s, this area appears to have experienced a substantial decline in population.

Sites of the Classic period are characterized by a bimodal size distribution -- large communities versus small farmsteads or seasonally occupied fieldhouses. This contrasts with the preceding Coalition period, where a greater range of site types characterized the settlement pattern. Investigations of the large Biscuit Ware pueblo sites on the Pajarito Plateau include initial studies by Adolph Bandelier (1882), Hewett (1953), and Steen (1977), who recorded sites within Frijoles Canyon including Pueblo Canyon, Tshirege, and Tsankawi. Several large archaeological projects have included Cochiti (Biella and Chapman 1979), a UCLA intensive survey and limited excavation project (Hill and Trierweiler 1986), and a National Park Service survey of Bandelier National Monument (McKenna and Powers 1986).

The Biscuit series and incised wares were produced in and adjacent to the study area. Beginning with Wiyo Black-on-white (A.D. 1300-1400), the series includes Biscuit A (A.D. 1375-1450), Biscuit B (A.D. 1400-1500 or 1550), and Sankawi Black-on-cream (A.D. 1500-1600) (Breternitz 1966). The appearance of Potsuwii Incised, about the time that Biscuit B became common, suggests contact with the Plains Indian groups. The addition of a red slip to Sankawi (or Tsankawi) Black-on-cream was the origin of the Tewa Polychrome series, ancestral to types that are still being produced in the Rio Grande pueblos. The Chama Valley and Pajarito Plateau were mostly abandoned by the end of this period, and population was concentrated along the Rio Grande when the Spanish arrived in A.D. 1540.

Native groups underwent numerous changes in lifestyle, social organization, and religion after the Spanish settlement of New Mexico about A.D. 1600. The introduction of new crops and livestock contributed to major changes in subsistence, as did mission programs that taught new industries (Simmons 1979:181). Incursions by Plains Indians caused the abandonment of many pueblos and a constriction of the region occupied by Pueblo groups (Chavez 1979; Schroeder 1979). A combination of new diseases to which the Pueblos had no natural defenses, intermarriage, conflict attendant with the Pueblo Revolt of A.D. 1680 and 1692, and abandonment of their traditional life contributed to a significant decrease in Pueblo populations over the next few centuries (Dozier 1970; Eggan 1979).

LA 835, POJOAQUE GRANT SITE

Description of the Site and Assessment Activities

This very large site is composed of a great kiva and numerous small individual pueblos grouped into a community measuring 300 m north-south by 400 m east-west (Fig. 2). During the summer of 1953, S. Stubbs of the Laboratory of Anthropology, Santa Fe, excavated parts of four small pueblos and trenched the great kiva, but died before he could complete his report. Highway construction earlier in this century traversed the western edge of the site, exposing cultural remains in the present right-of-way. The currently proposed highway work will be limited to the existing right-of-way. The archaeologist's job was to evaluate any resources that may remain within the existing right-of-way.

That portion of LA 835 lying within the existing right-of-way is a strip 300 m long and varying from 2 to 5 m wide. Prior to our investigations, cultural materials and possible features were evident along the highway slope cuts. Two drainages crosscut the right-of-way strip, dividing this strip into three sectors, labeled north, middle, and south. It is clear from both the decline in density of surface artifacts in the vicinity of the drainages and the absence of evidence for archaeological features (structures, trash deposits, etc.) in the stream cutbanks that these drainages were extant at the time of the prehistoric occupations of the site. It should also be noted that there is clear evidence of artifact-bearing earth having been moved by heavy equipment along the margins and across the bottoms of each drainage. None of these artifacts, however, were counted during the surface artifact inventory phase.

Archaeological work began with pinflagging surface artifacts in each sector, then typing and recording them according to 2-by-2-m units of a grid, established for the purpose of recording provenience information. Cultural remains recorded during this procedure include formal artifacts (projectile points, manos, metates, etc.), pottery sherds, lithic debitage, burned animal bone fragments, sandstone-slab building fragments, and cultural-stained (dark) soil (Table 1; Appendix 1). Only formal artifacts (for example, projectile points) and those items requiring other resources for proper identification were collected for laboratory description and analysis. Sixteen items were collected from LA 835 (Appendix 2).

Areas of high artifact density were used as guides for auger testing. Lines of auger holes were bored across the high density areas, starting well before and continuing well beyond the high density refuse concentrations to ensure that we discovered any anomalies within or close to the refuse areas. The auger tests were made at 2-m intervals along the 2W grid line in the gently sloped north and middle sectors, and a limited series was bored along the 4W line in the north sector. Although structural remains are clearly present in the south sector, augering was not done because the road cut in this sector is abrupt and close to the fence and will not be modified by the proposed highway improvements. All fill removed by auger was screened through ¼-inch wire mesh into a bucket. Artifacts, charcoal, and other cultural indicators recovered from each auger bucket were noted and recorded. No unique artifacts or artifacts requiring further study were recovered in the augering, and all were backfilled into the hole upon completion of each test.

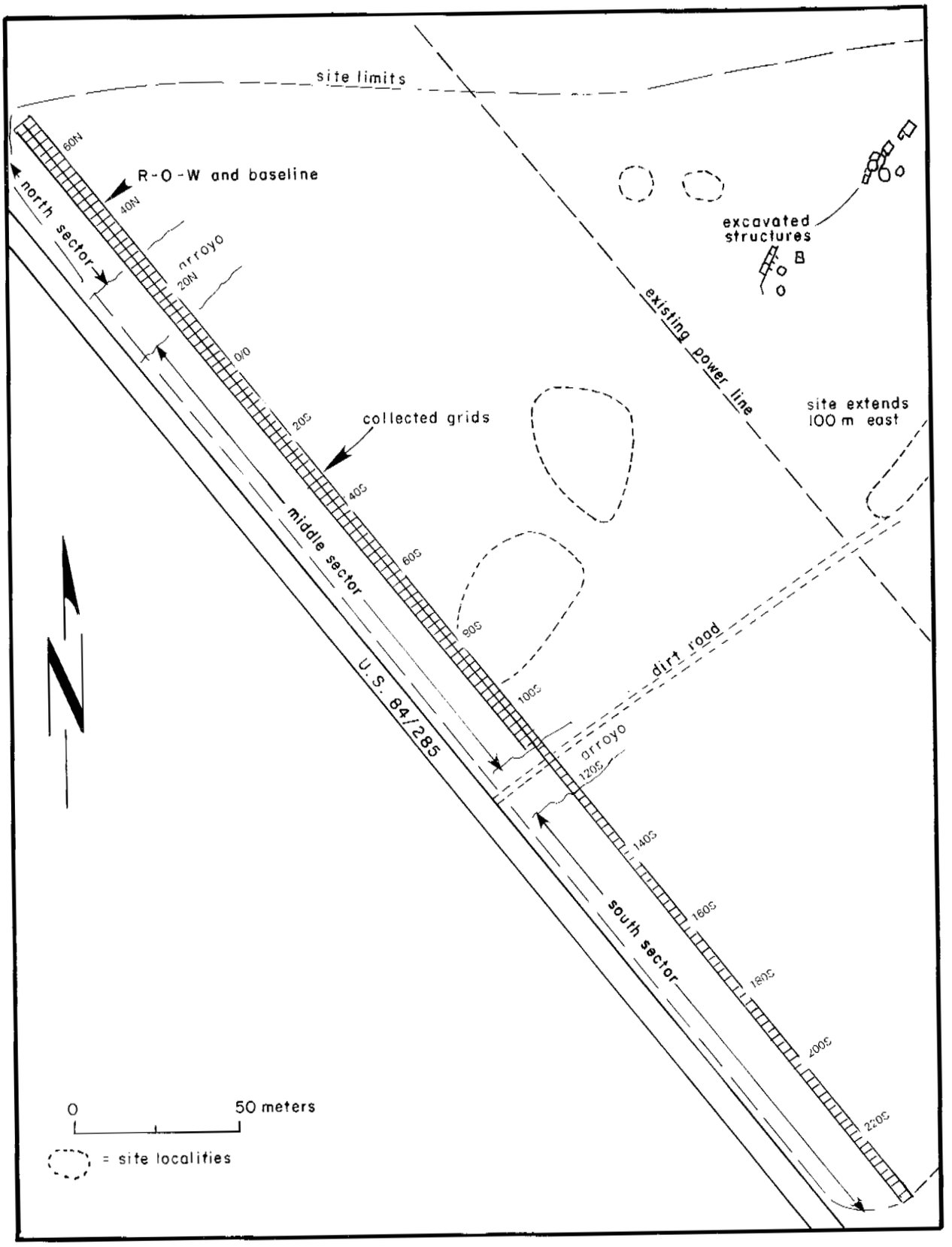

Figure 2. LA 835 site map.

Table 1. Summary of Cultural Items from LA 835, Pojoaque Grant Site

Artifact Type	Right-of-Way Sector North	Middle	South	Totals
Pottery:				
Painted	14	41	42	97
Utility	174	470	624	1268
Lithic Artifacts	64	174	190	428
Animal Bone	1	5	1	7
Projectile Points			1	1
Proj. Point Preforms	1	1	2	4
Biface fragments		1	1	2
Discoidal Beads		2		2
Metate Fragments			2	2
Mano Fragments			2	2
Hammerstone			1	1
Totals	254	694	866	1814

Augering revealed a fairly uniform stratigraphy below the site surface. The basic matrix throughout is a silty clay or clay containing variable but minimal amounts of fine sand and gravel. The most notable aspect is a compact layer of the basic matrix beginning 5 to 15 cm below the surface and ending at a depth of 35 to 50 cm. We are uncertain of the origin of this compact stratum. Below the compact stratum lies a softer, slightly moister clay sediment containing occasional microlenses of sand and gravel of geologic origin. The same silty clay or clay matrix of the overlying strata continues here as well. Rocks believed to relate to the prehistoric occupation were occasionally encountered in the soft stratum during augering.

It should be remembered that the surface from which we were working (and measuring depths) is not the modern ground surface of the site, but rather is the bladed slope created several decades ago when the current highway was built. It is estimated that the slope surface at the level of the 2W line of auger tests is 25 cm below the prehighway surface, and that of the 4W line is 50 cm below it. Ultimately, this difference is important for relating the depths of prehistoric structures and other features to both the modern (prehighway) surface and to the prehistoric surface at the time the ancients occupied the site.

Artifacts and other cultural evidence were frequently encountered during augering. These were noted by type of artifact (sherd, lithic, etc.) or charcoal (flecks, bits, stain, etc.), approximate depth, and stratum.

Assessment Results

The surface artifact inventory within the proposed project revealed both high and low density distributions in all three sectors (Fig. 3). Evidence for architecture and other features was also noted by cultural stains in the north sector and by sandstone fragments (architectural elements) in the middle and south sectors. Although these distributions have been blurred to some

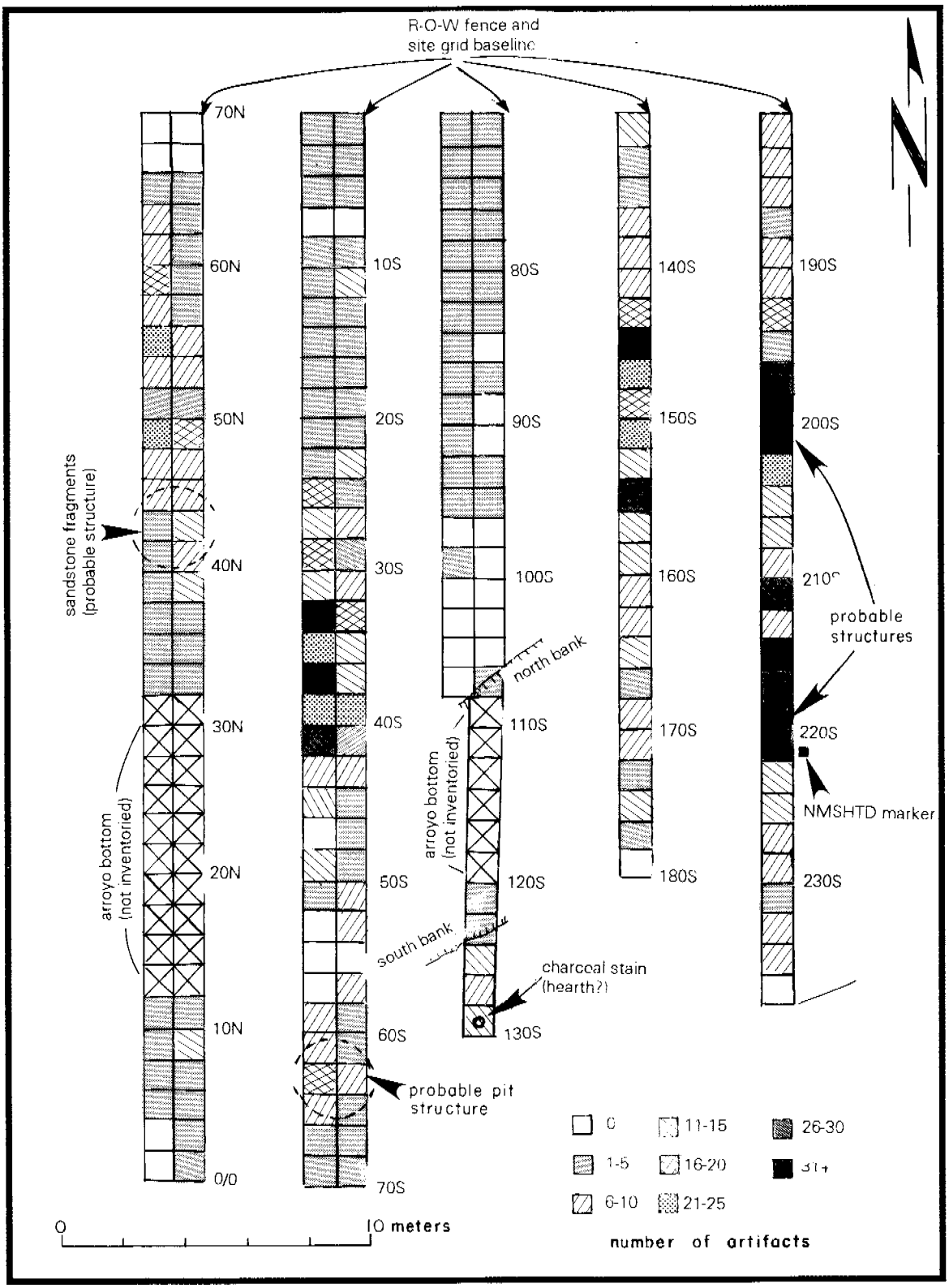

Figure 3. LA 835 surface artifact inventory map.

extent by earth-moving during the previous road-building episode, sufficient erosion has occurred since that time to expose what we believe to be the principal locations of both refuse deposits (areas of high artifact density) and structures (sandstone fragment locations).

The distribution of various pottery types in the sectors indicates overlapping occupations with slightly differing emphases in dates (Table 2). While one is tempted to assess dating on the basis of painted pottery types, the painted pottery assemblage is small at LA 835, a situation that is typical of Late Developmental period sites in general. Accordingly, the utility styles are perhaps the most informative about dating and are relied on heavily here.

Before tackling the dating problem, a few words are in order concerning the informal type "washboard" utility. These sherds are basically indistinguishable from Sapawe Micaceous Washboard except that they have the nonmicaceous paste and quartz temper typical of locally made Developmental period utility wares. Some of the sherds classified here as washboard also have evidence such as band width that is similar to the Kana-a style, suggesting that the washboard sherds at LA 835 date much earlier (A.D. 900s-1000s) than one might otherwise think.

The north sector, with the highest percentages of Red Mesa Black-on-white and washboard utility (2 percent and 11 percent respectively) and the lowest percentages of Kwahe'e Black-on-white and indented corrugated (less than 1 percent and 14 percent, respectively), appears to be the earliest of the three sectors. The low percentage of wide-banded utility, the local version of Kana-a Neckbanded, increases slightly in frequency from north to south (from early to late as purported here).

The higher indented corrugated percentage (17 percent) and lower washboard percentage (5 percent) in the middle sector suggest that this occupation is intermediate in time. The trend continues in the south sector where the indented corrugated pottery is most common (26 percent), indicating that this occupation lasted the longest.

Augering revealed several aspects of the subsurface (Fig. 4). First, the earth within 160 cm (deepest auger test) of the current ground surface is composed of essentially the same basic matrix--a silty clay or clay with little or no admixture of larger particles such as sands, gravels, pebbles, and rocks. What does change with depth is the degree of compaction and, of course, moisture content.

The loose surface layer varies from 5 to 15 cm thick. It overlies the second stratum, a compact layer of low moisture content that varies from 20 to perhaps as much as 80 cm in thickness. The upper surface of the compact zone occurs at fairly predictable depths (i.e., has a fairly even upper surface, probably as a result of heavy equipment work), but the bottom limit varies as much as 50 cm from test to test, suggesting that the compact zone was not created by the packing action of heavy equipment during earlier highway construction. Below the compact zone, to an undetermined depth, the earth is less compact and moister.

Most artifacts, including plastic and glass fragments, were recovered from the loose surface soil. Prehistoric artifacts were also recovered from the compact stratum. An occasional piece of glass and plastic also came from earth removed from the compact zone, but they are suspected of having fallen into the auger bucket from higher up in the fill.

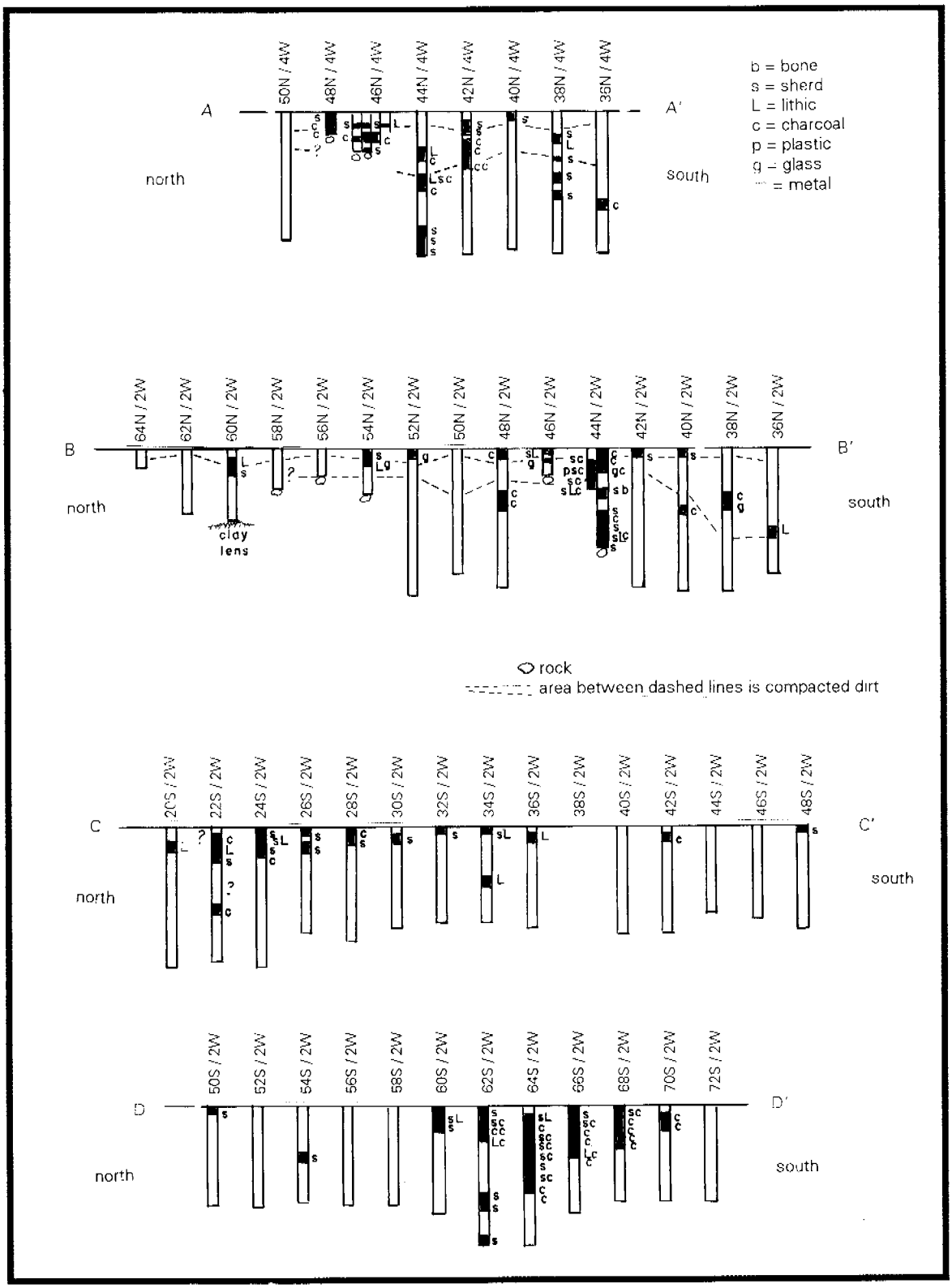

Figure 4. LA 835 auger results.

Table 2. Pottery Associations by Sector at LA 835*

Pottery Type	North N	North %	Middle N	Middle %	South N	South %	Totals N
Kiatuthlanna B/w			1				1
Red Mesa B/w	3	2	2		6	1	11
Puerco B/r			1				1
Gallup B/w	4	2			2		6
Socorro B/w	1				1		2
Kwahe'e B/w	1		15	3	13	2	29
Santa Fe B/w			1				1
Alma Plain					1		1
Smudged-redware			1				1
Whiteware	5	3	20	4	18	3	43
Redware					1		1
Painted Subtotal	**14**	**7**	**41**	**8**	**42**	**6**	**97**
Plain	120	64	339	66	372	56	831
Wide-banded	1		10	2	23	3	34
Washboard	20	11	26	5	39	6	85
Clapboard			1				1
Indented-corrugated	27	14	85	17	172	26	284
Ribbed-incised	3	2	1		1		5
Incised	2	1	3	1	6	1	11
Scored	1		5	1	11	2	17
Utility Subtotal	**174**	**93**	**470**	**92**	**624**	**94**	**1268**
Site Totals	**188**	**100**	**511**	**100**	**666**	**100**	**1365**

* Figures for pottery types constituting less than 1 percent are not shown.

Prehistoric cultural materials were recovered from the soft stratigraphic unit underlying the compact zone, but clear-cut associations between the artifacts and this lower unit occur in very few instances. Four of these instances, centered on Auger Tests (AT) 44N/4W and AT-44N/2W in the north sector and on AT-64S/2W and AT-64S/2W in the middle sector, encountered such large numbers of artifacts and quantities of charcoal and charcoal stain that we can only conclude that pit structures or similar cultural features are present in these locations. Although the south sector was not augered, surface manifestations (blackened soil, sandstone slab fragments, and a high concentration of artifacts on the surface of the road cut) clearly indicate the presence of structures and associated refuse.

AT-38S/2W struck human remains in the first bucket, indicating the presence of a burial. The moment we recognized human bone in our auger test, we immediately stopped augering, placed the bone (a femur shaft fragment) back into the hole, and backfilled the hole to protect the remains.

In summary, all indicators point to the presence of substantial cultural resources in all three sectors of the site lying within the existing right-of-way. These include a probable pit structure and associated refuse deposits in the north sector; a pit structure, human burial, and

associated refuse deposits in the middle sector; and structural remains and associated refuse in the south sector.

Description of the Site and Assessment Activities

LA 6579 is a small site with evidence of two occupations, one prehistoric and one historic. Overall site size is 40 m north-south by 50 m east-west. A low mound next to the highway cut appears to be the remains of a small adobe structure. A strip of site surface along the eastern side and measuring 35 m north-south by 10 m east-west lie within the proposed highway project. The house mound lies within this strip (Fig. 5).

Assessment activities at this site were limited to visual observation during several different visits under several conditions of natural lighting and vegetative cover. The autumnal absence of surface vegetation, the highway cut along the east side, two deeply eroded 2-track road scars along the west side, and numerous gopher holes with attendant backdirt piles provide ample evidence of the depth and nature of the site. The gopher burrows are so evenly spread across the site that they serve as effectively as auger tests in revealing subsurface cultural deposits. No collections or test excavations were done.

Assessment Results

The near absence of vegetation on the surface of the site accentuates the microtopography. A mound, located in the east-central sector next to the highway cut, is clearly the remains of an adobe-walled surface structure that probably represents the second of two occupations at the site. Low numbers of late-dating pottery types, found along the highway cut and on rodent backdirt piles on the site surface, indicate a historic occupation dating to the nineteenth century or perhaps earlier. Marshall (1995) states that a sherd of Sankawi Black-on-cream, suggesting a late prehistoric/early historic occupation, was observed during his visit, but it could not be relocated at the time of our assessment.

Two 2-track roads traverse north-south through the the west half of the site. The east 2-track road attains a maximum depth of 1 m. Both roads have exposed subsurface cultural deposits, including a trash-filled pithouse or large pit and a slab-lined burial. The probability of other buried features at the site is high.

The highway cut along the east side of the site and the 2-track roads reveal low frequencies of sherds, lithic flakes, and other artifacts eroding out at depths ranging up to 20 or 30 cm from the modern surface. Sherds and pieces of charcoal were observed scattered over the site surface. Since most of these materials are on the backdirt piles of active rodent burrows, it is clear that subsurface cultural deposits occur over much of the site area, especially within the proposed highway project area (i.e., between the existing highway and the 2-track roads).

In summary, all indicators at LA 6579 point to the presence of subsurface cultural features and artifactual remains within the proposed highway project area.

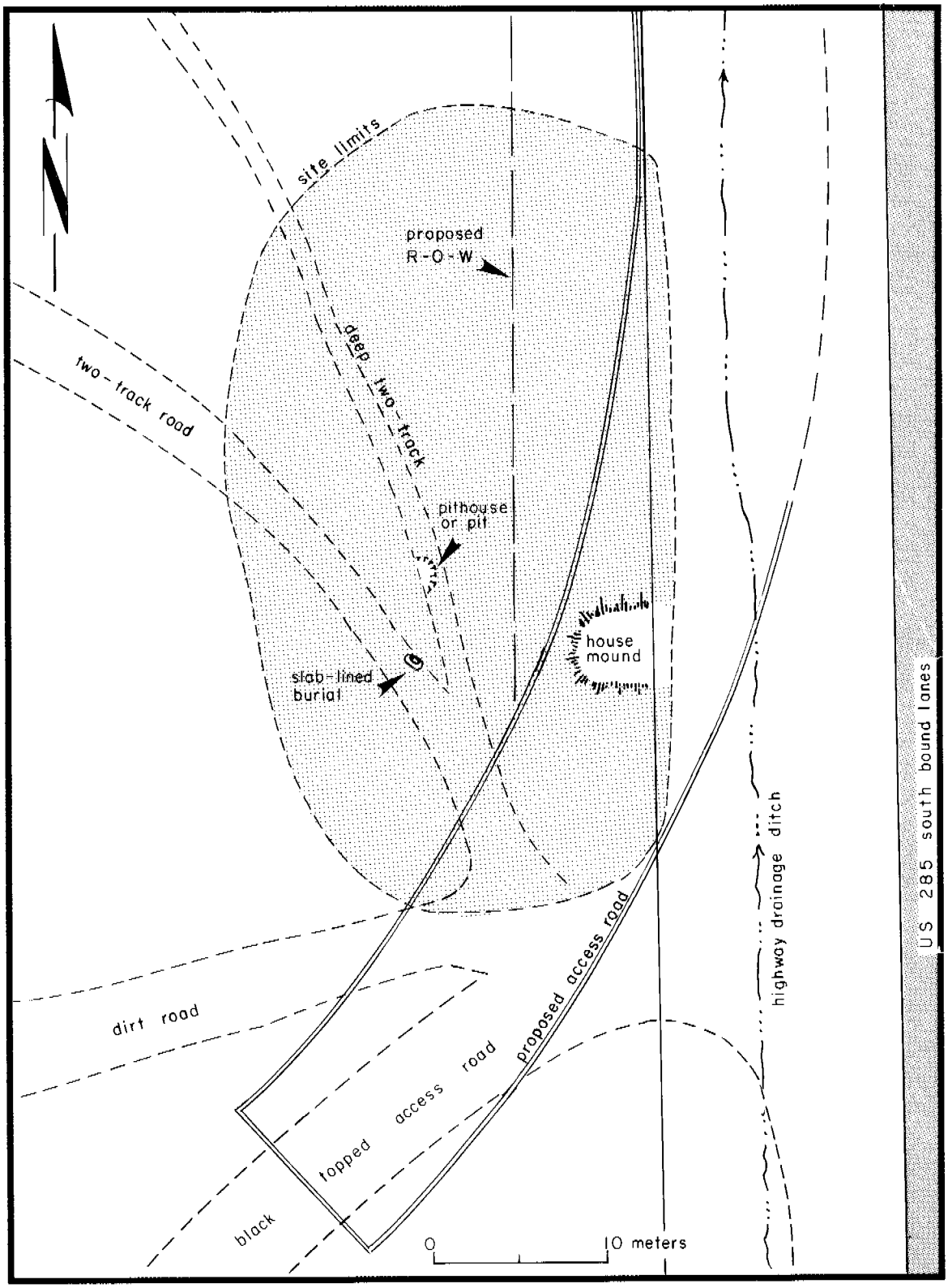

Figure 5. LA 6579 site map.

Description of the Site and Assessment Activities

LA 101410 is a small, low mound of river cobbles with a very sparse scatter of sherds and lithic artifacts. A meandering arroyo cuts all along the north and west sides of the site, and someone in the recent past has extensively bulldozed the ground surface immediately to the south and east. Associated pottery indicates a late Coalition or early Classic period occupation, probably sometime within the span A.D. 1300-1375.

The planning documents (Marshall 1993) indicate that the proposed new right-of-way cuts across the middle of the cobble mound. Thus, the western half of the site lies within the proposed project zone.

Assessment activities included detailed examination of the site surface and arroyo cuts, establishing a site datum and grid baseline, and pinflagging, mapping, and collecting surface artifacts from near the cobble concentration.

Assessment Results

A large juniper and several shrubs cluster on and around the cobble mound, but the leaf and other organic litter from these plants has not appreciably obscured the view of the cobble concentration. The cobble concentration contains at least one alignment that indicates the presence of a structure (Fig. 6). However, the relatively few cobbles in the mound indicate the walls were insubstantial and probably composed more of woody or brushy materials.

Only three artifacts identifiable to the prehistoric occupation were noted near the structure. These include two Wiyo Black-on-white sherds and one chalcedony flake (Appendix 3). All three items were collected.

Intense scrutiny of the large bladed area to the south and the arroyo cutbank along the north and west sides of the cobble mound failed to show stains, rocks, or any other signs of surface or subsurface cultural remains.

In summary, all indications point to LA 101410 being a late Coalition/early Classic period fieldhouse composed of one room and associated refuse. The western half of the site lies within the proposed highway construction zone.

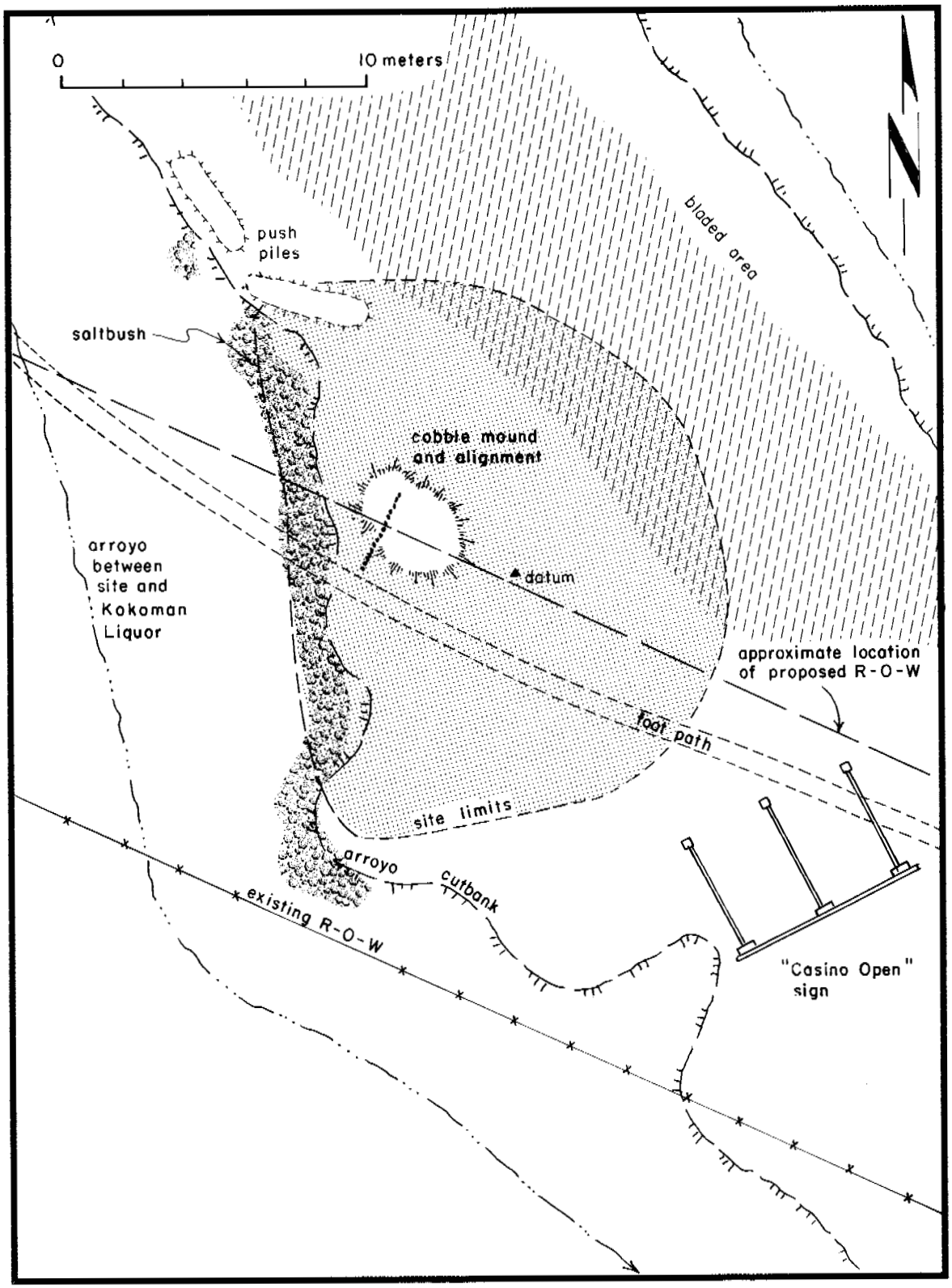

Figure 6. LA 101410 site map.

Description of the Site and Assessment Activities

Today LA 101415 is a 10-by-20-m concentration of approximately 200 sherds and lithic artifacts situated on the south slope of a lower terrace remnant. It is clear from the surface indications that the top of the terrace where the site originally laid was bladed at some time in the past, probably preparatory for a trailer home or other structure that was never moved in. Prehistoric building remains (small sandstone fragments) and cultural materials were pushed southward to their present location by the blading. Previous to our assessment activities, a light soil stain measuring 4 m in diameter was noted on top of the terrace near the south edge, raising the possibility that the bottom portion of a pithouse or kiva remained intact. Pottery indicates the prehistoric occupation dated to early Classic times, or sometime within the period A.D. 1350 to 1450.

Assessment activities included detailed visual examination of the site surface, pinflagging all surface artifacts, establishing a site datum and grid baseline, and auger-testing in and adjacent to the stain. All fill removed by the auger was screened through ¼-inch wire mesh into a bucket and backfilled into the hole upon completion of the test. Several pottery sherds were collected for further identification in the laboratory.

Assessment Results

Close visual examination of the site surface confirmed the initial impression that the site had been bladed and most of the cultural remains moved southward to the edge of the terrace (Fig. 7).

Five auger tests yielded the same results--bedrock at depths varying from 20 to 55 cm below the present surface, a gray silty clay surface layer overlying a medium brown silty clay or clay lower stratum overlying bedrock, and absolutely *no* cultural materials, charcoal, or other cultural indicators in the test fill. Bedrock depths in centimeters vary as follows from north to south: 20, 20, 55, 40, and 50. The location represents a natural, earthen-filled depression in the bedrock and not a structure or other cultural feature.

Once we were certain that the site lacked integrity and that the sherds and lithic artifacts were displaced from their original locations, we made a "grab" sample of all painted sherds and a few utility sherds for further examination in the laboratory. The painted sherds were collected so they could be cleaned and assigned type names with greater assurance. Final identifications and type assignments include approximately equal numbers of Wiyo Black-on-white, Biscuit A, and Biscuit B, with two sherds of Rio Grande Glaze B (Appendix 4).

The utility sherds were collected because they are thin-walled and require close comparison with appropriate type materials. Laboratory inspection of the utility sherds shows that they conform with other utility sherds from similar period sites in the Rio Grande drainage. Most

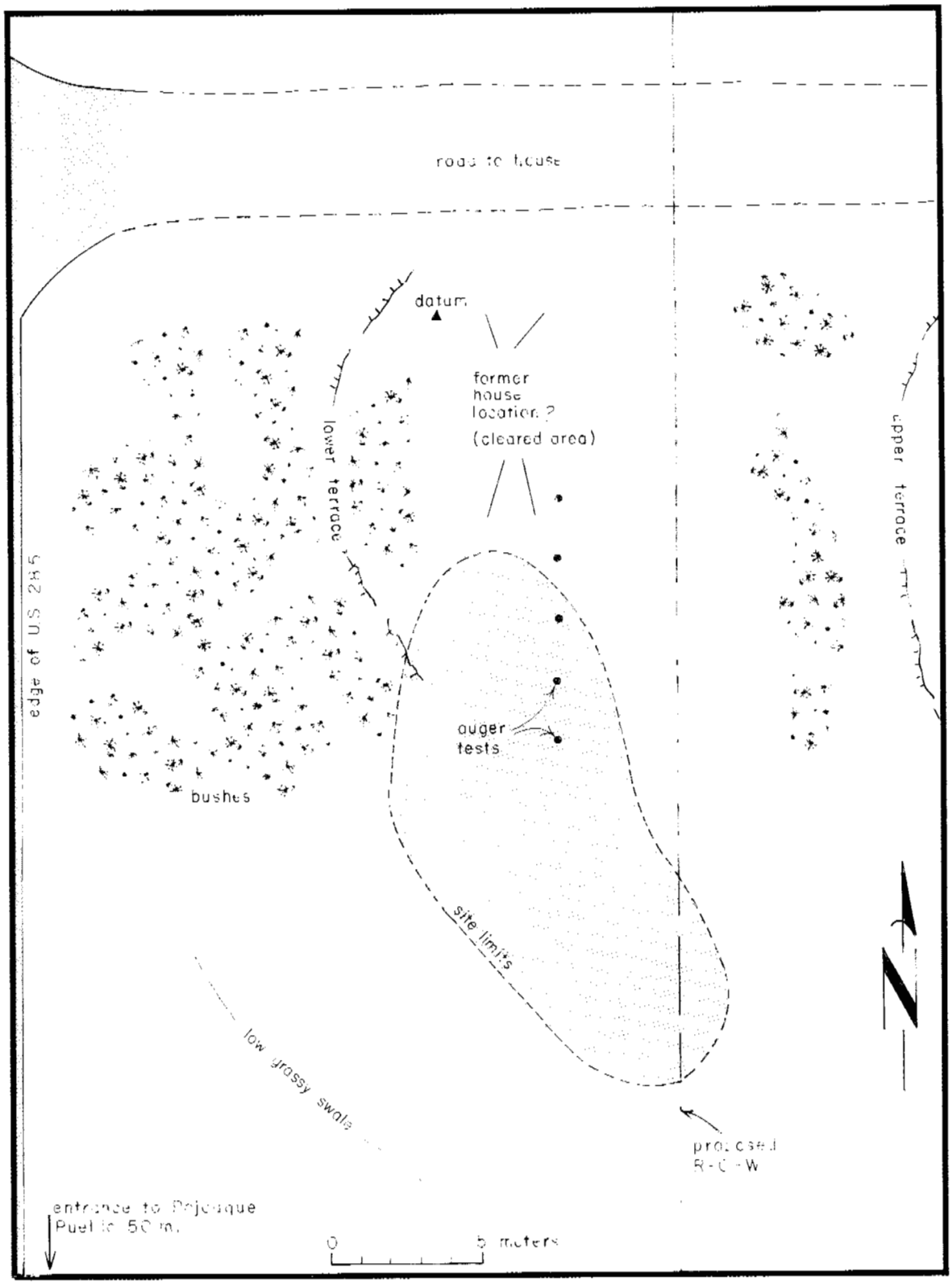

Figure 7. LA 101415 site map.

of the sherds are Rio Grande plain micaceous utility pottery, but one sherd each of Sapawe Micaceous Washboard, Kana-a-like banded (Rio Grande paste), and Pueblo III indented corrugated were also recovered.

In summary, all indicators point to a lack of subsurface features at LA 101415. Furthermore, the refuse concentration at the south end of the site was created when a bulldozer was used to flatten the site location for a modern home site. We could find no intact prehistoric or historic cultural remains at this site.

SUMMARY AND RECOMMENDATIONS

LA 835, Pojoaque Grant Site

Test results, rock concentrations, and artifact density patterns indicate the presence of two pit structures, surface structures, and cultural refuse within the existing highway right-of-way. These remains clearly have the potential for contributing important information on local and regional prehistory. Data recovery is recommended.

LA 6579

A low house mound, a pithouse outline, a slab-lined burial, and cultural refuse exposed in road cuts indicate the presence of substantial cultural remains within and adjacent to the proposed highway project. These remains clearly have the potential for contributing important information on local and regional prehistory and history. Data recovery is recommended.

LA 101410

A cobble pile, a rock alignment, and a thin scatter of cultural refuse lie within the proposed highway project. These remains have the potential for contributing important information on local and regional prehistory. Data recovery is recommended.

LA 101415

Cultural materials lie within the proposed highway project. However, testing and other observations indicate that these materials were pushed by means of heavy equipment to their present location and that no intact cultural deposits remain. Subsurface soil profiles, observations on and measurements of the location, and an inventory of diagnostic artifacts were completed in the field and exhaust the data potential of this site. No further work is recommended.

RESEARCH ORIENTATION AND PROBLEM DOMAINS

Timothy D. Maxwell and Regge N. Wiseman

Sites LA 835, 6579, and 101410 have occupations dating to the Developmental (A.D. 600-1200), Coalition (A.D. 1200-1325), and historic (nineteenth century) periods. It is not known whether the structures represent year-round or seasonal habitations. Minimally, the sites have the potential to offer information on limited activity sets as determined by associated artifacts and other cultural residues. Optimally, the sites offer substantial information about regional settlement and subsistence patterns.

Research Orientation

The foundation of the research proposed for this project is that of regional settlement and subsistence patterns. Of course, more specific concerns are to be addressed but in recent years, archaeologists have found it productive to move away from a focus on individual sites to an examination of regional patterns. Specific sites provide only a limited look at prehistoric lifeways but their importance is increased by examining their role in the context of regional events.

The prehistoric sites to be studied are important for their potential contribution to understanding these regional patterns. The Developmental period site (LA 835) represents one of the earliest year-round settlements in the valley. As discussed in more detail below, area residents in the Developmental period built both surface rooms and pit structures for living. The shift from subterranean dwellings to above-ground rooms was a phenomenon that occurred across the Southwest. This shift may have important implications for concomitant changes in social organization and subsistence strategies. Since the part of the site lying within the highway project area contains probable residences, archaeological investigation should offer data that can be used in the study of this transition in living space.

Since LA 835 is one of earlier Puebloan sites in the region, it will also provide information on the earliest subsistence practices in the area. Paleoenvironmental reconstruction of the region shows that there were a series of changes in rainfall patterns. It is often believed that early farmers reacted to such uncertainty by varying their subsistence pursuits and the plant and animal remains at the site should shed some light on the types of subsistence options practiced during the Developmental period. As discussed below, other researchers see a pattern of increasing specialization in subsistence strategies over time. By comparing the results obtained at this site with the evidence from earlier and later sites in the valley, a pattern may emerge that helps resolve this argument.

The appearance of several small communities in the Santa Fe and Pojoaque valleys during the Developmental period also presaged a trend toward increasing population aggregation that continued into the Coalition period represented by LA 101410 and the lower component of LA 6579 and culminated in the Classic period (A.D. 1325-1600). Population growth has been cited as a causal factor (Kohler 1989) in the appearance of aggregated communities while others

(Leonard and Reed 1993) believe that population growth is the result of successful adaptation and not a cause of new adaptations.

LA 6579, on the other hand, represents the historic period, a time when European-introduced diseases and a variety of other cultural impacts emanating from the coming of the Europeans in the sixteenth and seventeenth centuries greatly reduced Native American populations and altered their cultures (Ramenofsky 1987; see also various papers in Section 1 of Thomas 1989). Although the project sites cannot provide actual figures on regional population size at any particular point in time or changes in population size through time, they have the potential to provide data, such as room dimensions, that can be applied to studies of population growth. This is discussed in more detail below.

Problem Domains

The following research concerns will be addressed at LA 835, 6579, and 101410. The research problems are outlined and the specific archaeological techniques to be used are discussed.

Social Organization and the Structure of Living Space

Two questions are related to the evidence for a probable occupation surface. The sites have the potential to provide basic information on the type of living structures, the function of the structures, and the activities carried out at the sites. Given the implications these sites have for building a more complete understanding of site activities and perhaps social organization throughout the late prehistoric and early historic periods, the first data recovery concern is a simple one and revolves around identification:

1. What are the types of structures and other features at the sites?

In general, the Developmental period is characterized by a shift to surface habitation structures from pit structures as suggested by excavations elsewhere at LA 835 (Stubbs 1954) and at the nearby Tesuque Bypass Site (McNutt 1969). During the succeeding Coalition period, habitation appears to have been solely, or mostly, in pueblo-style surface structures that, in some instances, were much larger in size and implied number of residents rather than structures and sites of previous periods. The Classic period (A.D. 1325-1600) saw a crystallization of the trend toward large sites (greater aggregation), plus a new feature in the appearance of one- or two-room field-side seasonal structures built for ready access to farm lands. This pattern carried over in most respects to the early historic period, though we know little about the archaeology of this period. If the late component at LA 101410 is Native American (rather than Hispanic), it may inform on this more recent transition in living arrangements.

The changes in structure types and the uses to which they were put have implications for social organization and subsistence activities. As argued by Gilman (1983), the shift to surface rooms may be functionally related to increasing dependence on agriculture. As agricultural dependence increases, the majority of food appears during a brief harvesting period and greater

amounts of food must be prepared and stored. Gilman (1983) maintains that specialized food preparation areas would be needed and are more efficient in above-ground dwellings while supplies of food have better protection from moisture and animals when stored in above-ground structures. Gilman also argues that increasing reliance on planted crops will increase sedentism and rather than move to warmer locales during colder months, people will move inside.

Alternatively, Plog (1974) believes that the socio-organizational differences between pit structures and surface rooms is related to interaction among population size, differentiation of activities, integration of activities, and technological change. As pointed out by Plog, social integrative structures should be reflected in architectural features such as kivas or multifamily dwellings. Plog found in a study of the Hay Hollow Valley that the pithouse-to-pueblo transition was marked by population increase and increased differentiation of activities as seen in specialized space within rooms. New integrative structures also appeared, specifically, kivas, which became specialized, nonhabitation features.

Outdoor activity areas may also be specialized. As specialized differentiation in activities occurred, there may have been more formalized use of exterior space. For example, if warm-season activities included the grinding of plant foods outdoors, then it would be expected that this area would be kept free of the debris that might be generated by other activities. Identification of such areas within bounded localities such as plazas enclosed by room blocks would also signal increasing differentiation of activities and the need to coordinate activities.

Site specific research. All three sites have good but circumstantial evidence for the presence of structures. The presence of structures, and the details of their construction, internal layout, and size, need to be defined. Surface rooms may be bounded by walls, cobble foundations, adobe, or postholes that represent jacal construction. Pit structures will be indicated by prepared floors and walls on the bottoms and sides of pits created by the removal of natural deposits. The issue of identification of the living surface dating to the lower occupation of LA 6579 will be resolved by removing overburden until extramural features (traceable, horizontal, trampled sediments; extramural pits; extramural hearths) can be identified.

2. What was the function of the structures and other living spaces?

In order to address questions of increasing differentiation and its implications for social organization, it is necessary to determine the function of any identified living space. Based upon ethnographic data, Hill (1970) provides a set of assumptions that can be tested to determine function. Briefly, living areas should display a variety of floor features, a diversity of artifact types, and a nonrandom distribution of artifacts. Storage rooms should lack features and have low artifact diversity. Specialized activity rooms should have low artifact diversity and, depending upon the type of activity, a high number of specific tool types. If activity differentiation was not important, then the living surface should contain a wide variety of floor features, high artifact diversity, and manufacturing debris. These areas may also have a random distribution of artifact types.

Outside activity areas may also be specialized, for example, stone tool, pottery, basket, food production, hearths, and storage pits may occur repeatedly in the same location. Soil may become compacted through continued use of the same location and it is expected that, if

specialized, there will be a high frequency of similar artifact types. If there is random patterning to the artifact composition and distribution, the area may have had multiple uses or may be a discard area.

Site specific research. This issue will be studied through detailed inventory and mapping of site features and their locations and through laboratory analysis of the artifact assemblage. The inventory and mapping of site features, particularly those found on the occupation surfaces, will provide a measure of activity diversity present. Statistical analysis of the artifact assemblage will quantify artifact evenness and richness (Kintigh 1989) and allow assessment of any mixture of activities within the activity area.

Subsistence Activities

The Developmental period witnessed a shift in population to generally higher elevational settings and an accompanying access to a wider range of environmental zones. Throughout the northern Rio Grande Valley, Dickson (1979) notes the spread of residential sites into the piedmont zone overlooking the major river drainages. With greater access to different resources, one would expect a wide variety of foods to appear. Gasser (1982) has observed increasing diversification in prehistoric Puebloan subsistence economy between A.D. 650 and 1225 as an increasingly wide spectrum of wild plant and animal foods were taken. Gasser believes that this may be due to environmental or social stress while Doebley (1981) surmises that it may be due to (1) a change in cultural preference; (2) a decrease in agricultural productivity; or (3) human destruction of the environment. Leonard (1989) re-examined Gasser's evidence and argues that the pattern of increasing food diversity was caused by a sampling problem and that there was actually increasing specialization in food production with the emphasis on agricultural production.

1. What was the nature of the prehistoric environment at the time the site was occupied? What food resources were exploited and what does this information tell us about the potential 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 plant and animal remains. For example, the presence of nonedible domesticated plant parts would suggest local farming practices while the occurrence of only edible portions might suggest either local production or 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 and grease 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. Areas containing the two sites are often considered "marginal," a concept of dubious merit, especially without careful definition of the term and consideration of the problem under study. 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 exquisitely 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.

Evidence of seasonality will also be obtained, if available. This type of information may be derived from pollen, flotation, and faunal samples, and by inference, drawn from the presence or absence of certain feature or artifact types (for example, the presence or absence of hearths in habitation structures). The unfortunate reality, however, is that evidence for seasonality is usually so spotty that while we may be able to document site use in a given season, absence of evidence for use in another season is usually inconclusive.

Site-specific research. To answer these questions, data on the environment at the time of occupation must be obtained. General environmental reconstructions for northern New Mexico are available (for example, Rose et al. 1981). Site-specific information can be obtained through the analysis of pollen samples, macrobotanical remains, and faunal remains recovered during excavation. Macrobotanical remains will be retrieved through the sampling of features while pollen samples will be taken from features and various strata. The samples will be analyzed by specialists for plant species identification. Faunal remains will be retrieved through screening and analyzed by faunal specialists.

Population Growth

The Coalition period (A.D. 1200-1325), which follows the Developmental period, is one in which a trajectory of rapid population growth seems to have been established and culminated in a population maximum in the Classic period (A.D. 1325-1600). After European contact, populations declined. Although the study of three small sites and parts of sites cannot provide figures on population size, they can contribute to studies of population growth and decline. Through a determination of room size, researchers can establish room size variation throughout each period and make correlations between the probable number of occupants and room size. These data also make it possible to make more accurate estimates of the number of rooms that may be present in room block mounds of the Developmental, Coalition, and historic periods.

Site-specific research. The data needed to address this problem depend upon the nature and preservation of the structures. Even a single structure is useful for these studies. The greater the number of documented structures, the more useful the data on living space become for assessing population size in future studies.

Temporal Context

Temporal placement of the sites is important for understanding regional patterns of social and subsistence organization. The sites must be placed in the proper temporal position to detect regional trends and changes in social and subsistence patterns. This is necessary for addressing each of the previous problem domains.

Although the region was first occupied during the Developmental period, little is known about these early occupations. During the late Developmental period (A.D. 900-1200), the

construction of small communities began to increase dramatically, but it is unknown whether that portion of LA 835 lying within the project dates to the earlier or later portions of the Developmental period. Recent reassessment of dates from excavated areas within the site indicate a longer occupation span than previously believed (Wiseman 1995).

The level of knowledge about the succeeding Coalition period (A.D. 1200-1350) is generally higher, but specific knowledge of that part of the period represented by LA 101410, with its Wiyo Black-on-white pottery, and of the lower component of LA 6579 is basically unknown. Remains dating to the late eighteenth and nineteenth centuries, as represented in part at LA 6579, are virtually undocumented archaeologically.

Thus, each of the project sites is only generally dated at the present time. We must obtain data for more precise temporal placement of each in order to proceed with the other studies outlined in this document.

Site-specific research. It may be that stylistic and typological analysis of pottery is the only available method for determining occupation dates; therefore, all sherds will be retrieved for study. If appropriate features are encountered, radiocarbon and archaeomagnetic samples will also be retrieved.

Issues To Be Addressed by Ceramic Analysis

Temporal Issues. Before other patterns can be examined, it is necessary to determine the time of occupation and integrity of collections from various proveniences. Initial examinations of ceramic data will be directed toward the determination of the time of occupation represented at the project sites. The characterization of ceramics will provide important data concerning the dating and changes from the Developmental through Coalition periods, as well as limited information from the historic period. All dating evidence including stratigraphic associations will be used to document ceramic change.

The Late Developmental period as defined for the Rio Grande region spans A.D. 900 to 1200 (Wendorf 1954; Stuart and Gauthier 1981) and is similar to, but extends slightly later than the Pueblo II period as defined for areas of the Anasazi to the west. While many areas of the Northern Rio Grande country appear to have been first occupied by Anasazi groups during the late Developmental period (A.D. 900 to 1200), very little is known about the dating and nature of these occupations. Thus, the dating and documentation of ceramic change within Developmental phase contexts is particularly important. Decorated types associated with this occupation are distinguished from later types by the use of mineral paint. The presence of significant frequencies of sherds exhibiting painted styles indicative of both Red Mesa Black-on-white and Kwahe'e Black-on-white may provide the basis for the differentiation of distinct phases of the late Developmental period.

Occupations in the Northern Rio Grande region dominated by the Rio Grande variety of Red Mesa Black-on-white are poorly dated but appear to date sometime between A.D. 900 and 1050, while those dominated by Kwahe'e Black-on-white and associated trade wares are thought to date sometime between A.D. 1050 and 1200 (Stuart and Gauthier 1981). The dominance of Kwahe'e Black-on-white over Red Mesa Black-on-white may indicate that Developmental phase

components from LA 101412 date to the later part of this span. Changes in frequencies of gray ware types, as identified by surface treatments, may also provide for increased dating resolution of Developmental phase components.

The presence of independently dated trade wares from other areas of the Anasazi such as Cibolan White Ware, San Juan (or Mesa Verde) White Ware, White Mountain Redware, and Mogollon types provide the opportunity for ceramic cross-dating of Developmental period components. Changes in surface treatments in Kwahe'e Black-on-white toward manipulations more similar to those found in later organic painted types of the Coalition period might allow for the recognition of components dating to the later part of the Developmental phase.

The Coalition period, as defined for the Rio Grande region, appears to date between A.D. 1200 and 1325 (Wendorf 1954; Stuart and Gauthier 1981) and is similar to, but extends slightly later than the Pueblo III period as defined for Anasazi regions to the west. While more is known about the dating and associated trends of Coalition period occupation than for the Developmental period, ceramic change within this period is still poorly understood. This period is identified ceramically by the appearance of organic-painted white ware types, although low frequencies of mineral-painted types may still be associated with the earlier occupations of this period.

The majority of painted ceramics from most excavated Coalition phase components exhibit a fine bluish paste and styles indicative of Santa Fe Black-on-white. Its relationship to Wiyo Black-on-white, the first type in the Biscuit-Tewa series and the main painted type at LA 101410, is still not satisfactorily settled. LA 101410 has the potential for further assessing the relationship between the two pottery types, as well as providing a clearer means of dating sites using these types.

Early glaze ware types, Gallina Black-on-white, San Juan White Ware, White Mountain Redware, Mogollon types, and changes in corrugated treatments on local utility pottery may also provide the potential for ceramic cross-dating of Coalition phase contexts.

The presence of later historic (post A.D. 1750) period ceramics at LA 6579 may provide a limited opportunity to examine later ceramic change and patterns. Historic occupations are identified by the presence of Tewa Red and possibly Sankawi Black-on-cream types and may be further placed into more precise spans by the associations of various ceramic types and historic materials obtained through excavation.

Patterns of interaction, production, and exchange. Once basic temporal sequences are established, ceramic distributions may be used to examine a variety of concerns. While very little is known about ceramic changes related to various trends for Developmental and Coalition period components in the Northern Rio Grande, much more is known about ceramic change at contemporaneous Pueblo II and Pueblo III sites in areas of the San Juan Basin. Thus, information from studies in Anasazi regions to the west may provide a framework for the examination of various patterns of change.

The migration of people from areas of the San Juan Basin are often proposed as the source of population during the Developmental and Coalition periods (Ford et al. 1972). Given the extremely wide extent postulated for the Chaco system and the presence of a great kiva in the Pojoaque area, the potential influence and presence of Chaco (or Cibola series ceramics) will be

examined. Types produced in other regions to the west, such as White Mountain Redware, Mogollon Brown Ware, and San Juan White Ware types may also indicate widespread exchange and interaction during this time.

Models involving the mass movement of populations from the San Juan Basin into the Northern Rio Grande have particular relevance in interpretations of patterns noted for components dating to the Late Pueblo III or Middle Coalition period. While an increased similarity in the ceramics between these regions is often assumed to have resulted from such migrations (Reed 1949), no systematic attempt has been made to test this assumption. A detailed comparison of sherds with pottery from contemporaneous sites in the Northern San Juan and Northern Rio Grande regions may provide a unique opportunity to test such models.

Large-scale movements of populations should result in the brief presence of Mesa Verde Black-on-white ceramics tempered with crushed andesite/diorite or sherd, and increasing similarities between this type and contemporaneous Tewa series types at sites dating to the last part of the thirteenth and first part of the fourteenth century. This relationship is potentially reflected by the presence of Galisteo Black-on-white, which is often assumed to represent a local copy of Mesa Verde Black-on-white (Mera 1935). Recent analysis of large numbers of Mesa Verde sherds from sites in the La Plata Valley dating from early Pueblo II to the late Pueblo III periods provides the basis for initial comparisons of contemporaneous ceramics produced in these regions.

Thus, statistical comparisons of distributions of various similarly recorded attributes from contemporaneous assemblages from projects in these regions may provide insights concerning the nature of the relationship and interaction between the Northern San Juan and Northern Rio Grande regions. The presence of early Glaze Ware types at late Coalition phase sites may be used to document exchange and interaction with areas to the west and south.

An increase in the specialization of production and importance of exchange is thought to have occurred during the Classic period (Habicht-Mauche 1993) and continued into the historic period. Much of the comparison of exchange during the Coalition and early historic periods is based on comparisons of distributions of Tewa bichrome and polychrome types versus Glaze wares. The study area is located at the north edge Glaze Ware production, and lies within the region where Tewa types such as Biscuit Wares were produced. Information concerning the distribution and characteristics of these two ceramic groups will provide information concerning exchange and interaction between adjacent areas. The identification of historic types associated with known Pueblos based on stylistic characteristics and paste and temper types may be used to examine patterns of exchange during the historic period.

For all periods of occupation, distributions and changes in temper and pastes may provide additional information concerning patterns of local production and exchange with groups in other areas of the Rio Grande region that may not be evident by distributions of typological categories alone. The range of tempers and pastes noted in ceramics from this area also provides the potential for characterization of distinct production areas and localized exchange. The study area is located along an area of geological transition, resulting in potentially significant spatial differences in clay and temper sources from nearby locations.

In order to recognize locally available pastes and temper, a range of clays and temper

sources found within a reasonable catchment area of the project sites will be collected and characterized. Similar studies conducted by Shepard (1936, 1942) and Warren (1969, 1979) for glazed ware types indicate the potential for the recognition of an area of production for various sherds. Given the wide number of temper types noted for earlier types, the recognition of distinct production areas may also be possible for earlier components.

Comparisons of distributions of pastes and temper types from assemblages associated with different components will allow for the examination of both the changing use of different material sources in local ceramic production as well as the identification of nonlocal ceramics. The characterization of gray wares exhibiting distinct micaceous pastes dominant at all local components provides the potential for distinguishing local gray wares from those produced in adjacent areas. Differences noted in the pastes of decorated types associated with different occupations may also reflect changes in patterns of production and exchange.

Vessel use and function. Attributes relating to vessel size and shape, wall thickness, materials, surface manipulation/decoration, technological attributes, and wear patterns all may reflect the intended and actual use of ceramic vessels in various economic or social activities. Many aspects pertaining to use are strongly reflected by both ceramic ware distinctions and vessel form categories. Data concerning the distribution of ceramic functional groupings may provide information concerning the nature and structure of activities occurring at different sites and at different localities within individual sites. The range of activities, for example, should be reflected in ceramic forms, sizes, and perhaps other attributes.

Changes in the distributions of functional characteristics may ultimately be related to changes in activities associated with population growth and aggregation. Various changes in Northern Rio Grande ceramics including changes in the associated firing technology, increased wall thickness, changes in overall forms of jars and bowls, increased frequencies of painted wares to gray wares, and changes in surface manipulations in utility forms may indicate changes in uses of ceramic vessels that may be related to changes in pottery-related activities. Thus, changes and relationships among these attributes will be examined. The influence and the effect of the highly micaceous pastes utilized in utility wares also needs to be examined.

Field Methods

The following proposed excavation and analysis methods are generalized because the research issues and data collection requirements defined above require a broad range of information on chronology, subsistence practices, site structure, and patterning in data.

Given the problem orientation outlined above, the general field strategy will be to maximize three types of information: (1) chronometric, (2) subsistence, and (3) feature identification. This will mean exposing as much of the site within the right-of-way as possible, identifying all features and deposits within that area, excavating all of the structural remains, obtaining a wide variety of chronometric samples, and obtaining samples of biological remains from as many features and deposits as possible.

In the field, the first step will be to reestablish the baseline for a grid system, which will

be used to provenience surface collection and excavation units. A permanent baseline, marked by a rebar, was installed during the testing phase. Surface artifacts will be collected in 2-by-2-m grids. Any formal tools found on the surface will be bagged separately. Systematic surface collection should help unravel the issue of potential multiple occupations.

Excavation by strata is desirable in this case, not only because it will isolate separate occupations but because it will yield temporally associated clusters of structural remains and thus elucidate site structure. Therefore, exploratory units will be excavated into features and areas containing known or potential cultural deposits to aid in defining their stratigraphic context. Excavation units consisting of 1-by-1-m grid units will be dug by hand in arbitrary levels (not to exceed 20 cm) unless natural stratigraphic breaks are identified. Once subsurface stratigraphy has been defined, excavation will be expanded from the exploratory grids to expose any cultural deposits and features that are present. Excavation will continue until culturally sterile soil is encountered. Connecting excavations will be used to link discrete features and artifact clusters.

Because of the amount of overburden, mechanical equipment may be used to strip sterile overburden away from cultural deposits, to remove noncultural fill from large pit features, to stratigraphically link widely separated hand-excavation areas, and for backfilling when excavations are completed.

All soils removed during hand-trenching will be screened through ¼-inch wire mesh, and all artifacts will be removed and bagged for analysis. Artifacts found on floors or occupational surfaces will be mapped in place and bagged separately.

When structural features are encountered, these will be excavated in their entirety. We will also attempt to identify and excavate exterior work surfaces associated with such features, and to use the surfaces to link discrete features into common behavioral units.

For trash deposits (either as middens or fill within pit features), the emphasis will be different: our concern is primarily with obtaining representative biological remains and associated dating materials from as many different occupations and contexts as possible. Therefore, for trash deposits a sample excavation approach may be appropriate, including heavier sampling of deposits that are richer in biological and datable materials.

As a general rule, however, at least one pollen sample and one flotation sample will be collected from each cultural stratum and from the surface of each structure floor or occupational surface. Ground stone found in its original use context will be collected for pollen washes.

Because of our concern with building local chronologies, fieldwork will emphasize the recovery of samples for absolute dating. We will collect *all* pieces of wood with a high potential for dendrochronological study, whether or not they are in original context. *All* contexts suitable for archaeomagnetic dating (hearths, burned floors, and burned walls) will be sampled. We will also attempt to collect at least one radiocarbon sample.

All excavation units and features will be mapped. Artifacts will be provenienced by grid and excavation unit (or by exact location when such treatment is warranted). Profiles of individual features and exploratory units will be drawn, and standard recording forms will be completed. Features will be photographed after excavation.

Human remains were discovered during testing at LA 835 and others may be encountered during data recovery. Consultations with appropriate parties will be initiated as prescribed by the Native American Graves Protection and Repatriation Act, the Museum of New Mexico Policy on Sensitive Materials, and applicable state laws (Appendix 5). 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 if possible, use of hand tools to expose skeletal materials, mapping, photographing of the position of the skeleton and any grave goods, and retrieval of soil for pollen analysis.

We will attempt to excavate all human remains encountered, in order to rescue 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 allowed by, or 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 Museum of New Mexico Archaeological Research Collection (ARC) for physical storage at the Department of Anthropology, University of New Mexico. Remaining artifacts will be submitted to ARC for physical storage.

As a final note, given the research issues outlined earlier, it is critical to obtain an extensive sample of dating, pollen, flotation, and faunal samples. If initial excavations indicate that such remains are rare, field methods will be modified to maximize their recovery. For example, if only a few contexts appear likely to yield useful flotation samples, the size of samples from those areas can be increased to yield more statistically meaningful counts of remains.

Analytical Methods

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.

Pottery Analysis

Pottery types and distributional data from the project sites will provide information concerning the dating of sites and contexts, and permit the examination of trends in the affiliation, production, exchange, and use of pottery vessels. While the examination of all issues involves recording a large and varied range of categories and attributes, it is not feasible nor necessary to record all of these for the entire ceramic collection. The analysis will progress in several stages, with each stage involving specially selected samples, as follows.

The first stage of analysis will involve a "rough sort" and tabulation of sherds from all proveniences. Activities at this stage will include gathering the basic data required for the dating the sites, identifying sherds critical for documenting trade relationships, and evaluating the integrity of sherd collections.

Sherds from selected dated contexts will be analyzed and described in greater detail

during the "intensive analysis" stage. This will include the recording of additional attributes allowing for the examination of various trends and patterns. An attempt will be made to implement the more detailed analysis on sufficient samples of sherds from as many distinct temporal components as possible. The basic analytical system employed, variables recorded, and research issues that will be addressed using these data are discussed below.

Ceramic analysis will involve recording information about typological classification, descriptive attributes, and quantitative data. Each sherd will be assigned to ceramic tradition or series, ware, and type according to the established Southwestern pottery nomenclature.

The majority of sherds from the project sites belong to both the pre-Tewa and the Tewa series defined for the Northern Rio Grande region. Sherds exhibiting distinct textured treatments or painted styles will be placed into previously described formal types of this and other locally occurring series (Habicht-Mauche 1993; McKenna and Miles 1990; Mera 1932, 1933, 1935; Laumbach et al. 1977; Wendorf 1953), while those lacking distinct decorations or manipulations will be assigned to informal descriptive categories based on surface characteristics (for example, unpainted polished white). These types are defined based on combinations of pastes, paint types, design styles, and surface manipulations known to be temporally sensitive.

The number of strategies used to define types in the Northern Rio Grande region varies significantly from one study to the next. Some studies have attempted to "split" the commonly used temporally distinct types into a number of other types based on variation observed in slipped and polished treatment or temper size (Habicht-Mauche 1993; Honea 1968; Stubbs and Stallings 1953). While some of the variation defined in these types may be temporally or spatially significant, the use of a large number of types based on such criteria is potentially cumbersome and confusing. Thus, we prefer to initially "lump" such variation into a limited number of spatially distinct type categories defined for this area.

Descriptive attribute categories were selected to provide detailed descriptions of the associated ceramic collections as well as the investigation of a wide range of research issues. Descriptive categories that may be recorded during various levels of analysis include vessel form, temper, paint pigment, surface manipulation, slip, modification, refired paste color, and various stylistic attributes.

The identification of *temper type* is critical for the identification of nonlocal ceramics as well as the examination of patterns of ceramic production. Temper types expected to be identified during the present study include various classes of igneous rock (including tuff, ash, andesites, and diorites), sandstones, and crushed potsherds.

Refiring analysis will also be conducted on small samples of sherds and clays and will involve recording the color of samples exposed to common firing conditions using a kiln. This allows for the common comparisons of pastes derived from different sources based on the presence of mineral impurities (particularly iron oxides) in the clay. A small sample of sherds exhibiting the range of pastes and temper types identified will be submitted for petrographic analysis to provide for more detailed characterizations and sourcing information.

Lithic Artifact Analysis

Chipped stone artifact analysis will provide data on material procurement and selection, tool production technology, and activities performed with the tools. These in turn will inform on basic site function, mobility, and ties with other regions.

Several attributes will be studied on all chipped stone artifacts. Material type and texture will provide data on selection and source, and in particular whether materials were procured nearby or from distant locations. Lithic items will also be examined for evidence of thermal alteration to enhance flakability. In conjunction with other studies, these data will provide information on mobility and ties with other regions.

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. Debitage (flakes, cores, shatter) provide information about the reduction strategy employed, the formal tools provide data on tool-using activities. 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 type and 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 on this class of artifact including platform modification, platform lipping, and distal termination.

Formal tools will be identified by morphology, wear patterns, and presumed function. These data provide a basic categorization of activities employing chipped stone tools.

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. These attributes will provide information on activities employing chipped stone tools.

Ground Stone Analysis

Ground stone artifacts will be tabulated and discussed in terms of materials, morphology, and function. The possible correlation of the technological attributes of this class of artifact and specific processing activities will be discussed if adequate samples are recovered. If ground stone artifacts are found within intact, discrete settings, fill samples will be recovered for pollen or botanical analysis, and the ground stone artifact will be carefully bagged for pollen recovery.

Several types of information are available from this class of artifact. In the absence of floral remains, certain varieties of ground stone tools can be used to infer the types of foods processed. While trough metates and two-hand manos suggest maize processing, basin metates and one-hand manos are believed to indicate the processing of wild plant foods. Analysis of pollen samples from ground stone artifacts retrieved from floors or buried activity areas can

provide information about the range of plant foods exploited.

Faunal Remains

Faunal analysis will concentrate on identification of species, age, and bone elements to assist in documenting food procurement and consumption patterns. Elements not identifiable to species level will be identified to the lowest taxonomic level possible, including, if necessary, animal size class (small/medium/large mammal, small/medium/large bird, etc.).

Evidence of processing, such as burning or roasting and cut marks, will also be recorded. These data will help determine hunting, processing and consumption patterns, seasons of the occupation, and may provide information on the local environment at the times of the occupations. If faunal data are available for two or more of the occupation periods represented by the project sites, they can be used to assess stability or change in the use of specific species through time.

Floral Remains

Plant remains will be identified to the species level when possible, and will be 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 farming, while the lack of all but edible parts could indicate either that domesticates were grown locally or else were brought into the site.

Both pollen and macrobotanical remains will be useful in reconstructing the diet at the times of the occupations. If floral data are available for two or more of the occupation periods represented by the project sites, they can be used to assess stability or change in the use of specific species through time.

Human Remains

The main goal of skeletal analysis will be the nondestructive study of the remains to add to general data on prehistoric human populations, rather than to address specific questions raised in the research design. This approach will include standard metric studies, aging and sexing, and documentation of pathologies.

It is possible that human remains from the sites would be sufficiently well preserved to permit carbon, nitrogen, and strontium isotope studies, allowing us to estimate the relative proportions of meat, corn, and wild plant foods in the diet of the site's inhabitants. **However, before this or any other destructive analysis is undertaken, the Office of Archaeological Studies will work with the State of New Mexico Historic Preservation Division to ensure prior consultation with all concerned parties.**

Publication of Results

The final report will be published in the Museum of New Mexico's *Archaeology Notes* series. The report will include all important information concerning excavation and analysis, interpretive results, photographs, site and feature plans, and data summaries as appropriate.

Disposition of Collections, Paper Records, and Photographs

All artifacts, nonhuman biological remains (animal bone and plant materials), and other collections recovered from the surfaces and subsurfaces of the project sites will be stored by the Archaeological Research Collections staff at the Museum of New Mexico unless otherwise provided through the consultation process.

Field notes, maps, photographs, specialists' reports, and analytical data will be stored by the Archeological Records Management Section at the Laboratory of Anthropology in Santa Fe.

Human remains will be reposited in the manner prescribed through the consultation process among the New Mexico State Highway Department, the State Historic Preservation Division, and all interested parties.

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APPENDIX 1. LA 835 Surface Artifact Inventory by Grid Square

Square	Painted Pottery						Utility Pottery							Lithic Artifacts					Bone
	RM	G	Kw	SF	So	w	P	B	I	W	RIn	In	S	P	Ob	C	B	Q	
North Sector																			
66N/0							1												
66N/2W									1	1				2		1			
64N/0							1									1			
64N/2W	1						4			1				1					
62N/0						2				1				1					
62N/2W							5			1									
60N/0							1		1					1					
60N/2W							10	1	2	2				2			1		
58N/0	1						3								1				
58N/2W							6			1				2				1	
56N/0							4				1			1					
56N/2W	1	1					10		1	1	1	1		2	2				
54N/0						1	3							2					
54N/2W							3			1				1	1				
52N/0							2		1					1					
52N/2W							3												
50N/0	1				1		10		2					3					
50N/2W	1						13			1				4					1
48N/0							4		3	1		1		1					
48N/2W							2		2	1				3		1			
46N/0							2		1	1				1		1			
46N/2W							2		1	1				3					
44N/0							4		3	2					1	2			
44N/2W									2					2					
42N/0		1					7		2										
42N/2W									1					2	2				
40N/0	1						5		1	3				3	1				
40N/2W							2												
38N/0							3							2					
38N/2W									1					1					
36N/0						2	3				1			3				1	
36N/2W							3							1					
34N/0							4		1				1	2					

Square	Painted Pottery						Utility Pottery							Lithic Artifacts					Bone
	RM	G	Kw	SF	So	w	P	B	I	W	Rln	In	S	P	Ob	C	B	Q	
34N/2W								1	1										
Middle Sector																			
12N/0							2						1	2					
12N/2W							3				1								
10N/0	Puerco B/r, Kiatu. B/w						5		2					1	1				
10N/2W						1	1		1									1	
8N/0			1				1							1					
8N/2W														2					
6N/0														1					
6N/2W							1							1					
4N/0							2	clapboard											
2N/0														1					
0/0							1		1										
0/2W							1												
2S/0							2			1									
4S/0							3												
4S/2W							1			1							1		
8S/0							1							1					
8S/2W							1							1		1			
10S/0							5	1	3	1						2			
10S/2W							1												
12S/0						1													
12S/2W							2	1											
14S/0							4												
14S/2W									1										
16S/0							1			2									
16S/2W							1							1	1				
18S/0							1							1		1			
18S/2W							4												
20S/0							1									2			
20S/2W							3		2										
22S/0		1					11							1	1				
22S/2W							1							2					
24S/0		1							1	1				2					
24S/2W							9		3					4		2			
26S/0							5						1			2			

Square	Painted Pottery						Utility Pottery							Lithic Artifacts					Bone
	RM	G	Kw	SF	So	w	P	B	I	W	RIn	In	S	P	Ob	C	B	Q	
26S/2W							6		3	1			2	2					
28S/0							2							1		1			
28S/2W							10			1				5		1	1	1	
30S/0							7		1						1	1			
30S/2W							9		1					1		2			
32S/0			1	1			6		2	2				2		1			
32S/2W						2	25		2					8	1				
34S/0			1				6		3	1				1					
34S/2W			1			1	9		4					5		1			
36S/0							5		3					2		1			
36S/2W			3			1	18		1	2				8		1	1		
38S/0			1				7		2	1			1	5	1	1			5
38S/2W						1	11		4					7					
40S/0							1							2					
40S/2W			2			3	12		9	1				3					
42S/0							5							1					
42S/2W						3	4							2	1				
44S/0							2		2										
44S/2W						2	5		2	1						1			
46S/0							1		1	1						1			
46S/2W							4		1					3	1				
48S/0									1	2				1		1			
48S/2W							7		2	1				1					
50S/0	1						3							3					
50S/2W							3							1	1				
52S/0						1	1		3					1				1	
52S/2W						2	7		2	3				6		1		1	
54S/0	smudged red						7	1	1			1		3		1			
54S/2W							9	2	5					7					
56S/0							3	1		1				1		1			
56S/2W							7					1		3	1				
58S/0							2		1										
58S/2W							6		1										
60S/0							1												
60S/2W						1	3		1						1				
62S/0							4		1	1				2	1	1			

Square	Painted Pottery						Utility Pottery							Lithic Artifacts					Bone
	RM	G	Kw	SF	So	w	P	B	I	W	RIn	In	S	P	Ob	C	B	Q	
62S/2W			1				8	1	2					2		1			
64S/0							4												
64S/2W							1	2	2					limestone?					
66S/0							4												
66S/2W							4					1							
68S/0			1				1							1					
68S/2W							2							1					
70S/0							1		1										1
70S/2W														1					
72S/0														1					
72S/2W							1												
74S/0	1						1												
74S/2W							1							1					
76S/0														1					
76S/2W							2												
78S/0						1	2			1									
78S/2W							1							1					
80S/0							2							2					
80S/2W									1										
82S/0									2					silicified wood					
82S/2W							1												
84S/2W							1		1										
86S/0							2												
86S/2W							1		1										
88S/2W							1												
90S/2W							1												
92S/0			1				1												
92S/2W							1											1	
94S/0							1		1										
94S/2W									1										
98S/2W							1	1						1					
100S/0							1												
South Sector																			
120S/0			1						2					2					
122S/0	Red Ware						2			1			1						
124S/0							9		5						1				

Square	Painted Pottery						Utility Pottery							Lithic Artifacts					Bone
	RM	G	Kw	SF	So	w	P	B	I	W	RIn	In	S	P	Ob	C	B	Q	
126S/0							4		2					1		1			
128S/0							7		1					1	mano fragment				
130S/0							10		2	1			1						
132S/0							1		1	1									
134S/0	1						2												
136S/0		1				1	3		4					1					
138S/0			1				2							2		1			
140S/0						1			2			1		1					
142S/0							6		8					2					
144S/0							13		8					4	3	2	3		
146S/0							10		4	2				4			1		
148S/0							9		4					1	1		1		
150S/0	Alma Plain						10		3					3		2	2	1	
152S/0							5	2	4	1			1	1				1	
154S/0							17		3	1			1	3	2	1	1		
156S/0							4		3	1	1		1	2					
158S/0							4		4					2			1		
160S/0			2		1	1	1	1	2										
162S/0							4		2			2		2					
164S/0						1	3		5					2					
166S/0							2		1					1					
168S/0	1						2	3	1										
170S/0	1						4			1							1		
172S/0							2			1									
174S/0							8		2					1					1
176S/0							3	1											
178S/0						2	13	1	10	1			1	6	1	1	1		
180S/0						1	4	1	2					2					
182S/0		1					1		1	1				2		metate frag.			
184S/0							3		1							2			
186S/0							1		1	1				1					
188S/0						1	5		1				1						
190S/0							5		2					1	1				
192S/0						1	7		2	3				5					
194S/0						1			1					1				1	
196S/0						1	5	1	7	2				5	1		1		

Square	Painted Pottery						Utility Pottery							Lithic Artifacts					Bone
	RM	G	Kw	SF	So	w	P	B	I	W	RIn	In	S	P	Ob	C	B	Q	
198S/0		3				1	10		9	7			1	6		2			
200S/0	1						31	2	11	3		2	3	7	6	3	3, metate frag.		
202S/0	2						13	4						2		1			
204S/0							8		1	1				2		1			
206S/0						1	2		5				1	1	1				
208S/0							2	1		1				1		1			
210S/0		1					9		3			1		8	1	2	1		
212S/0							2		3	2					mano frag.				
214S/0							25	1	6					8		1	1		
216S/0						1	8		7	1				8	1				
218S/0		1				1	22	1	6					2	1 1 limestone	2	1		
220S/0		1					15		12	4				13			1		
222S/0		1				1	8	2	2										
224S/0		2					11		2										
226S/0						1	3	1		1				1					
228S/0							5		1										
230S/0							1	1	1	1									
232S/0							4							2		1			
234S/0						1	2		2					1		1, hammerstone			
Total	11	6	29	1	2	43	831	34	293	85	5	11	17	290	40	58	24	11	7

Note: 1 sherd each of Alma Plain, Kiatuthlanna B/w, Puerco B/r, smudged redware, redware, and clapboard corrugated; 2 limestone flakes, 1 silicified wood flake, 2 mano fragments, 2 metate fragments, 2 discoidal beads, and 1 hammerstone, for a total of 16 extra items.
Total Artifact Inventory = 1,814 items
Total Artifacts Collected for Laboratory Study = 16

Key to Symbols

Painted Pottery

RM	Red Mesa Black-on-white
G	Gallup Black-on-white
Kw	Kwahe'e Black-on-white
SF	Santa Fe Black-on-white
Soc	Socorro Black-on-white
w	White ware

Rio Grande Utility Pottery (all have Rio Grande paste)

P	Plain-surfaced
B	Wide-banded, like Kana-a Neckbanded
I	Indented corrugated (period not distinguished, but mostly PII to PII-III.
W	Washboardedlike Sapawe Micaceous Washboard, but not that type
RIn	Ribbed-incised
In	Incised
S	Scored similarly to Pecos Faint-Striated, but not that type

Lithic Materials

P	Pedernal chalcedony/chert
Ob	Obsidian (all from Jemez Mountains region)
C	Cherts, either gray, red, or Tecolote chert
B	Basalt (nonvesicular)
Q	Quartzite, including a few massive quartz examples

Bone: Burned bone, most or all from animals used for food.

APPENDIX 2. LA 835 Surface Collections

Field Spec. Number	Description	
1	Discoidal bead	4.25 mm diameter, 1.5 mm thick, 2 mm hole diameter; white shell.
2	Sherd	Body sherd of smudged, polished redware with sherd and sand temper; probably from San Juan Basin (Chaco).
3	Projectile point preform	Basal half; 16+ by 18.5 by 4 mm; heat-treated Pedernal chalcedony.
4	Discoidal bead	4.5 mm diameter, 1.5 mm thick, 2 mm hole diameter; white stone.
5	Biface fragment	Basal part; 12+ by 20 by 2.5 mm; edge-trimmed flake of hazy black obsidian containing a few white to light gray spherulites.
6	Projectile point preform	Complete; 30 by 15 by 9 mm; red chert (Tecolote?); serious thinning problems.
7	Projectile point preform	Tip missing; 18+ by 13 by 2.5 mm; edge-trimmed flake of hazy black obsidian containing white spherules.
8	Sherd	Jar sherd of Gallup Black-on-white; sparse quartz and unground clay tablets as "temper"; black paste except for 1-mm-thick margin next to exterior surface; cross-hatched design.
9	Biface fragment	Basal(?) fragment; 8+ by 4+ by 3.5 mm; edge-trimmed flake of clear black obsidian.
10	Sherd #1	Kwahe'e Black-on-white bowl sherd.
	Sherd #2	Kwahe'e Black-on-white bowl sherd; exterior well polished.
11	Projectile point fragment	Lower blade fragment; 14+ by 11+ by 3 mm; multiple side notches that render a serrated appearance; fully bifacially flaked.

12	Sherd	Jar rim sherd of a locally-made (Rio Grande igneous clay with quartz temper) "collared-scored" vessel; terminal coil flattened somewhat but tapered towards each edge to render collar effect; exterior surface below "collar" and interior surface scored by scraping; very Plainslike in appearance.
13	Sherd	Alma Plain body sherd with fine, moderately abundant igneous temper; 5-6-mm thick; exterior polished but interior eroded/worn from use.
14	Projectile point preform	Tip missing; 26+ by 13.5 by 4.5 mm; thick, bifacially thinned flake (not edge-trimmed; clear black obsidian with one white spherule.
15	Sherd	Gallup Black-on-white bowl sherd with sandstone temper and mineral paint that did not adhere to surface; paste is clearly western in nature and temper; hatched design that is a mere shadow from the paint binder of organic material; after intensive discussion with C. Dean Wilson, we decided to call this sherd Gallup instead of Mancos Black-on-white (Wetherill variety).

APPENDIX 3. LA 101410 Surface Collections

Field Spec. Number	Description	
1	Artifact #1 Sherd	Wiyo Black-on-white bowl sherd.
2	Artifact #2 Flake	Pedernal chalcedony flake fragment.
3	Artifact #3 Sherd	Wiyo Black-on-white bowl sherd.

APPENDIX 4. LA 101415 Surface Collections

Field Spec. Number	Symbol on Sherd	Description	Number
1	K-like	Kana-a-like Banded (local paste)	1
	PIII	Pueblo III indented corrugated	1
	W	Wiyo Black-on-white bowl	8
		Wiyo Black-on-white jar	1
	A	Abiquiu Black-on-gray (Biscuit A)	8
	B	Bandelier Black-on-gray (Biscuit B)	8
	ww	Rio Grande White Ware body	10
	G	Rio Grande Glaze B bowl rim	1
		Rio Grande glaze body sherds	2
		Sapawe Micaceous Washboard	1
		Rio Grande plain utility	13
Total			54

APPENDIX 5. Policy on Collection, Display and Repatriation of Culturally Sensitive Materials

Office of Cultural Affairs
Museum Division
(Museum of New Mexico)
P.O. Box 2087, 113 Lincoln Ave.
Santa Fe, New Mexico 87504

Rule No. 11 POLICY ON COLLECTION, DISPLAY AND REPATRIATION OF CULTURALLY SENSITIVE MATERIALS Adopted: 01/17/91

I. INTRODUCTION

The policy of the Museum of New Mexico is to collect, care for, and interpret materials in a manner that respects the diversity of human cultures and religions.

Culturally sensitive materials include material culture as well as the broader ethical issues which surround their use, care, and interpretation by the Museum. The Museum's responsibility and obligation are to recognize and respond to ethical concerns.

II. DEFINITIONS;

A. "Culturally sensitive materials" are objects or materials whose treatment or use is a matter of profound concern to living peoples; they may include, but are not limited to:

1. "Human remains and their associated funerary objects" shall mean objects that, as a part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later;

2. "Sacred objects" shall mean specific items which are needed by traditional religious leaders for the practice of an ongoing religion by present-day adherents;

3. Photographs, art works, and other depictions of human remains or religious objects, and sacred or religious events; and

4. Museum records, including notes, books, drawings, and photographic and other images relating to such culturally sensitive materials, objects, and remains.

B. "Concerned party" is a museum-recognized representative of a tribe, community, or an organization linked to culturally sensitive materials by ties of culture, descent, and/or geography. In the case of a federally recognized indian tribe, the representative shall be tribally-authorized.

C. "Repatriation" is the return of culturally sensitive materials to concerned parties. Repatriation is a collaborative process that empowers people and removes the stigma of cultural paternalism which hinders museums in their attempts to interpret people and cultures with respect, dignity, and accuracy. Repatriation is a partnership created through dialogue based upon cooperation and mutual trust between the Museum and the concerned party.

D. The Museum of New Mexico's Committee on Sensitive Materials is the committee, appointed by the Director of the Museum of New Mexico, that shall serve as the Museum of New Mexico's advisory body on issues relating to the care and treatment of sensitive materials.

III. IDENTIFICATION OF CONCERNED PARTIES

A. The Museum shall initiate action to identify potentially concerned parties who may have an interest in culturally sensitive material in the museum's collections.

B. The Museum encourages concerned parties to identify themselves and shall seek out those individuals or groups whom the Museum believes to be concerned parties.

C. The Museum's sensitive materials committee shall review all disputed individual claims of concerned-party status in consultation with the tribe, community, or organization which the individual(s) claims to represent. The Museum's sensitive materials committee shall assist, when necessary, in designating concerned parties who have an interest in culturally sensitive materials contained in the collections of the Museum of New Mexico.

D. The Museum shall provide an inventory of pertinent culturally sensitive materials to recognized concerned parties.

E. The Museum shall work with concerned parties to determine the appropriate use, care and procedures for culturally sensitive materials which best balance the needs of all parties involved.

IV. IDENTIFICATION AND TREATMENT OF CULTURALLY SENSITIVE MATERIALS

A. Within five years of the date of adoption of this policy, each Museum unit shall survey to the extent possible (in consultation with concerned parties, if appropriate) its collections to determine items or material which may be culturally sensitive materials. The Museum unit shall submit to the Director of the Museum of New Mexico an inventory of all potentially culturally sensitive materials. The inventory shall include to the extent possible the object's name, date and type of accession, catalogue number, and cultural identification. Within six months of submission of its inventory to the Director of the Museum of New Mexico, each Museum unit shall then develop and submit, a plan to establish a dialogue with concerned parties to determine appropriate treatment of culturally sensitive items or materials held by the unit.

B. As part of its treatment plans for culturally sensitive materials, the Museum reserves the right to restrict access to, or use of, those materials to the general public. The Museum staff shall allow identified concerned parties access to culturally sensitive materials.

C. Conservation treatment shall not be performed on identified culturally sensitive materials without consulting concerned parties.

D. The Museum shall not place human remains on exhibition. The Museum may continue to retain culturally sensitive materials. If culturally sensitive materials, other than human remains, are exhibited, then a good-faith effort to obtain the advice and counsel of the proper concerned party shall be made.

E. All human skeletal remains held by the Museum shall be treated as human remains and are de facto sensitive materials. The Museum shall discourage the further collection of human remains; however, it will accept human remains as part of its mandated responsibilities as the State Archaeological Repository. At its own initiation or at the request of a concerned party, the Museum may accept human remains to retrieve them from the private sector and furthermore, may accept human remains with the explicit purpose of returning them to a concerned party.

IV. REPATRIATION OF CULTURALLY SENSITIVE MATERIALS

A. On a case-by-case basis, the Museum shall seek guidance from recognized, concerned parties regarding the identification, proper care, and possible disposition of culturally sensitive materials.

B. Negotiations concerning culturally sensitive materials shall be conducted with professional discretion. Collaboration and openness with concerned parties are the goals of these dialogues, not publicity. If concerned parties desire publicity, then it will be carried out in collaboration with them.

C. The Museum shall have the final responsibility of making a determination of culturally sensitive materials subject to the appeal process as outlined under section VII A.

D. The Museum of New Mexico accepts repatriation as one of several appropriate actions for culturally sensitive materials only if such a course of action results from consultation with designated concerned parties as described in Section III of this policy.

E. The Museum may accept or hold culturally sensitive materials for inclusion in its permanent collections.

F. The Museum may temporarily accept culturally sensitive materials to assist efforts to repatriate them to the proper concerned party.

G. To initiate repatriation of culturally sensitive materials, the Museum of New Mexico's current deaccession policy shall be followed. The curator working with the concerned party shall complete all preparations for deaccession through the Museum Collections Committee and Director before negotiations begin.

H. Repatriation negotiations may also result in, but are not limited to, the retention of objects with no restrictions on use, care, and/or exhibition; the retention of objects with restrictions on use, care and/or exhibition; the lending of objects either permanently or temporarily for use to a community; and the holding in trust of culturally sensitive materials for the concerned party.

I. When repatriation of culturally sensitive materials occurs, the Museum reserves the right to retain associated museum records but shall consider each request for such records on an individual basis.

VI. ONGOING RECOVERY OR ACCEPTANCE OF ARCHAEOLOGICAL MATERIALS

A. In providing sponsored archaeological research or repository functions, the Museum shall work with agencies that regulate the inventory, scientific study, collection, curation, and/or disposition of archaeological materials to ensure, to the extent possible under the law, that these mandated functions are provided in a manner that respects the religious and cultural beliefs of concerned parties.

B. When entering into agreements for the acceptance of, or continued care for, archaeological repository collections, the Museum may issue such stipulations as are necessary to ensure that the collection, treatment, and disposition of the collections include adequate consultation with concerned parties and are otherwise consistent with this Policy.

C. In addition to the mandated treatment of research sites and remains and in those actions where treatment is not mandated, defined, or regulated by laws, regulations, or permit stipulations, the Museum shall use the following independent guidelines in recovering or accepting archaeological materials:

1. Prior to undertaking any archaeological studies at sites with an apparent relationship to concerned parties, the Museum shall ensure that proper consultation with the concerned parties has taken place.

2. When so requested by concerned parties, the Museum shall include an observer, chosen by the concerned party, in the crew of an archaeological study.

3. The Museum shall not remove human remains and their associated funerary objects or materials from their original context nor conduct any destructive studies on such remains, objects, and materials, except as part of procedures determined to be appropriate through consultation with concerned parties, if any.

4. The Museum reserves the right to restrict general public viewing of in situ human remains and associated funerary objects or items of a sacred nature and further shall not allow the public to take or prepare images or records of such objects, materials, or items, except as part of procedures determined to be appropriate through consultation with concerned parties. Photographic and other images of human remains shall be created and used for scientific records only.

5. The Museum reserves the absolute right to limit or deny access to archaeological remains being excavated, analyzed, or curated if access to these remains would violate religious practices.