Mission San José Indian Quarters Wall Base Project, Bexar County, Texas

With Appendixes on the Monitoring of the San José Bus Drive and Granary Parking Lot, and on the Monitoring and Shovel Testing of the San José Service Drive

Steve A. Tomka and Anne A. Fox

Contributions by
Christopher E. Horrell, Barbara A. Meissner,
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Center for Archaeological Research
The University of Texas at San Antonio
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Texas Antiquities Permit No. 1841

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Abstract

In June and September 1997, the Center for Archaeological Research, The University of Texas at San Antonio, conducted test excavations outside the walls and inside selected rooms of the restored Indian Quarters of Mission San José y San Miguel de Aguayo (41BX3) for the San Antonio Missions National Historical Park of the National Park Service (NPS). The site is located ca. seven miles south of downtown San Antonio on a high terrace overlooking the west bank of the San Antonio River.

The purpose of the excavations was to expose the foundations of these rooms in advance of a project to reinforce the southeast section of the Indian Quarters and to expose the wall bases in selected areas throughout the compound where mortar is deteriorating. The walls with deteriorating mortar are to be repointed as part of an NPS restoration project. The walls in question had all been reconstructed by the Civil Works Administration (CWA) in the 1930s under the direction of architect Harvey P. Smith, Sr. The excavations showed that the sandstone CWA foundations were set on the original limestone Colonial foundations. It was possible to differentiate between the two by the constituent rocks and mortar used in their construction.

The results of the excavations also indicate that: 1) wall base mortar-loss is present only at the ground surface; 2) vertical wall cracks may be due to lack of underlying foundation (i.e., west cross wall of Southeast gate) or structural weaknesses in the Colonial foundation; 3) on the inside of the mission compound and outside of its walls, the upper 12 inches of deposit consists of severely mixed materials dating from the eighteenth through twentieth centuries; 4) deposits lying below 18 inches in depth contain less disturbed Colonial period materials; 5) within the Indian Quarter rooms, deposits found within three feet of the walls are severely disturbed to a depth of 18 inches; 6) less disturbed materials are encountered below a depth of 24 inches.

Three recommendations are made concerning the proposed underpinning and repointing projects. First, outside of the Indian Quarters, deposits found below 12 inches in depth should be excavated by trained archaeologists. Second, within Room LXXIV of the Indian Quarters, deposits found below 18 inches in depth, in units found along the walls, should be excavated by professional archaeologists. Due to their disturbed character and limited interpretive potential, deposits lying above these depths within both contexts can be excavated by untrained personnel. Third, because the portion of the walls requiring repointing is above or at present ground surface and the upper 12 inches of deposits are disturbed, a trained archaeologist should only spot monitor any excavations (which do not exceed 12 inches in depth) associated with the repointing.

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Acknowledgments

The successful completion of this project is owed in large part to the able and hard working field crew and lab technicians that helped in excavating and processing the large quantity of materials obtained during the test excavations. They include the following individuals: Chris Cooley, Toni Figuerroa, Connie Gibson, Chris Horrell, Richard Jones, Anthony Lyle, Gloria Murguia, Dave Nickels, Owen Ford, Ruth Mathews, and José E. Zapata. San Antonio Missions National Historical Park Superintendent Stephen E. Whitesell, Assistant Superintendent Mary A. Bomar, and Mark Chavez, Chief, Division of Professional Services, facilitated the project in many ways. We gratefully acknowledge the support of the CAR staff, in particular acting director Robert J. Hard, small project coordinator Brett A. Houk and technical editor Marcie Renner. The figures were drafted by Bruce Moses.

Introduction

Steve A. Tomka

Pursuant to a contract between the National Park Service (NPS) and the Center for Archaeological Research (CAR) of The University of Texas at San Antonio (UTSA), CAR personnel undertook two excavation projects at Mission San José y San Miguel de Aguayo during June and September, 1997. The purpose of the testing was to observe the construction and condition of the foundations beneath the walls reconstructed by the Civil Works Administration (CWA) in the 1930s under the direction of architect Harvey P. Smith, Sr. In addition, areas of the wall base experiencing mortar loss were to be exposed to determine the extent of mortar loss below ground surface in advance of a repointing project.

Mission San José y San Miguel de Aguayo is a designated State Archaeological Landmark (SAL). It is one of four local missions under the auspices of NPS within San Antonio Missions National Historical Park and bears the state archaeological site trinomial number 41BX3.

The excavations were done in compliance with Section 106 of the National Historic Preservation Act of 1966 (as amended). Both excavations were carried out under Texas Antiquities Permit No. 1841.

The field work was accomplished in a combined total of 15 work days by a crew of eight. Serving as principal and co-principal investigators were Robert J. Hard and C. Britt Bousman, respectively. The project archaeologist during the June test excavations was Anne A. Fox, while the project archaeologist during September was Steve A. Tomka. The complement of CAR staff consisted of Chris Cooley, Chris Horrell, Richard Jones, Anthony Lyle, Gloria Murguia, Dave Nickels, Owen Ford, Ruth Mathews, and José E. Zapata. Small monitoring projects conducted are reported in the appendixes.

Historical Background

Anne A. Fox

Mission San José y San Miguel de Aguayo was founded in February 1720 on the east bank of the San Antonio River about 3.5 miles south of Mission San Antonio de Valero (the Alamo; see Figure 1). By the following spring, 227 Indians resided there (Habig 1968a:86). The mission was refounded across the river to its present location sometime between 1724 and 1727. Constructed during the following 70 years were a granary, a friary, stone Indian houses, and a stone church (Habig 1978). By 1789 the mission was enclosed by a wall with four bastions and six gates. The Indian population began to decline in the last quarter of the eighteenth century, and, by 1791, only 106 Indians remained in residence (Habig 1968a:103). Secularization of the mission began in 1794 when the property was divided among the 93 remaining Indians. During the nineteenth century the population consisted of local families who had taken up residence in and around the mission. A gradual decline in use and a lack of interest on the part of San Antonians allowed deterioration of the mission buildings. Vandalism combined with weathering of unprotected architecture until in 1868 the north wall of the church collapsed, causing the later collapse of the dome as well (Habig 1968b:148). The spiral staircase for the church tower lay in ruins by 1903. Although the staircase was restored in 1920, the tower itself partially collapsed in 1928.

After Bexar County obtained title to the various plots of land in the vicinity to create a park, in 1933 the CWA began the reconstruction of the original south, west, and east walls of the mission, which had been the Indian Quarters. On May 8, 1941, the entire site had been acquired by the State of Texas, and San José was designated a National Historic Site during a formal dedication (Habig 1968b:185–186). Enabling legislation was signed into law creating the National Historical Park on November 20, 1978. The park became fully operational with the signing and acceptance of cooperative agreements in 1983.

No documentary descriptions have so far been found that indicate the method of construction or the exact

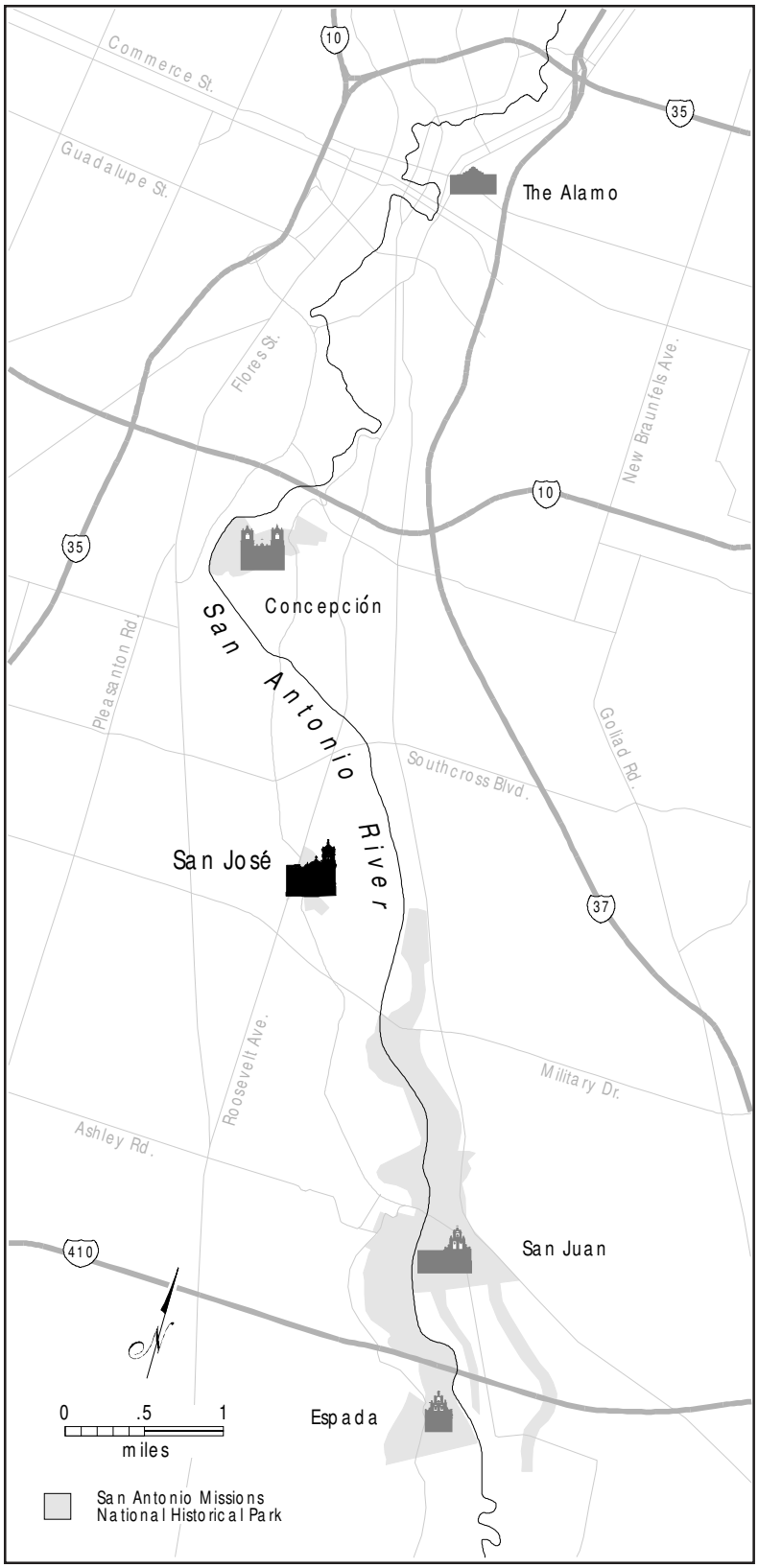

Figure 1. *Location of Mission San José y San Miguel de Aguayo.*

location of the Indian Quarters during the first years of San José's existence on its present site. However, it was customary for the first, temporary buildings on a Spanish colonial site to be of *jacal* construction, a method which involved setting upright logs into trenches to form walls, over which a thatched roof was constructed.

By 1749, Father Ciprián reported that at least some of the Indian houses were made of stone (Habig 1968a:49). Of 84 Indian apartments in 1755, 12 were of stone and consisted of two rooms each. They were arranged in "street-like form" (Leutenegger et al.1978:115). This layout resembles those described for the earliest years at missions San Juan Capistrano (Schuetz 1968:33) and San Antonio de Valero (Fox et al. 1976:3). Governor Barrios in 1758 described the Indian Quarters as consisting of eight units or squares of stone with flat roofs and parapets arranged within a larger square (Habig 1968a:50–51). By the time of the visit of Father Gaspar de Solís in 1768, the Indian apartments were stone structures formed as a part of the perimeter walls (Habig 1968a:55). This description was confirmed by Father Juan Agustín Morfi in 1777 (Habig 1968a:68).

After the secularization of the mission in 1794 and the division of the property, the houses of the Indian Quarters that were unoccupied began to deteriorate into ruins. Some were replaced by frame houses as the mid-nineteenth century approached. By the early twentieth century, the mission was the center of a small settlement composed primarily of the descendants of the first landowners (Hard et al. 1995:3–8). A 1905 U.S.G.S. map and an aerial photograph taken 15 years later indicate small structures stood along the south, west, and east sides of the compound at that time, most of them of frame construction. A few traces of the original walls still existed as ruins.

By the time of the CWA reconstruction of the mission walls in 1933, the only trace of the original Indian Quarters visible above the ground was a small section of one apartment at the southwest corner, visible on aerial photographs but probably hardly noticeable from ground level (Hard et al. 1995:Figure 5). The foundations of the original walls were relocated by the CWA workers under the instructions of architect Harvey Smith and the new walls were then built upon these foundations. This has since been confirmed by various archaeological excavations and by Fox's observations of small construction projects on the site since 1971.

Summary of Previous Investigations

Anne A. Fox

A number of archaeological investigations have been carried out at Mission San José in the past 30 years. Although only one of them has involved excavation of the Indian Quarters, each investigation has added a bit more to our knowledge of the architecture and the artifactual deposits present on the site.

In 1968, Mardith Schuetz (1970) of the Witte Museum monitored and recovered artifacts from a series of sprinkler system trenches throughout the mission. The trenches averaged 12 inches in depth. The trenches and their laterals extended throughout the interior of the compound as well as outside and parallel to the south, west, and north walls. Several buried foundations were encountered within the mission. Few field notes were taken, and the report consists mostly of lists of artifacts recovered from each trench and a few brief descriptions of features encountered.

In 1970, Daniel Fox (1970) reported several monitoring operations previously carried out as well as testing he conducted in the vicinity of the north wall of the mission. Included in this report are descriptions of monitoring of a large sewer line trench dug in December 1969 parallel to and north of the north wall of the mission, and an electrical line trench dug just north of the church in April 1970. The third section of the report deals with the excavation in August 1970 of a 2.5-x-3-m test pit north of the church where a persimmon tree was to be planted. Also mentioned is a drainage trench 30 cm wide and 40 cm deep dug by workmen for a pipe to carry water from the church entrance patio to a drain east of the north wall rooms.

In 1974, John Clark (1978) of THC conducted test excavations in a number of locations around the mission buildings to study the effects of climatic conditions on the major structures. This involved the excavation of eight test units, generally 1 x 2 m, in 20 cm levels. Clark also included much useful information of the history and construction of the various buildings at the mission and a detailed plan showing all disturbances that had occurred and archaeological units that had been excavated at the mission up to that time.

In 1979, John Clark and Elton Prewitt conducted a testing operation to the west of the granary in preparation for the proposed installation of a French drain that was "intended to relieve moisture-related structural problems along the west wall of the granary" (Clark and Prewitt 1979:iii). Six 0.5-x-1-m test pits were excavated in the area to be affected. These revealed a remnant of a flagstone surface and a number of pits and other disturbances. Artifactual evidence of Spanish colonial and later uses of the area eventually caused a reconsideration of the original plan to install the drain.

When improvements were planned to Napier Avenue in 1984, the Texas State Department of Highways and Public Transportation conducted investigations in the roadbed, locating a number of features (Henderson and Clark 1984). Among these were a section of an acequia lateral southeast of the mission compound, a nineteenth-century burial dug into the west bank of that feature, and what appeared to be a Colonial foundation trench ca. 100 ft outside the south wall of the mission. The latter contained a number of post holes, suggesting that it represented a corral structure. Colonial and later period artifacts were recovered.

In 1991, CAR conducted archival research and backhoe testing to locate and map the acequia outside the east wall of the mission in preparation for the construction of a parking area for a new visitor's center (Fox and Cox 1991). The exact location of the acequia madre or main ditch was determined by excavating of two backhoe trenches perpendicular to the suspected

path of the acequia and following out the line of the feature based on early maps of the area. The ditch was found to contain late nineteenth century and early twentieth century fill. An acequia lateral first located by Henderson and Clark (1984) was relocated and mapped by crossing it periodically with backhoe cuts (Fox and Cox 1991: Figure 3). This investigation resulted in the recommendation that subsurface preparation for the parking lot avoid excavating deeper than one foot below the ground surface.

CAR conducted test excavations at the southeast gateway and throughout the interior compound of the mission in 1993 (Hard et al. 1995) and additional excavations at the gateway in 1996 (Tennis 1997). These investigations included excavation units within the gateway which revealed the construction of the nineteenth-century road that ran through the area and the original location of the mission walls. The testing within the compound yielded information on the nature and depth of mission period and later deposits, making it possible to plan needed changes in the drainage patterns within the compound.

The previous excavations that have been most pertinent to the present project were conducted by Texas Parks and Wildlife Department archaeologists in the vicinity of the southwest corner of the mission in 1974 and 1976 (Roberson and Medlin 1976). Part of this project included excavation of test trenches inside three rooms of the Indian Quarters which recovered information on the CWA reconstruction of the walls upon the Colonial foundations. Those three rooms apparently were built over the location of early jacal (vertical log) buildings for which wall trenches are still present within floors of the later Spanish stone Indian Quarters. Also, it appeared that the cross walls or partitions between the rooms had no subsurface foundations. The archaeological crew on the present project took special care to look for similar construction details in the rooms where our excavations were conducted.

The Scope of Work

Steve A. Tomka

Given extensive wall base mortar losses along both the exterior and interior walls of the mission, and localized but serious structural damage in a number of Indian Quarters rooms, the goals of the field work at Mission San José y San Miguel de Aguayo (41BX3) consisted of the following:

1) expose foundations in deteriorating structures to observe the construction and condition of the foundations beneath the walls constructed by the Civil Works Administration (CWA);

2) expose exteriors of foundations immediately adjacent to the southeast gate and portions of the outer western wall where the exterior walls of the mission showed significant vertical cracks to define the nature of the archaeological remains; and

3) expose sections of the wall base where mortar erosion is evident along both the outside and the interior wall of the mission to define the nature of the archaeological remains encountered.

Methods of Investigation

Steve A. Tomka

To investigate the nature of structural deterioration, five units—three in June (II, III, and IV) and two in September (Units 6 and 9) —were excavated in three Indian Quarter rooms (Numbers LXXIV, XXI, LIV; Figure 3). In general, these units were placed along the walls of the structures usually centered on or in the vicinity of vertical cracks. The single unit that did not follow this pattern is Unit 6 which was positioned against the eastern wall of Room LIV. This wall forms the western wall of the mission's Southeast Gate. The purpose of the unit was to determine whether or not there is an underlying Colonial period foundation at this location. It was assumed that the absence of a Colonial foundation would indicate the lack of a Colonial gate.

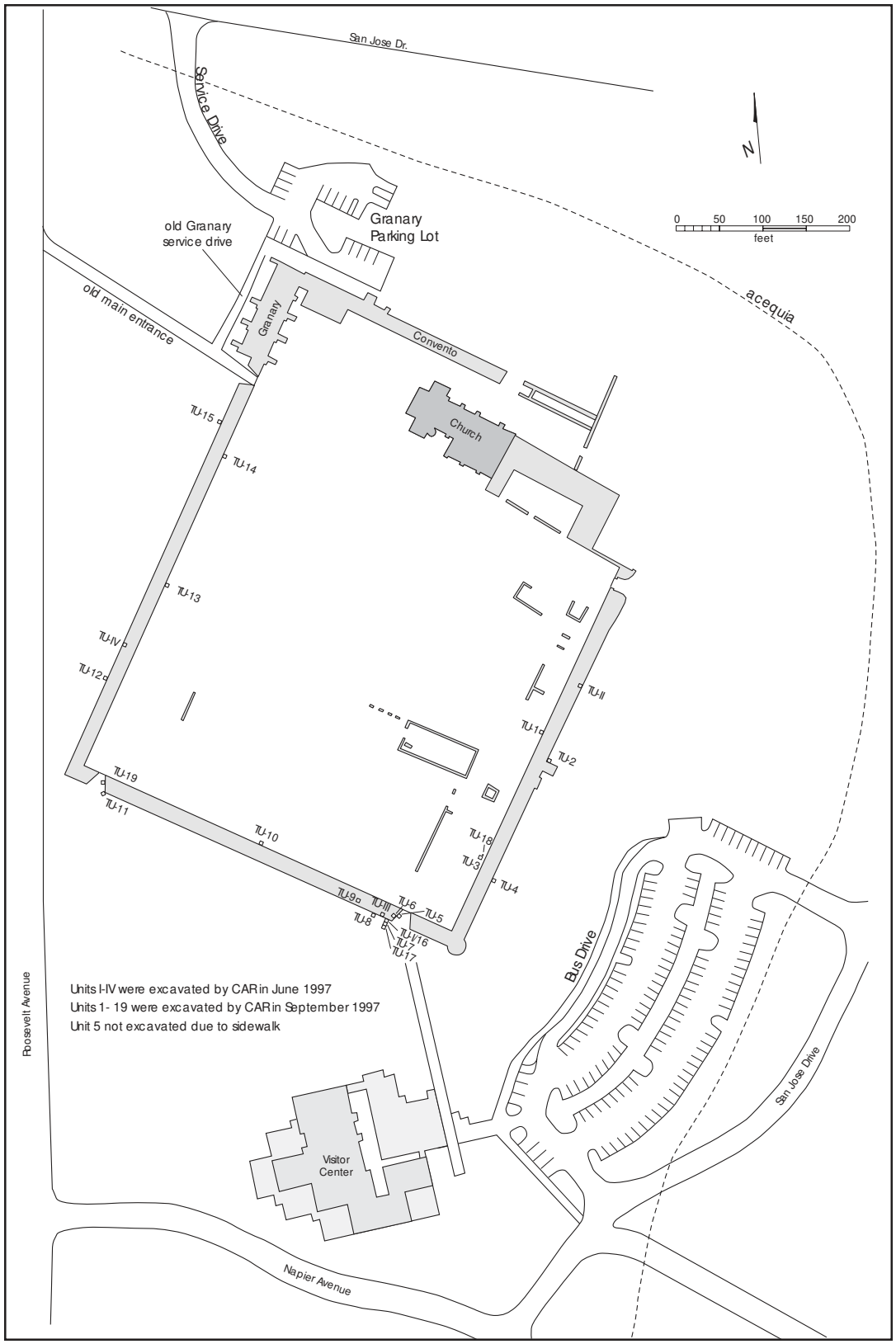

Figure 2. *Mission San José and the Wall Base Indian Quarters Excavation Units*.

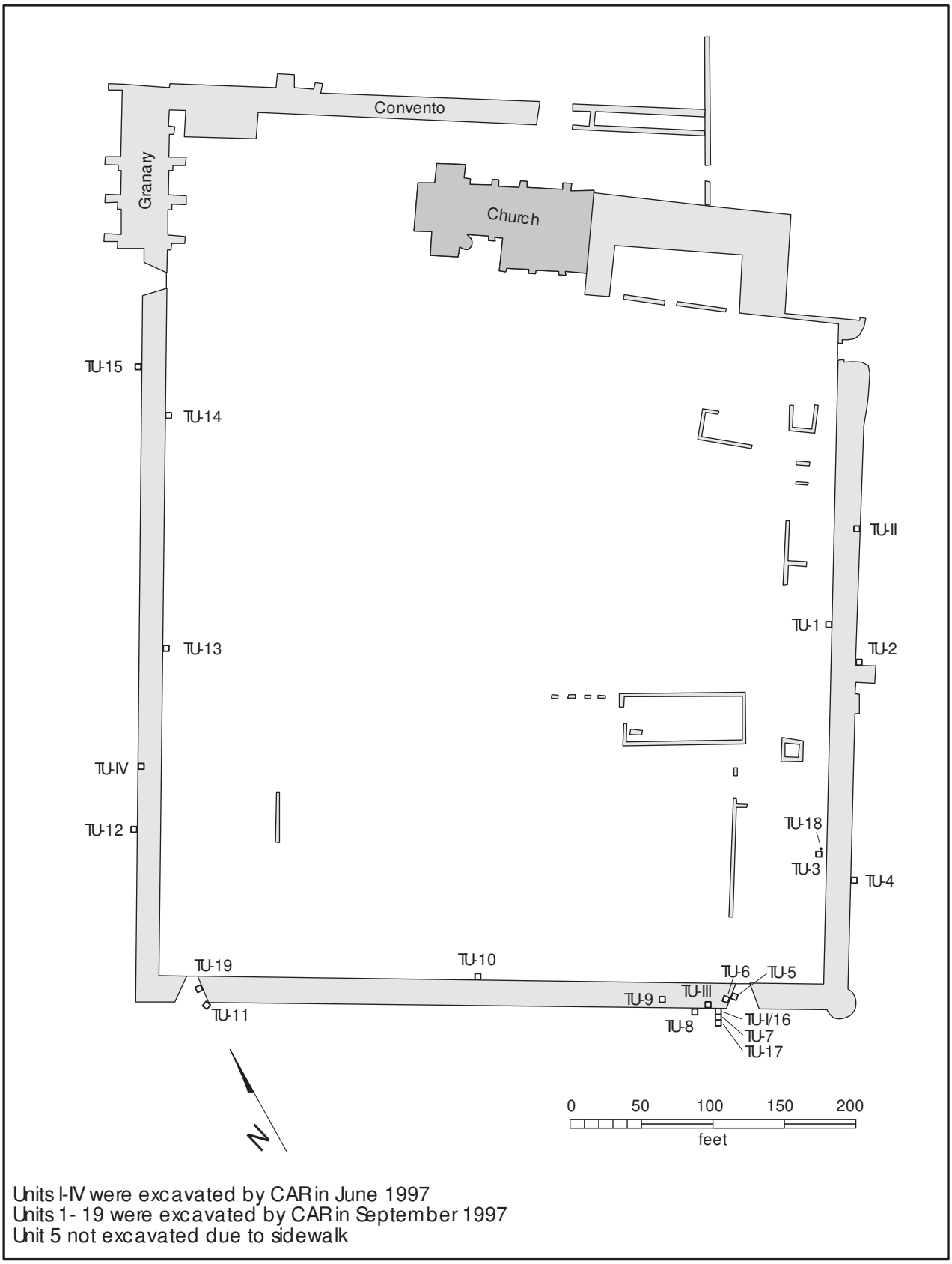

Figure 3. *Distribution of excavation units at Mission San José.*

To uncover the foundation underlying the western corner of the Southeast Gate and investigate additional vertical cracks along other sections of the exterior wall, four units (I, 8, 12, and 15) were excavated immediately below places where the exterior wall of the mission showed significant vertical cracks (Figure 3). In addition, Unit I was extended 6 feet southward through the excavation of two units (Units 7 and 17) to locate a sprinkler pipe and to determine the nature of the deposits away from the wall. Units 12 and 15 were placed along the exterior West wall.

The remaining 10 units (1, 2, 3, 4, 10, 11, 13, 14,18, 19) excavated along both the inside and outside walls of the mission compound explored selected portions of the wall base with missing mortar (Figure 3). Given some degree of flexibility in unit locations, a secondary goal of these units was to explore hitherto unresolved architectural issues such as: 1) is the southwest gate located on a Colonial period foundation (Units 11 and 19); 2) are CWA reconstruction doorways placed in identical locations to Colonial period doorways (Unit 3 and 18); 3) are there Colonial period splash-guards under CWA reconstruction *canales* or paved walkways along the interior of the mission compound (Units 1, 10, 13, 14); and 4) does the structure extending from the eastern wall of the mission reflect a Colonial period structure in the same location (Unit 2)? Finally, in addition to investigating the loss of mortar at the wall base, Unit 4 was excavated to define the inter-relationship between the CWA reconstruction wall base and Colonial foundation in this portion of the East wall.

The number, location, and approximate size of the test units were secified by the Scope of Work provided by NPS. A total of 20 (1–16, I–IV) 3-x-3-foot units were to be excavated. Three modifications were implemented to the scope to accomodate changingfield work circumstances. Unit 5, originally planned along the southwest wall inside the Southeast Gate, was not excavated due to the thick concrete slab thatcovers the area and forms the sidewalk. It will be excavated at a later date as part of the Southeast Gate underpinning project. Because Unit 11 was positioned tangentially to the southeast corner of the southwest gate it did not yield sufficient detail regarding the nature of the wallbase. A second unit, Unit 19, was excavated along the center of the gate's east wall to more clearly reveal the character of the wallbase. Unit 16 represents the excavation of a small pedestal of dirt left in Unit I following the June excavations. All artifacts recovered from Unit 16 were subsequently combined with the sample obtained from Unit I. As a result, none of the tables shown in this text make a reference to Unit 16. Finally, Unit 18 measures 1.5 x 1.5 feet because it represents the lateral extension of Unit 3 excavated in front of a doorway. It was intended to more fully define the architectural characteristics of the doorway. As a result of these changes, a total of 21 units were excavated (considering Unit 16 same as Unit I): 1–4, 6–15, 17–19, 1–IV).

To correspond to the drawings in the 1976 report by Roberson and Medlin, during field work measurements were done in inches and feet. The units excavated during June were numbered by Roman numerals in sequence as they were laid out. Those excavated in September were numbered by Arabic numerals to differentiate them from the previous field work. All units were excavated in six-inch levels. At least one selected wall of each unit was profiled and photographed. With the exception of four units (IV, 4, 8, 19), all soil removed was screened through $^{1}/_{4}$-inch mesh. The top 6 inches (Level 1) of soil in Units 4 and 8 and all three levels (0–18 inches below surface [bs]) of Unit 19 were removed without screening due to the recent landscape fill found in these units and levels. Because of substantial modern disturbance, none of the matrix in Unit IV (Room XXI) was screened. Artifacts recovered from all other levels of the remaining units were bagged and returned to the laboratory. Level records were kept on standard CAR forms and a day-to-day narrative of the work was kept by the project archaeologist.

In the laboratory, the artifacts were washed and cataloged on standard historic artifact forms used by CAR. Analysis of the artifacts included identification and approximate dating of the ceramics and glass and identification of the faunal material. All field photographs, artifacts, and records curated at CAR.

Results of the Excavations

Steve A. Tomka and Anne A. Fox

Excavations in Deteriorating Structures: Units II, III, IV, 6 and 9

Units III, 6, and 9 were excavated in Room LIV along the southern portion of the Indian Quarters, Unit II was excavated in Room LXXIV along the eastern wall, and Unit IV was dug in Room XXI along the western wall of the Indian Quarters (Figure 2). Unit IV encountered severely disturbed deposits related to the twentieth century construction of a modern living apartment within this room. A concrete slab and a plumbing pipe ran across the western half of the unit. Although the unit was excavated to a depth of 30 inches to expose the bottom of the Colonial foundation, none of the matrix was screened due to the obviously mixed nature of the deposits. The artifacts recovered from the remaining five units and the ceramic types represented are listed by level in Tables 1 and 2, respectively.

The stratigraphy of the units excavated within these rooms consisted of 2–6 inches of loose, light brown to gray sandy matrix that provides the footing for the flagstone floors (see Figure 4). It contained modern construction fill and a mixture of eighteenth, nineteenth, and twentieth century materials (Table 1). The ceramic types recovered range from whitewares to the native-made Goliad wares. The next 6 inches (Level 2, 6–12 inches bs) consisted of a loose light gray-brown ashy matrix that contained primarily bottle glass, ceramics, wire nails, and unidentifiable metal fragments. The recovered ceramics include nineteenth century whitewares, lead glazed specimens, and unglazed ceramics. The next 12 inches (Levels 3 and 4) of gray-brown ashy deposit contained a mix of both eighteenth and nineteenth century artifacts. Wire nails were common while cut nails occured in low frequency. Glass occured in lower frequencies than in higher deposits. Goliad sherds dominate the sample, particularly in Level 4. In Unit 6, clear indication of construction-related disturbance extended as deep as 22 inches bs (Figure 4). Here, excavations encountered chunks of asphalt road across the unit. The top 3 inches of Level 5 (24–30 inches bs) consisted of a darker mottled gray-brown matrix with patches of Houston Black clay. The bottom half of the level was nearly pure Houston Black clay. The collection of artifacts in this level consisted entirely of Colonial period specimens. All of the recovered ceramics represent Goliad wares. Bone recovery rates were high, particularly at the contact between the gray-brown matrix and Houston Black clay.

Table 1. Artifacts Recovered from Units (II, III, 6, and 9) within Structures

Artifact Type	Level 1	Level 2	Level 3	Level 4	Level 5	Total
Metal Objects	4	1	6	3	0	**14**
Metal Fragments	84	91	91	69	1	**336**
Glass	140	174	84	60	0	**458**
Kitchen Utensils	0	0	0	0	0	**0**
Clothing	0	1	0	1	0	**2**
Personal Items	3	2	2	1	0	**8**
Arms	0	0	1	0	0	**1**
Hardware	1	3	3	0	0	**7**
Cut Nails	4	2	1	0	0	**7**
Wire Nails	24	21	18	14	0	**77**
Bldg. Materials	2	3	1	0	0	**6**
Wire	23	4	14	0	0	**41**
Ceramics	42	68	44	88	27	**269**
Lithics	1	12	4	7	2	**26**
Bone	260	493	494	670	339	**2256**
Shell	2	2	4	0	0	**8**
Total	**590**	**877**	**767**	**913**	**369**	**3516**

Table 2. Ceramic Types by Level from Units (II, III, 6, and 9) within Structures

	Type											
Level	**1**	**2**	**3**	**4**	**7**	**11**	**12**	**13**	**15**	**17**	**18**	**Total**
1	14	2	1	1	0	6	16	1	0	0	1	42
2	16	16	5	0	0	6	17	0	6	2	0	68
3	25	3	1	0	1	6	7	0	1	0	0	44
4	70	2	3	0	0	2	6	0	0	5	0	88
5	27	0	0	0	0	0	0	0	0	0	0	27
Total	**152**	**23**	**10**	**1**	**1**	**20**	**46**	**1**	**7**	**7**	**1**	**269**

Types

1=Unglazed	7=Sponge	13=Yellowware
2=Lead Glazed	8=Edge Decor.	14=Porcelain, Chinese
3=Tin Glazed	9=Banded	15=Porecelain, European
4=Transfer Color	10=Over Glaze	16=Plain Colored
5=Decal	11=Other Decor. Whitew.	17=Stoneware
6=Hand Painted	12=Undercorated Whitew.	18=Other

Units II, III, IV, 6, and 9 established that: 1) the base of the CWA wall is between 20–22 inches below the present ground surface of the rooms; 2) the base of the CWA wall sits on a thin (1–2 inches) Portland-cement layer which caps the Colonial foundation; 3) the Colonial foundation consists of natural unshaped limestone and caliche cobbles placed in a trench dug into sterile Houston Black Clay; 4) the outer CWA reconstruction wall of the mission is approximately 6 inches wider than the Colonial foundation and overhangs the latter along the inner side; 5) the base of the existing Colonial foundation is located between 30–34 inches below ground surface; 6) the cross-wall in Room LIV sits on an eighteenth–twentieth century artifact-containing matrix and does not have an underlying Colonial foundation, and consequently; 7) the western cross-wall of the southeast gate also lacks an underlying Colonial foundation. Therefore the location of the CWA-reconstructed Southeast Gate may not reflect the location of a Colonial gate.

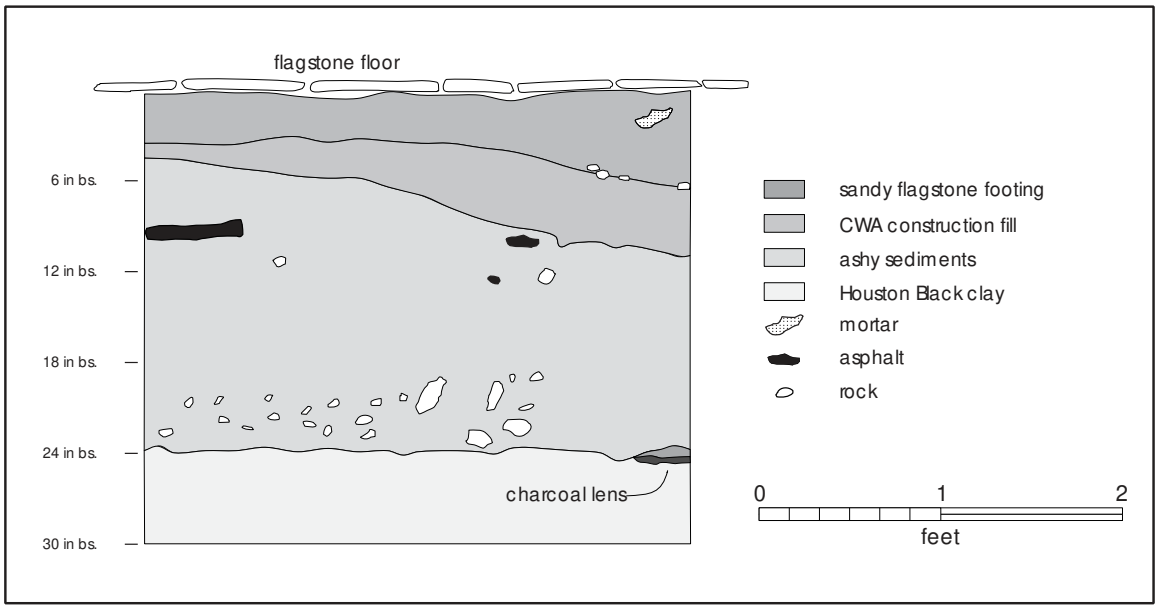

Figure 4. *Stratigraphy of north wall of Unit 6, inside Room LIII of Indian Quarters.*

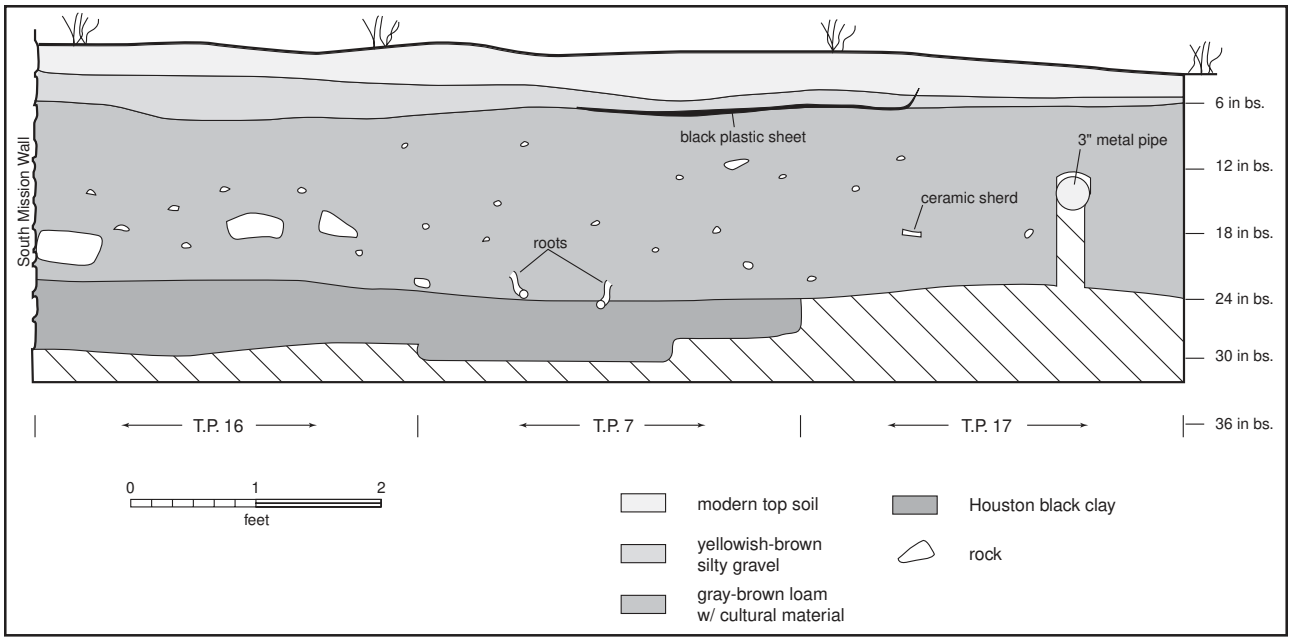

Figure 5. *Stratigraphy of east wall of Units I, 16, 7, and 17.*

Excavation Units Associated with Vertical Wall Cracks: Units I, 7, 8, 12, 15, 16, and 17

Units I, 8, 12, and 15 were centered on portions of the base of the exterior wall of the mission with significant vertical cracks (Figure 3). Units 7 and 17 represent southward extensions of Unit I dug in June (Figure 3). A small pedestal of dirt left in Unit I following the June excavations was removed in September as Unit 16. For analytical purposes all artifacts recovered from Unit 16 are combined with the sample obtained from Unit I. Units 12 and 15 were placed along the exterior western wall.

The stratigraphy of the top two levels (0–12 inches bs) within Units I, 7, 8, and 17 differed significantly from the stratigraphy of the units dug within the Indian Quarters rooms (Figure 5). Below the top four inches of modern topsoil there was an uneven layer of sterile yellowish-brown silty gravel. It was introduced sometime during the past 30 years to level the previous ground surface and provide runoff drainage away from the base of the wall adjacent the corner of the Southeast gate. Black plastic sheeting was found immediately below this layer. The stratigraphy of Units 12 and 15 along the western wall was somewhat different in that the sterile gravely fill was missing in these units. Instead, the gray-brown cultural matrix was found immediately below the 4–6 inch topsoil.

Units I and 8 revealed that the base of the CWA wall is between 22–24 inches below the present ground surface, and somewhat deeper than in Units 12 and 15, where it is found at between 10–12 inches below the modern surface. This difference reflects the thicker layer of topsoil introduced adjacent the southeast gate compared to the area adjacent the west wall. In all four units, the base of the sandstone CWA reconstruction wall sits on a 1–2 inches thick cement footing. In Units I, 8, and 12, as throughout much of the mission compound, this footing is found directly on top of the Colonial foundation that is composed of relatively small rounded limestone and caliche cobbles (Figure 6). In contrast, in Unit 15 the sandstone CWA wall base was placed on top of large tabular limestone blocks which may have been intended to level the top of the underlying foundation of smaller rounded limestone and caliche cobbles (Figure 7). Although a 10-x-12-inch concrete block abuts and extends below the top of the large limestone blocks, at this point we cannot determine whether the limestone blocks are a CWA addition to the Colonial foundation or represent a Colonial period reconstruction.

The stratigraphy in Units I, 7, 8, and 17 indicates that modern disturbance extends to a depth of 12 inches below surface in the vicinity of the southeast gate. On the other hand, Units 12 and 15 indicate that only the upper 4–6 inches of soil represent recently introduced materials along the western wall of the mission.

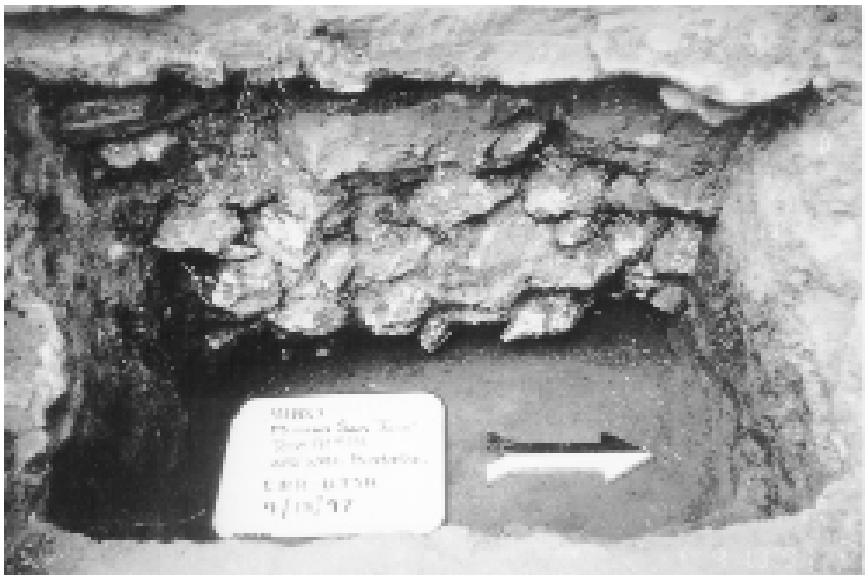

Figure 6. *Superposition of CWA wall and Colonial foundation in Unit 14.*

With the exception of glass, archaeological materials of other types are scarce in Level 1 (see Table 3). The few sherds recovered represent a mix of eighteenth and nineteenth century specimens (Table 4). Materials recovered in Levels 2 and 3 consist primarily of glass, metal fragments, and ceramics. The bulk of the ceramics are Goliad wares, whitewares, and lead glazed fragments. The materials recovered in Levels 4, 5, and 6 are dominated by ceramics (Table 3). Goliad wares were the most numerous in these levels (Table 4), and the small sample from Level 6 consists exclusively of this type. Lithic artifacts were relatively numerous in both Level 3 and 4. In general, the recovered sample consists of expedient tools and unmodified debitage. An exception to this pattern is a Guadalupe tool (see later discussion), commonly assumed to be of Early Archaic age (8000–5000 B.P.), recovered from Level 5 of Unit 15. Since this tool type has not been previously reported as a component of Mission Indian tool kits (e.g., Fox 1979, Hester 1977) it is likely that it represents a find associated with an Early Archaic occupation in the vicinity of the mission or an artifact recycled by Mission Indians.

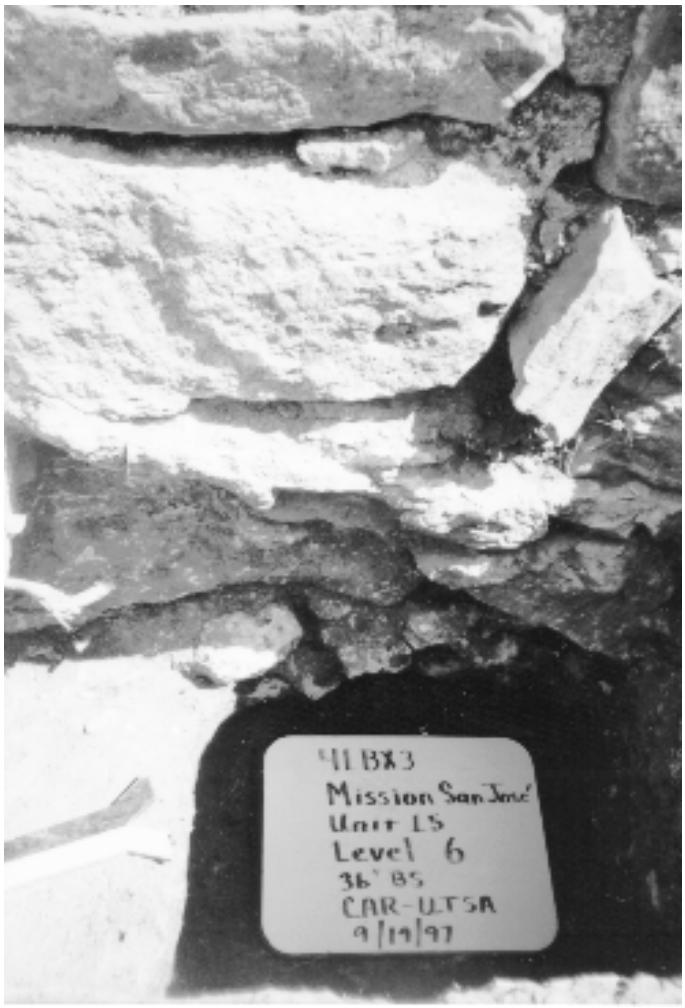

Figure 7. *Large, blocky limestone on top of Colonial foundation and underlying the CWA wall in Unit 15.*

Excavation Units Associated with Wall Base Repointing: Units 1, 2, 3, 4, 10, 11, 13, 14, 18, 19

Ten units were excavated to expose portions of the wall base where mortar loss has been occurring. The placement of these units is shown in Figure 3. Because of the shallowness of the units and the dis-

turbed nature of the materials, the matrix from units 11 and 19 was not screened.

The placement of Unit 11 did not yield a sufficient exposure of the base of the CWA wall to establish the nature of the foundation-wall base relationship in the southwest gate corner. Unit 19 was positioned along the center of the eastern wall of the southwest gate to provide full access to the base of the reconstruction wall. It revealed that at least the eastern wall of the southwest gate is sitting on a thin cement footing placed directly on Houston Black clay (Figure 8). This footing is 11 inches below the present ground surface. The absence of an underlying Colonial foundation sug-

Table 3. Artifacts Recovered from Units (I, 7, 8, 12, 15, and 17) Associated with Vertical Wall Cracks.*

Artifact Type	Level 1	Level 2	Level 3	Level 4	Level 5/6	Total
Metal Objects	3	18	6	2		**29**
Metal Fragments	7	112	105	4		**228**
Glass	168	688	375	25		**1256**
Kitchen Utensils	0	0	0	0		**0**
Clothing	0	3	1	0		**4**
Personal Items	0	0	1	1		**2**
Arms	0	1	0	0		**1**
Hardware	2	10	5	0		**17**
Cut Nails	0	2	9	0		**11**
Wire Nails	7	28	22	2		**59**
Bldg. Materials	2	14	2	1		**19**
Wire	7	28	15	2		**52**
Ceramics	10	106	207	165	133	**621**
Lithics	1	16	20	21	4	**62**
Bone	113	745	1980	821	1029	**4688**
Shell	2	2	14	4	0	**22**
Total	**322**	**1773**	**2762**	**1048**	**1166**	**7071**

* Unit I includes 19 specimens recovered during September excavations in Unit 16.

Table 4. Ceramic Types by Level from Units (I, 7, 8, 12, 15, and 17) Associated with Vertical Wall Cracks

	Type															
Level	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**11**	**12**	**13**	**15**	**17**	**18**	**Total**
1	2	1	2	0	0	2	0	0	0	0	3	0	0	0	0	**10**
2	58	7	3	0	1	1	2	3	3	1	19	3	2	1	2	**106**
3	166	22	3	1	0	3	0	0	0	0	6	1	2	1	2	**207**
4	154	6	1	0	0	1	0	0	0	1	1	0	0	0	1	**165**
5	93	4	2	0	0	0	0	0	0	0	0	0	0	0	0	**99**
6	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**34**
Total	**507**	**40**	**11**	**1**	**1**	**7**	**2**	**3**	**3**	**2**	**29**	**4**	**4**	**2**	**5**	**621**

Types

1=Unglazed
2=Lead Glazed
3=Tin Glazed
4=Transfer Color
5=Decal
6=Hand Painted
7=Sponge
8=Edge Decor.
9=Banded
10=Over Glaze
11=Other Decor. Whitew.
12=Undercorated Whitew.
13=Yellowware
14=Porcelain, Chinese
15=Porecelain, European
16=Plain Colored
17=Stoneware
18=Other

gests that no gate was present at this location during the Colonial period. The unit contained 11 inches of recent construction fill directly on Houston Black clay. The absence of a gray-brown cultural matrix on top of the black clay in both Unit 11 and 19 suggests that this may have been entirely removed from the area during construction of the gate.

Figure 8. *Base of east wall of southwest gate in Unit 19.* Note that their is no underlying Colonial foundation beneath the CWA reconstructed wall.

Units 1, 10, and 14, as well as all the other units excavated to investigate the nature of the eroding wall base mortar, indicated that the mortar of the CWA reconstruction wall is intact below the ground surface. The stratigraphic relationship between the base of the reconstruction wall and the Colonial foundation was the same as noted in all other units. None of these units revealed the existence of paved walkways and/or splash-guards along the interior walls of the mission. However, Unit 1 did result in the excavation of a single postmold.

The postmold was cross-sectioned by the northern wall of the unit (Figure 9). It was four inches in maximum diameter at the top and it had a rounded bottom. It extended 11 inches into the Houston Black Clay and it is filled with the gray-brown matrix characteristic of Levels 3–5. It was located only eight inches in front of (west of) the Colonial foundation.

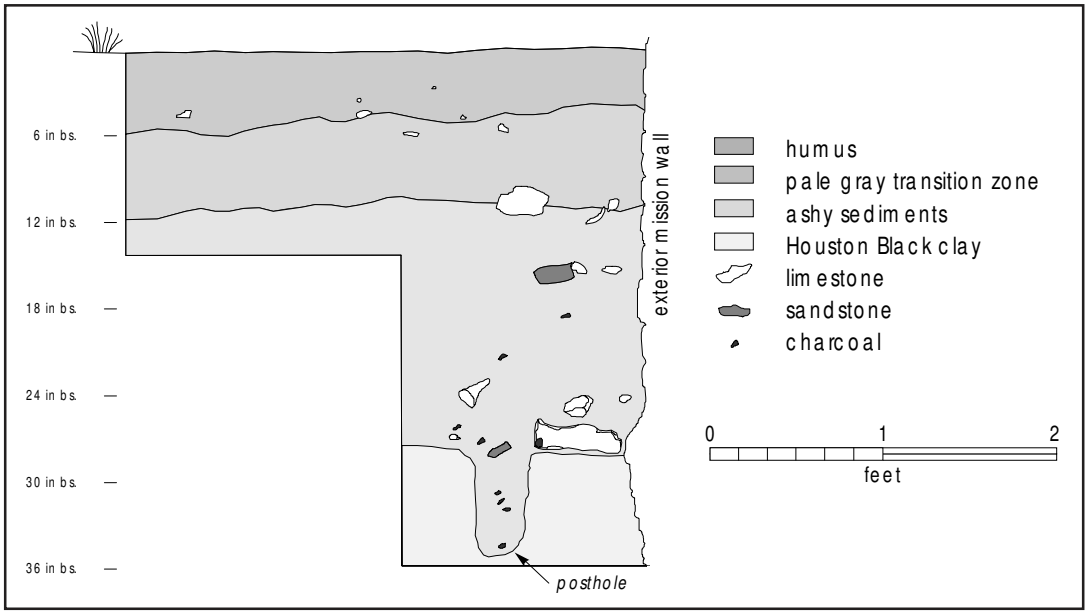

Figure 9. *Profile of north wall of Unit 1 showing the posthole cut into Houston Black clay.*

The three units (1, 10, and 14) exhibit similar stratigraphy consisting of a 4–6 inch thick layer of top soil followed immediately by the gray-brown matrix of mixed cultural fill characteristic of Levels 3–5 in other units. This matrix lies directly on sterile Houston Black clay.

Unit 2 was excavated to determine whether the structure extending from the east wall of the mission was built on a Colonial foundation (Figure 2). The western edge of this unit was the eastern outer wall of the mission compound. The CWA wall base sits on a thin Portland-cement layer found on top of the Colonial foundation. This contact zone is 26 inches below surface. The base of the Colonial foundation is 48 inches below surface. The southern edge of the unit was formed by the wall of the structure. Excavation in the southern half of the unit revealed the base of the CWA reconstruction wall at 24 inches below surface. However, rather than laying on top of a Colonial foundation, it sits immediately above a tabular stone foundation that appears to be in line with the structure wall (Figure 10). Although the foundation stones extend under the wall base, in places a slight gap (1–2 inch) does exist between the two suggesting perhaps that they are not structurally related. The tabular stone foundation abuts the Colonial foundation and the CWA wall base of the Mission's eastern wall, suggesting a construction date that post-dates the Colonial foundation. Additional support for this observation is provided by the fact that the foundation stones are held together by Portland cement mortar. The base of the foundation is 36 inches below surface. Additional excavations at the northeast corner of the structure would be needed to document the extent of this foundation and its relationship to the CWA reconstruction.

The stratigraphy of the unit consisted of a four-inch layer of top soil followed by a two inch lens of glass (bottle, window) and pebbles. This lens appears to represent the remains of a trash dump pushed against the base of the CWA wall some time following its construction. The stratigraphy of the unit below this lens consisted of a gray-brown cultural matrix through Level 5. A two inch thick gravely layer followed by a two inch thick ashy lens separated this zone from a mottled Houston Black Clay layer that extended from 34 to 39 inches below surface. Sterile black clay underlay Level 5.

The excavation of Unit 3 exposed the base of the CWA reconstruction wall at 10–12 inches below surface. Below the base of the reconstruction wall is a thin (1–2 inches) layer of cement. The Portland-cement lens caps the Colonial foundation. The top of the Colonial foundation consists of a layer of limestone blocks. These blocks are on top of smaller rounded limestone and caliche cobbles that constitute the remainder of the foundation. The Colonial foundation extends to 29 inches below surface and was dug 9 inches into the Houston Black Clay. No indication of a doorway could be discerned in the Colonial foundation suggesting either the lack of congruence between CWA

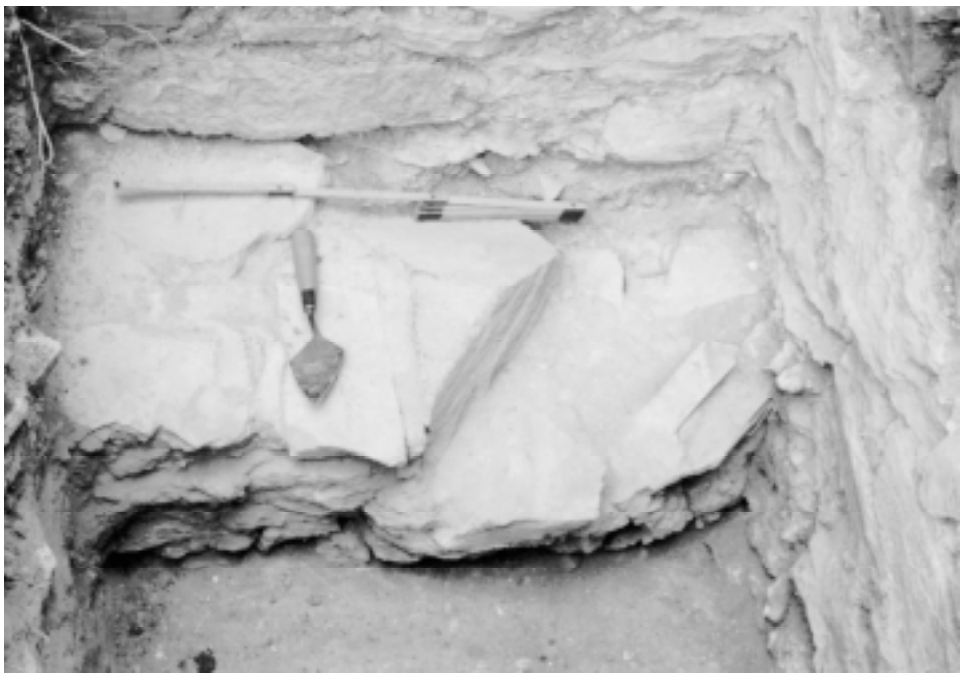

Figure 10. *Portland-cement foundation underlying north wall of structure in Unit 2.*

Figure 11. *Profile of south wall of Unit 3 showing cut into Houston Black clay at the base of the unit.*

reconstruction and Colonial doorway locations or differences in construction techniques (e.g., no breaks in foundation) for doorways.

Another aspect relevant to the impact of the CWA work on cultural deposits at Mission San José is the discovery of a distinctive cut into the black clay layer immediately in front of the Indian Quarter wall in Unit 3 (Figure 11). This cut appears to have been initiated immediately next to the Colonial foundation. The top of the foundation begins at 11 inches bs and the top of the cut was observed at 19 inches bs. The cut extends to a depth of 9 inches into the clay or a depth of 28 inches bs.

The stratigraphy of Unit 3 consisted of a 3–4 inch layer of topsoil followed by 6–8 inches of yellowish caliche pebbled construction fill containing modern twentieth century materials. Levels 3, 4, and the upper half of 5 were characterized by gray ashy cultural matrix also found in other units described above. The bottom 3 inches of Level 5 represent the contact between the loose gray-brown matrix and the sterile Houston Black clay that underlies the site.

Unit 4, excavated along the southern half of the east wall, revealed that the CWA wall reconstruction was positioned on top of the Colonial foundation. The stratigraphy of the unit was similar to that described for Unit 2, including the lens of glass found 4 inches below the surface. The bottom of the unit lacked the gravely and ashy lenses with the gray-brown cultural matrix extending into the mottled black clay zone and sterile clay 27 inches bs.

Unit 13, also intended to expose a section of the wall base with eroding mortar, was excavated only through the second level. The excavations revealed 15 patio bricks lying on a level surface at a depth of 12 inches below surface (Figure 12). These bricks appear to form the edge of a paved patio. No mortar was used to hold

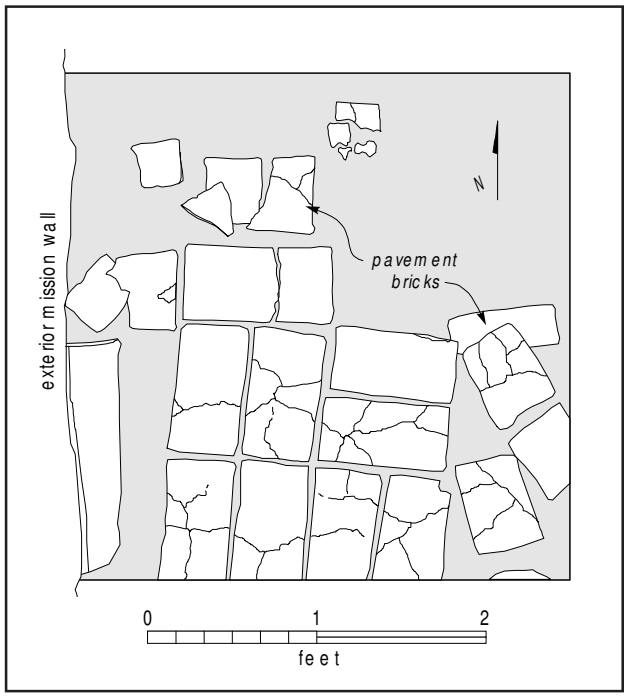

Figure 12. *Plan view of bottom of Level 2 in Unit 13 showing pavement of patio bricks.*

the bricks in place, but a lose sandy layer was used as base. Rather than removing the bricks and continuing the excavation, the bricks were drawn in plan, left undisturbed, and the excavation was terminated.

The combined artifacts recovered from Levels 1 and 2 of these eight units consist primarily of glass, ceramics, and smaller quantities of a variety of other nineteenth and twentieth century materials (Table 5). The ceramics consist of a variety of whitewares, Go-

Table 5. Artifacts Recovered from Units (1–4, 10, 11, 13, and 14) Associated with Wall Base Repointing

Artifact Type	Level 1	Level 2	Level 3	Level 4	Level 5/6/7/8	Total
Metal Objects	12	19	2	4	1	**38**
Metal Fragments	31	63	18	15	3	**130**
Glass	1468	1219	56	28	13	**2784**
Kitchen Utensils	0	0	0	0	0	**0**
Clothing	4	3	1	3	1	**12**
Personal Items	4	2	4	1	0	**11**
Arms	2	1	0	1	1	**5**
Hardware	26	13	4	2	1	**46**
Cut Nails	7	18	3	20	0	**48**
Wire Nails	37	35	13	6	4	**95**
Bldg. Materials	16	10	4	5	0	**35**
Wire	15	36	0	2	0	**53**
Ceramics	69	159	97	89	106	**520**
Lithics	14	13	9	4	9	**49**
Bone	366	988	532	495	1279	**3660**
Shell	2	5	4	5	4	**20**
Total	**2073**	**2584**	**747**	**680**	**1422**	**7506**

Table 6. Ceramic Types by Level from Units (1–4, 10, 11, 13, and 14) Associated with Wall Base Repointing

	Type															
Level	**1**	**2**	**3**	**4**	**6**	**7**	**8**	**9**	**11**	**12**	**13**	**14**	**15**	**17**	**18**	**Total**
1	16	8	4	3	5	0	0	2	0	16	0	0	3	0	12	**69**
2	56	10	15	2	5	4	1	1	0	39	1	0	5	1	19	**159**
3	53	19	8	1	2	1	0	0	1	5	0	1	1	0	5	**97**
4	56	10	8	1	2	2	0	0	0	6	1	0	2	0	1	**89**
5	78	1	1	0	0	0	0	0	0	0	0	0	1	0	8	**89**
6	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**11**
7	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	**2**
8	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
Total	**275**	**48**	**37**	**7**	**14**	**7**	**1**	**3**	**1**	**66**	**2**	**1**	**12**	**1**	**45**	**520**

Types

1=Unglazed
2=Lead Glazed
3=Tin Glazed
4=Transfer Color
5=Decal
6=Hand Painted
7=Sponge
8=Edge Decor.
9=Banded
10=Over Glaze
11=Other Decor. Whitew.
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liad wares, lead and tin glazed specimens (Table 6). The artifact sample from Level 3 also is dominated by ceramics. Glass and metal artifacts occurred in lower frequencies compared to higher levels. The ceramics collection consists mainly of Goliad wares, lead glazed, and tin glazed fragments (Table 6). Whitewares constitute a smaller proportion of the sample than in Levels 1 and 2. Level 4 artifacts are again characterized by high numbers of ceramics and low numbers of glass and metal artifacts (Table 5). Cut nails occur in higher frequencies than in any other level. As from the previous level, the ceramics collection consists mainly of Goliad wares, lead glazed, and tin glazed fragments (Table 6). Whiteware ceramics are infrequent. The combined sample of artifacts from Level 5 and deeper levels is heavily dominated by ceramics (Table 5). Other artifact categories occur in lower frequencies. In turn, with the exception of 12 (11 percent) pieces, the sample consists of Goliad wares (Table 6). The combined artifacts recovered from Levels 1 and 2 of these nine units consist primarily of glass, ceramics, and smaller quantities of a variety of other nineteenth and twentieth century materials (Table 5). The ceramics consist of a variety of whitewares, Goliad wares, lead and tin glazed specimens (Table 6). The artifact sample from Level 3 also is dominated by ceramics. Glass and metal artifacts occurred in lower frequencies compared to higher levels. The ceramics collection consists mainly of Goliad wares, lead glazed, and tin glazed fragments (Table 6). Whitewares constitute a smaller proportion of the sample than in Levels 1 and 2. Level 4 artifacts are again characterized by high numbers of ceramics and low numbers of glass and metal artifacts (Table 5). Cut nails occur in higher frequencies than in any other level. As from the previous level, the ceramics collection consists mainly of Goliad wares, lead glazed, and tin glazed fragments (Table 6). Whiteware ceramics are infrequent. The combined sample of artifacts from Level 5 and deeper levels is heavily dominated by ceramics (Table 5). Other artifact categories occur in lower frequencies. In turn, with the exception of 12 (11 percent) pieces, the sample consists of Goliad wares (Table 6). units consist primarily of glass, ceramics, and smaller quantities of a variety of other nineteenth and twentieth century materials (Table 5). The ceramics consist of a variety of whitewares, Goliad wares, lead and tin glazed specimens (Table 6). The artifact sample from Level 3 also is dominated by ceramics. Glass and metal artifacts occurred in lower frequencies compared to higher levels. The ceramics collection consists mainly of Goliad wares, lead glazed, and tin glazed fragments (Table 6). Whitewares constitute a smaller proportion of the sample than in Levels 1 and 2. Level 4 artifacts are again characterized by high numbers of ceramics and low numbers of glass and metal artifacts (Table 5). Cut nails occur in higher frequencies than in any other level. As from the previous level, the ceramics collection consists mainly of Goliad wares, lead glazed, and tin glazed fragments (Table 6). Whiteware ceramics are infrequent. The combined sample of artifacts from Level 5 and deeper levels is heavily dominated by ceramics (Table 5). Other artifact categories occur in lower frequencies. In turn, with the exception of 12 (11 percent) pieces, the sample consists of Goliad wares (Table 6).

The Artifacts

Anne A. Fox and Steve A. Tomka

The artifact assemblage found during this project contains objects which are also commonly found on all Spanish colonial and early nineteenth century occupation sites in the San Antonio area. The categories include ceramics, glass, and metal as well as shell, bone, and lithics (Table 7). The eighteenth century artifacts were directly connected with the occupation of the site by the mission inhabitants. The nineteenth century ones were probably deposited by the later *vecinos* or citizens of the San José community that grew up on the mission site. The following artifact descriptions refer to those produced by both stages of excavation and are limited to artifacts that can in some way be used for the interpretation of the site.

Ceramics

Of the artifacts recovered from a Spanish mission site, the ceramics are the most useful for dating the deposits since they changed regularly in style and technique of manufacture throughout the eighteenth and nineteenth centuries. The chronology of South Texas historic ceramics is shown in Figure 13, it is modified from Hard et al. (1994). Therefore, the analysis of the

Table 7. All Artifacts by Unit

	Unit																			
Artifact Type	**1**	**2**	**3**	**4**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**17**	**18**	**I**	**II**	**III**	**Total**
Metal Objects	8	14	0	0	9	6	3	5	6	1	0	3	6	10	9	1	1	0	0	**82**
Metal Fragments	11	29	3	4	133	34	11	24	24	11	2	13	30	23	71	5	90	35	144	**697**
Glass	130	2322	25	6	140	391	50	58	52	25	13	39	177	138	160	8	513	103	157	**4507**
Kitchen Utensils	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Clothing	0	3	0	0	1	0	1	0	0	2	0	1	6	3	0	0	1	0	1	**19**
Personal Items	0	4	2	1	2	1	0	2	1	0	0	0	3	0	1	0	0	0	4	**21**
Arms	0	2	0	0	1	0	0	0	0	0	0	1	1	0	1	1	0	0	0	**7**
Hardware	1	11	7	0	3	7	3	2	1	1	0	7	15	4	1	3	3	0	2	**71**
Cut Nails	4	22	1	0	2	1	0	1	7	0	0	10	4	0	1	0	9	0	4	**66**
Wire Nails	11	16	8	0	16	7	6	5	13	1	0	17	25	19	7	4	21	18	38	**232**
Bldg. Materials	11	11	5	0	6	11	1	0	0	2	0	4	0	4	3	2	0	0	0	**60**
Wire	1	0	5	2	17	14	1	2	3	1	0	23	18	5	5	0	9	2	20	**128**
Ceramics	80	123	78	52	53	139	53	53	75	3	18	31	62	200	122	16	89	59	104	**1410**
Lithics	9	8	8	6	9	21	10	5	6	0	1	3	8	13	19	1	5	9	3	**144**
Bone	236	940	874	695	747	605	799	764	442	6	541	43	322	671	1707	103	660	204	541	**10900**
Shell	2	9	5	3	2	10	2	0	0	0	1	0	3	1	6	1	2	4	2	**53**
Total	**504**	**3514**	**1021**	**769**	**1141**	**1247**	**940**	**921**	**630**	**53**	**576**	**195**	**680**	**1091**	**2113**	**145**	**1403**	**434**	**1020**	**18397**

Table 8. Ceramic Types by Unit

	Type																
Unit	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**11**	**12**	**13**	**14**	**15**	**17**	**18**	**Total**
1	33	8	7	0	0	2	1	0	1	1	21	0	0	0	1	5	80
2	57	5	11	1	0	0	0	0	0	0	8	1	0	8	0	32	123
3	58	13	2	2	0	0	1	0	0	0	0	0	1	0	0	1	78
4	42	0	1	0	0	2	0	0	0	0	1	0	0	0	0	6	52
6	34	6	4	1	0	0	1	0	0	0	5	0	0	1	0	1	53
7	119	10	1	0	0	3	0	0	0	0	3	0	0	1	0	2	139
8	41	3	1	1	0	0	1	0	0	0	3	0	0	0	0	3	53
9	40	9	2	0	0	0	0	0	0	0	2	0	0	0	0	0	53
10	44	2	0	0	0	4	3	1	1	0	17	0	0	3	0	0	75
11	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
12	9	4	1	0	0	2	0	0	0	0	2	0	0	0	0	0	18
13	7	9	5	2	0	2	0	0	1	0	5	0	0	0	0	0	31
14	22	7	9	2	0	4	2	0	0	0	14	1	0	1	0	0	62
15	168	5	7	0	1	1	1	3	3	0	10	0	0	0	1	0	200
17	109	6	1	0	0	1	0	0	0	0	4	0	0	1	0	0	122
18	9	4	2	0	0	0	0	0	0	0	0	0	0	0	0	1	16
I	61	12	0	0	0	0	0	0	0	2	7	4	0	2	1	0	89
II	22	4	2	0	0	0	0	0	0	6	23	0	0	1	1	0	59
III	56	4	2	0	0	0	0	0	0	14	16	1	0	5	6	0	104
Total	**934**	**111**	**58**	**9**	**1**	**21**	**10**	**4**	**6**	**23**	**141**	**7**	**1**	**23**	**10**	**51**	**1410**

Types

1=Unglazed
2=Lead Glazed
3=Tin Glazed
4=Transfer Color
5=Decal
6=Hand Painted
7=Sponge
8=Edge Decor.
9=Banded
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15=Porecelain, European
16=Plain Colored
17=Stoneware
18=Other

deposits found in this project relies strongly on the ceramic fragments recovered. This is then confirmed by the approximate dating of other types of artifacts found with them.

A sample of 1410 ceramics was recovered from San José Mission. The majority of these (n=1359, 96 percent) were grouped into 17 types (Table 8). The remaining (n=51, 4 percent) were included in a miscellaneous "other" group.

Unglazed Wares

The bulk of the ceramics from Mission San José are unglazed wares (n=934, 66 percent). In general, sev-

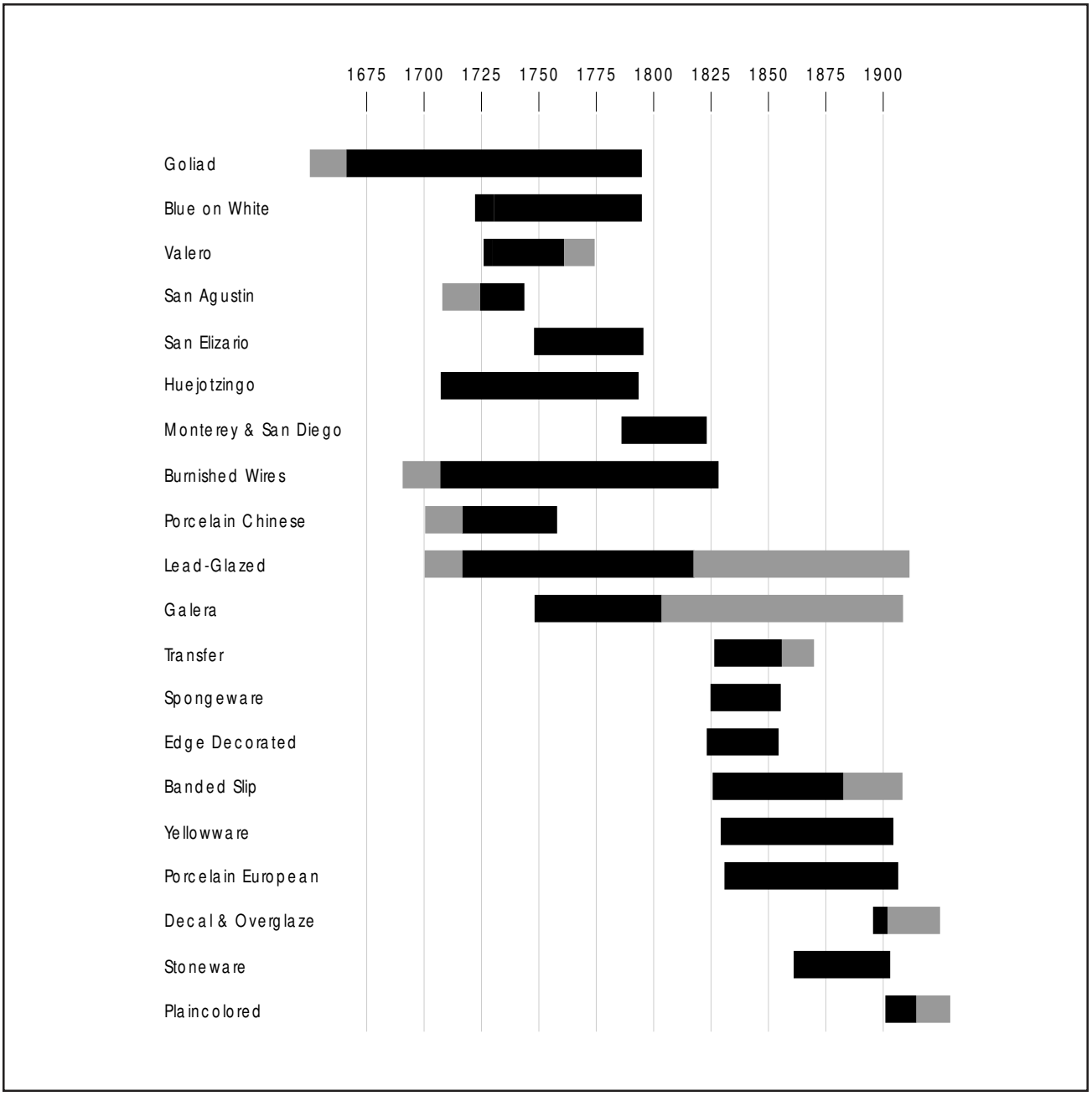

Figure 13. *Chronology of the approximate dates of historic ceramics in South Texas.* Intensity of shading is indicative of popularity.

Table 9. Unglazed Ceramic Types by Unit

	Type						
Unit	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
1	29	0	0	0	0	4	**33**
2	56	1	0	0	0	0	**57**
3	53	1	4	0	0	0	**58**
4	42	0	0	0	0	0	**42**
6	33	0	1	0	0	0	**34**
7	119	0	0	0	0	0	**119**
8	41	0	0	0	0	0	**41**
9	40	0	0	0	0	0	**40**
10	44	0	0	0	0	0	**44**
11	1	0	2	0	0	0	**3**
12	9	0	0	0	0	0	**9**
13	7	0	0	0	0	0	**7**
14	20	0	0	2	0	0	**22**
15	166	0	0	0	1	1	**168**
17	108	0	0	0	0	1	**109**
18	7	0	0	0	0	2	**9**
I	55	2	0	0	0	4	**61**
II	22	0	0	0	0	0	**22**
III	55	0	1	0	0	0	**56**
Total	**907**	**4**	**8**	**2**	**1**	**12**	**934**

Types

1=Goliad
2=Tonala Burnished
3=Valera
4=Black Burnished
5=Red Burnished
6=Other Glazed

eral types of unglazed ceramic wares are usually found on Spanish sites in the San Antonio area. A total of six types (Table 9) were identified in the collection. They include the locally-made hand-built ware commonly called Goliad Ware (n=907), a wheel-turned utility ware made in Mexico which has been called Valero ware (n=8), and occasional examples of hand-built wares probably made by Indian groups from elsewhere in Texas or Mexico.

Goliad ware has a distinctive red brown to dark brown color on the exterior and usually has a black core, due to low firing temperatures. It contains bone tempering and appears identical to the Leon Plain ceramics of the Late Prehistoric period in South Texas. Spanish colonial artifact inventories in the San Antonio and Guadalupe River valleys are dominated by this ceramic type, strongly suggesting that it originated among the Indians of the South Texas area (Fox et al. 1976:67). The Colonial ceramics from this project reflect this same distribution.

Valero ware shows evidence of wheel turning and is usually pinkish tan in color with occasional white flecks and small pebbles. Some sherds bear red or red brown painted decoration in wide brush strokes. Vessels consisted mostly of large water jars, and sherds of this ware are found with mid-eighteenth-century artifacts in San Antonio. Eight sherds of this type were recovered in these excavations.

Four sherds of an unidentified hand built vessel (Figure 14a) were also recovered. These were decorated with punctated and molded designs on a light tan body. It is not possible to reconstruct the shape or size of the vessel represented. The paste resembles that of some Mexican-made objects found in downtown San Antonio in late-nineteenth-century deposits (Meissner 1997:202).

Two types of unglazed burnished wares are common on mission sites in San Antonio. Both appear to be direct descendants of precolumbian traditions in Mexico. A tan bodied ware with burnished red slip or burnished red, black, and yellow slip-painted designs has been identified as coming from Tonalá, Jalisco (Charlton and Katz 1979). Four sherds of this type were found in these excavations. A burnished ware with red body (sometimes also found in black) commonly occurs in Spanish colonial sites. Several sherds of this ware were recovered from this site.

Table 10. Lead Glazed Ceramic Types by Unit

	Type						
Unit	**7**	**8**	**9**	**10**	**11**	**24**	**Total**
1	6	1	0	0	1	0	**8**
2	3	1	0	0	0	1	**5**
3	10	3	0	0	0	0	**13**
6	4	1	1	0	0	0	**6**
7	7	0	2	1	0	0	**10**
8	1	0	0	0	0	2	**3**
9	5	3	0	0	0	1	**9**
10	0	2	0	0	0	0	**2**
12	0	3	0	0	0	1	**4**
13	2	7	0	0	0	0	**9**
14	1	3	0	0	0	3	**7**
15	5	0	0	0	0	0	**5**
17	4	1	0	1	0	0	**6**
18	4	0	0	0	0	0	**4**
I	11	1	0	0	0	0	**12**
II	0	4	0	0	0	0	**4**
III	1	3	0	0	0	0	**4**
Total	**64**	**33**	**3**	**2**	**1**	**8**	**111**

Types

7=Sandy Paste
8=Galera
9=Red/Brown
10=Yellow w. Brown
11=Olive Jar
24=Other

Figure 14. *Historic artifacts.* a: untyped unglazed, punctated and molded ceramic fragments; b: can key; c: spoon handle; d: knife blade; e: electrical fixture; f: plumbing fixture; g: copper arrow point.

Lead Glazed Utility Wares

The 111 lead glazed sherds include several types usually found on mission sites (Table 10). All are too small to determine much about vessel shapes or sizes. The vessels were probably made in Mexico and carried to the frontier in the annual shipment of supplies.

Bowls and jars of sandy paste earthenware are predominant among the lead glazed vessels in eighteenth century deposits. The glaze is clear or very pale green, exposing and intensifying the color of the pink-to-orange paste beneath (Fox 1974:56). This collection contains 64 sherds of this type of ware.

Also present in deposits dating after 1750 are thinner orange sherds covered on the inside and over the rim onto the outside with a clear, thin lead glaze. *Chocolateros* and bean pots of this ware are often decorated with brown, yellow, and occasionally green floral designs. The term Galera ware is accepted for this type across the southwest to California (Gerald 1968:54; Barnes 1980:102). These excavations recovered 33 Galera sherds.

Another type of Colonial lead glazed earthenware consisted of a brick red body covered with a thin, mahogany-colored glaze. Called Red Brown Ware (Fox 1974:59), sherds of this type have been found in all the Colonial sites at San Antonio and down river at Goliad. Three of these sherds were recovered.

A lead glazed pottery type consisting of a creamy beige body decorated with brown linear designs and covered with a clear glaze (Fox 1974:58) is found occasionally on San Antonio River sites. This may be a late eighteenth century type which has carried over into the present, as bowls that resemble this ware are still being made in Mexico today. Two yellow with brown sherds were found in this collection.

Tin Glazed Wares

Tin glazed wares are earthenwares with a lead glaze to which tin has been added to create a background for colored enamel decoration. The decorative patterns underwent frequent changes through time, making this ceramic type useful for dating purposes. For that reason, they are dealt with here in more detail than other ceramic types. A total of 58 tin glazed specimens were identified in the sample (Table 11).

Undecorated sherds can represent totally undecorated vessels, which were made throughout the eighteenth

Table 11. Tin Glazed Ceramic Types by Unit

	Type													
Unit	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**Total**
1	1	1	2	1	1	0	0	0	0	0	0	0	1	**7**
2	0	3	0	3	1	2	1	1	0	0	0	0	0	**11**
3	0	0	0	1	0	0	0	0	0	0	0	0	1	**2**
4	0	0	0	0	0	0	0	0	1	0	0	0	0	**1**
6	0	3	0	0	1	0	0	0	0	0	0	0	0	**4**
7	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
8	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**
9	0	1	0	1	0	0	0	0	0	0	0	0	0	**2**
12	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**
13	2	0	0	1	0	0	0	0	0	0	0	0	2	**5**
14	0	2	0	1	0	0	0	0	4	1	1	0	0	**9**
15	0	1	0	5	0	0	0	0	0	0	0	1	0	**7**
17	0	0	0	0	0	0	0	0	0	0	1	0	0	**1**
18	0	1	0	1	0	0	0	0	0	0	0	0	0	**2**
II	0	1	0	0	1	0	0	0	0	0	0	0	0	**2**
III	0	0	0	2	0	0	0	0	0	0	0	0	0	**2**
Total	**3**	**14**	**2**	**17**	**5**	**2**	**1**	**1**	**5**	**1**	**2**	**1**	**4**	**58**

Type

12=Monterey Polychrome
13=Blue on White
14=San Agustin
15=Undecorated
16=Guanajuato
17=Blue and Brown on White
18=Unidentified Blue
19=Huejotzuigo
20=Green on White
21=Aranama
22=San Elizario
23=San Diego
24=No Subtype

century (Lister and Lister 1974:30). They also can be merely undecorated sections of vessels bearing painted designs. Seventeen undecorated sherds were found.

San Agustín Blue on White is a pattern consisting of floral designs in two shades of blue. Plates with this pattern have large pale blue loops on the underside. The generally accepted dates for this pattern are 1700 to 1730 (Goggin 1968:189), although some slightly later sites appear to contain a few sherds. Identification of this type is difficult on small sherds, but two were found in this collection.

Puebla Blue on White is a simple design consisting of blue rim bands from which are suspended a row of single blue petals alternating with a whole blue flower. Floral arrangements or a bird or deer form the central design. A large portion of each of these vessels is undecorated, probably accounting for many of the undecorated sherds recovered. This design was first suggested by Goggin (1968:194) as dating from the beginning of the eighteenth century to 1850. However, Ivey and Fox (1982:35–36) suggest that Goggin's dates for the type are too broad, and that this particular blue on white pattern version was used in San Antonio ca. 1730 to 1750. No blue on white sherds in this collection could confidently be placed in this category. Since the sherds of blue on white majolica in this collection are really too small to differentiate patterns, we have grouped all otherwise unidentifiable blue on white sherds (a total of 14) within one all-inclusive category of Blue on White, realizing that this may include some San Agustín and perhaps other as yet unidentified patterns as well.

San Elizario, a subtype of Puebla Blue on White, is a design named by Rex Gerald (1968:45) and dated by him 1750 to 1800. This consists of the same blue on white with suspended petals and flowers, but these have dark brown to black lines and accents. Two sherds of this type were recovered.

Huejotzingo, another blue on white pattern, consists merely of a band of blue over the rim of cups and plates. This can also be seen occasionally as a wavy or scalloped border and also appears in green or yellow. It is generally accepted as dating anywhere from 1700 to the nineteenth century (Goggin 1968:195) making it of little use for dating. One sherd of this type has been identified in this collection.

Blue and Brown on White, a later eighteenth century type, consists of small blue and brown floral decorations on a thin body, leaving large areas undecorated. This type was first recorded at Mission San Juan Capistrano by Schuetz (1969:57) and has since been noted at most other San Antonio mission sites. The delicacy of the design suggests possible British or French influence, and the type appears to date to the late eighteenth century. Two sherds were found during these excavations.

Monterey Polychrome is one of a group of late eighteenth century orange-banded polychrome designs. This type includes primarily yellow, orange, and green in a combination of ovals and floral sprays with black accents. It was first recorded by Barnes and May (1972:12, 36) in Arizona and California, and appears at all the San Antonio missions and at Rancho de las Cabras near Floresville. Barnes and May have suggested ca. 1790 to 1830 for dating this type. Three sherds of Monterey Polychrome are in this collection.

Another orange-banded type is San Diego Polychrome. The design consists of green and bright yellow triangles with yellow, green, and gold balls interspersed. All are outlined and connected with brown outlines. It has been dated to ca. 1770 to 1800 (Barnes and May 1972:35). One sherd of this type was recovered.

Small sherds bearing evidence of an orange band have been included in the Aranama type. This term has been used by various people at various times for a variety of different patterns, so that at this time it no longer can be universally understood. For this reason, we use it as a general descriptive type for sherds too small to otherwise identify.

A new color combination of rust, green, and brown/black on a greenish cream background began to appear after ca. 1810 (Lister and Lister 1974:Figure 12). Called Guanajuato after the region of Mexico where it was made, this ware appears on all the San Antonio mission sites and on early nineteenth century sites in Laredo.

Chinese Porcelain

Delicate cups and bowls of porcelain arrived at Acapulco aboard the Manila galleons in the early eighteenth century. Mexican buyers transported them to Mexico City where they were purchased by Franciscan conductors of supplies and hauled to the frontier missions. Sherds of these vessels are found in every mission on the frontier, and one such sherd was recovered during these excavations.

Whitewares

The presence of whitewares is generally an indicator of nineteenth century occupation on San Antonio sites. British-made white bodied wares began to appear in this area in the early 1830s. It was not until after the Civil War that American potteries began to be represented on San Antonio sites, at which time most of the whitewares were Ironstone or its equivalent.

Undecorated sherds of whiteware can represent portions of otherwise decorated vessels or may come from wholly white vessels. Of the 141 undecorated sherds, 45 (32 percent) are from plain white Ironstone plates, the rest probably from earlier, decorated vessels.

Decoration on whiteware can take many forms. The 22 decorated sherds represent transfer, banded slip, hand painted and gilded decoration. The first three probably date to the early nineteenth century, the latter perhaps the late nineteenth century.

Yellowware

In the late nineteenth century and early twentieth century, this type of ware was used for kitchen and utility vessels such as mixing bowls and pie plates available to housewives through mail order catalogs and hardware stores (Roycraft and Roycraft 1975:Plate 16). Five of the seven sherds of this ware came from one general location: Units I and III at the southeast corner of the mission. By the last part of the nineteenth century, this portion of the Indian Quarters was totally obliterated. Therefore, it seems possible that these sherds may have come from the same bowl used by a family that lived in a nineteenth-century house on or near the wall line.

European Porcelain

This type of porcelain is a thin, vitrified, translucent ceramic. The 23 sherds in this collection probably originated in Europe, where most of the porcelain was made until late in the nineteenth century. Families often had just a few pieces such as tea cups and saucers or dessert plates which they saved for special occasions.

Stoneware

Stoneware is a dense, hard ceramic with a white, tan or gray paste. Vessels made of this ware were used for food preparation and storage. Ten stoneware sherds were recovered. The white Bristol glaze used on the eight sherds in this collection represents the period after 1900.

Glass, Metal, and Miscellaneous Artifacts

Glass containers

A total of 766 fragments of glass containers of various colors was identified. The glass found on Colonial sites in San Antonio is nearly always limited to olive green wine bottle glass. The fact that so much clear and colored glass was found in the upper levels of all units confirms that these deposits represent post-Colonial occupation, or a mixture of that occupation with an earlier one.

Window Glass

Fragments of window glass were found at Level 2 in a number of the units. The pieces are too few to have any analytical importance as far as the location of windows in previous structures is concerned.

Metal Fragments

A total of 697 unidentified metal fragments was recovered (Table 7). Unidentifiable thin rusted metal fragments were found in nearly every level of every unit. These tend to represent disintegrated tin cans and other thin iron objects. For the most part, they are customarily found in nineteenth century occupation sites, and in this case may indicate a great deal of disturbance of the deposits within the room floors, probably caused during the reconstruction of the walls.

Metal Objects

A total of 82 identifiable metal objects was recovered. This category contains numerous bottle caps and screw tops for glass bottles and jars, recovered mostly in the upper two levels of the site. Bottle caps found at deeper levels probably represent the burrows of ground squirrels which were numerous at all the missions as late as the 1960s and were particularly fond of fresh, shiny bottle caps (Schuetz 1970:15).

One large can key was found in Unit 14, Level 2 (Figure 13b). Such keys were used on cans containing meats such as corned beef, ham, or Spam. The heavy metal necessary to withstand the heat used in canning these products required the leverage of larger, longer keys (Vaughn 1997:213).

A number of fragments of metal strapping were found in various units. Such objects are commonly found in late nineteenth century and early twentieth century deposits in San Antonio. A cotter pin from Unit 15, Level 2, could have had many uses during the turn of the century or later. A fragment of cast iron was found in Level 3 of Unit 3. Cast iron cooking pots were common on Spanish colonial sites and their use continued well into the twentieth century. A fragment of sheet copper found in Unit 12, Level 2 is probably part of a Spanish colonial kettle. These vessels were used until they were worn out, then cut up for other uses such as patching other kettles (Schuetz 1969:48; Taylor and Fox 1985:36).

A metal utensil handle from Unit 1, Level 2 includes just enough of the bowl to be identified as a spoon (Figure 13c). It is enough larger than a teaspoon to probably be a serving spoon, and shows no indication of silver plating. A table knife-type blade with a tang for insertion into a handle was found in Unit 2, Level 1 (Figure 13d). It was probably a stainless steel knife with plastic handle such as could be found in American kitchens during the first half of the twentieth century. An unidentified brass object from Unit 9, Level 3 appears to be some part of an electrical fixture (Figure 13e). It is labeled APATENTED APR.7,1914/ MADE IN U.S.A.@ and bears the trade mark AK-W@ within a circle. One unidentified heavy iron object (Figure 13f) was recovered from Level 3 of Unit 1. It appears to be a valve or some sort of plumbing attachment, perhaps having to do with one of the many sprinkler systems that have been installed at the mission.

Clothing

A two-hole machine-cut shell button $^{1}/_{2}$ inches in diameter was recovered from Level 3 in Unit I. A four-hole shell button $^{7}/_{16}$ inches in diameter came from Unit III, Level 2. A four-hole shell button $^{3}/_{8}$ inches in diameter with a cut-in design was recovered from Unit 14, Level 4. Machine-cut shell buttons came into use about 1850 (Albert and Kent 1949:59).

Two identical ceramic four-hole buttons came from Level 2 of Unit III and Level 1 of Unit 14. Such buttons were popular between 1850 and 1910 (Meissner 1997:120). A metal button from Unit 15, Level 2 has a brass face and iron backing. Such buttons were generally used on work clothes in the late nineteenth and early twentieth centuries (Meissner 1997:122). A faceted green plastic button once had a metal shank attached, for which only a trace remains. It was found in Unit 14, Level 3. Two metal safety pins came from Unit 15, Level 2 and Unit 2, Level 1. A plain metal belt buckle with attached tongue is typical of those in use in the early to mid twentieth century. It was found in Unit 6, Level 3. Two small metal eyelets such as those used on shoes, were found in Unit 15, Level 2 and Unit 14, Level 1. A metal ball mounted on a stalk was part of a ball catch used on a woman's purse (Israel 1968:325). It came from Unit 2, Level 4. Purses of this sort have been on the market since the late nineteenth century

Jewelry

Six glass beads were recovered during the project. Their color and diameters are shown in Table 12.

A metal stick pin, plain with gold wash, was found in Unit 2, Level 5. It was unusual in that it had two parallel pins attached, rather than one. This type of ornament was found during the Alamo Dome excavations in downtown San Antonio (Meissner 1997:169) and probably was popular in the late nineteenth century.

A child's gold ring came from Unit III, Level 3. It bore a pierced design and was set with two very small red stones, between which was an empty setting for a larger missing central stone. Solid gold jewelry was popularly available in the late nineteenth century, but went out of style during World War I (Meissner 1997:167).

Table 12. Glass Beads by Unit and Level

Unit	Level	Color	Diameter (mm)
4	3	orange	3
6	1	gold	5
6	2	red faced	5
9	2	blue oval	15 mm long
14	3	pale blue	3
17	4	medium blue	4

Arms

A .22-caliber short cartridge shell was found in Level 1 of Unit 13. These appeared about 1857 (Logan 1959:63) and continue in use to the present. A .30 caliber short cartridge shell patented by the Winchester Repeating Arms Company in 1871 (Logan 1959:64) came from Level 2 of Unit 14. The wooden handle for a sheath knife, once decorated with brass stars and other cut-outs, came from Unit III, Level 4. A small portion of its blade still is present, as is the metal tang which still extends into what is left of the handle, but the back end of the handle and the pommel are missing.

A copper arrow point was recovered in Level 4 (18–24 inches bs) of Unit 18 (Figure 13g). It is a relatively large triangular specimen with moderately long downward pointing barbs. Marks along the margins and the insides of the barbs indicate that it was cut out of the blank with a chisel. The absence of chisel marks on either face of the center of base and its uneven line suggests that it was originally stemmed. The distal end slightly narrows at a distance of 12.5 mm from the tip. Slight shoulders are evident along both edges at the point where the blade begins to widen. An additional point of interest is the fact that the tip section of the point is .7 mm thick while the proximal end in the vicinity of the barbs ranges from 1.0 to 1.5 mm. Parallel lines running tangentially to the longitudinal axis of the specimen suggest that the point was thinned with a file. Interestingly, the narrower and thinner distal end is a common feature of some brands of modern metal arrow points. These features are familiar to bow hunters and are designed to aid point penetration and cutting effectiveness.

A brief search for other metal arrow points recovered from primarily south Texas indicates the existence of few barbed specimens (Bauman 1989, 1991; Chandler 1986, 1989, 1993; Flaigg 1990; McReynolds 1982; Mitchell and Highley 1982; Parker 1983). In addition, the very few that are barbed have much shorter barbs than the specimen encountered at Mission San José.

Personal Objects

A fragment of a brown composition comb was found in Unit 7, Level 3. Objects made of composition material generally date before the first World War (Meissner 1997:167). Two tubular glass objects appear to be parts of medical syringes. They came from Level 1 in Unit 2 and Level 1 in Unit II. A 1983 U.S. penny was found in Level 1 of Unit 3.

Amusements

A molded plastic checker came from Unit III, Level 1. Its color ranges from yellowish tan to orange. Two German-made agate marbles ("aggies") made sometime between 1830 and 1915 (José Zapata, personal communication 1997) were found during the excava-

tions. One multicolored swirl agate marble, 11.5 mm in diameter, came from Unit 14, Level 4. One carnelian agate marble, 15.5 mm in diameter, came from Unit III, Level 1. In addition, a fragment of a green glass contemporary marble came from Unit 2, Level 1. Two fragments of black plastic LP phonograph records came from Unit II, Level 1 and Unit 2, Level 1.

Hardware

A total of 71 artifacts are categorized as hardware. An unidentified metal object consisting of two crudely-cut, M-shaped flat pieces joined to create a buckle-shaped plate were found in Level 2 of Unit II. Two wire fence staples 35 mm long came from Unit 8, Level 5 and Unit II, Level 2. Two common-type light bulb bases were found in Level 1 on Unit II. A metal lamp socket with a ceramic base containing connectors, plus an attached multi-strand electric wire found in Level 1 of Unit 2 probably dates to the period soon after the reconstruction was finished.

Building Materials

A total of 60 artifacts are included in this category. Fragments of roofing tar were found in many units in Levels 1 through 4. Fragments of asphalt road paving came from Unit 6 in Levels 1 through 3. Clay tile fragments were found in Unit 2, Level 4 and Unit 6, Level 2. Two fragments of burned clay found in Level 5 of Unit 15 could be significant if they are daub left from a jacal structure that may have preceded the stone construction at the mission. The unit is not too far from the midden outside the west gate of the mission (Schuetz 1970:8).

Nails

All of the nails recovered during this project are either cut nails which date generally to the nineteenth century or wire nails which did not reach the San Antonio area until the very end of the nineteenth century and the first of the twentieth century. No hand-forged Colonial nails were found. By far the greatest proportion of the nails were of the latter variety and probably represent the period of the construction of the small frame houses that replaced the stone Indian Quarters, or the reconstruction of the mission by Harvey Smith.

Wire

Numerous fragments of wire of varying lengths and thicknesses were occasionally found at various depths in all the units.

Lithic Artifacts

A total of 143 chipped lithic artifacts were recovered (Table 13). They are categorized into the following functional groups: three arrow points, three gun flints, one Guadalupe adze, seven scrapers, and five knives. Function was partially determined by low-powered (80x) micro-wear analysis. Five unifacially flaked artifacts and two bifacially flaked items could not be grouped into functional categories. They are classified as indeterminate unifacial and bifacial artifacts, respectively. In addition, a total of 117 pieces of unmodified lithic debitage also was recovered from the site. All artifacts are of fine-grained chert that was most likely obtained from the nearby San Antonio River or was found in small quantities on top of the underlying clay at the site.

Table 13. Lithic Artifacts by Category

Artifact Category	Count	Percent
Arrow Points	3	2.10
Gun Flints	3	2.10
Guadalupe Adze	1	0.70
Scrapers	7	4.90
Knives	5	3.50
Indet. Unifacial Artifacts	5	3.50
Indet. Bifacial Artifacts	2	1.40
Unmodified Debitage	117	81.82
Total	143	100.00

Arrow Points

Two complete and one proximal arrow point fragment are classified as Guerrero points (Figure 15a–b). This point type is commonly associated with mission occupations (Turner and Hester 1993). The specimens are characterized by triangular to lanceolate outlines and slightly to moderately concave bases. All three were made on small flake blanks and two of the three exhibit blade rejuvenation (Table 14). The proximal fragment is broken in the vicinity of the neck and it is also missing one corner of the base. Based on break morphology (snap break) the fragment appears to have been broken in use.

Gun Flints

Three gunflints (Figure 15c–e) made of local-origin fine-grained chert were recovered. The most formal of the gunflint is a 5 mm thick square specimen measuring 24 mm in length and width (Figure 15c, Table 14). It appears to have been made on a broad tertiary flake blank. The blank was bifacially shaped with retouch flakes penetrating only 5–11 mm from the margins. The second gunflint is a 12 mm thick roughly rectangular (32 x 28 mm) specimen (Figure 15d). It was made on the proximal portion of a blade blank. If it can be assumed that the small flake scars on the platform derive from use, the blade appears to have had a single faceted platform. Short (5–10 mm) use-wear scars are present along all four sides of the specimen. The flake scars are on the ventral surface of the specimen having been detached from the dorsal face. The third and final specimen is a short feather-terminated flake (34 mm; Figure 15e). Its original feathered sides appear to have been intentionally broken to form steep faces. Short (3–5 mm) step fractured flake scars are present on alternate faces of the two break-faces. The thicker proximal end of the flake also exhibits use-wear off the former platform. The feathered distal end has an irregular outline and is too thin to have been used. The specimen has a maximum width of 26 mm and a maximum thickness of 6 mm.

Adze

A single bifacially flaked Guadalupe adze was recovered from the Mission San José excavations. It is a well resharpened distal fragment with a snap break characteristic of use (Figure 15f, Table 14). The raw material is fine-grained light to dark gray chert with

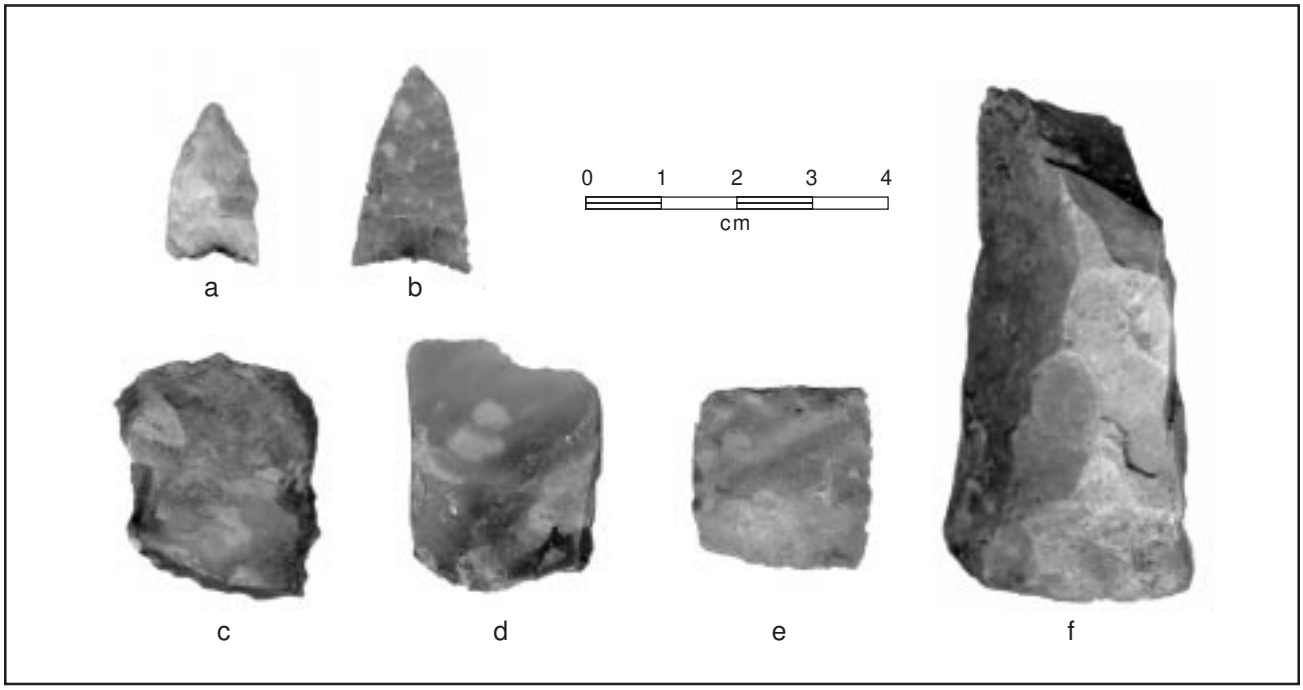

Figure 15. *Lithic artifacts.* a–b: Guerrero arrow points; c–e: gun flints; f: Guadalupe adze.

Table 14. Lithic Artifact Characteristics by Category

		Tool Type					
Unit	**Level**	**Arrow Points**	**L (mm)**	**W (mm)**	**Th (mm)**	**Blank**	**Notes**
8	4	Guerrero Arrow Point	22	11	4	Flake Blank	Blade reworked, one ear impact fractured
10	4	Guerrero Arrow Point	27	16	4	Flake Blank	Tip has unrepaired impact burin break
15	5	Guadalupe Tool	69	32	23	Nodule	Distal tool fragment.
17	4	Guerrero Arrow Point		10	2	Flake Blank	Use broken at neck and one ear, prox. fr.
		Gun Flints					
2	5	Specimen # 1	24	24	5	Tertiary Flake	Well made, bifacially flaked
3	3	Specimen # 2	32	28	12	Tertiary Blade Frag.	Proximal portion of blade blank
II	2	Specimen # 3	34	26	6	Tertiary Flake	Has one thin feather-terminated edge
		Adze					
15	5	Guadalupe Adze					
		Scrapers					
6	4	Formal Side Scraper Frag.			9	Secondary Blade	Distal blade frag. , no distal end retouch
7	3	Formal End/Side Scraper	31	42	15	Secondary Flk.	Small uniface retouched around perimeter
10	2	Formal End/Min. Ret. Side Scraper	32	25	6	Secondary Blade	May have been made on broken blade
4	5	Minimally Retouched End Scraper	36	33	14	Secondary Flk.	Has the appearance of a distally beveled tool
10	3	Expedient Side Scraper	35	25	6	Tertiary Flk.	Heavily patinated medial flake frag.
17	3	Expedient Side Scraper	32	29	3	Tertiary Blade	Distal blade frag.
15	5	Expedient End Scraper	42	68	14	Tertiary Flk.	Large hard hammer flake blank.
		Knives					
1	4	Expedient Knife	52	28	12	Tertiary Blade	Single faceted platform w. wear on one edge
4	5	Expedient Knife	39	25	6	Secondary Blade	Single faceted platform w. wear on one edge
6	3	Expedient Knife		27	6	Tertiary Blade	Medial blade frag. with one used edge
17	3	Expedient Knife	54	54	13	Secondary Flk.	Hard hammer flake w. single decorticate facet
		Indeterminate Unifaces					
8	4	Indeterminate Unifacial Artifact	49	20	15	Secondary Flk.	Wedge-shaped piece, w. two retouched edges
15	4	Indeterminate Uniface Medial Frag.				Tertiary Blade	Medial blade frag. with bilateral retouch
3	3	Indeterminate Uniface Proximal Frag.			13	Secondary Blade	Single faceted platform blade frag., poss. End
12	2	Indeterminate Uniface Edge				Indeterminate	Inditerminate uniface edge frag.
6	2	Indeterminate Uniface Edge				Indeterminate	Inditerminate uniface edge frag.
8	4	Indeterminate Uniface Edge				Indeterminate	Inditerminate uniface edge frag.
		Indeterminate Bifaces					
15	4	Indeterminate Biface Edge			10	Indeterminate	Indeterminate biface edge
8	3	Early Red. Stage Biface	52	37	10	Secondary Flake	Min. retouch only at bulb of percussion

some coarse inclusions. The working bit is 32 mm wide and 23 mm thick.

This artifact type is thought to be diagnostic of the Early Archaic Period (Turner and Hester 1993; Black and McGraw 1985). No other Guadalupe adze finds have been reported from other mission sites in Texas. Three interpretations are possible at the present: 1) the tool represents an isolated specimen discarded during Early Archaic times; 2) the tool is an indication of the presence of an Early Archaic or later time period prehistoric site in the vicinity of San Jose Mission; or 3) the tool was recycled and used by mission Indians and was discarded following failure.

Scrapers

Seven unifacial scrapers have been recovered from the San José excavations (Table 14). Based on the location of the working edge(s) they are classified as end (n=2), side (n=3), and combination end/side (n=2) scrapers. Based on the degree of retouch on their working edges, the seven specimens can be divided into formal scrapers (one side scraper, one end/side scraper), minimally retouched (one end scraper), a combination of formal and minimally retouched scrapers with two or more working edges (one formal end/minimally retouched side scraper), and expedient scrapers (two side, one end). The formal specimens have extensive retouch along their working edges. Minimally retouched specimens manifest little flaking in the making of the working edge, while expedient scrapers are unmodified flakes used as scrapers.

Knives

Four items exhibiting minutely scalloped acute working edges reminiscent of serrated knife blades (Table 14) are included in this group. Because they lack retouch and only use-wear is present on their edges, these specimens are identified as expedient tools. Three of the four are blades, the remaining specimen is a flake.

Indeterminate Unifaces

One unifacially retouched flake and five flake fragments are included in this category. These specimens represent items that could not be classified into functional tool categories due to their fragmentary nature or lack of use-wear. The complete specimen is a narrow wedge shape angular piece with two short (18mm, 19mm) unifacially retouched edges on alternate faces (Table 14). The remaining five specimens are small unifacially retouched flake edges (n=3), and medial (n=1) and proximal (n=1) tool edges for which it was not possible to determine whether they represented end, side, or combination end/side scrapers. These specimens were simply too incomplete to allow meaningful measurements of dimensions.

Indeterminate Bifaces

Two items are included in this category. The complete specimen is a large triangular secondary flake with minimal bifacial retouch along one edge (Table 14). It appears to represent a very early stage biface discarded prior to further reduction. The fine-grained chert has a mottled light to dark gray and tan appearance. The flake measures 52 x 37 x 10 mm. The second specimen is a relatively thick (10 mm) bifacially flaked artifact edge. The fragment may have been part of a middle-reduction stage biface or a bifacial tool. No use-wear is evident on the small fragment. The fine-grained chert is dark gray.

Unmodified Debitage

A total of 117 unmodified debitage was recovered from excavation. The breakdown of cortex categories among these specimens indicates that tertiary flakes constitute a slightly higher percentage than secondary flakes (Figure 16). Primary flakes are a small portion of the collection. The distribution of debitage by size classes indicates that 11–20 and 21–30 mm specimens dominate (Figure 17). The smallest size class (1–10 mm) may be under-represented primarily because of the ¼ inch hardware cloth used in screening the bulk of the matrix. The percentage of specimens in the larger size classes decreases with increased size. The distri-

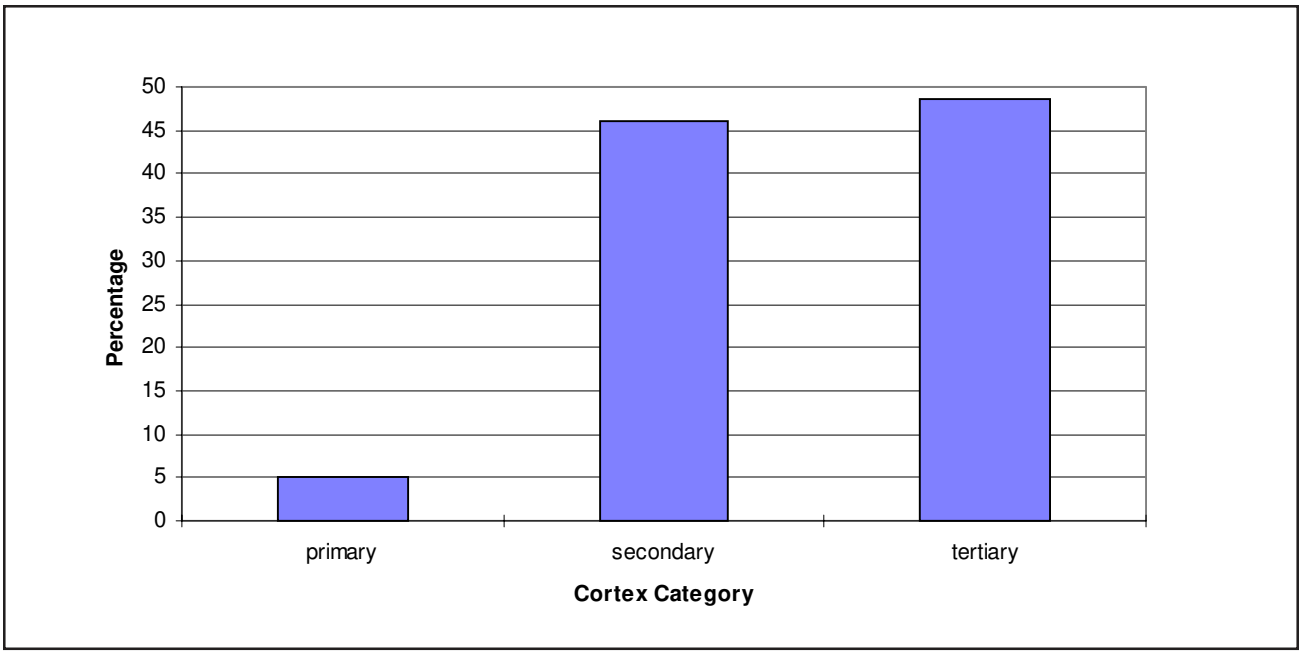

Figure 16. *Distribution of debitage cortex categories.*

bution of platform facet counts indicates that single faceted flakes are the most common among the platform-bearing flakes (complete and proximal fragments, Figure 18). Importantly, corticate platforms are the second most common type, further indicating the relative scarcity of flakes with highly prepared platforms. Platform-bearing flakes with two and three or more facets represent a relatively small proportion of the collection. This pattern stands in strong contrast to debitage collections dominated by bifacial reduction, where multi-faceted striking platforms greatly out number corticate and single faceted specimens (Tomka 1989). Finally, the breakdown of the debitage collection in terms of flake type indicates that core/platform preparation flakes constitute the largest proportion of the sample (Figure 19). Given that, as mentioned

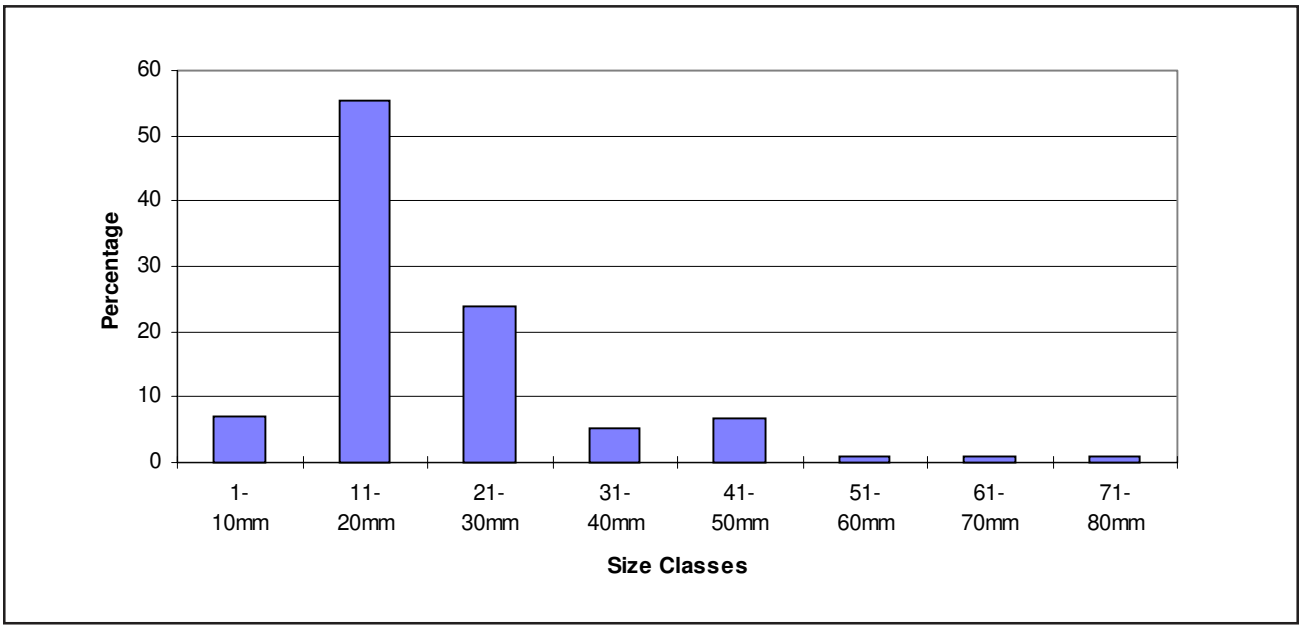

Figure 17. *Distribution of debitage by size.*

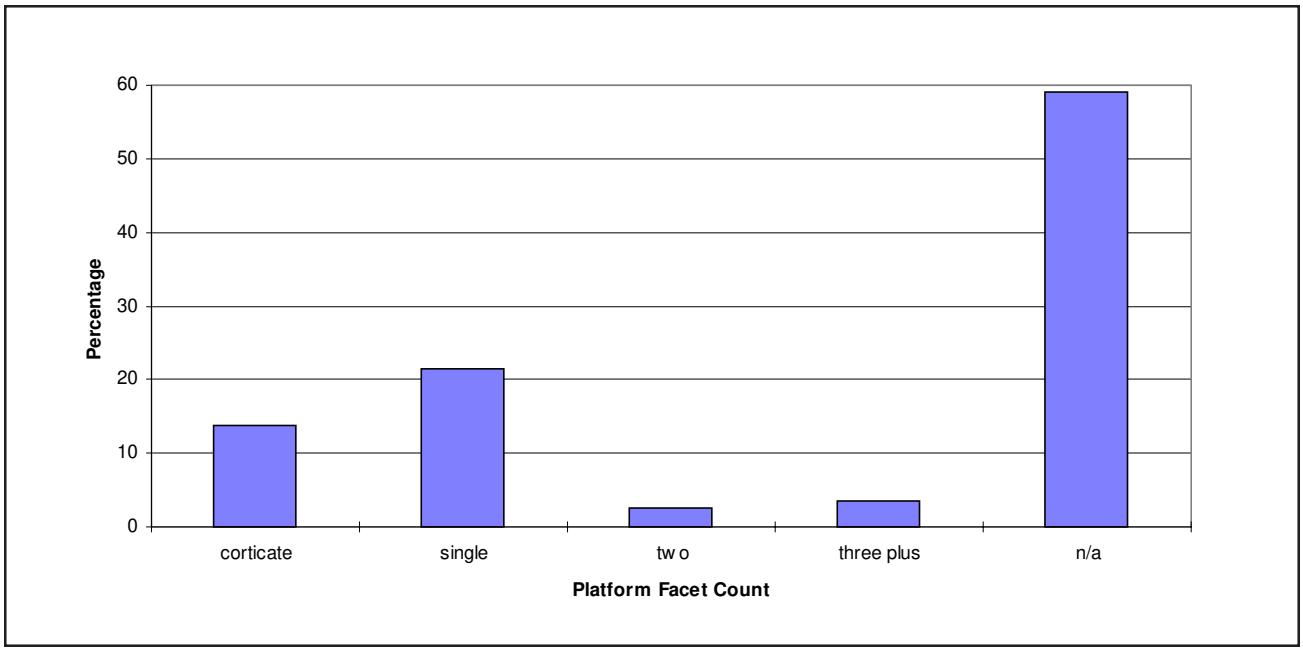

Figure 18. *Distribution of platform-bearing flakes by facet counts.*

before, a large proportion of the platform-bearing flakes are single faceted or corticate, and many of the specimens have bladelet-like morphologies, it is likely that most of these flakes derive from the preparation of uni- or bidirectional cores rather bifacial cores (e.g., bifaces). Blades constitute the second largest percentage of debitage, excluding indeterminate flakes. Flakes identified as the products of other reduction strategies (e.g., biface manufacture, thinning, and resharpening, and uniface manufacture and resharpening, represent a very small proportion of the collection. The scarcity of biface flakes corresponds to the relative emphasis on uni- and perhaps bidirectional blade production at the mission. The scarcity of debitage derived from uniface manufacture and resharpening is somewhat surprising given the number

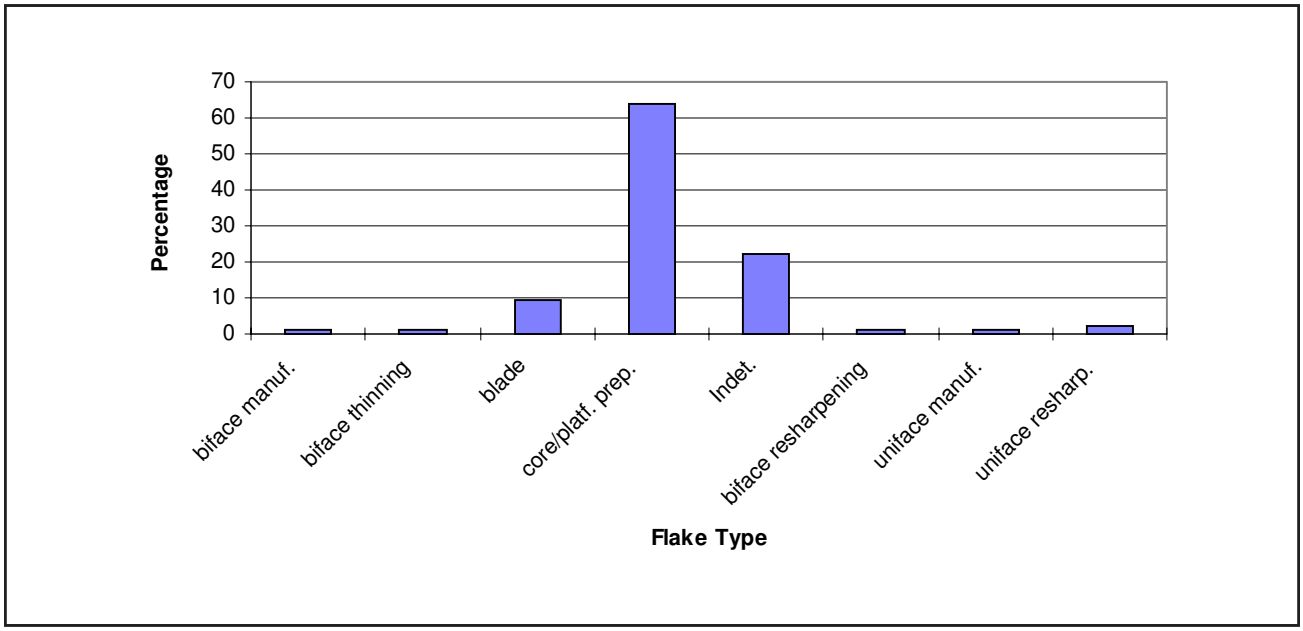

Figure 19. *Distribution of debitage by flake type.*

of unifacially retouched tools and expedient scrapers made on blades. However, the debitage resulting from the making of minimally retouched scrapers and the use of expedient scrapers would be relatively small and is not expected to be recovered in ¼ inch screening.

Overall, the lithic technology evident in the San Jose lithic artifacts indicates local or nearby raw material procurement, a tool kit composed primarily of expedient scrapers, and the continued manufacture of stone arrow points even though metal points and guns have already been adopted. Raw material reduction strategies are dominated by uni- or bi-directional core reduction to produce blades and gunflint blanks. Bifacial reduction appears to be employed in arrow point manufacture and the shaping of some gunflint blanks. The tool and debitage assemblage indicates a relative lack of bifacial reduction for the manufacture of functional tool classes such as large knives. This assemblage composition pattern may reflect the use, availability, and long use-life of metal knives and a relative lack of raw materials for the manufacture of metal arrow points.

Vertebrate Faunal Remains

Barbara A. Meissner

A total of 10,900 vertebrate faunal remains, weighing 10,205.20 g, was recovered during the two projects. In the field, the bone was recovered by screening the sediment through ¼ inch mesh. Bones were bagged with other artifacts by unit and level. In the laboratory all bone was washed, dried, then bagged by unit and level. The bone was identified to the lowest possible taxon using the comparative collection at CAR, and several standard reference texts (Blakwill and Cumbaa 1992; Gilbert 1990; Hillson 1986; Olsen 1964, 1968). Identifications were conservative, i.e. bone which appeared to be cow-sized was not identified as *Bos taurus* unless it could be differentiated from *Bison* and *Equus* species. All bone was weighed. Butcher marks and evidence of exposure to heat were noted when present on all bone. The degree to which bones were weathered was noted on bone which could be identified to at least the family level. The kinds of breaks observed on the bone also were noted. Bone from the June and September projects are considered together. A complete list of taxa identified is listed in Table 15 with counts and weights. When bone could be identified only to class (e.g. mammal, bird, etc.) an estimate of the size of the animal was made when possible.

This collection is highly fragmented. The average bone weight for the entire collection was only 0.94 g. Only 379 bone (3.5 percent) could be identified to the genus taxonomic level. Eighty-six percent of the bone (n=9,384) could be identified only as mammalian.

Thirty taxa were identified to at least the genus level in the current project. These taxa and the Number of Identified Specimens (NISP) in each taxa, are listed in Table 16. Preliminary calculations of the Minimum Number of Individuals (MNI) represented at the site indicated that a single individual of each taxon was identified for each unit in which it was found. That is, MNI in this case was an identification of the number of units in which a taxon was found, not a measure of relative abundance, per se. This is a common problem with using MNI in highly fragmented collections where the NISP is a small percentage of total bone (Grayson 1984:29–49; Hard et al. 1995:86). Because of this weakness, only NISP counts are presented in this report.

Table 16 shows that only about 57 percent of the NISP are mammals, while reptiles (especially snakes) and fish constitute 26 and 11 percent, respectively. These counts are somewhat misleading indicators of the relative importance of these taxa in the diet. First, NISP is well-known to over-emphasis small animals (Grayson 1984; Ringrose 1993). This is especially true in highly fragmented collections. Second, examination of the weights shows that mammalian bone was about 95 percent of the bone weight of the NISP. Bone weight is a better indicator of the relative amounts of meat represented in a collection. In the San José collection, the amount of meat represented by the weight of bone varies among different taxa (Table 16). The high percentage of bone, by weight, derived from mammalian taxa indicates that the meat consumed on site was overwhelmingly mammalian.

Table 15. Taxa Identified in Faunal Assemblage

Taxon	Common Name	Ct	Wgt (g)	Notes
Mammalia	Mammals	9,384	4,538.41	Animal size not determined
	Very small mammals	15	1.47	Mouse-sized
	Small mammals	92	12.08	Cottontail to rat-sized
	Medium mammals	10	4.22	Dog to jackrabbit-sized
	Large mammals	64	167.32	Deer-sized
	Very large mammals	520	2,880.28	Cow, bison, horse-sized
	Total Unidentified Mammals	**10,085**	**7,603.78**	
Artiodactyl	Deer, goat, or sheep	54	148.40	Differentiation of these 3 genera is difficult on fragmented bone.
Bovinae	Cattle or bison	87	1,006.44	Differentiation of these 2 genera is difficult on fragmented bone.
Carnivora	Carnivore	1	0.09	Skunk or cat-sized
Rodentia	Rodents	23	3.75	
Bos taurus	Domestic cattle	59	1,000.49	
Canis sp.	Dog, coyote, or wolf	3	1.76	
Canis cf. *familiaris*	Resembles dog	1	0.26	
Canis cf. *latrans*	Resembles coyote	3	10.65	
Capra hircus	Domestic goat	7	34.47	
Capra/Ovis	Goat or Sheep	2	11.36	Differentiation of these 2 genera is difficult on many bones.
Didelphis virginanus	Opossum	7	3.75	
cf. *Didelphis virginanus*	Resembles opossum	1	0.25	
Equus caballos	Horse	2	64.49	
Felis cf. *domesticus*	Resembles domestic cat	3	0.23	
Geomys sp.	Pocket gophers	5	0.84	*G. attwateri* is only pocket gopher usually found in Bexar County today, but the ranges of two very similar species, *G. personatus* and *G. texensis*, are nearby (Davis and
Lepus californicus	Black-tailed jackrabbit	3	2.71	
Neotoma sp.	Wood rats	10	2.05	Ranges of 3 very similar species (*N. albigula*, *N. micropus*, and *N. floridana*) overlap in the area (Davis and Scmidly 1994:192, 194,
Odocoileus virginianus	White-tail deer	17	57.36	
cf. *Odocoileus virginianus*	Resembles white-tail deer	2	1.75	
Ovis aries	Domestic sheep	10	42.00	
Pecari tajacu	Javelina, collared peccary	2	1.48	The native pig of South Texas and Mexico.
Procyon lotor	Raccoon	3	0.65	
cf. Procyon lotor	Resembles raccoon	1	0.27	
Rattus rattus	Black or roof rat	2	0.55	European immigrant not common in Colonial period (Meissner
Sciuris cf. *niger*	Resembles Eastern fox squirrel	6	2.05	
Sciurus sp.	Tree squirrels	2	0.69	

Table 15. continued

Taxon	Common Name	Ct	Wgt (g)	Notes
Sigmodon hispidus	Cotton rat	10	1.39	Very common indigenous rat
cf. *Sigmodon hispidus*	Resembles cotton rat	1	0.18	
Sus scrofa	Domestic pig	6	6.00	
Sylvilagus sp.	Cottontail rabbit	50	12.12	Ranges of 3 closely related species (*S. floridanus*, *S. aquaticus* and *S. audubonii*)overlap in the area (Davis and Schmidly 1994:88, 90,
	Total Mammals	**67**	**19.69**	
Aves	Birds	6	1.17	Animal size not determined
	Small bird	4	0.26	Sparrow-sized
	Medium bird	20	3.34	Dove-sized
	Large bird	56	18.87	Chicken, duck-sized
	Very large bird	5	7.05	Turkey-sized
	Total unidentified birds	**91**	**30.69**	
Gallus domesticus	Chicken	11	5.55	
cf. *Gallus domesticus*	Resembles chicken	1	0.31	
Meleagris gallopavo	Turkey	6	8.34	
	Total birds	**109**	**44.89**	
Reptilia	Reptiles			
Viperidae	Poisonous snakes	2	0.45	
Colubridae	Non-poisonous snakes	1	0.07	
Testudinata	Turtle	25	22.75	
	Total unidentified reptiles	**28**	**23.27**	
Crotaus atrox	West. diamondback rattlesnake	29	11.60	
Elaphe sp.	Rat snakes	42	9.99	
Lampropeltus getulus	Bull snake	1	0.17	
Pseudomys sp.	Pond sliders	11	8.77	
Trionyx sp.	Softshelled turtles	14	11.10	
Trionyx spineferous	Spiny softshelled turtle	2	0.36	
	Total Reptiles	**127**	**65.26**	
Amphibia	Amphibians			
Bufo sp.	True toads	5	0.44	
	Total amphibians	**5**	**0.44**	
Osteichthys	Unidentified boney fish	99	50.37	
Ictalurus sp.	Catfish	29	7.36	
Lepisosteus sp.	Gars	5	0.86	
Pylodictus olivaris	Flathead catfish	7	2.57	
	Total Fish	**140**	**61.16**	
Vertebrata	Vertebrates	51	11.19	Unidentifiable to class
	Total Identified to Genus	**230**	**87.11**	
	Overall Total	**499**	**202.63**	

Table 16. Number of Individual Specimens (NISP) of Taxa Identified to Genus Level

Taxon	Common Name	Ct	%	Wgt (g)	%
Bos taurus	Domestic cattle	59	15.57%	1,000.49	76.04%
Canis sp.	Dog, coyote, or wolf	3	0.79%	1.76	0.13%
Canis cf. *familiaris*	Resembles dog	1	0.26%	0.26	0.02%
Canis cf. *latrans*	Resembles coyote	3	0.79%	10.65	0.81%
Capra hircus	Domestic goat	7	1.85%	34.47	2.62%
Didelphis virginanus	Opossum	8	2.11%	4.00	0.30%
Equus caballos	Horse	2	0.53%	64.49	4.90%
Felis cf. *domesticus*	Resembles domestic cat	3	0.79%	0.23	0.02%
Geomys sp.	Pocket gophers	5	1.32%	0.84	0.06%
Lepus californicus	Black-tailed jackrabbit	3	0.79%	2.71	0.21%
Neotoma sp.	Wood rats	10	2.64%	2.05	0.16%
Odocoileus virginianus	White-tail deer	19	5.01%	59.11	4.49%
Ovis aries	Domestic sheep	10	2.64%	42.00	3.19%
Pecari tajacu	Javelina, collared peccary	2	0.53%	1.48	0.11%
Procyon lotor	Raccoon	4	1.06%	0.92	0.07%
Rattus rattus	Black or roof rat	2	0.53%	0.55	0.04%
Sciuris cf. *niger*	Probably Eastern fox squirrel	6	1.58%	2.05	0.16%
Sciurus sp.	Tree squirrels	2	0.53%	0.69	0.05%
Sigmodon hispidus	Cotton rat	11	2.90%	1.57	0.12%
Sus scrofa	Domestic pig	6	1.58%	6.00	0.46%
Sylvilagus sp.	Cottontail rabbit	50	13.19%	12.12	0.92%
Total Mammals		**216**	**56.99%**	**1,248.44**	**94.88%**
Gallus domesticus	Chicken	12	3.17%	5.86	0.45%
Meleagris gallopavo	Turkey	6	1.58%	8.34	0.63%
Total Birds		**18**	**4.75%**	**14.20**	**1.08%**
Crotaus atrox	West. diamondback rattlesnake	29	7.65%	11.60	0.88%
Elaphe sp.	Rat snakes	42	11.08%	9.99	0.76%
Lampropeltus getulus	Bull snake	1	0.26%	0.17	0.01%
Pseudomys sp.	Pond sliders	11	2.90%	8.77	0.67%
Trionyx sp.	Softshelled turtles	14	3.69%	11.10	0.84%
Trionyx spineferous	Spiny softshelled turtle	2	0.53%	0.36	0.03%
Total Reptiles		**99**	**26.12%**	**41.99**	**3.19%**
Bufo sp.	True toads	5	1.32%	0.44	0.03%
Total Amphibians		**5**	**1.32%**	**0.44**	**0.03%**
Ictalurus sp.	Catfish	29	7.65%	7.36	0.56%
Lepisosteus sp.	Gars	5	1.32%	0.80	0.06%
Pylodictus olivaris	Flathead catfish	7	1.85%	2.57	0.20%
Total Fish		**41**	**10.82%**	**10.73**	**0.82%**
Total NISP		**379**	**100.00%**	**1,315.80**	**100.00%**

No bison bone was identified in this collection. Nonetheless, some nondiagnostic bison elements may have been included into the Bovinae family or the Very Large Mammal category. However, it is likely that if bison was present in the collection in any significant amount, at least some of the specimens would have been recognized. In other words, the lack of bison in the collection represents absence from the diet rather than analytical bias.

The large number of snake bones in this collection is interesting. Twelve of the 20 units contained snake vertebra constituting 19 percent (n=72) of the NISP. On the other hand, rodents, the most likely prey of snakes, were only about 9 percent of the total NISP.

Evidence of exposure to heat can indicate whether bone was routinely thrown into the fire as a disposal method. Only 4 percent (n=438) of the bone from this collection showed evidence of heat alteration. Of these, 80 percent (n=350) were either smoke stained or charred, while only 20 percent (n=88) were calcined or partially calcined. Smoke staining and charring represent evidence of roasting. The fact that only 3.2 percent (n=350) of the bones show evidence of roasting suggests that most meat was prepared by boiling in stews rather than over open flames. The fact that less than 1 percent (n=88) of the specimens show evidence of deliberate burning may be an indication of well defined bone disposal practices and careful activity area maintenance that prevented bones from coming in contact with or being thrown into fires.

Only four bones showed evidence of gnawing by animals. The tooth marks were made by canid-sized and smaller (cat or skunk-sized) carnivores. No evidence of rodent gnawing was seen. The absence of rodent gnawing and the rarity of carnivore gnawing indicates that either a high percentage of the bone was rendered unappealing to rats and dogs, or that the bone was buried immediately after disposal. Rapid burial within the context of a nonagrading stable depositional environment such as a living surface is unlikely. The absence of trash-filled pits at the site also argues against rapid burial. If, as suggested earlier, most meat was prepared by boiling, and if the technique results in rendering of most nutrients from the bones, it may explain the low incidence of gnawing in the San Jose collection.

Although the bones in this collection are too fragmented to allow useful examination of butchering practices, evidence of butchering and other tool marks were identified (Table 17). About 60 percent of the bone with butcher marks had been chopped. Thin cut marks were seen on 16.5 percent of the marked bone. Only four bones (two of which could be conjoined) were found with machine saw cuts, and only five (two of which conjoined) were found with hand saw cuts. Eight bones (7.3 percent) showed evidence of impact fractures, indicating that the bone had been deliberately broken open with a blunt object.

The mission compound at San José was a residential location for about 200 years. The bone in this collection could not, of course, be assigned with certainty to any particular time period. However, Hard et al. (1995:71–80) have shown that animal bone in the San Jose compound is strongly correlated with Colonial period ceramics but not with post-Colonial ceramics, suggesting that most of the bone in the mission compound is Colonial in origin. The rarity of saw marks, especially machine saw marks, is another piece of evidence supporting the contention that the majority of the bone in this collection is from the Colonial period.

The highly fragmented condition of bone in this collection is common but not universal in Colonial

Table 17. Butcher Marks Observed on Bone from Faunal Assemblage

Butcher Mark Type	Count
Thin cut mark. Thin superficial cut, most likely from knife.	18
Thick cut mark. Thicker superficial, from heavy knife or small hatchet.	9
Chop mark. Heavy deep cut which may or may not have completely severed bone.	65
Hand saw cut.	5
Machine saw cut	4
Impact scar-small surface area. Impact scar is less than 1 cm in diameter	3
Impact scar-large surface area. Impact scar is 1 cm or greater.	5
Total	**109**

period sites. Table 18 shows bone counts, weights and the (NISP) of bone from several recent excavations including the current project, two recent excavations at San José (Hard et al. 1995; Hunziker 1997), an excavation at Mission San Antonio de Valero (Meissner 1996), and the Spanish Governor's Palace project (Meissner 1997). The faunal analyses in several earlier publications were examined, but the practice of including bone weight in published reports was not established until recently.

Table 18. Comparison of Bone Counts, Weights, and NISP from Five Recent Excavations at Colonial Sites

	Current Project	Hunziker 1997	Hard et al. 1995	Meissner 1996	Meissner 1997
Count	10,900	1709	5038	1255	1952
Weight (g)	10,205.20	5390.87	*	1195.44	1463.65
NISP	379	206	161	343	184
% NISP	3.5%	12.1%	3.2%	27.3%	9.4%
Average bone wgt. (g)	0.94	3.15	0.53	0.95	0.75

*Total bone weight was not published, but average bone weight was listed

Table 18 shows a clear difference in average bone weight. Bone from San José alone varied from 0.53 to 3.15 grams in average weight. Hunziker (1997:26) noted that the bone she examined was much larger and less fragmented than was commonly seen in mission projects in San Antonio, and suggested that most of the bone from that project was located in an area out of normal foot traffic patterns. In general, bone from Colonial period sites tends to be highly fragmented, averaging less than a gram in weight.

There are several possible causes for the highly fragmented nature of the collection. Cultural practices such as shattering of long bones and their articular ends to extract marrow and bone grease are probably contributing factors. The shattering of the shafts and articular ends results in few identifiable fragments. The boiling involved in bone grease extraction removes organic content and probably makes the bone more friable after burial. Trampling of bone probably also contributed to fragmentation (Schiffer 1987:126–127). San José has been in continuous use since it was founded on this location. Foot and vehicle traffic may have caused much of the breakage. In addition, various building activities, especially the building of the reconstructed walls by the CWA in the 1930s, is likely to have seriously disturbed and fragmented the bone. Finally, the excavation itself will have added to the fragmentation, since it was carried out for the most part with shovels.

If we assume that marrow and bone grease extraction would be limited to beef (and/or bison) and possibly to artiodactyls such as deer, goat, and sheep, then we should expect to see differences in the percentages of the still identifiable body parts between these large species and other animals commonly used for food such as rabbits. The head, tail, and lower legs (including the carpals, tarsals, metapodials and phalanges) carry relatively small amounts of meat, marrow, and bone grease, compared to the bones of the body (cervical, thoracic and lumbar vertebrae, ribs, scapula and pelvis) and upper leg (femur, humerus, radius, ulna, tibia and fibula). If most of the body and upper leg bones have been shattered by human activity, then there should be few identifiable elements from these parts of the body. To investigate this hypothesis, the representation of body parts among Bovinae (cattle or bison), Artiodactyl, and Leporidae were compared (Table 19). The identified elements of *Bos taurus* were combined with bone identified as Bovinae. Deer, sheep, goat, and bone identified as Artiodactyl were also combined. The identifiable elements of the Leporidae (cottontail rabbits and jackrabbits) from the collection were also combined.

Table 19 shows that there is very little difference in body part distribution between cow-sized animals and deer-sized animals, but there is a distinct difference between these and the smaller animals. More identifiable elements from the head, tail, and lower legs are present in the larger animals, while the bones which represent the most food value make up only a little more than 40 percent of the total. Bovinae have a lower

Table 19. Comparison of Body Parts of Bovinae, Artiodactyl, and Leporidae in Faunal Assemblage

	Bovinae		Artiodactyl		Leporidae	
	Ct.	%	Ct.	%	Ct.	%
Head/Tail	41	33.88%	21	31.82%	6	11.76%
Body	36	29.75%	14	21.21%	18	35.29%
Upper leg	15	12.40%	15	22.73%	15	29.41%
Lower leg	29	23.97%	16	24.24%	12	23.53%
Totals	121	100.00%	66	100.00%	51	100.00%
High utility	51	42.15%	29	43.94%	33	64.71%
Low utility	70	57.85%	37	56.06%	18	35.29%

percentage of upper leg bones identified than Artiodactyls. The rabbit bone, in contrast to the larger animals, is mostly from the body and upper legs. While Table 19 does not prove that food processing practices are responsible for the majority of the fragmentation of this collection, it does suggest that such practices are contributing factors. It also indicates that Native American population living in the mission may have approached the butchering, processing, and consumption of medium and large body-size domesticated animals in a similar fashion as that of wild species such as bison, deer, and antelope.

The high degree of fragmentation makes it difficult to assess the relative importance of various taxa in the diet. Clearly cattle have both the highest NISP and highest percentage of the weight of identified bone. If the bone identified as Bovinae are combined with cow, they represent about 28 percent of the bone identified to the family taxonomic level. The weight of this bone is 81 percent of the total bone identified to family. However, bone identified to the family taxonomic level is only 4.7 percent of the total bone.

The 30 taxa identified to the genus level are divided into three groups in Table 20: domestic animals, non-domestic land animals, and non-domestic riverine animals. *Canis* sp. and turkey were excluded from these calculations, as both could be either domestic or wild, however, total NISP (including *Canis* sp. and turkey) were used to calculate percentages. Domestic animals are 28 percent of the total NISP but constitute 88 percent of the bone weight.

Although the degree of fragmentation seen in this collection limits its usefulness in answering questions about the meat diet of the inhabitants of Mission San José, there are a few observations which can be made. The importance of domestic animals is shown, especially in the percentage of bone weight. However, a fairly high percentage (69 percent) of bone in this collection is non-domestic (land and riverine), although this constitutes only a small percentage of the bone weight (11.6 percent). Hard et al. (1995) found that bone believed to be largely nineteenth century in origin was completely domestic, while about 41 percent of the bone believed to be largely Colonial in origin was non-domestic animals. Although the percentage of bone from non-domestic animals from the current project is high, the presence of large percentages of bone from non-domestic animals can be seen as characteristic of the bone assemblage at San José. What is not clear, however, is how much of the diet was composed of non-domestic animals in the Colonial period. The non-domestic bone constitute a small percentage of the total bone weight, which means it represents a fairly small percentage of the total amount of meat represented by the total bone collection, even assuming that neophytes in the missions continued to eat snakes and rats after joining the mission. Perhaps more importantly, however, if the fragmentation seen in this collection is due in large part to human processing of domestic animal bone for marrow and/or bone grease, the majority of this unidentifiable bone may be from domestic animals. If that is the case, then non-domestic animal bone becomes a very small percentage of the total bone recovered. Continued work at Mission San José may help to solve

Table 20. NISP and Weight of Bone from Domestic, Wild Land, and Wild Riverine Animals

Category	Count	%	Wgt (g)	%
Domestic Animals (9 taxa)*	100	26.39%	1,162.14	88.32%
Non-domestic Land Animals (15 taxa)*	191	50.40%	120.50	9.16%
Non-Domestic Riverine Animals (6 taxa)	71	18.73%	31.40	2.39%
Total NISP (including *Canis* sp. and turkey)	**379**	**95.51%**	**1,315.80**	**99.87%**

* Bone identified only to *Canis* sp. and turkey was not included, as it could be wild or domestic.

some of these problems. In particular, future investigations of bone from this and other mission sites could concentrate more attention to the nature of the bone breakage. Detailed analysis of broken bone to determine possible causes would be helpful in our efforts to understand better the subsistence practices of the inhabitants of Mission San José as well as the other mission.

Shell

Fifty-three fragments of river mussel shell were found, a few in each unit. Shell fragments like these are often found in Colonial deposits at all the missions.

Stratigraphic and Associational Integrity of Deposits

Steve A. Tomka

The comparison of the relative proportions of artifact types by level offers a reasonable estimate of the nature and stratigraphic integrity of the deposits at the mission. However, only Levels 1 and 2 were fully excavated in each unit. The volume of matrix excavated in deeper levels varied in many units. To assure that the comparison of artifact counts is not biased by sample size, all artifact counts derived from Level 3 and deeper proveniences were adjusted upwards to reflect the number of artifact types recovered given fully excavated levels (Table 21). The comparison of the artifact types by level using adjusted standardized residuals (Everitt 1977; Haberman 1973) indicates some interesting patterns regarding site stratigraphy (Table 22).

Metal objects, metal fragments, glass, wire nails, wire, and building materials tend to be over-represented in the upper two levels. Ceramics and bones are significantly under-represented within the same deposits. The artifact types recovered from Level 3 appear to represent a somewhat transitional zone. While metal fragments, personal items, and wire nails are over-represented, glass, wire, ceramics, lithics, bone, and shell are under-represented. In general, all construction-related artifact types and metal items are under-represented in Level 4. The single exception to this pattern is the over-representation of cut nails. In contrast to the patterns noted in higher levels, ceramics and bones are over-represented in the level. Due to the few units that were excavated below Level 4, most major artifact types are under-represented in Level 5. A major exception to this pattern is the high over-representation of bones in these deeper levels. In general, these patterns of artifact distribution by

Table 21. Adjusted Artifact Counts Reflecting Entirely Excavated Levels

Artifact Type	Level 1	Level 2	Level 3	Level 4	Level 5–8	Total
Metal Objects	19	38	16	14	5	**92**
Metal Fragments	126	272	231	103	12	**744**
Glass	1782	2085	568	150	31	**4616**
Clothing	4	7	3	7	3	**24**
Personal Items	7	4	10	4	0	**25**
Arms	2	2	1	3	2	**10**
Hardware	35	26	16	4	3	**84**
Cut Nails	11	22	16	40	0	**89**
Wire Nails	74	84	68	28	9	**263**
Bldg. Materials	20	31	7	11	0	**69**
Wire	41	58	26	5	0	**130**
Ceramics	121	333	443	499	500	**1896**
Lithics	18	42	37	39	44	**180**
Bone	816	2086	2368	2571	4870	**12711**
Shell	6	9	18	15	14	**62**
Total	**3082**	**5099**	**3828**	**3493**	**5493**	**20995**

Table 22. Adjusted Residuals by Artifact Category and Level

	Level 1		Level 2		Level 3		Level 4		Level 5–8		
Artifact Type	Total	Adj. Resid.	Totals	Adj. Resid.	Totals	Adj. Resid.	Totals	Adj. Resid.	Total	Adj. Resid.	**Total**
Metal Objects	19	1.62	38	**3.81**	16	-0.21	14	**-6.04**	5	**-4.53**	92
Metal Fragments	126	1.77	272	**7.95**	231	**9.22**	103	**-5.2**	12	**-15.51**	744
Glass	1782	52	2085	**37.46**	568	**-11.81**	150	**-5.13**	31	**-44.61**	4616
Clothing	4	0.24	7	0.56	3	-0.073	7	1.65	3	-1.52	24
Personal Items	7	1.88	4	-0.97	10	**2.82**	4	-0.09	0	**-2.98**	25
Arms	2	0.48	2	-0.32	1	-0.67	3	1.13	2	-0.44	10
Hardware	35	7	26	1.43	16	0.19	4	**-2.93**	3	**-4.72**	84
Cut Nails	11	-0.62	22	0.1	16	-0.06	40	**7.19**	0	**-5.62**	89
Wire Nails	74	**6.21**	84	**2.91**	68	**3.22**	28	**-2.63**	9	**-8.44**	263
Bldg. Materials	20	**3.36**	31	4	7	-1.74	11	-0.16	0	**-4.94**	69
Wire	41	**5.45**	58	**5.42**	26	**-5.72**	5	**-3.93**	0	**-6.81**	130
Ceramics	121	**-10.7**	333	**-7.16**	443	**-5.14**	499	**11.87**	500	0.22	1896
Lithics	18	-1.78	42	-0.3	37	**-5.52**	39	1.82	44	-0.53	180
Bone	816	**-41.89**	2086	**-32.96**	2368	**-5.12**	2571	**17.3**	4870	**49.62**	12711
Shell	6	-1.11	9	-1.8	18	**-6.7**	15	1.6	14	-0.64	62
Total	3082		5099		3828		3493		5493		20995

Note: Statistically significant adjusted residuals (plus or minus 1.96) are in bold.

level indicated that Levels 1 and 2 are relatively disturbed, while Level 3 may represent a transitional zone to less-mixed deposits lying deeper. Level 4 and deeper deposits are less-disturbed and contain primarily Colonial Period materials.

In general, in historic sites ceramics offer one of the best and most reliable method of dating deposits and addressing depositional history. The sixteen ceramic types recovered from the excavations are listed by level in Table 23. It is evident that whitewares, lead and tin glazed ceramics are most common in Levels 1 through 3. Tin glazed ceramics are often found to be useful for dating deposits. In this case most of the majolica types (e.g., Monterey Polychrome, Guanajuato, Unidentified Blue, Huejotzuigo, San Elizario, San Diego) date to 1750 and later (Table 11). The majority of the tin glazed specimens (n=42, 72 percent) were recovered in Levels 1–3, the rest come from Level 4 and deeper deposits. Unglazed ceramics are relatively frequent in Level 3. However, the proportion of Unglazed ceramics, vis a vis other wares, increases even more dramatically in Level 4. Unglazed ceramics are the dominant and nearly exclusive wares in deeper depositional contexts.

To investigate more fully the degree of disturbance of the deposits, Table 24 presents a comparison of the frequencies of Colonial (pre 1800s) and post-Colonial (post 1800s) ceramics by level. All unglazed ceramics are included in the Colonial group, while transfer, hand painted, sponge decorated, edge decorated, banded, yellow wares, European porcelain, stonewares, and miscellaneous specimens in the other category (Type 18) were lumped into a post-Colonial sample. The comparison of the frequencies using adjusted standardized residuals indicates that Colonial ceramics are under represented in the upper two levels but over-represented in all deeper levels of the site. Post-Colonial ceramics have an inverse distributional pattern. Another interesting observation is that Goliad wares appear in nearly every level of every excavation unit, from the surface to 30 inches, no matter what other artifacts are present.

An additional aspect of depositional integrity emerges from the comparison of Colonial and post-Colonial ceramic distributions by level in units associated with wall cracks, structures, and mortar loss (Table 25). In general, in the units excavated outside of structures post-Colonial ceramics are over-represented in the upper two levels and under-represented in the bottom two or three levels. The ceramics suggest that Level 3

Table 23. Ceramic Types by Level

	Type																
Level	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**11**	**12**	**13**	**14**	**15**	**17**	**18**	**Total**
1	32	11	7	4	0	7	0	0	2	6	35	1	0	3	0	13	**121**
2	130	33	23	2	1	6	6	4	4	7	75	4	0	13	4	21	**333**
3	244	44	12	2	0	5	2	0	0	7	18	1	1	4	1	7	**348**
4	280	18	12	1	0	3	2	0	0	3	13	1	0	2	5	2	**342**
5	198	5	3	0	0	0	0	0	0	0	0	0	0	1	0	8	**215**
6	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**45**
7	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**
8	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**
Total	**934**	**111**	**58**	**9**	**1**	**21**	**10**	**4**	**6**	**23**	**141**	**7**	**1**	**23**	**10**	**51**	**1410**

Types

1=Unglazed
2=Lead Glazed
3=Tin Glazed
4=Transfer Color
5=Decal
6=Hand Painted
7=Sponge
8=Edge Decor.
9=Banded
11=Other Decor. Whitew.
12=Undercorated Whitew.
13=Yellowware
14=Porcelain, Chinese
15=Porecelain, European
17=Stoneware
18=Other

is a mixed transitional zone between post-Colonial and Colonial deposits. Interestingly, the only clear pattern noted in the four units excavated within structures is the over-representation of post-Colonial ceramics in Level 2. The lack of similarity in patterning to outdoor units suggests a greater degree of mixture of deposits within the rooms of the Indian Quarters. This finding suggests greater CWA-related construction disturbance within the structures compared to outside of them.

A number of miscellaneous artifacts may also offer clues to the degree of disturbance of the deposits. With the exception of the sheet copper fragment (Unit 12, Level 2) and the copper arrow point (Unit 18, Level 4) that are probably of Colonial origin, all of the metal objects recovered date to the nineteenth and early twentieth century occupations. Other than the orange (Unit 4, Level 3), pale blue (Unit 14, Level 3), and medium blue beads (Unit 17. Level 4), the jewelry items are also of a later date, as are the remainder of the artifacts.

Table 24. Comparison of Adjusted Residuals for Colonial and Post-Colonial Ceramics

	Colonial		Post-Colonial		
Level	Count	Adj. Resid.	Count	Adj. Resid.	**Total**
1	32	-8.47	30	8.47	**62**
2	130	-9.06	64	9.06	**194**
3	244	2.7	22	-2.7	**266**
4	280	4.62	16	-4.62	**296**
5	198	4.16	9	-4.16	**207**
6+	50	2.81	0	-2.81	**50**
Total	**934**		**141**		**1075**

Colonial includes: Type 1
Post-Colonial includes: Types 4, 6, 7, 8, 9, 13, 15, 16, 17, 18

Summary and Recommendations

Steve A. Tomka and Anne A. Fox

Archaeological excavations were conducted by CAR personnel at Mission San Jose y San Miguel de Aguayo in June and September, 1997. These excavations had three goals: 1) expose and observe the foundation of the reconstructed mission walls within selected rooms of the mission; 2) expose portions of the exterior mission wall under large vertical cracks; and 3) expose sections of the interior and exterior mission wall base where mortar loss is evident. In addition to addressing these goals, the excavations were to characterize the types and

Table 25. Comparison of Adjusted Residuals for Colonial and Post-Colonial Ceramic Distribution by Level in Units Associated with Wall Cracks, Structures, and Wall Base Repointing

Units Associated with Wall Cracks (I, 7, 8, 12, 15, 17)					
	Colonial		**Post-Colonial**		
Level	**Count**	**Adj. Resid.**	**Count**	**Adj. Resid.**	**Total**
1	2	**-3.81**	2	**3.81**	4
2	58	**-6.77**	17	**6.77**	75
3	166	0.06	10	-0.06	176
4	154	**2.85**	2	**-2.85**	156
5 and 6	127	**3.19**	0	**-3.19**	127
Total	**507**		**31**		**538**
Units in Structures (II, III, 6, 9)					
	Colonial		**Post-Colonial**		
Level	**Count**	**Adj. Resid.**	**Count**	**Adj. Resid.**	**Total**
1	14	-1	3	1	17
2	16	**-3.91**	8	**3.91**	24
3	25	0.59	2	-0.59	27
4	70	1.48	5	-1.48	75
5 and 6	27	1.95	0	-1.95	27
Total	**152**		**18**		**170**
Units Associated with Wall Base Repointing (1–4, 10, 11, 13, 14, 18)					
	Colonial		**Post-Colonial**		
Level	**Count**	**Adj. Resid.**	**Count**	**Adj. Resid.**	**Total**
1	16	**-5.63**	25	**5.63**	41
2	56	**-11.45**	39	**11.45**	136
3	53	1.85	10	-1.85	63
4	56	**2.3**	9	**-2.3**	65
5 and 6	94	**4.51**	9	**-4.51**	103
Total	**275**		**92**		**367**

Note: Statistically significant adjusted residuals (plus or minus 1.96) are in bold.

integrity of the buried deposits found in the Indian Quarter Rooms and in the vicinity of the wall base.

The five units (II, III,IV, 6, and 9) excavated within rooms indicated that the outer reconstructed wall of the mission was placed on top of the Colonial foundation. The Colonial foundation consists of rounded limestone nodules in a caliche mortar. It is 6–8 inches narrower than the CWA wall and the two align along the outside edge of the wall. The base of the CWA wall is 20–22 inches below surface while the Colonial foundation is 30–34 inches belowexisting ground level. A 1–2 inch thick Portland-cement base caps the Colonial foundation. Cross-walls within the rooms lack foundations. The west wall of the southeast gate also has no underlying Colonial foundation. Eighteenth and nineteenth century materials appear to be mixed throughout the deposits found adjacent the walls of the rooms investigated.

Seven units (I, 7, 8, 12, 15, 16, and 17) were excavated in association with vertical wall cracks. The stratigraphic relationship between the reconstruction wall base and the Colonial foundation is the same as noted earlier. Wall cracks appear to be the result of two factors: 1) the absence of underlying foundation, such as in the vicinity of the Southeast gate, and 2) the insufficient load-bearing capacity of the Colonial foundation. The archaeological deposits found adjacent to the inner and outer walls of the mission contain primarily post-Colonial materials in the upper two levels (0–12 inches bs), and less-mixed Colonial pe-

riod materials in Level 4 and below. Level 3 appears to be a transition zone between the two.

Ten units (1, 2, 3, 4, 10, 11, 13, 14, 18, 19) were excavated to investigate the nature of the wall base mortar loss and a variety of architectural features. These units revealed that mortar loss occurs only at the ground surface and does not extend below ground. The east cross-wall of the southwest gate does not have an underlying Colonial foundation. The large structure extending out of the east wall of the mission has a Portland-cement foundation under the CWA reconstruction wall base. While this foundation is clearly not Colonial in age, its relationship to the structure remains unresolved.

Overall, based on the results of these excavations, it is concluded that subsurface disturbances in the upper 12 inches of deposits both inside and outside of the mission walls will impact mixed eighteenth through twentieth century materials characterized by low associational integrity. These archaeological materials have little interpretive potential or value. Archaeological materials found below 18 inches in depth, consist of much less disturbed and primarily Colonial period deposits. Subsurface disturbances reaching to this depth will impact archaeological materials with the best associational integrity and interpretive potential at the mission. The six inches separating these two zones appear to represent a transitional zone from more disturbed to less disturbed deposits.

It is recommended that subsurface excavations beginning at a depth of 12 inches below the modern surface be conducted by professional archaeological crews. Excavations (soil disturbances) limited to the upper 12 inches of materials can be carried out by construction crews not trained in archaeological recovery techniques and methods.

Based on the results of excavations within the Indian Quarters rooms, it is concluded that the upper 18 inches of deposits are characterized by substantially mixed materials dating between the eighteenth and twentieth century. These materials have low associational integrity and little interpretive potential or value. Archaeological materials found below 24 inches in depth, consist of less disturbed Colonial period deposits. Subsurface disturbances reaching to this depth will impact archaeological materials with the best associational integrity and interpretive potential found along the walls of the rooms. The six inches separating these two zones appear to represent a transitional zone from more disturbed to less disturbed deposits.

It is important to emphasize that this characterization of the deposits applies only to the three foot wide perimeter found immediately adjacent to the walls of the rooms. That is, deposits found in the middle of the rooms, where disturbance associated with CWA wall reconstructions would have been shallow, are expected to have greater associational integrity and interpretive potential.

It is recommended that subsurface excavations within the Indian Quarters located in a 3-foot-wide band along the perimeter of the rooms beginning at a depth of 18 inches below the modern surface be conducted by professional archaeological crews. Excavations (soil disturbances) limited to the upper 18 inches of materials can be carried out by construction crews not trained in archaeological recovery techniques and methods.

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Appendix A: San José Bus Drive Project

Ricky Robinson

Introduction

The National Park Service contacted the Center for Archaeological Research (CAR) of The University of San Antonio (UTSA) to monitor the construction of a bus drop-off access road outside the east wall of Mission San José y San Miguel de Aguayo (41BX3) of San Antonio, Texas (Figure A-1). The construction work was done by K-D Construction Company, with Ken McCarty serving as the supervisor of the construction crew. The purpose of the monitoring, which took place on August 13–15, 1997, was to ensure that no cultural resources would be impacted by the construction of the access road.

Previous Investigations

Previous investigations (Fox and Cox 1991; Hard et al 1995), had revealed two Spanish colonial archaeological features outside the mission wall in the general area: the Acequia Lateral, which lies under the present visitor parking lot, and the Acequia Madre, which lies farther to the east paralleling San José Drive. Information obtained from the archives located at CAR indicated that late nineteenth to mid-twentieth-century residential structures once existed outside of the mission's east wall. All of these factors were taken into consideration when the construction project began.

Monitoring

Construction began of the planned bus road, which runs in a north to south direction, began on August 13. The impacted area was excavated by a bulldozer and road grader. The south and north end of the road were excavated to an average depth of 18 in by the bulldozer, with the road grader scraping the middle section to depths averaging about 6 to 8 in. The average width of the road was 17 ft 6 inches. To the west, paralleling the road, was an 8-ft-wide section that was scraped 2 to 4 in deep for the foundation of a sidewalk. The finished project would be a curved road, 500–600 ft long by that runs 13 ft and 6 in wide from curb to curb. Paralleling the road to the west will be a 6 ft sidewalk. The road and sidewalk will dip in elevation from west to east to allow for drainage of the area.

For control and provenience purposes the road was divided into three areas with the Area 1 being the south end, Area 2 the middle section and Area 3 the north end of the road (Figure A-1). Area 1 produced few artifacts of importance, and most of these were of recent times. The artifacts recovered were glass sherds, ceramics sherds, and one bone fragment. one Spanish Colonial Goliad ware sherd was recovered but it was mixed with the construction fill (sandstone chunks, boards with mortar attached) which was determined to be related to the previous construction project of the new visitors center. Area 1 was determined to be heavily disturbed at least 16 inches below surface from previous construction around the mission.

Area 2 showed very few cultural artifacts those recovered were a few glass sherds, a round eight-penny nail, a bottle cap, and one burned bone fragment. The artifacts were distributed throughout the section. A fine powdery lime-gravel material mixture was exposed after four inches were removed. This area revealed no cultural features and may contain construction fill related to earlier mission renovations of recent times. This area at least to the depths of 6 to 8 in below surface has little archaeological importance.

Area 3 produced the largest number of cultural artifacts. The artifacts recovered from the Spanish Colonial period were 11 sherds of Goliad ware and San Agustin majolica pottery and two gunflints. One square nail may also date from this time period. The majority of the artifacts, however, dated from the late

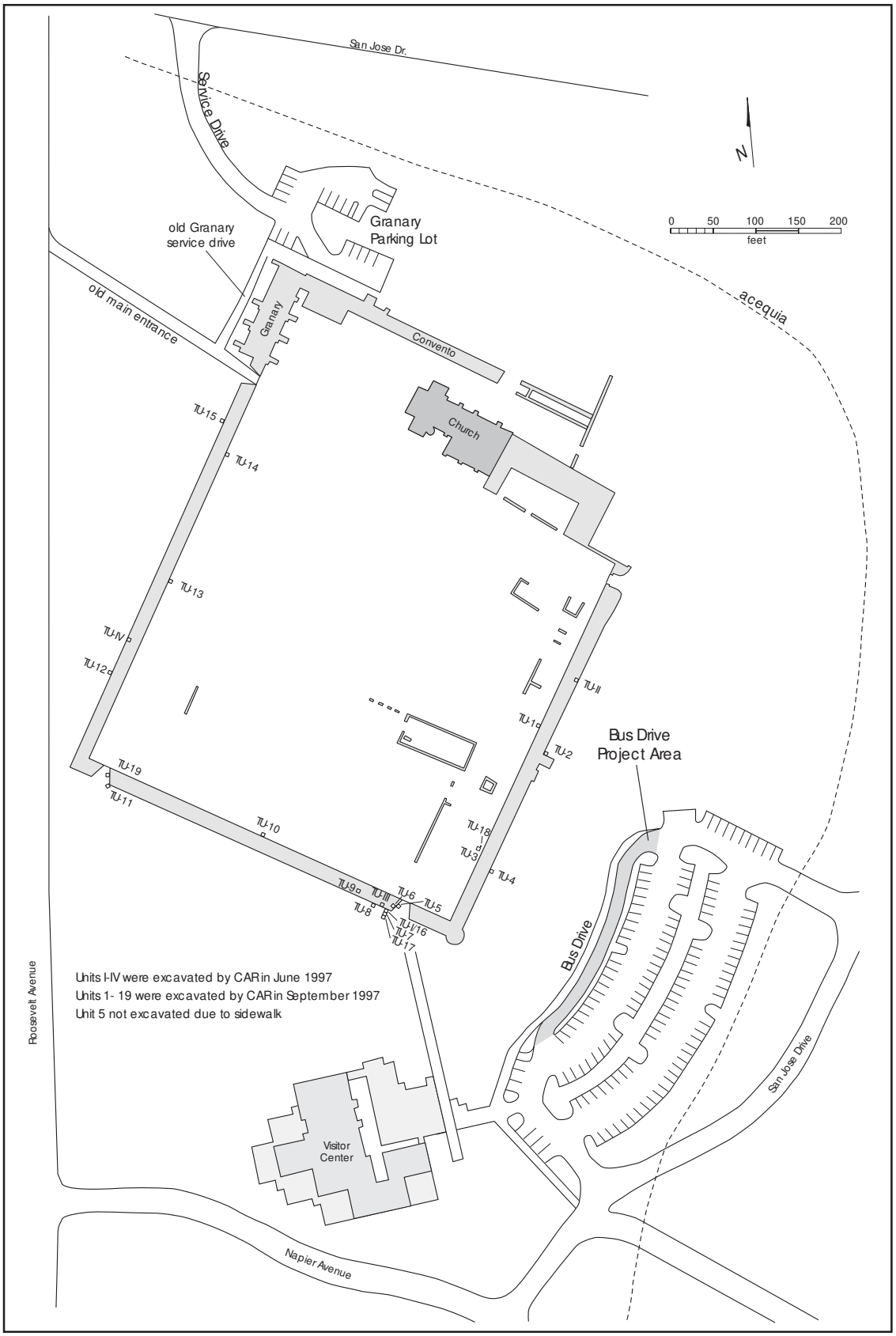

Figure A-1. *Location of Bus Drive Project area.*

nineteenth to the mid-twentieth century. These artifacts included broken glass bottles, plastic fragments, tile fragments, round eight-penny nails, 16-penny nails, toy parts, a metal bell cover, and bone fragments, one of which exhibited a handsaw/machine cut pattern.

No Colonial period levels were found to be intact due to the deeper depths of the more recent trash deposits. One of the gunflints was found lying next to a plastic toy boat at 9 in below surface in the east wall of the road. A modern water line was found at 10 in below surface which ran westward toward the mission's east wall. Modern trash was still being found at 16 in below surface, and no Colonial artifacts were found. At 18 in few artifacts were found and these could be dated to recent times. This area appears to be a large modern trash midden that has been thoroughly mixed. The CAR archives reveal that a residential structure prior to the 1940s existed in the general vicinity of this trash midden. There is a possibility that when the structure was torn down a bulldozer would have dug a pit to bury the debris left from the demolition, thus eliminating the cost of hauling the debris away. This is a common practice today among modern construction companies.

Summary and Conclusions

The assessment of the bus road is that the Area 1 has been heavily disturbed by the previous construction of the visitors center, since the majority of the artifacts observed even at the deepest levels are modern construction materials. In this area, there are no intact archaeological features, at least to the depth of 16 to 18 in. Area 2 was scraped to 6 to 8 in below surface and contaned no shallow archaeological important deposit. At deeper levels there may be intact archaeological features, but the construction of the bus road will not impact these deeper depths. In Area 3 intrusive deposits of the late nineteenth to mid-twentieth century have already impacted this section of the road to a depth of at least 18 in.

It appears that no cultural features of importance related to the early lifeways of the mission will be impacted by the construction of the bus drop-off road. The Acequia Lateral was not encountered in the excavations. No architectural features were revealed, and no cultural deposits of significance were exposed. The trash midden located at Area 3 dates to twentieth century and is archaeologically insignificant. Therefore, it is the opinion of CAR that the construction of the bus drop-off road will have no impact on the cultural resources related to Mission San José (41BX3).

Appendix B: San José Granary Parking Lot Project

Barbara A. Meissner

The purpose of the project was to monitor the removal of the old parking lot behind the granary at Mission San José y San Miguel de Aguayo (41BX3). Although there were no known structures or important cultural features in the area, the possibility existed that removal of the parking lot would disturb remains of Colonial or nineteenth-century structures or cultural deposits. Therefore, an archaeologist was present during the removal of the old parking lot.

The contractors used the plow on the front of a bulldozer to break up the asphalt with as little disruption of the subsurface as possible. The asphalt and base material was then removed by the blade operator assisted by a bobcat and a front loader. During the entire process Meissner looked for evidence of structures or cultural deposits.

Beneath the asphalt was a layer of fill material—either a gray sandy clay and gravel mixture or a white caliche and gravel mixture. A few sherds of glass and other artifacts were found in the sandy clay fill, but all appeared to be of recent origin. The caliche fill appeared sterile. When the desired grade had been reached, most of the area still had fill visible on the surface. In a few patchy areas the fill was completely removed, revealing the surface of the undisturbed sediments, but no evidence of structural remains was seen, nor were any artifacts visible.

In conclusion, the process of removing the old parking lot behind the granary had no adverse effect on structural remains or important cultural deposits.

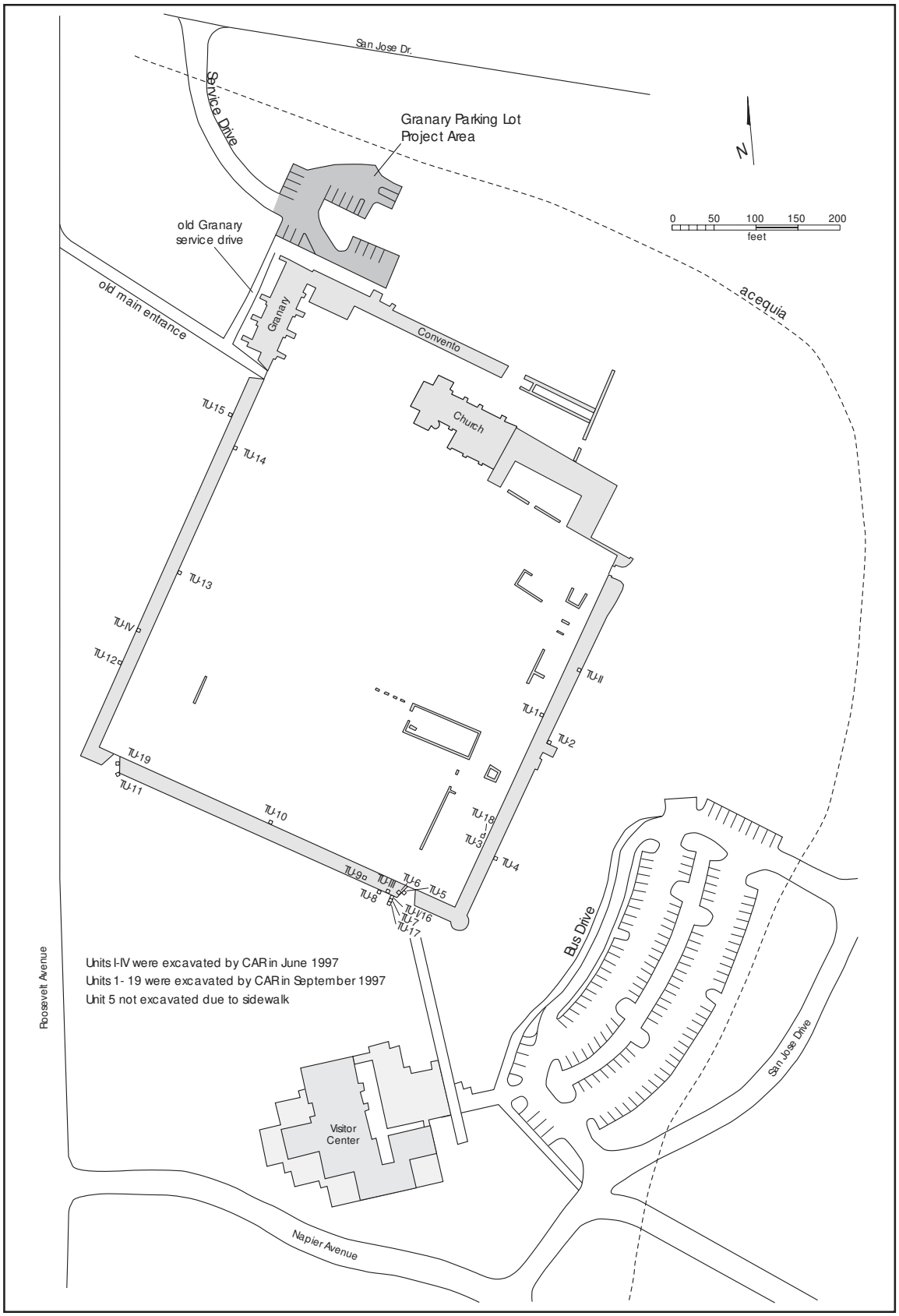

Figure B-1. *Location of the Granary Parking Lot Project area.*

Appendix C: San José Service Drive Project

Christopher E. Horrell

Introduction

The National Park Service contacted the Center for Archaeological Research (CAR) of The University of Texas at San Antonio (UTSA) to excavate a series of 26 shovel tests along the proposed service road (Figures C-1 and C-2) and monitor the excavation of the service drive at Mission San José y San Miguel de Aguayo (41BX3) of San Antonio, Texas. In addition, the contract also called for the monitoring of the removal of the old service drive in front of the granary (Figures C-1 and C-2). The shovel testing was performed on October 16 and 20, 1997, while the monitoring occurred on December 30–31, 1997. The shovel testing was conducted under the supervision of Diane A. Cargill, with help from K. Hanselka, A. Figueroa, C. Horrell, and R. Jones. Christopher E. Horrell monitored the excavation of the service drive.

Methodology

Field Methods

As called for in the scope of work, a series of 26 shovel tests was excavated along the proposed service road to determine the presence of any cultural materials subsurface. These shovel tests were evenly spaced at 10 foot intervals. The first 6 shovel tests were excavated to a depth of 24 in, due to the proximity of the mission to the proposed road. As the distance from the mission increased, the remaining 17 shovel tests were excavated only to a depth of 20 in. The last two shovel tests were excavated to deeper depths where a proposed gate is to be placed; one at 28½ in and the other to 24 in below surface. The excavated matrix from the shovel tests was screened through ¼-inch mesh. All data collected from the shovel tests were recorded on standard CAR forms, and photographs of the project area were made during excavation.

The scope of work also called for monitoring of excavation of the proposed service drive. Excavation of the proposed service drive was conducting utilizing a John Deere 544E front loader. In addition, a John Deere Motorized Grading Machine 578A was used to blade the service drive to its proposed depth. CAR staff archaeologists were to monitor the excavation for the presence of any cultural materials and features uncovered during this process. The scope of work also called for the monitoring of the removal and excavation of the existing service drive in front of the Granary.

Laboratory Methods

Upon completion of field work, all artifacts were taken to the laboratory at CAR. All artifacts were washed, labeled, and cataloged. A complete analysis of the artifacts followed. When the analysis was completed, the artifacts were placed in the repository at CAR.

Results

Shovel Testing

Shovel tests 1–6 indicated that the area was extensively disturbed. At depths of about 6 in the presence of road fill was detected. No colonial artifacts were detected in these first shovel tests, although shovel test 4 yielded the largest quantity of bone recovered during the project.

Shovel test 7 encountered caliche at about 6 in below surface. No artifacts were detected below this level.

Shovel test 8 revealed a sewer line at approximately 12 in. Modern artifacts were recovered above this level.

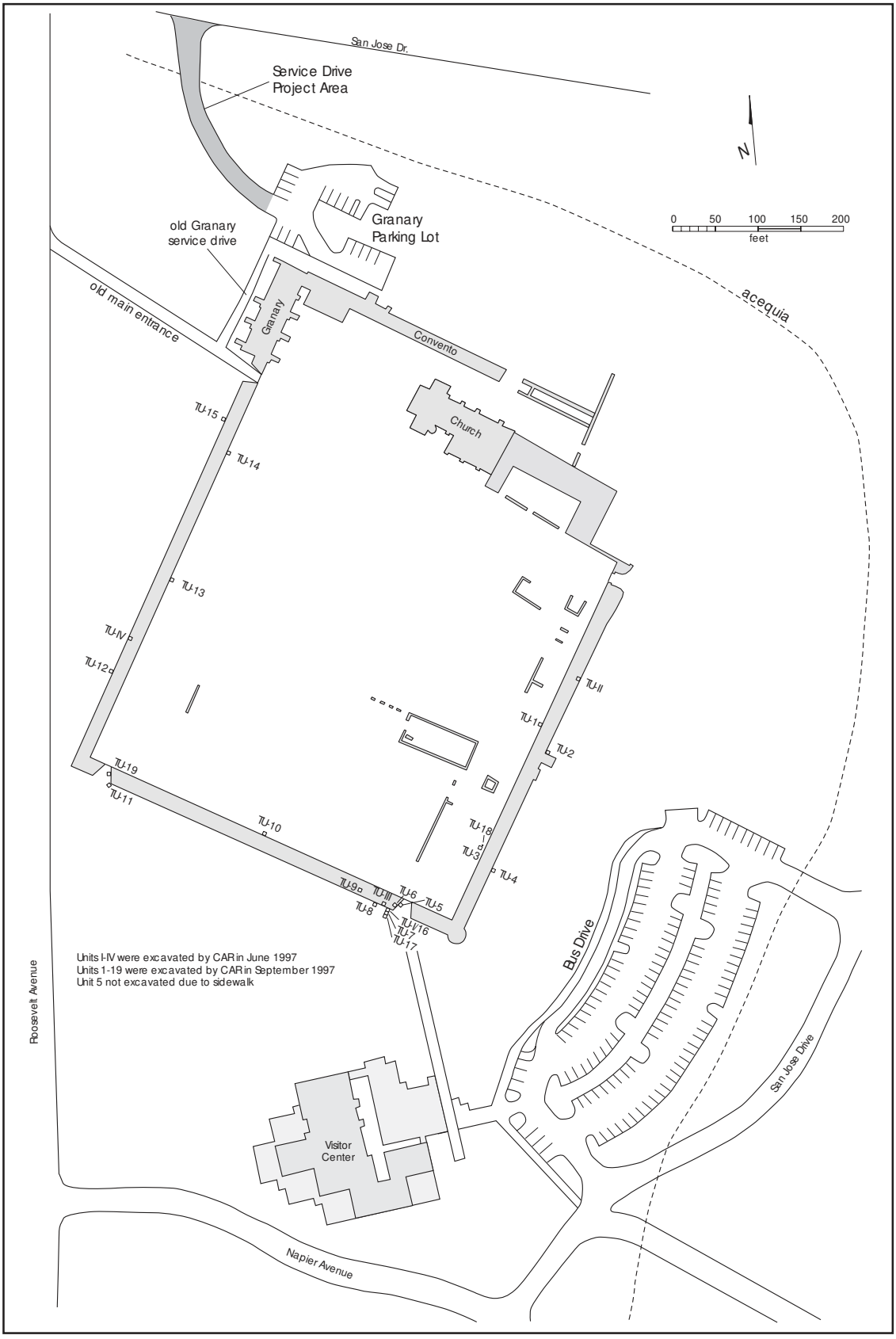

Figure C-1. *Location of the Service Drive Project area.*

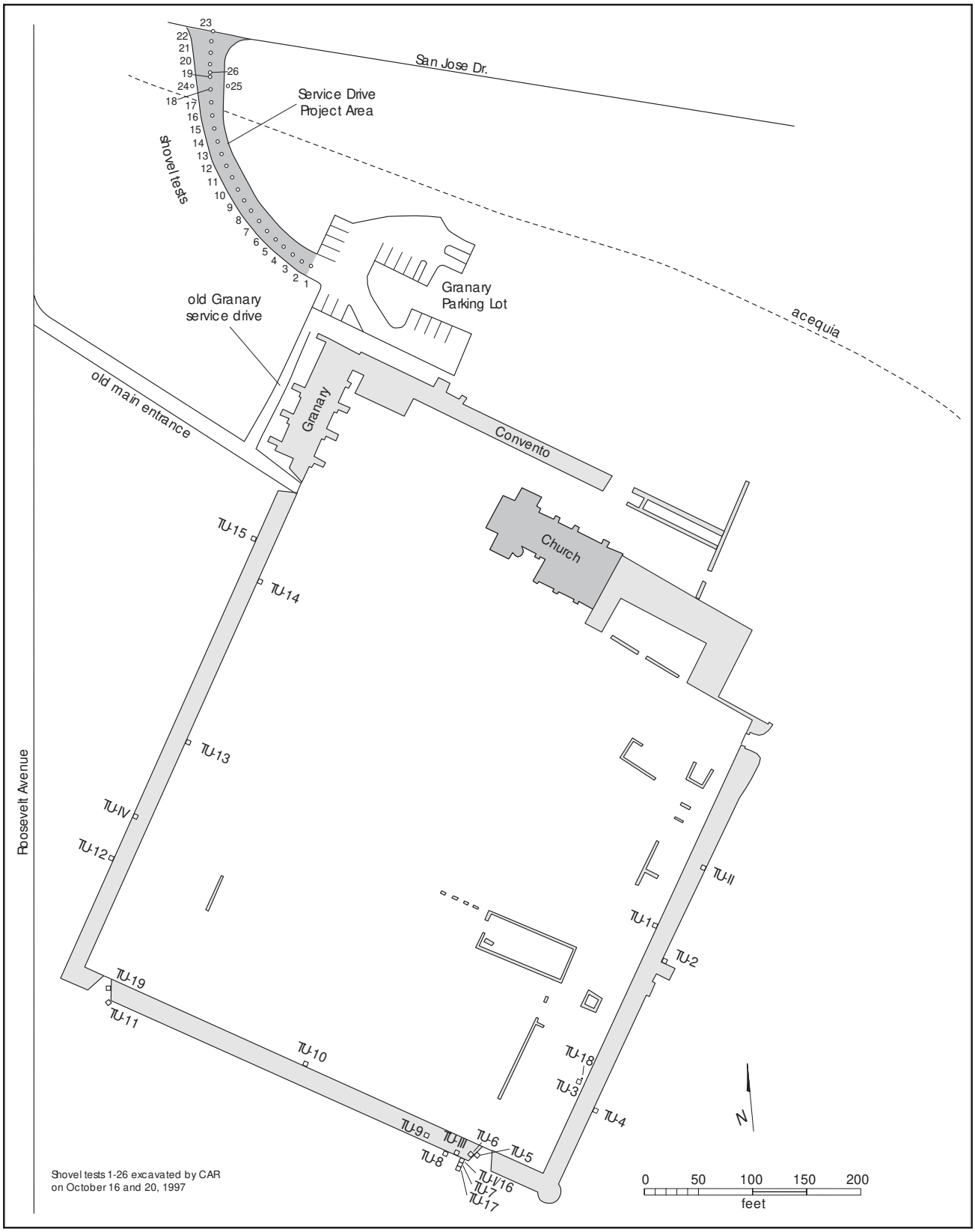

Figure C-2. *Distribution of Shovel Tests along Service Drive.*

Shovel tests 9–18 and 20–23 were all excavated to a depth of 24 in. These shovel tests indicated the presence of modern artifacts in association with few Spanish colonial artifacts. Shovel test 18 yielded a large number of metal objects and glass. Shovel test 19 was also only excavated to a depth of 12 in., since it appeared that a structural feature may have been encountered (i.e., mortar fragments). To further investigate this possibility, shovel test 26 was excavated immediately adjacent to ST 19. It was excavated to a depth of 20 in. bs. The excavation revealed no structural remains confirming the initial impression that the mortar fragments were part of a scatter rather than an intact feature.

Shovel test 24 was excavated to a depth of 28½ in. This shovel test produced many modern artifacts which indicated the possible location of a subsurface midden.

Shovel test 25 was excavated to a depth of 20 in. This shovel test produced few modern artifacts before encountering caliche gravels.

A total of 730 artifacts were recovered from the 26 shovel tests, including a variety of 18th and 19th century materials (Table C-1). More than half (n=427) of the specimens came from Levels 3 and 4, or between 12-24 in. bs. (Table C-2) . However, as indicated by the distribution of the ceramic types, the matrix and cultural materials contained within the 24 inches excavated, are heavily disturbed (Table C-3). For instance, 67 percent (n=8) of the unglazed ceramics come from Level 1, while 52 percent (n=12) of the whitewares are from Levels 3 and 4. Although cut nails were recovered primarily from the deeper two levels (Table C-4), wire nails are also relatively common in these levels (n=21).

Monitoring

Monitoring of excavation for the proposed service drive recovered a variety of artifacts. A modern midden, measuring approximately 45–60 ft by 4–6 ft, was found within the project area. It is located in the vicinity of shovel test 8, which contained a high concentration of artifacts. The midden reached a depth of 2½ feet below ground surface. Within the midden area several modern artifacts were recovered during the excavation. These artifacts include several whiteware ceramic shreds, tin cans, bottles and bottle fragments, and floor tiles. Additionally, two majolica wares were recovered.

The excavation also was successful in locating a portion of the colonial acequia. This feature extends from the west wall of the proposed service drive 15 ft in length with a width of 25 ft. The depth of the acequia reached 2½ ft below surface. Identification of this feature was possible by noting soil changes as well as its association with the alignment of the exposed portion of the acequia near the mill house. Only the upper portion of the acequia was exposed during excavation, revealing a clay loam soil mottled with limestone pebbles. In addition, the location of the acequia slightly below the modern midden provided further evidence for identification. The recovery of modern artifacts from the midden area slightly above the acequia demonstrates the use of this feature well into the twentieth century (Cox 1988:5).

The old service drive was removed without CAR staff archaeologists present to monitor the work. However, upon inspection of the area it was determined that only the pavement of the existing road surface was removed. Excavation did not proceed below the existing road (i.e., below the road fill), and no subsurface cultural materials were impacted.

Summary and Recommendations

CAR conducted shovel testing and monitoring along a proposed route for a new service drive. In addition, the contract called for the monitoring of the removal of the old granary service drive. The shovel tests and subsequent excavations revealed the presence of only highly disturbed cultural materials and a modern midden. These investigations and the monitoring mitigated the impact of the construction activities to the acequia. The old Granary Service Drive was removed without a staff archaeologist present. However, it appears that no cultural resources were affected. Based on our observations, we recommend that the project proceed as planned.

Table C-1. Artifacts Recovered by Shovel Test

	Shovel Tests												
Artifact Type	1	2	3	4	5	6	7	8	9	10	11	12	13
Metal Objects	0	0	0	1	0	0	0	0	2	0	0	1	0
Metal Fragments	5	1	0	5	1	0	0	1	0	1	0	0	0
Glass	5	10	3	16	9	0	4	0	3	9	4	4	1
Personal Items	0	0	0	0	0	0	0	0	0	2	0	0	0
Hardware	0	3	1	0	0	1	0	0	0	0	1	0	1
Cut Nails	0	0	1	0	4	0	0	0	0	4	1	0	0
Wire Nails	9	8	1	2	1	1	0	0	0	2	3	0	0
Bldg. Materials	2	3	5	3	5	3	6	5	11	10	7	1	1
Wire	2	3	0	2	1	0	0	0	0	0	2	0	0
Ceramics	0	5	2	6	2	4	0	0	8	5	1	0	2
Plastics	0	1	0	8	0	0	0	0	0	0	0	0	2
Lithics	0	6	1	4	5	1	0	0	0	0	0	1	1
Bone	0	33	10	172	9	3	0	0	0	6	3	1	2
Shell	0	1	0	0	0	0	0	0	0	0	0	0	0
Total	23	74	24	219	37	13	10	6	24	39	22	8	10

	Shovel Tests													
Artifact Type	14	15	16	17	18	19	20	21	22	23	24	25	26	Total
Metal Objects	0	1	0	0	0	0	0	0	0	1	57	0	1	64
Metal Fragments	0	0	0	4	0	0	0	0	0	0	0	0	0	18
Glass	0	10	14	9	3	5	13	3	3	4	23	2	15	172
Personal Items	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Hardware	0	0	0	0	0	0	1	0	0	0	0	0	1	9
Cut Nails	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Wire Nails	0	0	1	0	0	1	0	0	2	0	4	0	1	36
Bldg. Materials	0	2	1	0	0	3	0	1	1	0	1	1	1	73
Wire	0	0	0	0	1	0	0	0	0	2	1	0	2	16
Ceramics	1	1	2	1	0	0	1	0	1	1	1	0	0	44
Plastics	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Lithics	0	0	0	0	0	0	0	0	0	0	0	1	0	20
Bone	1	2	0	6	0	0	1	0	3	0	1	1	0	254
Shell	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	2	16	18	20	4	9	16	4	10	8	88	5	21	730

Table C-2. Distribution of Artifact Types by Level
within the Shovel Tests, Mission San José

	Levels				
Artifact Types	1	2	3	4	Total
Metal Objects	5	26	31	2	64
Metal Fragments	1	7	3	7	18
Glass	79	35	44	14	172
Personal Items	1	1	0	0	2
Hardware	5	4	0	0	9
Cut Nails	1	0	4	5	10
Wire Nails	15	9	11	1	36
Bldg. Materials	31	20	14	8	73
Wire	2	8	6	0	16
Ceramics	12	11	17	4	44
Plastics	0	0	5	6	11
Lithics	2	5	6	7	20
Bone	9	14	84	147	254
Shell	0	0	0	1	1
Total	163	140	225	202	730

Table C-3. Distribution of Ceramic Types by Level
within Shovel Tests, Mission San José

	Level				
Ceramic Types	1	2	3	4	Total
Unglazed	8	0	3	1	12
Lead Glaze	0	1	3	0	4
Porcelain	0	1	2	0	3
Stoneware	0	2	0	0	2
Whiteware	4	7	9	3	23
Total	12	11	17	4	44

Table C-4. Distribution of Nail Types by Level
within Shovel Tests, Mission San José

	Level				
Nails	1	2	3	4	Total
Cut Nail	1	0	4	5	10
Wire Nail	15	9	11	1	36
Total	16	9	15	6	46

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