

**AN ARCHAEOLOGICAL AND HISTORICAL EVALUATION OF  
MERCURY MINING AND ORE PROCESSING SITES  
IN THE PHOENIX MOUNTAINS OF CENTRAL PHOENIX,  
MARICOPA COUNTY, ARIZONA**

by

**Lyle M. Stone**

with contributions by

**Michael M. Gregory  
Jeffrey B. Hathaway  
Ross S. Curtis**

submitted by:

**Archaeological Research Services, Inc.  
Tempe, Arizona**

**August 1990**



**Archaeological  
Research  
Services, Inc.**

2124 South Mill Avenue  
Tempe, Arizona 85282

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[Arizona Department of Transportation Project H-0835-01D]

BY  
LYLE M. STONE

ARIZONA DEPARTMENT OF TRANSPORTATION  
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Contract 88-21  
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Investigations

## Abstract

*During the summer of 1989 Archaeological Research Services, Inc. performed archaeological data recovery and testing (for evaluation purposes) investigations at three historic mercury mining sites within the Phoenix Mountains of Central Arizona (within Sections 26, 34, and 35 of T3N, R3E; USGS Sunnyslope, 1971/15'). These activities were performed at the request of the Arizona Department of Transportation (for Project H-0835-01D) in order to document and evaluate sites which would be negatively impacted by the construction of the Squaw Peak Extension (State Route 510) in Phoenix between Glendale Avenue at 19th. Street on the south and Shea Boulevard at 32nd. Street on the north.*

*Site AZ T:8:53 (ASM), a complex of mid-teens-to-mid-1930s mining and ore processing facilities within the Rico Group of mining claims was subjected to data recovery investigations involving archaeological fieldwork (testing, surface feature documentation, collection and recording of surface artifacts), and historical documentary research. This National Register-eligible site is considered to be significant for its representation of the history and technology of mercury mining and mercury ore processing operations in central Arizona.*

*Site AZ T:8:54 (ASM), defined by a complex of eight mine excavation features (i.e., prospects, shallow shafts, and a tunnel) which may have been located on claims of the Mercury Group and mined during the mid-teens to the mid-1920s, was evaluated for the presence of National Register quality cultural resource values through fieldwork and documentary research investigations. It has been determined that this site does not possess or reflect cultural resource values of National Register quality.*

*Site AZ T:8:55 (ASM) is represented by two mine excavation features (both shallow shafts) on lands which do not appear to have been formally claimed for mining purposes. This site is not considered to be eligible --or potentially eligible-- for inclusion in the National Register of Historic Places.*

*It has been recommended that cultural resources clearance for proposed ADOT actions in the vicinity of Sites AZ T:8:53, 54, and 55 (ASM) be approved since important associated cultural resources will not be affected by these actions.*

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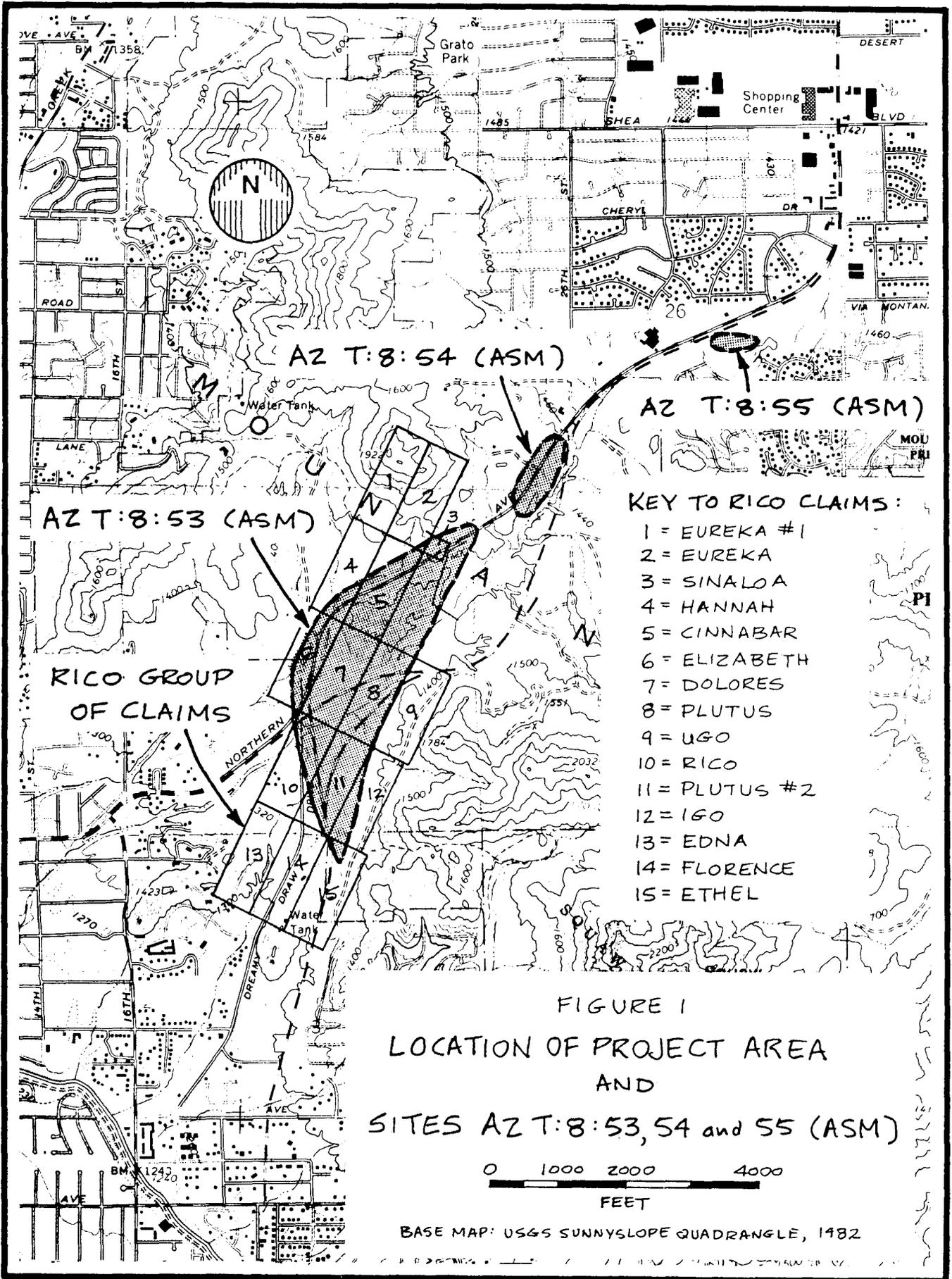
## CHAPTER 1. INTRODUCTION

### Project Background

In mid-December, 1988, the Arizona Department of Transportation (ADOT) requested that Archaeological Research Services, Inc. (ARS) perform a cultural resources survey for a segment of the proposed Squaw Peak Extension (State Route 510) in Phoenix, Maricopa County, Arizona, between Glendale Avenue at 19th. Street on the south and Shea Boulevard at 32nd. Street on the north, a distance of approximately 3.9 miles. ADOT proposes to construct the Squaw Peak Extension through Dreamy Draw to the proposed Pima Freeway as part of Project H-0835-01D). ARS performed this survey (with the exception of a ca one-half mile section at the north end of the project area between Mountain View Road and Shea Boulevard which was unsurveyable due to land access considerations) in late January and February, 1988, and late August, 1989, and submitted three separate reports of findings including two letter reports (Bontrager to Rogler, 1/27/89; Curtis to Environmental Planning Services, 8/28/89) and a standard descriptive report which covered the majority of the survey area (Curtis 1989).

The project area consists of a 200-to-250 ft wide corridor centered on segments of the existing 19th. Street, Dreamy Draw Drive, and Northern Avenue between Glendale Avenue and Mountain View Road (Figure 1). In addition, an irregularly-shaped parcel (ca 3300 ft long north-south by 1750 ft wide east-west) in the vicinity of Northern Avenue at 19th. Street was surveyed to accommodate an area required for the construction of a bridge and related roadway features at this location. The project area is generally located within portions of the E1/2, SW1/4 and the W1/2, NE1/4 of Section 3, T2N, R3E, the E1/2 of Section 34, T3N, R3E, the extreme northwest corner of Section 35, T3N, R3E, and the S1/2 of Section 26 of Section 26, T3N, R3E. Right-of-entry for archaeological survey purposes to an area of the project corridor which crosses the Phoenix Mountain Preserve (a City of Phoenix park) was obtained through a Temporary Entry Authorization of 1/6/89 issued to ADOT by the City of Phoenix. This authorization also provided for the subsequent investigation of individual archaeological sites.

The 1989 report of survey findings by Curtis indicated that three historic archaeological sites were present within the project area, and that each site was subject to project-related negative impacts. Site AZ T:8:6 (ARS) [subsequently redesignated AZ T:8:53 ASM], a multi-component complex of structural features and artifact deposits related to mercury ore mining and processing during the period between the mid-teens and the mid-1930s, was considered to be eligible for inclusion in the National Register of Historic



Places based on its association with early mercury mining activities in the Phoenix Mountains. It was recommended that this site be subjected to data recovery investigations through archival and archaeological research. Site AZ T:8:7 (ARS) [redesignated AZ T:8:54 ASM], a complex of seven historic mine excavation features and a large surface scatter of historic artifacts, was considered to be potentially eligible for inclusion in the National Register of Historic Places --it was recommended that this site be further evaluated through archival and archaeological study procedures as a basis for formally determining its National Register eligibility. Site AZ T:8:8 (ARS) [redesignated AZ T:8:55 ASM], defined by two historic mine excavation features, was also considered to be potentially eligible to the National Register of Historic Places subject to further evaluation through archival research and fieldwork investigations. In addition, and as described in a preliminary letter report of survey findings, a surface concentration of twelve prehistoric ceramic sherds (Gila Plain) were observed at a location on the east study area boundary; it was suggested that these materials represented a "pot bust" which did not reflect National Register quality cultural resource values.

Based upon a review of the 1989 survey report by Curtis, ADOT requested by letter of March 20, 1989 that ARS prepare a work plan to address data recovery requirements for the National Register-eligible Site AZ T:8:53 (ASM), and testing (to determine National Register eligibility) requirements for sites AZ T:8:54 and 55 (ASM). This work plan was prepared and submitted by Lyle M. Stone of ARS in early April, 1989 (Stone 1989). ADOT and the Arizona State Historic Preservation Office approved this work plan in mid-May, 1989, and ADOT subsequently authorized ARS to implement the work plan under Contract 88-21, with fieldwork investigations being performed between June 12 and July 3, 1989. Upon completion of fieldwork as outlined in the work plan, ARS submitted a letter summary report of findings (Stone to Belt; 7/6/89) which indicated that:

- the National Register-eligible Site AZ T:8:53 (ASM) had been fully documented such that cultural resources clearance for proposed actions affecting this site could be recommended for approval, and that

- sites AZ T:8:54 and 55 (ASM) were further evaluated with the conclusion that these sites did not represent National Register quality resources. With regard to sites AZ T:8:54 and 55 (ASM) it was also noted that the cultural features present at the sites had been documented at a level equivalent to that which would have been achieved had they been subjected to data recovery investigations. Cultural resources clearance for actions affecting these sites was therefore recommended for approval.

This document represents the results of data recovery and testing (for evaluation purposes) investigations at Sites AZ T:8:53, 54, and 55 (ASM) as outlined in the ARS work plan.

## Project Area Setting

The proposed Squaw Peak Extension alignment between Glendale Avenue and Shea Boulevard extends through the Phoenix Mountains, a prominent north Phoenix natural landmark, parts of which were the focus of extensive mercury mining activities during the period from the mid-teens into the mid-1930s. Currently, much of the Phoenix Mountains is incorporated within the Phoenix Mountain Preserve, a City of Phoenix park in which is located the prominence of Squaw Peak.

Elevations across the project study area range from 1260 to nearly 1500 ft above mean sea level. The Phoenix Mountains range in elevation from ca 1400 to 2500 ft above mean sea level, and are characterized by a weathered Precambrian metamorphic schist formation (defined by quartzite, slate, marble, and sericite and chlorite schist) which contains cinnabar, or mercury bearing deposits produced by volcanic activity (Bailey 1969:226-230). Area soils are not well developed and consist of gravelly loams of the Antho and Cavelt Soil Series (Adams 1974:7-8, 10-12). Vegetation is characterized by a marginal Sonoran Desertscrub (Lower Colorado Sub-Division) Vegetative Community, with observed plants including creosote-bush, salt-bush, palo-verde, mesquite, ironwood, cholla cactus, saguaro cactus, hedgehog cactus, barrel cactus, ocotillo, acacia, and various grasses. Based on climatological observations at the Mummy Mountain recording station, also within the Phoenix Mountains located ca 4.0 miles east-southeast of the project area, the area experiences mean daily maximum and minimum temperatures during January of 64.5 degrees Fahrenheit (F) and 42.6 degrees F respectively; July mean daily maximum and minimum temperatures of 104.1 degrees F and 80.9 degrees F are reported (Sellers and Hill 1974:341). Precipitation is recorded at an annual mean of 8.4 inches, with the greatest rainfall occurring during the periods December-March and July-September (ibid.:341).

## Acknowledgements

In completing this study, ARS wishes to acknowledge the co-operation of the City of Phoenix in facilitating access to the Phoenix Mountain Preserve for the purposes of archaeological investigation. Personnel with the Arizona Department of Mines and Mineral Resources are acknowledged for their assistance in locating and providing documentary information pertaining to the history of mining in the Phoenix Mountains.

This study was directed by the author, with the position of Field Director being assumed by Dan R. Bontrager. Ross S. Curtis, Jeffrey B. Hathaway, and Bradford William Stone served as Archaeological Technicians. Curtis also contributed to Chapters 2, 4, and 5 of this report by preparing draft descriptions of fieldwork procedures and of identified cultural resource loci. Hathaway prepared the report artifact Appendix A, and contributed

to the artifact description sections in report chapters devoted to each of the sites. Michael M. Gregory of ARS performed part of the project historical documentary research task, prepared a draft version of Chapter 3 (Historical Overview of the Project Area and Vicinity), and provided the historical background for individual sites in Chapters 4 and 5.



## CHAPTER 2. STUDY OBJECTIVES AND METHODOLOGY

As indicated, two basic study objectives were recognized with regard to the three historic archaeological sites. For example, it has not been possible to formally evaluate the National Register eligibility of sites AZ T:8:54 (ASM) and AZ T:8:55 (ASM) in terms of National Register eligibility criteria based on surface observations and a review of historical documentation pertaining to mining in the region. Accordingly, the objectives of further investigations at these sites was to develop archaeological and historical data on the basis of which their National Register eligibility could be determined.

With regard to Site AZ T:8:53 (ASM), the remains of a mercury ore mining operation and ore processing plant with evidence of associated building sites (residences), artifact scatters, and mine prospect, excavation features, and tailings piles, it had been concluded on the basis of survey level observations (combined with the results of background historical research) that this site would be eligible for inclusion in the National Register of Historic Places. Since this site would be subject to negative impacts as a result of the proposed Squaw Peak Extension construction by ADOT, the objectives of further study were to record and report those archaeological and historical data pertaining to the site which support its National Register eligibility. Such data relate to the history and technology of early mercury mining and ore processing in Arizona.

The work plan (outlined below) for archaeological testing for evaluation purposes at Sites AZ T:8:54 and 55 (ASM), and for data recovery at AZ T:8:53 (ASM) provided a detailed description of proposed study procedures (Stone 1989). Such detail is provided in the context of the "procedures" sections within individual site description Chapters 4 and 5 below. In general, for each of the three sites, it would be necessary to undertake extensive historical records research in order to formally document their history, and to determine relationships between sites, and between the three sites and other sites which reflect a regional pattern of historical mining activity.

With regard to the two sites being evaluated for National Register eligibility (AZ T:8:54 and 55 ASM), fieldwork procedures involved re-surveying and re-locating previously identified associated cultural features and deposits, site mapping, and the documentation of all features through photography and the preparation of measured drawings. In addition, the surface artifact scatter at Site AZ T:8:54 (ASM) was to be further evaluated through the documentation (in-field recording at a 50% level) and systematic collection (at a 10% level) of a representative sample of artifacts. In preparing the work plan for

Sites AZ T:8:54 and 55 (ASM), it was observed that these proposed test phase study efforts could result in site documentation at a level at which all associated significant cultural resource data values were recorded and reported.

With regard to Site AZ T:8:53 (ASM) which would be further investigated in order to formally document its associated National Register-quality data values, study procedures involved historical records research as above, as well as the re-survey, re-location, and documentation of all site features and artifact scatters and deposits. All site features were recorded through the preparation of detailed scaled drawings, photography, and narrative (written) descriptions of each feature and its cultural and natural setting. Artifact scatter documentation involved identifying and recording (in-situ at a 50% level) the types and frequencies of representative samples of artifacts from each surface scatter locus. In addition, and in support of the surface documentation effort, a systematic random collection (at a 10% level) of surface artifacts at each locus was made. Diagnostic artifacts at each surface artifact locus were also collected. As will be noted in the site description Chapters 4 and 5, the percentages of artifacts which were surface documented and collected at each site --and at each locus-- varied somewhat (from the 50% and 10% respective proposed levels) in order to accommodate field conditions. Such modifications in artifact documentation and collection strategy are described in detail.

Site documentation also involved sub-surface investigations (with small, 2 ft or 3 ft square hand excavated units) designed to fully expose and record structural features and detail associated with site Locus 1 (the Rico Mine ore processing facility). One artifact scatter locus was also investigated through the excavation by hand of a small test unit in order to determine depth of the deposit.

At the conclusion of the fieldwork phase of study all artifacts and project records were removed to ARS's laboratory facility in Tempe for processing and analysis. Artifact analysis involved essentially the identification and enumeration of artifact types (on the basis of formal, functional, and chronological attributes). Artifact data from individual artifact loci, and from associated structural features, were then compared and evaluated by type and frequency, and in relation to information derived from documentary sources, in order to interpret the history of and functional source from which each artifact deposit had been obtained, and to determine the functional and chronological representation of associated structural features.

At the conclusion of data analysis all project materials and records are being delivered to the Arizona State Museum for permanent curation under the provisions of a Repository Services Agreement between the Arizona State Museum and ARS dated June 21, 1989.

## CHAPTER 3. HISTORICAL OVERVIEW OF THE PHOENIX MOUNTAIN AREA

By: Michael M. Gregory

### Introduction

The availability of land rather than mineral resources attracted the first settlers to the area surrounding the Phoenix Mountains during the 1870s. Interest in the mineral resources of the mountains, with the exception of slate and limestone, did not occur until about 1916 when mercury and copper deposits were discovered outcropping on the slopes of Squaw Peak. Even after the discovery of these minerals, mining activities appear to have contributed little to the economic and social development of the area. Many of the first patented lands within the area represent cash purchases; however, the most common land records represent homestead and desert lands entries filed during the 1870s through the early 1940s. Beginning with the late 1940s, a number of small tract patents were issued for 5.00 acre parcels, and these appear to define the beginning of local urban development with builders acquiring the land for residential and small business uses. Other uses and developments contributing to the area's historical growth included the construction of the Arizona Canal (ca 1883), the establishment of roads connecting Phoenix to northern settlements, livestock grazing, the development of timber cultures for homesteading purposes, and the creation of a recreational park. During approximately 120 years of historical development, much of the area has been tied to agricultural and residential uses rather than to mining or industrial ventures.

### Early Settlement of the Area

The earliest record of a land appropriation related to the Phoenix Mountains area occurred on February 24, 1863 when the U.S. government set aside Sections 16 and 36 of T3N R3E, T3N R4E, T2N R3E, and T2N R4E for territorial use. After this record, documentary evidence of legal settlement or attempts at settlement of the area are noted as early as 1873 in T2N, R3E, and as late as 1891 in T3N, R4E. The first private land transaction was recorded on April 28, 1873 and involved a cash exchange for 160.00 acres in the SE1/4 of Section 32, T2N, R3E. A second cash exchange for 160.00 acres in the SE1/4 of Sec. 33 occurred on April 10, 1874. The majority of local land patented before 1900 represented cash purchases, but whether the purchased land was used for settlement, speculation or some other purpose is not known. Records of early land entry indicate that cash purchases, rather than participation in public land programs such as homesteading, represented the most

successful means of acquiring public lands.

The majority of land transactions recorded for the area up until the early 1940s comprise homestead, timber culture, and desert land entries. Records indicate that much of the public's early interest in the area focused upon T2N, R3E, which lies to the immediate south of the project area between the Phoenix Mountains and the then small, but growing town of Phoenix. The first homestead filing within the township occurred on August 24, 1875, and represented 80.00 acres in the W1/2, NW1/4 of Section 32 of T2N, R3E. This claim was relinquished on December 4, 1876. The first patented homestead record appears on May 16, 1878, and included 160.00 acres in the SW1/4 of Section 32, T2N, R3E. The next homestead patent was issued on May 23, 1888, when 160.00 acres in the NW1/4 of Section 33, T2N, R3E were conveyed. In addition to the homestead entries, a number of early entries for the township represented timber cultures which allowed individuals to acquire up to 160.00 acres of land if they agreed to plant trees on the property. The first timber culture was recorded on October 13, 1877, for a 160.00 acre parcel in the SE1/4, of Section 30, T2N, R3E. This entry was relinquished on March 19, 1879. The first patented timber culture entry was approved on May 23, 1888, for 160.00 acres in the NW1/4, Section 33 of T2N, R3E. The last timber culture entries associated with the township were filed or patented during the early and mid-1890s. Most of the listed timber culture parcels are restricted to the southern third of the township near early Phoenix. Public land records list few desert land entries for the township. After the mid-1890s, no homestead, timber culture, or desert land entries are listed for the township.

Settlement in T2N, R3E contrasts sharply with that of the other townships in which the Phoenix Mountains are located, and this undoubtedly relates to the comparative nearness of an expanding Phoenix to the township. The earliest entries filed in T3N, R3E (in which the archaeological sites described in this report are located; T3E, R4E; and T2N, R4E occurred in 1885, 1891, and 1880 respectively; the first land patents for these townships were not issued, however, until 1905, 1911, and 1890. Few timber culture entries appear for the three townships, and most of the records represent homestead and desert land entries.

Within the four townships of the Phoenix Mountains vicinity, the majority of homesteads and desert land entries were not patented before 1910. A possible reason for these failures to prove up on entries may be derived from the observations of individuals describing the benefits and drawbacks of working mineral deposits in the area. According to Schrader (1918:98) "Paradise Valley contains excellent underground water. In the Montgomery well, which ends in valley fill at a depth of 225 ft, water was encountered at 196 feet". Whether settlers had the resources or desire to access ground water at similar depths, and to use it in developing their homesteads is unknown, although many individuals probably abandoned their claims due to a lack of reasonably accessible water. A later description of the area

indicated that "the vegetation on the slopes of the Phoenix Mountains and in those portions of the valley not under irrigation is rather sparse" (Lausen and Gardner 1927:45). The Arizona Canal, completed between 1883 and 1887, passes east and south of the Phoenix Mountains, but its completion does not seem to have had any influence on the early success of public lands being patented within the project area.

Several early roads passing through the Phoenix Mountains facilitated movement into this vicinity. Cave Creek (also Camp Creek) Road represents the earliest road through the area, connecting Phoenix with Cave Creek, and appears on maps as early as 1880 (Eckhoff and Riecker 1880: map). Although the route of this early road through the mountains and immediate project area has not been determined, it probably did not deviate significantly from its present alignment. Cave Creek Road continues to be used today and, since at least 1916, the road has maintained its general course through the mountain range crossing the pass located to the east of North Mountain (Schrader 1918:98), and approximately 1.5 miles to the west of the project area. A second early route, described as a wagon road (Schrader 1918:99), crossed the immediate project area through a pass located to the west of Squaw Peak, and connected the Agua Fria and Paradise Valley areas (Schrader 1918:101). No additional details are available concerning this road until 1927 when it is shown to have connected Phoenix with an area to the north --possibly Camp Creek-- (Lausen and Gardner 1927:52), in crossing several mining claims west of Squaw Peak. Later sources indicate the road, or at least that section of it through the mountains, as part of Shea Boulevard (USMS 4047: map). Sometime after 1929, the section of Shea Boulevard crossing the pass west of Squaw Peak became a part of Northern Avenue.

### Mining Activities

While much attention was directed to the settlement of public lands within the general area during the early 1900s, several individuals began to show interest in developing the mineral resources of the Phoenix Mountains. The first documented mineral discoveries and claim development occurred in 1916 when L.L. Brunson of Phoenix discovered copper and mercury deposits outcropping on the east slope of Squaw Peak. The group of claims staked here became known as the Seal Rock Group. Schrader (1918:97) states that "old monuments" indicate mineral claims were staked perhaps 40 or 50 years earlier in the Phoenix Mountains; Schrader notes, however, that prior to Brunson's discovery, no mining and little prospecting had been done. Following Brunson's discovery another find occurred on the northwest slope of the peak, where Henry Porterie and his father J.A. Porterie, both of Phoenix, found mercury. The Porteries staked four claims known collectively as the Mercury Group, and adjoining these, James Shay staked two claims representing the Constellation Group. Portions of claims defining the two groups appear to fall within the current Squaw Peak Extension study area and may be represented by components of

Sites AZ T:8:54 and 55 (ASM). Chapter 5 presents detailed descriptions of the history of the two groups. Southwest of the Mercury and Constellation Groups, Samuel Hughes and his partners, Louis H. Larsen and F.E. Jeter, staked a group of claims during late 1916 and early 1917. This group became known as the Rico Group; portions of claims defining this group are located within the study area and are represented by features and components of Site AZ T:8:53 (ASM). A detailed history of the Rico Group is presented in the "Historical Background" section of Chapter 4, and the approximate locations of Rico Group claims are indicated on Figure 1. Copper was found at a location approximately 525 ft east of Hughes' mercury discovery in early 1917, and two claims, the Pesky-Drummond and the McDaniels (which adjoined the east side of the Rico Group) were staked. Due to its small size, the copper deposit did not receive much attention. Other groups of claims staked during 1916-1917 are the Boulder Group, comprising nine claims staked by an unknown person on the southwest side of Squaw Peak, and the Jones-Husted Group, representing six claims staked by B. Jones and E. Husted on the east side of Cave Creek Road. Other mining claims may have been staked within the range; however, the five mentioned are the best documented. Mining interests were devoted primarily to the Rico, Mercury, and Constellation Groups and, of these, the Rico Group was the most actively mined. In addition to the mercury and copper claims, several limestone and slate quarries were developed in the range; however, specific details about these quarries were not defined during this study.

The occurrence of mercury in the Phoenix Mountains represents a late addition to the known sources of mercury within Arizona. Few lodes of mercury are known in the state, and the first recorded discovery occurred in 1875 in the Dome Rock Mountains near Quartzsite, Arizona (Bailey 1969:228). Later discoveries occurred in the Copper Basin southwest of Prescott during the 1880s or 1890s, and in the Mazatzal Mountains northeast of Phoenix during 1911 (Lausen and Gardner 1927:8). Until sometime after 1927 the Dome Rock Mountains District yielded the largest share of mercury produced in Arizona; after 1927 the Mazatzal Mountain district became the primary mercury producer in the state (Bailey 1969:228; Lausen and Gardner 1927:8). Total mercury production from the Phoenix Mountains area amounted to less than a hundred flasks (a standard flask contains 76 pounds of mercury), representing comparatively limited production (Bailey 1969:228). Other discoveries of mercury occurred in the state, but production figures are not recorded for these deposits (Bailey 1969:229).

Following the initial discovery of mercury within the project area portion of the Phoenix Mountains, three additional groups of claims were developed, the Jones-Husted, Boulder, and Sealrock, although each of these is located outside the current Squaw Peak Extension study area. None of the three groups appear to have been extensively developed, and little is known about their operation history. The mercury lode that led to the establishment of the Seal Rock Group was discovered during March 1916 on the east slope of Squaw Peak. The Boulder Group, established on February 21, 1917 by L.L. Brunson and Gus Alsted, is poorly documented in the

available records and little is known about it. The Jones-Husted Group was staked on December 30, 1916, and Frank Schrader visited the group during March 1917. Schrader reported that the three lodes associated with the group had not yielded any mercury and that, at the time, the deepest development was opened to a depth of approximately 8 ft (Schrader 1918:107). Early reports describing the three groups did not indicate them to be of commercial importance.

The Rico Group, located within the immediate project area, represents the most actively worked group of mercury claims within the Phoenix Mountains. Mining occurred at these claims, and especially at the Rico, from 1916 through at least the mid-1930s. By the end of its documented history, 21 claims were associated with the Rico Group, and all were posted at various times by private individuals along a mercury lode bearing approximately north-northeast and located one mile to the northwest of Squaw Peak. Copper deposits occurred near the mercury lode and some of the Group claims relate to attempts to develop copper resources. The small size of the copper deposit insured that it received little attention, and mercury remained the primary mineral of interest within the group. Persons visiting the Rico Group wrote optimistically about the potential of the mercury lode, and suggested that the properties would yield profitable quantities of ore when properly developed (Schrader 1918, Anonymous 1925, Lausen and Gardner 1927). Considerable investment was made in the group, but whether owners or developers realized a profit on these investments is not known.

The discovery of mercury at the Mercury and Constellation Groups, also located within the immediate project area, occurred in 1916 and predated the discovery of mercury at the Rico Group by one or two months (Schrader 1918:97). Development of the Mercury and Constellation Groups began soon after claims were posted, and continued at least until 1924. After 1924, no known records are available which describe the groups. None of the claims associated with the documented history of the two groups were patented and the majority of the claims were not developed beyond the improvements necessary to file the claims. Exceptions do occur at the Mercury and Jupiter Claims where owners actively mined the mercury lode. Mercury represents the primary mineral of commercial interest at each claim, although copper is reported at the Mercury Claim (Schrader 1918:101). The copper deposits were not substantial and do not appear to have been developed to any degree.

Original claims of the Mercury and the Constellation Groups are represented by the Vampire, Constellation, Mercury, Almadan, Shay, and Fraction Claims staked between November 1916 and April 1917. The Constellation and Shay Claims constitute the Constellation Group to which other claims were added at a later date. After 1917 the number of claims comprising the two groups increased to 10 or 11, and the expanded group became known simply as the Mercury Group (Lausen and Gardner 1927:56).

From the available records the timing of mining activities in the area and at the claims cannot be confidently correlated with high and low mercury prices recorded for 1911 through 1940 (Bailey and Smith 1964:7). During 1916 the price of mercury peaked at a time when L.L. Brunson discovered mercury in the Phoenix Mountains. The concurrence of these events appears to suggest more than a coincidence, especially since Brunson's discovery followed his earlier reported knowledge of "fibrous rock stained green, reddish, and brown by copper and iron minerals" on the slopes of Squaw Peak by several years. In actuality, however, the discovery does not appear to have been related to the price of mercury, since Brunson is reported to have been "much surprised" upon learning that the ore contained a greater value of mercury than copper (Schrader 1918:97). In addition, Schrader states that "the presence of quicksilver had not been suspected in the Phoenix Mountains" (ibid.) prior to Brunson's discovery. While the initial discovery does not appear to be related to the price of mercury, subsequent explorations conducted during 1916 and 1917 may represent activities motivated by the initial discovery and higher prices. Mercury prices began dropping after 1916, and reached a low in 1921 before peaking again in 1930. During 1932 prices fell to a new low before peaking once again in 1940 (Bailey and Smith 1964:7). After 1940 no documentation for the groups is available for review, preventing any attempts to correlate mining activities in the area with variations in mercury prices.

After 1916 the greatest activity at the Rico Group occurred between 1928 and 1933, a time of rising, and then falling ore prices. Investment in the Group during 1928 through 1930 probably reflects the increasing price of mercury and the operators' attempts to increase production and profit from the 1930 peak in mercury prices. During early 1931, a year or less after the price high, Texas interests acquired control of the property, and this acquisition may represent an attempt on their part to profit from the high price paid for mercury. By the mid-1930s less interest is shown in the Rico Group, probably as a result of the cave-in of the Rico shaft in 1933, coupled with the low price being paid for mercury. The price of mercury increased during the late 1930s, peaking in 1940, and these price increases may have encouraged an attempt to re-open the mine (Girand 1940:1).

At the Mercury and Constellation Groups no easily explainable correlation exists between the level of mining activity and mercury prices. In part this is due to the poorly documented history of the groups. The only good description of the groups is for the year 1924 (Lausen and Gardner 1927), at a time when a number of recent subsurface and surface improvements had been made upon the claims, probably during 1923 or 1924. At the time, mercury prices were rising after a low reached in 1921, but whether the increases represented a sufficient rise over the price low to warrant the developments is unknown. An event unrelated to the price of mercury that may have encouraged development during 1923 and 1924 was the successful testing results achieved by the Emmet Mercury Boiler (presumably a boiler for the production of electrical

energy). Testing of the boiler "demonstrated that the substitution of mercury for water resulted in a saving of nearly 50 percent in fuel" (Lausen and Gardner 1927:3). News of the potential demand for mercury forecast by the boiler's test results may have encouraged development of mercury claims even though prices may not have fully recovered from the 1921 low. At the time, the United States Bureau of Mines realized that adoption of the new boiler might create a sudden demand for mercury, boosting the price paid for the mineral (ibid.).

### Post-1940 Development of the Area

Mineral patents continued to be issued during the 1950s for properties in the Phoenix Mountains. By the 1940s, however, mining interest in the area appears to have been drawing to a close. Homesteading continued within the area into the mid-1930s. The last homestead entry was filed in June, 1936, and involved 26.18 acres within Lots 2 and 3 of Section 29 of T3N, R3E. The last desert lands entry recorded for the area occurred on October 20, 1941. This claim was patented and represents 80.00 acres in the SW1/4, SW1/4 of Section 23, T3N, R4E (approximately 2 miles northwest of the present project area). During the 1940s and 1950s those townships or portions of townships not already under municipal control, such as T3N, R3E, began to be sold-off in 5.00 acre tracts. The disposal of the small tracts probably represents the beginning of residential and commercial development of the area by builders. This development continues today in the area around the Phoenix Mountains.

During the late 1960s, alarmed over the rapid growth in the area and construction occurring in the Phoenix Mountains, a group of Valley residents organized to lobby for the establishment of a park which would preserve parts of the Phoenix Mountains from development. Formal efforts to establish the park began in 1970 when the group lobbied the Phoenix City Council to establish the Phoenix Mountains Preserve. Efforts to create the park continued into the 1970s under much controversy. In 1973, the Preserve was dedicated and currently consists of over 7,900 acres extending from the east slope of Squaw Peak to the north slope of North Mountain. Today the preserve is enjoyed by Phoenix and area residents as a recreational resource. The Squaw Peak extension proposed by ADOT will pass through the preserve at the locations of the former Rico, Constellation, and Mercury Groups of mining claims.

### Conclusions

The settlement and economic growth associated with the Phoenix Mountains and surrounding area is the result of commercial and residential development of the area. Most of the early settlement or attempts at settlement involved homesteading and desert lands

entries, many of which failed. Many of these probably failed due to a scarcity of water which prevented individuals from making the necessary legal improvements required in order to patent the property. For unknown reasons, public lands acquired by individuals under homestead and desert land programs after ca. 1910 enjoyed a greater patent success rate than those entries filed earlier. Unlike homesteading and agriculture, mineral exploration and mining began late in the history of the area and involved only a small number of people, although considerable investment was expended on several claims located near Squaw Peak. In spite of the commercial interest shown in the mining claims the mining industry appears to have played a minor role in the economic and social development of the area. This is probably due to the limited nature of the mineral lodes discovered. After 1940 growth of the area reflected residential and small business development which has continued until present. The Arizona Department of Transportation's proposed plan to construct the Squaw Peak Extension to facilitate the flow of traffic between Phoenix and Paradise Valley is another measure of recent growth within the area.

## CHAPTER 4. SITE AZ T:8:53 (ASM)

### Site Setting

AZ T:8:53 (ASM) is a multi-component complex of structural features, surface artifact scatters, and mine excavation and related features which define the remains of an historic mercury mining and ore processing facility in operation intermittently between 1916 and the mid-1930s. Associated components include mine excavation features such as shafts, cuts, prospects and tunnels, the remains of a mercury ore processing plant, the probable sites of two associated buildings, surface artifact scatter loci, and segments of abandoned roads. This site, which was associated with operations on the Rico Group of mineral claims (described below) is located along and on both sides of a west-trending dry wash (variously named in historical documents as Rico Wash, Ricowash, or Mercury Wash), and extends northeast-southwest in a portion of a pass through the Phoenix Mountains a distance of ca 5600 ft, primarily within the east half of Section 34 of T3N, R3E (Figures 1 and 2). The site varies in width from 300 ft to 1200 ft; additional site features may also be present outside the surveyed project area boundaries. The majority of site features are centered near the north end of the Rico Claim at the location of the Rico Mine and adjacent ore processing facility. The majority of features away from this central location consist of mine excavation features such as prospects and artifact scatter loci.

At the time of archaeological fieldwork the site was crossed by several existing hard surface roads, including segments of northbound and southbound Northern Avenue, and 19th. Street. All of the site is located within the Phoenix Mountain Preserve, a park administered by the City of Phoenix. While the south end of the site is readily defined by an absence of associated cultural features, the northern site boundary is not as well defined, being represented by a spatial gap in the locations of historic mine-related features. While this "gap" has been interpreted as a division between Site AZ T:8:53 (ASM) and Site AZ T:8:54 (ASM) on the north, it is possible that features adjacent to the gap could have been associated with either site.

### Historical Background - The Rico Group

By: Michael M. Gregory

### Introduction

The majority of archaeological features and deposits recorded



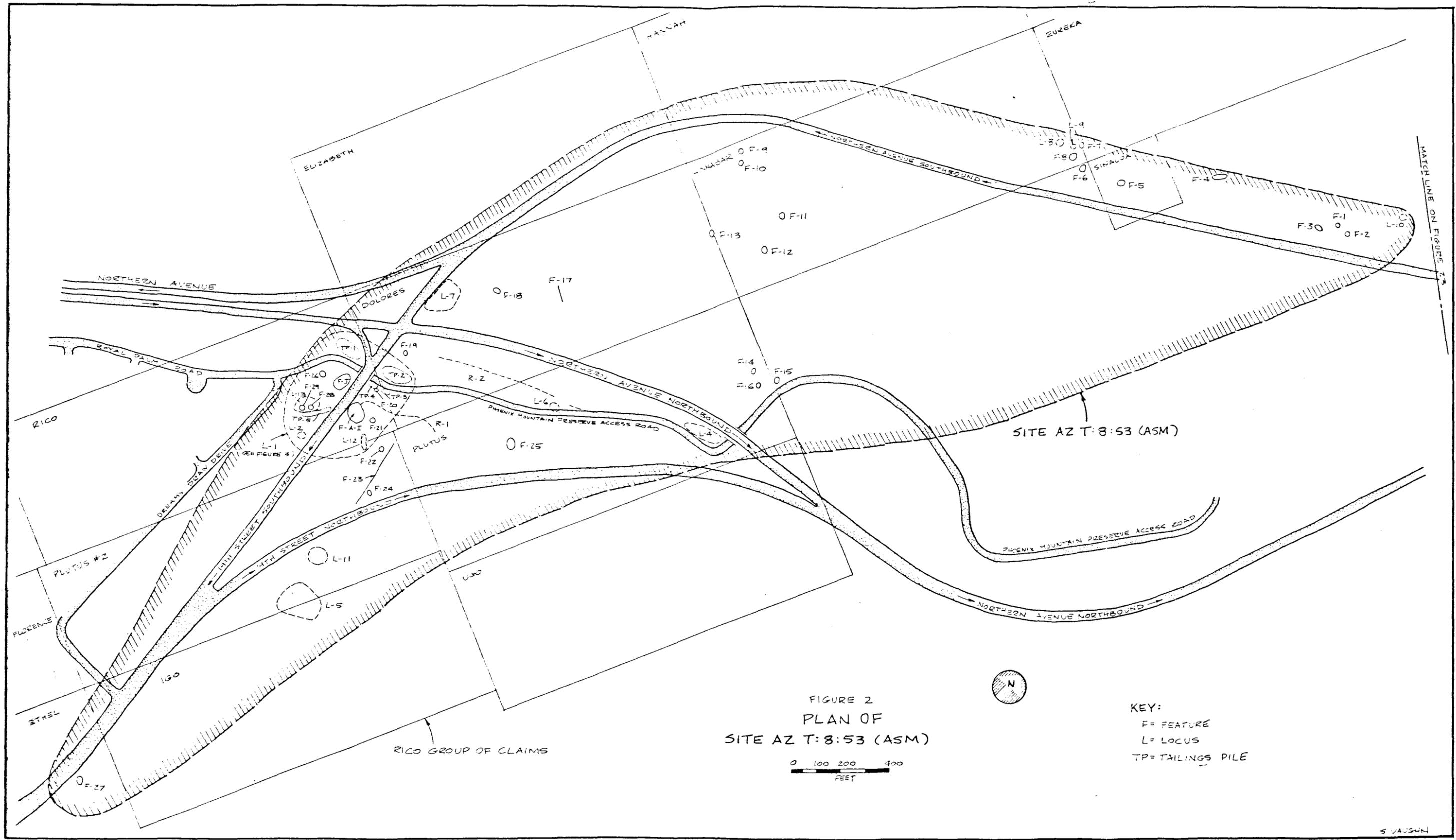


FIGURE 2  
 PLAN OF  
 SITE AZ T:8:53 (ASM)

0 100 200 400  
 FEET

KEY:  
 F= FEATURE  
 L= LOCUS  
 TP= TAILINGS PILE

at Site AZ T:8:53 (ASM) relate to mercury mining ventures pursued between 1916 and the mid-1930s at 14 claims of the Rico Group which are located at least in part within the site boundaries. Twenty-one claims comprised the Rico Group, and most were posted by private individuals along an 80 ft wide by 6000 ft long mercury lode oriented north-northeast and located approximately one mile northwest of Squaw Peak. Some of the claims relate to copper deposits discovered near the mercury lode. Due to the small quantity of copper present, these claims did not receive much attention, and mercury remained the primary mineral of interest. Persons visiting the Rico Group during the teens and 1920s wrote optimistically about the potential of the mercury lode, and suggested that the properties would yield profitable quantities of ore when properly developed (Anonymous 1925; Lausen and Gardner 1927; Schrader 1918). Considerable investment was made in the locations, especially the Rico and Dolores Claims, but whether owners or developers ever realized a profit is unknown. As one interested individual observed, "there are no systematic records of any description covering this work [development of the claims]. There has been some production but no record of this is available" (Anonymous 1934:3). Based upon the few historical records that are available, the history of the Rico Group may be described in terms of three time periods as follows: (1) 1916-1927, discovery and early development of the lode, (2) 1928-1933, modernization of operations by commercial interests, and (3) post-1933, re-establishment of mining activity after the 1933 cave-in. Little is known about the latter period, especially after the mid 1930s.

The Rico and Dolores claims represent the original members of the Rico Group, and, during the following 17 years, the group increased to 21 claims, 15 of which were patented. Most of the claims ranged in length from 1376.51-to-1500 ft and had a width of 524-to-600 ft (United States Mineral Survey (USMS) 4047 [surveyed in 1927] and 4111 [surveyed in 1929]). Exceptions were the Sinaloa Claim which measured 220 by 350 ft in size, and the 600 ft by 3000 ft Pesky-Drummond, and McDaniels copper claims. Together, the 21 claims formed a contiguous block of land measuring approximately 7500 ft long by 2400 ft wide, and oriented north 26 degrees east along the strike of the mercury lode. Modifications to the claims began as early as January 1917 when the Pesky-Drummond and the McDaniels claims began to be subdivided, eventually yielding three new claims, the Plutus, Plutus No. 2, and the Sinaloa, and parts of several other locations including the Red Top, Red, and Key Claims. Other claim modifications occurred during the 1920s. Twenty feet were added to the northern end of the Rico claim in 1924 as the result of a settlement reached between Samuel Hughes and his partners when they dissolved their partnership (Lausen and Gardner 1927:51). Sometime after this, Hughes failed to prevent portions of the Edna, Florence and Rico claims from being incorporated into a homestead patent, thereby losing an unspecified portion of each claim (Lausen and Gardner 1927:51,53). Additional modifications to boundaries cannot be found in the available records; after 1940 no records detailing any aspect of the claims are known to exist.

## The Period 1916 to 1927

Samuel Hughes discovered mercury along Rico Wash, also referred to as Mercury Wash (Schrader 1918:102), on December 18, 1916, and with his partners Louis H. Larsen and F.E. Jeter, staked the discovery with the Rico and the Dolores Claims (Schrader 1918:99). Soon after this discovery, copper deposits were found 525 ft east of the mercury lode. The most substantial copper deposits were staked by unidentified parties with the Pesky-Drummond and the McDaniels Claims which adjoined the southeast side of the Rico Group. Improvements made upon the mineral claims between 1916 and 1928 were accomplished manually and are recorded by Frank Schrader (1918), Arthur Flagg (Anonymous 1925), and Carl Lausen and E.D. Gardner (1927) who visited the claims between the Winter 1916-1917 and April 1924.

Schrader (1918) visited the Rico Group during the Winter 1916-1917 and reported both his observations, as well as information forwarded to him several months after his visit. At the time of the visit the group comprised eight claims; the Rico, Mary Ann, Elizabeth, Hannah, Eureka No. 1, Dolores, Cinnabar, and Eureka (Schrader 1918:98), upon which some development work was being conducted. Only those improvements made at the Rico Claim are reported, and describe how the deposit "had been opened to a depth of 9 feet by three shafts situated in alignment on the lode within a distance of 42 feet" (Schrader 1918:103). The middle shaft, known as the Discovery shaft, exposed the deposit extending across the opening and "was reported to average approximately 5 per cent in quicksilver" (ibid.). Hughes and his partners erected a "crude" five retort plant at the site and produced 10 pounds of commercial mercury at the end of a three day trial run of the plant. During April, following the visit by Schrader, the Discovery shaft reached a depth of 22 ft, and two flasks of mercury (76 pounds each) were produced from the workings (ibid.). By the end of August 1917, the shaft had been excavated to a depth of 60 ft, and at this level a crosscut was excavated which exposed good quality retort ore (Schrader 1918:103-104).

Schrader's report is illustrated with a map of the Rico Group which shows a symbol indicating a mine shaft or mine excavation feature on the Rico, presumably the Rico Mine Shaft. The location of the Pesky-Drummond and McDaniels claims (subsequently the Plutus and Plutus No. 2 Claims) which adjoin the east side of the Rico Group are also shown on the Schrader map with a symbol indicating the presence of prospects on each claim. The Plutus and Plutus No. 2 claims were staked by S. W. Pescat, Z.T Drummond and W.E. Drummond on January 18, 1917 and filed May 14, 1918 (Vaughn 1918). These claims are created from the two copper claims --the Plutus from the southwest half of the McDaniels claim, and the Plutus No. 2 from the northeast half of the Pesky-Drummond claim-- at approximately the time Schrader visited the group; however, he does not mention any details about the division.

Additional claims were added to the group during late 1918,

when Hughes, acting alone, staked the Ethel, Ugo, Igo, and Florence Claims, adjoining the Pesky-Drummond Claim on its south and east sides. Hughes filed for the Florence and Ethel Claims on November 2, 1918 (Vaughn 1918), and the Igo and Ugo claims on February 28, 1919 (Moore 1919). Whether Hughes made any improvements to these claims during 1918 and 1919 is not known. The creation of four new locations brought the number of Rico Group claims to 14 during early 1919. From 1919 until early 1924, little is known about the development of the group because no records exist for these years. Another eyewitness account of the property is not reported until 1925 (Anonymous); this account describes a visit to the Rico Group in early 1924 by Arthur L. Flagg.

By early 1924, the Rico, or Hughes property, as it was then known, was being developed under the direction of Walter E. Jones who held an option on the property (Anonymous 1925:14). The option probably represents an agreement Jones made with Hughes, although no legal record can be found to support this interpretation. Later, during December 1924, the interests of Jones, Hughes, and P. Crymble are incorporated into the Quicksilver Queen Mining Company (Quicksilver Queen Mining Company 1924). The purpose of the company and the locations it developed are not described; however, the assumption is that the incorporators established the company to sell stock and develop the claims held by Hughes. Flagg is reported to have visited the claims during early 1924, producing a report describing what he learned (Anonymous 1925:14). Whether Flagg had prior interests in the property or with the owners/developers before his visit is unknown.

At the time of Flagg's visit (1924) the Rico Shaft extended to a depth of 100 ft, and at that level a 60 ft long drift had been excavated toward the southeast until the vein being followed pinched out. Two crosscuts were run from the drift in the hopes of intersecting the mercury lode; one of the crosscuts extended eastward and the other is not described. The depth of the shaft and the presence of the drift indicates that additional work had been conducted at the site after the publication of Schrader's 1918 report. The development work at the shaft yielded approximately 125 tons of broken ore located both in the mine and piled in dumps on the property. Unlike Schrader, Flagg assesses the development of the other claims, although in general terms only, stating that "on the other claims are shallow holes, contributing little as to the nature of the deposit, but demonstrating the certain existence of mercury ore over quite a distance. On the whole, the group is but slightly prospected; far less than conditions warrant" (Anonymous 1925:14).

As a result of his 1924 visit, Flagg concluded that the quality and quantity of the Rico lode ore increases with depth, and that the deposit probably has outstanding horizontal extent. Based on these conclusions and quicksilver figures for 1923 published by the U.S. Geological Survey (as cited by Flagg), Flagg optimistically suggests that the ore from the lode carries more metal than does ore from mines furnishing the greater part of the

world's output (Anonymous 1925:38). The reported tonnage of the Rico property was 3,125 tons of ore running 1.36 percent mercury, which "makes it possible with but little work and equipment to start production" (ibid.). The percentage mercury content per ton of ore from mines in California in 1923 is listed as 0.52 percent; Texas, Nevada, Oregon and Idaho figures are given as 0.82 percent.

During April 1924, shortly after Flagg's visit, Carl Lausen and E.D. Gardner (1927) visited and described the claims, which at the time were divided into the Rico and the Eureka Groups. By April 1924, the Hughes, Larsen, and Jetter partnership had dissolved, and the claims divided into the two groups. The Rico Group comprised nine claims --the Edna, Florence, Ethel, Igo, Rico, Mary Ann, Ugo, Afterthought, and Red Top-- which remained in the possession of Hughes who lived on the property. The Eureka Group held by Louis Larsen and F.E. Jeter comprised the Elizabeth, Dolores, Hannah, Cinnabar, Eureka No. 1, Eureka, and Red claims. The Lausen and Gardner report describes each group individually.

The Rico shaft had been driven 12 ft deeper to 112 ft by the time of Lausen and Gardner's visit (April 1924). At this depth a crosscut excavated toward the west for 100 ft ran from a 59 ft long drift extending toward the south. Since it is unlikely that a new drift and crosscut of this size were developed between early 1924 (Flagg's visit) and April 1924 (Lausen and Gardner's visit), it is probable that these features represent the eastward crosscut and southeast drift reported earlier by Flagg. The rock into which the developments had been excavated is described as "easy to drill and relatively easy to blast; nevertheless, it is firm enough to stand without supports" (Lausen and Gardner 1927:54). As the result of conflicting statements made by Lausen and Gardner in their report, the reader cannot determine whether all the workings were timbered at the time of the visit. Development work performed at other claims of the Rico Group comprises "the regulation discovery shafts" (ibid.) required by law in order to file for the claims.

The ore within and piled about the Rico shaft is described in optimistic terms (Lausen and Gardner 1927:54-55). Based on the ore exposed in the shaft and drift, the authors conservatively estimate that 160 tons of potential ore exists in the ground and will contain 4,100 pounds of mercury. Added to this is ore bearing rock removed during the development work which was stockpiled on the property. Hughes estimated the stockpile at 40 tons of assayed rock showing 0.72 percent mercury. At \$75 per flask, the piled ore was worth \$14.40 per ton; rich enough to make a profit after processing it through a standard furnace or retort. In addition, approximately 1,000 pounds of high grade ore had been saved and sacked for processing. Some ore from the workings was processed through the retort and two flasks of quicksilver produced. The flasks were probably produced from the 5-pipe Johnson-McKay retort erected on the grounds. The authors describe the retort as crudely constructed and "not very efficient" (Lausen and Gardner 1927:53). Assessing the potential of the Rico Group, Lausen and Gardner believe that deeper and wider development may yield several

thousand tons of ore and that the ground conditions encourage "further development in the hope of opening up sufficient tonnage to justify installation of, say a 5-ton retort or 10 ton furnace" (Lausen and Gardner 1927:55).

On the claims representing the Eureka Group (formerly part of the Rico Group) cinnabar was found in small quantities along the lode continuing northeast from the Rico Group (Lausen and Gardner 1927:55). At 150 ft north of the Hughes shaft (also known as the Rico shaft), a 50 ft shaft with 60 ft of crosscuts and 90 ft of drifts was sunk into the Dolores Claim. These features exposed very little mercury bearing ore (Lausen and Gardner 1927:55-56). Approximately 1,000 ft north of the shaft a surface cut made across the lode exposed only a few isolated crystals of cinnabar. On the Eureka Claim, a 30 ft crosscut tunnel excavated into a schist deposit yielded no ore. Similarly a 185 ft tunnel opened on the Eureka No. 1 failed to produce ore of any value. Despite these poor showings, Lausen and Gardner encouraged continued development of the group (Lausen and Gardner 1927:56).

During October 1925, the Arizona Quicksilver Corporation obtained an option on the Rico Group claims (Lausen and Gardner 1927:51). How much work they conducted upon the claims and whether they eventually owned the property cannot be determined from the records reviewed. The company was organized during 1921 in Toledo, Ohio, and had an interest in mercury deposits located in the Sunflower Mining District, Arizona (Anonymous 1921). From 1925 through 1929, the company listed property it "owned" in the Phoenix Mountains in its annual reports; however, this conflicts with legal records indicating other individuals owned the property at the time. Little more is known about the company and its interest in the claims.

Sometime between 1924 and 1927 Henry T. Bailey acquired eight claims of the Rico Group either from Hughes, the Arizona Quicksilver Corporation, or another party. During the summer of 1927 Bailey arranged for the survey of the Edna, Ethel, Florence, Igo, Plutus, Plutus #2, Rico and Ugo Claims. At the time, forty-three improvements, representing 22 shafts, 15 cuts, 3 drifts, 2 cross cuts and one house, are recorded on the claims. These improvements are valued at approximately \$10,000 (Jones 1927). On March 29, 1929, Bailey patented the claims (Patent No. 1025379, Serial No. 063270). Two years later, L.H. Larsen, with his partner Henry T. Bailey, surveyed the Elizabeth, Dolores, Hannah, Cinnabar, Eureka, Eureka No. 1, and Sinaloa claims. Improvements listed for these locations are 13 shafts, 21 cuts, 9 trenches, 5 tunnels, 3 cross cuts, 2 drifts, 1 winze, and one house, collectively valued at approximately \$12,425.50 (Jones 1929). This property was patented on February 18, 1932 (Patent No 1053387, Serial No. 067642). Together the 15 claims held collectively or individually by Bailey and Larsen totaled 286.021 acres.

## The Period 1928 to 1933

Between 1928 and 1930 the Quicksilver Corporation of America invested a substantial amount of capital and labor on 300 acres it leased and worked in the Phoenix Mountains (Hartman 1930:38). The company was incorporated on July 31, 1928, and authorized for sale capital stock amounting to \$500,000 to be divided into \$1.00 shares (Mining Journal (MJ): 9/15/1928, p. 24). Prior to or soon after incorporation the company probably leased all 15 claims held separately and jointly by Bailey and Larsen, and made the Rico shaft the primary site of its mining activity. The company made both surface and subsurface improvements to the property, and mechanized a number of operations at the mercury claims.

Much of the company's energy was devoted to developing the Rico shaft (ibid.). The shaft was retimbered, and by the summer of 1928 the company employed 10 miners and was extracting 20 tons of ore a day from the shaft (MJ:8/30/1928, p. 20). Plans were being made during this period to develop a two compartment shaft (probably the Rico Shaft) to exploit the juncture of three veins which were thought to come together at a depth of 250 ft (ibid.). In order to process the available ore, a 30 ton Hartman continuous quicksilver furnace was being erected on the property near the shaft (MJ: 8/30/1928, p. 22). During November 1928 the furnace is described as a 40, rather than a 30, ton retort that "is practically ready for operation" and in the near future plans were proposed to upgrade it to a 200 ton retort. At the same time the company was installing its own power and electric generating unit, and the shaft had been excavated to a depth of 150 ft. In addition the president of the company, E.W. Hartman, moved his headquarters to the mine property (MJ:11/30/1928, p. 26).

Perhaps encouraged by the company's progress and showings, the United Verde Extension Mining Company of Jerome, Arizona took an option on the majority of the Quicksilver Corporation of America's stock during late 1928. At the time mercury production had not yet started, but it was planned for the "near future" (MJ: 12/15/1928, p. 23). Reports of the mining operations during January 1929 were very encouraging. At the bottom of the 150 ft shaft ore of unknown mass was exposed and reported which assayed at 74 pounds of mercury per ton. Similarly, ore assaying at 96 pounds of mercury per ton was being worked at the 70 ft level. Plans were to develop the shaft to the 300 ft level, and the shaft was being enlarged to a 7 by 14 ft opening in preparation for increased production. On the surface, two additional No. 4 Hartman type retorts were to be erected bringing the plant's processing capacity to 110 tons daily. At the time, the company employed 14 men and had expended \$60,000 to develop the property (MJ:11/15/1929, p. 21).

By June 1930, the Rico Shaft had been extended to a length of 300 ft which reached a vertical depth of 238 ft. Crosscuts and drifts extended out in several directions from four levels along the length of the shaft (Hartman 1930:38). At the 70 ft level a station cut, probably representing the crosscut first described by

Schrader, occurred. Two drifts, one running north for 100 ft and one south for 80 ft, and a 125 ft long crosscut are described at the 100 ft level. The 80 ft long drift may represent the 60 ft long drift described by previous visitors that had been extended an additional 20 ft. The 100 ft long drift probably represents work conducted after Lausen and Gardner's 1924 visit. On the 200 ft level two drifts, one running 40 ft north and the other running 30 ft south, and a 5 ft long eastward trending crosscut had been excavated. At the 245 ft level, two drifts, one extending 70 ft north and the other 80 ft west, had been developed. Extending from the 80 ft drift was a crosscut running 35 ft west. Blocked out ore at the mine amounted to an estimated 105,240 tons carrying 0.75 percent mercury (15 pounds per ton), or 1,578,000 pounds of mercury (20,140 flasks). This amount of ore is reported as sufficient to keep the reducing plant running for several years (ibid.).

While the company planned to bring the capacity of the furnace up to 110 tons of ore a day, by 1930 the plant was capable of processing only 40-to-50 tons of ore daily (Hartman 1930:38-39). Ore brought to the plant arrived via a tramway to a 1.0 inch grizzly (sieve mechanism) which sorted the material into a 6 by 14 ft Wheeling jaw crusher powered by a 20 h.p. high torque U.S. motor. The crushed material then passed through a vertical 35 foot elevator and was deposited into a 40 ton bin. From the bin, a feeder system carried the material into a rotary kiln measuring 3 ft by 30 ft and lined with fire brick. Depending on the grade of the ore, the trip through the kiln took between 11 and 18 minutes. At the end of the kiln the calcined material, at a temperature of approximately 950 degrees Fahrenheit dropped into a 20 ft cubic cooling chute and then into cars which took the waste to a dump area, while the "volatilized mercury with the products of combustion" passed into a small dust collector, through a Sorrocco blower, and then into a six-unit Hartman cast iron condenser. The condenser concentrated much of the mercury which then ran into water seals which extracted most of the mercury; however, the finely divided mercury particles held in suspension by the residual gases then passed into a baffled redwood tank for additional cooling using water. From the redwood tank the gases went into a second tank that removed "almost the last traces of any mercury particles carried by the smoke". The processed gases then exited through a stack and no more than one or two ounces of mercury a day were thought to have been lost through the stack (Hartman 1930:38-39).

The plant was controlled from a central switchboard and a system of lights allowed the plant to be operated through the night. The work crew consisted of an operator and a "crusher man" during the night, and an extra cleanup man during the day. The plant is reported to have operated satisfactorily (Hartman 1930:39).

A 10,000 volt Central Arizona Light and Power Company line supplied power to the plant and the machinery associated with the mine (Hartman 1930:38). Mine-related machinery consisted of a 175

cubic ft Chicago Pneumatic compressor belted to a 25 h.p., 440 volt U.S. motor; a one h.p. single drum electric hoist; a 5 h.p. Sturtevant 3,400 r.p.m fan, supplemented with a 110 volt "Vento" fan; and one Cochise stoper (vertical drill) and two Cochise-mounted No. 40 drills (ibid.). Lighting and ventilation reached all parts of the Rico shaft and improved working conditions. The single drum electric hoist replaced Hughes' hand winch, and a 15 cubic ft skip (ore container) running on skids in the inclined shaft took materials into and out of the mine. A skip pocket was constructed on the 100 and 245 ft levels. Track and ore cars were also installed at these levels.

In addition to the plant other improvements were made on the ground surface (Hartman 1930:38). These consisted of a 12 by 16 ft cleaning room with water heater and stove for the employees, a tool room, a timber framing yard, and a small blacksmith shop. A 10 ton bin was built into the headframe over the shaft, and a 14 cubic ft mine car with tramping facilities to both the dump and the reduction plant was laid out.

As suggested by the substantial development of the group, the mine operators were optimistic about their venture. Their only concern was not having two openings into the mine that would permit operation of the mine on a continuous basis; taking supplies in through one opening and removing materials through the other (Hartman 1930:39). Plans were being made to sink a 500 or 1,000 ft vertical shaft which would crosscut the entire formation. Completion of this work would have exposed fine veins of copper and gold, in addition to the cinnabar. Similarly, the company planned to modernize and up-grade the processing plant to handle 500 tons of ore daily. Expansion of the operations would have permitted the company to process several thousand tons of waste ore present on the property. From the documents reviewed, one cannot determine if any of the proposed plans were implemented.

During early 1931 the property the Quicksilver Corporation of America held in the Phoenix Mountains was taken control of by the McCabe-Doty interests of Houston, Texas. E.W. Hartman, formerly the president and general manager of the company, had resigned his positions and "left for coast cities" (MJ:3/15/31, p. 22). The circumstances surrounding his resignation and the land transaction are not known. J.P. McCabe of Houston assumed management of the properties and was expected to personally direct the operations. The Houston interests planned to actively develop the properties and may have done so until late 1933 when a cave-in seriously damaged the shaft and drifts at the 100 ft level (Anonymous 1935:1). Shortly after the cave-in some work was done in an effort "to catch up the ground and reopen the shaft" (ibid.). This effort was abandoned when the operators realized that the resources and materials at hand were insufficient to complete the task.

Prior to the cave-in the Rico shaft extended to a vertical depth of 245 feet. At the 100 ft level approximately 345 ft of drifting and 80 ft of crosscutting had been completed (Anonymous

1935:1). These measurements suggest that between 1930 and 1933 the shaft may have been extended vertically by an additional 7 ft, but that most of the work took place on the horizontal workings. In 1933, the total footage of crosscuts and drifting was 425 ft, an increase of 140 ft from that reported for 1930. Whether the measurements are an accurate reflection of the actual footage excavated is debatable. The 1930 figures represent 180 ft of drifts and 125 ft of crosscuts (Hartman 1930:38); these measurements conflict with the data presented above for 1933. It is possible that the authors classified workings differently or made errors in their reporting. Little is known about improvements made upon other claims of the group prior to the cave-in. The Larsen (or Dolores) shaft located approximately 250 ft (in contrast to the 150 ft reported by Lausen and Gardner) north of the Rico shaft may have been excavated to a depth of 80 ft by 1933 (Anonymous 1935:3), but it is uncertain if the Quicksilver Mining Corporation of America extended the depth or if this was accomplished by others between 1924 and 1928. After the cave-in work continued at the Rico Group, although at locations away from the abandoned Rico shaft.

### The Period Post-1933

Following the cave-in "a considerable amount of shallow prospecting" was conducted outside the Rico Mine area (Anonymous 1935:1). At the time the Larsen (or Dolores) Shaft was excavated 25 ft deeper to a depth of 105 ft, and at that point a short drift was excavated toward the north (Anonymous 1935:3). Activities continued on the claims until late 1935, after which the only people at the locations were a watchman occupying a small house near the works, and the manager in charge of the operations who occupied several rooms of a larger house (Anonymous 1935:1). During late 1935 the claims were reviewed, identifying only the Dolores, Rico, Cinnabar and Eureka Claims as likely mercury producers. In addition a plan was proposed to re-open the Larsen shaft, and to drift under the 100 level of the Rico shaft in order to reopen the Rico. Re-opening the Rico shaft was important because the shaft provided the most convenient access to the reduction plant (Anonymous 1935:2-3). Whether any work related to this plan took place has not been determined. During 1940 the idea of resuming operations was still being entertained as indicated by a Mine Owners Report filed for the Rico Mercury Mine on July 9 by its owner Dr. H.T. Bailey (Girand 1940:1).

At the time Bailey owned claims totaling 286.021 acres (ibid.), which probably represented the 15 claims that he patented either individually or collectively with L.H. Larsen during the 1920s and 1930s. His plan was to recondition both the Rico shaft and surface plant to begin immediate operations on the property (ibid). As a step toward accomplishing this he had the Rico Shaft cleaned out and retimbered to the 100 ft level. For the plant Bailey proposed to install "a concentrating plant to work in conjunction with the furnace plant" (Girand 1940:2). The plans

did not call for improvements to be made at the other claims. Other shafts within the Rico Group are described in the 1940 mine owners report, although usually in general terms. The Dolores Shaft is described as being 130 ft deep, and other shafts "range from forty or fifty feet to ten foot (sic) location holes" (Girand 1940:1). If the Dolores was 130 ft deep it must have been excavated an additional 25 ft deeper between 1935 and 1940. Whether Bailey was successful with his proposed plans remains unknown. The owners report is the most recent written description available for the property. Archaeological observations do not indicate that mining or ore processing operations occurred on Rico Group claims after the 1930s.

### Conclusions

Throughout its recorded history, the claims of the Rico Group, and especially the Rico Claim, were described in optimistic terms. The descriptions drew a substantial amount of investment to the claims; however, whether a profit was ever made from them is not known. The total production from the area including the claims is estimated to have been less than 100 flasks (Bailey 1969:228). If the Rico lode was as rich as described, it is difficult to understand why mining interests never exploited the mercury lode to its potential, thus realizing a profit, after having invested substantial amounts of time and money into its development. Additional documentary evidence, if available, may answer these questions as well as provide data relating to specific claims; very little is recorded for the Key, Afterthought, Golden Crown, Red, and Red Crown Claims. Portions of claims located within the Site AZ T:8:53 (ASM) boundaries include the Ethel, Igo, Plutus No. 2, Rico, Elizabeth, Dolores, Plutus, Hannah, Cinnabar, Eureka, Sinaloa, Key, Red, and Red Top.

### Study Procedures

As discussed in Chapter 2 the objectives of archaeological and historical investigations of Site AZ T:8:53 (ASM) were to record and report cultural resource data which support its National Register-eligible status. Site AZ T:8:53 (ASM) is considered to be National Register-eligible based on its content of important information pertaining to the history and technology of early mercury mining and ore processing in Arizona. Such data are present in both documentary sources and in the archaeological record, and include written, cartographic, and photographic information, as well as the physical remains of the site as represented by artifact deposits, structural remains and features, and mine excavation features.

## Documentary Research

Primary sources of information pertaining to the history of mining activities within the Phoenix Mountains included documents, records, photographs, and maps on file at the Arizona Department of Mines and Mineral Resources, and at the Land Records Office of the U.S. Bureau of Land Management. Source materials available through the Arizona Department of Mines and Mineral Resources included:

- 1920s editions of the Mining Journal
- annual reports of mining companies to the Arizona Corporation Commission
- owners mine reports filed for individual mines with the Arizona Department of Mineral Resources
- publications by Schrader (1918) and Lausen and Gardner (1927) which describe mining activities in the Phoenix Mountains
- a copy of a photograph entitled "Rico Mercury Mine. General View of Furnace Plant, Machine Shop and Rico Headframe in Distance"

U.S. Bureau of Land Management records included:

- documentation pertaining to the filing on and patenting of mining claims
- U.S. Government mineral survey notes for individual mining claims; these notes typically provide lists of improvements for claim location purposes
- mineral survey plat maps (Mineral Surveys 4047 and 4111 dated 1927 and 1929 respectively) indicating the locations of claims (and improvements) at and adjacent to the Rico Claim

## Archaeological Field Research

Fieldwork procedures involved site re-survey and mapping, the surface documentation of all identified cultural features, test excavations at specific structural features to obtain additional descriptive information regarding feature depth and sub-surface configuration, and the collection of surface artifacts.

In the April 1989 work plan (Stone 1989) it was noted that site features to be documented included two historic artifact scatters (Loci 5 and 7) apparently associated with the locations of mine-related house sites, a complex of concrete structural foundations and platforms (Locus 1) which defines a mercury ore processing plant on the Rico Claim, six areas of historic artifact scatter (Loci 2,4,6,8,9,10), segments of two roads (Road Features 1 and 2), and 30 mine excavation features (Features 2-14 and 17-29, and tailings piles 1-4). Upon re-survey of the site during data recovery investigations, three additional surface artifact scatters (Loci 11, 12, and 13), and four additional mine excavation

features (Features 1, 15, 16, and tailings pile 5) were identified and recorded.

All of the above-noted features and artifact deposits were located on a 1 inch - 100 foot scale area site map provided by ADOT (Figure 2), described in detail in written field notes, mapped by scaled drawing, and photographed in black-and-white. Locus 1, the mercury ore processing plant site, was mapped using a transit and measuring tapes (see Figures 3 and 5).

Formal archaeological test excavations, the majority of which (4 of 5) were located at Locus 1, included 2 ft square and 3 ft square units excavated to define the depth of artifact deposits and/or structural features. An additional ten, small rectangular units were excavated adjacent to Locus 1 structural features to define feature depth and sub-surface configuration. Formal test units were excavated in 0.3 ft levels, with the removed soil being screened through 1/4 inch hardware cloth. All test excavation units were documented in field notes and scaled drawings, and photographed.

The initially defined surface artifact documentation strategy involved the in-field description (at a survey level of documentation) of 50%, and the collection of 10%, of the surface artifacts at each artifact locus. Artifacts to be recorded in the field were to be selected on a systematic basis as representing all visible artifacts within every other 10 ft square of a grid system superimposed over the artifact scatter. The 10% sample to be collected was defined on a systematic random basis from among 10 ft square units, the artifacts from which had not been field-recorded. Functionally and chronologically diagnostic artifacts were also collected from each artifact scatter. It was anticipated that this approach would assure sample representativeness in defining the potential chronological, ethnic, functional, and frequency diversity of each artifact assemblage.

In initiating fieldwork activities involving the documentation and collection of site artifacts, it soon became apparent when dealing with low density artifact scatters that the proposed sample design was not always adequate in providing a body of data adequate for the purposes of interpretation within the context of research design objectives. Accordingly, surface collection procedures were modified in several instances in order to achieve a balance between level of fieldwork effort and ability to interpret individual artifact loci. This modification (at Loci 2, 5, 8, 12, and 13) typically involved increasing the size of the artifact sample to be collected from 10% to 50% (or 100%) at small or low density artifact scatter loci.

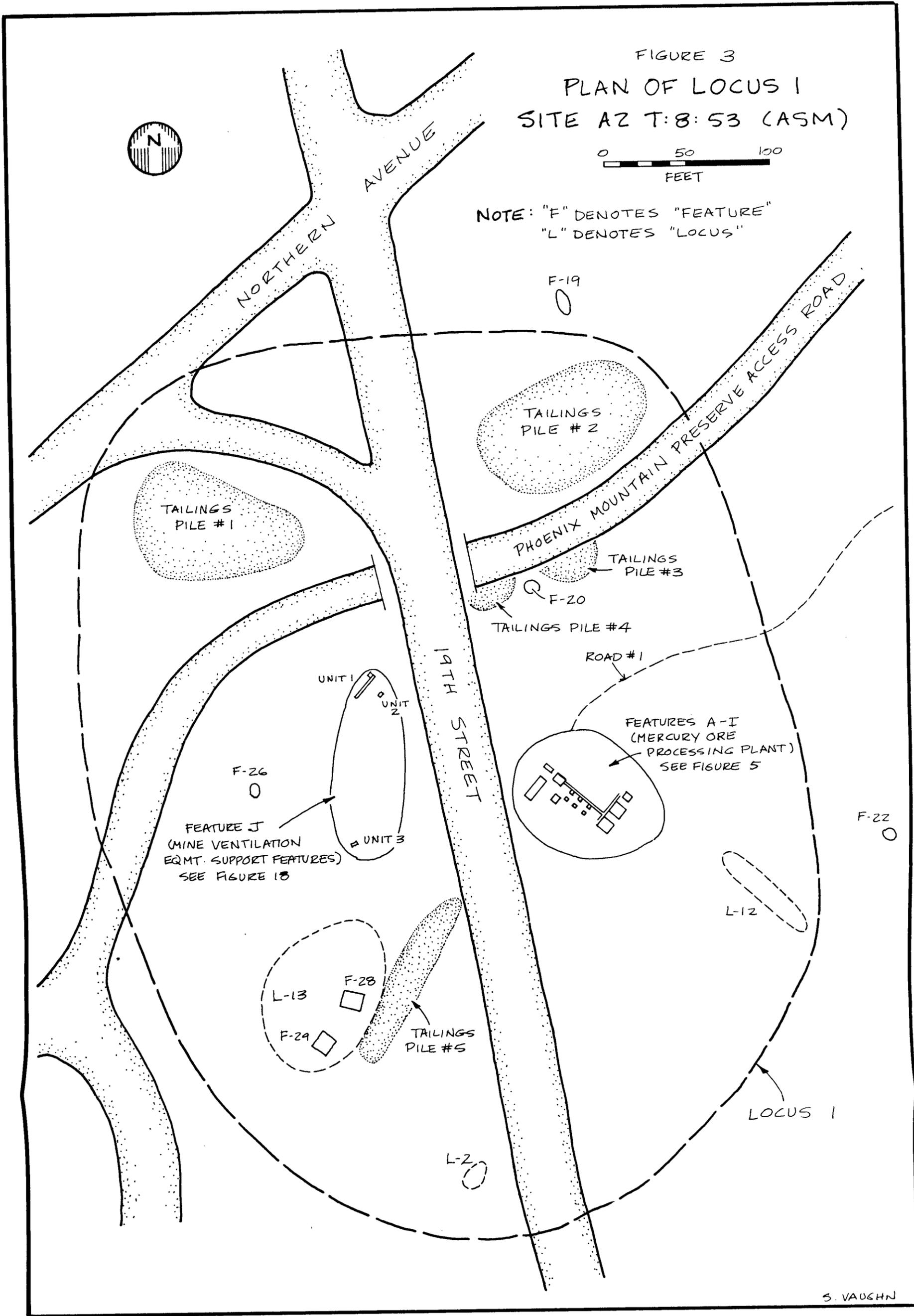
All collected artifacts and artifacts recovered from test excavation units at Site AZ T:8:53 (ASM) are described in Appendix A and summarized in the context of individual artifact loci descriptions in this chapter. Artifact documented in the field at a survey level of recordation are briefly described by frequency



FIGURE 3  
 PLAN OF LOCUS 1  
 SITE AZ T:8:53 (ASM)



NOTE: "F" DENOTES "FEATURE"  
 "L" DENOTES "LOCUS"



and type in the context of individual artifact loci descriptions in Chapter 4.

### Site Description - AZ T:8:53 (ASM)

Site AZ T:8:53 (ASM) is defined by a series of mining-related features and artifact deposits which represent surface and immediate sub-surface archeological evidence of mineral exploration, mining, and ore processing activities within the Rico Group of mining claims. Other features associated with the history of the Rico Group claims which are documented historically (e.g., mining shafts, tunnels, etc.) may be represented archaeologically but were in a condition and at a depth below ground surface which precluded their investigation during this study.

Features and artifact deposits associated with Site AZ T:8:53 (ASM) and which are described below include:

- a mercury ore processing facility with related cultural features (Cultural Resource Locus 1),
- two probable building or house sits with associated artifact scatters (Loci 5 and 7),
- thirty-four mine excavation features including five tailings piles (TP-1-5), and 29 additional features (Features 1-29), which represent mine shafts, tunnels, prospects, and trench cuts,
- two road segments (R-1 and R-2), and,
- nine surface artifact scatters (Loci 2, 4, 6, 8, 9, 10, 11, 12, and 13).

The mercury ore processing facility is located near the south-central portion of the site and is adjacent to several tailings piles, the probable house sites, a number of isolated surface artifact scatters, and one segment of abandoned road. The mine excavation features are represented by tailings piles located near the ore processing facility, and by tunnels, linear trench prospects and shafts which are located across the entire site. Similarly, the isolated surface artifact loci are located across the site, although these are typically in the general vicinity of mine excavation features. Figure 2 represents a plan map of Site AZ T:8:53 (ASM) indicating the locations of all recorded cultural features in relation to site and project area boundaries.

In comparing the descriptions and locations of all Site 53 features as defined archaeologically with the descriptions and locations of mining claim boundaries and improvements indicated on Mineral Survey plat maps and in surveyors notes (Table 1; Page 69 ), it is noted that it has been possible to suggest attribution of many of the Site AZ T:8:53 (ASM) features to individual Rico Group claims and recorded improvements as noted in these documentary sources. The degree of correlation is sufficiently high that it is possible to conclude that the majority of features

which are known to have been present historically are represented archaeologically. Feature descriptions are presented below in the order of their introductory listing above.

### Ore Processing Facility (Locus 1) and Related Features

#### Location.

This complex of site features is located primarily on the Rico Claim and within an approximately 400-to-450 ft diameter area centered on the south-bound lanes of 19th Street (Figures 2 and 3). The north-bound lanes of Northern Avenue defined the approximate north boundary of the feature complex and Dreamy Draw Street defines its west boundary. Nineteenth Street (south-bound) has bisected the ore processing plant, with elements of the plant located on the east and west sides of the road. The site area has been defined by those features which are either in obvious functional association with, or are in immediate proximity to the ore processing plant structures.

Cultural features in apparent association with the Ore Processing Facility component of Site AZ T:8:53 (ASM) as indicated on Figures 2 and 3 include:

#### Mine Excavation Features.

- Feature 29, a 7-to-10 ft (N-S) by 13-to-16 ft (E-W) by greater-than 2.3 ft deep depression which has been filled in with soil overburden and a large sheet of corrugated metal. A low (less than 1.0 ft), 10 ft long by 4.0 ft wide tailings pile located along the northwest side of the feature suggests that the feature is of relatively shallow depth. A 3.0 ft square test unit was excavated at this feature to determine content and depth. Excavations were discontinued at between 1.5 and 2.3 ft below ground surface (BGS) upon encountering sterile soil fill. Artifacts recovered during test excavations included 3 window glass fragments, 4 miscellaneous metal fragments, and 2 metal containers, one of which is a flat top beverage container that had been opened with a "church key" type can opener. The can could have contained either beer or a soft drink. The "church key" type opener was manufactured after 1935 (Rock 1987:29). Feature 29 appears to represent an abandoned and filled-in shaft prospect of shallow depth. This feature is located within the western portion of this site component and is adjacent (40 ft to the southwest) to a second mine excavation feature (#28). Locus 13, a surface artifact scatter located in the general vicinity of Features 28 and 29, is described below as a feature of the Ore Processing Facility under the category of Surface Artifact Scatters.

- Feature 28, a 9 ft long (NW by SE) by 6 ft wide (NE by SW) by greater-than 0.7 ft deep rectangular depression with an associated low (less than 1.0 ft), 12 ft long by 4 ft wide tailings pile. A 3 ft square test excavation unit was placed within the

feature to determine content and depth. This unit was excavated to 2.5 ft BGS and contained redeposited soil fill and lumps of caliche. Artifacts recovered in this test unit included a roofing nail, a 6 in long segment of 1/4 in wide metal strip, and a small marine shell (species unidentified). Feature 29 is probably an abandoned and partially filled-in shaft prospect of shallow depth judging from the quantity of tailings contained in the associated tailings pile. This feature is located within the western portion of the site component and is approximately 40 ft northeast of Feature 29. Locus 13, a surface artifact scatter located in the general vicinity of Features 28 and 29 is described below as a feature of the Ore Processing Facility under the category of Surface Artifact Scatter.

- Feature 26, is a filled-in rectangular prospect 5 ft (NW by SE) by 3 ft (NE by SW) in size. A low, 9 ft diameter tailings pile is located to the northeast of the feature, and a smaller tailings pile (5 ft diameter by 2 ft high) is located on the immediate southwest side of the feature. This prospect is located within the western portion of this site component ca 110 ft west of the south-bound lanes of 19th. Street.

- Feature 21 consists of a linear prospect cut approximately 15 ft long (NE by SW) by 6 ft wide (NW by SE) and 2-to-3 ft deep. A 14 ft long by 6 ft wide by 2 ft high tailings pile containing quartz fragments is located immediately southwest of the feature. A smaller tailings pile, 6 ft long by 3 ft wide by 1.1 ft high is located to the south of this feature. Feature 21 is located near the mercury ore processing plant within the eastern portion of this site component.

- Feature 20 consists of a partially filled-in prospect trench cut 15 ft long (NW by SE) by 4 ft wide (NE by SW) and 0.5 -to-1.5 ft deep. A low tailings pile 15 ft long (NW by SE) by 9 ft wide and 0.8 ft high is located to the immediate northeast of the feature, and a smaller tailings pile 6 ft long (E-W) by 3 ft wide and 1.1 ft high is located to the south of the feature. This feature is located in the southern portion of the site and northeast of the ore processing facility plant on the former Rico Claim.

- Tailings Pile 1 This tailings pile is located on the Rico Claim approximately 200 ft northwest of mercury ore processing plant and consists of a 125 ft long (NE by SW) by 85 ft wide by between 3 and 15 ft high pile of mine tailings (Figures 3 and 4). A bulldozer cut has impacted much of the northwest edge of the feature. The construction of 19th Street may also have undercut and removed a portion of the features. A series of five, upright, 2 in by 4 in posts are located along the southwest and northeast edges of the tailings pile suggesting that some type of retaining wall or other feature may once have been present. The majority of the tailings consist of tabular and angular schistose rock. It is suggested that this tailings pile was probably derived from excavations within the Rico Mine which, based on reference to

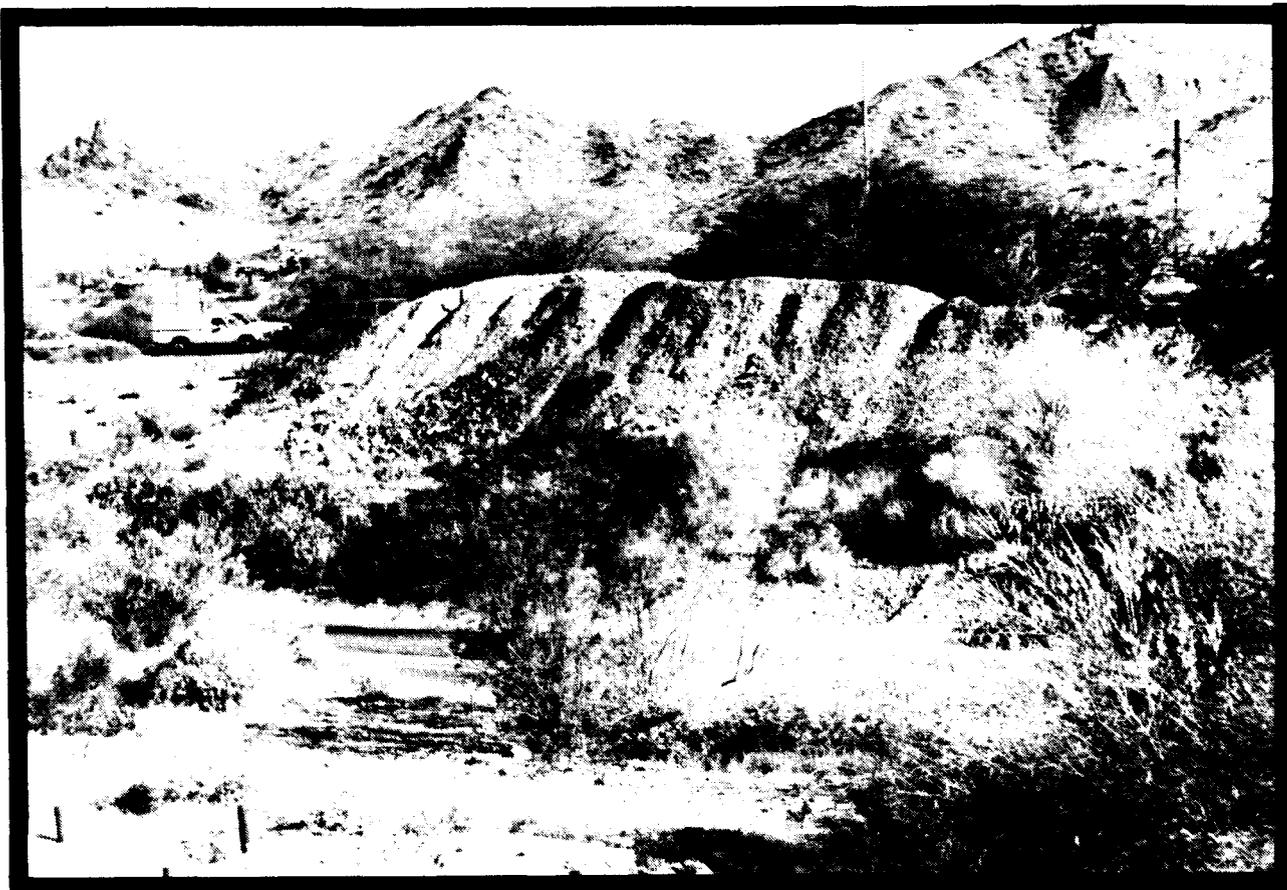


FIGURE 4. View of Tailings Pile-1 at Locus 1,  
Site AZ T:8:53 (ASM)

historic maps and photographs, would have been located between Tailings Pile 1 on the northwest and the mercury ore processing plant on the southeast. TP-1 could also have been derived from the Dolores shaft, located ca 250 ft north of the Rico Shaft.

- Tailings Pile 2 This tailings pile is located on the Dolores Claim approximately 200 ft north of the mercury ore processing plant and consists of a 100 ft long (E-W) by 60 ft wide by 6-to-8 ft high pile of schistose mine ore tailings. The top surface of the feature has been graded level by heavy machinery. This tailings pile is probably also associated with excavations at either the Rico or Dolores Mines.

- Tailings Pile 3 This feature, located ca 120 ft north of the mercury ore processing plant, is 46 ft long (NE by SW) by 35 ft wide, and from 2-to-5 ft in height. The tailings, which contain medium and large pieces of schist with some soil, have been dumped on a hillside along the south side of a west trending drainage (Rico Wash). This tailings pile may be associated with excavations at the Rico or Dolores Mines.

- Tailings Pile 4 This tailings pile, located ca 130 ft north-northwest from the mercury ore processing plant, is 30 ft long (NE by SW) by 28 ft wide, and from 2-to-4 ft in height. The tailings, which consist of small-to-medium pieces of schist with some soil, have been dumped on a hillside above the south side of a west trending drainage (Rico Wash) This tailings pile may be associated with excavations at either the Rico or Dolores Mines.

- Tailings Pile 5 This feature is defined by a linear berm ca 115 ft long (NE by SW) by 25-to-30 ft wide by 3-to-4 ft in height. The northeastern portion of this berm feature has been impacted by the construction of 19th. Street. Tailings Pile-5 is located within the western portion of the ore processing site component, and may once have extended across 19th. Street into the eastern portion of the site component. It is probable that this tailings pile represents a deposit of waste materials from the ore processing operation rather than from mining operations at the nearby Rico and Dolores mines. Notably, materials which comprise the feature appear to contain more soil than schistose rock. Also, it will be noted that waste materials from the processing plant furnace (rotary kiln) appear to have been removed from the kiln at its southwest end, or in the direction of the Tailings Pile-5 berm. The kiln in fact is oriented on the same angle as the berm.

#### Surface Artifact Scatters.

As noted above with reference to mine excavation Features 28 and 29, a surface artifact scatter (Locus 13) was located in the general vicinity of the two features. A second surface artifact scatter (Locus 2) was located south of the Tailings Pile-5 linear berm feature. A third artifact scatter (Locus 12) is located southeast of the ore processing plant and is defined by two components. A cluster of nails was also observed and recorded. A dispersed, low density scatter of period-to-recent artifacts was also observed in the general vicinity of the ore processing facility component of Site AZ T:8:53 (ASM).

- Locus 13 This surface scatter was ca 60 ft long (NE by SW) by 30 ft wide and centered on Features 28 and 29. Locus 13 artifacts were collected and documented in two grid units, one each centered over Feature 28 and Feature 29. The artifact documentation/collection grid at Feature 28 consisted of a series of 36, 5 ft squares; all artifacts from each square were collected for later analysis. A 40 ft square grid (four, 10 ft squares) was superimposed over the Feature 29 area and all observed surface artifacts were collected. The materials collected and documented from the two unit grids are combined and summarized below. These materials are summarized in greater detail in Appendix A and are listed under the Locus 13 column in Tables A.1 through A.7.

A total of 183 artifacts were recovered during the surface collection of all artifacts at Locus 13. This assemblage of primarily food-related and household items included 31 fragments

of bottle jar and glass tableware, 114 metal household, personal, and hardware items, 18 fragments of ceramic tableware, 9 cans and 9 miscellaneous artifacts. The only chronologically diagnostic artifact recovered was a jar base, embossed with the maker's mark of the Hazel-Atlas Co., dating from ca 1920 to 1964 (Toulouse 1971:239). Due to this lack of chronologically diagnostic artifacts it has not been possible to determine whether or not the Locus 13 materials relate to the period of mining and ore processing plant operation (mid-teens to mid-1930s). It is possible that the Locus 13 assemblage of materials was deposited after the termination of mining operations.

- Nail Cluster This feature consists of a concentration of nails within a 10 ft (N-S) by 15 ft area located in the western portion of the ore processing facility at 30 ft west of a mine shaft vent pipe (Unit 3 of Feature J) which is discussed under the ore processing plant description below. This cluster was gridded into six, 5 ft square units, each of which was 100% surface collected. A total of 615 artifacts were collected from this concentration. The 604 metal specimens included 533 whole and fragmentary wire nails [ranging in length from 1 in (2d) to 4 in (30d)], 67 hardware-related items and 4 food cans. The remaining artifacts recovered from this locus were 11 fragments of bottle and window glass. All of the nails and other metal artifacts at this locus appear to have been burned.

Based on the large quantity of nails and other construction-related hardware items, and on the burned condition of the artifacts, it is suggested that this locus represents the remains of a building or wood frame structural feature associated with the ore processing plant.

- Dispersed, Low Density Artifact Scatter Surface artifacts observed within this low density scatter were recorded in the field. Artifacts identified for recording were those which did not appear to be recent (i.e., 1940s or later) in origin. The majority of artifacts within this scatter represented recent materials which have been deposited by occasional visitors to the site. Recorded artifacts included:

- 1, 1 in iron T pipe fitting
- 4, 3 in wire nails
- 8-to-10, fragments of glazed white ceramic tile
- 15, fragments of red ceramic sewer tile
- fragments of milled lumber
- 3, sanitary beer cans
- 1, segment of steel wire
- 1, 1 ft long segment of 1 in diameter steel pipe
- 2, fragments of aqua bottle glass
- 1, piece of angular concrete rubble, ca 8 ft diameter by 3 ft high
- 1, friction lid for Lipton Tea tin
- 3, pocket oval tobacco tins
- 3, small porcelain insulators

- 1, section of steel mesh screen
- 15-to-20, fragments of red brick and fire brick
- 1, 3/4 inch diameter threaded bolt

- Locus 2 This moderate density surface artifact scatter was ca 45 ft long (N-S) by between 15 and 25 ft wide (E-W), and located along the west edge of 19th Street ca 110 ft south of the Tailings Pile-5 berm feature. The artifact research strategy for this scatter involved describing 50% of the scatter and collecting the remaining 50%. The scatter contained a total of 13, 10 ft square grid units, the artifacts from which six were 100% collected and seven (odd numbered units) were described.

The artifact assemblage recovered during the surface collection of Locus 2 consisted of 297 items (Appendix A). The majority of the artifacts, 210 specimens (or 71% of the total) consisted of fragments of glass containers. The remaining artifacts included can fragments, jar lids, white ironstone (WIS) and earthenware vessel sherds, and various household and personal items. The only chronologically diagnostic artifacts recovered at this locus were two jar bases, embossed with the maker's mark of the Latchford Marble Co., that were manufactured between 1939 and 1957 (Toulouse (1971:332), and a bottle base embossed with the Hazel-Atlas maker's mark that was manufactured from 1920 to 1964 (Toulouse 1971:239).

In addition to the 297 recovered artifacts, 205 artifacts were documented from the seven non-collection units. As with the collected artifacts the artifacts recorded in the field consisted predominantly of fragments of bottle and jar glass (115 specimens). Other artifacts recorded in the field included jar screw caps, cans and can fragments, fragments of white ironstone and glazed earthenware ceramic, and clothing and personal items. Diagnostic items from the seven field-recorded grid units were collected for further analysis.

This locus appears to represent a trash dump dating from the late 1930s to the 1950s. It appears to be composed primarily of materials related to food preparation and household maintenance. There were no artifacts from Locus 2 which appear to be associated with the historic mercury ore processing facility.

- Locus 12 This surface artifact scatter is located on the Rico Claim in the southern portion of the site and consists of two artifact concentrations (Loci 12A and 12B) spaced approximately 35 ft apart. Locus 12A was ca 10 by 12 ft in size and all of its surface artifacts were collected. Locus 12B was 10 ft by 20 ft and was collected in two, 10 ft square grid units. Locus 12A consisted predominantly of food preparation and household items and Locus 12B contained wire nails and other construction materials. A total of 220 artifacts were recovered during the surface collection of this locus. The majority of metal items recovered from the artifact clusters exhibit signs of burning.

The artifact assemblage from Locus 12A consisted of 93 items

of glass, metal, and ceramic. The majority of the specimens from this cluster are associated with food preparation. The assemblage included fragments of clear and selenium glass BEST FOODS mayonnaise jars. The only chronologically diagnostic items recovered were a jar base, embossed with the maker's mark of the Hazel-Atlas Glass Co. (1920-1964) [Toulouse 1971:239], and a whiteware bowl base stamped with the mark of the Vernon Potteries (1906-1960) [Lehner 1980:156]. Items suggesting the presence of female and male individuals (change purse frame, and razor blade receptacle), and of children (a stamped metal toy spoon) were also documented at Locus 12A.

The Locus 12B artifact assemblage consisted of 125 specimens, including 85 wire nails of various sizes. The nails and other artifacts recovered exhibit signs of having been burned. Due to the proximity of Locus 12 to the mercury processing plant, the collected construction-related items possibly related to the processing plant structures and could have been deposited in this area during the construction or dismantling of the plant.

Based on the artifact assemblage collected at Locus 12 it appears that the two concentrations associated with this locus represent household refuse (Locus 12A) and construction materials (Locus 12B) deposited during the time period that the mine and mercury processing plant were in operation (ca 1915 - mid-1930s). The materials recovered from Locus 12 are in close proximity to the processing plant and are probably related to activities that occurred at that location.

#### Road Features.

One segment of abandoned dirt road (R-1 on Figures 2 and 3) extended from the east side of the ore processing plant to the east a distance of 330 ft at which point it appears to have descended into a dry wash. This road was probably one of several within a network of roads which facilitated access to the Rico Mine and ore processing plant. The road had been bladed to an average width of 10-to-12 ft.

#### Mercury Ore Processing Plant.

The primary element of Site AZ T:8:53 (ASM) consists of a complex of structural remains which define the historically documented processing plant for mercury ore from the Dolores and Rico Mines. As described in the preceding site history section it is known that the mercury ore processing plant was initially in operation in 1916. This early plant was replaced by a more substantial operation between about 1928 and 1933. Those structural remains present at the site appear to represent -- primarily-- this later 1920s-early 1930s operation as documented in contemporary trade journal (Mining Journal) and photographic documents.

The mercury ore processing plant is located at the approximate

center of a ca 400-to-450 ft diameter area which has been defined as Locus 1, the Ore Processing Facility and Related Features. This facility is centered approximately on the south-bound lanes of 19th. Street (Figures 2 and 3) at a location just south of the northbound lanes of Northern Avenue. Nineteenth Street bisects the mercury ore processing plant with the main plant facility (furnace and mercury extraction apparatus) located on the east side of the street and several concrete features related to a mine ventilation system located on the west side of the street. Overall, the processing plant, including facilities on both sides of 19th Street, is within an area 200 ft long (NW by SE) by 60-to-75 ft wide. The bisecting 19th Street has removed several structural features associated with the plant.

Based on historical documentation the early, 1916 mining and ore processing facility operated by its discoverer Samuel Hughes (and others) consisted of a primary shaft (the "Discovery" shaft) to a depth of 60 ft in late August 1917 (Schrader 1918:103), a headframe and hand windlass, and a "crude" 5-ton Johnson-McKay Retort which was used to extract mercury from the mined ore. The retort apparatus was still in use in 1924 (Lausen and Gardner 1927:53), at which time the main Mercury shaft was 112 ft deep. Hughes apparently lived in a nearby cabin located on the Dolores Claim. The location and remains of this probable cabin site are represented archaeologically as Locus-7, and are described below under the heading "Probable Building or House Sites".

The ore processing plant was substantially upgraded during the period 1928-1933. The modified operation consisted of the following elements:

- a 300 ft deep (on angle; 238 ft vertical) Rico mine shaft from which ore was removed in 15 cubic ft capacity "skip" buckets mounted on inclined skids and pulled by 3/4 in steel cable with a 1 horsepower single drum electric hoist mounted on a 35 ft high headframe,
- a tram to remove mine waste to tailings areas, and to transport ore to be processed at the plant site.
- a "Wheeling" jaw crusher,
- a 35 ft vertical elevator which raised the crushed ore to be deposited within a 40 ton capacity bin, which in turn supplied ore to,
- a 3 ft diameter by 30 ft long rotary kiln (Hartman Continuous Quicksilver Furnace) fired with an oil burner,
- a cooling chute from which waste materials were discharged for removal to a waste dump,
- a dust collector (to remove furnace dust from the gas containing volatilized mercury) and a "Sorrocco" blower through

which the volatilized (vaporized) mercury passed into,

- a six unit Hartman cast iron condenser which served as the primary mercury ore extraction apparatus, the mercury leaving the condenser system through water seals,

- a set of two baffled redwood tanks which served to extract most of the remaining volatilized mercury, and a stack through which remaining gasses were vented.

In addition, the facility included:

- a tool room,

- a machine shop,

- a watchman's house (believed to be the nearby Hughes Cabin (Locus 7),

- a larger home occupied by the plant manager (probably E. W. Hartman) and located at some distance away from the plant on the boundary between the Igo and Plutus #2 Claims (believed to be represented archaeologically by Locus 5, described below under the heading Probable Building or House Sites).

- a mine ventilation system represented by a 5 horsepower Sturtevant 3400 RPM fan and 260 ft of 10 in galvanized, bolt-coupled pipe, and a 110 volt Vento Fan with 200 ft of 6 in slip joint pipe,

- two redwood storage tanks, possibly for the storage of fuel (oil) to be used in the furnace burner.

Archaeologically, the mercury ore processing plant is represented by the remains of at least the following elements:

- vertical elevator and 40 ton ore bin
- the rotary kiln or furnace
- the Hartman condenser
- the baffled redwood tanks
- the stack through which waste gasses were vented
- a complex of concrete troughs through which a water/mercury mixture flowed into a set of concrete basin-receptacles. Processing waste products may also have passed through this trough system
- the primary mine ventilation system which, although not a feature of the processing plant, was located immediately adjacent to it and is described in this report section.

With the exception of the ventilation system features, all of the above are adjoined in a complex of concrete features within a 60 ft (NW by SE) by 45 ft (NE by SW) plant site.

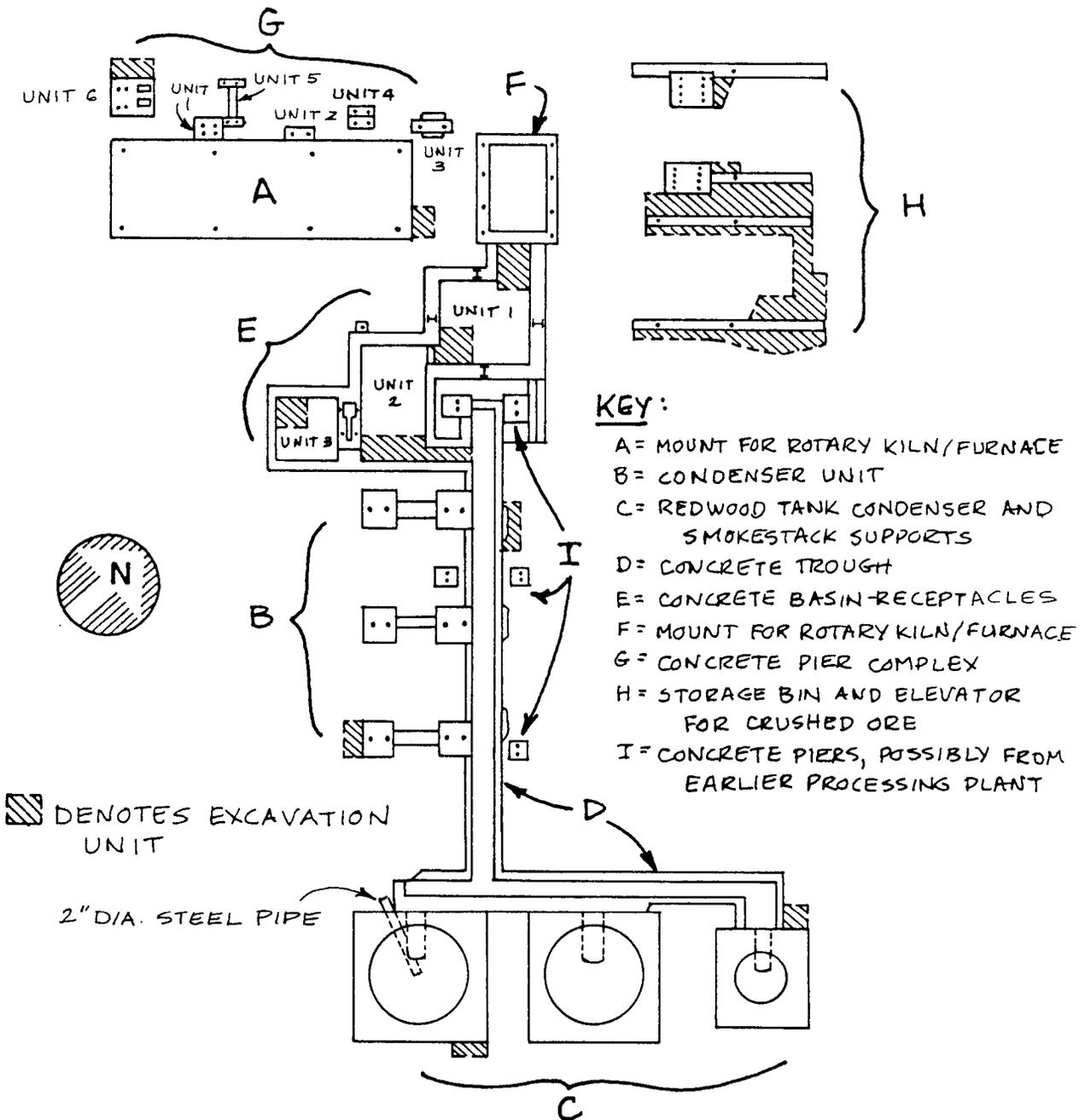
Evidence of other features and components of the plant was not

represented archaeologically, and it is assumed that such features and components were either dismantled and removed for use elsewhere, or disturbed during the construction of 19th. Street. Each of the archaeologically defined features is formally described below.

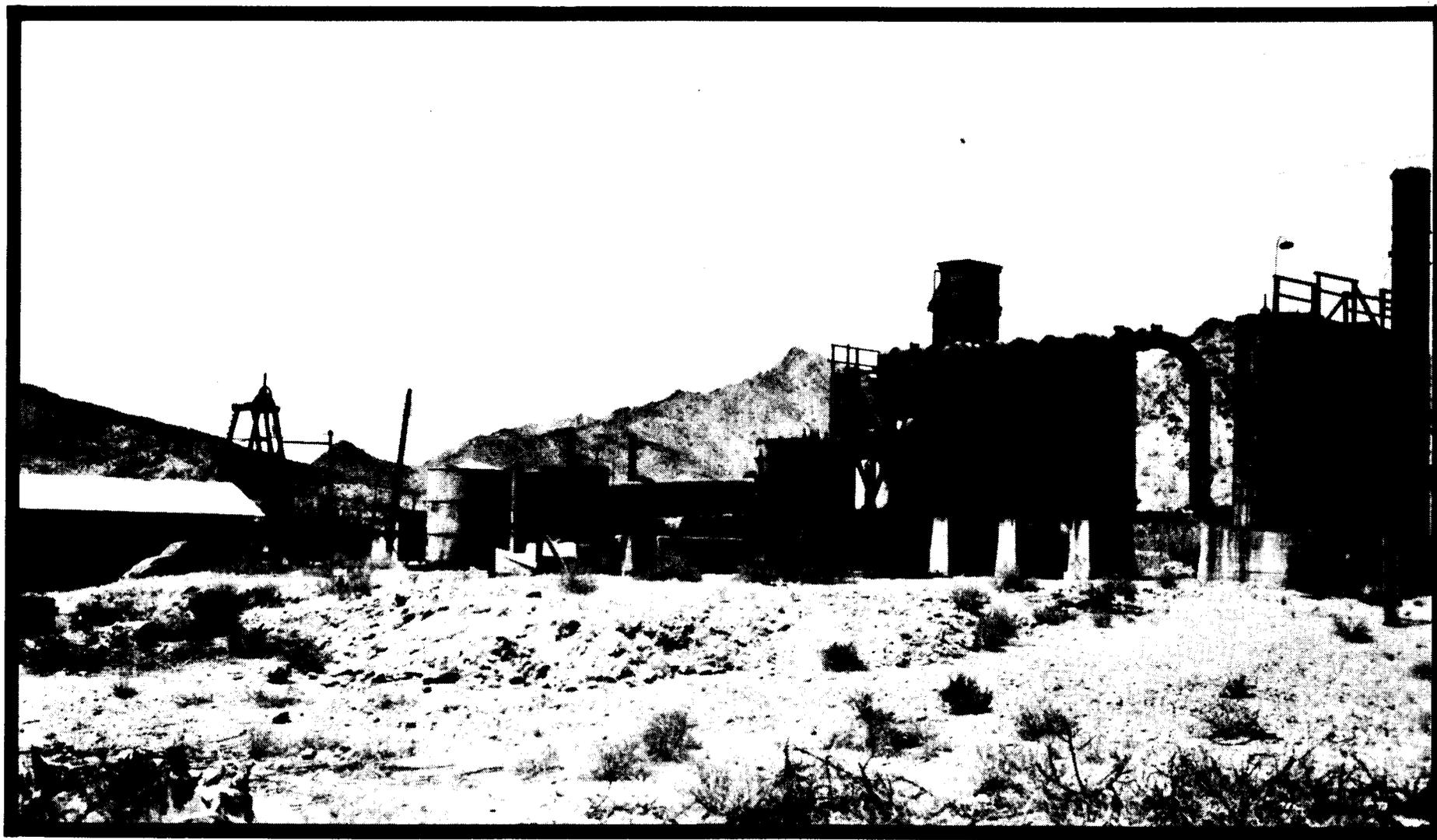
- Rotary Kiln or Furnace (Features A and F) As indicated on the accompanying plan map of the archaeological representation of the mercury ore processing facility (Figure 5), on the undated historic photograph of the Rico Mercury Mine (Figure 6), and on an historic photograph published in a 1930 article "Equipment of the Dreamy Draw Mine (Hartman 1930:38), a large concrete platform (Feature A) and a smaller, hollow concrete platform or mount (Feature F) defined the alignment of the 3 ft by 30 ft horizontally mounted rotary kiln or furnace (Figures 7, 8, 9). The rectangular Feature A is 6.7 ft wide by 19 ft long (at ground surface base) by 3 ft high, and tapers to a top surface dimension of 5.5 ft by 18 ft. A 1 ft by 2 ft test unit was excavated at the northeast corner of Feature A to determine its depth; the base of the feature was defined at 0.6 ft BGS. A series of eight, 1 in diameter bolts are mounted vertically in 2 in diameter pipe sleeves spaced 5.6 ft apart on the southeast and northwest surface edges of the platform and 4.6 ft apart on the southwest and northeast surface edges. It is believed that the these bolts secured sets of steel rollers on which the furnace revolved, one of which is indicated on the historic photograph accompanying the 1930 Hartman article. Framing for Feature A was constructed of 2 in by 4 in and 2 in by 10 in boards. Two small concrete piers or supports (Units 1 and 2 of Feature G) are attached to the northwest face of Feature A. One pier (Unit 1) is L-shaped, 1.35 ft by 2.8 ft in maximum dimension, with a top surface at 1.6 ft below the top surface of Feature A. This pier has six bolts projecting vertically from its top surface; two, 1/2 in diameter by 2 in long, and four, 3/4 in diameter by 2 in long. The second pier (Unit 2) is 1 ft by 2.3 ft by 2.0 ft high and bears two, 1/2 in diameter bolts which project vertically from its top surface. Four additional piers (Units 3-6 of Feature G) are located within 1-to-4 ft from the northwest face of Feature A, and are probably associated with the feature.

Feature F, a smaller concrete platform/tank located 4.5 ft northeast of Feature A, appears to represent, in part, a base for a mount structure for the northeast end of the rotary kiln. A concrete platform mount for the southwest end of the rotary kiln is shown immediately southwest of Feature A on a period photograph but is not represented archaeologically (the area in which this feature was located has been extensively disturbed during the construction of 19th. Street). The Feature F platform/tank is rectangular and 6.3 ft by 3.5 ft in external dimension by 3.5 ft high (above ground surface). The 8 in (0.65 ft) thick walls of this platform define a hollow interior area 5.65 by 2.85 ft in size which is 2.7 ft deep. This interior tank area was filled with small size angular ore rubble. A 1 ft diameter red tile pipe passes through the southeast face or wall of the feature at 1.6 ft

FIGURE 5  
 PLAN OF  
 MERCURY ORE PROCESSING PLANT  
 AT LOCUS 1, SITE AZ T:8:53 (ASM)



S. VAUGHN



**FIGURE 6.** Circa 1930 Photograph of the "Rico Mercury Mine". General View of Furnace Plant, Machine Shop and Rico Headframe in Distance. View Northeast. Courtesy: Arizona Department of Mines and Mineral Resources.



FIGURE 7. View of Remains of Mercury Ore Processing Plant, Site AZ T:8:53 (ASM). View Northwest

below its top surface. This passage appears to have conveyed ore rubble into an underlying concrete-lined basin at ground surface (5.2 ft square with 0.8 ft thick walls) which is 0.5-to-1.5 ft deep based on the excavation of two small test units (1.7 by 2.4 ft and 2 ft square). This unit is indicated as Unit 1 of Feature E, a complex of three recessed, concrete-lined basins or receptacles. The top surface of each wall of the 5.2 ft square container is defined by one, centered steel I-Beam mounted vertically. The northeast and southwest wall top surfaces of the Feature F platform /tank are defined by four, 1 in diameter vertical bolts set in 1 1/2 in metal pipe sleeves. It is probable that Feature F served as the base for a mount for the northeast end of the rotary kiln and that the eight bolts secured the mount to the base. The function of the tank (or hollow feature) of the concrete mount has not been ascertained. It is suggested that this hollow feature was constructed as a receptacle for crushed ore which would be introduced into the northeast end of the kiln. Alternately, this feature served as a receptacle for ore materials which were spilled during the kiln loading process.



FIGURE 8. View of Features A and F (Rotary Kiln Support Platforms) and Feature E (Concrete Basin-Receptacles) at Mercury Ore Processing Plant, Locus 1 of Site AZ T:8:53 (ASM). View Northwest

- Condenser Unit (Feature B) The "Six Unit Hartman Cast Iron Condenser" which is indicated on the undated historic photograph (Figure 6) and on a figure accompanying the 1930 Hartman article (p. 38), is defined archaeologically (Figures 5, 7, 10) by three sets of two concrete piers, the sets being spaced 7.0 ft apart on center, and the piers in each set spaced 4.5 ft apart on center. Each rectangular pier is tapered from a 1.75 by 2.1 ft base (at ground surface) dimension to a 1.5 ft square top surface dimension at a height of 4.5 ft above ground surface. The piers within each set of piers are connected by a 3.0 ft long by 1.4 ft high by 0.75 ft wide section of concrete. A concrete trough at ground surface (part of Feature D below) extends along and is incorporated into the northeast faces of the east row of piers. Two, 1/2 in diameter bolts (set in 2 in diameter pipe sleeves) are mounted on each pier top surface. Based on the two historic photographs it is noted that each row of piers supports a horizontal steel I-beam (or possible steel railroad track) which was probably secured by the

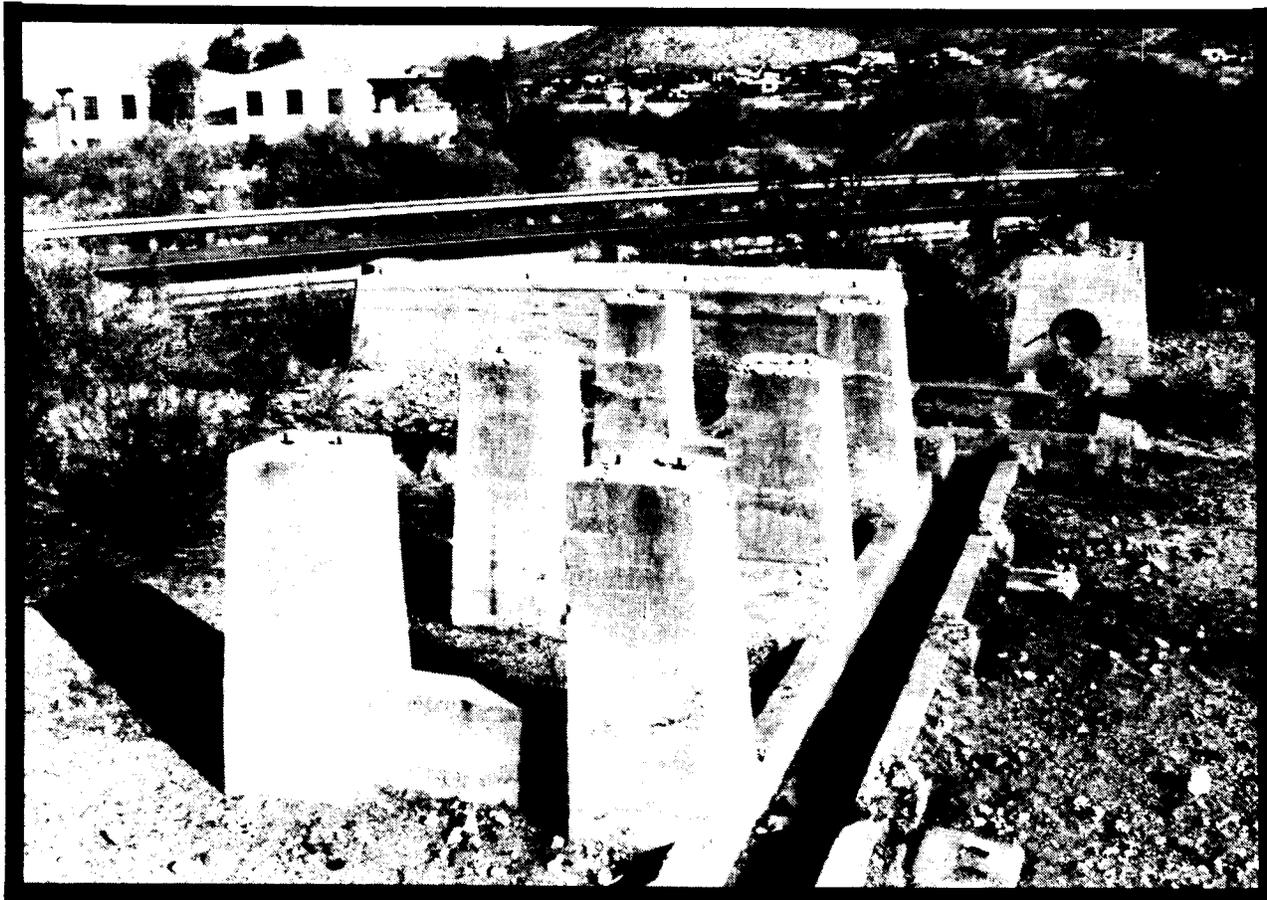


FIGURE 9. View of Features B (Condenser Unit), D (Concrete Trough System), I (Early Concrete Piers), and A and J (Rotary Kiln Support Platforms) at Mercury Ore Processing Plant, Locus 1 of Site AZ T:8:53 (ASM). View Northwest



FIGURE 10. View of Features C (Redwood Condenser Tank and Smokestack Supports) and B (Condenser Unit), Mercury Ore Processing Plant, Locus 1 of Site AZ T:8:53 (ASM). Looking Southeast

vertical bolts. The six-unit condenser was then mounted on the I-beams. A small test unit (1 ft by 2 ft) excavated along the southwest face of the southeast pier indicated that the bottom of this pier was at 0.4 ft below ground surface. Framing for pier construction consisted of 10 in wide boards.

- Redwood Condenser Tanks and Smokestack Supports (Feature C)  
Historic photographs (Figure 6; Hartman 1930:38) and a period Mining Journal description of the mercury ore processing equipment at the Rico Mine (also Hartman 1930) indicate that two redwood tanks and a smokestack were features of the processing complex which functioned near the end of the production process. The two redwood tanks contained water and served to separate remaining mercury from gasses which had passed through the Hartman condenser. The smokestack vented end-production waste gasses. Archaeologically, these three features consist of a row of three concrete platforms, each of which is represented by a top surface



FIGURE 11. View of Feature C (Redwood Condenser Tank and Smokestack Supports), Mercury Ore Processing Plant, Locus 1 of Site AZ T:8:53 (ASM). View Southwest

defined by a large depression in the shape of an inverted cone; the cone shape serving to direct any remaining waste materials or mercury to the bottom of the depression where it exited into an external concrete trough (at ground level) through a large diameter red ceramic tile pipe through the northwest side of each unit of

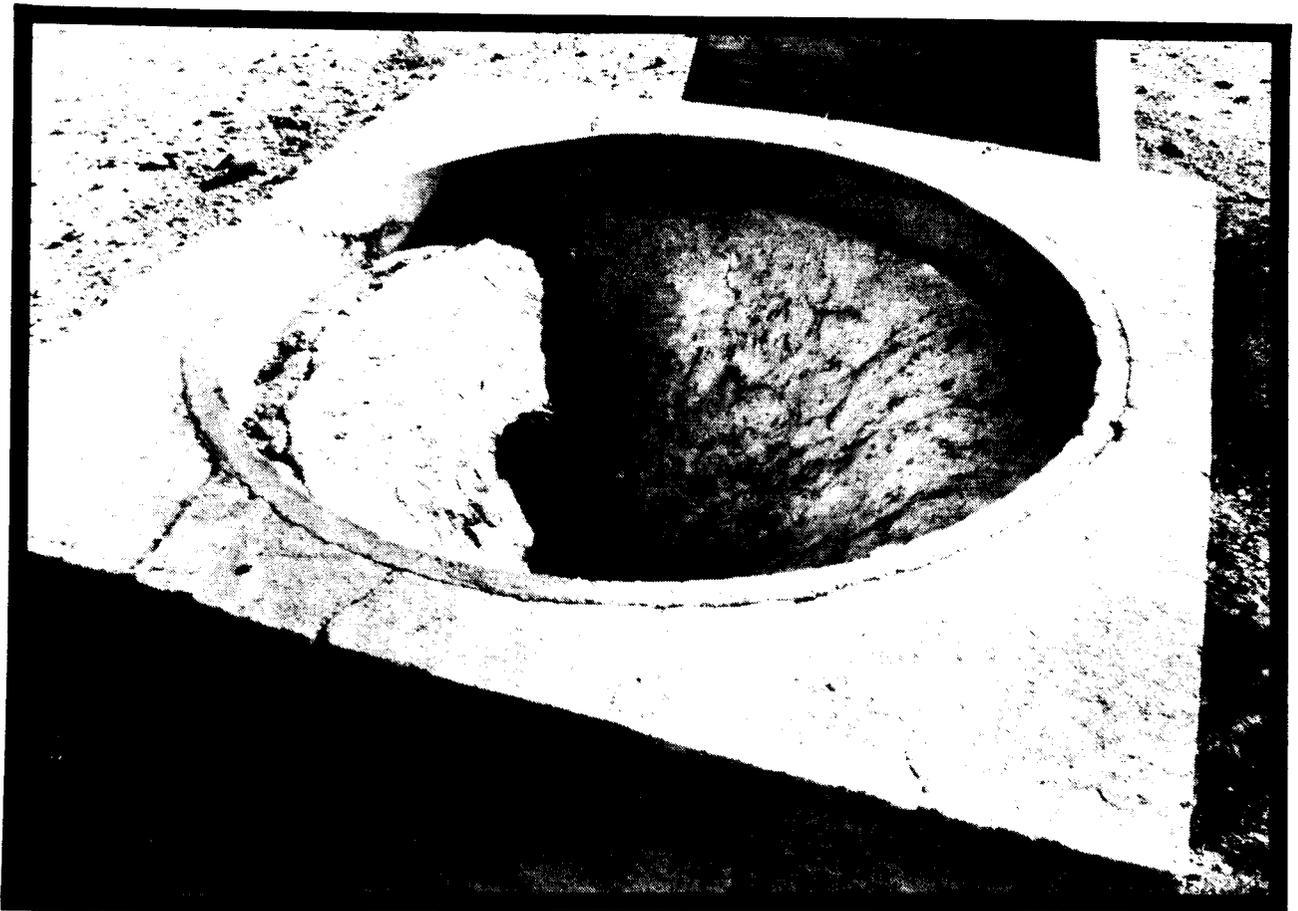


FIGURE 12. View of Surface of Middle Unit of Feature C (Redwood Condenser Tank and Smokestack Supports), Mercury Ore Processing Plant, Locus 1 of Site AZ T:8:53 (ASM).  
View Northeast

#### Feature C.

The two redwood tank units (Units 1 and 2 of Feature C) as indicated on Figures 5, 7, 10, 11, and 12, are of the same size (8 ft square at base tapering to a top surface dimension of 7.5 ft square at 3.7 ft above ground surface). A small (1 ft by 2 ft) test excavation at the northeast corner of Unit 1 defined the bottom of this unit at 0.8 ft below ground surface. The inverted cone depressions are 6 ft in maximum diameter and 2.5 ft deep. A 1.0 ft diameter red ceramic tile pipe extended from the bottom of the depression through the northwest walls or sides of the two units. Two bolts (5/8 in diameter by 6 in long) project horizontally from the exterior face of each unit, one at each side

(on center) of the ceramic tile pipe. These bolts probably served to attach ceramic elements which would have further directed waste materials and mercury into the underlying trough. The Unit 1

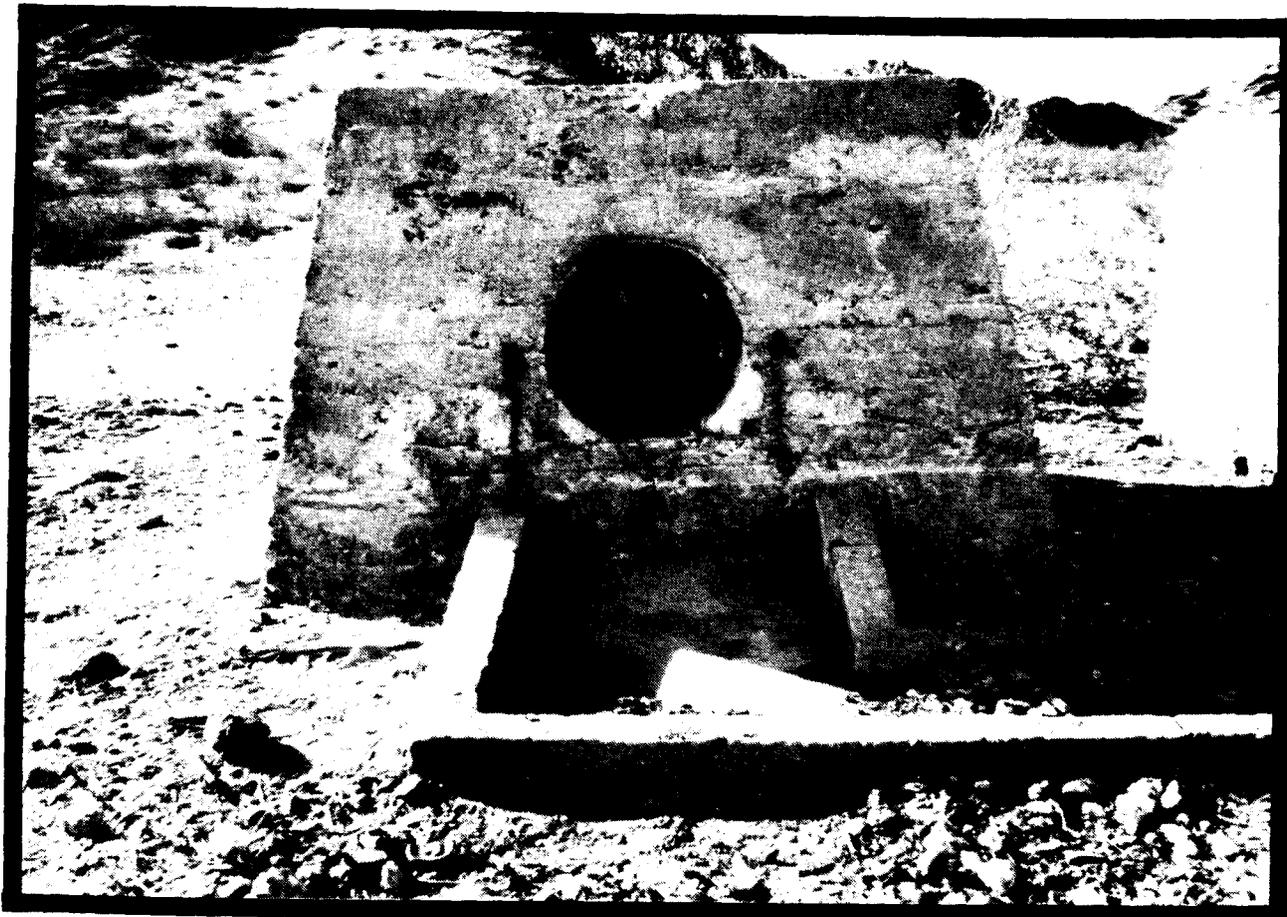


FIGURE 13. View of Feature C (Redwood Condenser Tank and Smokestack Supports) Showing Face of Smokestack Support Unit, and Feature D (Concrete Trough System), Mercury Ore Processing Plant, Locus 1 of Site AZ T:8:53 (ASM). View Southeast

structure is also defined by a 2 in diameter steel pipe which extends horizontally (and at an angle between the 1 ft diameter ceramic pipe and the northwest corner of the unit) from the bottom of the conical depression to and projecting 0.8 ft beyond the exterior surface of the unit. This pipe may have served to convey any remaining condensed mercury into a collector receptacle. A similar feature was not present on Unit 2.

The smokestack support (Unit 3 of Feature C) is indicated on Figures 5, 7, 10, 11, and 13) as a concrete platform which is somewhat smaller than Units 1 and 2 (tapered, 6 ft square at base by 4.5 ft square at top surface at 3.7 ft above ground surface). The inverted cone depression in Unit 3 is 2.8 ft in maximum diameter and 2.45 ft deep. A 1 ft diameter segment of red ceramic tile pipe also extends through the northwest side of this unit

(Figure 13), and is similarly defined by a set of horizontally projecting bolts on each side of the ceramic pipe on the exterior face of the unit.

A concrete trough (Feature D) extends along the front (northwest) sides of each of the Feature C units, and presumably served to convey a mixture of mercury and water (or, alternately, processing waste materials) to concrete basin receptacles (Feature E) located between the rotary kiln (Feature A) and condenser support piers (Feature B).

- Concrete Trough System (Feature D) As noted with reference to Features B (condenser piers) and C (redwood tank and smokestack supports), a concrete trough extended along the front (northwest side) of the three Feature C units and along the northeast side of Feature B to a junction with a complex of three concrete-lined basins or receptacles (Feature E). It is assumed that the trough served to convey a water/mercury mixture, or, alternately, processing waste materials and system cleaning residue, to the Feature E receptacles. Such waste or residue materials would have consisted of very fine dust particles which were not removed by the dust collector located between the furnace (Feature A) and condenser (Feature B), and which were conveyed in the air which passed through the processing system. Alternately, the material which drained from the redwood condenser units (Feature C) into the concrete trough (Feature D) for conveyance to the basin receptacles (Feature E) may have included a mixture of water and mercury; the mercury would then have been extracted from the concrete basins of Feature E.

The trough is 56 ft long (24 ft NE by SW adjacent to Feature C; 29 ft NW by SE adjacent to Feature B; 3 ft NE by SW at Feature E) as indicated on Figure 5, and as shown on Figures 9, 10, and 13. The trough is 2.5 ft wide with 0.4 ft thick sides which define a 0.3-to-0.5 ft deep by 1.3 ft wide trough channel. The trough turns 90 degrees to the southwest near its northwest end and increases in depth from 0.5-to-1.0 ft at its junction with a concrete basin receptacle (Unit 2 of Feature E). The bottom of the trough is located at 0.85 ft below ground surface as defined by a small (1 ft by 3 ft) test excavation unit along the northeast face of the trough in the vicinity of a concrete buttress support. Three concrete buttress supports were spaced 6.0 ft apart on center along the northeast face of the northwest by southeast segment of the trough. The supports are 1.5 ft wide by 0.3-to-0.4 ft thick and extend from the top of the trough to 0.85 ft below ground surface.

- Concrete Basin-Receptacles (Feature E) As discussed above in relation to the trough (Feature D) and furnace support (Feature F) elements of the ore processing plant, a complex of three concrete basins (designated Units 1, 2, and 3 on Figure 5) are located between Features A and F on the northwest and Feature B on the southeast (see Figures 7, 8, 9, and 14). It is believed that basin Units 2 and 3 served as collectors for either a mercury/water mixture, or processing waste residue materials which were conveyed



FIGURE 14. View of Unit 3 of Feature E (Concrete Basin-Receptacles), Mercury Ore Processing Plant, Locus 1 of Site AZ T:8:53 (ASM). View Southwest [Note Feature Identification Discrepancy on Photo Board]

through trough Feature D. Feature E, Unit 1 (described on page 54) appears to have served as a collector for crushed ore materials or residue from the Feature F furnace support. Unit 2, which joins the end of the concrete trough (Feature D), is a 3.4 ft (SW by NE) by 7.0 ft (SE by NW) [interior dimensions] concrete-lined basin or tank with 0.5 ft thick sides on the northwest, southeast, and northeast, and a 1.0 ft thick wall on the southwest which defines a common wall with Unit 3. The bottom of this basin, as defined by a 1.5 by 4.0 ft test excavation unit along its southeast interior side, varies in depth from 1.0 ft on the northeast to 1.4 ft on the southwest. A 1.4 by 1.6 ft rectangular pit in the southeast corner of Unit 2 extends to a depth of 3.0 ft below ground surface. The function of this Unit 2 basin extension is unknown. The 1.0 ft wide southwest side or wall of the Unit 2 basin has been cut by a 0.8 ft wide by 0.5 ft deep trough across

its southeast end, presumably to accommodate the movement of materials from Unit 2 into Unit 3. Basin Unit 3 (Figure 14) is 4.2 ft by 4.4 ft (in interior dimension) with 0.5 ft thick sides on the northwest, southwest, and southeast, and a 1.0 ft thick common wall with Unit 2 on the northeast. This unit is 2.5 ft deep as evidenced by a small (1.5 ft square) test excavation unit in its southwest corner.

It has been suggested that Units 2 and 3 served to collect either a mercury/water mixture, or waste/residue from the mercury processing operation. The manner in which basin units 2 and 3 (and possibly 1) functioned in relation to differences in size and depth is unknown.

Interestingly, inspection of the undated historic photograph (Figure 6) indicates that a set of two round tanks (probably redwood) were mounted at an elevation of ca 4-to-5 ft above ground surface over the general area of the Feature E complex of concrete basins. The function of these tanks as part of the ore processing operation is unknown.

- Storage Bin and Elevator for Crushed Ore (Feature H) As noted on two historic photographs, the undated Figure 6 herein, and a figure in the 1930 Hartman article in the Mining Journal, a large, relatively high metal structural complex or building with a ca 10-to-12 ft square vertical stack extension was located to the immediate northeast from the northeast end of the rotary kiln. It is assumed that this structure contained the 35 ft vertical elevator (which received ore materials from the Wheeling ore crusher) and 40 ton bin which are referred to in the Hartman article (1930:38, 39). A "feeder arrangement" supplied crushed ore from the bin to the rotary kiln.

This feature is located 6 ft northeast of the northeast end of the rotary kiln (as defined by Feature F), and is defined archaeologically (Figure 5) by two concrete piers, three, 8 in by 8 in horizontal timbers set in concrete (i.e., as floor joists), and fragments of a concrete floor pad which join the wood and concrete pier elements (Figures 10, 15, 16). The Feature H elements appeared to be somewhat fragmentary in nature and were only partially exposed archaeologically in order to document the composition and nature of construction materials.

The concrete piers differed in size, the one on the northwest being 2.2 by 2.7 ft at ground surface tapering to 2.0 by 2.5 ft at a top surface height of 1.5 ft, and the one on the southeast being 2.1 ft by 2.6 ft at ground surface tapering to 1.65 by 2.15 ft at top surface at a height of 2.3 ft. Each pier top surface had four sets of two bolts each protruding 0.1 ft vertically. Each pier is also associated with segments of 8 in by 8 in linear wood timbers which were laid either under a pier or along a pier edge with the wood embedded in the pier concrete. The wood timbers were also embedded in a 0.15-to-0.3 ft thick, concrete floor slab which had been poured onto bedrock. Two additional timbers were noted as 8



FIGURE 15. View of North Pier Element of Feature H (Storage Bin and Elevator for Crushed Ore), Mercury Ore Processing Plant, Locus 1 of Site AZ T:8:53 (ASM). View Southwest [Note Feature Identification Discrepancy on Photo Board]

in wide depressions in concrete of variable thickness. The wood timbers and timber depressions are defined by vertically projecting ca 1.0 ft long steel spikes regularly spaced 4.6 to 4.7 ft apart. All of the timbers and timber depressions were oriented NE by SW on an angle equivalent to that of the rotary kiln. Timber segments varied in length from 6-to-12 ft and were spaced at intervals of from 3-to-7 ft (on center).

While this complex of features appears to represent the storage bin and elevator structure based on locational correspondence (with historic photographs), the specific manner in which these archaeological features functioned as elements of the structure has not been determined.



FIGURE 16. View of South Pier Element of Feature H (Storage Bin and Elevator for Crushed Ore), Mercury Ore Processing Plant, Locus 1 of Site AZ T:8:53 (ASM). Looking Southwest. [Note Feature Identification Discrepancy on Photo Board]

- Concrete Pier Complex Adjacent to Rotary Kiln (Feature G)

As indicated on Figure 5, a complex of six concrete pier features, two of which (Units 1 and 2) are attached to the furnace platform (Feature A) and are described in that context above, and four of which (Units 3-6) are located at distances of from 1-to-4 ft north of the furnace platform. The functions of these features are unknown, and above-ground structures which may have been associated with this pier complex are not indicated on historic photographs. Based on location, however, it must be assumed that these piers supported equipment which operated in conjunction with the rotary kiln. The piers are defined as follows:

Unit 3, rectangular, tapers from 2.1 ft by 0.5 ft at ground surface to 1.7 by 0.5 ft at a height of 2.2 ft. Two, 1/2 in diameter bolts project from the top surface of this pier.

Unit 4, rectangular, tapers from 1.45 by 1.6 ft at base to 1.25 by 1.4 ft at height of 1.2 ft. A 0.2 ft wide by 1.4 ft long by 0.3 ft high raised area crosses the NE by SW axis of this unit surface. Two sets of two, 7/16 in diameter by 4 in long bolts are mounted vertically on either side of the raised area.

Unit 5, rectangular tapers from 2.5 by 0.5 ft at base to 1.7 ft by 0.5 ft at a height of 1.6 ft above ground surface. Two, 1/2 in diameter by 2 in long bolts project vertically from the top surface of the feature.

Unit 6, rectangular, tapers from 2.3 ft by 3 ft at base to 2.1 ft by 2.75 ft at a height of 1.1 ft. A series of six, 5/8 in bolts, each projecting ca 4 in vertically from the top surface of the unit were noted in association with the impressions of two mounting plates.

- Set of Concrete Piers Possibly Related to An Earlier (Ca 1916-1920s) Ore Processing Plant (Feature I)

As noted in the history section of this report, the earliest on-site processing operation (i.e., mid-teens to ca 1927) which served the Rico Mine consisted of a "crude" 5-ton Johnson McKay Retort which was used to extract mercury from mined ore. A complex of pier supports defined by three sets of two piers in alignment is located on the site of the later plant as defined by the above-described features; this complex does not, however, appear to relate to the operation of this more recent plant, and is in fact partially built upon by condenser piers (Feature B) and trough (Feature D) features associated with the post-1927 plant. It is suggested that this set of piers (Feature I) may represent evidence of the earlier retort operation which was constructed by Sam Hughes and others during the mid-teens. Elements of this feature are indicated on Figures 5, 9, and 10. Reference to Figure 5 indicates that one of the Feature I piers has been built over or removed by the construction of a pier associated with the Feature B condenser



FIGURE 17. View of Unit 1 of Feature J (Mine Ventilation Equipment Support), Mercury Ore Processing Plant, Locus 1 of Site AZ T:8:53 (ASM). View North

unit. Each of the Feature I piers is 1.1 ft square and extends 1.5 ft below ground surface based on the excavation of a small (1 by 2 ft) test unit. The top surface of each pier (at ca 0.1 to 0.3 ft above ground surface) is defined by a set of two, 1/2" or 7/16" diameter bolts which project 4 in vertically. Each set of Feature I piers is spaced ca 10 ft apart (on center), with piers in each set spaced 4.5 ft apart (on center). The trough Feature D extends between the northeast and southwest rows of Feature I piers.

This interpretation of a relationship between the Feature I piers and the early "retort" plant is considered to be somewhat tenuous. It may subsequently be determined based on additional documentary research that Feature I is in fact a component of the post-1927 processing plant.

- Mine Ventilation Equipment Support (Feature J) The location of Feature J components on the west side of 19th Street is

indicated on Figure 3. Figures 17 and 18 illustrate the primary component (Unit 1) of this complex of features which represent the above-ground portion of a mine ventilation system. Evidence of this site component is not provided in the referenced historical photographs. The main ventilation system has, however, been described (Hartman 1930:38) as consisting of a 5 horsepower, 3400 RPM fan which directs air through 260 ft of 10 in galvanized, bolt-coupled pipe, and a 110 volt Vento fan and 200 ft of 6 in slip-joint pipe. The larger (10 in diameter) ventilation system is represented archaeologically, and is defined by Unit 1, a concrete mount for a blower motor and associated 10 in diameter pipe; Unit 2, a small concrete pier, and Unit 3, a 10 in diameter pipe which projects vertically from the ground surface at a distance of 132 ft southeast of Unit 1.

Unit 1; a 14 ft long (NE by SW) by 2.5 ft wide by between 1.5 and 2.4 ft high concrete platform. A 2 ft by 5 ft concrete pad extends to the northwest from the northwest side of the unit. The higher platform element at 2.4 ft above ground surface is defined by seven, 1 1/4 in diameter by 5 1/2 in-to-1.0 ft vertically projecting steel bolts located on the unit's top surface southwest and northeast edges. These bolts probably served to secure a blower motor which directed air down through a 10 in diameter opening (pipe) in the lower level platform (at 1.5 ft above ground surface). This pipe turns 90 degrees from vertical to horizontal and exited the platform at a junction with a 23 ft long segment of 10 in diameter steel pipe. The end of this pipe had been crushed and bent. It is this latter pipe which was probably directed sub-surface to ventilate the Rico Mine. A small area (ca 1.2 ft long by 0.8 ft wide by 0.5 ft deep) on the top surface of the northwest edge of the upper platform had been chiseled out and covered over with heavy mesh metal screen held in place by concrete mortar. The function of this feature is unknown. The concrete in Unit 1 is reinforced with square rebar.

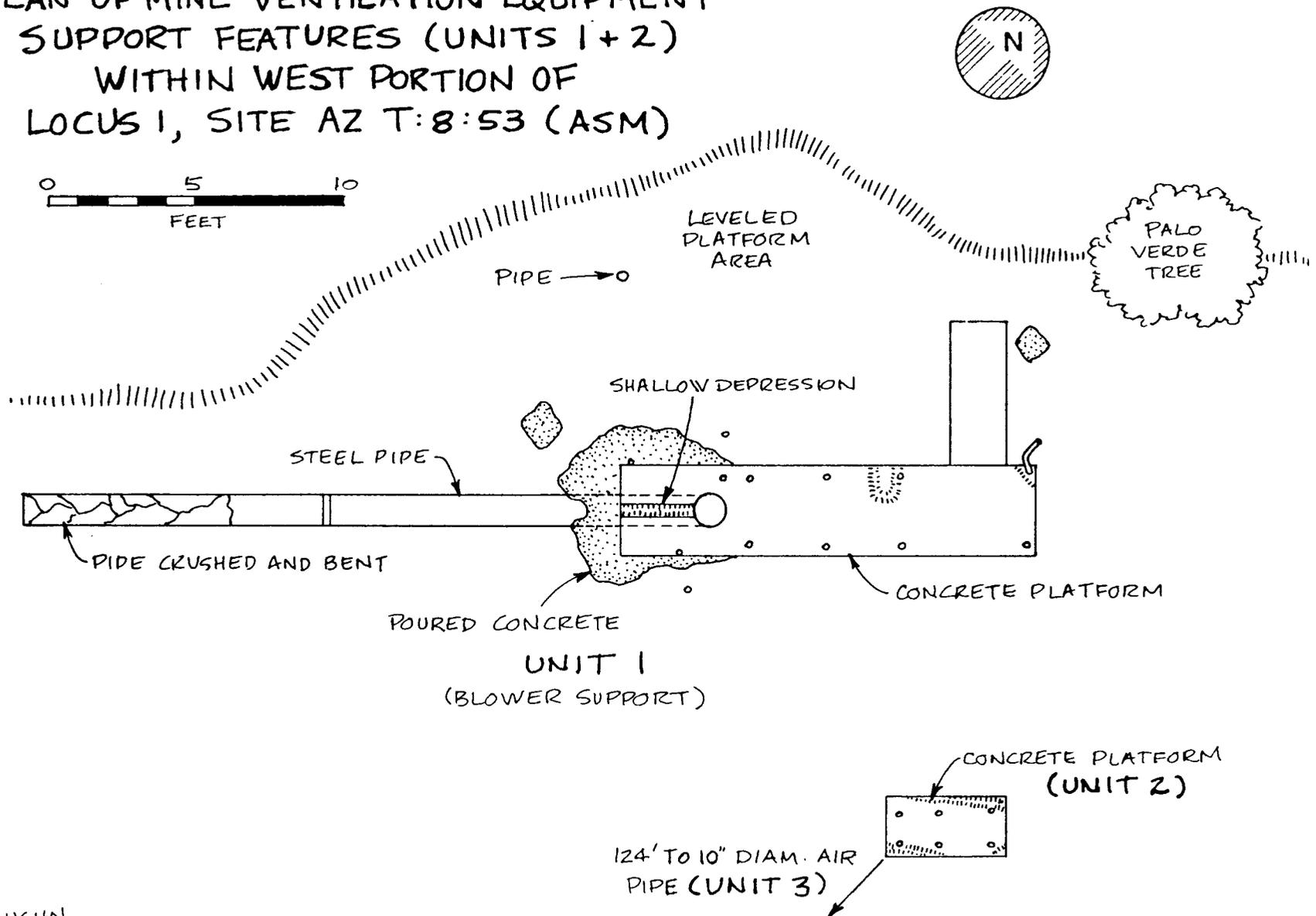
Unit 2; located 8 ft southeast of Unit 1, is a second, smaller concrete pier with six surface mounting bolts. The pier is 4 ft long (NE by SW) by 1.95 ft wide by 2.0 ft high above ground surface. Three sets of 5/8 in diameter bolts spaced 1.0 ft apart projected 3 in from the surface of this feature. The concrete in this unit is also reinforced with rebar. The function of Unit 2 as a component of the ventilation system is unknown.

Unit 3; a 10 in diameter steel pipe projecting vertically ca 0.3 ft from the ground surface at a location 132 ft southeast of Unit 1. This pipe is open and an estimated 165 ft+ in vertical depth. It is suggested that this unit represents a vent for circulating air to exit the Rico Mine.

- Artifacts Recovered in Test Excavation Units in Vicinity of Ore Processing Plant

During test excavations performed in order to expose sub-surface sections of the processing plant features, a total of 108 artifacts were recovered (Appendix A). The 61 metal specimens

FIGURE 18  
 PLAN OF MINE VENTILATION EQUIPMENT  
 SUPPORT FEATURES (UNITS 1+2)  
 WITHIN WEST PORTION OF  
 LOCUS 1, SITE AZ T:8:53 (ASM)



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included 40 nails and nail fragments, 16 hardware-related items and five miscellaneous artifacts. The remaining artifacts recovered included 31 fragments of bottle glass, three ceramic tile fragments, a light socket fragment, two .22 cartridges, six fragments of coal, a brick fragment, a shell button, and two fragments of a ceramic figurine.

Based on the condition of the artifacts and the context in which they were recovered it would appear that the majority of the items were deposited during the construction and/or operation of the processing plant. However, artifacts were recovered that post-date the period of plant operation. One such item, a bottle base embossed with the maker's mark of the Owens-Illinois Co. that has been manufactured since 1954 (Toulouse 1971:403).

### Probable Building or House Sites

In reviewing plats and surveyors notes for Mineral Surveys 4047 and 4111 (1927 and 1929 respectively) it is noted that one house site (16 by 29 ft frame) is located on the Dolores Claim north of the Rico Mine, and a second house site (12 by 36 ft with lean-to additions) is located on the boundary line between the Plutus #2 and Igo Claims to the southeast of the Rico Mine. Documentary information cited above suggests that Sam Hughes occupied the first, smaller site which is closest to the Rico Mine as he developed and operated the mine during the mid-teens into the early-to-mid 1920s. This house was then probably occupied by a watchman after about 1927-1928. The second house site would have been occupied by the post-1928 mining operations manager, assumed to be E. W. Hartman, General Manager and President of The Quicksilver Corporation of America.

Archaeologically, surface artifact scatter loci are located at the historic house site locations as indicated on the 1927 and 1929 Mineral Survey plat maps. Locus 7 corresponds with the location of the smaller house occupied initially by Sam Hughes; Locus 5 corresponds with the location of the larger house probably occupied by Hartman.

#### Locus 5.

The initial ARS report of survey findings (Curtis 1989:8-9) indicated that this locus was defined by a ca 200 ft diameter cleared area. Re-survey of Locus 5 during data recovery investigations indicated that two areas of moderate density artifact concentration (A and B) were represented within the general area of surface artifact scatter. Locus 5A is approximately 20 ft in diameter and located on a relatively flat area. Locus 5B, 30 ft to the northeast, is approximately 20 ft in diameter and located in and along the edge of a small dry wash. Each locus was divided into four, 10 ft square units, with the artifacts from two units (northwest and southeast) being surface collected and the artifacts from two units (northeast and

southwest) being field-recorded. Several diagnostic artifacts were judgmentally collected.

A total of 551 specimens were recovered during the surface collection of Locus 5. The artifacts were collected from two discreet concentrations. Cluster A, located in the southern half of the locus, consisted of household related items that appear to have been deposited during the 1930s. Cluster B, located in the northern half of the locus, consisted of household refuse deposited in the area between ca 1915 and 1930; this locus also contained some materials dating to the late 1930s. There were 380 artifacts recovered during the surface collection of Locus 5A. An additional 329 artifacts were field-recorded. The majority of the artifacts from Locus 5A consisted of glass container fragments, several of which exhibited chronologically diagnostic maker's marks. The remainder of the assemblage included cans and can fragments, bottle crown caps, fragments of white ironstone, earthenware, and porcelain ceramic tableware, and various metal household-related items.

Chronologically diagnostic maker's marks from Locus 5A included those used by the Chattanooga Glass Co. (1927 - present), Owens-Illinois Co.-Pacific Coast Division (1932-1954), and Whitall-Tatum Co (1935-1938) [Toulouse 1971:108, 403, 544]. The remaining artifacts from Locus 5A were not chronologically diagnostic but appear to have been deposited during the same time period. All of the materials from this concentration appear to be related to food preparation and other types of household activities such as clothes cleaning.

The artifact assemblage from Locus 5B consisted of 171 items, predominantly fragments of glass food containers. An additional 138 specimens, including 114 glass fragments, were field-documented. The remainder of the artifacts recovered from this concentration included whole cans and can fragments, white ironstone ceramic tableware fragments, and other items of metal and glass. The chronologically diagnostic maker's marks embossed on several bottle and jar bases include those used by the Barrel Syrup Co. (ca 1915-1928), Capstan Glass Co. (1918-1938), the Heinz Glasshouse (1900-1943), Illinois Pacific Glass Co. (1902-1930), and Obear-Nester Glass Co. (1915-present) [Toulouse 1971:261, 268, 374, 549; Zumwalt 1980:39]. Several diagnostic cans were also recovered from this concentration. These included the lid to a Hills Bros. "Red Can" Coffee can, manufactured from 1936 to 1963, and an MJB Coffee can embossed TRY TREE TEA/ORANGE PEKOE which was manufactured in the 1920s (Rock 1987:38, 39). The lid to a paper-bodied OLD DUTCH CLEANSER can, which has been manufactured since 1905, was also recovered (Periodical Publishers Association 1934:42).

The only chronologically diagnostic ceramic specimens recovered from Locus 5B were two white ironstone (WIS) plate bases stamped with the maker's mark of the Pope-Gosser China Company. This mark was used by the company from 1932 to 1958 according to

Lehner (1988:353).

All of the material documented and /or recovered from Locus 5B appears to represent household refuse, including food preparation and items associated with household maintenance. The majority of the artifacts from Locus 5B date from ca 1915 to 1930.

Based on location and artifact content it appears that Locus 5A represents the site of the house which was occupied by the post-1928 mine manager. This house site was recorded by surveyors in June or July of 1927, and it is possible that this house was actually constructed as early as the early-to-mid-1920s, and occupied by mine supervisory personnel. Locus 5B probably represents a dump site which was used by the occupant(s) of the nearby house during the 1920s and 1930s. The assemblage of artifacts from Locus 5 is not particularly diagnostic of differences in the ethnic representation, age, sex, or occupation of the house occupants. It may be suggested that the occupants of the house site were representative of a comparatively low-to-moderate socio-economic status. No structural materials were observed at Locus 5 and it is assumed that all such remains were removed from the site when the house was dismantled.

#### Locus 7.

This locus was initially identified as the possible remains of a house site defined by a ca 80 ft by 120 ft area of surface artifact scatter (Curtis 1989:9). Locus resurvey during data recovery investigations indicated this scatter to be ca 200 ft N-S by 140 ft E-W in size. The area was gridded into 10 ft square units; the artifacts from 130 (of 260) units were field-recorded, and the artifacts from 26 were collected. The field-recorded units included all even-marked 10 ft squares. Units selected for collection were defined by a 20% random sample of the remaining odd-numbered 10 ft squares. Several diagnostic artifacts were judgmentally collected.

The artifact assemblage recovered during the surface collection of Locus 7 consisted of 738 items of glass, metal, ceramic, and miscellaneous materials. An additional 1430 artifacts were recorded during the surface documentation of Locus 7. The majority of the surface-documented artifacts (938 specimens) consisted of fragments of bottle and jar glass and tableware glass, and whole cans and can fragments (187 specimens). The remaining artifacts were associated with food, food preparation, and other household activities. The majority of the collected artifacts consisted of 357 fragments of bottle glass and pressed glass bowls, and 21 whole cans and can fragments. The remaining artifacts included various household items and construction materials. The chronologically diagnostic glass maker's marks noted on several container bases suggest that the majority of the material at this locus was deposited sometime between the early 1930s and the 1950s. The diagnostic marks noted on container bases included those of the Maywood Glass Co (1930-1961), Owens-Illinois Glass Co. (1929-1954)

[Toulouse 1971:357, 403], and Vick's Va-tra-nol nose drops (1931-present) [Periodical Publishers Association 1934:88).

The only diagnostic ceramic maker's mark noted was the trademark of the Western Stoneware Co. of Monmouth, Illinois, stamped on the body of a stoneware crock. According to Lehner (1988:514), this company manufactured stoneware vessels from 1906 to 1985.

Documented and/or recovered construction materials included nails of various sizes, fragments of milled lumber, bricks and brick fragments, wire mesh reinforced concrete, asphalt roofing shingles, asbestos tile, and fragments of flat window glass. Other building-related artifacts noted at Locus 7 consisted of ceramic floor tile fragments, electrical fuses, copper wire, tube-type ceramic wiring insulators, sewer tile fragments, and window screen.

Two unusual, potentially diagnostic artifacts were a bottle opener and a toy sheriff's badge. The bottle opener is stamped with the name of the Yavapai Garage in Prescott, Arizona. The badge is stamped with the name and image of Hopalong Cassidy, a motion picture character who appeared in 1930s and 1940s Western films.

Although the majority of the artifacts recovered or recorded at Locus 7 appear to represent household refuse deposited after about 1930, earlier materials, which date from the teens and 1920s include fragments of sun-colored amethyst (SCA) glass, hole-in-top can fragments, and a three-piece sardine can embossed FRANCE. Twelve of the units documented in the field contained fragments of SCA glass. These units are in the western portion of the Locus and it is possible that an early component at this location was removed by the construction of southbound 19th Street. The occurrence of the earlier historic artifacts, and construction materials as noted above, suggest that Locus 7 represents the house site recorded by surveyors in July of 1929; this house site was probably occupied by Sam Hughes during the teens and early-to-mid-1920s, and by a mine watchman during the late 1920s and 1930s. Artifacts representing both time periods have been recorded at Locus 7. As noted it is possible that elements of the earlier site component were removed during the construction of an adjacent highway. The absence of in-situ structural features may possibly be attributed as well to this construction activity. Artifacts reflecting ethnic representation, or differences in the sex and occupation of the Locus 7 house residents were not present. The presence of one toy, (a Hopalong Cassidy badge) may indicate that the resident family included a child.

#### Other Mine Excavation Features

A total of 24 additional mine excavation features (other than the five directly associated with the Locus 1 ore processing facility) are associated with Site AZ T:8:53 (ASM) as indicated on

Figure 2. Of this total, 17 were small prospect excavations (i.e., 9 linear prospect trenches or "cuts", 7 small rectangular prospects, and 2 circular prospects [possible shafts]), 1 tunnel was noted, and 5 shafts were recorded. Of these totals only two features were not associated with tailings piles. The tailings from one feature (#5) had apparently been bladed away, and the tailings from the second (Feature 23) had been backfilled into the linear trench. Each mine excavation feature is briefly described below as arranged by feature category.

#### Linear Trench Prospects.

- Feature 2. 11 ft long (NW by SE) by 5 ft wide by 1.5 ft deep trench. A 13 ft long by 4-to-6 ft wide by 1.2 ft high tailings pile is located immediately to the northeast of the feature, and a second smaller tailings pile, 9 ft long by 4 ft wide by 0.3 ft high is located southwest of the feature. This feature is located near the north end of the site on the immediate west side of Northern Avenue.

- Feature 3. Four trench cuts on a hillside within an area 135 ft long by 30 ft wide. In dimension the cuts are (1) 42 ft long by 5 ft wide by 2.5 ft deep (Figure 19), (2) 12 ft long by 5 ft wide by 3 ft deep, (3) 8 ft long by 5 ft wide by 2.5 ft deep, and (4) 38 ft long by 5 ft wide by 1.5 ft deep.

Trench cut 1 contains a filled-in circular area (6 ft diameter) that may represent a filled-in shaft or an area at which ore deposits were followed to a greater depth. Tailings piles are located adjacent to the four cuts on the northeast and southwest and were from 6-to-35 ft long, 5-to-8 ft wide, and 0.2-to-1.5 ft high. Associated with the feature were several small pieces of cobalt blue, aqua, and brown glass. Feature 3 is located near the north end of the site on the west side of Northern Avenue.

- Feature 8. 38 ft long by 3 ft wide by 1.5-to-3.5 ft deep prospect trench. Three low tailings piles, 9-to-14 ft long by 1.5-to-5 ft wide and 1.5-to-3.5 ft high are located to the northwest and southeast of the cut features. This feature is located on the former Cinnabar Claim in the central portion of the site and just west of Northern Avenue. This prospect may represent "shaft" No. 7 as indicated on the 1929 plat for Mineral Survey 4111 (Table 1).

- Feature 10. 17 ft long by 2.4 ft wide by 2 ft deep prospect trench. An associated 17 ft long by 4 ft wide by 1.1 ft high tailings pile is located adjacent to the east side of the feature. A large quartz vein was noted near the trench cut. Associated with the feature was a large square fuel can with soldered handle and spout. The feature is located on the former Cinnabar Claim at about the center of the site and east of Northern Avenue. This feature may represent Trench No. 4 as indicated on the 1929 plat for Mineral Survey 4111 (Table 1).



FIGURE 19. View of Feature 3 (Linear Prospect Trench) at Site AZ T:8:53 (ASM).  
View Northwest

- Feature 11. 14 ft long by 5-to-7 ft wide by 7 ft deep prospect trench. An approximately 16 ft diameter pile of tailings is located downslope at the western edge of the feature. The feature is located at the approximate center of the site east of Northern Avenue and may represent "Discovery Cut" #1 of the former Cinnabar Claim as indicated on the 1929 plat for Mineral Survey 4111 (Table 1).

- Feature 17. 35 ft long by 3 ft wide and 1-to-4 ft deep trench cut. Piles of tailings (1.3-to-1.5 ft high) are located

TABLE 1 Comparison of Archaeologically Defined Mine Excavation Features with Similar Features Indicated on Late-1920s Mineral Survey Plats

Archaeological Feature #	Feature Type*	Claim	Probable Corresponding Feature on Mineral Survey Plat	Mineral Survey Number
5	4	Sinaloa	No. 1 Discovery Cut	4111
6	4	Cinnabar	No. 6 Shaft	4111
7	3	Eureka	No. 3 Shaft	4111
8	2	Cinnabar	No. 7 Shaft	4111
9	4	Cinnabar	No. 5 Trench	4111
10	2	Cinnabar	No. 4 Trench	4111
11	2	Cinnabar	No. 1 Discovery Cut	4111
12	4	Cinnabar	No. 2 Shaft	4111
13	4	Cinnabar	No. 3 Shaft	4111
14	4	Plutus	No. 4 Shaft	4047
16	3	Plutus	No. 4 Shaft	4047
17	2	Dolores	No. 4 Trench	4111
18	2	Dolores	No. 3 Trench	4111
24	3	Plutus #2	No. 2 Shaft	4047
25	3	Plutus	No. 2 Shaft	4047
27	5	Ethel	No. 1 Discovery Shaft	4047

\* 1, Tunnel. 2, Linear Trench Prospect. 3, Shaft. 4, Shallow Rectangular Prospect. 5, Circular Prospect

adjacent to both the northwest and southeast sides of the feature. A large quartz vein was noted within the northwest half of the trench cut. Feature 17 is located on the former Dolores Claim within the southern portion of the site and may represent the No. 4 trench on the claim as indicated on the 1929 plat for Mineral Survey 4111 (Table 1).

- Feature 18. 13 ft long (E-W) by 3 ft wide (N-S) and 0.8 ft deep trench cut. A small tailings pile 8.5 ft long by 4.5 ft wide and 1.2 ft high is located to the immediate north of the feature.

A 3/4 in diameter iron pipe is set in the ground 6 ft south of the southwest corner of the trench. The feature is located on the former Dolores Claim in the southern portion of the site and may represent Trench No. 3 as indicated on the 1929 plat for Mineral Survey 4111 (Table 1).

- Feature 19. 10 ft long (E-W) by 3 ft wide and 0.5-to-1.5 ft deep trench prospect. A 9 ft long by 5 ft wide and 1.5 ft high tailings pile containing quartz fragments is located to the southwest side of the feature. This feature is located on the former Dolores Claim in the southern portion of the site near the intersection of Northern Avenue and 19th Street.

- Feature 23. 265 ft long (NW by SE) by 3-to-4 ft wide filled-in prospect trench cut. The feature has been excavated into a slightly sloping surface composed of schist bedrock containing many veins of quartz. The northwest terminus of this feature ends at an abandoned dirt road that provides access to the mercury processing plant (Locus 1). This feature is located in the southern part of the site on the former Plutus #2 Claim.

#### Tunnels.

- Feature 1. This feature consists of a tunnel 3.5 ft high and 3.0 ft wide that extends 18 ft horizontally into a hillside (Figure 20). Low dispersed tailings are located at the mouth of the feature. The tunnel is situated on the northwest side of southbound Northern Avenue at the north end of the site within a drainage near a horse tunnel that extends below Northern Avenue.

#### Shafts.

- Feature 4. This feature consists of the filled-in remains of a large shaft and an associated disturbed area containing tailings on a hillside covering a total area of 150 ft long (N-S) by 60 ft wide. Due to disturbances related to the filling-in of the feature it is difficult to define the exact location of the shaft, but it appears to have been located in the approximate center of the area defined by loosely compacted tailings covering an area 50 ft long (N-S) by 30 ft wide. To the east tailings have been pushed downslope creating a leveled area. The general area has been cut into the hillside to a maximum depth of at least 11 ft below the natural hillslope surface. An abandoned dirt road provides access to the feature from the north, and continues to the south. The feature is located near the north end of the site and east of southbound Northern Avenue.

- Feature 7. This feature consists of the remains of a large filled-in shaft and associated large tailings pile. The shaft is defined by an area of loosely compacted schistose tailings 12 ft long by 7 ft wide. A large irregular shaped tailings pile 37 ft long by 6-to-30 ft wide and 3.4 ft high is located adjacent to the feature (Figure 21). This feature is one of the largest of the

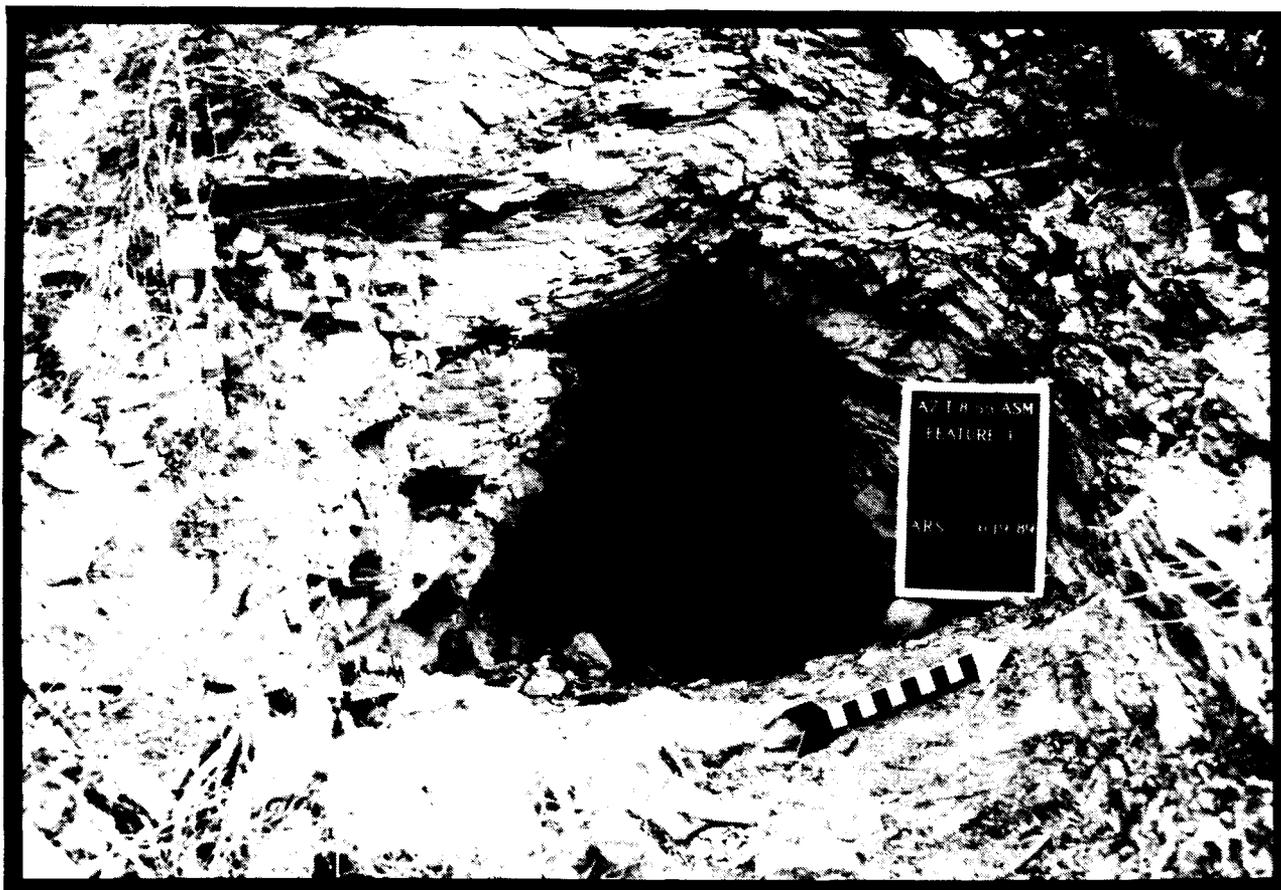


FIGURE 20. View of Feature 1 (Tunnel) at Site AZ T:8:53 (ASM). View Northwest

noted shafts within the Rico Group of mining claims. A dense trash scatter (Locus 9; see page ---) is located approximately 60 ft south of the feature, and may be associated. An abandoned dirt road provides access to the west side of the feature from the northwest to southeast. The feature is located on the former Eureka Claim in the northern portion of the site and may represent "Shaft #3" as indicated on the 1929 plat map of Mineral Survey 4111 (Table 1).

- Feature 16. This feature consists of an oval-shaped shaft 7.5 ft long by 5 ft wide and 3.5-to-5.5 ft deep. The shaft appears to have been partially filled in, although a 14 ft long by 10 ft wide and 1.0 ft high tailings pile is located on the immediate south edge of the feature. Several quartz veins were noted within the feature. Feature 16 is located on the former Plutus Claim near the east central portion of the site and may represent the Plutus "No. 4 Shaft" as indicated on the 1927 plat of Mineral Survey 4047 (Table 1). Feature 14 (shallow rectangular prospect) may also define this historic Plutus shaft.



FIGURE 21. View of Feature 7 (Partially Filled-In Shaft and Tailings Pile at Site AZ T:8:53 (ASM). View South

- Feature 24. This feature consists of a partially filled-in shaft 5.5 ft long by 3.5 ft wide and 2-to-3 ft deep. The feature appears to have extended to some depth at one time. A dispersed low pile of tailings 17 ft long by 12 ft wide surrounds the feature. The feature is located 10 ft north of the southeast end of Feature 23. Feature 24 is located in the southern portion of the site and may represent "Shaft #2" of the Plutus #2 Claim as indicated on the 1927 plat of Mineral Survey 4047 (Table 1).

- Feature 25. This feature consists of a large shaft 11 ft long by 9.5 ft wide and 11 ft deep. The feature appears to have been partially filled-in, although a large tailings pile 16 ft long by 12 ft wide is located downslope from the feature to the west and north. The feature is one of the largest and deepest of the identified shafts from the Rico Group of mining claims. The feature is located on the former Plutus Claim in the southern portion of the site and may define the "No. 2 Shaft" on the Plutus as indicated on the 1927 plat of Mineral Survey 4047 (Table 1).

## Shallow Rectangular Prospects.

- Feature 5. This feature consists of the remains of a prospect recently partially damaged by the movement of heavy machinery. Approximately 50% of the feature has been bladed away. The remaining portion of the feature consists of a rectangular excavation 6 ft long by 4 ft wide by 2 ft deep (Figure 22). No tailings were noted in association with the feature; it is probable that associated tailings were removed by heavy machinery. The prospect is located on the former Sinaloa Claim near the center of the site on the west side of 19th Street, and may represent the "No. 1 Discovery Cut" on the Sinaloa as indicated on the 1929 plat of Mineral Survey 4111 (Table 1).

- Feature 6. This feature is a rectangular prospect 11 ft long by 5 ft wide and 1-to-1.6 ft deep. Three small low tailings piles from 4-to-12 ft long by 2.5-to-6.0 ft wide and 0.3-to-0.7 ft high were located to the immediate north and south of the feature. The feature is located on the former Cinnabar Claim near the center of the site on the west side of 19th Street, and may represent the "No. 6 Shaft" on the Cinnabar as indicated on the 1929 plat for Mineral Survey 4111 (Table 1).

- Feature 9. Rectangular prospect 12 ft long by 4 ft wide and 1 ft deep. A 12 ft long by 4 ft wide and 0.2 ft high tailings pile is located on the slope immediately adjacent to the south side of the feature. An abandoned dirt road is located adjacent to the west side of the feature. The prospect is located on the former Cinnabar Claim near the center of the site on the east side of 19th. Street and may represent the "No. 5 Trench" on the Cinnabar Claim as indicated on the 1929 plat of Mineral Survey 4111 (Table 1).

- Feature 12. Rectangular prospect 8 ft long by 3 ft wide and 1.2-to-2.5 ft deep. A 10 ft long by 8 ft wide tailings pile containing abundant quartz fragments is located downslope adjacent to the southern edge of the feature. The feature is located on the former Cinnabar Claim near the center of the site and may represent the Cinnabar "No. 2 Shaft" as indicated on the 1929 plat of Mineral Survey 4111 (Table 1).

- Feature 13. Rectangular prospect 10 ft long by 4 ft wide and 4.5 ft deep. An associated 12 ft long by 8 ft wide tailings pile is located downslope adjacent to the southern edge of the feature. A quartz vein was noted running through the western edge of the feature. The prospect is located on the former Cinnabar Claim near the center of the site and may represent the "No. 3 Shaft" on the Cinnabar as identified on the 1929 plat of Mineral Survey 4111 (Table 1).

- Feature 14. Rectangular prospect 7 ft long by 5 ft wide and 1.5-to-2.0 ft deep. Associated with the feature is a tailings pile to the west (7 ft long by 5 ft wide and 0.3 ft high) and a tailings



FIGURE 22. View of Feature 5 (Rectangular Prospect) at Site AZ T:8:53 (ASM). View Northeast

pile to the east (10 ft long by 2-to-5 ft wide and 0.8 ft high). A quartz vein was noted near the prospect. The prospect is located on the former Plutus Claim near the east central portion of the site and may represent the Plutus "No. 4 Shaft as indicated on the 1927 plat of Mineral Survey 4047.

- Feature 15. Rectangular prospect 14 ft long by 8 ft wide and 2-to-3 ft deep. An associated 18 ft diameter tailings pile is located downslope to the immediate southwest of the feature. The prospect is located near the east central portion of the site ca 80 ft northeast of Feature 14.

#### Circular Prospects.

- Feature 22. This feature by the filled-in remains of a mine prospect or shaft, and is defined by a ca 20 ft diameter area of surface disturbance. Surface material at this feature has the appearance of loose tailings when compared with the surrounding ground surface. It has not been possible to define the size and

located approximately 200 ft southeast of the mercury ore processing plant (Locus 1).

- Feature 27. This feature consists of a circular prospect 25 ft in diameter and 2.5 ft deep. A 30 ft long by 18 ft wide and 0.3 ft high tailings pile is located immediately to the southwest of the feature, and a smaller tailings pile 15 ft long by 10 ft wide is located to the southeast. Surrounding the feature is a low density dispersed artifact scatter 125 ft long by 75 ft wide. Noted artifacts within this scatter included four pieces of an unidentified SCA bottle, five pieces of an aqua mason jar, five pieces of a cobalt blue bottle, 10 pieces of milk glass, 10 pieces of white ironstone ceramic, five pieces of an earthenware flower pot, and one piece of narrow gauge steel wire. The feature is located on the former Ethel Claim at the south end of the site and may represent the "No. 1 Discovery Shaft" for the Ethel as indicated on the 1927 plat of Mineral Survey 4047 (Table 1).

#### Other Road Features

One segment of abandoned dirt road (R-2 on Figure 3) extends for a distance of ca 200 ft along and parallel to the south side of northbound Northern Avenue between approximately 600 and 800 ft east of the intersection of 19th Street and Northern Avenue. This 20 ft wide roadbed crosses the former Rico, Dolores and Plutus Claims, and probably represents an abandoned segment of Shea Boulevard as indicated on the 1927 plat of Mineral Survey 4047. This road would have represented the primary access route for mining personnel, equipment, and materials to and from the Rico Group mines.

#### Other Surface Artifact Scatters

A total of six additional surface artifact scatter loci, not directly associated with the ore processing facility site component, were identified and recorded within Site AZ T:8:53 (ASM). The locations of these loci are indicated on Figure 3.

##### Locus 4.

This ca 160 ft long (E-W) by 40-to-50 ft wide surface artifact scatter is located on the former Plutus Claim within the east-central portion of the site near the intersection of northbound 19th. Street and northbound Northern Avenue. The trash scatter area was gridded into 10 ft square units for artifact surface collection and recording purposes. A total of 45 units were selected to include all odd-numbered units, and all surface artifacts in each unit were field-recorded. Artifacts from nine units, selected based on a 20% random sample of the remaining even numbered units, were collected. In addition, a 3 ft square test unit was excavated by hand to determine the depth of the artifact deposit. This excavation unit was judgmentally located to test an

deposit. This excavation unit was judgmentally located to test an area which appeared to have the greatest surface artifact density. The test unit encountered sterile soil at 0.7 ft below ground surface.

A total of 1265 whole and fragmentary artifacts were recovered during the surface collection of Locus 4 and the excavation of a test unit in the western half of the locus. The majority of artifacts, 830 specimens or 66%, consisted of several whole bottles as well as fragments of glass containers representing a minimum of 125 bottles and jars. The remaining artifact assemblage included cans and can fragments, metal jar lids and screw caps, ceramic tableware fragments, wire fragments, and other specimens of glass, metal and miscellaneous materials.

Over 2000 artifacts were recorded in the field during the surface documentation of 45 units. Approximately 80% of the artifacts recorded consisted of bottle and jar glass fragments. Other artifacts included cans and can fragments, fragments of various types of ceramic tableware, bottle and jar closures, construction materials, hardware items, and several personal and clothing-related items. The majority of the artifacts recorded at Locus 4 appear to be related to food and food preparation. It was noted that earlier materials such as SCA glass and hole-in-cap can fragments were present in units in the western half of the locus. Diagnostic artifacts from both halves of the locus were collected after the non-collection units were recorded.

The collected glass artifact assemblage included fragments of containers and whole bottles that had contained a variety of identifiable products. Fragments of bottles that had contained milk, carbonated beverages (Coca Cola, Canada Dry ginger ale, and Clicquot Club soft drinks), beer, wine, and liquor were recovered from throughout the locus. Several different food related products, such as pickles, butter, and cooking oil, are represented in the glass container assemblage. Cosmetic jar fragments and containers for proprietary medicines such as Listerine were also recovered from Locus 4. Other bottle specimens that contained identifiable products included fragments of Clorox and Purex bleach containers.

A majority of the bottle and jar bases were embossed with chronologically diagnostic maker's marks. Several of the container bases exhibited maker's marks of glass manufacturers that were operating at the same time as the mine and processing plant, or marks that were used by the manufacturers only during this time period. These marks included those of the American Glass Works (1908-1935), Illinois Glass Co. (1916-1929), Illinois Pacific Glass Co. (1902-1930), Longbeach Glass Co. (1920-1933), and Obear-Nester Co. (1915-present) [Toulouse 1971:23-24, 264, 268, 318, 371].

Several other container bases exhibit marks used by manufacturers and/or bottlers that were in operation at the same time as the mine and processing plant. These marks were also in

use after mining activities in the Rico Mine area discontinued. These specimens include bottles and jars manufactured by the Chattanooga Glass Co. (1927-present), the Clorox Co. (1929-1963), Foster-Forbes Glass Co. (1929-present), Hazel-Atlas Co. (1920-1964), and Owens-Illinois Glass Co. (1929-1954) [Clorox Co. nd; Toulouse 1971:108, 197, 239, 403].

The remaining container bases recovered at Locus 4 exhibit maker's marks that post-date the mine/processing plant period of operation. These marks include those of the Anchor Hocking Co. (1938-present), Arkansas Glass Container Corp. (1958-present), Armstrong Cork Co.-Glass Division (1938-1969), Canada Dry Ginger Ale (ca. 1930-1950), the Glass Container Corp. (1945-present), Maywood Glass Co. (ca. 1958?), and Seaboard Glass Bottle Co. (1943-1947) [Toulouse 1971: 22, 23-24, 101, 220, 357, 455].

Food preparation, household maintenance, and leisure activities are suggested by the identifiable glass containers recovered at Locus 4. Except for those bottle and jar bases exhibiting identifiable maker's marks dating from the same time period as the mining operation, it has not been possible to calculate the overall percentage of the glass assemblage representative of this period. Specimens were not recovered that appeared to relate functionally to mining activities. Those specimens manufactured during the period of mining and processing plant operation are probably associated with one of the houses located in the vicinity of the Rico Mine.

The only chronologically diagnostic ceramic specimens from Locus 4 were the base fragments of two white ironstone plates. The plate fragments, labeled with the maker's marks of the Edwin M. Knowles Pottery Co., were from pieces of tableware manufactured between 1900 and 1963 (Lehner 1988:237). The tin can assemblage contained chronologically diagnostic specimens that post-date the period of mine/processing plant operations. These specimens consisted of two condensed milk cans that are embossed PUNCH HERE. According to Simonis (nd:np), this style of can was manufactured between 1935 and 1945.

Locus 4 artifacts which may reflect age, sex, or ethnic differences include glass cosmetics containers and a lipstick tube, indicating a female individual in the population which produced this trash, and several fragments of children's toys (i.e., stamped and cast metal toy parts). If the Locus 4 materials are from one of the two mine period residences, it may be suggested that the residences were occupied by mine staff (e.g., manager, watchman) and their families. Artifacts reflecting a particularly high, or low, level of socio-economic status were not observed.

This analysis indicates that the Locus 4 artifact assemblage consists of items associated with food preparation, household maintenance, and other household activities not directly related to the operation of the mine and processing plant. It is suggested that the Locus 4 materials which date to the period of mine and

plant operation (teens - mid-1930s) may have been derived from one or both of the two site residences (Loci 5 and 7) which were occupied by mine personnel. Later materials were probably deposited at Locus 4 after the mining operation was discontinued during the mid-1930s. Roads border the north and south sides of the site, and it is a relatively convenient location for the dumping of trash.

#### Locus 6.

Resurvey of this locus during data recovery investigations resulted in the identification of two distinct artifact concentrations (Loci 6A and 6B). Locus 6 is located on the former Plutus Claim within the east central portion of the site and ca 900 ft west of the intersection of northbound Northern Avenue and northbound 19th Street. The two Locus 6 artifact concentrations were approximately 50 ft apart; Locus 6A was 50 ft (NW by SE) by 20-to-25 ft (NE by SW) in size, and Locus 6B was 50 ft (E-W) by 10-to-25 ft (N-S). At Locus A, fourteen, 10 ft units were defined; artifacts from seven units (even numbered) were field-recorded and artifacts from 20% of the remaining odd numbered units (2 units) were collected. At Loci B, eleven, 10 ft square units were defined; artifacts from five units (even numbered) were field recorded and artifacts from 20% of the remaining odd numbered units (2 units) were collected.

A total of 183 artifacts were recovered during the surface collection of Locus 6. An additional 479 artifacts were recorded in the field; 209 specimens from Loci 6A and 270 specimens from Loci 6B. diagnostic artifacts from each cluster were collected after field documentation for further analysis. The majority of the collected artifacts, 132 specimens or 72%, consisted of fragments of beverage bottles, food jars, and other glass containers. The remainder of the assemblage consisted of seven tin cans and five can fragments, three bottle crown caps, four jar lids, 13 ceramic sherds from white ironstone, porcelain, and earthenware ceramic tableware, and 19 other household and personal items. The chronologically diagnostic maker's marks embossed on several bottle bases suggest that this trash concentration was deposited between ca 1945 and 1954. The diagnostic marks noted on the bases include those of the Anchor-Hocking Glass Co. (1938-present), the Glass Container Co. (1945-present), Hazel-Atlas Glass Co. (1910-1964), Latchford Marble Glass Co. (1939-1957), and Owens-Illinois Glass Co. (1929-1954) [Toulouse 1971:48, 220, 239, 332, 403].

Based on the analysis of diagnostic artifacts which were field-recorded and collected it appears that Loci 6A and 6B represent deposits of household trash which were discarded during the late 1940s or early 1950s - after the mining operation had been abandoned. This surface trash scatter is located adjacent to an abandoned segment of Shea Boulevard (Road Feature #2), and it is probable that the Locus 6 materials were deposited by individuals using Shea Boulevard as an area access road.

#### Locus 8.

This small surface scatter is located at the north end of the Cinnabar Claim and near the north end of the site. The ca 20 ft diameter scatter was divided into four, 10 ft square units, with the artifacts from two units being collected and the artifacts from the remaining units being field-recorded.

A total of 336 artifacts were collected from Locus 8. The most common artifact category included wire nails of various sizes and other construction-related materials. The remaining artifact included glass fragments, whole cans and can fragments, clothing parts, wire fragments, and ceramic tableware sherds. In addition to the artifacts recovered during surface collection, 76 artifacts were recorded in the field. These artifacts included 33 whole or fragmentary specimens of glass containers, 9 ceramic tableware fragments, and 30 wire nails. Diagnostic artifacts were collected for further analysis.

Several diagnostic glass maker's marks were noted on the bases of bottles and jars. The marks included those of the Atlantic Bottle Co. (1911-1929), Illinois Pacific Glass Co. (1902-1929), and Owens Bottle Co. (1911-1929) [Toulouse 1971:28, 268, 396]. Eight fragments of SCA glass, manufactured from approximately 1880 to 1915, were also recovered at this location. A single maker's mark was noted on a fragment of a white ironstone plate recovered at Locus 8. This mark is an early design that was used by the Harkens Pottery Co. from 1890 to 1930 (Gates and Ormerod 1982:83; Lehner 1988:198).

Artifacts suggesting that individuals of both sexes contributed to the Locus 8 assemblage included fragments of clothes pins (probable female), and a tobacco tin (male). A child's toy was also observed.

The chronologically diagnostic glass and ceramic maker's marks and the presence of SCA glass would suggest that the materials associated with this artifact concentration were deposited sometime between 1915 and 1930. The presence of food preparation/household refuse and construction-related materials suggests that this locus is associated with a residence rather than with mining activities. It is possible that the artifacts recovered at this locus are associated with one of the residences (as defined by Loci 5 and 7) located in the vicinity of the mine and processing plant during the period from the teens into the 1930s.

#### Locus 9.

This moderate size (ca 50 ft N-S by 20-to-30 ft E-W) trash scatter is located at the approximate boundary between the former Cinnabar and Eureka Claims near the north end of the site. A total of 15, 10 ft square units were established at this locus; artifacts from eight (all odd-numbered units) were field-recorded and

artifacts from two (20% of the remaining even-numbered units) were collected.

A total of 704 artifacts were recovered during the collection of Locus 9. An additional 805 artifacts were documented in the field and diagnostic specimens were collected for later analysis. The majority of the artifacts are food related items and items used in household maintenance, including whole tin cans and can fragments, bottle crown caps, glass container fragments, jar lids and canning jar pressure seals, and ceramic tableware sherds.

The chronologically diagnostic glass maker's marks that were in use during the period operations include those of the Hazel-Atlas Glass Co. (1920-1964), Kerr Glass Manufacturing Co./Sand Springs, Okla. (1915-1946), the Maryland Glass Co. (1916-present), the Owens Bottle Co. (1911-1929), and the Pacific Coast Glass Co. (1925-1930) [Toulouse 1971:239, 306, 339, 396, 414]. Fragments of an opaque white glass jar that contained "Mentholatum", dating from 1889-1955 (Eastin 1965:8), were also recovered at Locus 9.

Two maker's marks were noted on glass container bases that could be associated with the later part of the mining period. These marks were noted on the base of a tumbler manufactured by the Bartlett-Collins Glass Co. (1929-present), and on the base of a bottle manufactured by the Diamond Glass Co. (1924-present) [Toulouse 1971:75, 550].

The diagnostic maker's marks noted on the remaining glass containers indicate that they were manufactured after about 1940, and post-date the period of mining activities in the study area. These materials appear to represent household refuse that was deposited during the 1940s and 1950s. The embossed marks noted on bottle and jar bases included those of the Glass Container Corp. (1945-present), Latchford Glass Co. (1957-present), Owens-Illinois co./"Duraglass" (1940-1954), and T. C. Wheaton & Co. (1946-present) [Toulouse 1971: 220, 316, 403, 527]. The base to a heat-treated tumbler, manufactured by the Libbey Glass Co. since 1944 (Toulouse 1971:257) was also recovered during the surface collection of Locus 9.

Only one of the three ceramic maker's marks is possible from a tableware item that could have been manufactured during the period that the mine and processing plant were in operation. This mark, noted on the base of a coffee cup, was used by the Wellsville china Company from 1900 to 1969 (Lehner 1988:510). The other two identifiable maker's marks are ones that were used by the Shenango China Co. (1954-1969) and the Wallace China Co. (1931-1964) [Lehner 1988: 420, 498]. It is possible that all of the ceramic specimens recovered at Locus 9 post-date the mining operations time period.

The can assemblage consisted of food, beverage, and cleaning product containers as well as non-diagnostic can lids and fragments. Only two of the 56 tin can specimens have embossing that is chronologically diagnostic. The two embossed items

consisted of a lid from a Hills Bros. "RED CAN" coffee container (1936-1963) and a KC Baking Powder lid labeled "SAME PRICE AS 44 YEARS AGO" (1934) [Rock 1987:38; Ward et al. 1973: 240]. Several flat-top beverage cans and can fragments were recovered at Locus 9. This type of can and the "church key" opener used to open it were invented in 1935 (Rock 1987:29). This analysis indicates that the majority of cans recovered or recorded at this locus post-date the period of mine and processing plant operation.

Artifacts reflecting the presence of females in the population from which the Locus 9 artifacts were derived included fragments of cosmetics jars and a ballerina figure.

The analysis of the artifact assemblage documented in the field and/or surface collected at Locus 9 indicates that the majority of materials consist of household refuse that was deposited in this area between ca 1930 and the late 1950s. Some of the recovered artifacts, however, date from the period ca 1915-1930, and could possibly be associated with the mining operations or with one of the residences located in the area during the same time period. It is possible that this locality was used as a trash dump from approximately 1915 until the 1950s because of its ready access from a nearby road. This locus is close to another area containing significant amounts of household refuse (Locus 8) and could have been a favorable location for disposing of household trash and other refuse from a variety of sources. Locus 9 is also located 60 ft from Feature 7, a large mine shaft, and may have been associated with this mine excavation feature.

#### Locus 10.

This surface trash scatter is ca 20 ft in diameter and located at the extreme north end of the site. The scatter was divided into four, 10 ft square units, with artifacts from two units being field-recorded and artifacts from two units being collected.

The artifact analysis of Locus 10 is somewhat inconclusive due to the limited number of specimens recovered and recorded. Only 53 artifacts were recovered from this locus and the majority of specimens were chronologically and/or functionally non-diagnostic.

The only chronologically diagnostic artifacts recovered were a jar base embossed with the maker's mark of the Anchor-Hocking Co. (1938-present) and a "church Key"-opened, all steel beverage container dating from 1935 to ca 1960 (Toulouse 1971:46; Rock 1987:29). The remaining specimens of glass, metal, and ceramic do not exhibit any chronologically diagnostic attributes although they appear to be associated predominantly with food preparation and other household activities. The majority of artifacts recorded in the field (39 specimens of glass, metal, and burned bone), were also chronologically non-diagnostic. The fragments of SCA glass noted at Locus 10 are from pressed glass items that could have been curated for many years after manufacture, and it is not possible to determine when they were deposited in the present location.

Based on the analysis of the limited diagnostic materials documented and/or recovered from this artifact concentration it appears that this locus represents a household trash dump containing materials deposited between the late 1930s and the 1950s. This locus does not contain any materials that would be associated with the mining operations or with the residences located in the vicinity of the Rico Mine during the same time period (ca mid-teens - mid-1930s).

#### Locus 11.

This surface scatter is located on the former Plutus #2 Claim near the south end of the site and approximately 300 ft north of Locus 5, a probable house site (residence) location associated with the mid-teens - 1930s mining operation. Locus 11 is ca 45 ft N-S by 25-to-40 ft E-W in size. A grid system of 10 ft square units was superimposed over the site for the purposes of artifact collection and recording. A total of 67, 10 ft square units were established, the artifacts from which 33 (even numbered units) were field recorded, and 7 (representing 20% of the remaining odd numbered units) were collected.

A majority of the 1400 artifacts recovered during the surface collection of Locus 11 are items associated with food preparation/household activities, or represent construction-related materials. These specimens appear to date from the same time period that the mercury mine and processing plant were in operation. The majority of this assemblage consisted of fragments of glass beverage containers, food jars, and proprietary medicine bottles.

A number of glass specimens were chronologically diagnostic and, in several cases, it was also possible to identify the product once contained in the bottle or jar as well as the glass manufacturer. Diagnostic "brand names" noted on several bases included food-related products bottled by the H. J. Heinz Co. in containers manufactured by the Owens Bottle Co. (1911-1929) and the Heinz Glasshouse (1900-1943) [Toulouse 1971: 396, 236]. The base to a Hellman's "Blue Ribbon" mayonnaise jar, manufactured from 1914-1932, and the base of a jar associated with the Snider Preserve Co. (1884-1943) were recovered (Periodical Publishers Association 1934:16; Zumwalt 1980:388). Fragments to bottles that contained Veronica mineral water (Illinois Pacific Glass Co., 1902-1930) and PLUTO mineral water (Root Glass Co., 1901-1932) were also recovered during the surface collection of this artifact concentration (Toulouse (1971:268, 445). Two Phoenix dairies, the Norton Dairy (ca. 1913-1936) and the Central Avenue Dairy (1912-1949) are also represented in the glass assemblage (Arizona Directory 1914:244); Wilson and Troyer (Compilers) 1936:201; Arizona Directory Co. 1912:286; 1949:23).

In addition to the artifacts recovered during surface collection, over 2600 artifacts were documented in-field, and

chronologically and/or functionally diagnostic specimens were collected for further analysis. As with the recovered artifact assemblage, the majority artifacts recorded in-field consisted of fragments of glass containers; more than 2,000 glass fragments were recorded during the surface documentation of Locus 11. The remaining artifacts were predominantly associated with food and food preparation (whole cans and can fragments, ceramic vessel fragments, and glass tableware fragments). A moderate amount of construction materials such as brick fragments, and building hardware were also noted within the locus as were several clothing related items.

The majority of chronologically diagnostic glass maker's marks embossed on several container bases are associated with manufacturers that were in operation during the same time period as the mine and processing plant. These glass manufacturers include the American Bottle Co. (1905-1916), Capstan Glass Co. (1918-1938), Hazel-Atlas Glass Co. (1920-1964), Illinois Glass Co. (1916-1929), Illinois Pacific Glass Co. (1902-1930), Longbeach Glass Co. (1920-1933), Obear-Nester Glass Co. (1915-present), and the Owens Bottle Co. (1911-1929) [Toulouse 1971:30, 549, 239, 264, 268, 318, 374, 396].

Several patent and proprietary medicines are represented in the glass assemblage collected at Locus 9. The different medicines and cosmetics include Cutex (cuticle remover), Listerine, Lucky Tiger Remedy (eczema and dandruff cure), and Zemo Antiseptic Lotion for Skin and Scalp. All of these medicines and cosmetics were available during the same period of the mining operations (Fike 1987:68, 69, 108; Periodical Publishers Association 1934:89). The most common proprietary medicine represented by the glass assemblage is Listerine which was available without a prescription after 1915 (Fike 1987:67). Fragments of several Listerine bottles, manufactured by the Obear-Nester Glass Co., as well as two corkscrews embossed LISTERINE, were recovered at this locus.

There were several maker's marks noted on container bases that are associated with glass manufacturers that date to the terminal period of mining operations. The manufacturers of these containers include Owens-Illinois Glass Co. (1929-1954), Owens-Illinois/Pacific Coast Co. (1932-1943), and Whitall-Tatum (1935-1938 or 1924-1938) [Toulouse 1971:403, 544; Girade 1980:136].

The remaining food preparation and household-related items recovered during the surface collection of this locus include bottle crown caps, can fragments, jar lids and bottle screw caps. there were also fragments of earthenware and porcelain tableware and stoneware crockery recovered at the locus. The only identifiable maker's mark noted on any of the ceramic sherds was the trademark of the Ridgeways (Bedford Works) Ltd. pottery company, that was in use beginning in 1927 (Godden 1980:539).

A large number of nails and other general hardware items were recovered from the artifact scatter. These materials would suggest

that the scatter was associated with a building or structure, but it could not be determined whether the artifacts are related to any of the structures known to have been present within the Rico Group claims. Office related items associated with Locus 11, such as paper clips, thumbtacks, and a mechanical drawing compass, were also recovered during surface collection.

Artifacts from Locus 11 which are possibly gender-specific include razor blades, suspender parts, and beer and liquor bottles (male), a bobby pin, fragments of cosmetic jars and bottles, and a top from a talc powder can (female). The presence of children in the population contributing to the Locus 11 assemblage is suggested by a toy tea cop and a fragment of a stamped metal toy. The presence of a variety of decorated white ironstone ceramics, fragments of champagne and mineral water bottles may indicate that some of the Locus 11 materials derived from individuals or a family representing a higher than average socio-economic status.

The analysis of the historic artifacts documented in-field and/or recovered during the surface collection of Locus 11 indicates that the majority of the specimens were manufactured during the same time period as the mercury mine operations in the Rico Group (ca mid-teens - mid-1930s). The artifacts recovered at this locus are predominantly related to food preparation and other household activities. A significant number of construction related items such as wire nails and general hardware were also recovered. The amount of household and construction related materials collected from this locus are possibly related to one of the residences in the vicinity of the mine operation. Notably, Locus 11 is located near Locus 5, a probable residential site based on documentary and artifactual data, and it is suggested that the Locus 11 materials were derived from this house site, perhaps at the time of the demolition or removal of its residence structure, as suggested by the presence of construction-related materials.

### Data Integration and Synthesis

Site Az T:8:53 (ASM), a National Register-eligible property within the Phoenix Mountains of Central Arizona, is defined by the remains of mercury mining and ore processing operations on nine claims of the 18 claim Rico Group during the period ca 1915-mid-1930s. Archaeologically, these operations included:

- mineral exploration (prospecting) and assessment mining as represented by 29 mining excavation features (Features 1-29), six of which (Features 20, 21, 22, 26, 28, and 29) are located within the core site area (Locus 1) in the vicinity of the Rico Mine and ore processing facility. These excavation features included eight shallow rectangular prospects, nine shallow mine shafts, most of which had been at least partially filled-in, ten linear prospect trenches or cuts, one tunnel, and two circular prospects. Almost all of the mining excavation features were associated with tailings

piles. It is believed that many of the prospects, and particularly the linear cuts, were excavated for assessment and/or initial discovery purposes (i.e., in representing the initial or annual work on a claim which must be accomplished and reported as part of the claim filing and patenting process), rather than to determine the mineral content of a specific location (i.e., prospects).

- ore mining/extraction as represented, in particular, by a complex of shafts and underground works on the Rico and Dolores Claims (located adjacent to one another near the ends of adjoining claims), and by two large tailings piles (TP-1 and 2). Both the Rico and Dolores mine shafts have been filled-in and there is no surface evidence of their former locations. It is probable that any surface evidence of these shafts would have been removed during the construction of Northern Avenue and 19th Street across the mine sites. A second, much less extensive area of ore mining/extraction appears to be defined by a series of mine excavation features (Features 1-8) and surface artifact scatters (Loci 8 and 9) near the north end of the site (on the Cinnabar, Eureka, and Sinaloa Claims of the Rico Group). These features are poorly documented historically, and it has not been possible to define a shaft or tunnel (with the possible exception of Feature 1, an 18 ft tunnel) which would have defined the primary mining location in this area. One of the two surface trash scatters at this location (Locus 8) contained a substantial amount of household refuse, and may suggest the presence of a residence in association with this complex of features.

- mercury ore processing as represented by a facility (Locus 1) adjacent to the Rico and Dolores mine shafts) which operated primarily to extract mercury from these two mines. It is possible that the facility processed ore from other mining operations within the Rico Group, and particularly from those located on the Cinnabar, Eureka, and Sinaloa Claims to the north. The processing facility is represented by the remains of an ore reduction plant, an abandoned road segment (R-1), three surface trash scatters (Loci 12, possibly 13, and a nail concentration which may represent the site of a small building associated with the processing operation), a widely dispersed, low density scatter of surface artifacts, and by a tailings pile (TP-5) which probably represents an accumulation of waste from the ore processing plant. Locus 1 also contained a complex of three features (Feature J, Units 1-3) which define the remains of a mine ventilation system - probably for the Rico Mine.

Directly associated with the ore processing facility were two additional tailings piles (TP-3 and 4), and two probable house sites (Loci 5 and 7) which were occupied as the residences of the mine managers and mine watchmen. Two additional surface scatter loci (Loci 4 and 11) may be directly related to the Loci 5 and 7 residential sites.

In addition to the surface trash scatters associated either with the processing facility or residential sites were three trash areas (Loci 2, 6, and 10) which contained materials believed to

post-date the period of mining operations at this location, and two (Loci 8 and 9) which may reflect an area of secondary mining endeavor at the north end of the site.

One additional feature of this site, road feature #2, probably represented an abandoned segment of Shea Boulevard. This historic road crossed the Rico, Dolores, and Plutus Claims, and would have represented the primary route for the transportation of personnel, equipment, and materials between the mines and supply and market sources in nearby Phoenix.

With the exception of several sites elements (i.e., three of possibly four surface scatters which post-date the site), the above-described complex of mining, ore processing, and transportation features represented a substantial investment of capital and labor during a relatively short period of time, particularly in considering that extensive operations did not begin until ca 1927-1928, and had been discontinued by the mid-1930s. In considering that mercury mining in the Phoenix Mountains overall has produced less than 100 flasks of mercury (Bailey 1969:228), it is probable that the Rico Group mining operations were not highly profitable.

Historically, this complex of mining-related features had probably begun to develop by at least the mid-teens with the occurrence of limited prospecting activities and the preliminary layout of claims. By late 1916 - early 1917 the Rico Group of claims had been established and development of the Rico properties had been initiated. This initial operation continued into the mid-1920s at a comparatively small scale which involved the extraction of mercury from mined ores in a "crude" 5 ton Johnson-McKay retort. Mr. Hughes, one of mine owners, probably lived in a nearby cabin (represented by Locus-7) and actively participated in the mining and ore processing operations. A hand windlass was used to raise quantities of ore from the Rico Shaft, and it is doubtful that the early sub-surface mining area was well ventilated.

Based upon the introduction of new and improved mining and processing techniques to operations within the Rico Group during the late 1920s, the capacity of the operation to produce greater amounts of mercury bearing ore --and mercury-- was expended. This expansion was initiated when the partnership of Henry T. Bailey and L. H. Larson acquired the Rico Group claims during the summer of 1927. The Quicksilver Corporation of America leased and developed the Bailey/Larson claims between 1928 and 1930, the period during which mining operations were greatly expanded to support a newly installed mercury processing plant which replaced the earlier retort system with a more efficient rotary kiln furnace. Some of this work may also have been undertaken by the United Verde Extension Mining Company of Jerome. In early 1931 control of the Quicksilver Corporation of America was assumed by the McCabe-Doty interests of Houston, Texas, who operated the mines and processing facility until a cave-in of the Rico Shaft occurred in late 1933. Subsequently, some additional prospecting within the group

occurred, and development work was undertaken on the Dolores Shaft. After 1935 a short-lived attempt to re-develop the Rico Mine appears to have taken place but was probably unsuccessful.

Improvements initiated by the Quicksilver Corporation of America between 1928 and 1930 included principally the installation of a new ore processing plant and the expansion of sub-surface mining operations. Improvements which represented technological advances included the rotary kiln and condenser apparatus which allowed for the more efficient processing of larger amounts of ore, the construction of a headframe to accommodate an elevator hoist system, the installation of an electric forced air ventilation system, and the general expansion of ore extraction capabilities within the mine itself. The new plant was well laid out internally and in relation to the locations of the Rico and Dolores Shafts, and was systematically constructed to process mercury-bearing ore in a most efficient manner.

It is the remains of this plant (Locus 1) that represents the primary and most important archaeological component of Site AZ T:8:53 (ASM). A reconstruction of the operation of the ore processing plant based on documentary (i.e., Hartman 1930) and archaeological observations is presented below.

The operation involved a foreman or manager, an estimated seven miners, and three individuals (1 plant operator, 1 crusher operator, 1 clean-up man) to run the ore processing plant. At this level of operation it was possible to extract 20 tons of ore daily from the Rico shaft, and to process (extract mercury) from 40 tons a day. The mined mercury ore was primarily cinnabar and some metacinnabarite derived from an extensive lode of a precambrian metamorphic quartz-sericite schist. Ore was transported through an inclined shaft to the surface by skip buckets attached to cables driven by an electric motor across a 35 ft headframe. Ore materials were then crushed in a Wheeling jaw crusher and transported through a 35 ft vertical elevator into a 40 ton storage bin. From the storage bin crushed ore materials entered the northeast end of a 30 ft long rotary furnace kiln for firing to a temperature in excess of 950 degrees fahrenheit (F.) -any mercury contained in the ore would have become volatilized at about 680 degrees F. Waste materials were then cooled to ca 90 - 100 degrees F, removed through the southwest end of the furnace, and transported to a processing waste pile (Tailings Pile-5).

Simultaneously, much of the dust contained in the volatilized mercury-bearing gasses was removed by a dust collector, and the gasses then forced (by a Sorrocco Blower) through a six-unit Hartman cast iron condenser in which most of the mercury condensed into a liquid on the sides and at the bottom of the condenser. Liquid mercury was then removed from the condenser unit through "water seals" and placed into flasks containing 76 pounds. The reduced gasses then passed through two water-filled baffled redwood tanks in which any remaining mercury vapor was condensed and extracted as a liquid, possibly by flow as a mixture of water and

mercury through a concrete trough system into basin receptacles. Remaining gasses were then vented through a ca 15 ft high by 2 ft diameter smoke stack. It appears that water materials (e.g., accumulating dust and debris) within the condenser apparatus, including the redwood tanks, may have been removed from the system (perhaps by water flushing) and conveyed through the concrete trough system into concrete-lined basins. These final solid waste products were then removed from the site. It should be noted that the function and operation of the concrete trough system and basin/receptacles may not be accurately represented above. Documentary sources do not address this aspect of the ore processing operation.

Flasks containing mercury were then shipped from the processing site to be used in a number of industries and processes, including the manufacture of drugs and chemicals, explosives, paint, felt (from rabbit fur), and more recently dental alloys, bactericides and fungicides and in the production of chlorine. Mercury was also used in electrical apparatus and batteries, and in the amalgamation of gold and silver bearing ore (Lausen and Gardner 1927:9-10; Bailey 1969:226-227).

#### Site Evaluation

Site AZ T:8:53 (ASM) was initially determined to represent a National Register-eligible cultural resource on the basis of information which it contained and reflected pertaining to the history and technology of early mercury mining and ore processing in Arizona. This initial evaluation has been supported by the present, intensive study of archaeological and historical documentary evidence pertaining to the site.

The archaeological site, AZ T:8:53 (ASM), and its documented history, represent a substantial body of data pertaining to 1) the history of mining in the Phoenix Mountains of central Arizona, 2) the history and technology of mercury mining in Arizona, and 3) the history and technology of mercury ore processing. The fact that these data pertain to mining of a comparatively scarce mineral (mercury) and to the even less common occurrence of mercury ore processing facilities adds, as well, to the overall value and significance of the site as a National Register quality cultural property.

It has been our intention to document and report data supportive of this site's characterization as a National Register-eligible historic archaeological resource. The detailed historical and archaeological reporting of an interrelated complex of site features above has, we feel, achieved this objective.

The mining and ore processing operation defined by Site AZ T:8:53 (ASM) was developed and operated, in large part, by local mining and economic interests. Technologically, it has been

indicated that an early (mid-teens) mining operation and processing facility which was technologically unsophisticated, was replaced within a short time period (15 years) by an operation using the most currently available equipment, operations procedures, and technologies for both mineral extraction and processing, given the comparatively small scale and yield of the overall operation. It is noted that the mineral claims involved in the production of mercury from the Rico Group were developed and operated by a series of different individuals and economic interests over time. This observation suggests, and is supported by data suggesting limited mercury production, that mercury mining within the Rico Group was not a particularly successful business venture, despite the documented level of mining activity, the ready availability of labor and support (i.e., electric power, fuel oil) and shipping facilities (i.e., transportation by rail to and from Phoenix), and the modern nature of the processing operation. Had the venture been relatively successful, it is assumed that one, or several interests or owners at most, would have developed and operated the Rico Group mines until the mercury ore body had been exhausted.

Data pertaining to ethnic, gender, age, and status characteristics of the population engaged in mining and ore processing activities at Site AZ T:8:53 (ASM), as reflected in the associated artifact assemblage, and in the historical record, have been inadequate as a basis for developing any meaningful interpretations of such social and cultural attributes. It appears (based on surnames) that Anglo-Americans controlled the development of the Rico Group mining and ore processing operation throughout its history. Mine operators living in residences on-site may have been accompanied by their families, at least two of which had children.

### Recommendations

Cultural resources clearance for proposed freeway construction actions which will negatively impact most of this site's features has been recommended for approval since the important data values which characterize this site have been recovered and reported.



## CHAPTER 5. SITES AZ T:8:54 AND 55 (ASM)

### Site Setting

The two additional project area sites, AZ T:8:54 (ASM) and AZ T:8:55 (ASM) were further evaluated through fieldwork and documentary research procedures to determine the eligibility of each site for inclusion in the National Register of Historic Places. These sites are located within the Squaw Peak Extension corridor south of 29th Street and immediately north of the previously described Rico Group of claims.

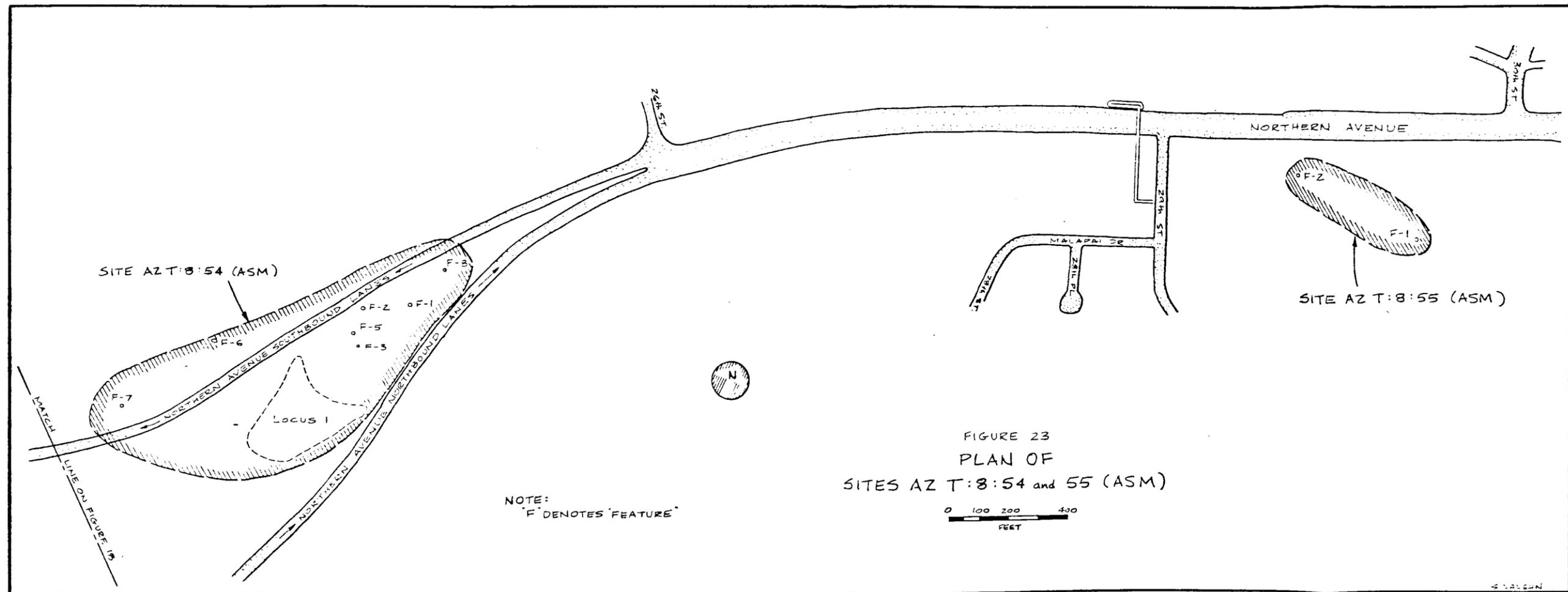
Site AZ T:8:54 (ASM) consists of a complex of eight historic mine excavation features and a large surface scatter of historic artifacts, and is located within portions of the extreme northwest corner of Section 35, and the SW1/4, SW1/4 of Section 26, T3N, R3E at an elevation of between 1400 and 1480 ft above mean sea level (Figures 1 and 23). Site features occur within a 1200 ft long (NE by SW) by 300 ft wide area located primarily between southbound Northern Avenue on the west and northbound Northern Avenue on the east. Site AZ T:8:55 (ASM) is defined by two historic mine excavation features, and is located on the east side of Northern Avenue within a portion of the E1/2, NW1/4, SE1/4 and the W1/2, NE1/4, SE1/4 of Section 26, T3N, R3E at an elevation of ca 1480 ft above mean sea level. The two site features occur within an area ca 500 ft long (NE by SW) by 150 ft wide.

### Historical Background - The Mercury and Constellation Groups

By: Michael M. Gregory

Within the northern half of the study area two groups of archaeological features and deposits were documented which may represent the abandoned remains of mercury mining ventures in the Phoenix Mountains between 1916 and at least April 1924. These remains are designated Sites AZ T:8:54 and 55 (ASM), and each site appears to be associated with claims of the Mercury or the Constellation Groups. The majority of the claims posted for the two groups were not developed beyond the improvements necessary to establish the claims. Exceptions do occur at the Mercury and Jupiter Claims (of the Mercury Group) which were actively mined. Mercury represents the primary mineral of interest at each of the claims, although copper deposits do occur at the Mercury Claim (Schrader 1918:101). The copper deposits do not appear to have been developed to any degree, probably due to their limited size. Discovery of mercury at the Mercury and Constellation Groups occurred in 1916 and predated discoveries at the Rico Group by one or two months (Schrader 1918:97).





Initially, the Mercury and the Constellation Groups began as a contiguous suite of six claims, the Vampire, Constellation, Mercury, Almadan, Shay, and Fraction, which were staked between November 1916 and April 1917. At a later date, the number of claims increase to 10 or 11, and the expanded group became known simply as the Mercury Group (Lausen and Gardner 1927:56). None of these claims were patented and available records do not document work at the claims after April 1924. Similarly, no systematic records recording either improvements made upon the claims, or the amount of mercury yielded at these locations are known to exist.

The exact location of the claims is somewhat problematic as three documentary sources reviewed each indicated a slightly different position and orientation for them; accordingly, attribution of Sites AZ T:8:54 and 55 (ASM) to claims of the Mercury Group is probable, but not a certainty. The earliest record (Schrader 1918:98) shows the claims located approximately 6,800 ft north-northeast of Squaw Peak and 4500 ft northeast of the Rico Group of claims. Six years later, Lausen and Gardner (1927:52) suggest that the original claims of the groups are located approximately 10,000 ft northwest of the peak and immediately adjacent to the north end of the Rico Group of Claims. Data from the Arizona Department of Mines and Mineral Resources place the general location of the claims in the SE1/4 of Sec. 27, T3N, R3E, which is approximately 8500 ft northwest of Squaw Peak. This confusion surrounding the location of the claims has made it difficult to determine which claims are located within the study area, and which abandoned developments are represented by the archaeological features and deposits recorded during the study.

Most of the claims maintain a regular size and shape throughout the documented history of the groups; however, the same cannot be said of their orientation. With two exceptions, each claim had a rectangular shape measuring approximately 1500 by 600 feet. Exceptions to this standard size and shape are the Fraction Claim which, while rectangular in shape, measured only 1500 by 300 ft and an unnamed claim between the Jupiter, Neptune, Constellation, Sirius, and Almaden Claims which exhibits a polygon shape of irregular size (Lausen and Gardner 1927:52). Schrader (1918:97) shows the original six claims oriented roughly N 23 E on a lode striking N 30 E. The same claims are oriented roughly N 40 E by Lausen and Gardner (1927:52), and the four claims that adjoin the original at their southern end are oriented N 20 E on a lode striking N 22 E. No additional records were located that indicate which of the orientations is correct. By 1924 the claims are collectively known as the Mercury Group and adjoin the Key Claim of the Eureka Group (a former claim of the Rico Group).

The earliest account of the Mercury Group is reported by Frank Schrader (1918). Schrader visited the area between late 1916 and April 1917, and reported that the Mercury Group comprised the Mercury, Vampire, Almaden, and Fraction Claims, all owned by Henry and J. A. Porterries; and that the Mercury shaft located near the center of the Mercury Claim represented the principal improvement

made within the group (Schrader 1918:101). At the time the shaft was 6 ft by 10 ft by 10 ft deep, and exposed mercury bearing ore almost the length of the cut and across the shaft. The cut exposed some copper bearing ore which was not developed. By June 1917 the shaft had been developed to a depth of 25 ft and the lode consisted "of 5 feet 2 inches of siliceous mercury ore of good grade" (Schrader 1918:102). The quality and quantity of the ore on the property improved with depth (Schrader 1918:102).

During the Winter 1917-1918 the Porteries planned to process the ore worked from the claims, probably ore from the Mercury shaft only, through a reduction plant (Schrader 1918:102). They intended to construct the plant on their farm located three-quarters of a mile away on the Paradise Valley slope. A reported \$5,000 worth of ore had been removed from the shaft and dumped on the property. In addition, another estimated \$20,000 worth of ore was visible in the ground (ibid.). Whether this ore was to be removed by the end of 1917 remains unknown. Similarly, records reviewed do not indicate whether the reduction plant was erected and in operation to process the recovered ore. Schrader's report appears to describe work completed only through the summer 1917, and, until April 1924, nothing new was determined about activities conducted at the locations. In regards to the Constellation Group, Schrader mentions only that it is owned by James Shay (1918:99).

During April 1924, Lausen and Gardner (1927) visited the Mercury Group which had grown to "about eleven claims" and included all of the former Constellation Group locations. At the time, the Mercury Group was operated by the Porterie Mining Company, which was owned by the Porterie family. Between mid-1917 and April 1924 it appears that development of the claims had continued since Lausen and Gardner report improvements made upon the claims which were not described in 1918 as a result of Schrader's 1916-1917 visit. The principal developments at the group were the Mercury and Jupiter Claims (Lausen and Gardner 1927:56). Only assessment and development work had been completed at the other claims. During the 1924 visit of Lausen and Gardner, no work was being undertaken at the Mercury Group. Descriptions of previous work completed within the Group are, however, presented in the 1927 report. At the Mercury Claim improvements comprised two shafts, one 4 by 6 by 68 ft deep, and the other 4 by 6 by 12 ft deep; and an open cut 4 by 20 by 15 ft deep (Lausen and Gardner 1927:56-57). These developments indicate that mining operations continued at least sporadically at the claim between the summer of 1917 and April 1924, since Schrader had reported only a single shaft 25 ft deep (Schrader 1918:102). At the Jupiter Claim which was posted after the summer of 1917, improvements represented a three compartment, timbered shaft, 6 by 20 by 18 ft deep, with three tunnels, 4 by 6 ft in section by 35, 42, and 20 ft long extending away from it; a winze 4 by 5 by 6 ft deep; and two open cuts, one 6 by 15 by 10 ft deep and the other 4 by 40, by 17 ft to the face (Lausen and Gardner 1927:57). The timbering of the shaft represented a substantial investment of time and money, suggesting that the owners intended to develop it to a much greater depth.

The quality of the timbering allowed the shaft to be continued to a depth of 1,000 ft or more, and would cost \$100 per ft to install (Lausen and Gardner 1927:59).

In addition to the subsurface improvements made at the claims, several surface facilities had been developed (Lausen and Gardner 1927:57). Near the deeper shaft reported for the Mercury Claim, the owners had erected a 24 by 38 ft corrugated iron compressor building which housed various pieces of machinery. A 10 by 12 inch Sullivan air compressor, a Fairbanks-Morse 25 h.p. hoist, and a 40 h.p. gasoline engine to be used to operate the compressor were housed in the building. None of the equipment was connected for operation and all improvements upon the claims noted prior to Lausen and Gardner's visit had been made by hand. Other structures noted on the group comprised five, 10 by 12 ft frame cabins (no locations given), and forms erected around the Mercury shaft to receive cement to create piers for a shaft headframe. Prior to Lausen and Gardner's visit workers removed ore from the shaft using a hand operated wooden windlass.

Based upon what they learned during their 1924 visit, Lausen and Garden indicated that "there are several promising showings of quicksilver mineral on the Mercury Group, and further expenditure would be justified in hope of finding a mineral deposit of ore" (1927:59). Much of the ore they reported for the mine assayed at 0.22 per cent or less mercury, or 4.4 pounds per ton, which was too poor to work and process at a profit; however, some samples assayed at 1.47 per cent mercury (or 29.40 pounds per ton), and if this or a better grade could be mined, it would make the owners a profit (Lausen and Gardner 1927:58). On the Jupiter Claim, ore assayed at 0.22 per cent mercury did "warrant further development work", and cinnabar in the Mercury shaft and the "mineral occurring in the vein at the surface for 300 ft to the north would justify further development work, especially drifting on the vein under the surface showings" (Lausen and Gardner 1927:59). The authors do not attempt to estimate how much ore is present on the claims because ore had not been blocked out at the time, and as far as they knew no ore had been "developed" on the Mercury Group (ibid.).

The Lausen and Gardner report (1927) is the last known record describing the Mercury Group claims. Whether additional work was planned and eventually performed at the claims is undocumented. The presence of equipment and prepared pier forms at the Mercury Claim, and the substantial timbering of the Jupiter shaft suggest that the Porterie Mining Company planned to continue operations (Lausen and Gardner 1927:58). Whether financial problems forced an end to the company's efforts, or whether the company suspended operations for a period of time while it prepared for more intensive operations has not been determined. The lack of documentation prevents a detailed history of the claims from being developed, and leaves unanswered many questions about the operation and production of the Mercury and Constellation Groups of claims.

## Study Procedures

Documentary research and archaeological fieldwork study procedures at Sites AZ T:8:54 and 55 (ASM) are essentially those described for Site AZ T:8:53 (ASM) [see pages 29-34], with the exceptions that excavations were not performed, and the collection/field recording of artifacts from Locus 1 at Site AZ T:8:54 (ASM) was accomplished at a less intense level of sampling (i.e., 10% random sample field recording and 5% random sample collection).

### Site Description - AZ T:8:54 (ASM)

As indicated, Site AZ T:8:54 (ASM) is defined by eight mine excavation features (Features 1-8) and a large surface scatter of artifacts (Locus 1) within an area ca 1200 ft (NE by SW) by 300 ft wide. Six of the eight features are clustered within the north one-third of the site on the east side of southbound Northern Avenue (Figures 1 and 23); the remaining two features (Features 6 and 7) are located in the south half of the site on the west side of southbound Northern Avenue. Locus 1 is located at about the center of the site on the east side of southbound Northern Avenue.

#### Mine Excavation Features

##### Feature 1.

This feature consists of a roughly circular prospect 9 ft in diameter and 5.5 ft deep. An irregular shaped tailings pile 12 ft long by 11 ft wide and 1.5 ft high is located to the immediate east of the feature. The feature is 8 ft east of an abandoned section of dirt road. The feature is located on an east facing hillslope 120 ft southeast of the centerline of southbound Northern Avenue, and 950 ft southwest of 26th Street.

##### Feature 2.

This feature consists of a 9 ft long by 3.5 ft wide and 1.5 ft deep prospect trench cut. A low 0.8 ft high tailings pile 16 ft long by 10 ft wide surrounds the feature. The feature is located 10 ft south of an abandoned section of dirt road on an east facing hillslope 50 ft southeast of southbound Northern Avenue, and 1130 ft southwest of 26th Street.

##### Feature 3.

This irregular shaped prospect is 17 ft long by 8 ft wide and 1.5 ft deep. A 10 ft long by 3 ft wide and 0.3 ft high tailings pile is located to the immediate east of the feature, and a 9 ft long by 3 ft wide and 0.2 ft high tailings pile is located to the south. The feature is located on an east facing slope 150 ft southeast of southbound Northern Avenue, and 1160 ft southwest of 26th Street.

#### Feature 4.

This feature consists of a rectangular shaped shaft 8 ft long by 7 ft wide and 9 ft deep. The shaft has been partially filled in, but a large amount of tailings covering an area 24 ft long by 15 ft wide are present downslope to the south and east of the feature. The shaft is located on a south facing slope 180 ft southeast of southbound Northern Avenue, and 1310 ft southwest of 26th Street.

#### Feature 5.

This feature is a roughly rectangular shaped shaft 9 ft long by 6 ft wide and 8 ft deep. The shaft has been partially filled in, but a large amount of tailings covering an area 24 ft long by 15 ft wide are present downslope to the south and east of the feature. The shaft is located on a south facing slope 180 ft southeast of southbound Northern Avenue, and 1310 ft southwest of 26th Street.

#### Feature 6.

This feature consists of an irregular shaped prospect trench cut 19 ft long by 5-to-6 ft wide and 3.5 ft deep. A substantial tailings pile 16 ft long by 6 ft wide and 1.5 ft high is located immediately east of the feature, and a slightly smaller tailings pile 14 ft long by 7 ft wide and 1.5 ft high is located to the west. A very small dispersed pile of tailings 8 ft long by 4 ft wide and 0.3 ft high is located to the south. The feature is located on an east facing hillslope 130 ft northwest of southbound Northern Avenue, and 1620 ft southwest of 26th Street.

#### Feature 7.

This irregular shaped prospect is 15 ft long by 10 ft wide and 3 ft deep. A substantial tailings pile 14 ft long by 7 ft wide and 1.8 ft high is located to the immediate east of the feature. The feature is located on a south facing hillslope 80 ft west of southbound Northern Avenue, and 2000 ft southwest of 26th Street.

#### Feature 8.

This feature consists of a tunnel which is 5 ft high, 4-to-12 ft wide, and 11 ft deep (Figure 24). The feature is wider at its mouth and tapers in. An area immediately in front of and below the mouth of the tunnel is covered by an approximately 12 ft diameter pile of tailings containing many pieces of quartz. A large quartz vein was noted on the interior of the tunnel. The tunnel is located in a drainage within a triangular shaped parcel between the north and southbound lanes of Northern Avenue, 60 ft southeast of southbound Northern Avenue, and 820 ft southwest of 26th Street.



FIGURE 24. View of Feature 8 (Tunnel) at Site AZ T:8:54 (ASM). View Northeast. [Note Site Identification Discrepancy on Photo Board]

Although the above features have not been attributed to locations on individual claims within the Mercury Group, it is noted that the majority of features are located ca 1800 ft southwest of the existing "Mercury Mine School" reportedly constructed on the site of one of the two shafts on the Mercury Mine Claim. Assuming this to be correct, at a location ca 1800 ft southwest of the Mercury Mine School the majority of reported Site 54 features would probably be located on the Almaden or Sirius Claims.

#### Surface Artifact Scatters

##### Locus 1.

This moderate-to-high density surface trash scatter is ca 300 ft long (N-S) by between 140 and 260 ft wide, and is located on a relatively level area above two dry washes and between the

northbound and southbound lanes of Northern Avenue at between 1250 and 1550 ft south of 26th Street.

The surface artifact evaluation strategy for this large scatter was designed to verify or discount initial survey level observations that the scatter may have post-dated the mercury mining activities in the Phoenix Mountain Preserve area. To achieve this a 10% random sample of the scatter was field-recorded, and a 5% random sample was collected for more detailed analysis. The scatter contained a total of 622, 10 ft square units from which 62 were selected for field recording of artifacts; the artifacts from 31 units were collected. The samples were selected using a random numbers table and initially defining the 10% sample for field recording. A small sample of chronologically and functionally diagnostic artifacts were judgmentally collected from the units not included in the collection sample for more detailed analysis.

The majority of the 1506 artifacts recovered during the surface collection of this site appear to date from the 1940s and 1950s based on the analysis of diagnostic items. The estimated 2220 field-recorded artifacts reflect a content and date range very similar to the collected materials. Approximately half of the artifacts consisted of bottle and jar fragments. The maker's marks on the bottle and jar bases, along with a single embossed coffee can lid, were the only diagnostic artifacts recovered from this site locus.

Only three of the maker's marks, from bottles and jars manufactured by Brockway Glass (1925-to-present), Hazel-Atlas (1920-1964), and Owens Illinois Co. (1929-1954) were in use prior to 1930. All of these marks were still in use by the 1950s (Toulouse 1971). The remaining maker's marks were all in use in the 1940s and 1950s. Based on the date ranges for the various maker's marks it appears that most of the glass items were deposited in this area during the decades of the 1940s, 1950s, and 1960s.

The only diagnostic metal item was the lid to a coffee can. This can lid, used by Folgers Coffee, is embossed with the words "For Coffee Pot or Percolator". This can embossing was used by Folgers from 1952 to 1959 (Rock 1987:36).

The remaining artifacts consisted of non-diagnostic items associated with food preparation/household activities and construction related activities. These artifacts included cans and can fragments, crown caps, jar screw caps, scrap sheet metal, nails and other building hardware, and porcelain fixture fragments. All of this material was randomly scattered around the locus.

This artifact scatter appears to be the result of multiple, random episodes of dumping household trash and construction material at various times between the late 1930s and the 1960s.

The analysis of diagnostic materials indicates that the greatest amount of dumping occurred between about 1940 and 1950. The majority of the material post dates the period during which mercury mining operations occurred in the area, and as such Locus 1 materials are not associated with these activities. Locus 1 is in an area which was readily accessible from the east side of southbound Northern Avenue, and appears to have been used as an informal dump site up until the area became part of the Phoenix Mountain Preserve (early 1970s). Artifacts from Locus 1 of Site AZ T:8:54 (ASM) due to their comparatively recent age, are not systematically reported in the Appendix A artifact descriptions. Analysis data are, however, on file at ARS and with the Arizona State Museum.

#### Site Description - AZ T:8:55 (ASM)

As noted, Site AZ T:8:55 (ASM) consists of only two mine excavation features (Features 1 and 2) located on the east side of Northern Avenue within a ca 550 ft long (NE by SW) by 150 ft wide area and 450 ft apart.

#### Mine Excavation Features

##### Feature 1.

This feature consists of a roughly circular shaft 16 ft in diameter and 4.2-to-5.6 ft deep (Figure 25). An approximately 20 ft long by 10 ft wide pile of tailings is located downslope from the northwest side of the feature. The shaft does not appear to have been filled in. The feature is located on the side of a northwest facing hill covered with schist bedrock, 330 ft southeast of Northern Avenue, and 870 ft northeast of 29th Street.

##### Feature 2.

This feature is an irregular shaped shaft 9 ft long by 8 ft wide and 5.3 ft deep. Located to the northeast of this feature is a tailings pile 11 ft long by 2-to-3 ft wide and 0.5 ft high. To the southwest of the feature is a similar tailings pile 10 ft long by 4 ft wide and 0.5 ft high. Natural erosion has cut into the feature on the east and west. The shaft appears to have been partially filled in, and recent refuse consisting of lawn clippings and tree trimmings have been deposited within the feature. The feature is located on a relatively level area 120 ft southeast of Northern Avenue, and 460 ft northeast of 29th Street.

The two Site AZ T:8:55 (ASM) mine excavation features are located between 1200 and 1750 ft northeast of the Mercury Mine School location. Assuming the school to be on the Mercury Claim, the location of the Site 55 features would be just to the north of the Mercury Claim on lands which have not been formally assigned a claim or group designation.



FIGURE 25. View of Feature 1 (Shallow Shaft) at Site AZ T:8:55 (ASM). View East  
Data Integration and Synthesis

Based on the available evidence, Site AZ T:8:54 (ASM) appears to represent a complex of related mine excavation features which were probably excavated during the teens and 1920s. It is probable that several of the mine excavation features (2, 3, 6, and 7) were excavated for mineral exploration or assessment purposes, while ore may actually have been extracted from several (Features 1, 4, 5, and 8) and removed to another area for processing. This distinction is based on the nature of the feature and on shaft or tunnel depth. It has been tentatively concluded that these mine excavation features are located within the Almaden or Sirius Claims of the Mercury Group.

Site AZ T:8:55 (ASM) appears to represent two isolated, and possibly unrelated mineral prospect shafts which may have been excavated during the teens or 1920s. These features may not have been associated with a formally designated claim or claim group and

as such are thought to represent prospects (rather than shafts from which ore was removed for processing) on public lands.

### Site Evaluations

This evaluation of Sites AZ T:8:54 (ASM) and AZ T:8:55 (ASM) for the presence of National Register quality cultural resource values has indicated that neither site is eligible --or potentially eligible-- for inclusion in the National Register of Historic Places. Several reasons may be provided in support of this determination.

(1) Neither site can be clearly associated with a specific historically documented claim or claim group, or time period, although it has been tentatively suggested that the Site 54 features may have been associated with either the Almaden or Sirius Claims of the Mercury Group of claims which were worked during the teens and 1920s.

(2) The identified features do not contain, nor are they associated with mineral exploration support structures or facilities; such an association may have provided data on the basis of which specific claim associations could be demonstrated.

(3) Period (i.e., teens - 1920s) surface trash scatter loci are not associated with or in the vicinities of the Site 54 and 55 mine excavation features. Such loci may have documented the historical context for mining activities at these sites.

(4) The mine excavation features, with the exception of the Feature 8 tunnel at Site 54, do not represent evidence of extensive or long term mining activities from which significant quantities of mercury-bearing ore were obtained. The majority of features appear to be prospects or assessment excavations, or shallow shafts from which limited quantities of ore may have been recovered. Evidence of deep shafts or tunnels was not represented at either site. Thus, the mining activities represented at these sites is relatively minor in scope, and not demonstrative of new or developing mining technologies.

This study has resulted in the documentation and reporting of all cultural features associated with each site such that the question of the National Register eligibility of either site becomes a moot issue.

### Recommendations

On the basis of the above findings that neither Site AZ T:8:54 (ASM) nor Site AZ T:8:55 (ASM) is of National Register --or potential National Register-- quality, it is recommended that cultural resources clearance for proposed highway construction actions which may affect these sites be approved.



## CHAPTER 6. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

### Summary

This archaeological and historical study of cultural resources within the Phoenix Mountains of central Arizona involved data recovery investigations at one historic archaeological site (AZ T:8:53 (ASM)), and the further investigation of two historic archaeological sites (AZ T:8:54 and 55 ASM) in order to determine their eligibility for inclusion in the National Register of Historic Places.

The National Register eligible site, AZ T:8:53 (ASM), located in the southern portion of the study area in the vicinity of Northern Avenue and 19th Street, is defined by a complex of mercury mining and ore processing facilities in association with a number of surface artifact scatters, several of which may define the locations of residences occupied by mine personnel. Historically the mining and processing operation within the Rico Group of mining claims was on-going from the mid-teens into the mid-1930s. This site is represented by 29 mine excavation features, including one shallow tunnel, nine shallow (or partially filled-in) shafts, ten linear trench cuts, eight shallow rectangular prospects, and two circular prospects. Many of the prospects are assumed to have resulted from annual assessment work required for individual claims. Five isolated tailings piles (i.e., not associated with identified mine excavation features) were also observed, one of which (TP-5) probably represents a dump for the water or residue produced by a mercury ore processing plant. The remaining tailings piles were probably associated with the filled in Rico and Dolores Mines. Other site features included the remains of an ore processing facility, as represented by concrete foundation remains for an elevator and ore storage bin, rotary kiln, condenser, and waste collection components of the facility. Features associated with a power ventilation system for the Rico Mine were also documented as were a total of 12 surface trash scatters, three of which appear to post-date the period of mining operations, three of which are associated with the ore processing plant operation, at least two, and possibly four of which were components of the mining operation, and two of which are associated with a secondary area of mining activity at the north end of the Rico Group of claims. Two abandoned historic road segments were also identified as features associated with Site AZ T:8:53 (ASM).

The two remaining sites (AZ T:8:54 and 55 ASM), located near the north end of the study area in the vicinity of Northern Avenue and 26th. Street, may have represented mining activities on claims of the Mercury Group, on which mining has been documented as occurring during the period between the mid-teens and mid-1920s. Site AZ T:8:54 (ASM) is defined by a complex of eight mine excavation features, including four linear trench cuts, three

shallow (or partially filled-in) shafts, and a tunnel. An extensive surface artifact scatter locus located in the vicinity of, and initially recorded as a component of Site 54, was determined to represent a deposit of 1940s - 1960s trash which was not associated with the historic mining aspect of Site 54. Site AZ T:8:55 (ASM) is represented by two shallow mine shafts. It is possible that the Site AZ T:8:54 features are located on either the Almaden or Sirius Claims of the Mercury Group. The Site 55 mine features are not located on formally designated claim properties.

### Conclusions

Mercury mining and processing in the Phoenix Mountains appears to have been a fairly intensive industrial activity by local mining and economic interests during a relatively short time period (i.e., from the mid-teens into the mid-1930s). Although plans were developed, and partially implemented, to re-establish the Rico Group mining and processing operation at a later date (ca 1940), there is no evidence to indicate that this proposed redevelopment occurred.

Despite the published claims of ore production, and of the results of assay work which indicated the potential of the Rico Group claims to produce ores of a quantity and quality to support an economically successful mining operation, it has been concluded on the basis of both archaeological and historical documentary evidence that the documented operation did not represent a particularly successful business venture. The fact that the owners, developers, and operators of the Rico Claim changed hands fairly frequently during an 18 year time period, the publication of exaggerated claims of the mine's production and potential (possibly to generate investment for a somewhat marginal production facility), the fact that only two mines (the Rico and Dolores) within the Rico Group were extensively mined, and the documented level of mercury production of less-than 100 flasks all tend to support this conclusion concerning the success of the operation. It would appear that areas of high quality mercury ore were located and mined out during a relatively short time period and that new sources of mercury ore were not located.

Prospecting and assessment work appear to have been common excavation activities at each of the three reported sites. While most of this work probably occurred immediately prior to or during the 1916-mid-1930s period of active operation, it is also possible that prospecting continued on an informal basis after the mid-1930s. Gold and copper deposits had been reported on claims within the Phoenix Mountains, and it may be that some of the identified prospects were in fact excavations to locate deposits of these minerals.

Technologically, it has been noted that, while the earliest (mid-teens - mid-1920s) mining and ore processing operations (within the Rico Group) were relatively unsophisticated and at a

low level of production, later mining and processing operations (under new operators) were characterized by qualitative and quantitative advancements. Beginning in about 1928 the level of mining activity appears to have increased substantially, and to have involved newer and better equipment and procedures. An ore processing plant was brought into operation which was capable of extracting mercury from large quantities of ore on a daily basis. It is believed that the mercury processing plant represented the application of current (late 1920s) ore processing technology. The detailed description of this technology in a 1930s Mining Journal article tends to support this interpretation.

Throughout most of the history of mining operations within the Rico Group (as defined at Site AZ T:8:53 ASM), the mining and processing functions were owned (or leased) and operated by local individuals and economic interests. During the last several years of operation (ca 1931-1933), the mines were controlled and operated by Texas interests. Being located adjacent to a developing urban center (Phoenix) with external transportation facilities, the operators of the Rico Group mines and ore processing plant had advantages relating to the ready availability of labor, support facilities and supplies (e.g., fuel oil, electric power), as well as ready access to external markets and equipment supply sources. Such favorable conditions for the development and support of a mining operation were probably at least in part responsible for the high level of mining and ore processing technology which characterized mining within the Rico Group.

Site AZ T:8:53 (ASM), as initially determined based on survey level observations supplemented by the results of documentary research, represents a National Register-eligible historic archaeological site. The site is eligible, principally, due to its content of information pertaining to the history and technology of historic mercury ore mining and processing operations within the Phoenix Mountains, at best an uncommon type of mining endeavor in Arizona due to the infrequent occurrence of mercury bearing ore. The fact that recovered ores were processed on-site to recover liquid mercury adds an additional dimension of significance to this site.

With regard to the two sites (AZ T:8:54 and 55 ASM) being further evaluated in order to formally determine their eligibility for inclusion in the National Register of Historic Places, it has been concluded that these sites do not contain or reflect cultural resource values of National Register quality. This evaluation of Sites 54 and 55 has resulted in the documentation and reporting of all cultural features associated with the sites -within the project study area.

#### Recommendations

It has been recommended that cultural resources clearance for proposed highway construction actions which will affect Sites AZ

T:8:53, 54, and 55 (ASM) be approved since important data values related to Site 53 have been recovered and reported, and since such data values are not represented at Sites 54 and 55.

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## APPENDIX A: ARTIFACT ANALYSIS

By: Jeffrey B. Hathaway

### INTRODUCTION

During the surface collection and limited testing of the 11 loci associated with AZ T:8:53(ASM) a total of 6688 artifacts were recovered from both surface and subsurface contexts. The artifact descriptions that follow are presented and grouped according to a classification system which recognizes primary functional categories to which artifacts may be assigned. The primary categories--Subsistence/Household, Personal, Structural Materials, Hardware, Commerce/Industry, Automotive, and Miscellaneous-- are further subdivided when functional and use-specific distinctions for artifacts can be made at finer levels of discrimination. When possible the following descriptions provide data about artifact form, frequency, distribution, association, and chronology. Tables A1 through A7 indicate artifact frequency by type and provenience. Tables are not provided for artifact categories for which all provenience data are listed in the appendix text. It should be noted that Locus 1 of Site AZ T:8:53 (ASM), the area of the mercury ore processing facility and related features, is defined by four individual loci (Locus 13, an undesignated "nail cluster", text excavation units in the vicinity of the ore processing plant; and mine excavation (prospect) Features 29 and 29 combined). Other artifacts from Site AZ T:8:53 (ASM) surface artifact scatter loci which were field-recorded total 8100, and are discussed in terms of representative type categories and frequency in the context of feature and artifact loci descriptions in Chapter 4. Appendix A does not include artifacts recovered from and documented at Locus 1 of Site AZ T:8:54 (ASM). Data pertaining to this 1940s - 1960s trash scatter are on file at ARS.

### Subsistence/Household

#### Food and Beverage Containers:Bottles and Jars

A total of 2837 glass specimens, recovered during data recovery activities at Site AZ T:8:53 (ASM), can be classified as fragments of bottles and jars. The glass specimens included several whole vessels. The various attributes of the fragments and whole containers (i.e. color, frequency, and vessel section represented) were recorded for the purposes of analysis.

Due to the fragmentary nature of the glass assemblage it was not possible to positively identify the original contents of many of the containers represented. The colors and technological

attributes exhibited by the fragments are presented and used when possible to date individual fragments of glass. The manufacturing dates of the various glass items were also used to develop a date range for the different loci from which they were recovered.

#### Color.

Sixteen different colors are represented by the 2837 specimens of bottle and jar glass recovered from 14 site proveniences (Table A1). The following colors and frequencies were recovered: clear or flint-1872 specimens (66%), amber/brown-435 (15%), honey/wheat (selenium)-164 specimens (5.8%), emerald green-87 (3%), aqua-72 specimens (2.5%), opaque (milk) white-45 (1.5%), sun-colored-amethyst (SCA)-41 specimens (1.4%), cobalt blue-33 (1.1%), smokey grey-25 (0.9%), Georgia green-23 specimens (0.8%), light green-21 (0.7%), dark green-14 specimens (0.5%), opaque purple (SCA milk)-2 (<0.5%), olive green-1 specimen (<0.5%), blue-green-1 (<0.5%), and yellow-1 specimen (<0.5%). Of these colors the most significant in terms of being chronologically diagnostic are sun-colored-amethyst (SCA), honey/wheat (selenium), and clear.

Sun-colored-amethyst glass is the result of manganese dioxide (used in the manufacturing process) being oxidized by exposure to the ultraviolet radiation of the sun. Manganese dioxide was used in glass manufacture as a decolorizing agent from approximately 1880 to ca. 1915. The supply of manganese dioxide was halted by Germany, the principal exporter, during World War I (Munsey 1970:55).

Fragments of SCA glass were recovered at five of the loci associated with AZ T:8:53 (ASM); Locus 4 (11 specimens), Locus 5 (7 specimens), Locus 7 (6 specimens), Locus 8 (8 specimens), and Locus 11 (9 specimens).

Selenium, which was used as a decolorizing agent in glass manufacture from approximately 1915 to 1930, imparts a light amber or honey\straw color to glass that has been oxidized by sunlight (Giarde 1980:165). Fragments of selenium glass were recovered from all of the AZ T:8:53 (ASM) loci (except Loci 8 and 10).

Arsenic and other decolorizing agents have been used in the manufacture of clear or flint glass since approximately 1930. These decolorizing agents do not react to ultraviolet light and glass manufactured with them will remain clear after many years of being exposed to sunlight (Munsey 1970:55). Fragments of clear glass were recovered from all of the loci. Over 500 fragments of clear glass were recovered at Locus 4 (544 specimens) and Locus 11 (518 specimens).

#### Embossing.

Raised letter and pattern embossing on bottles and jars was commonly used for product identification from the mid-19th Century until the 1930s, when it was replaced on most glass containers by

TABLE A1 BOTTLE AND JAR GLASS BY COLOR AND PROVENIENCE,  
SITE AZ T:8:53 (ASM)

ARTIFACT CATEGORY	PROVENIENCE														TOTALS
	Locus-1														
	L-13	Nail Cluster	Processing Area Test Excavations	Features 28&29 Test Excavations	L-2	L-4	L-5	L-6	L-7	L-8	L-9	L-10	L-11	L-12	
<u>Glass Color</u>															
Clear	17	7	21		163	544	151	89	162	35	120	5	518	40	1872
Selenium (straw/honey)	5	3			2	33	15	8	8		10		74	6	164
Aqua					2	22	31	1	10	2			4		72
Amber			9		13	138	34	10	51	10	53	3	110	4	435
Light Green						4	4		2	2			9		21
Emerald Green			1		1	45	1	7	4	3	5		20		87
Georgia Green					1	8			11		1		2		23
Olive Green						1									1
Dark Green					1	1		4		4			4		14
Blue Green											1				1
Cobalt Blue						12	1	1	8		2	2	7		33
Yellow						1									1
Sun-Colored Amethyst						11	7		6	8			9		41
Smokey Grey									25						25
Opal White (Milk)	7				2	10	1	5	1	1	1		17		45
Opaque Purple	1										1				2
<b>TOTALS</b>	<b>30</b>	<b>10</b>	<b>31</b>		<b>185</b>	<b>830</b>	<b>245</b>	<b>125</b>	<b>288</b>	<b>66</b>	<b>193</b>	<b>10</b>	<b>774</b>	<b>50</b>	<b>2837</b>

L Locus

applied color enamel labeling (Munsey 1970:52). Embossing on several of the body and base fragments permitted the identification of manufacturers as well as the probable contents of the containers. The information concerning the manufacturers and contents was also useful in developing a date range for the various loci associated with AZ T:8:53 (ASM) and the mercury mining activities in the Phoenix Mountain area.

Although several of the bottle and jar fragments exhibited partial or unidentifiable legends and trademarks, the majority were identifiable as to manufacturer, period of manufacture, and probable contents. The categories of probable contents consisted of beverages (both alcoholic and non-alcoholic), food, and medical/cosmetic related items. Fragments of embossed bottles that had contained products that could not be incorporated into any of the above categories are included in a section on miscellaneous embossed containers.

(Beverages). The following manufacturers and/or bottlers of alcoholic and non-alcoholic beverages are represented by the glass assemblage from the eleven AZ T:8:53 (ASM) loci. The manufacturers and bottlers are listed in alphabetical order below along with the probable contents, date of manufacture, glass color and vessel part, recovery context, and data source:

- (1) Bacardi, rum, 1909-?, Aqua bottle base with Vidriera de Monterrey maker's mark. Locus 4 (Fontana 1969:48, Toulouse 1971:518)
- (2) Canada Dry, ginger ale and club soda, ca. 1930-1950, Clear and emerald green bottle bases. Locus 4 (Toulouse 1971:403)
- (3) Carnation, milk, 1934-?, Clear body fragments with applied color enamel labeling. Locus 7 (Giarde 1980:154, Riley 1958:267)
- (4) Central Avenue Dairy, milk, 1912-1949, Clear base and body fragments. Locus 8 and Locus 11 (Arizona Directory Co. 1912:286, 1949:23)
- (5) Clicquot Club, carbonated beverages, 1929-1954, Green bottle base with Owens-Illinois maker's mark. Locus 4 (Toulouse 1971:403)
- (6) Coca Cola, carbonated cola, 1916 to 1965 bottle style, Georgia green base and body fragments. Locus 2, 4, 7, 9, and 11 (Bottle fragments recovered at Locus 4 date from 1937-1951) (Gilborn 1968:184)
- (7) Excelsior Water (Arrowhead Beverage Co.), club soda, 1934-?, Clear bottle fragments with applied color labeling. Locus 4 (Riley 1958:267)
- (8) Garrett, Virginia Dare wine, Since 1835, Clear body fragment. Locus 9 (Eastin 1965:60)

- (9) Gordons London Dry Gin, gin, 1929-1954, Clear bottle base with Owens-Illinois maker's mark. Locus 4 (Toulouse 1971:403)
- (10) Hollywood Dry Corporation, carbonated beverage or beer, 1917-1931, Two amber bottle bases with Southern Glass Co. maker's mark. Locus 11 (Toulouse 1971:451)
- (11) Mountain Dew, carbonated beverage, ca 1960-Present, Emerald green bottle fragments with applied color label and Ball Corp. maker's mark. Locus 9 (Toulouse 1971:66)
- (12) Nehi, carbonated beverage, 1934-?, Clear bottle body fragments with applied color labeling. Locus 7 (Riley 1958:267)
- (13) Norton Dairy, milk, ca. 1913-1936, Honey/straw (selenium) bottle base. Locus 11 (Arizona Directory 1914:244, Wilson and Troyer (Compilers) 1936:201, Hull-Walski and Ayres 1989:83)
- (14) Old Sunnybrook, liquor, Date unknown, Embossed aluminum screw cap on clear bottle finish. Locus 7
- (15) Pepsi Cola, carbonated cola, 1934-?, Clear body fragments with applied color labeling. Locus 11 (Riley 1959:267)
- (16) Pluto, mineral water, 1901-1932, Georgia green bottle base with Pluto figure and Root Glass Co maker's mark on insweep. Locus 11 (Toulouse 1971:445)
- (17) Veronica, mineral water, 1902-1930, Honey/straw (selenium) bottle base with Illinois Pacific Glass Co. maker's mark on insweep. Locus 11 (Toulouse 1971:268)

In addition to the above mentioned beverage bottle fragments a clear bottle base, embossed WINE OVAL, was recovered at Locus 11. A second clear bottle base, embossed WINE, was recovered at Locus 7. Several clear milk bottle fragments, with what appears to be "Saguaro Dairy" etched in script, were also recovered at Locus 4.

(Food) The following manufacturers' marks and embossing that have been identified with food related items were recorded. The marks and embossing are listed in the same manner as those associated with beverage bottles:

- (1) Best Foods, mayonnaise and other food products, 1922-?, Selenium and clear jar base fragments. Locus 4, 5, 9, 11, and 12 (Jar bases embossed BEST FOODS/DESIGN/PATENTED/80918 date from 1930-?) (U.S. Patent Office (USPO) 1930:305, Periodical Publishers Association 1934:16, Hull-Walski and Ayres 1989:67,86)
- (2) California Conserve Co., unidentified food product, 1920-1964, Clear jar base with Hazel-Atlas maker's mark. Locus 11 (Hull-Walski and Ayres 1989:67, Toulouse 1971:239)

- (3) Central Avenue Dairy, cottage cheese, 1912-1949, Clear wide-mouthed jar (8 oz.). Locus 8 (Arizona Directory Co. 1912:286, 1949:23)
- (4) E. R. Durkee & Co., salad dressing, spices, and mustard, 1874-1929, Clear body and finish fragments. Locus 8 and Locus 11 (Zumwalt 1980;128-129)
- (5) Frenchs, mustard, 1938-?, Clear jar base embossed FRENCHS/PAT 8-16-38. Locus 11 (Zumwalt 1980:157)
- (6) H.J. Heinz Co. #143, pickles, 1921+, Clear jar base. Locus 5 (Eastin 1965:32, Zumwalt 1980:227)
- (7) H.J. Heinz Co. #223, olive oil, Date unknown, Clear bottle base. Locus 11 (Zumwalt 1980:230)
- (8) H.J. Heinz Co. #255, tomato ketchup, 1900-1943, Clear Bottle base. Locus 11 (Zumwalt 1980:214)
- (9) H.J. Heinz Co. #333, unidentified food product, Pre 1940s, Clear bottle base. Locus 11 (Zumwalt 1980:203)
- (10) H.J. Heinz Co. #344, unidentified food product, Pre 1940s, Clear bottle base. Locus 11 (Zumwalt 1980:203)
- (11) H.J. Heinz Co., unidentified food product, 1911-1929, Clear bottle base with Owens Bottle Co maker's mark. Locus 9 (Toulouse 1971:236)
- (12) Hellmans Blue Ribbon, mayonnaise, 1914-1932, Clear jar base. Locus 11 (Periodical Publishers Association 1934:16)
- (13) Hill Food Products, unidentified food product, 1902-1930?, Clear bottle base. (A similar base noted in Hull-Walski and Ayres (1989:118 #490) is associated with Illinois Pacific maker's mark) Locus 11 (Toulouse 1971:268)
- (14) Kraft (Kraft Phoenix Cheese Co), cheese product, 1909-?, Clear bottle or jar base. Locus 11 (Periodical Publishers Association 1934:56)
- (15) Mellins, baby food, 1870-?, Aqua jar body fragment. Locus 4 (Zumwalt 1980:300-301)
- (16) Snider Preserve Co., unidentified food products, ca. 1884-1943, Selenium and clear bottle/jar bases. Locus 4 and Locus 11 (Hull-Walski and Ayres 1989:64, Zumwalt 1980:388)
- (17) Table Products Co., unidentified food product, 1939-1957, Clear jar bases with Latchford Marble Glass Co. maker's mark. Locus 2 and Locus 5 (Toulouse 1971:332)
- (18) The Barrel Syrup Co, syrup, ca. 1915-1928, Clear bottle/jar

base. Locus 5 (Zumwalt 1980:39)

(19) Wesson Oil, cooking oil, 1940-1954, Clear bottle base with Owens-Illinois and Duraglas maker's marks. Locus 4 (Toulouse 1971:403,170)

In addition to the above mentioned food products bottle and jar fragments, embossed PICKLE and BUTTER, were recovered during the surface collection of Locus 4. Bottle fragments embossed EXTRACT were recovered at both Locus 4 and Locus 11. Other food related containers, consisting of fragments of aqua glass canning (Mason) jars, were recovered at Loci 4, 5, and 11.

(Patent/Proprietary Medicines and Cosmetics) Several identifiable maker's marks noted on whole bottles and container fragments are associated with medicines and cosmetics. The following products and/or manufacturers are represented by the bottle and jar assemblage:

(1) Bromo-Seltzer (Emerson Drug Co./Baltimore,Md), proprietary medicine, 1916-Present, Cobalt blue bottle body and base fragments. Base fragments are embossed with the Maryland Glass Co. maker's mark. Locus 6 and Locus 9 (Brand Names Foundation 1947:np, Eastin 1965:16, Toulouse 1971:339)

(2) Caldwells Syrup Pepsin (Monticello, Illinois), patent medicine, 1895-? or 1905-1917, Clear body and base fragments from two different bottles, including a base fragment with the Pierce Glass Co. maker's mark. Locus 4 (Eastin 1965:16, Fike 1987:224, Toulouse 1971:412)

(3) Chamberlains, patent medicines, 1892-ca.1930, Clear bottle body fragments. Locus 5 (Fike 1987:206, Wilson and Wilson 1971:110)

(4) Cutex (Northam Warren Corp.), cuticle remover, 1912-?, Clear whole bottle. Locus 11 (Periodical Publishers Association 1934:89)

(5) Cuticle Remover, Manufacturer and date of manufacture unknown, Clear whole bottle. Locus 4

(6) Daggett & Ramsdale, cosmetics, 1913-?, SCA bottle base. Locus 8 (Periodical Publishers Association 1934:29)

(7) Deltex, possible cosmetic, Manufacturer and date of manufacture unknown, Two clear whole bottles. Locus 4

(8) Fitch's (The F.W. Fitch Co.), cosmetics/hair preparation, 1892-?, Clear bottle base. Locus 9 (Brand Names Foundation 1947:np)

(9) A.S Hinds Co., cosmetics/Honey & Almond Cream lotion, 1875-

? or 1876-? (1925-1947+ the company owned by Lehn & Fink) Two clear whole bottles. Locus 9 (Brand Names Foundation 1947:np, Periodical Publishers Association 1934:58)

(10) Jergens Lotion, hand cream/lotion, 1913-?, Clear bottle base. Locus 4 (Brand Names Foundation 1947:np)

(11) Listerine (Lambert Pharmacal Co.), proprietary medicine, 1914-Present, Clear bottle body and base fragments, whole bottle. Loci 4, 9, and 11 Whole bottle (Locus 4) embossed with Obear Nester maker's mark. (Brand Names Foundation 1947:np, Fike 1987:67, Toulouse 1971:374)

(12) Lucky Tiger Remedy, eczema and dandruff cure, 1915-?, Clear body and base fragments. Base fragment embossed with Obear Nester maker's mark. Locus 5 and Locus 9 (Fike 1987:68, Toulouse 1971:374)

(13) Mar-O-?/ Shampoo, hair shampoo, 1934-?, Clear bottle fragment with applied color label. Locus 7 (Munsey 1970:52)

(14) Mentholatum, proprietary medicine, 1895-1955, Opaque white (milk/opal) glass jar fragments. Locus 9 (Eastin 1965:5-6)

(15) Phillip's Milk of Magnesia, laxative, 1892-?, Cobalt blue bottle body fragments. Locus 11 (Periodical Publishers Association 1934:82)

(16) Vicks, proprietary medicine, 1894-Present, cobalt blue jar fragments. Locus 4 (Brand Names Foundation 1947:np, Periodical Publishers Association 1934:88)

(17) Vicks Va-tro-nol, nose drops, 1931-?, Cobalt blue jar base. Locus 7 (Periodical Publishers Association 1934:88)

(18) Woodburys (Andrew Jergens Co.), cosmetic/personal care products, 1901-? or 1913-?, Clear bottle base fragments. Locus 4 (Brand Names Foundation 1947:np, Periodical Publishers Association 1934:52)

(19) Woodruff, cosmetic, 1920-1964, Opaque white (milk/opal) jar fragments with Hazel-Atlas maker's mark. Locus 4 (Toulouse 1971:239)

(20) Wyeth & Bro., proprietary medicines, 1860-?, Cobalt blue jar fragment. Locus 9 (Eastin 1965:8, Fike 1987:187, Periodical Publishers Association 1934:11)

(21) Zemo Antiseptic Lotion, skin and scalp lotion, 1903-?, Clear bottle fragments (2 bottles). Locus 11 (Fike 1987:108,139)

(Miscellaneous/Household) Several embossing marks were identified on bottle fragments that could not be incorporated into

the previously established categories. The majority of these miscellaneous embossed fragments are associated with household cleaning products, such as bleach. The miscellaneous identifiable products are as follows:

(1) Clorox, household bleach, 1929-1963, Amber bottle and jug fragments. Cork closures used on bottles manufactured from 1929 to 1940 and screw top closures were used on bottles manufactured from 1940 to 1963. Locus 2, 4, 5, 9, and 11 (Both cork and screw finish bottle fragments were recovered at Loci 4, 9, and 11) (The Clorox Co nd:np, Gillio et al. 1980:18)

(2) Purex, household bleach, 1939-1957, Amber bottle base with Latchford Marble maker's mark. Locus 4 (Hull-Walski and Ayres 1989:85, Toulouse 1971:332)

(3) White Magic, household bleach ?, 1934-1954, Amber jug base with Owens-Illinois maker's mark. Locus 11 (Toulouse 1971:403)

(4) Whittemore, shoe polish, 1920-1964?, Clear bottle fragments. Locus 2 [Same maker's mark in Hull-Walski and Ayres (1989:117) associated with Hazel-Atlas maker's mark]. (Toulouse 1971:239)

#### Other Maker's Marks.

Base fragments representing 38 glass manufacturers and bottlers were recovered during the surface collection and testing activities at the different AZ T:8:53 (ASM) loci. Although the contents of the bottles and jars associated with these marks were not determinable, it was possible to identify the manufacturer and probable date of manufacture. The following manufacturers and /or bottlers were documented from the different loci. Included along with the manufacturer and date range are the recovery context/contexts and the date source reference.

(1) American Bottle Co. 1905-1929, Locus 4 and Locus 11 (Toulouse 1971:30)

(2) American Glass Works. 1908-1935, Locus 4 (Toulouse 1971:23)

(3) Anchor-Hocking. 1938-Present, Loci 4, 6, and 10 (Toulouse 1971:48)

(4) Arkansas Glass Container Corp. 1958-Present, Locus 4 (Toulouse 1971:22)

(5) Armstrong Cork Co. 1938-1969, Locus 11 (Toulouse 1971:23)

(6) Atlantic Bottle Co. 1918-1930, Locus 8 (Toulouse 1971:28)

(7) Ball Bros./Ball Corp. 1919-Present, Locus 9 (Toulouse 1971:66)

- (8) Brockway Glass Co. 1907-1933, Locus 11 (Toulouse 1971:59)
- (9) Canada Dry Ginger Ale Co. ca 1930-1950, Locus 4 (Toulouse 1971:403)
- (10) Capstan Glass Co. ca 1918-1938, Locus 4 and Locus 11 (Toulouse 1971:549)
- (11) Chattanooga Bottle and Glass Co. 1927-Present, Locus 5 (Toulouse 1971:108)
- (12) Diamond Glass Co. 1924-Present, Locus 9, (Toulouse 1971:550)
- (13) Foster-Forbes. 1929-Present, Locus 4 (Toulouse 1971:197)
- (14) Glass Container Co. 1934-1967 or 1945-Present, Locus 4 and Locus 6 (Giarde 1980:45, Toulouse 1971:220)
- (15) Hazel-Atlas. 1920-1964, Loci 1, 2, 4, 6, 9, 11, and 12 (Toulouse 1971:239)
- (16) Heinz Glass House. 1900-1943, Locus 5 and Locus 11 (Toulouse 1971:236)
- (17) Illinois Glass Co. 1916-1929, Locus 4 and Locus 11 (Toulouse 1971:264)
- (18) Illinois Pacific Glass Co. 1902-1930, Loci 4, 5, 8, and 11 (Toulouse 1971:268)
- (19) Kerr Glass Manufacturing Co.(Sand Springs, Okla.) 1915-1946, Locus 4, 9, and 11 (Toulouse 1971:306)
- (20) Latchford Glass Co. 1925-1938 or 1957-Present, Locus 9 (Giarde 1980:142, Toulouse 1971:316)
- (21) Latchford Marble Co. 1939-1957, Loci 2, 4, and 5 (Toulouse 1971:332)
- (22) Longbeach Glass Co. 1920-1933, Locus 4 (Toulouse 1971:318)
- (23) Maryland Glass Co. 1916-Present, Locus 6 and Locus 9 (Toulouse 1971: 339)
- (24) Maywood Glass Co. 1930-1961 (ca 1958?), Locus 4 and Locus 7 (Toulouse 1971:357)
- (25) Obear-Nester. 1915-Present, Locus 4 and Locus 11 (Fike 1987:67, Toulouse 1971:374)
- (26) Owens Bottle Co. 1911-1929, Loci 4, 8, 9, and 11 (Toulouse 1971:396)
- (27) Owens-Illinois. 1929-1954, Loci 4, 5, 6, 8, 9, and 11; 1954-

Present, Locus 1 (Toulouse 1971:403) DURAGLAS maker's mark associated with Owens-Illinois 1940-1963 Locus 4 and Locus 9 (Toulouse 1971:170)

(28) Pacific Coast Glass Co. 1925-1930 or 1925-1931, Locus 9 (Giarde 1980:99, Toulouse 1971:414)

(29) Pierce Glass Co. 1905-1917, Locus 4 (Toulouse 1971:412)

(30) Puerto Rico Glass Co. 1955-Present, Locus 4 (Toulouse 1971:426-427)

(31) F.E. Reed Co. 1927-1956, Locus 4 (Toulouse 1971:327)

(32) Root Glass Co. 1901-1932, Locus 11 (Toulouse 1971:445)

(33) Seaboard Glass Bottle Co. 1943-1947, Locus 4 (Toulouse 1971:455)

(34) Southern Glass Co. 1917-1931, Locus 11 (Toulouse 1971:457)

(35) Southwest Coca Cola Bottling Co. 1918-1948, Locus 11 (Arizona Directory Co 1919:558, 1947:601)

(36) Vidriera de Monterrey. 1909-Present, Locus 4 (Fontana 1968:48, Toulouse 1971:518)

(37) T.C. Wheaton & Co. 1946-Present, Locus 9 (Toulouse 1971:527)

(38) Whitall-Tatum 1924-1938 or 1935-1938, Locus 5 and Locus 11 (Giarde 1980:136, Toulouse 1971:544)

#### Applied Color Enamel Labeling.

In addition to embossing, it was possible to identify bottle contents from applied color enamel labeling on several fragments. Applied color enamel labeling (ACL) was developed for commercial use in the early 1920s. However, the American glass industry did not adopt this type of labeling for bottles and jars until after 1933 (Giarde 1980:154).

Applied color labeling was first used on soft drink/carbonated beverage bottles in 1934 (Munsey 1970:50, Riley 1958:267). By late 1934 or early 1935 the process was in widespread commercial use in the milk bottle industry (Giarde 1980:154). Today applied color enamel labeling is one of the dominant types of labeling on such glass containers as soft drink bottles.

Bottle fragments with applied color enamel labeling were recovered at five of the AZ T:8:53 (ASM) loci. Soft drink/carbonated beverage bottle fragments with ACL were recovered at Loci 6, 7, and 11. Milk bottle fragments with ACL were recovered at Loci 4, 5, and 7. The brand names of these products

are discussed in the previous section on beverages. The only other product identified from applied color enamel labeling was hair shampoo; fragments of a shampoo bottle were recovered during the surface collection of Locus 7.

#### Closures.

(Crown Caps). A total of 228 crown caps were recovered during the surface collection of the different AZ T:8:53 (ASM) loci (Table A2). Crown caps were recovered at all of the loci except for Locus 2 and Locus 10. The majority of the caps were recovered during the surface collection of Locus 9 (136 specimens) and Locus 11 (53 specimens). In addition to the crown caps an aluminum foil crown cap insert was recovered during the surface collection of Locus 9.

Note: the crown cap was patented, along with the crown bottle finish, by William Painter in 1892. By the early 1900s the crown cap became the universal beverage bottle closure (Leif 1965:17).

(Screw Top Bottle and Jar Lids). Sixty-six metal bottle and jar screw top lids were recovered at the different loci associated with AZ T:8:53 (ASM). There were no screw caps of this type recovered at either Locus 8 or Locus 10. This type of bottle and jar closure, which was manufactured in several different diameters ranging from 3/4 inch to 3 1/8 inches, was designed for glass containers with continuous thread finishes. This type of closure was adopted in 1924 by the glass container industry for various sizes of jars and bottles (Leif 1965:27).

In addition to the whole bottle and jar screw top lids, 12 screw cap fragments were recovered at three of the loci; nine fragments from Locus 9, three fragments from Locus 11, and one fragment from Locus 4.

(Aluminum Screw Caps). Four aluminum roll-on bottle closures were recovered at two of the AZ T:8:53 (ASM) loci. Three of the caps were recovered at Locus 4 and one cap was recovered at Locus 2. According to Leif (1965:29) this type of bottle closure was developed in 1924 for bottles with continuous thread type finishes.

(Canning Jar Lids). A total of 13 canning jar lids were recovered during the surface collection activities at three of the loci; one specimen from Locus 4, nine specimens from Locus 9, and three specimens from Locus 12. These two-piece metal lids, used in the home canning of fruits, vegetables, jams and jellies, are designed to fit on wide mouth jars with continuous thread finishes.

In addition to the lids, 23 canning jar pressure seals were also recovered. The majority of the pressure seals, 19 specimens, were recovered at Locus 9. These metal discs fit into the canning jar lids to form a vacuum seal. Several of the pressure seals were

TABLE A2 BOTTLE AND JAR CLOSURES BY TYPE AND PROVENIENCE,  
SITE AZ T:8:53 (ASM)

ARTIFACT CATEGORY	PROVENIENCE													TOTALS	
	Locus-1				L-2	L-4	L-5	L-6	L-7	L-8	L-9	L-10	L-11		L-12
	L-13	Nail Cluster	Processing Area Test Excavations	Features 28&29 Test Excavations											
<b><u>Bottle &amp; Jar Closures</u></b>															
Crown Caps	10				2	10	3	12	2	135		53	1	228	
Screw Top Jar Lids	3			1	3	1	3	2	1	14		9	3	40	
Screw Top Bottle Lids	2			1	2	4	1	1	3	1		11		26	
Aluminum Screw Caps					1	3								4	
Canning Jar Lids					1					9			3	13	
Canning Jar Pressure Seals					2			1		19			1	23	
Opal Glass Pressure Seals	2													2	
Aluminum Bottle Covers					1									1	
Champagne Bottle Cork Covers								1						1	
Wine Bottle Wire Twists							2							2	
Corks								1	1					2	
Phenolic Plastic Bottle Caps									1				1	2	
Crown Cap Aluminum Inserts											1			1	
Screw Top Fragments						1				8			3	12	
Ornamental Metal Caps									1					1	
Glass Stoppers									2					2	
Lightening Top Lids						1								1	
<b>TOTALS</b>	<b>17</b>			<b>2</b>	<b>9</b>	<b>13</b>	<b>16</b>	<b>9</b>	<b>21</b>	<b>2</b>	<b>187</b>	<b>77</b>	<b>8</b>	<b>361</b>	

L Locus

labeled KERR "SELF SEALING" MASON/ FOR ALL TYPES OF CANNING.

(Aluminum Jar Cover). The aluminum foil cover for a glass cottage cheese container was recovered during the surface collection of Locus 2. The cover was labeled MISSION DAIRY/ CREAMED COTTAGE CHEESE/ NET WEIGHT 10 OZ. The aluminum cover is similar to covers that were used on wide mouth milk bottles. ( A whole bottle that appears to have contained the same product was recovered at Locus 8.)

(Champagne Cork Cover). A stamped metal cover, which fit over the top of a champagne or wine bottle cork, was collected at Locus 6.

(Wire Twists). Two wine or champagne bottle wire twists were collected at Locus 5. These wire twists were used for securing the corks into the bottle finish and prevented the cork from being accidentally removed by internal pressure.

(Glass Pressure Seal). Two fragments of an opaque white (opal/milk) glass pressure seal was recovered during the surface collection of the trash area in the southwest portion of Locus 1. This type of glass seal fit into zinc canning jar lids in the same manner as the metal pressure seals. The pressure seal was embossed GENUINE BOYD CAP.

(Ornamental Metal Bottle Cap). An ornamental metal cap to a small bottle with a continuous thread finish was collected at Locus 7.

(Lightening Seal Jar Lid). A fragment of a light green glass "lightening seal" jar lid was collected at Locus 4. This type of jar and bottle closure was patented by George Putnam in 1882 (Leif 1965:13). The lid was originally designed for canning jars and was later adapted for use on beverage bottles.

(Phenolic/Plastic Bottle Caps). Two plastic screw type bottle caps were recovered during surface collection activities; one specimen from Locus 7 and one specimen from Locus 11. The caps appear to have fit onto small, continuous thread finish proprietary medicine or cosmetics bottles. The cap recovered at Locus 7 is embossed "McKessons"; the other cap is unembossed. ( A phenolic plastic cap was also noted on the finish fragment of a Listerine bottle. This cap was embossed with the initials of the Lambert Pharmacal Company.)

(Corks). Two bottle corks were recovered during the surface collection of Locus 6 and Locus 7. The cork recovered at Locus 6 is 5/8 inch in diameter and the cork from Locus 7 is 11/16 inch in diameter. The corks appear to have fit into the finishes of small patent or proprietary medicine bottles.

(Glass Bottle Stoppers). Two SCA glass bottle stoppers were recovered during the surface collection of Locus 7. One of

the stoppers appears to be from an ornamental perfume bottle while the other appears to be a standard glass stopper that could have fit into a bottle with a patent finish.

#### Openers.

(Bottle Opener). A flat, stamped metal bottle opener was recovered during the surface collection of Locus 7. The opener is stamped "Compliments/Yavapai Garage/Prescott, Arizona". The address and phone number of the garage, as well as the outline of a woman's face, are also stamped on the bottle opener's surface. The opener appears to have been a free item or souvenir given out by the garage.

(Cork Screws). Three metal cork screws were recovered during the surface collection of Locus 11. Two of the cork screws are a small, ring type opener that are embossed "LISTERINE". These openers appear to have been used to open Listerine bottles with cork closures. The third cork screw is a steel handled folding opener used for removing wine bottle corks.

#### Food Containers: Cans

The can assemblage recovered during surface collection and testing activities conducted at AZ T:8:53 (ASM) consisted of several different diagnostic can types and can fragments dating from the early-to-mid 20th Century. The majority of the cans were crushed and/or too heavily oxidized to permit accurate measurement of their dimensions. The contents, however, were identified in most cases based on can shape, construction, embossing, and method of opening.

A total of 616 specimens were recovered from the 14 loci associated with AZ T:8:53 (ASM) (Table A3). The types of cans recovered during surface collection and test excavation included "sanitary" fruit and vegetable, evaporated and condensed milk (both hole-in-cap and matchstick), meat, coffee, carbonated beverage, and cooking-related items such as baking powder and spices.

The cans are described below by shape and/or contents. Can measurements are provided in terms of the conventional system of converting 1/16 inch units into numbers (1 through 16) which are added to measurement units of single or multiple inches; thus, a 2-15/16 inch diameter can with a height of 4-6/16 inches would be designated 215D x 406H.

#### Fruit/Vegetable.

A total of 28 fruit and/or vegetable cans were recovered from six of the AZ T:8:53 (ASM) loci. The majority of this can type, 12 specimens, were recovered during the surface collection

TABLE A3 FOOD CANS BY TYPE AND PROVENIENCE,  
SITE AZ T:8:53 (ASM)

ARTIFACT CATEGORY	PROVENIENCE														TOTALS
	Locus-1				L-2	L-4	L-5	L-6	L-7	L-8	L-9	L-10	L-11	L-12	
	L-13	Nail Cluster	Processing Area Test Excavations	Features 28&29 Test Excavations											
<u>Can Type</u>															
Sanitary Fruit/Vegetable				1		9	2		2		12		2		28
Evaporated Milk	2					4			14						20
Condensed Milk						1			2		1				4
Cylindrical Meat	1								3		3				7
Tapered Rectangular Meat	2						2				1				6
Meat Can Keys & Strips	1	4			2		2				4			9	22
Sardine										1	2	1	1		5
Coffee	1						3	3		2	1	3		2	15
Flat-Top Beverage				1							5	1			7
Beverage Tops/Bottoms											14/9				14/9
Cone Top Beverage											1				1
Baking Powder	1						1				1				3
Spice	2							1		3					6
Cooking Oil										1	2				3
Lard Bucket Fragments	1						1	2	1	2	34		1		42
Friction Top Cans							4				4*				8
Friction Top Lids	4				3	3	6	1	6		5	3	8	2	41
Unidentified Miscellaneous Cans										1			1		2
Sanitary Can Lids			4		1		3	1	6		8		6	1	26
Sanitary Can Bases							1	4	1	1	1				8
Sanitary Can Fragments					5	96	16	4	52	17	98	1	27	16	336
Hole-in-Cap Can Fragments										2			1		3
<b>TOTALS</b>	15	4	4	2	11	125	39	8	103	18	204	6	58	19	616

L Locus

\* 3 Fragments

of Locus 9.

All of the fruit and vegetable cans are of the sanitary or "open-top" type that is the standard can type used today. This type of can was developed at the turn of the century but was not brought onto the commercial canning market until the founding of the Sanitary Can Company in 1904 (Rock 1987:22). Although sanitary cans dominated production by ca 1910-1915, it took nearly 30 years for this can type to completely replace the earlier hole-in-cap can (May 1937:91-92, Rock 1987:22). Except for a single knife opened can recovered at Locus 4, all of the fruit and vegetable cans were opened using either rotary type or bayonet type can openers.

#### Evaporated Milk.

Twenty whole and fragmentary specimens of evaporated milk can were recovered from three of the loci associated with AZ T:8:53 (ASM). The majority of the cans of this type, 14 specimens, were recovered during the surface collection of Locus 7. The specimens recovered from Locus 7 consisted of two whole cans and 12 fragments representing a minimum of five cans.

One of the whole evaporated milk cans recovered at Locus 7 is an earlier hole-in-cap type that was manufactured from 1908 to 1914 according to Simonis (nd:np). This can measured 215D x 406H and had a cap diameter of 012D. The other whole can, which was too crushed to accurately measure, is of the "matchstick" type that has been manufactured since 1915 (Simonis nd:np).

Three of the whole evaporated milk cans, one specimen from Locus 1 and two from Locus 4, are embossed PUNCH HERE. According to Simonis (nd:np), this style of evaporated milk can was manufactured from 1935 to 1945.

#### Condensed Milk.

A total of four condensed milk cans, which are of the "matchstick" filler hole type similar to evaporated milk cans, were recovered at three of the loci. Two of the specimens were collected at Locus 7 and one each was collected at Locus 4 and Locus 9. The four cans measured 207D x 208H.

#### Meat Cans.

Thirteen specimens of meat can were collected from three of the loci associated with AZ T:8:53 (ASM); Locus 1, Locus 7, and Locus 9. Both cylindrical (7) and tapered rectangular (6) varieties are represented in the can assemblage. The meat cans were identified by their shape, method of opening (Key and Strip), and by the letters EST and ESTAB embossed on the can tops. According to Rock (1987:56), government regulations required establishment numbers on cans containing meat and meat by-products after 1907.

In addition to the meat can fragments a total of 22 can keys and strip fragments were recovered at five of the loci. The majority of the keys and strip fragments, nine specimens, were recovered during the surface collection of Locus 11.

#### Sardines.

A total of five flat, rectangular sardine cans were recovered during the surface collection of four loci. One of the cans, recovered at Locus 9, is a modern drawn aluminum can. Another can, recovered at Locus 7, is an early style, three-piece soldered type that is embossed FRANCE. The remaining specimens of sardine can are two-piece, drawn steel cans measuring 301D x 405D x 014H. According to Rock (1987:59), the two-piece drawn sardine can has been manufactured by automatic machinery since 1904.

#### Coffee.

A total of 15 items associated with coffee cans were recovered at seven of the AZ T:8:53 (ASM) loci. The items included a coffee can key opener (Locus 5), three lid band fragments (Loci 4, 7, and 11), seven can lids (Loci 1, 4, 5, 8, 9 (2), and 11), and four cans (Loci 4, 5, 7, and 9).

Several of the can lids and one whole can were embossed with the manufacturer's name and/or other labeling that made it possible to identify the manufacturer and probable period of manufacture. An external friction top/slip cover lid embossed CHASE & SANBORN TEAS ARE ALSO DELICIOUS dates from 1913 to approximately 1929 (Rock 1987:33). Two lids, one from Locus 5 and the other from Locus 9, were embossed HILLS BROS/RED CAN COFFEE. According to Rock (1987:38) this type of embossing was used on Hills Brothers Coffee cans beginning in 1914. A can lid embossed REGULAR GRIND/FOR COFFEE POT OR PERCOLATOR, recovered during the surface collection of Locus 9, was manufactured by the Folgers Coffee Company from 1952 to 1959 (Rock 1987:36).

A whole coffee can, recovered during the surface collection of Trash Cluster B at Locus 5, is embossed ASK FOR TREE TEA/ORANGE PEKOE. According to Rock (1987:39) this can style was manufactured by MJB Coffee during the 1920s. The base of this can has a matchstick filler hole, sealed with a drop of solder, and was one of the earliest types of vacuum packed coffee can (Pulati 1973:60).

#### Baking Powder.

Three embossed baking powder can lids were recovered during the surface collection of three loci associated with AZ T:8:53 (ASM). One of the lids, recovered at Locus 4, is for a container of Calumet Baking Powder that has been manufactured since 1927 Hull-Walski and Ayres 1989:134, Periodical Publishers Association 1934:37). A lid recovered at Locus 9, embossed KC BAKING POWDER/SAME PRICE TODAY AS 44 YEARS AGO, was manufactured in 1934 (Ward et. al. 1973:240). Another KC Baking Powder lid, recovered

at Locus 1 from the trash scatter in the southwest portion, is embossed KC BAKING POWDER/TRUE HEIGHT CAN GUARANTEED. This style of lid was manufactured between 1925 and 1950 (Ward et al. 1973:240).

#### Spices.

A total of six specimens representing probable spice containers were recovered at three of the loci. The specimens include a small, rectangular spice can with a shaker top (Locus 1), the lid and top to a small, rectangular internal friction top can (Locus 7), the tops to two shaker top containers (Locus 5 and Locus 7) and two external friction/slip cover lids (Locus 1 and Locus 7). The slip cover lid recovered at Locus 1 is a rectangular lid embossed FRENCHS. This lid appears to have been manufactured from 1892 to approximately 1926 according to Zumwalt (1980:157). The other slip cover lid, a circular lid embossed "A Schillings Product", has been manufactured since 1918 (Zumwalt 1980:366).

#### Cooking Oil.

A rectangular cooking oil can, measuring 312D x 208D x 400H, was recovered during the surface collection of Locus 9. This can was embossed TO OPEN/PUNCH BOTH CORNERS on the top. Wesson oil manufactured cans similar to this in the 1930s (Periodical Publishers Association 1934:90, Pulati 1973:113). Two pour spouts, recovered at Locus 7 and Locus 9, appear to be associated with oil or syrup cans.

#### Beverage Cans.

A total of 30 specimens of flat top, cylindrical beverage cans were recovered at three of the AZ T:8:53 (ASM) loci during surface collection as well as test excavation. The majority of the can specimens of this type, including whole cans (5), can tops (14), and can bottoms (9), were recovered at Locus 9. The whole cans measure 211D x 413H and are constructed in the same style as sanitary fruit and vegetable cans.

This type of can, which could have contained either beer or carbonated beverages, was opened using a "church key" type opener. Both the flat top beverage can and the church key opener were introduced in 1935 and the all steel version of the can was manufactured until the 1960s according to Rock (1987:29).

In addition to the flat top beverage containers, one cone top beer can was recovered at Locus 9. This style of beer can was also introduced in 1935 and was manufactured during the same period as the all steel flat top can (Rock 1987:29). Cone top beer cans are sealed using a crown cap similar to those found on beer and soft drink bottles. Although most of the labeling on this specimen was illegible it appears that the can contained a beer produced in Canada and imported into the United States by the Carling Brewing Co.

### Friction Top Cans.

A total of 49 items associated with friction top cans were recovered from 10 of the loci associated with AZ T:8:53 (ASM). The items consist of 41 friction top lids, five whole cans, and three can fragments. Several different closure styles and shapes are represented by the lid assemblage including rectangular external/slip cover, circular external and internal, and oval external and internal lids.

The majority of the can lids were unembossed so it was not possible to determine the contents of the associated friction top cans. The only embossed lids recovered from the loci were an oval lid embossed HERSHEY/COCOA and one embossed PATENTED/12-5-15/1-8-18.

### Hole-in-Top Cans.

Three fragments of hole-in-top cans were recovered at two of the AZ T:8:53 (ASM) loci. The fragments consisted of two can top fragments with part of the cap area intact (recovered from Locus 7), and an embossed can cap (recovered at Locus 9). The cap from Locus 9 is embossed with an E inside of a diamond. The contents of the cans associated with these fragments could not be determined.

### Buckets.

A total of 42 items associated with metal buckets were recovered at seven of the loci. The bucket related items included bails/handles, bucket ears, bucket lids and lid fragments, and bucket body fragments. There were no intact buckets recovered at any of the loci. The majority of the bucket related items, recovered at Locus 9, consisted of 34 lid fragments. The contents of the buckets associated with these items could not be determined because of the fragmentary condition of the specimens. However, metal buckets were used as containers for several different food related items such as lard, peanut butter, and syrup.

### Miscellaneous Unidentified Cans.

The embossed top portions and/or lids to two cans, whose contents could not be determined, were recovered during the surface collection of Locus 7 and Locus 11. The can top recovered at Locus 7 is embossed RICHARDSON & ROBBINS/DOVER, DEL. and appears to be the upper portion of a key opened cylindrical can. The other can top, which appears to be a slip cover can lid, is embossed COHEN WEENEN & CO/LONDON, ENGLAND. The can top embossed with the Richardson & Robbins maker's mark is from a company that has been in the canning business since 1865 (Heite and Heite 1987:39) and could possibly have contained plum pudding.

## Miscellaneous Can Parts.

A total of 375 specimens of miscellaneous can parts and fragments were recovered during surface collection and testing at the 11 loci associated with AZ T:8:53 (ASM). These items consisted of 26 can lids (removed by rotary or bayonet type can openers), eight can bases, 336 sanitary can fragments, 3 hole-in-cap fragments, and 2 fragments of unidentified can types.

## Food Preparation and Serving: Euro-American Ceramics

The category of Euro-American ceramics, represented by 423 specimens, consists of those items manufactured in Europe and North America (Table A4). Ceramics are classified in terms of the three primary categories of Earthenware, Stoneware, and Porcelain. The categories are based on body (paste), and surface treatment attributes.

### Earthenware.

A total of 335 specimens of earthenware vessels were recovered at the 14 loci associated with AZ T:8:53 (ASM). Earthenwares are a non-vitreous ceramic type with a porous to semi-porous opaque body. Earthenwares can be further divided into soft paste (relatively porous) and hard paste (less porous) forms, both of which commonly have glazed or slipped surfaces.

(Whiteware). The most common form of earthenware recovered at the different loci was whiteware, which is also referred to as white ironstone (WIS), stone china, and semi-porcelain. This type of earthenware is characterized by a white opaque body that is glazed and either left undecorated, or decorated in a variety of styles and patterns.

A total of 224 white ironstone sherds were recovered during surface collection and testing. Whiteware vessel sherds were recovered at all of the loci except for Locus 7.

Vessel forms represented by the WIS fragments include plate (117 specimens), cup (51 specimens), bowl (31 specimens), and gravy boat (4 specimens). Twenty-one whiteware sherds could not be assigned to a specific vessel form due to their size. A total of 112 fragments of white ironstone recovered from the different loci exhibit some type of decoration. Decorations observed on the WIS fragments included raised molded patterns, scalloped edges, overglaze decal print, underglaze transfer print, translucent glazes, hand-painted overglaze designs, and applied gold and silver rim banding.

Nine of the whiteware vessel fragments recovered at AZ T:8:53 (ASM) exhibited whole or partial maker's marks that were identifiable to a specific manufacturer and period of manufacture. A whiteware bowl base, documented at Locus 12 but not collected,

TABLE A4 CERAMIC VESSEL FRAGMENTS BY TYPE AND PROVENIENCE,  
SITE AZ T:8:53 (ASM)

ARTIFACT CATEGORY	PROVENIENCE													TOTALS	
	Locus-1				L-2	L-4	L-5	L-6	L-7	L-8	L-9	L-10	L-11		L-12
	L-13	Nail Cluster	Processing Area Test Excavations	Features 28&29 Test Excavations											
<u>Ceramic Type</u>															
<u>Earthenware</u>															
White Ironstone	18				3	52	29	6		11	12	1	85	7	224
Color-Glazed					11	11	29	3	6		17		28		105
Redware					1	1			1				3		6
<u>Stoneware</u>						7			7	2			22		38
<u>Porcelain</u>						13	9	4	11	1	6		6		50
<u>Opaque Glass</u>					3	6	49						8		66
<u>Historic Aboriginal Redware</u>															
Maricopa Red (?)						6							8		14
<u>Prehistoric Redware</u>															
Salt Red										1					1
<b>TOTALS</b>	18				18	94	116	13	25	15	35	1	160	7	504

L Locus

also exhibited an identifiable maker's mark. This information was useful in developing a date range for the different loci associated with AZ T:8:53 (ASM).

Eight manufacturers are represented by the 10 vessel fragments collected or documented at the different loci. The manufacturers are listed below along with the vessel forms, recovery context, probable date of manufacture, and data source:

- (1) Empire China Co. plate base, Locus 4, ca. 1924-? (Lehner 1980:56, 1988:138)
- (2) Harker Pottery Co. plate base, Locus 8, 1890-1930 (Gates and Ormerod 1982:83)
- (3) The Edwin M. Knowles China Co. 2 plate bases, Locus 4, 1900-1948 (Gates and Ormerod 1982:99, Lehner 1988:237)
- (4) Pope Gosser China Company. 2 plate bases, Locus 5, 1932-1958+ (Lehner 1988:353)
- (5) Ridgeways (Bedford Works) Ltd. plate base, Locus 11, 1927+ (Godden 1980:539)
- (6) Shenango Pottery Co. plate base, Locus 9, 1939-1967 (Lehner 1988:420)
- (7) Vernon Kilns or Vernon Potteries. bowl base, Locus 12 (Not collected), 1906-1960 (Lehner 1980:156)
- (8) Wallace China Co. cup base, Locus 9, 1931-1964 (Lehner 1988:498)

(Color Glazed Whiteware). A total of 105 fragments of whiteware vessels, with an opaque color glazed interior and exterior surfaces, were recovered from seven of the loci associated with AZ T:8:53 (ASM). The majority of the fragments, 53 specimens, represent bowl fragments with single or multiple color glazes. The remaining color glazed whiteware specimens consist of 19 plate fragments, 19 cup or mug fragments, 10 gravy boat fragments, and four fragments unidentifiable as to vessel form.

The color glazed whiteware vessels represented by the 105 fragments are similar to the Fiesta Dinnerware vessels manufactured by the Homer Laughlin China Company from 1936 to 1973 (Lehner 1980:89). However, there were no Fiesta ware vessels represented by the color glazed whiteware assemblage. The only manufacturer's mark observed on any of these specimens was a partial mark impressed into the bases of two bowls, one recovered at Locus 4 and the other recovered at Locus 9. The partial mark, LOS ANGEL..., possibly represents the Los Angeles Potteries and dates from ca 1914 to 1967 (Lehner 1988:269).

(Redware). Six fragments of red earthenware vessels were

recovered during the surface collection of four AZ T:8:53 (ASM) loci. A bowl fragment with a hard dark red paste and dark red glaze on both the interior and exterior surfaces was collected from Locus 2. A bowl fragment with a brown glaze on both surfaces was recovered at Locus 4. A jug fragment with a dark brown glaze was recovered during the surface collection of Locus 7. From Locus 11 two bowl fragments, decorated with a brown interior glaze and a green exterior glaze were recovered. The bowl fragments from Locus 11 were also decorated on the exterior surface with hand painted floral designs. The sixth redware specimen, also collected at Locus 11, is a bowl fragment with a dark green glaze.

#### Stoneware.

Stonewares are a type of ceramic having non-porous opaque bodies and are usually glazed with salt or lead glazes. A total of 38 fragments of stoneware vessels were recovered four loci associated with AZ T:8:53 (ASM). The specimens consisted of 34 storage crock fragments, three bowl fragments, and one fragment of undeterminable vessel form which was decorated with a dark brown/black glaze. The storage crock fragments included several sherds recovered at Locus 7 that were stamped with the maker's mark of the Western Stoneware Co. of Monmouth, Illinois. This company manufactured stoneware items from 1906 to 1985 (Lehner 1988:514).

#### Porcelain.

A total of 50 fragments of porcelain vessels were recovered during the various surface collection testing activities. The specimens include both a translucent, highly vitrified ceramic type and a semi-vitrified type similar to hard paste whiteware.

The vessel forms represented by the specimens of porcelain consisted of plate (20 sherds), cup (21 sherds), bowl (6 sherds), and three fragments unidentifiable as to vessel form. Twenty-three of the specimens exhibited some type of surface decorations, including underglaze transfer print, hand painted overglaze designs, and overglaze decal print.

The only maker's marks noted on any of the porcelain specimens were two marks noted on fragments of semi-vitreous porcelain recovered at Locus 9. A cup base, stamped with the mark of the D.E. McNichol Pottery Co. (ca. 1949), and a cup base stamped with the mark of the Wellsville China Co. (ca. 1958) were recovered during the surface collection of Locus 9 (Gates and Ormerod 1982:190, Lehner 1988:510).

#### Opaque Glass.

Sixty-six fragments of opaque glass serving vessels were recovered during the surface collection activities at four of the loci. The majority of the fragments, 49 specimens, were recovered during the surface collection of Locus 5. Opaque glass is described in the ceramic artifact category since it resembles

porcelain, and was produced to represent typical ceramic forms (i.e., cups, bowls, etc.) in functioning essentially as a ceramic tableware.

Opaque white (opal/milk) and other opaque colored glass is similar in appearance to highly vitrified porcelain. This type of glass has been used in the manufacture of tableware since the late 19th Century (Jones and Sullivan 1985:14). The vessel forms represented by the glass tableware fragments include plate (24 specimens), bowl (21 specimens), cup (3 specimens), and 18 specimens of undeterminable vessel form. The only decoration exhibited on any of these tableware fragments were opaque surface glazes, (such as yellow and green), on several of the plate and bowl sherds. Several colors of opaque glass were recovered at Locus 5, including red, green, and white.

#### Other Ceramics.

Fourteen fragments of what appears to be Maricopa Red ceramic vessels were recovered during the surface collection of two loci; six fragments were recovered at Locus 4 and eight fragments were recovered at Locus 11. The sherds represent fragments of redware bowls that were red slipped and polished. According to Wood (1987:115), Maricopa Red redware vessels have been manufactured by the O'Odham and the Maricopa Indians since 1700. This thick slipped dark red pottery is still being made in small amounts for the tourist trade.

A single Salt Red redware sherd was recovered during the surface collection of Locus 8. This ceramic type was manufactured by the Hohokam Indians from ca. 1300 to 1450 A.D., according to Wood (1987:31).

#### Food Preparation and Serving: Glassware

A total of 193 artifacts were recovered during the surface collection and limited testing activities that represent fragments of glassware vessels used in food preparation and/or serving. The glassware specimens include fragments of mixing bowls, oven dishes, tumblers, plates, table accessories, and decorative glass bowls.

#### Mixing Bowls.

A total of 17 specimens of glass mixing bowls were recovered during surface collection and testing at three of the AZ T:8:53 (ASM) loci. The bowl fragments consisted of one light green and five clear specimens recovered at Locus 4, two opaque white specimens recovered at Locus 5, and nine specimens of selenium and/or clear glass recovered at Locus 11. The clear and selenium glass specimens could represent fragments of pyrex glass, a heat resistant glass manufactured by Corning Glass since 1915 (Periodical Publishers Association 1934:27).

#### Oven Dishes.

Nineteen fragments of clear glass oven dish were recovered at two of the loci; two specimens from Locus 4 and 17 specimens from Locus 11. The oven dishes represented by these fragments also appear to be manufactured from pyrex glass.

#### Measuring Cup.

Five fragments of a selenium or pyrex glass measuring cup were recovered during the surface collection of Locus 4.

#### Tumblers/Water Glasses.

A total of 83 fragments of glass tumblers or water glasses were recovered at eight of the AZ T:8:53 (ASM) loci. The tumbler fragments consisted of 41 clear, 17 light green, 16 selenium, and nine pink glass specimens. Two of the tumbler fragments recovered at Locus 9 were bases embossed with the maker's marks of the Bartlett-Collins Glass Co. (1921-Present) and the Libbey Glass Co. (1944-Present) [Toulouse 1971:75 and 254].

Six of the water glass fragments, three recovered at Locus 6 and three recovered at Locus 11, are decorated with applied color enamel designs. The designs included floral patterns, human figures, and characters from the motion picture Snow White and the Seven Dwarves. This type of glass decoration has been in use since 1934 (Riley 1958:145).

#### Mugs.

Three base fragments from thick, polygonal-shaped glass mugs were recovered during the surface collection at three of the loci. Two of the fragments, one from Locus 4 and one from Locus 11, are manufactured from SCA glass. The third fragment, recovered at Locus 5, is of clear glass.

#### Tea/Punch Cups.

Glass specimens that appear to represent fragments of glass tea or punch cups were recovered at four loci. These fragments consist of an opaque purple (SCA) fragment with a green exterior rim band (Locus 1), a yellowish-orange (selenium?) rim and handle fragment (Locus 4), an opaque purple (SCA) rim fragment (Locus 8), and an olive green handle fragment (Locus 11).

#### Plates.

Six fragments of translucent glass plates or saucers were recovered at four of the AZ T:8:53 (ASM) loci. These fragments consisted of a clear pressed glass fragment with a floral pattern (Locus 2), two light green fragments (Locus 2 and Locus 6), and three SCA glass fragments (one from Locus 4 and two from Locus 5).

#### Water Pitcher.

Four fragments of a pink glass water pitcher were recovered at Locus 7.

#### Salt Shaker.

Two base fragments from a clear glass salt or pepper shaker were recovered during the surface collection of Locus 4.

#### Gravy Boat.

The spout portion of a clear glass gravy boat was collected at Locus 9.

#### Egg Cup.

The base from what appears to be a glass egg cup was recovered during the judgmental surface collection of Locus 5. The base fragment was manufactured from SCA glass and had a dark purple swirl pattern within it.

#### Shot Glass.

Two fragments of a possible shot glass were recovered during the surface collection of Locus 7. The fragments, which consist of a rim fragment and a base fragment, are of opaque, light brown/tan glass.

#### Decorative Bowls.

Thirty-nine specimens of decorative pressed glass bowls were recovered at five of the AZ T:8:53 (ASM) loci. These specimens consisted of 21 clear fragments (four from Locus 2 and 17 from Locus 7), 12 light green fragments (Two from Locus 4, one from Locus 10, and nine fragments from Locus 11), three SCA fragments (Locus 10), two cobalt blue fragments (Locus 11), and one selenium fragment (Locus 4). The 17 clear fragments recovered at Locus 7 represent three different bowls. The pressed patterns observed on the bowl fragments included starbursts, diamond, hexagons, and scrollwork.

#### Lids/Covers.

Two clear glass lid fragments to decorative containers were recovered during the surface collection of Locus 4 and Locus 9.

#### Unidentified Decorative Glass.

Five fragments of decorative glass vessels unidentifiable as to form or shape were recovered at two of the loci. The specimens recovered at Locus 4 consisted of an opaque light green pressed glass fragment with a floral pattern, an opaque purple

(SCA) rim fragment (Vase?), a light green translucent body fragment and a translucent pink body fragment (water glass fragments?). The unidentifiable decorative specimen recovered at Locus 8 consisted of an SCA glass fragment with a scrollwork pattern.

#### Food Preparation and Serving: Metal Items

Few metal items associated with food preparation and serving were recovered at any of the loci associated with AZ T:8:53 (ASM). A total of 24 metal food preparation or serving items were recovered during the surface collection of six loci. The items are described below by type and recovery context.

##### Plate/Bowl Fragments.

Ten fragments of metal plates and/or bowls were recovered at two of the loci. Nine of the fragments were recovered during the surface collection of Locus 13 (within Locus 1) and one fragment was recovered at Locus 4. The specimens were too fragmentary and heavily oxidized to determine the form of the associated vessels.

##### Enamelware Cup.

A badly crushed enamelware cup was recovered during the systematic random surface collection of Locus 4.

##### Utensils.

Two metal kitchen utensils were recovered at two of the AZ T:8:53 (ASM) loci. A plated, butter knife blade was recovered during the surface collection of Locus 7, and a stamped metal spoon was recovered at Locus 12. The spoon is possibly a measuring spoon or part a child's toy set.

##### Kitchen Accessories.

Several kitchen accessories or possible accessories are represented by the artifact assemblage from six of the loci. A funnel and two funnel fragments were recovered from Locus 13 (within Locus 1). A meat hook was collected from Locus 2. From Locus 4, the pour spouts to two sugar or syrup containers were recovered as well as the coarse cutter attachment to a meat grinder. A wire whisk handle and the circular frame and hanger attachment for a hot pad were collected at Locus 6. Another wire whisk/egg beater was recovered during the surface collection of Locus 7. A third pour spout for a sugar or syrup container was collected at Locus 9.

#### Household Maintenance

##### Cleaning Products.

#### Aerosol Can.

An aerosol spray can was recovered during the surface collection of Locus 9. This type of can, which would have contained insecticide or paint, was developed in 1944 (Rock 1987: 67).

#### Miscellaneous Household Items

##### Ash Tray.

Eight fragments of a dark green/olive green glass ash tray were recovered during the surface collection of Locus 11.

##### Ceramic Flower Pots.

A total of 23 fragments of unglazed red earthenware flower pot were recovered at three of the loci associated with AZ T:8:53 (ASM). Six flower pot fragments were recovered at Loci 4, 14 fragments were recovered at Locus 5, and three fragments were recovered during the surface collection of Locus 12.

##### Decorative Ceramic Items.

Eleven ceramic fragments, representing eight decorative objects, were recovered during the surface collection and testing of five AZ T:8:53 (ASM) loci. The ceramic fragments appear to represent such decorative items as figurines, vases, and other "knick-knacks".

Two fragments of a porcelain animal figure were recovered during test excavations in the vicinity of the mercury processing plant (Locus 1).

At Locus 4, five ceramic fragments were recovered. The fragments consist of a porcelain/opaque glass vase rim, two fragments of an unidentified unglazed earthenware figurine, a decorative bowl fragment, and a fragment of a decorative item in the shape of a tree. The bowl fragment is from a vessel with an unglazed interior, a polished exterior painted with purple and orange bands, and a dark grey core.

The remaining ceramic specimens (4) appear to be from different figurines or statues. A fragment of a white glazed earthenware horsehead was judgmentally collected at Locus 7. A porcelain figurine fragment and a fragment of an unidentified, yellow glazed earthenware object were recovered at Locus 9. The porcelain fragment, which appears to be the torso of a ballerina, is possibly part of a jewelry box figurine. From Locus 12 the leg portion of a porcelain elephant statue was recovered.

#### Stove Part.

A cast iron fleur-de-lis, that appears to be an ornamental stove part, was recovered during the surface collection of Locus 6.

#### Furniture Parts.

Three furniture related items were recovered during the surface collection of two of the loci. Two chrome plated upholstery buttons were recovered a Locus 11. A furniture caster wheel was collected at Locus 8. The type of furniture that these items are related to could not be determined.

#### Whetstone/Hone.

A fragment of a ceramic kitchen whetstone or utensil hone was recovered during the surface collection of Locus 11.

#### Lighting Devices.

A total of 16 items associated with lighting devices were recovered during surface collection and testing activities at six of the AZ T:8:53 (ASM) loci. These items consisted of fragments of lamp/lantern glass, light bulb fragments, and light sockets.

(Lamp glass). Five fragments of lamp or lantern glass were recovered at three of the loci; three specimens from Locus 4, one specimen from Locus 5, and one specimen from Locus 9. The three fragments recovered at Locus 4 consisted of an SCA lamp base fragment, an aqua globe or light cover fragment, and a clear lamp chimney fragment. The specimens recovered at Locus 5 and Locus 9 were also clear glass chimney fragments.

(Light bulbs). Four fragments of light bulb glass were recovered at four of the loci associated with AZ T:8:53 (ASM). The fragments recovered at Loci 4, 7, and 8 were from clear household light bulbs. The fragment recovered at Locus 11 was from a frosted light bulb and was labeled MAZDA/GE/60 WATT 120 VOLT.

In addition to the light bulb glass fragments, three light bulb bases were recovered. The bases were recovered during the surface collection of Loci 7, 8, and 10.

(Light Sockets). Four specimens of ceramic light sockets were recovered at three of the loci. Two whole sockets were recovered; one during the testing of subsurface features in the vicinity of the mercury processing plant (Locus 1) and one during the surface collection of Locus 6. Two fragments of a third socket were recovered during the surface collection of Locus 4.

#### Other Electrical Items.

(Fuses). Four glass and/or ceramic household fuses were

recovered from four of the loci. The fuses were recovered during the surface collections of Locus 2, 4, 7, and 11.

(Insulators). A ceramic house wiring insulator tube was recovered during the surface collection of Locus 7. A ceramic insulator cleat, embossed P.P.I. ALLICATOR, was recovered at Locus 6. A fragment of a ceramic insulator was recovered during the surface collection of Locus 11.

(Radio Tube). Two fragments of a metal and plastic radio or television tube/transistor were recovered during the surface collection of Locus 9.

(Unidentified Electrical Items). Seven artifacts that have been tentatively identified as household electrical items were recovered at four of the loci associated with AZ T:8:53 (ASM). Two ceramic and one metal electrical item were recovered at Locus 2. Two other metal items, one from Locus 4 and the other from Locus 7, were collected. Two fragments of a plastic or synthetic rubber item were recovered at Locus 8. All of the items appear to be related to some type of machinery or electrically operated item; the exact form and function of these artifacts could not be determined because of their fragmentary condition.

### Personal/Clothing

A variety of personal and clothing related items were recovered during the random and judgmental surface collection of the loci associated with AZ T:8:53 (ASM). A total of 128 personal and clothing-related artifacts were recovered at 10 of the 14 loci. The items included in this category included clothing and shoe parts, accessories, cosmetics and health related items, musical instruments, and toys.

#### Clothing Related

##### Shoe/Boot Nails.

Six shoe and/or boot nails were recovered during the surface collection of two of the loci. Four of the nails were recovered at Locus 4 and two nails were collected at Locus 11. The two nails recovered at Locus 11 were earlier, square boot nails. The type of footwear that the remaining nails were attached to could not be determined.

##### Shoe/Boot Heel.

Two fragments of a synthetic rubber shoe or boot heel were recovered during the systematic random surface collection of Locus 7. The exact type of footwear that this heel was attached to could not be determined due to the fragmentary condition of the specimen.

### Eyelets.

Four shoe/boot eyelets were recovered at two of the loci associated with AZ T:8:53 (ASM). Three of the eyelets were recovered at Locus 8 and one eyelet was recovered at Locus 9. The type of footwear associated with these specimens could not be determined.

### Buttons.

A total of six clothing buttons were recovered during the surface collection and/or testing of three AZ T:8:53 (ASM) loci. Four of the buttons were recovered at Locus 7 and one button each was recovered at Locus 1 and Locus 11. The button recovered at Locus 1 was collected during test excavations at the mercury ore processing plant. The remaining buttons were recovered during random and judgmental surface collections. The clothing buttons are described below in terms of "lignes", a standard measurement used to describe buttons in terms of their diameter (Herskovitz 1971:37). There are 40 lignes, or lines, to the inch.

Two of the four buttons recovered at Locus 7 were shell, sew-through type buttons; one a two-hole collar or cuff button measuring 15 lignes in diameter, and the other a four-hole shirt button measuring 20 lignes in diameter. A 40 ligne diameter sew-through button made of mica was also collected at Locus 7. This button appears to have been a dress or coat button. The fourth button recovered at Locus 7 was a wire shank pink glass button that appears to have been from a dress.

A four-hole sew through shell button was recovered during the judgmental surface collection of Locus 11. The button measures 22 lignes in diameter and was probably a work shirt button. Machine made buttons of this type have been manufactured since the 1850s (Luscomb 1967:177, Teague 1980:115).

A fourth shell button was recovered during test excavations in the vicinity of the mercury ore processing plant (Locus 1). This two-hole sew through button measures 20 lignes in diameter and also appears to have been a work shirt button.

### Overall/Pants Buttons.

A total of 10 overall and/or denim pants buttons were recovered during the surface collection of five AZ T:8:53 (ASM) loci. All of the buttons are two-piece brass and iron shank buttons similar to those found on modern denim jeans and overalls.

Three of the shank buttons were recovered during the surface collection of a nail cluster in the west portion of Locus 1. Although the article of clothing that these buttons had been attached to could not be determined, it appears that the garment had been burned. All of the buttons exhibit signs of having been in a fire.

The brass front part of an overalls button was recovered during the systematic random surface collection of Locus 4. This button is embossed with the symbol of a train.

Three shank buttons were recovered during the surface collection of Locus 7. All of the buttons are embossed with the words CARHARTT'S O'ALLS & GLOVES and the symbols of a heart overlying a streetcar. An overalls shoulder brace/buckle, embossed CARHARTTS, was also recovered in association with these buttons.

Two overalls buttons were recovered during the surface collection of Locus 8. One of the buttons is embossed with the symbol of a crown and the words CROWN OVERALL. The second button is embossed with the symbol of a bulldog and the words KING OF THE ROAD.

A two-piece shank button was recovered at Locus 11. This button was unembossed and the type of clothing that the button was attached to could not be determined.

#### Overalls/Suspender Parts.

A total of five overalls and/or suspenders brace buckles were recovered during the surface collection of two of the loci associated with AZ T:8:53 (ASM). One of the buckles was recovered at Locus 7 and the remaining four buckles were recovered at Locus 11. The buckle recovered at Locus 7 was recovered in association with three overalls buttons, discussed in the previous subcategory, and was embossed CARHARTTS. The four suspender or overall brace buckles recovered at Locus 11 were unembossed and the types of clothing that they were attached to could not be determined.

#### Clothing Fasteners.

Seven metal clothing fasteners were recovered at four of the AZ T:8:53 (ASM) loci. Three iron clothing snaps and a brass snap fastener were recovered during the systematic random collection of Unit 145 at Locus 7. The female part of a brass snap fastener, embossed CARR FAST. CO./BOSTON/PAT 13, was collected at Locus 8. An iron clothing snap was recovered during the surface collection of Locus 9. The seventh fastener, an iron snap, was recovered at Locus 11. The types of clothing that these fasteners were attached to could not be determined.

#### Buckles.

A total of four metal buckles were recovered during the surface collection of three of the loci associated with AZ T:8:53 (ASM). Two buckles were recovered at Locus 7 and one buckle each was recovered from Locus 2 and Locus 8. A rectangular iron belt buckle was recovered during the judgmental surface collection of Locus 2. The two buckles recovered at Locus 7 consisted of a small iron belt buckle and a decorative, stamped white metal buckle that

appears to be a small belt or shoe buckle. The buckle collected at Locus 8 is a small brass belt buckle that is missing its tongue.

#### Possible Clothing Related Items.

Two brass artifacts were collected from Locus 7 and Locus 8 that have been tentatively identified as clothing related items. The artifact recovered at Locus 7 appears to be some type of suspender or overalls adjustment part. The artifact recovered at Locus 8 appears to be some type of clothing fastener or hook but the type of clothing that it had been attached to could not be determined due to its fragmentary condition.

#### Accessories

##### Safety Pin.

A single safety pin was recovered during surface collection at Locus 11.

##### Bobby Pin.

A bobby pin/hair pin was recovered at Locus 11.

##### Pocket Knives.

The side plates to two pocket knives were recovered at Locus 2 and Locus 5. The side plate recovered at Locus 2 is from a pearl handled knife. The side plate from Locus 5A was undecorated.

##### Umbrella Parts.

Three fragments of an umbrella were recovered during the surface collection of Locus 13 (within Locus 1). The parts consisted of two umbrella rib fragments and a metal ring that supported and locked the umbrella rib assembly into an open position.

##### Change Purse Frames.

The frames to two cloth covered change purses were recovered at Locus 12. The purses with which these frames are associated appear to have been destroyed by fire. Both frames exhibit signs of burning.

##### Eyeglass Lens.

Two circular eyeglass lenses were recovered at Locus 11. The lenses are clear and 1-1/2 inches in diameter.

##### Steamer Trunk/Luggage Parts.

A total of 12 items that appear to be associated with

steamer trunks or other types of luggage were recovered during the surface collection of four loci associated with AZ T:8:53 (ASM). These items include lock parts, corner brackets, and a possible nameplate and monogram letter.

A trunk or luggage lock clasp was recovered at Locus 1. This artifact was recovered in the northwest portion of the locus, in the vicinity of the ventilation fan foundation within the west portion of Locus 1.

A single iron trunk corner bracket was recovered from Locus 2. Eight other corner brackets were recovered during the surface collection of Locus 7. In addition to the corner brackets from Locus 7, a small riveted metal nameplate was also recovered. The nameplate, which was in the same collection unit as seven of the brackets, measured two inches in length and 1/2 inch in width. The nameplate was too heavily oxidized to determine whether there was a name engraved upon it.

A brass stamped initial, recovered during the surface collection of Locus 8, also appears to be a part of a monogram letter used on luggage. The initial appears to have been attached by means of several small nails that are soldered onto the underside of the item. The initial appears to be an upper case L or F but it has been intentionally deformed and it was not possible to determine the correct letter that it represented.

#### Personal Care/Cosmetics

##### Razors.

Fragments of six razor blades were recovered during surface collection activities at three of the AZ T:8:53 (ASM) loci. Two of the fragments, one from Locus 1 and the other from Locus 11, are from single edged safety razor blades. The four remaining fragments, three collected at Locus 11 and one from Locus 12, represent double edged razor blades.

In addition to the razor blade fragments, an aluminum razor blade injector was collected during the judgmental surface collection of Locus 7. The specimen was labeled SCHICK EVERSHARP.

##### Toothpaste Tube.

An aluminum toothpaste tube was recovered during the surface collection of Locus 6.

##### Talcum Powder Cans.

The shaker top portions to two brass talcum powder cans were recovered during the surface collection of Locus 4 and Locus 11. This type of container has been manufactured since approximately 1890 (Rock 1987:16) and could have contained a variety of body powders.

#### Pill Containers.

Three circular, two-piece pill containers were recovered during the surface collections of Loci 1, 6, and 8. The containers recovered at Locus 1 and Locus 8 measure 1-3/16 inches in diameter, and the container recovered at Locus 6 measures 1-1/2 inches in diameter. The contents of these containers could not be determined.

Two rectangular, two-piece containers were also recovered during the surface collection of Locus 4 and Locus 6. The containers measured 110D x 112D x 005H. This type of container was first manufactured by Tindeco in 1917 for the Bayer Aspirin Company (Can Manufacturers Institute nd:22-29, Periodical Publishers Institute 1934:82, Rock 1987:68).

#### Shaker Top Can.

The shaker top/lid to a cylindrical, paper-bodied container was recovered during the surface collection of Locus 5. The circular lid is two inches in diameter and is similar to the lid of a scouring powder/cleanser container. It is possible that the lid is associated with a foot powder container, however, the exact contents could not be determined.

#### Surgical Tape Containers.

The spools to two surgical tape containers were collected at Locus 2 and Locus 9. In addition, the circular metal spool cover for a tape container was recovered during the surface collection of the trash scatter associated with Locus 1. The tape cover appears to have been intentionally deformed for some unknown purpose.

#### Rectangular Bandage Container.

The lid to a hinged, rectangular bandage container was recovered at Locus 9. The lid measured 2-3/8 x 1-1/8 inches in diameter.

#### Lipstick Tube.

A brass lipstick tube/holder was recovered during the judgmental surface collection of Locus 4. The tube was engraved, ELMO in script, along the side.

#### Thermometer.

A fragment of a glass thermometer was recovered during the surface collection of Locus 7.

#### Douche Nozzle.

The red plastic/rubber end of a douche bag nozzle was recovered during surface collection activities at Locus 5.

#### Cane/Crutch End.

The rubber end to a cane or hospital crutch was recovered at Locus 9. The rubber end is embossed with the number "19" inside of a diamond.

#### Musical Instruments

##### Harmonicas.

The parts of two harmonicas were recovered at two AZ T:8:53 (ASM) loci. The side plate to a harmonica was recovered at Locus 2, and the reed plate to a 10-reed harmonica was collected at Locus 7.

#### Toys

##### Marbles.

Two glass marbles were judgmentally collected during the surface collection of Locus 7 and Locus 11. The marble collected at Locus 7 is manufactured from opaque white glass with an orange and brown agate pattern. A clear glass marble with an orange "cats-eye" swirl pattern was recovered at Locus 11.

##### Doll.

The right leg to a plastic doll was recovered from Locus 2.

##### Badge.

Two fragments of a stamped metal toy sheriff's badge were recovered during the surface collection of Locus 7. The badge is embossed with the words HOPALONG CASSIDY as well as the likeness of this 1930s and 1940s motion picture character.

##### Jack.

A cast metal jack was collected at Locus 8.

##### Airplane.

The plastic and metal wheel assembly to a toy airplane was recovered from Locus 5A.

### Stuffed Animal.

A plastic eye from what appears to be a stuffed toy animal was recovered from Locus 8.

### Stamped Metal Toys.

Nine artifacts representing fragments of stamped metal toys were recovered at five of the loci associated with AZ T:8:53 (ASM). One artifact each was recovered from Loci 1, 2, and 11, and three artifacts each were recovered at Locus 4 and Locus 5. The artifacts included two key wind mechanisms (Locus 4 and Locus 11), a toy gear (Locus 4), and the base of a toy car (Locus 5). The remaining toy parts were too fragmentary or too heavily oxidized to determine the type of toy of which they had been a part.

### Molded Plastic Toys.

Two fragments of a molded plastic toy were recovered during the surface collection of Locus 1. The fragments were too small to accurately identify the type or shape of the toy.

### Bicycle Parts.

Two items that are associated with bicycles were collected from Locus 4 and Locus 8. The item recovered from Locus 4 was a fragment of a tire spoke. The other bicycle related item is a chain link collected at Locus 8.

## Hobbies

### Fishing Related Items.

Two probable fishing related items were recovered during the surface collection of Locus 7. These items consisted of a fishhook and a homemade lead weight/sinker. The weight was constructed from a piece of cast lead with a nail embedded into it.

## Indulgences

### Tobacco Tins.

A total of eight specimens of upright hinged-lid pocket type tobacco tins were recovered during the surface collection of six loci. One specimen each was recovered at Loci 2, 4, 5, and 9, and two specimens each were recovered at Locus 7 and Locus 8. This type of pocket tobacco container was first developed around 1905 according to Rock (1987:75), and similar containers were manufactured until the 1970s.

### Snuff Cans.

The lids to two snuff containers were collected during the surface collection of Locus 6 and Locus 7. The lid recovered at

Locus 6 is embossed GARRETT'S RICH MILD SNUFF. The lid collected at Locus 7 is embossed COPENHAGEN SNUFF. The style of lid recovered at Locus 7 appears to have been manufactured from 1919 to 1938 (Hull-Walski and Ayres 1989:133, Steinle 1965:np).

### Structural Materials

The category of structural materials consists of specific materials that were used during the construction of buildings and structures. These materials are distinguished from general hardware items, such as nails, screws, rivets, and bolts, which are used to join structural materials together or as structural accessories. Structural materials were recovered in limited quantities from all of the loci associated with AZ T:8:53 (ASM); the majority of the materials were recovered during the surface collection of Locus 4 and Locus 7.

A total of 187 specimens of various structural materials were recovered (Table A5). The majority of the specimens were non-diagnostic and except for the material recovered during the test excavation of features associated with Locus 1, could not be directly associated with any of the structures in the vicinity of the mercury ore processing plant or with the residences that were located in the area (i.e., Loci 5 and 7) during the period of active mining and ore processing (ca. 1915-mid-1930s).

#### Bricks.

A total of five red-fired clay brick fragments were recovered at two of the AZ T:8:53 (ASM) loci. One of the brick fragments was recovered at Locus 1 and four fragments were recovered at Locus 8. All of the fragments were non-diagnostic as to manufacturer or date of manufacture and the fragments were too small for the accurate measurement of dimensions.

#### Concrete.

Eight fragments of structural concrete were recovered during the surface collection of five of the loci associated with AZ T:8:53 (ASM). Two fragments each were recovered at Loci 8, 9, and 10, and one fragment each was recovered at Locus 1 and Locus 12. All of the fragments were non-diagnostic as to the type of structure with which they were associated.

#### Lumber.

A total of eight fragments of milled lumber were recovered from four of the loci; four fragments from Locus 1, one fragment each from Locus 5 and Locus 7, and two fragments from Locus 8. Three of the fragments were recovered during the testing of features associated with Locus 1 (mercury ore processing plant).

TABLE A5 STRUCTURAL MATERIALS BY TYPE AND PROVENIENCE,  
SITE AZ T:8:53 (ASM)

ARTIFACT CATEGORY	PROVENIENCE													TOTALS	
	Locus-1				L-2	L-4	L-5	L-6	L-7	L-8	L-9	L-10	L-11		L-12
	L-13	Nail Cluster	Processing Area Test Excavations	Features 28629 Test Excavations											
<u>Structural Material</u>															
Brick			1							4				5	
Concrete	1							2	2		2		1	8	
Lumber	4					1		1	2					8	
Asbestos Tile								20						20	
Flat Window Glass		1		3	6	42	17	3	33		3	1	9	118	
Window Screen	6					2		1						9	
Floor Tile			3			5			2					10	
Sewer Tile						6				3				9	
<b>TOTALS</b>	<b>11</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>6</b>	<b>55</b>	<b>18</b>	<b>4</b>	<b>58</b>	<b>11</b>	<b>3</b>	<b>3</b>	<b>9</b>	<b>187</b>	

L Locus

### Asbestos Tile.

Twenty fragments of asbestos tile were recovered during the surface collection of Locus 7. Asbestos tile was once used for roofing shingles and siding on buildings and it is probable that these fragments are from one of the residential buildings associated with the Rico Mine and processing plant.

### Window Glass.

A total of 118 fragments of flat, aqua and clear window glass were recovered at AZ T:8:53 (ASM). Fragments were recovered from all of the loci except for Locus 8 and Locus 12. The majority of the fragments were recovered at Locus 4 (42 specimens) and Locus 7 (33 specimens).

### Window Screen.

Nine fragments of wire mesh window screen were recovered from three of the AZ T:8:53 (ASM) loci. Six of the fragments were recovered at Locus 1, two fragments were recovered at Locus 4, and one fragment was recovered at Locus 6. All of the fragments were 1/16 inch mesh screen except for one fragment of 1/4 inch mesh recovered at Locus 4.

### Floor Tile.

A total of 10 glazed ceramic floor tile and tile fragments were recovered at three loci. Three of the tile fragments were recovered during test excavations around the features associated with the ore processing plant (Locus 1), five fragments were recovered during the surface collection of Locus 4, and two tiles were collected at Locus 7. All of the tiles and tile fragments were non-diagnostic as to the manufacturer or date of manufacture.

### Sewer Tile.

Nine fragments of glazed and unglazed ceramic sewer tile were recovered during the surface collection of two AZ T:8:53 (ASM) loci. Six of the fragments were recovered at Locus 4 and three of the fragments were recovered at Locus 8.

## General Hardware

A total of 1435 hardware related artifacts were recovered during the surface collection and testing of the different loci associated with AZ T:8:53 (ASM). The hardware items are divided into the categories of structural and general hardware. The types of hardware items recovered from the different loci are indicated on Table A6 and Table A7.

TABLE A6 NAILS BY TYPE AND PROVENIENCE,  
SITE AZ T:8:53 (ASM)

ARTIFACT CATEGORY	PROVENIENCE														TOTALS
	Locus-1				L-2	L-4	L-5	L-6	L-7	L-8	L-9	L-10	L-11	L-12	
	L-13	Nail Cluster	Processing Area Test Excavations	Features 28629 Test Excavations											
<u>Nails (Wire)</u>															
2d		28							1	1				30	
3d		23	2							2		21		48	
4d		51										1	5	72	
5d		37						1	2	12				72	
6d	5	43	3	1					5	17		14		73	
7d		5						1	4	11		1	2	1	72
8d	30	191	13					1					8	14	
10d		14	6			1/2			7	30		2	32	18	326
12d		14							4				7		31
16d	5	13	9				1		1	4	1				21
20d		12					1/4		3	9	4		11	3	62
30d		3	1					/2	1	4		2	17		38
40d								/1							5
60d					1	1							2		4
Fragments		40	5				1		2	13		3		9	73
<u>Roofing Nails</u>	5	9		1			1						5		21
<u>Casing Nails</u>	1														1
<u>Brads</u>	2	50	1		1				2	4			1	49	110
<b>TOTALS</b>	<b>48</b>	<b>533</b>	<b>40</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>15</b>		<b>32</b>	<b>107</b>	<b>5</b>	<b>8</b>	<b>122</b>	<b>85</b>	<b>1002</b>

L Locus

TABLE A7 HARDWARE BY TYPE AND PROVENIENCE,  
SITE AZ T:8:53 (ASM)

ARTIFACT CATEGORY	PROVENIENCE													TOTALS	
	Locus-1				L-2	L-4	L-5	L-6	L-7	L-8	L-9	L-10	L-11		L-12
	L-13	Nail Cluster	Processing Area Test Excavations	Features 28&29 Test Excavations											
<u>Hardware Category</u>															
Fasteners		8													8
Rivets		6													6
Burrs		3													3
Screws		2			1				1	2			1	1	8
Bolts		1	5						3	1			1		11
Nuts									2						2
Brackets	1	1			2						1		2		7
Tacks		1													1
Washers							1		3	1					5
Staples			2				1		2	5	2				12
Wire	13	41	4	1	11	39	39	1	80	44	18	3	16	25	323
Eye Bolts		1													1
Grommets		3					1	1	1	1					7
Chain													3		3
Reinforcing Mesh											13		2	5	15
<b>TOTALS</b>	<b>14</b>	<b>67</b>	<b>11</b>	<b>1</b>	<b>11</b>	<b>42</b>	<b>42</b>	<b>2</b>	<b>92</b>	<b>54</b>	<b>34</b>	<b>3</b>	<b>25</b>	<b>31</b>	<b>416</b>

L Locus

## Structural

### Door Hinge.

A stamped metal door hinge was recovered from Locus 8. A door hinge pin was also recovered from Locus 11.

### Door Spring.

A screen door retention spring, measuring 9-1/2 inches in length, was recovered at Locus 5A.

### Skeleton Key.

A fragment of a door lock skeleton key was recovered at Locus 11.

## General Hardware

### Nails.

The nail assemblage recovered from the AZ T:8:53 (ASM) loci consists of 1002 specimens. Nails were recovered from all of the loci except for Locus 6. All of the nails identifiable as to shape were the wire or "drawn" variety. The nail assemblage includes common nails, box nails, roofing nails, casing nails, finishing nails or brads, and nail fragments too heavily oxidized for accurate identification. The measurable nails recovered from the different loci range in length from one inch, or 2d (pennyweight), to six inches or 60d. The majority of nails, 326 specimens or 32.5%, were 8d nails measuring 2-1/2 inches in length.

The majority of the nails were recovered at Locus 1 (Table A6). A total of 623 common nails, ranging in length from 2d to 30d, as well as roofing nails, finishing nails and nail fragments, were recovered during the surface collection of a nail concentration in the west portion of Locus 1. All of the nails recovered from this concentration exhibit signs of burning and appear to represent the remains of structural materials that were dismantled and burned.

Other loci which contained more than 100 nails were Locus 7 (107 specimens) and Locus 11 (122 specimens). A total of 85 nails, including 49 finishing nails, were also recovered from a nail concentration associated with Locus 12.

Nails recovered from the AZ T:8:53 (ASM) loci were not chronologically diagnostic. Wire nails have been commercially manufactured since the turn of the century and replaced the earlier machine-cut square nails. Except for nails recovered from the nail concentration at Locus 1, none of the nails could be associated with any of the structures that were located in the vicinity of the mine and mercury ore processing plant.

#### Corrugated Fasteners.

Eight corrugated metal fasteners of different lengths were recovered during the collection of the nail cluster associated with Locus 1. These fasteners also exhibited signs of having been burned.

#### Rivets.

A total of six rivets were recovered during the surface collection of Locus 1. Five of the rivets, recovered from the nail cluster in the west portion of the locus, are of a type known as "clinch" rivets. The sixth rivet is a standard type rivet which is fastened together using a metal burr.

#### Burrs.

Three iron burrs, flat metal discs that are used to fasten small rivets to different objects, were recovered during the surface collection of the Locus 1 nail cluster.

#### Wood Screws.

A total of eight wood screws were recovered from six AZ T:8:53 (ASM) loci. Two screws each were recovered at Locus 1 and Locus 8 and single screws were recovered at Loci 4, 7, 11, and 12. The screws ranged in length from 1-1/2 inches to 2-1/2 inches.

#### Bolts.

Eleven bolts and bolt fragments were recovered during the surface collection and/or test excavation activities at four loci. Six of the bolts and bolt fragments were recovered at Locus 1, three bolts were recovered from Locus 7, and one bolt each was recovered from Locus 8 and Locus 11.

The bolts collected at Locus 1 were recovered during the test excavation of features in the vicinity of the mercury ore processing plant. All of the bolts were too heavily oxidized and in such a fragmentary condition that their dimensions could not be accurately measured. Both square head and hexagonal head bolts are represented in the artifact assemblage.

#### Nuts.

Two nuts, one hex head and one square head, were recovered from Locus 7. The square head specimen is attached to a fragment of bolt that appears to have been sheared off.

#### Brackets.

A total of seven angle brackets were recovered during the surface collection of four loci associated with AZ T:8:53 (ASM).

Two brackets each were recovered at Loci 1, 4, and 11, and a single bracket was recovered at Locus 9. The brackets ranged in length from 1-1/2 inches to 6 inches on a side and appear to have been used for fastening different structural materials together.

#### Washers.

Five iron washers were recovered at three of the AZ T:8:53 (ASM) loci. Three of the washers were recovered at Locus 7 and one washer each was recovered from Locus 5 and Locus 8. Two of the washers recovered from Locus 7 are the "locking" type used for holding machinery and structural materials together with machine bolts and nuts.

#### Staples.

A total of twelve heavy gauge wire staples were recovered at five loci. The staples consisted of five specimens from Locus 8, two specimens each from Loci 1, 7 and 9, and one specimen from Locus 5. All of the staples were too deformed or too heavily oxidized for accurate measurement, and their exact function could not be determined.

#### Eyebolt.

A single eyebolt, attached to a length of copper wire, was recovered during the surface collection of Locus 13 (within Locus 1).

#### Grommets.

Seven metal grommets were recovered during the surface collection of five loci at AZ T:8:53 (ASM). Three of the specimens were recovered at Locus 1 and one specimen each was recovered at Loci 5, 6, 7, and 8. The grommets are all manufactured from iron, except for a brass specimen recovered from Locus 7.

#### Wire.

A total of 335 wire fragments were recovered. The wire fragments include both drawn iron and copper specimens as well as fragments of braided wire. Many of the fragments were twisted together and several appear to have been intentionally modified for some undeterminable purpose. The majority of the wire fragments were recovered at Locus 7 (80 specimens) and Locus 1 (59 specimens).

#### Tack.

An iron tack, measuring 1/2 inch in length, was recovered at Locus 1. The tack appears to be a small carpet or furniture

tack.

Chain.

Three link fragments to a section of heavy gauge chain were recovered at Locus 11.

#### Commerce/Industry

This category consists of artifacts that can be related, directly or indirectly, to the performance of commercial activities. Few diagnostic artifacts were recovered that could be associated with specific commercial or industrial activities.

#### Office-Related Items

A total of 17 artifacts were recovered at AZ T:8:53 (ASM) loci that have been tentatively identified as office related items. These items include fragments of wooden pencils, paper clips, thumbtacks and pushpins, and fragments of mechanical drawing instruments.

Pencils.

The metal ends to three wooden pencils were recovered during the surface collection of three loci. The metal ends, recovered at Loci 4, 7, and 8, contained the rubber eraser on one end of the pencil. Two graphite pencil lead fragments were also recovered at Locus 8.

Paper Clips.

A total of five metal paper clips were recovered. Two of the paper clip fragments were from the surface collection of the burned nail concentration associated with Locus 1. Three paper clips were recovered during the surface collection of Locus 11.

Pushpins.

A metal pushpin was recovered from Locus 11. A thumbtack, which served the same function as the pushpin, was also recovered at Locus 11.

Notebook/Binder Parts.

The wire binder from a spiral notebook was recovered at Locus 9. Another metal strip, that appears to be some type of book spine or part of a bound notebook, was also recovered at Locus 9.

Mechanical Drawing Instruments

A portion of a mechanical drawing compass was recovered during the surface collection of Locus 11. An adjustment screw and an adjustment nut, which also appear to be parts of mechanical

drawing instruments, were also recovered at Locus 11.

#### Transportation/Automotive-Related Items

A total of 23 artifacts were recovered from the different AZ T:8:53 (ASM) loci that are associated with automobiles or automobile maintenance. These items include fragments of automobile parts, tire fragments, and possible automobile repair tools.

##### Tires.

Seven fragments of tire rubber were recovered during the surface collection of three loci. Four of the fragments were recovered at Locus 4, two fragments were recovered at Locus 2, and one fragment was recovered at Locus 7.

##### Spark Plugs.

Two ceramic and metal automobile spark plugs were recovered during the surface collection of Locus 7. Both of the specimens were CHAMPION brand spark plugs.

##### Brake Pad.

A fragment of an asbestos brake pad was recovered at Locus 9.

##### Window Guide.

A fragment of an automobile window guide was recovered during the surface collection of Locus 9. The specimen appears to be a section of a side window guide assembly.

##### Leaf Spring.

The end of a cast metal leaf spring was recovered at Locus 10. This artifact appears to have been part the suspension for an automobile.

##### Clamp.

A metal clamp, possibly for a radiator hose, was recovered during the surface collection of Locus 12. The specimen is a wire type adjustment clamp that measures 5/8 inch in width.

##### Light Bulb.

The base to an automotive light bulb was recovered at Locus 1.

#### Oil Filter.

The base to an automobile engine oil filter was recovered during the surface collection of Locus 7.

#### License Plate.

A fragment of an automobile license plate was recovered at Locus 4. The specimen consists of the left half of an Arizona state plate. The year that the plate was issued could not be determined.

#### Brake Fluid.

Two metal disks, similar to the inserts found in the tops of brake fluid containers, were recovered at Locus 1 and Locus 5.

#### Tire Repair Tools.

An aluminum tube that had contained tire repair glue was recovered during the surface collection of Locus 6. In addition to the tire repair glue, four tire repair tools were also recovered at three of the loci. The tools, one recovered at Locus 5, one recovered at Locus 10, and two recovered at Locus 11, consisted of metal disks with rough exterior surfaces. The tools were used to roughen the surface area of the tire before glue and a repair patch could be applied.

It should be noted that, because of the proximity of the majority of the AZ T:8:53 (ASM) loci to major transportation thoroughfares, the majority of these transportation related artifacts are probably not related to any of the mining activities in the area. The artifacts appear to have been deposited after the area was abandoned for the purpose of mercury mining and processing.

### Miscellaneous

A total of 259 items were recovered at the different loci that could not be incorporated into any of the established artifact categories, or that were in a poor state of preservation such that they could not be identified. These items were separated into categories based on material type.

#### Metal

##### Metal Strip/Strapping.

Eighty-one fragments of metal strip or strapping were recovered during surface collection and testing activities. The majority of the strip fragments (27 specimens) were recovered at Locus 11. The remainder consisted of 15 specimens from Locus 5,

11 specimens from Locus 4, 10 specimens from Locus 2, eight specimens from Locus 1, two specimens each from Loci 6 and 7, and one specimen each from Loci 8, 9, 10, and 12. The specimens recovered at Locus 1 consisted of three specimens from the Nail Cluster, and four specimens from Locus 13. The strapping fragments ranged in width from 1/8 inch to 1-1/2 inches. The fragments that measured 1/8 inch and 3/16 inch (27 specimens) appear to represent the remains of brackets or reinforcing for paper-bodied rectangular boxes. The fragments 3/8 inch or wider possibly represent sections of barrel hoops, box reinforcing, or construction related reinforcing. The exact function of the strap segments could not be determined because of their fragmentary condition.

#### Scrap Metal.

A total of 28 fragments of scrap metal were recovered; 10 fragments of iron (4 specimens from the Locus 1 Nail Cluster, 3 specimens from Locus 7, 2 specimens from Locus 10, and 1 specimen from Locus 4), 7 fragments of aluminum (5 specimens from Locus 9 and one specimen each from Loci 4 and 6), 9 fragments of cast iron (4 specimens from Locus 1, 2 specimens each from Loci 7 and 8, and one specimen each from Loci 2, 4, and 10).

#### Unidentified Metal Objects and Fragments.

Thirty-one items were recovered during surface collection and testing that were in such a fragmentary state that their exact form or function could not be determined. These items included three springs (one from Locus 10, two from Locus 7), four handles (three from Locus 11 and one from Locus 7), three metal rods from Locus 11, three cast iron pipe fragments from Locus 1, four thin iron or steel disks (three from Locus 7 and one from Locus 4), two fragments of heavy gauge metal riveted together (Locus 4 and Locus 7), and 12 other whole or fragmentary items (four from Locus 7, two each from Loci 4, 11, and 12, and one each from Loci 9 and 10) that were unidentifiable as to form or function.

#### Tool Fragments.

Three fragments of metal tools were recovered during the surface collection of three loci associated with AZ T:8:53 (ASM). Two fragments of hacksaw blades were recovered one each at Locus 1 and Locus 4. The end of a drill bit was recovered at Locus 8.

#### Identifiable Miscellaneous Items.

Eight items were recovered that were identifiable as to form and/or function but could not be incorporated into any of the established categories. These items consisted of five fragments of barbed wire (2 specimens from Locus 4 and one specimen each from Loci 5, 7, and 10), a wire barrel hoop from Locus 7, a wire clip of undeterminable function from Locus 12, and the end to a dry cell battery from Locus 6.

## Plastic

A total of nine miscellaneous plastic items were recovered at four loci. One specimen was collected at Locus 1, one specimen was recovered at Locus 2, six specimens were collected at Locus 7, and one specimen was recovered at Locus 11. The plastic items recovered at Locus 7 include three fragments of a blue plastic item that was embossed REMCO PLASTICS AIR---

## Rubber

Two fragments of an unidentified red rubber object were recovered during the surface collection of the trash scatter in the southwest portion of Locus 1.

## Shell

Five specimens of marine or fresh water shell were recovered during the various testing activities at the AZ T:8:53 (ASM) loci. A specimen of marine shell was recovered during the test excavation of Prospect Feature 28 at Locus 1. Four shell fragments were recovered during the surface collection of Locus 11.

## Vinyl

A fragment of a vinyl phonograph record was recovered at Locus 8.

## Tar

Three fragments of tar were recovered at Locus 7. Because the proximity of the locus to a major thoroughfare it is possible that the fragments are associated with highway maintenance activities.

## Charcoal

Six fragments of charcoal were collected during the testing of the processing plant area Feature I at Locus 1. These fragments probably represent the remains of burned structural materials associated with the mercury processing plant.

## Coal

A fragment of coal was recovered during the surface collection of Locus 8.

## Bone/Faunal Remains

A total of 23 fragments of bone were recovered during the surface collection and/or testing of six loci (13 from Locus 8, 4 from Locus 10, 2 each from Loci 5 and 9, and one fragment each from Loci 4 and 11). Seventeen of the fragments were burned and appear to be from large animals such as cattle. Several of the specimens exhibit signs of butchering marks.

### Battery Carbon

Ten fragments of dry cell battery carbon were recovered during the surface collection of five loci (5 from Locus 11, 2 from Locus 7, and one fragment each from Loci 4, 6, and 10).

### Miscellaneous Material

A hard silvery substance, which appears to be the residue from a cosmetics container, was recovered during the surface collection of the trash area associated with Locus 1.

### Quartz crystal

A quartz crystal was recovered during the surface collection of Locus 7.

### Glass

Six miscellaneous glass fragments were recovered from four of the loci associated with AZ T:8:53 (ASM). A fragment of frosted glass, 5/16 inch thick, was recovered at Locus 4. A fragment of flat, opaque purple (SCA) glass that possibly represents a tile fragment was recovered at Locus 8. A blob of melted opaque green glass was collected at Locus 9. Three fragments of flat clear glass that appear to be microscope slides were recovered during the surface collection of Locus 12.

### Cartridges

A total of 40 rifle and pistol cartridges were recovered from eight of the AZ T:8:53 (ASM) loci. All of the cartridges were recovered during random and/or judgmental surface collection except for a single .22 cartridge recovered during test excavations around the surface features associated with the mercury ore processing plant (Locus 1).

The majority of the cartridges consisted of 27, .22 caliber cartridges recovered from seven of the loci (16 from Locus 8, two each from Loci 1, 2, 7, 11, and 12, and one from Locus 9). Five different cartridge manufacturers are represented by the 27 cartridges. All of the .22 cartridges, except for the PETERS HV brand (1887-1934), are still being produced and have been manufactured for over 100 years.

Other cartridges recovered during the surface collection of the different loci included four shotgun shell bases (three 20 gauge and one 12 gauge) recovered at Locus 7, three .38 caliber pistol cartridges recovered at Locus 9, and three .30 caliber rifle cartridges (One each recovered at Locus 5, 7, and 8). A single .45 caliber pistol cartridge and a .30-06 rifle cartridge were also recovered at Locus 7, and a .303 caliber rifle cartridge was

recovered at Locus 9. Six different manufacturers are represented by the cartridges and shotgun shell bases.

Because of the length of manufacture for the majority of the cartridges (In many cases 100 years or more), and the possibility of re-loading the externally-primered center fire cases, it was not possible to determine if any of the cartridges are from the time period of the mercury ore mining and processing operations (ca. 1915-mid-1930s). The majority of the cartridges were probably deposited some time between the 1930s and the 1960s when the mine was abandoned and the area was uninhabited.

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