

**A CULTURAL RESOURCE ASSESSMENT
FOR THE LAVEEN AREA
DRAINAGE MASTER PLAN PROJECT
OF CENTRAL
MARICOPA COUNTY, ARIZONA**

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

James B. Rodgers



Contract Archeological Series 2000-8

Scientific Archeological Services



A117.917

A CULTURAL RESOURCE ASSESSMENT
FOR THE
LAVEEN AREA DRAINAGE MASTER PLAN PROJECT
OF
CENTRAL MARICOPA COUNTY, ARIZONA

Maricopa County Flood Control District Contract No. 1999C060

Work Assignment No. 10

Prepared and Submitted by:

James B. Rodgers
Scientific Archeological Services
2542 W. Monterey Way
Phoenix, Arizona 85017

Prepared for and Submitted to:

Theresa M. Hoff
Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009

December 26, 2000

Contract Archeological Series 2000-8

ABSTRACT

This report culminates a cultural resource assessment investigation that Scientific Archeological Services has just completed of a large master plan area of proposed flood control development in central Maricopa County, Arizona. The concerned Laveen ADMP project locale is defined to include nearly 12,000 acres that extend westward from the South Mountains and southward from the Salt River to the Gila River Indian Reservation. The sole sponsor of this project has been the Maricopa County Flood Control District.

No fieldwork was performed during this assessment, of course, but archival research has included both site record checks and numerous literature searches. Together, they have produced several significant findings. In particular, 29 cultural resource studies have previously been undertaken locally and they have resulted in the intensive examination of about 23 percent of the project locale and the recording of 49 archeological sites there. A total of 214 sites could, theoretically, exist in the project locale, therefore, and, thus, cultural resources could definitely constitute a critical factor influencing the location of future flood control facilities.

The 14 prehistoric sites (28.6%) of this project include 5 canals that are directly associated with 3 large artifact scatters, 1 possible hamlet, and 5 larger villages. They are all Hohokam Indian remains that represent one unknown and two identifiable themes of major cultural activity: Canal Irrigation and Residential Living. Although generally poorly dated, a few of them could span A.D. 600-1450, or the greatest part of the entire Hohokam cultural sequence.

The 35 historic sites are more variable, functionally speaking, but date entirely to the Territorial (1863-1912) and Statehood (1912-1950) phases of the Anglo-American Period. They include: designated and undesignated dirt roads, a schoolhouse, temporary camps, a post office, an old well, residential homes, a general store, and six canals (Indian, Lambeye, Peninsula, León, Champion, Western). Together, they represent four cultural themes: Transportation, Canal Irrigation, Community Growth and Development, and a limited amount of local Mining.

When designing all eventual flood control facilities, therefore, SAS recommends that the Flood Control District carefully consider all appropriate archeological compliance guidelines of the State and federal governments. Among other things, such action should ensure that an intensive field examination will be undertaken of any structure or facility whose construction is expected to cause land disturbance.

TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT.....	ii
LIST OF FIGURES.....	IV
LIST OF TABLES.....	V
INTRODUCTION.....	1
PROJECT OBJECTIVE AND GOALS.....	4
ENVIRONMENTAL LOCATION.....	5
PROJECT METHODOLOGIES.....	9
Archival Research Phase.....	10
Laboratory Analysis Phase.....	11
ARCHIVAL RESEARCH RESULTS.....	12
Prior Research Investigations.....	12
Cultural Histories.....	18
Prehistoric Themes and Sites.....	21
Canal Irrigation.....	24
Residential Living.....	26
Unknown Activity.....	27
Historic Themes and Sites.....	27
Transportation.....	29
Canal Irrigation.....	37
Community Growth and Development.....	40
Mining.....	42
SUMMARY EVALUATION AND RECOMMENDATIONS.....	43
REFERENCES CITED.....	45

LIST OF FIGURES

<u>No.</u>		<u>Page</u>
1	Boundary and general location of the Laveen ADMP project locale in central Maricopa County, Arizona.....	2
2	Detailed location of the northern part and prior research project areas of the Laveen ADMP project locale.	7
3	Detailed location of the southern part and prior research project areas of the Laveen ADMP project locale.	8
4	Northern part of the Laveen ADMP project area, as it occurs in relation to some of the major prehistoric sites and canals of the Salt River Valley.....	16
5	Prehistoric and certain historic sites located in the northern part of the Laveen ADMP project locale.....	22
6	Pre-1868 GLO sites of the Laveen ADMP project locale in Township 1 North, Range 1 East.....	31
7	Pre-1868 GLO sites of the Laveen ADMP project locale in Township 1 South, Range 1 East.....	32
8	1868-1899 GLO sites of the Laveen ADMP project locale in Township 1 North, Range 1 East.....	33
9	1868-1899 GLO sites of the Laveen ADMP project locale in Township 1 South, Range 1 East.....	34
10	Certain pre-1900 GLO sites of the Laveen ADMP project area in Township 1 South, Range 2 East.....	35
11	Certain pre-1919 GLO sites of the Laveen ADMP project area in Township 1 South, Range 2 East.....	36
12	Certain historic sites located in the southern part of the Laveen ADMP project area.....	38

LIST OF TABLES

<u>No.</u>		<u>Page</u>
1	Township components of the Laveen ADMP project area....	5
2	List of archival projects of the Laveen ADMP project locale.....	13
3	Summary characteristics of the prehistoric sites of the Laveen ADMP project locale.....	23
4	Summary Characteristics of the historic Sites of the Laveen ADMP Project Locale.....	30

INTRODUCTION

The Flood Control District of Maricopa County (Flood Control District or FCDMC) has selected HDR Engineering, Inc. (HDR) to be the prime contractor for developing an area drainage master plan (ADMP) for the Laveen region of central Maricopa County, Arizona (Figure 1). The paramount concern of the eventual Laveen ADMP will be the production of a comprehensive document that will detail and evaluate various alternative means for providing efficient flood protection to a fastly developing agricultural area that is situated immediately south of the Salt River and partly in the southwestern part of the city of Phoenix, Arizona. In essence, therefore, that plan is expected to identify several critical drainage problems in the area and recommend the development of a storm water collection and disposal system for effectively eliminating all those problems.

According to provisions of an on-call archeological contract (No. FCDMC 1999C060) negotiated October 19, 1999, the Flood Control District has also contracted Scientific Archeological Services (SAS) to prepare the following archeological assessment. For clarity sake, SAS defines an archeological assessment as a project specific type of planning, or management, study that is generally undertaken in order to obtain and evaluate various data pertaining to the nature and location of previous archeological research areas and, even more importantly, the different archeological resources previously recorded therein. While archeological assessments can closely resemble more general types of "overviews," they are usually prepared for areas having a much smaller size and very specific boundaries. Archeological assessment studies have proven to be valuable preservation tools, for they can often produce critical information upon which final management decisions can be made for eliminating the unnecessary and usually very costly activities that are normally associated with either subsurface archeological site testing or full-scale site data recovery.

As clearly stated in the project scope of work (Flood Control District of Maricopa County 2000), the primary purpose of this Laveen ADMP assessment has been to locate, describe, and evaluate all archeological resources that could foreseeably be impacted through eventually implementing the Laveen Area Drainage Master Plan. Further, this assessment project has involved absolutely no official undertaking of either the state of Arizona (State) or the United States government, but the future implementation of the final Laveen ADMP may, at that time, require appropriate permits from, for example, the Arizona State Land Department (ASLD), the U.S. Army Corps of Engineers (USACE), and the U.S. Bureau of Land Management (BLM).

Strictly speaking, therefore, the impetus of this assessment project may actually be a requirement of not only the Arizona State Museum (ASM), but the U.S. Army Corps of Engineers and also the BLM. Specifically, no project disturbance of either State or federal lands should ever be justifiably permitted without having first performed an intensive field survey of them, and all such survey work is to have been preceded by an assessment of archeo-

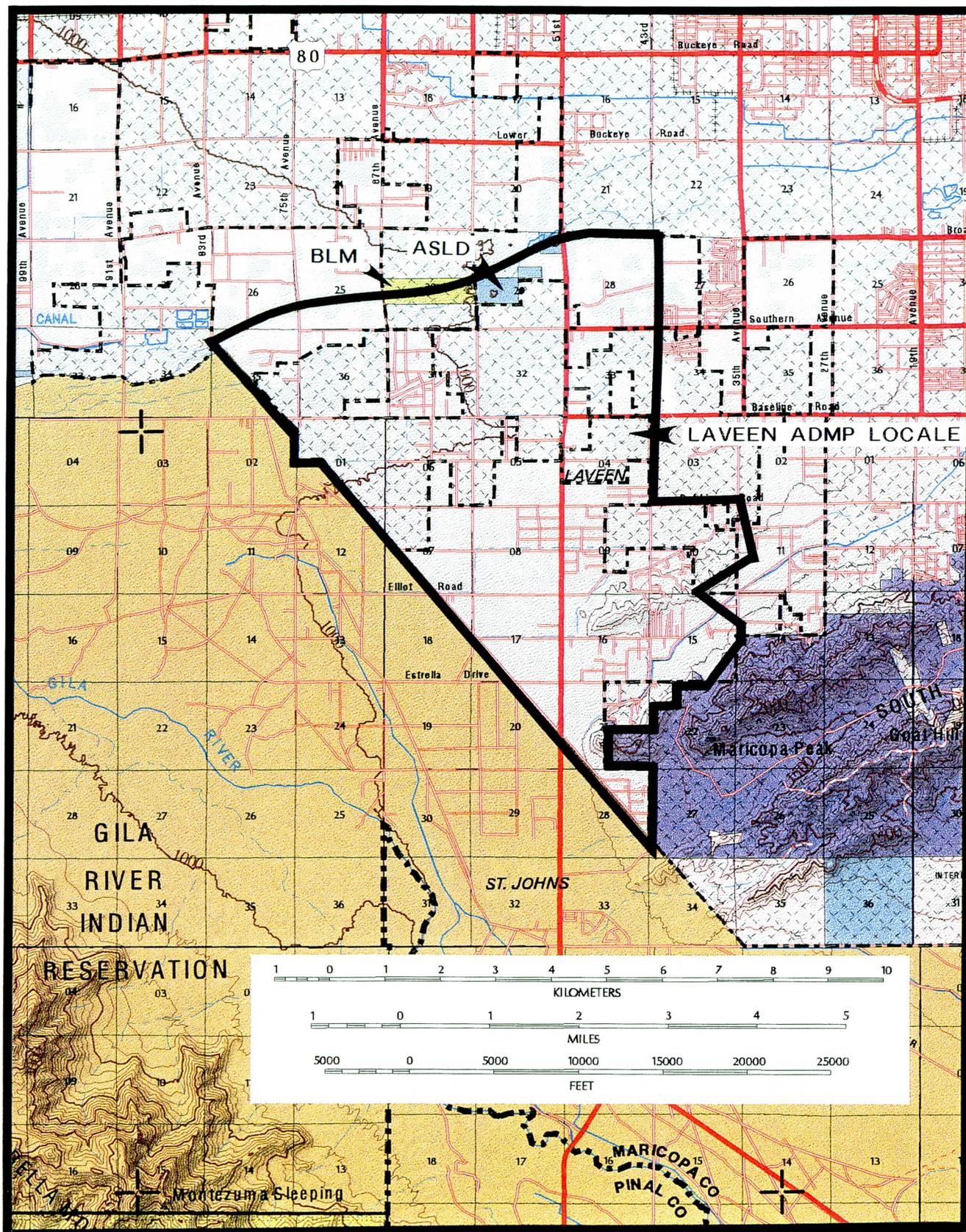


Figure 1. Boundary and general location of the Laveen ADMP project locale in central Maricopa County, Arizona. (based on a 2000 land ownership map of the Arizona State Land Department)

logical sites known or expected to occur within those specific survey areas. Such appears to be the explicit intent of ASM Rule 8-203 C.1 (Arizona Board of Regents 1991:21), a standard for fulfilling an aspect of the Arizona Antiquities Act of 1960 (A.R.S. § 41-841 et seq.), 33 CFR 325.3, a required procedure for processing all Department of Army permits (U.S. Army Corps of Engineers 1990:27004), and 36 CFR 800, the primary guidelines for implementing the National Historic Preservation Act of 1966 (Advisory Council on Historic Preservation 1999).

As a typical assessment study, no actual fieldwork has been completed during this particular archeological investigation and, therefore, no field permits or other archeological repository agreements were ever needed during any of its different research phases. Instead, the entirety of this project has been successfully completed by having undertaken only two primary types of archival research: a literature search and a site records check. The numerous tasks of both activities are all elaborated later.

This SAS archeological assessment project officially began with a formal Notice to Proceed, which is dated July 13, 2000, and all of its subsequent activities have been sponsored solely by the Flood Control District of Maricopa County. Two particular individuals from the FCDMC deserve special recognition, for each of them has variously assisted SAS from the inception of this project. First, Tim Phillips, FCDMC planning project manager, has served as overall project manager, and has provided SAS with much support and project information. Second, Theresa M. Hoff, FCDMC environmental services planner, actually administered this project for the Flood Control District, and her involvement has included several major responsibilities: 1) the expeditious negotiation of the project contract, 2) the maintenance of regular project communication with SAS, 3) the provision of different project resource materials, and 4) the review and acceptance of this final assessment report.

The Flood Control District actually provided SAS with four primary kinds of project resource material. The first one was the project scope of work, which has already been referenced, and the second one consisted of different archival research reports. The third and fourth items had all been recently produced by Jim Smith, analyst for the GIS (Geographic Information System) Branch of the FCDMC. They include both a large-scale (1:28,800), black-and-white aerial photograph and a large-scale (1:24,000), colored topographic map of the entire Laveen ADMP project area. Hereafter, the former is considered to be the Project Aerial Base Map; the latter is similarly referred to as the Project Topographic Base Map. This second base map is essentially a computerized composite of the two "project quadrangle maps," which are defined shortly.

As its principal investigator, the author administered all aspects of this assessment project for Scientific Archeological Services. In addition, he actually conducted all of the necessary archival research activities. As usual, though, numerous fiscal and laboratory support activities were required during the course of this project, and all of them were very ably performed by Carol A.

Rodgers, SAS laboratory director, and Michelle L. Howe, SAS project clerk and laboratory technician.

Much other assistance was variously provided throughout this project by other competent professionals who are affiliated with neither SAS nor the Flood Control District. In particular, Sharon F. Urban, public archeologist, and Erin E. O'Hera, archival specialist, conscientiously performed the site records check at the Arizona State Museum, which is located on campus at the University of Arizona in Tucson, Arizona. Additional research services were graciously provided by: Arthur W. Vokes, assistant curator of the ASM repository collections, Shelley C. Dudley, Salt River Project (SRP) senior historical analyst, SHPO historian William C. Collins, C. Michael Barton, ASU anthropology collections administrator, and especially Todd W. Bostwick, city of Phoenix archeologist. Also, Colleen M. Smith, library assistant, greatly aided SAS's historic research at the Laveen branch library (Laveen Library) of the Maricopa County Library District.

PROJECT OBJECTIVE AND GOALS

Scientific Archeological Services continues to define an objective as a primary goal to be achieved by accomplishing several secondary objectives, or goals per se. Accordingly, the main objective of this archeological assessment project has been the collection, analysis, description, and evaluation of all available archival data concerning all of the prehistoric, protohistoric, and historic resources of the defined Laveen ADMP project locale. This overall project objective could have required SAS to achieve, among several other less significant ones, any or all of the following six project goals:

1. Represent the Flood Control District of Maricopa County during all interagency meetings held in conjunction with this particular assessment project.
2. Define the nature and area of potential adverse effect of the entire Laveen ADMP project area.
3. Attempt to locate and evaluate all prehistoric-historic sites previously found within the project locale.
4. Identify all cultural resource projects that have been responsible for either the original recording or the subsequent investigation of the different archeological resources of this assessment locale.
5. Provide realistic compliance recommendations concerning the potential need for having to undertake additional archeological research within the area of the proposed drainage master plan.

6. Document all relevant information pertaining to the nature, location, methodologies, results, and recommendations of this cultural resource assessment project.

ENVIRONMENTAL LOCATION

Scientific Archeological Services has neither a contract nor an archeological compliance responsibility to prepare an in-depth environmental description of the Laveen ADMP project area. This particular section is intended to provide at least a brief physical description of the present assessment area, however, and, hopefully, it will serve to increase the reader understanding and appreciation of the area that was locally utilized during the prehistoric and historic past. It should also provide an environmental foundation for conducting all subsequent archeological investigations that may need to be undertaken as different flood control features of the Laveen ADMP are eventually constructed.

Figure 1 was based on a northeast-central part of a medium-scale (1:100,000), interagency land ownership map that the Arizona Land Resource Information System (ALRIS) Division (2000) of the Arizona State Land Department has prepared and, most recently, updated on February 5, 2000. That figure is important for several reasons. Primarily, though, it has accurately located both the boundary and the general geography of the Laveen ADMP project locale in central Maricopa County, Arizona. Accordingly, this area has an irregular plan and encompasses 11,852.7 acres, or 18.51 square miles, that, in relation to the Gila and Salt River Baseline and Meridian (G&SRB&M), occupy at least a part of the four townships and 30 legal sections listed in Table 1. The north-south axis of this area measures a maximum of 6.9 miles long; its perpendicular axis has a maximum length of 5.9 miles.

Table 1.

Township Components of the Laveen ADMP Project Area

Township 1 North, Range 1 East (T1N,R1E):
Section 25, 26, 35, 36

Township 1 North, Range 2 East (T1N,R2E):
Section 28, 29, 30, 31, 32, 33

Township 1 South, Range 1 East (T1S,R1E):
Section 1, 2, 12

Township 1 South, Range 2 East (T1S,R2E):
Section 4, 5, 6, 7, 8, 9, 10, 11,
14, 15, 16, 17, 18, 20, 21, 22, 28

Geographically, the Laveen ADMP project area is situated south of the general Salt River centerline, immediately east of the eastern boundary of the Gila River Indian Community (GRIC), and immediately northwest of the western boundary of Phoenix's South Mountain Park. The unincorporated farming community of Laveen is rather centrally located within this area, the northwestern corner of which occurs only 4.0 miles east of, or upstream from, the confluence of the Salt and Gila rivers. Vehicle transportation throughout this assessment area is provided mainly by only 10 roads. From north to south, the five east-west ones include Southern Avenue, Baseline Road, Dobbins Road, Elliot Road, and Estrella Drive. From east to west, the five north-south roads are those of 43rd, 51st, 59th, 67th, and 75th avenues. The Gila River originates in New Mexico but, in Arizona, it is the principal tributary of the Colorado River. The Salt River is one of its principal tributaries and, also, is the largest local drainage, of course. It originates about 200 miles farther east in Gila County, Arizona.

Finally, Figure 1 has also revealed that the concerned project area does not have a very complex ownership pattern. With only three minor exceptions, in fact, all of this area consists of either unincorporated county land or private property located within the incorporated boundary of southern Phoenix. All three exceptions are rather small parcels, less than 160 acres each, that occur in T1N,R2E. The first one belongs to the U.S. Bureau of Land Management (BLM) and coincides with the N2S2 of Section 30. The second and third ones are State Trust lands located in Section 29.

Figures 2 and 3 provide the most detailed geographic and topographic view of, respectively, the contiguous northern and southern parts of the Laveen ADMP project area. These figures are based on two 7.5' maps that the U.S. Geological Survey (USGS) originally prepared in 1952 of the quadrangle areas known as Fowler and Laveen, Arizona. Hereafter, those two USGS maps are informally referred to as the "project quadrangle (quad) maps." The USGS photorevised its Laveen quad in 1973 and its Fowler quad in 1982. Both of them are large-scale (1:24,000) maps having 10-foot contour intervals. Parenthetically, the ASM has designated the Fowler quad as AZ T:12 NW and the Laveen quad as AZ T:12 SW.

Environmentally, the Laveen ADMP project area is situated within both the Phoenix Basin (Péwé 1987) and the Sonoran Desert section of the Basin and Range physiographic province (Fenneman 1946). The surrounding region is characterized as a vast desert plain that is separated by widely-scattered buttes, hills, and low mountains. Climatological data from Phoenix itself have been tabulated since about 1901 (Greening 1941), and they reveal that it enjoys mild winters, hot summers, high diurnal temperatures, and a low relative humidity. The average annual precipitation here is 7.62 inches, and slightly more than 40 percent of it occurs during July and August (25.3%) and November and December (15.0%). Daily temperatures average only 51.8° during January but increase markedly to 90.3° during July. Overall, such factors contribute to a regional frost-free growing season of about 304 days.

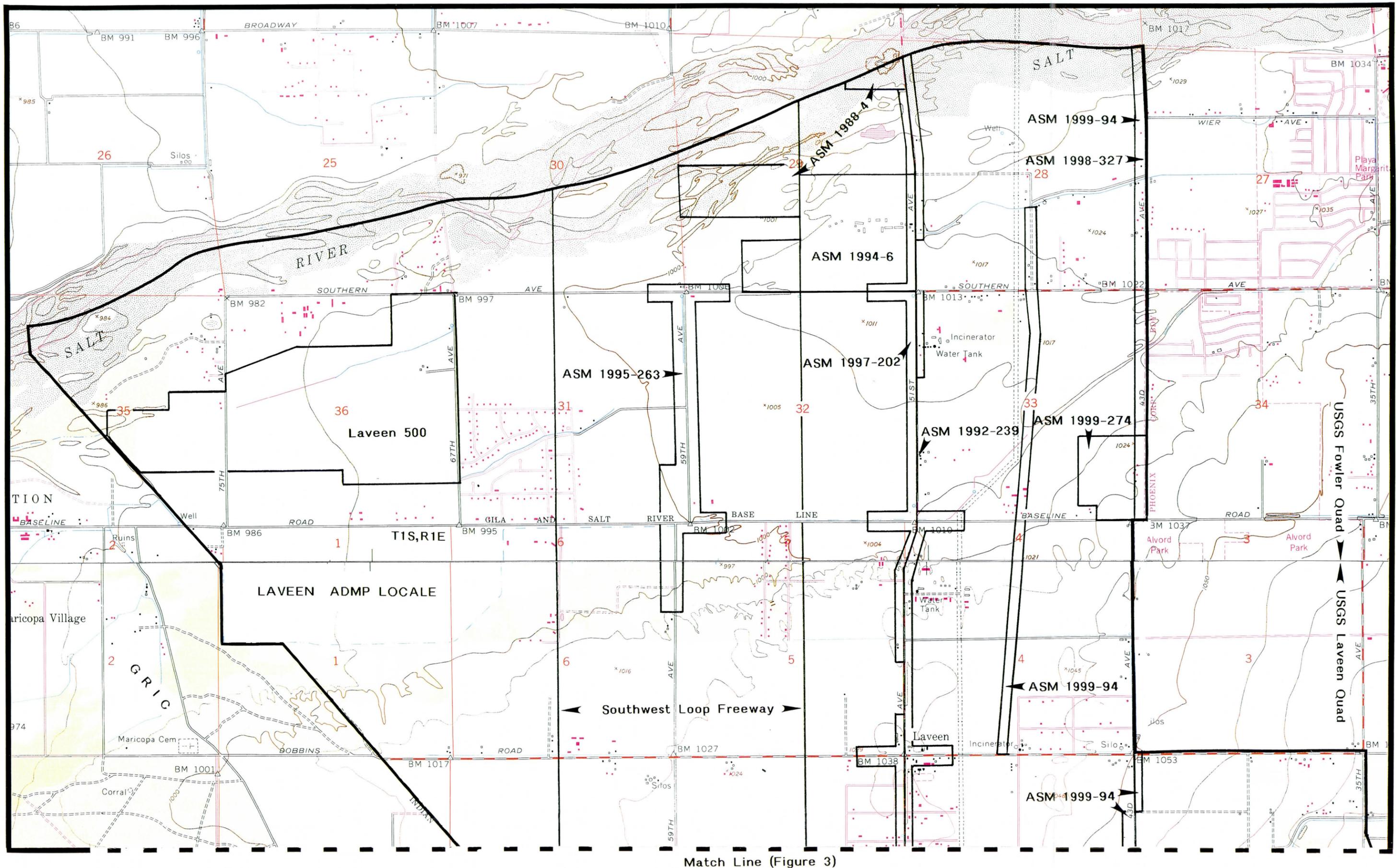


Figure 2. Detailed location of the northern part and prior research project areas of the Laveen ADMP project locale. (based on the 1952 USGS 7.5' quadrangle map of both Fowler and Laveen, Arizona)

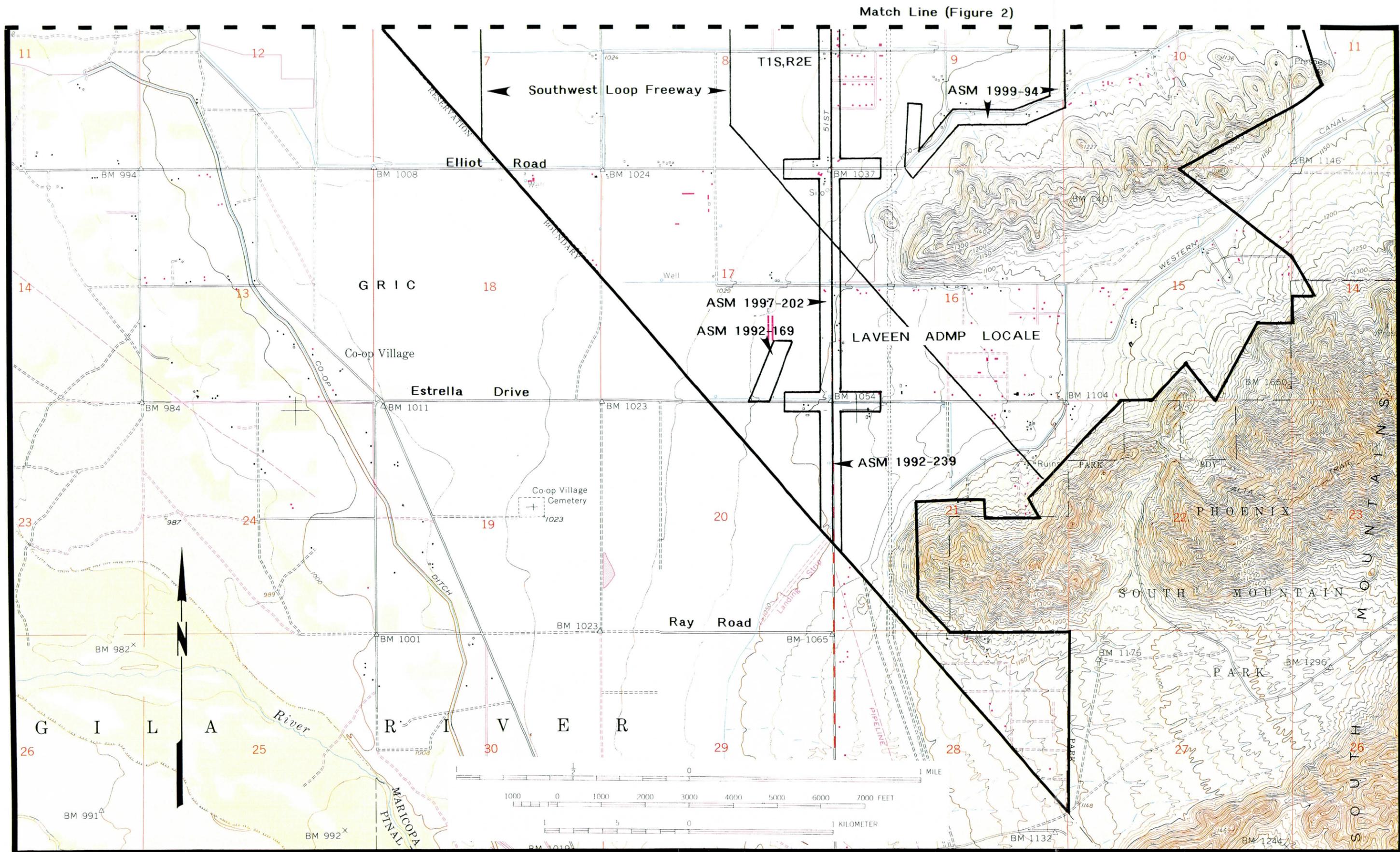


Figure 3. Detailed location of the southern part and prior research project areas of the Laveen ADMP project locale. (based on the 1952 USGS 7.5' quadrangle map of Laveen, Arizona)

Topographically, this assessment area descends first westward and then southwestward from about 1,570 feet to 970 feet above sea level. Its geology has been examined, studied and actually mapped by not only Wilson et al. (1957) but, most recently, by Kamilli and Richard (1998). The numerous soils of this area have been thoroughly discussed, classified and mapped by the U.S. Natural Resources Conservation Service (NRCS) (Hartman 1977), formerly the U.S. Soil Conservation Service. Based on provisional SAS interpretations of all such data, and using certain terms and definitions espoused by the American Geological Institute (1974), the Laveen ADMP project area is believed to be composed of no fewer than seven major environmental zones.

These seven environmental zones also characterize those of the lower, southern Salt River Valley. From generally northwest to southeast and from lowest to highest elevations, they include: 1) the Salt River channel, 2) its southern and rather wide floodplain, which has a maximum width of about 0.40 miles, 3) a low, nearly level (0-3%), and much wider (1.70 miles) stream terrace, which is only seldomly subjected to river overflow, 4) an even wider (1.4-2.3 miles) but similarly sloping old central valley plains, 5) a Recent alluvial fan, which covers parts of both older alluvial fans and valley plains, 6) a geologically older alluvial fan, which radiates outward from the base of the South Mountains and usually has gently sloping (3-10%) surfaces, and 7) the often steep and very steep (20-90%) slopes of the lower western hills and low mountains comprising the South Mountains, all or part of which have variously been referred to also as the Salt River Mountains. While the South Mountains themselves consist primarily of Precambrian gneiss, the alluvial sediments of all six of the other zones are much more recent and date to either the middle and early Pleistocene or the Holocene. However, the indigenous plants of all seven zones typify those of the Lower Colorado subdivision of the Sonoran Desertscrub community (Brown 1973).

PROJECT METHODOLOGIES

As previously mentioned, absolutely no fieldwork was ever expected to be undertaken during this assessment project. Accordingly, the six explicit goals of this project have all since been achieved by accomplishing numerous minor tasks and several major activities that were undertaken during only the four concurrent, or immediately successive, phases of: 1) project administration, 2) archival research, 3) laboratory analysis, and 4) report writing. All relevant aspects of those activities, as well as their results, have already been elaborated by the project director in his project journal (SAS Form 220). Unquestionably, the most significant activities of this project involved those undertaken during the archival research and laboratory analysis phases. Thus, the most critical procedures of both phases are elaborated shortly.

Generally speaking, though, all of the different tasks and activities of this project were performed according to the profes-

sional standards and the procedural and reporting guidelines that have already been developed and formally disseminated by not only certain federal agencies (National Park Service 1977, U.S. Army Corps of Engineers 1990, Advisory Council on Historic Preservation 1999), but the national archeological community (McGimsey and Davis 1977) and, also, both the Arizona Board of Regents (1991) and the Arizona State Museum (1994). In addition, SAS considered certain draft recommendations recently made by the Arizona State Historic Preservation Office (SHPO) (1999) for implementing both the Arizona Antiquities Act of 1927 and the State Historic Preservation Act of 1982.

Further, neither the nature, quantity, nor location of any isolated artifactual materials, or simply isolates, were considered during this project for, as defined by SAS, they most typically constitute only non-site manifestations of generally little or absolutely no archeological research value. Instead, sites per se are the exclusive kind of cultural resources that are considered during this assessment, with several of the archival research institutions having obviously used quite varying criteria for defining such entities. Finally, the expected sites of this project were all assumed to date to either of three general time periods, or chronological eras. Regionally speaking, the prehistoric sites are all known, or are strongly believed, to predate circa A.D. 1450, while the protohistoric sites are similarly believed to date between circa A.D. 1450 and 1534. Finally, the historic sites of A.D. 1534-1950 could foreseeably have been associated with either of three major periods of Arizona history: the Spanish (1534-1821), Mexican (1821-1848), and the Anglo-American (1848-1950), or simply American.

Archival Research Phase

Two principal kinds of archival research activity were conducted by SAS during this assessment investigation: a comprehensive literature search and a thorough site records check. The explicit purpose of the former was to obtain, examine and evaluate all relevant information that has been published concerning, for example, the natural environment and the prehistoric-historic archeological variability of the Laveen ADMP project locale. Contrastingly, the principal purpose of the different site record checks was to locate, analyze, and evaluate various sources of unpublished information (e.g., maps, site files, correspondences, records, photographs, etc.) concerning not only the archeological sites of the project area, but also the different cultural resource projects that have been responsible for originally recording or subsequently investigating them.

Scientific Archeological Services essentially began its archival research phase on July 10, 2000. Shortly thereafter, on July 19, 2000, a formal request was made by SAS for the Arizona State Museum to perform a comprehensive site survey file examination of all relevant ASM files, maps, records, photographs, etc. pertaining to all relevant sites and previous projects occurring in

the defined project locale. That initial site records check was painstakingly performed by Sharon F. Urban, ASM public archeologist, and Erin E. O'Hera, archival specialist. Much later, SAS also requested all ASM information pertaining to any of the project sites at which any post-survey research (e.g., monitoring, testing, full-scale data excavation, etc.) has been authorized, performed or actually reported. All of that information was quickly supplied to the author by Arthur W. Vokes, ASM assistant curator for archeology collections.

After analyzing most of its ASM archival research data, SAS updated an Archival Research Information Sheet (SAS Form 231) and an Archival Research Information Continuation Sheet (SAS Form 232). Both are project specific forms that were intentionally designed for consistently recording a wide variety of pertinent site and prior project data. Thereafter, they were conveniently used to facilitate the acquisition of additional archival information that was obtained while performing other site record checks at SAS, of course, the Public Records Room of the Arizona State Office of the BLM, the SHPO reference library, the Department of Anthropology at Arizona State University (ASU), and the Pueblo Grande Museum (PG or PGM) in Phoenix.

Admittedly, it may also have been beneficial to have been able to examine and record other unpublished site data that, possibly, are currently being housed both locally and nonlocally. In particular, SAS wishes it would have had the opportunity to have extended its site records check to some of the other local contract archeological firms and, at least, the Arizona State Land Department and the BLM Phoenix District Office in Phoenix. Farther afield, some additional archival site information about the project area might exist at the Museum of Northern Arizona (MNA) in Flagstaff, Arizona. Also, the following discussion makes no further assessment of the several man-made features (e.g., silos, farm roads, city streets, water tanks, laterals, etc.) that are specifically designated on either of the two project quadrangle maps.

On the other hand, SAS performed numerous literature searches throughout this assessment project. All of them were completed at the following research facilities or larger institutions located in the metropolitan Phoenix-Tempe area: 1) Scientific Archeological Services, 2) the Flood Control District of Maricopa County, 3) the SHPO reference library, 4) the Arizona Room of the Burton Barr Central Library, 5) the Heard Museum Library and Archives, 6) the Natural Resources Conservation Service, 7) the ASU Department of Anthropology, 8) the ASU Department of Archives & Manuscripts, 9) the Fleming Library at Grand Canyon University (GCU), 10) Salt River Project, 11) the Pueblo Grande Museum, and 12) the Laveen Library.

Laboratory Analysis Phase

No artifact analyses were expected to be undertaken during this assessment, of course, for, once again, this project has

included absolutely no fieldwork. Consequently, the majority of the time expended during this laboratory phase was spent analyzing and interpreting the vast array of data that have been generated by the different literature searches and site record checks. In addition, the most accurate data available were all carefully used to plot the general location, at least, of all archival sites occurring in the established boundary of the Laveen ADMP project area. Such plotting was performed only on the previously defined Project Topographic Base Map, however. The remainder of this phase was used to finalize certain archeological materials of this project for their subsequent curation. The SAS procedures for accomplishing such curatorial processing are essentially the same as those officially formulated by the Arizona State Museum (Young 1988).

ARCHIVAL RESEARCH RESULTS

Much valuable archeological information has been produced during this assessment project, and the principal purpose of the following section is to disseminate most of that data, as they pertain to three major project concerns: 1) a summary overview of the prior cultural resource studies that have previously been undertaken in the Laveen ADMP project area, 2) a discussion of the principal prehistoric culture of the lower, southern Salt River Valley, and, of course, 3) a description and evaluation of all the prehistoric, protohistoric, and historic cultural resources that have been found and recorded during those different investigations.

A terse overview (Burton 1977) of the archeology of the Phoenix metropolitan area has been produced, but no single, comprehensive synthesis presently exists concerning the marked variability of the prehistoric and historic resources of the Laveen ADMP project locale. A few more localized and more recent overviews do exist, however, and two of them are especially relied upon here. The earlier of the two occurs in a report that Bostwick and Rice (1987) prepared for the Southwest Loop Freeway Project; the second one actually results from an SAS assessment study (Rodgers 1993) of the Broadway Road Locale. All three of these projects are more fully detailed later.

Prior Research Investigations

Many cultural resource investigations have previously been undertaken across the Laveen ADMP project area. In fact, the prehistoric-historic archeology of this area is known largely as the result of no fewer than 29 relevant studies, and summary information concerning all of those archival projects is presented in Table 2. Further, the exact boundaries of those different project areas have already been included in Figures 2 and 3, whenever it has been possible, or relevant, to do so.

Most of the information in Table 2 should be self-explanatory, for it includes: 1) a general name and, whenever applicable, an ASM

Table 2.
List of Archival Projects of the Laveen ADMP Project Locale

Project Name	ASM Project No.	Firm/ Agency	Project Type *	Local Acres	Sites Located	Major Reference
Township 1 North, Range 1 East	-----	GLO	RS	---	+	Pierce and Ingalls 1868a
Township 1 North, Range 1 East	-----	GLO	RS	---	+	Patrick 1900a
Township 1 North, Range 1 East	-----	GLO	RS	---	-	Harrington 1920
Township 1 North, Range 2 East	-----	GLO	RS	---	+	Pierce and Ingalls 1868b
Township 1 South, Range 1 East	-----	GLO	RS	---	-	Pierce and Ingalls 1868c
Township 1 South, Range 1 East	-----	GLO	RS	---	+	Patrick 1900b
Township 1 South, Range 2 East	-----	GLO	RS	---	-	Pierce and Ingalls 1868d
Township 1 South, Range 2 East	-----	GLO	RS	---	-	Patrick 1900c
Township 1 South, Range 2 East	-----	GLO	RS	---	+	Blout 1920
Independent research	-----	---	RS	---	+	Patrick 1903
Independent research	-----	---	RS	---	+	Turney 1924, 1929a, 1929b
Independent research	-----	---	RS	---	+	Midvale 1997
Gila Pueblo survey	-----	GP	RS	---	+	Unpublished site data
Laveen Centennial Study	-----	---	A	---	+	Accomazzo 1984
SRVSS	-----	WPA	RS,T	---	+	Schroeder 1940
Phoenix Metropolitan Overview	-----	OCRM	O	---	+	Burton 1977
Intersite map compilation	-----	SSI	A	---	+	Howard 1991
Southwest Loop Freeway	-----	OCRM	IS,a	1694	+	Bostwick and Rice 1987
Calmat Sand & Gravel	1988-004	ASM	IS,a	120	+	(ASM letter report only)
SRP Ditch Easement	1992-169	BR	IS,l	3.4	-	Telles 1993
Santa Fe Pacific Pipeline	1992-239	ACS	IS,l	41.3	-	Crary 1993
Broadway Locale Assessment	-----	SAS	A	---	+	Rodgers 1993
Salt River-51st Ave. Quarry	1994-006	ACS	IS,a	200	+	Douglas 1994
59th Avenue widening	1995-263	SSI	IS,l	64	+	Owens 1995
51st Avenue widening	1997-202	D&M	IS,l	77.4	+	Shepard and Rogge 1997
43rd Avenue Storm Drain	1998-327	SAS	IS,l	25.6	-	Rodgers 1998
EPNG Pipeline	1999-94	ACS	IS,l	177	+	Aguila 1999
Richmond American Homes	1999-274	NRI	IS,a	56	-	Walsh-Anduze 1999
Laveen 500	-----	PAST	IS,a	500	+	Stephen 2000

* Assessment (A), Reconnaissance survey (RS), Intensive survey of linear (IS:l) or areal (IS:a) project area, Overview (O), subsurface site testing (T)

project number for each of the concerned archival projects, 2) the name of the firm or agency responsible for conducting that research, and, of course, 3) the major bibliographic reference of the data report in which the concerned research project is most fully discussed. Table 2 also provides a few other kinds of important information that should probably be clarified, however. All of the concerned archival projects are of only three basic types: assessment, surface field survey, and subsurface testing, for none of them include any subsurface site monitoring or full-scale site excavation. Further, the different field surveys have been differentiated as being of either the "reconnaissance" (BLM Class II) or the "intensive" (BLM Class III) subtype. These two subtypes differ significantly for, while reconnaissance surveys typically result in only the partial or incomplete examination of a given but often undescribed area, intensive surveys normally result in the full or complete (100%) examination of a carefully defined area. The intensive survey projects were also differentiated on the basis of their linear versus areal nature. As another variable, "Local Acres" in Table 2 refers to the total area of an intensive field survey project that occurs entirely inside the concerned boundary of the Laveen ADMP project area. Finally, Table 2 quickly indicates, under the "Site Located" variable, whether or not any prehistoric or historic sites were encountered by a particular archival project.

Not explicitly stated in Table 2 is the fact that the various archival projects of the Laveen ADMP locale have all resulted from basically four major kinds of work: contract survey engineering, independent research, government assistance, and contract archeology, and, in general, they have all been undertaken during four successive periods of research. A principal exception is the tremendous quantity of independent research that Betty Kruse Accomazzo and the Laveen Centennial Committee completed in the early 1980s. Fortunately, it has resulted in providing numerous interesting and informative glimpses (Accomazzo 1984) into the history of Laveen and, especially, the lives of various families who, fortunately, have chosen to settle and continue living there.

The earliest period of archival research was one during which the U.S. General Land Office (GLO), the partial 1812-1946 predecessor of the U.S. Bureau of Land Management, contracted professional land surveyors to conduct cadastral surveys across territory that would later become the state of Arizona. Nine GLO surveys were performed of at least a part of the Laveen ADMP project area between 1868 and 1919. They include those undertaken of T1N,R1E (Ingalls 1868a; Patrick 1900a), T1N,R2E (Ingalls 1868b), T1S,R1E (Ingalls 1868c; Patrick 1900b), and T1S,R2E (Ingalls 1868d; Patrick 1900c; Blout 1920).

Strictly speaking, the above GLO investigations constitute 9 of the 14 reconnaissance survey projects that have been completed within the Laveen ADMP project area. Three of the remaining five have resulted in a tremendous quantity of very significant research that has been independently performed by three pioneer archeologists: Herbert R. Patrick, Omar A. Turney, Ph.D., and Frank J. Mid-

vale. This Patrick is the same GLO land surveyor who produced three of the above township maps. He also prepared the first report (1903), including a detailed map, of the vast network of prehistoric and historic canals and prehistoric sites that once existed across the lower, northern and southern Salt River Valley. Dr. Turney was an engineer for the city of Phoenix and, during the 1920s, he greatly built upon the solid engineering research foundation established by Patrick. Specifically, he produced a relatively rare pamphlet (1922a) and map (1922b), several successive editions of his "Map of Prehistoric Irrigation Canals" (1924a, 1929a) (Figure 4), a brief overview (1924b), and a substantive report (1929b) dealing with the nature and, most importantly, the more precise location of several historic canals, many large prehistoric villages, or "pueblos," and a series of no fewer than 12 prehistoric canals inside the boundary of Phoenix itself.

Frank Joseph Midvale was a very personable, inspiring, and passionate protégé of Dr. Turney, and he spent most of his life visiting and variously recording the numerous Salt River prehistoric canals and associated villages (1966, 1968), many of which had previously been plotted by Patrick and Turney. After his death in 1971, his hundreds of feature, site, and intersite maps, photographs, correspondences, articles, newspaper clippings, etc. were all organized into 45 scrapbooks, or large photograph albums, that were donated to the ASU anthropology department in 1973. Later, in 1997, most of those critical archival materials were finally transferred to the ASU Department of Archives and Manuscripts, where they are now being permanently curated as the Frank Midvale (1997) Papers.

The first of the final two concerned reconnaissance projects was undertaken during the late 1920s by members of Gila Pueblo (GP), a private archeological research foundation who examined some of the largest prehistoric sites of the lower Salt River Valley during its survey of the Gila River Basin (Gladwin and Gladwin 1929). The second one constitutes the exclusive government assistance project that included a study of the Laveen ADMP area. Specifically, the Works Progress Administration (WPA) was a federal agency that financed some regional site excavations and the Salt River Valley Stratigraphic Survey (SRVSS). As fully elaborated by Bostwick (1993), the SRVSS project was headquartered at Pueblo Grande Museum in Phoenix, and between June 1938 and October 1940, it was supervised by both Albert H. Schroeder and Audie R. Kelley.

The slight majority of the prior research projects of the Laveen ADMP area are contract archeological studies that, locally speaking, began only in the late 1970s and continue today. The first of those 14 projects was a regional overview (Burton 1977) that resulted in defining specific zones of differing archeological sensitivity across the Phoenix metropolitan area. The ASU Office of Cultural Resource Management (OCRM) prepared that overview for the Los Angeles District USACE. A later assessment stemmed from the investigative need of the East Papago Canal Study to obtain comparative data for analyzing the various prehistoric sites and canals of Turney's Second Canal System, which is modernly referred

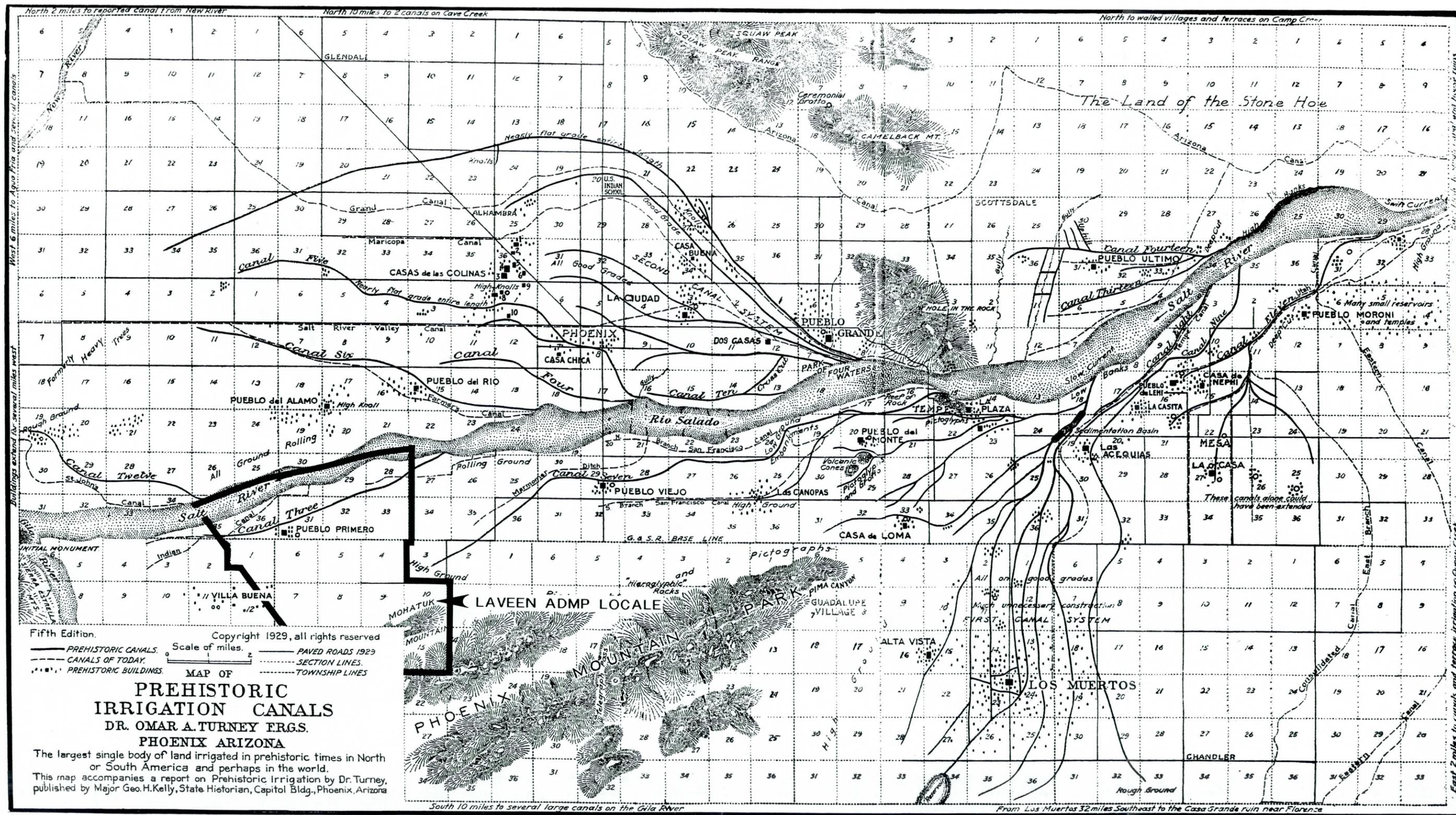


Figure 4. Northern part of the Laveen ADMP project locale, as it occurs in relation to some of the major prehistoric sites and canals of the Salt River Valley. (based on Turney 1929a)

to more commonly as Canal System 2. Soil Systems, Inc. (SSI) undertook that study for the Arizona Department of Transportation (ADOT), and it has resulted in both a valuable canal irrigation report (Howard and Huckleberry 1991) and updated compilations of prehistoric sites situated across the USGS 7.5' quadrangle map of both Fowler (Howard 1991a) and Laveen (Howard 1991b), Arizona. The third and last of the three concerned archival assessment projects was begun in 1992 by SAS (Rodgers 1993) itself. It was conducted on behalf of the Maricopa County Department of Transportation (MCDOT), and its primary purpose was to evaluate the cultural resource variability of the Broadway Road Locale, an arbitrary archeological research locality that encompassed 18 square miles and included a northern part of the Laveen ADMP area.

The next 11 archival projects are especially significant, for they are all characterized as having been intensive field examinations that have actually been completed within the Laveen ADMP locale since the late 1980s. Collectively, the corresponding survey areas of these 11 projects, excluding certain overlaps of them, total about 2,710.44 acres, or 22.87 percent of the present assessment area itself. Once again, either the centerline of all the narrower, linear survey areas or the boundary of all the wider, areal survey areas of these particular projects has already been included in Figures 2 and 3.

Five of the 11 intensive survey projects are of the larger, areal subtype and result in a cumulative acreage of 2,430.44 acres. Without a doubt, the largest of them is the Southwest Loop Freeway Project that the ASU OCRM (Bostwick and Rice 1987) conducted for ADOT. Varying from 4,200 feet to 5,280 feet wide and extending southward along 59th Avenue and then southeastward along the eastern GRIC boundary, it accounts for 1,694.44 acres alone. The Laveen 500 Project area is also quite large, consisting of 500 acres situated northwest of the intersection of 67th Avenue and Baseline Road. David V. M. Stephen (2000) is currently finalizing his study of that proposed development area for Professional Archaeological Services and Technologies (PAST). A smaller area of residential development was also examined recently by Northland Research, Inc. (NRI). That Richmond American Homes Project includes 56 acres located immediately northwest of the intersection of Baseline Road and 43rd Avenue (Walsh-Anduze 1999). The last two areal survey loci partly overlap that of the Southwest Loop Freeway Project, and both were of large, proposed sand and gravel quarries. The smaller area (120 ac) was State Trust land that was investigated by the ASM in 1988 (Project No. 1988-4), but no management report, as defined by the ASM itself, has yet ever been written concerning it. The second and slightly larger quarry (200 ac) occurs immediately northwest of the corner of 51st and Southern avenues. In 1994, Archaeological Consulting Services, Ltd. (ACS) completed that project (ASM No. 1994-6) for Phoenix Redi-Mix Company, Inc. (Douglas 1994).

The six remaining intensive field survey projects have all been of rather long but narrow areas. Two of them, ASM Project No. 1992-169 and No. 1995-263, were undertaken within the Southwest

Loop Freeway corridor. The former was a short (1,500 by 300 ft) SRP ditch easement that was examined by the U.S. Bureau of Reclamation (BR) (Telles 1993). The latter was a MCDOT widening project of 59th Avenue between Southern Avenue and Dobbins Road, and it was completed by SSI (Owens 1995). Shortly thereafter, in 1997, Dames and Moore (D&M) intensively examined the 77.4 acres that comprised the MCDOT widening project (ASM No. 1997-202) of 51st Avenue between the Salt River channel and the GRIC boundary (Shepard & Rogge 1997). Within this same alignment, ACS (Crary 1993) had earlier, in 1992, surveyed the narrower Santa Fe Pacific pipeline (ASM Project No. 1992-239). Farther east and in advance of constructing a FCDMC storm drain, SAS (Rodgers 1998) examined 25.6 acres along 43rd Avenue between Broadway and Baseline roads (ASM Project No. 1998-327). The sixth and last project has been designated ASM No. 1999-94. It consisted of a 177-acre survey that ACS (Aguila 1999) conducted along both an old and a newly proposed gasline of the El Paso Natural Gas (EPNG) company.

Culture Histories

The lower, southern Salt River Valley was extensively utilized during the archeological past, and its cultural record could someday prove to have begun more than 11,500 years ago. If so, however, no sites of any Paleo-Indian or later Archaic cultures, cultural traditions, or cultural complexes have yet been discovered and adequately reported from this particular region. In gross overview, the Paleo-Indian and Archaic traditions constitute the two most popular stages of preceramic development in America and, in Arizona, they are presently known best from southeastern parts of this State (Mabry 1998).

The Paleo-Indian stage is generally believed to have begun by about 10,000 B.C. and to have continued until, perhaps, 5500 B.C. It is characterized by the development of numerous Native American groups who very skillfully made and used large, lanceolate-shaped projectile points to hunt chiefly large game animals, including several species of extinct megafauna, especially mammoth and bison. The Clovis (ca. 9600-8900 B.C.) and sequent Folsom (ca. 8900-8200 B.C.) cultures are the two best known traditions of this early developmental stage, and both of these nomadic groups are differentiated largely on the basis of distinctive projectile point types and correlative lithic tool assemblages. Currently, the Paleo-Indian site that occurs closest to the Laveen ADMP locale exists near the town of New River, Arizona, which is located approximately 43 miles north of the confluence of the Salt and Gila rivers. Three controversial lithic collections occur there that, according to Peru (1984), at least, may represent the archeological results of: 1) the Paleo-Indian preparation of certain hunting implements, 2) the butchering of game animals, and 3) the processing of both cordage and animal hides.

Archeologically speaking, the Archaic actually designates a post-Pleistocene and continental-wide phenomenon that basically ended with the introduction and local manufacture of pottery. The

more sedentary lifestyle of the various Archaic cultures is characterized by a much more diverse subsistence economy that, apparently, was based on the hunting of smaller game animals, much plant food collecting, and, eventually, incipient agriculture. Such Archaic activities in the lower, southern Salt River Valley are arguably represented best by those of the Cochise Indians.

The Cochise culture was originally defined by Sayles and Antevs (1941), and it was later reevaluated by Huckell (1984). Consequently, the lithic artifactual assemblages of this culture can vary greatly but typically they contain a variety of bifacially flaked tools, unused unifaces and bifaces, food grinding implements, and projectile points that have become diagnostic of three sequent periods. Comparative geologic, artifactual, and chronometric data have suggested that those periods may possibly date 5500-3500 B.C. (Sulphur Spring), 3500-1500 B.C. (Chiricahua), and 1500-200 B.C. (San Pedro) (Whalen (1971)).

The single most widespread and significant post-Archaic culture of all southern Arizona is that of the Hohokam Indians. Understandably, therefore, an exhaustive overview of this complex culture is obviously beyond the scope of this report. For the interested reader, however, valuable Hohokam syntheses have been produced by, for example, Dr. Emil W. Haury (1976), Gumerman and Haury (1979), McGuire and Schiffer (1982), and Gumerman (1991).

Characteristically, the Hohokam Indians were agriculturalists who employed intricate systems of floodwater and sheetwash farming and, especially, canal irrigation. Important, too, is the fact that they heavily supplemented their different cultivated foods (e.g., corn, squash, beans, etc.) with those obtained by hunting, gathering, and collecting a wide variety of indigenous plants and animals. Both inhumation and cremation were common human burial practices of the Hohokam, and, whenever possible to do so, they produced much rock art. Hohokam habitations varied greatly through time and included subsurface pithouses, semisubterranean, masonry-footed, and adobe-walled structures, and large compounds built of adobe and rock. Several types of interfamily settlements have thus been recognized and, from smaller to larger, have variously been defined as farmsteads, hamlets, and villages. Monumental architecture of the Hohokam includes large ballcourts and raised platform mounds, both of which may have been associated, at least indirectly, with community religious activities. The Hohokam were skilled artisans and produced a great variety of utilitarian and ceremonial items that were fashioned from bone, clay, stone, and both local and imported shell.

The chronology of the Hohokam culture is presently an issue of much professional debate (Dean 1991). Traditionally, though, Hohokam development has been traced through four successive periods: Pioneer, Colonial, Sedentary, and Classic; and, correspondingly, a series of nine sequential phases, which may have lasted for a total of, perhaps, 1,150 years. The earliest period is the most controversial one but may have included the Vahki (A.D. 300-500), Estrella (A.D. 500-600), Sweetwater (A.D. 600-700), and Snaketown

(A.D. 700-800) phases. The Colonial period is much better known and includes the Gila Butte (A.D. 800-900) and Santa Cruz (A.D. 900-1000) phases. The Sedentary period coincides with the Sacaton phase of A.D. 1000-1200. The final Classic period, at least in the lower, southern Salt River Valley, consists of only the Soho (A.D. 1200-1300) and Civano (A.D. 1300-1450) phases.

Before leaving this prehistory discussion, two other cultural phase assignments should possibly be introduced, even though neither one of them has yet been enthusiastically endorsed by the archeological community as a whole. First, Morris (1969) has proffered "Red Mountain" as a transitional phase between the cultural sequences of the Archaic and Hohokam Indians. Second, "Polvorón" has been advanced by Sires (1984) to account for the final phase expression of the Hohokam culture during the Classic Period, at least in the Queen Creek delta region of northwestern Pinal County, Arizona.

The A.D. 1450-1534 protohistoric era basically designates the transition between prehistoric and historic times. Different criteria have been used to define this period, however, resulting in the fact that a wide variety of dates have been attributed to it (Gilpin and Phillips 1999). Across the lower, southern Salt River Valley, this period is most commonly represented by an array of habitation and economic subsistence activities that are believed to have been undertaken by either of only two Native American groups: the Akimel O'odham ("river people") and the Pee Posh ("the people"), which are much better known, respectively, as the Pima and the Maricopa.

The Pima Indians, as well as the Tohono O'odham ("desert people"), their Papago relatives to the south, are generally considered to be descendants of the Hohokam. Quite understandably, therefore, they were sedentary agriculturalists who inhabited riverine reaches of especially the Santa Cruz, Gila, and Salt rivers (Russell 1975; Ezell 1983). In marked contrast, the ancestry of the Maricopa Indians remains an issue of some heated professional debate, but they are probably related to certain Lower Colorado Yumans. As originally studied by Spier (1933) and later by Castetter and Bell (1951), the Maricopa historically lived in settlements along the Gila River and its tributaries. There they cremated their dead and relied upon floodwater farming to raise not only corn, beans, and squash, but also wheat and cotton (Harwell and Kelly 1983). The Gila River Indian Community is presently one of both Pima and Maricopa Indians. An Act of Congress originally established the 64,000-acre Gila River Indian Reservation there on February 28, 1859.

The final historic era of Anglo-American and Euro-American dominance predates the present, modern, or contemporary period of 1950-2000, and, in Arizona, has commonly been subdivided into three main temporal divisions. The earliest one, or Spanish Period (1534-1821), witnessed numerous exploratory incursions across mainly southern and northern parts of the State, where several significant Catholic missions were eventually established. The following

Mexican Period (1821-1848) began with parties of mountain men trapping down the Gila River and up some of its major tributaries. It ended with the signing of the Treaty of Guadalupe Hidalgo, on February 2, 1848, which ended the war between Mexico and the United States. The third, or American Period (1848-1950), includes the pre-Territorial (1848-1863), Territorial (1863-1912), and Statehood phases (1912-1950). During the pre-Territorial phase, many U.S. military posts were established and the large, southern part of Arizona was secured through the final negotiation of the Gadsden Treaty, which the Senate ratified on June 24, 1854. Later, in 1863, President Abraham Lincoln created the Territory of Arizona when he signed a bill that separated the 1850 Territory of New Mexico into a western (Arizona) and an eastern (New Mexico) division. Finally, Arizona was admitted to the Union on February 14, 1912. Major efforts during the resulting Statehood phase were definitely not limited to the cadastral surveying of this 48th state, exploring its vast natural resources, establishing and prospering its numerous cities, and facilitating transportation and communication among them.

Prehistoric Themes and Sites

Archival information indicates that the Laveen ADMP project locale contains at least 49 archeological sites. Collectively, those sites represent a total of four major kinds of cultural activity, or cultural themes. Some of them have been officially assigned formal, consecutive, alphanumeric site designations by the particular research institutions that are presently curating the original records of those sites. Given their general location in either of the two project quadrangle areas, all of them should appropriately be prefaced with "AZ T:12."

Fourteen of the Laveen ADMP project sites, or 28.6 percent of them, date to the prehistoric past, and all of them are of the defined Hohokam culture. Every one of them has also been plotted in Figure 5, since, interestingly, they all occur entirely across the northern part of the concerned project area. They represent one unknown and, somewhat surprisingly, only two identifiable cultural themes, or general activity patterns: Canal Irrigation and Residential Living. Each of the corresponding sites is discussed shortly.

Presently, though, salient aspects of all the prehistoric sites of this project are presented in Table 3. The four self-explanatory variables there include: Formal Site Designation, Synonym, Legal Location, and Major Report Reference. The four other ones may need some elaboration. The environmental zones (Env Zone), for example, are the same as those that SAS has defined herein, and information pertaining to the Surface Condition (Surf Cond) of each site was obtained only through the SAS use of the Project Aerial Base Map, as previously described. Site Type employs standardized terms of the Arizona State Museum, and Site Date is based on the archival occurrence of certain artifactual data that are normally considered to be characteristic of the different phases and periods of Hohokam cultural development.

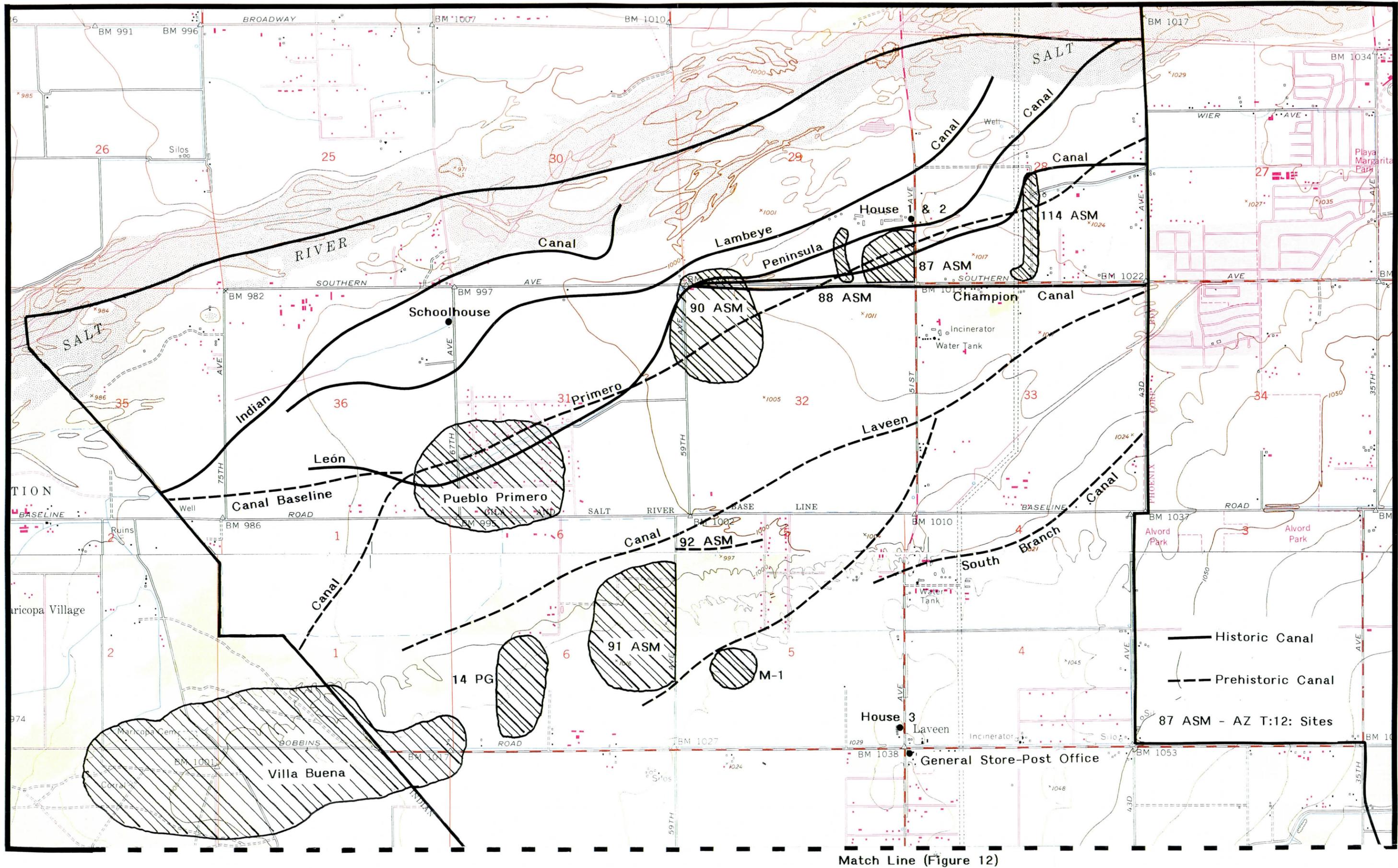


Figure 5. Prehistoric and certain historic sites in the northern part of the Laveen ADMP project locale. (based on the 1952 USGS 7.5' quadrangle map of both Fowler and Laveen, Arizona)

Table 3.

Summary Characteristics of the Prehistoric Sites
of the Laveen ADMP Project Area

Formal Site Designation	Synonym	Legal	Location	Env Zone*1	Site Type	Surf Cond*2	A.D. Site Date	Major Report	Reference
----- AZ T:12:11 PG	Canal Primero ---	(see Figure 5) NW4SW4 of Sec 31 in T1N,R2E		ST ST	Canal Village	Dest Dest	? 1200-1450	Midvale 1966, 1997 Kelley 1939	
AZ T:12:90 ASM	Pueblo Primero AZ T:12:19 ASU ---	----- ----- NW4NW4 of Sec 32 in T1N,R2E		-- -- ST	--- --- Village	----- ----- Dest	--- --- 1200-1450	Midvale 1966, 1997; Bostwick and Rice 1987 Owens 1995	
AZ T:12:87 ASM	AZ T:12:55 ASU ---	----- SE4 of Sec 29 in T1N,R2E		-- ST	--- Artifact Scatter	----- Dest	--- ?	Bostwick and Rice 1987 Douglas 1994	
AZ T:12:88 ASM	---	SW4SE4 of Sec 29 in T1N,R2E		ST	Artifact Scatter	Dest	?	Douglas 1994	
AZ T:12:114 ASM	---	E2SW4&W2SE4 of Sec 28 in T1N,R2E		ST	Artifact Scatter	Dest	?	Aguila 1999	
-----	Canal Baseline	(see Figure 5)		ST	Canal	Dest	?	Midvale 1966, 1997	
----- AZ T:12:92 ASM	Canal Laveen ---	(see Figure 5) N2NW4 of Sec 5 in T1S,R2E		ST/VP ST	Canal Canal	Dest Dist	? ?	Midvale 1966, 1997 Owens 1995	
AZ T:12:3 PG	Villa Buena	(see Figure 5)		VP	Village	Dest	600-1450	Huckell 1981	
AZ T:12:14 PG	---	E2SW4 of Sec 6 in T1S,R2E		VP	Village	Dest	700-1450	Kelley 1939	
-----	M(Midvale)-1	N2SW4 of Sec 5 in T1S,R2E		VP	Hamlet ?	Dest	?	Midvale n.d.b	
AZ T:12:91 ASM	---	S2NE4 & N2E4 of Sec 6 in T1S,R2E		VP	Village	Dest	?	Owens 1995	
-----	AZ T:12:56 ASU South Branch Canal	----- (see Figure 5)		-- VP	--- Canal	----- Dest	--- ?	Bostwick and Rice 1987 Midvale 1966, 1997	

*1 Low stream terrace (ST), Valley plains (VP)

*2 Destroyed (Dest), Disturbed (Dist)

CANAL IRRIGATION

This first prehistoric cultural theme is represented by two minor and three major canals that, within the Laveen ADMP project area itself, have a cumulative length of about 12.40 miles. All four of them are known largely as the result of independent fieldwork performed by Frank J. Midvale (1997) during the 1920-60s and, subsequently, laboratory analyses by Howard (1991a, 1991b). Regrettably, no subsurface investigation has ever been made of any one of these canals, none of them has yet been dated, and most of their surfaces have since been destroyed, largely by much ongoing crop cultivation.

The three largest canals all head outside of the Laveen assessment area and along the southern bank of the Salt River. Having axes that range from South 27° West to South 85° West, they then extend generally southwestward across the low stream terrace zone and the lower part of the local valley plains. From north to south, they are most popularly known as Canal Primero, Canal Laveen, and the South Branch Canal.

Canal Primero was first found and recorded by Patrick (1903a), who named it Ancient Canal No. 7 and included it on his "Map of Salt River Valley, Showing the Location of Ancient Canals and Cities" (1903b). Turney (1929b:96) later redesignated it Canal Three and suggested that it may have been one of the earliest ones of the entire Salt River Valley. He also included it on all five editions of his "Map of Prehistoric Irrigation Canals," such as the 1929 version (1929a) that was earlier provided here as Figure 4.

According to Midvale (n.d.a, 1966, 1997) and Howard (1991a), Canal Primero begins just northwest of the intersection of 35th Avenue and Broadway Road, extends 0.8 miles southwestward, and enters the Laveen ADMP locale along 43rd Avenue. Thereafter, it continues first 3.65 miles southwestward (South 65° West), ending just west of 67th Avenue, and then 0.9 miles southward (South 27° West), ending at the GRIC boundary. Within the Laveen assessment area itself, therefore, Canal Primero is 4.55 miles long and occurs totally across the low stream terrace there. In relation to the G&SRB&M, it crosses at least a small part of the following six sections: Sec 1 of T1S,R1E, Sec 36 of T1N,R1E, and Sec 28, 29, 31, and 32 of T1N,R2E.

Canal Baseline, or the Baseline Canal, is one of the two minor canals of this project and is known entirely as the result of former field research made by Frank J. Midvale (1997). Although it may total 3.5 miles long, only its shorter, eastern part occurs in the Laveen ADMP project area (Figure 5). There its head branches from Canal Primero and extends about one mile westward (South 85° West), until it also enters the Gila River Indian Community. Finally, therefore, this minor canal occurs only across the stream terrace zone and southern parts of Sec 35 and 36 in T1N,R1E.

Curiously, Canal Laveen was recognized by neither Herbert R. Patrick nor Dr. Omar Turney. Instead, it was originally recorded by

Midvale, and information concerning it exists principally on three maps: 1) an undated (n.d.a) intersite map based on the USGS 7.5' quadrangle map of Fowler, Arizona, 2) a similar undated map (n.d.b) based on the contiguous USGS 7.5' quadrangle map of Laveen, Arizona, and 3) an archival map of "The Prehistoric Irrigation of the Salt River Valley" (1966). In addition, various archival data concerning this canal were later compiled by Howard, as they pertained to sites in the Fowler (1991a), Laveen (1991b), and Phoenix (1991c) quadrangle areas. Consequently, Canal Laveen is nearly 10.5 miles long and heads just east of the Central Avenue bridge over the Salt River.

Only the terminal 5.25 miles of this canal occur in the Laveen ADMP project area, however, and it consists of two sections. The main, or northern, channel is 3.5 miles long and, being situated about 0.75 miles south of Canal Primero, generally parallels it. This same channel begins slightly more than 0.25 miles south of the corner of 43rd and Southern avenues and, extending South 70° Westward to just west of 67th Avenue, crosses only the upper limits of the stream terrace zone. The second and southern channel is actually an unnamed branch of Canal Laveen. Beginning just east of 51st Avenue, it extends 1.75 southward and then southwestward (South 47° West), ending just west of 59th Avenue and having crossed mainly the lower limits of the local valley plains. Together, these two alignments occur in parts of Sec 32 and 33 of T1N,R2E and Sec 5 and 6 of T1S,R2E, and Sec 1 of T1S,R1E.

The second minor canal was recently found by SSI during an intensive field survey that it undertook for MCDOT. As reported by Owens (1995), it is represented by only a short, 600-meter-long segment of a narrow, linear, and slightly depressed channel of dark, organic soil that was officially recorded as AZ T:12:92 ASM. This site is especially interesting because a) its upper layer had earlier been truncated by cultivation, and b) it could be a separate canal or, alternatively, a modification of either Canal Laveen, situated 0.25 miles to the north, or its unnamed southern branch, situated 0.30 miles to the south. Being located immediately east of 59th Avenue and about 275 m (902 feet) south of Baseline Road, AZ T:12:92 ASM occurs entirely within SAS's valley plains zone. The archeological dating of this site was precluded by a total absence there of any artifactual remains.

The fifth and last of the project canals is also the third of the three larger ones. It has likewise been investigated solely by Midvale (n.d.a, n.d.b, 1966, 1977), who has variously referred to it as the "South Branch of Canal Laveen," the "South Branch," and, as is used here, the "South Branch Canal." This canal actually begins 1.4 miles east of the present project boundary, 0.55 miles northeast of the intersection of 35th and Southern avenues, and 5.25 miles upslope from the terminus of Canal Laveen. It then flows 3.3 miles gradually southwestward (South 55° West), with only its last 1.4 miles actually occurring within the concerned project area. There this canal is also the highest, or most elevated, occurring about 1,030 feet above sea level, and extends wholly along the lower edge of the valley plains.

RESIDENTIAL LIVING

The Hohokam Indians typically lived in direct association with their canals and vast systems of agricultural fields and, not surprisingly, therefore, six definite communities of permanent pre-historic residency have previously been interpreted as occurring in the Laveen ADMP project locale. The smallest of them is a yet undesignated site that could prove to be a hamlet. The five larger ones are believed to be huge villages ("villas" or "pueblos") occurring along Canal Primero and Canal Laveen. They are known best as Pueblo Primero, Villa Buena, AZ T:12:14 PG, AZ T:12:55 ASU, and AZ T:12:91 ASM. With few exceptions, they were recorded prior to their surface destruction, but no major subsurface research has ever been undertaken at any one of them.

Figure 5 has already indicated that Canal Primero extends through Pueblo Primero and AZ T:12:55 ASU. The former is the largest Hohokam village of the concerned master plan area and encompasses just less than 150 acres. It has also been formally designated by the Arizona State University as AZ T:12:19 ASU (Bostwick and Rice 1987) and by the Pueblo Grande Museum as AZ T:12:14 PG. Despite repeated minimal investigations since the early 1920s (Turney 1922b, 1929a; Schroeder 1940; Midvale 1966, 1997; Howard 1991a), however, very little information exists concerning Pueblo Primero. It is located immediately north of Baseline Road and west but mainly east of 67th Avenue, though, and its surface has largely been destroyed by urban development and farming. Original Hohokam features there included a large house complex, a platform mound, numerous trash mounds, and two ballcourts, all of which were surrounded by a mixed scatter of artifacts dating chiefly to the Classic Period of A.D. 1200-1450.

AZ T:12:55 ASU occurs about 0.75 miles northeast of Pueblo Primero, and information about it results from both the Southwest Loop Freeway Project and a proposed widening investigation of 59th Avenue. As reported by Bostwick and Rice (1987:38) and Owens (1995), therefore, this second village occupies about 110 acres located immediately southeast of the intersection of 59th and Southern avenues. That area occurs just inside the lower limit of SAS's low stream terrace and presently coincides with a northwestern part of the Cottonfields Golf Course. Previously, however, it was a plowed field that contained remnants of slag, possibly indicating the subsurface occurrence of large cooking ovens, or hornos, and assemblages of both ceramic and lithic artifacts. The plain, decorated, and redware pottery there provisionally dates AZ T:12:55 ASU to the Hohokam Classic Period. Its lithic assemblage included: food grinding implements (i.e., manos and metates), cores, choppers, and much stone tool manufacturing debris, or debitage.

From west to east, Villa Buena, AZ T:12:14 PG, AZ T:12:91 ASM, and Midvale (M)-1, are the four final Hohokam settlements of the Laveen ADMP project area. Interestingly, all of them occur a) along the lower boundary of the valley plains zone and b) immediately downslope from the two terminal ends of Canal Laveen. Occupying a

total of about 490 acres, Villa Buena is the largest of the four, but only its far eastern end actually enters this ADMP assessment area, mainly northwest and southeast of the corner of 67th Avenue and Dobbins Road (Figure 5). This third village, or AZ T:12:3 PG, was first found and recorded during the Salt River Valley Stratigraphic Survey project (Schroeder 1940) and, importantly, it was then recognized as occurring exclusively in the NE4NW4 of Sec 12 in T1S,R1E, which exists entirely inside of the Gila River Indian Community boundary. Archeological features there included house mounds, 10 trash mounds, and 3 ballcourts. Their associated pottery dated from the Sweetwater to Civano phases of circa A.D. 600-1450 (Bostwick 1993:Table 7.1). Huckell (1981) has written a report dealing with her later test excavations at Villa Buena, but SAS has been unable to obtain a copy of it.

The fourth project village, AZ T:12:14 PG, begins only about 0.2 miles east of Villa Buena, or about 0.25 miles east of the Dobbins Road-67th Avenue intersection. It, too, is known exclusively as the result of the SRVSS project, and information about it consists of only a few typed paragraphs on the original site card (Kelley 1939). Accordingly, the surface of this site has been destroyed since the late 1930s, at least, and no surface archeological features have ever been observed there. Instead, this site consists of a large artifact scatter that coincides with the entire 80 acres of the E2SW4 of Sec 6 in T1S,R2E. Subsequent analysis of the ceramic and stone artifacts there suggests that AZ T:12:14 PG was occupied during the late Pioneer, Colonial, Sedentary, and Classic periods of, perhaps, A.D. 700-1450.

The fifth and last project village is known synonymously as AZ T:12:56 ASU and AZ T:12:91 ASM. The former site was first found and designated in 1986 by the ASU Office of Cultural Resource Management. Bostwick and Rice (1987:38, 42, Fig. 14) then documented it as a large area that, measuring 580 m north-south and 385 m east-west, was composed of a) an artifact scatter, b) a short trail leading to a circular cleared area, having a 3.0 m diameter, c) a small rock ring, with a 1.4 m diameter, and d) a large rock circle, which had a 2.5 m diameter. Pottery there included plainware, redware, and unidentified red-on-buffware; lithic artifacts included manos and metates, polishing stones, hammerstones, choppers, and, of course, much debitage. Encompassing about 60 acres, this site occurs immediately west of 59th Avenue and about midway between Baseline Road and Dobbins Road. Thus, it was later encountered by SSI during its 1995 survey of the Southwest Loop Freeway corridor. By then however, the entire surface of AZ T:12:91 ASM had been plowed, resulting in the total destruction of any surface features and a marked decrease in both artifact quantity and diversity.

Very little information presently exists concerning site M-1, the last of the five Hohokam settlements of the Laveen ADMP project area. In fact, it is known entirely from an unpublished intersite map prepared by Frank J. Midvale (n.d.b). Figure 5 has already indicated that M-1 is much smaller than the nearby villages and that it is situated just east of AZ T:12:91 ASM, immediately south

of the South Branch Canal, and just east of its terminus. More specifically, this presumed Hohokam hamlet measures no more than about 1,000 feet in diameter and is located just northeast of the intersection of 59th Avenue and Dobbins Road. Unfortunately, nothing is known about either the architecture, the artifactual assemblages, or the chronological placement of this site.

UNKNOWN ACTIVITY

No specific functional activity can presently be assigned to three of the prehistoric sites of the Laveen ADMP locale. That is, all three sites of this third and last prehistoric cultural theme were first encountered while investigating bladed and plowed fields, with the resulting site areas there being characterized by only large scatters of mixed artifacts. All three sites have been formally recorded during intensive field surveys that were undertaken by a single contract archeological firm, and all of them occur across lower parts of the stream terrace zone. They have been designated AZ T:12:87 ASM, AZ T:12:88 ASM, and AZ T:12:114 ASM.

Further, all three of these large artifact scatters occur along a middle section of Canal Primero, and all three have been investigated exclusively by ACS. Arizona T:12:114 ASM is the easternmost one and was encountered while examining an EPNG gasline. Aguila (1999) documents this site as being a low to moderate-density scatter that, measuring 565 m north-south and 225 m east-west, is located north of Southern Avenue and midway between 43rd and 51st avenues. While no specific chronological assignment has been given to this Hohokam site, its ceramic assemblage did include plainware, red-on-buff, and incised pottery. Its lithic assemblage was limited mainly to stone tool manufacturing debris of basalt, rhyolite, and quartzite.

Both AZ T:12:87 ASM and AZ T:12:88 ASM were found while surveying a proposed sand and gravel quarry located immediately northwest of the intersection of 51st and Southern avenues. As fully reported by Douglas (1994), AZ T:12:87 ASM is the much larger of the two, occupying about 40 acres, for AZ T:12:88 ASM encompasses only about 9.8 acres. Otherwise, though, they are basically identical scatters of low and medium artifact densities that are situated only about 60 m apart and located only about one-half mile west of AZ T:12:114 ASM. Lithic artifacts predominate at both sites and, in addition to stone tool manufacturing debris, include handstones and manos. Pottery is relatively rare there and is limited to only a few plainware sherds. Thus, no diagnostic artifacts of any kind were recognized at either site.

Historic Themes and Sites

No archival evidence was found by SAS for the existence of any protohistoric (A.D. 1450-1534) sites within the Laveen ADMP project locale. Thirty-five historic sites (71.4%) have been located in this assessment area, however, and none of them date to the Spanish Period (1534-1821), the Mexican Period (1821-1848), or the pre-

Territorial Phase (1848-1863) of the Anglo-American Period. Instead, they are all sites of the subsequent Territorial (1863-1912) or Statehood phases (1912-1950) and represent four cultural themes, or general patterns of cultural activity: Transportation, Canal Irrigation, Community Growth and Development, and Mining. Summary characteristics of all those sites are provided in Table 4. Neither of the different variables used there should require any further clarification.

TRANSPORTATION

No fewer than 17 archival roads have been located in this ADMP project area (Figures 6-11), and 14 of them are discussed later in conjunction with local Community Growth and Development. The other three all appear to have been intersettlement roads and, thus, are used here to comprise this first historic theme. This theme also represents the earliest of the historic activities undertaken across this assessment area, for all three of its represented sites are known exclusively from five GLO maps that were prepared using field survey information that was obtained between 1868 and 1919. Unfortunately, though, the Laveen Aerial Base Map indicates that all four sites have subsequently been destroyed by either farming or the modern construction of roads and even a canal.

No specific name or designation has ever been attributed to either of the three concerned roads. The first measures a total of 5.80 miles long and crosses the Salt River at a "Good Ford" located in the NW4 of Sec 35 in T1N,R1E. Inside the Laveen ADMP project area, however, it extends only about 1.4 miles southeastward across the floodplain and low stream terrace zones of Sec 35 and 36 in T1N,R1E and contiguous Sec 1 of T1S,R1E. Importantly, this first undesignated road must predate March 12, 1868, for it occurs on two of the GLO maps of Ingalls (1868a, 1868c). Further, it is known to have lasted for at least 31 years, for this same alignment is later plotted on the two corresponding maps of Patrick (1900a, 1900b).

The second archival road has been plotted mainly by Patrick (1900a), and its relative location has already been included in Figure 8. Accordingly, it is just less than five miles long and must have been in use prior to October 17, 1899. Beginning along the "Prescott to Tucson Road, formerly the "Road from Wickenburg to Maricopa Wells (Ingalls 1868c), it extends generally eastward through the Gila River Indian Reservation and ends 1.25 miles inside the western boundary of the Laveen ADMP locale. There the terminal segment of this road crosses the low stream terrace in Sec 35 and 36 of T1N,R1E.

The third and final undesignated road of this project occurs 4.8 miles farther southeast, and information about it occurs exclusively on the fractional GLO map that Blout (1920) prepared of Township 1 South, Range 2 East. It must predate March 26, 1919, therefore, and consists of a branching road situated within a western part of the "Salt River Mtns." Overall, this road is 2.3 miles long and crosses at least a small part of Sec 10, 11, 15, 16, and 21. Within the Laveen assessment area itself, it extends across

Table 4.

Summary Characteristics of the Historic Sites
of the Laveen ADMP Project Area

Archival Site	Legal	Location	Zone*	Site Type	Surface Condition	Date	Major Reference
Transportation							
"Old Road"	Sec 35, 36	T1N,R1E	FP-ST	Road	Destroyed	pre-1869	Ingalls 1868a
"Old Road"	Sec 35, 36	T1N,R1E	ST	Road	Destroyed	pre-1900	Patrick 1900a
Branching road	Sec 15,16,21	T1S,R2E	OAF	Road	Destroyed	pre-1920	Blout 1920
Canal Irrigation							
Indian Canal	(see Figure 5)		FP-ST	Canal	Destroyed	1887	Dunlevy 1902; Robinson 1901
León Canal	(see Figure 5)		FP-ST	Canal	Destroyed	1870	Dunlevy 1902; Dunbar 1904
Peninsula Canal	(see Figure 5)		FP-ST	Canal	Destroyed	1900	Robinson 1901; Dunlevy 1902
Lambeye Canal	(see Figure 5)		ST	Canal	Destroyed	1895	Dunlevy 1902; Robinson 1901
Champion Canal	(see Figure 5)		ST	Canal	Destroyed	1893	Robinson 1901; Dunlevy 1902
Western Canal	(see Figure 12)		OAF	Canal	Intact	1911	Andersen 1990
Community Growth & Development							
Schoolhouse	NE4, Sec 36	T1N,R1E	ST	School	Destroyed	pre-1950	Stephen 2000
House 1	SE4, Sec 29	T1N,R2E	ST	House	Intact	1920s	Shepard and Rogge 1997
House 2	SE4, Sec 29	T1N,R2E	ST	House	Intact	1920s	Shepard and Rogge 1997
Unnamed roads (12)	(see Figure 10)		VP-RAF	Roads	Destroyed	pre-1900	Patrick 1900c
"Road to Salt River"	Sec 7	T1S,R2E	VP	Road	Destroyed	pre-1900	Patrick 1900c
"Old Well"	NW4, Sec 17	T1S,R2E	VP	Well	Unknown	pre-1900	Patrick 1900c
"Ivy's Store"	NE4, Sec 20	T1S,R2E	RAF	Store	Unknown	pre-1900	Patrick 1900c
"Road to Gila Crossing"	Sec 21 and 22	T1S,R2E	VP-RAF	Road	Destroyed	pre-1900	Patrick 1900c
"Laveen P.O."	NW4, Sec 9	T1S,R2E	VP	Post Office	Destroyed	pre-1920	Blout 1920
House 3	SE4, Sec 5	T1S,R2E	VP	House	Intact	1920s	Shepard and Rogge 1997
House 4	SE4, Sec 8	T1S,R2E	VP	House	Intact	1920s	Shepard and Rogge 1997
House 5	SE4, Sec 8	T1S,R2E	VP	House	Intact	1920s	Shepard and Rogge 1997
Laveen General Store	NW4, Sec 9	T1S,R2E	VP	Store	Intact	1924	Shepard and Rogge 1997
Mining							
"W. Johnson's Camp"	SE4, Sec 16	T1S,R2E	RAF	Camp	Unknown	pre-1920	Blout 1920
AZ T:12: 39 ASU	SW4, Sec 21	T1S,R2E	RAF	Camp	Destroyed	post-1936	Bostwick and Rice 1987

* Floodplain (FP), Old alluvial fan (OAF), Recent alluvial fan (RAF), Low stream terrace (ST),

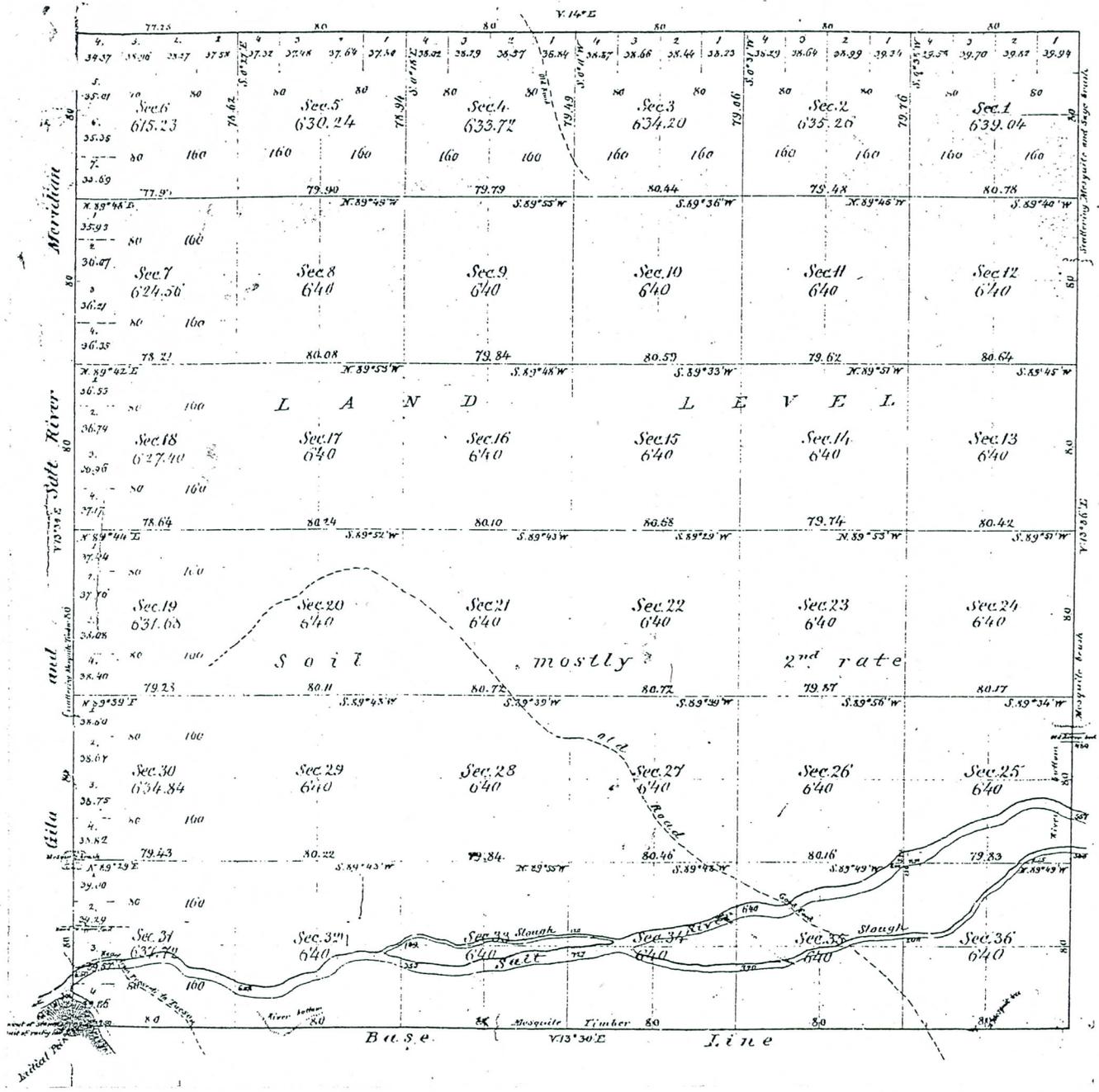


Figure 6. Pre-1868 GLO sites of the Laveen ADMP project locale in Township 1 North, Range 1 East. (from Ingalls 1868a)

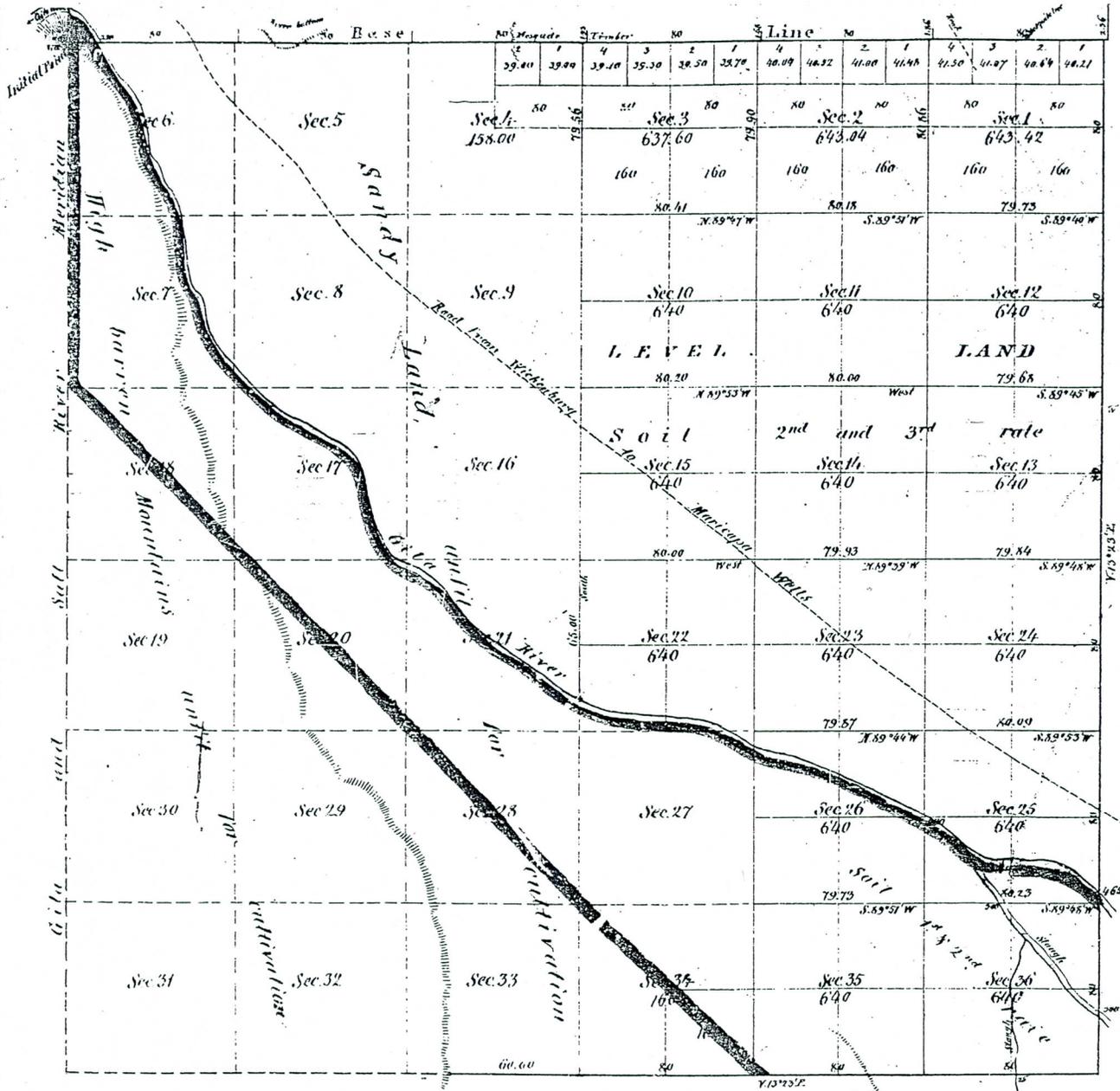


Figure 7. Pre-1868 GLO sites of the Laveen ADMP project locale in Township 1 South, Range 1 East. (from Ingalls 1868c)

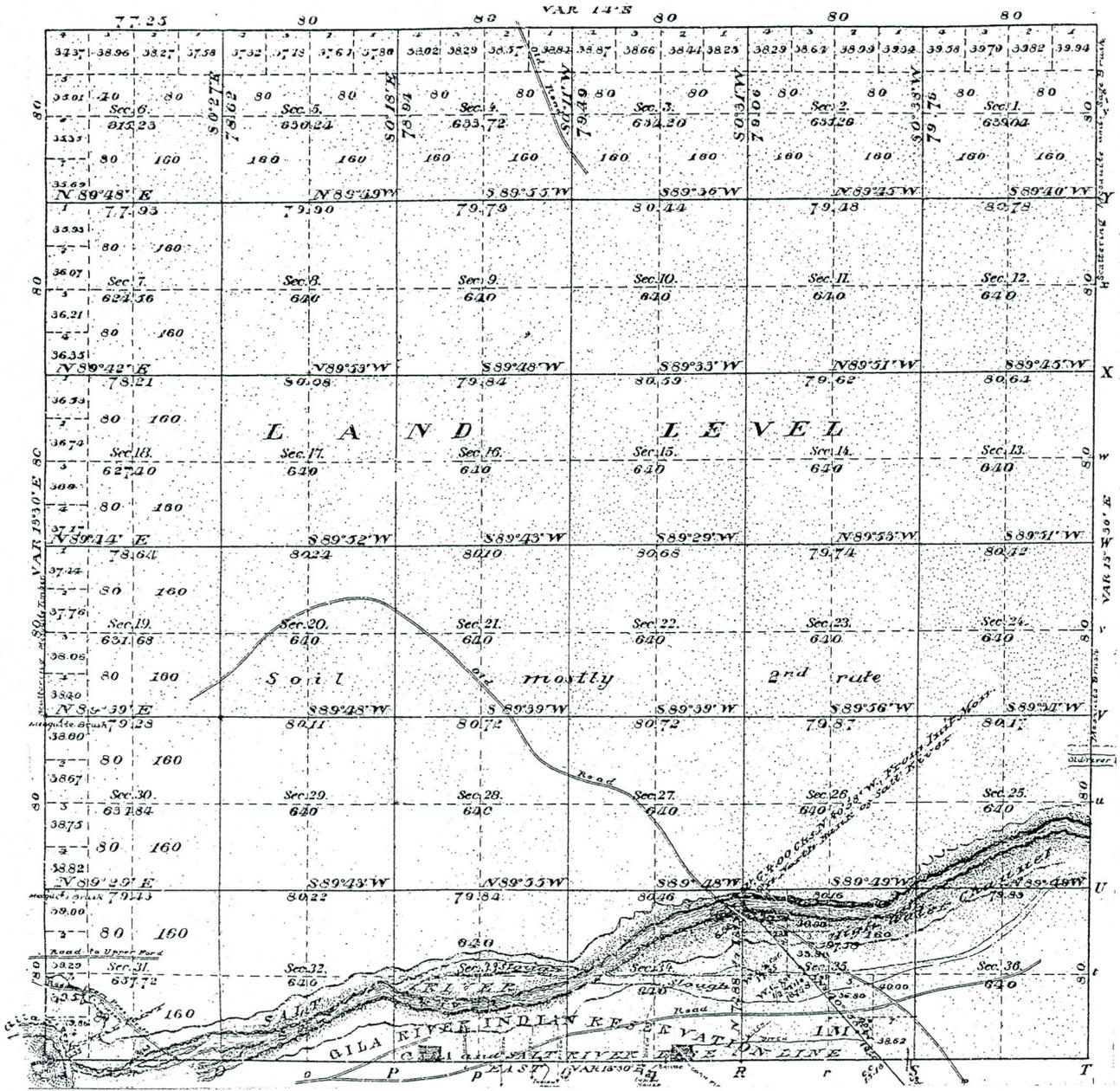


Figure 8. 1868-1899 GLO sites of the Laveen ADMP project locale in Township 1 North, Range 1 East. (from Patrick 1900a)

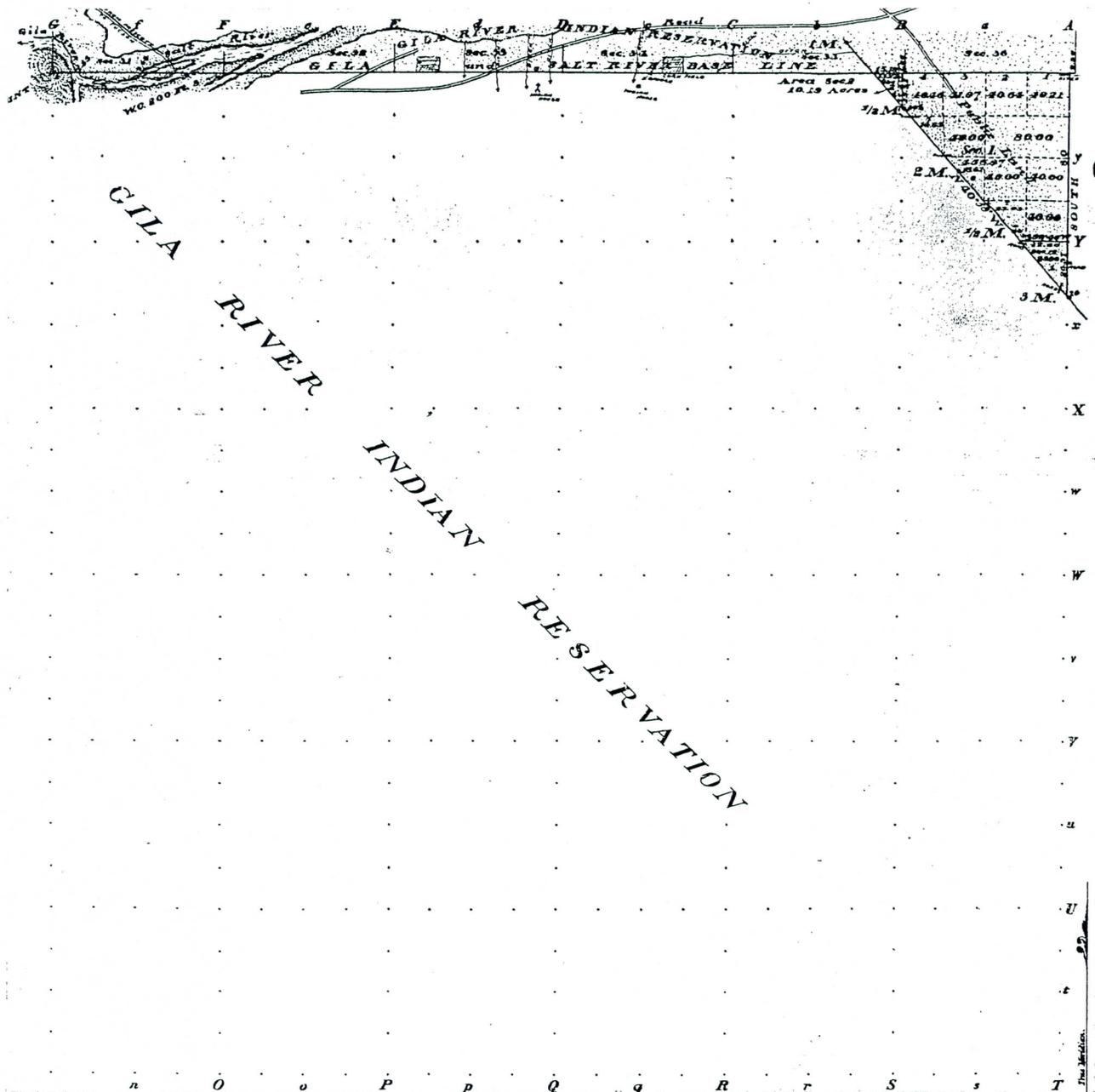


Figure 9. 1868-1899 GLO sites of the Laveen ADMP project locale in Township 1 South, Range 1 East. (from Patrick 1900b)

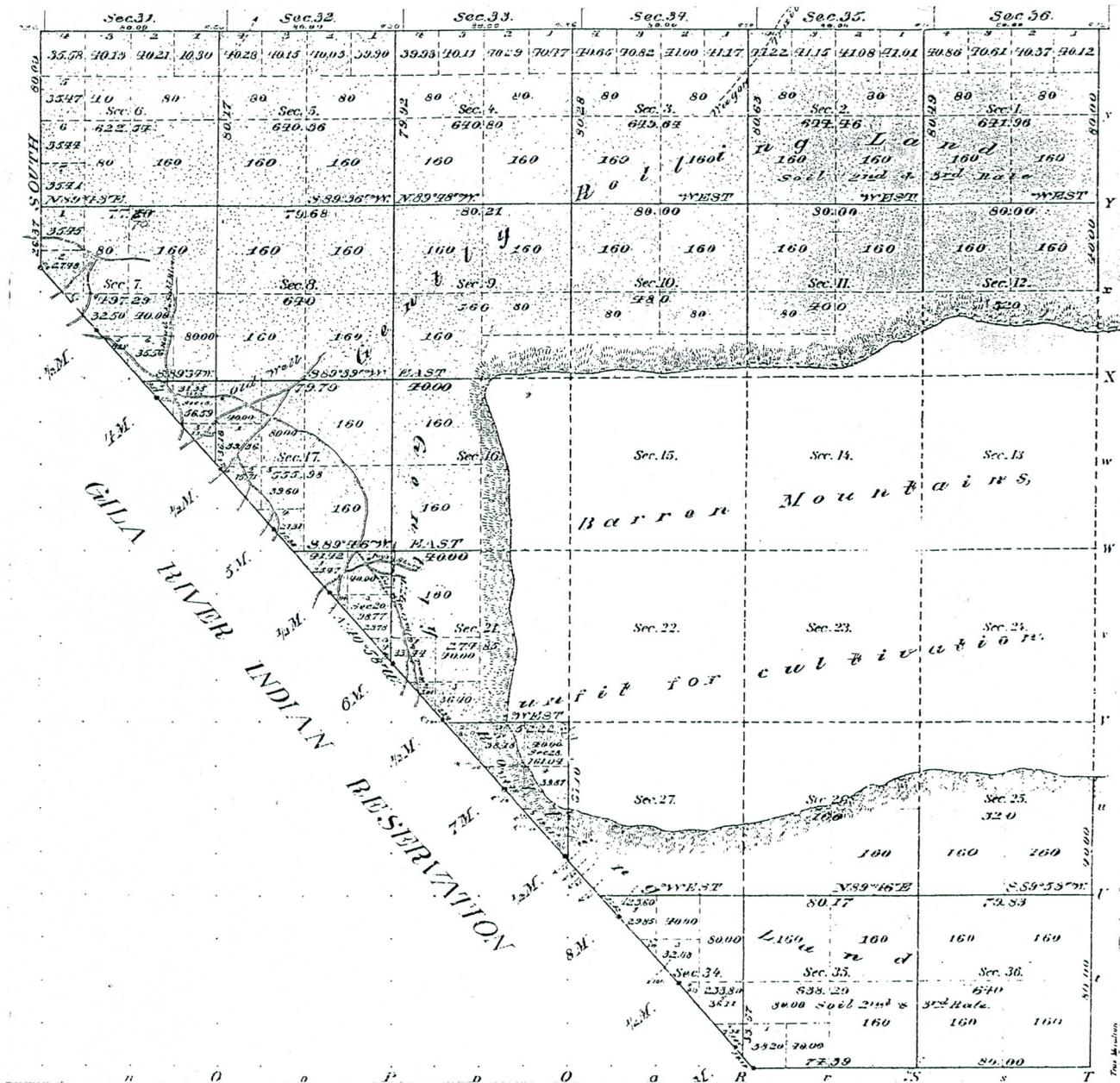


Figure 10. Certain pre-1900 GLO sites of the Laveen ADMP project area in Township 1 South, Range 2 East. (from Patrick 1900c)

only the old Alluvial Fan zone where, it closely coincides with that of two modern alignments: Carver Road and the Western Canal.

CANAL IRRIGATION

Without a doubt, farming continues to be the major preoccupation of the Laveen ADMP project area, and the thousands of acres of cultivated land there have all been watered via an intricate, ever-changing system of canals, smaller ditches, and even smaller laterals. Six such waterworks are considered below as, together, they comprise this second pattern of important cultural historic activity. Among others, they have variously been named the Indian, León, Peninsula, Lambeye, Champion, and Western canals. Except for the Western Canal, all of them are known or strongly believed to have been destroyed by flooding, largely in the early 1900s, and later crop cultivation.

Before discussing each of these canals individually, SAS wishes to clarify three critical issues. First, no in-depth comparative analysis has ever been made and reported of these six canals, and, in fact, SAS has uncovered certain inconsistent or contradictory information concerning every one of them. Thus, the following must be considered only a provisional discussion. Second, the project location of the five northern canals has already been included in Figure 5, that of the sixth one occurs in Figure 12. However, at least small parts of all six channels appear to have shifted somewhat through time, for various natural and engineering reasons, and no two sources of information are usually consistent in the location of those alignments.

Third, no or very little textual or graphic information concerning the six historic canals was found in any of the valuable canal irrigation works of Forbes (1911), Davis (1917), and Zarbin (1980, 1984, 1986, 1997), and Howard (1991a, 1991b). Thus, SAS has had to rely most heavily upon two primary sources of historic irrigation data: 1) a series of archival maps (Patrick 1903b; Davis 1903; U.S. Reclamation Service 1904; Dunbar 1904; Turney 1924a, 1929a; Becker 1926; Midvale 1997) and, not surprisingly, 2) a variety of information currently being housed in the SRP archives. This second data source resulted in finding not only an informative pamphlet about the different canals of the SRP service area (SRP 1997), but a comprehensive report (Andersen 1990) of the Western Canal, and even a typed court manuscript (Dunlevy 1902) and an accompanying map (Robinson 1901) dealing extensively with all five of the other project canals.

The first four of the five northern canals all head along the southern bank of the Salt River west of 27th Avenue and, importantly, the relative location of all four are clearly indicated by Dunbar (1904) on his "Map of Phoenix and the Salt River Valley.". From upper to lower elevations, or from east to west, they include the León, Peninsula, Lambeye, and Indian canals.

The León Canal is the oldest of the four and was also plotted by Patrick (1903b) as very closely paralleling the southern edge of

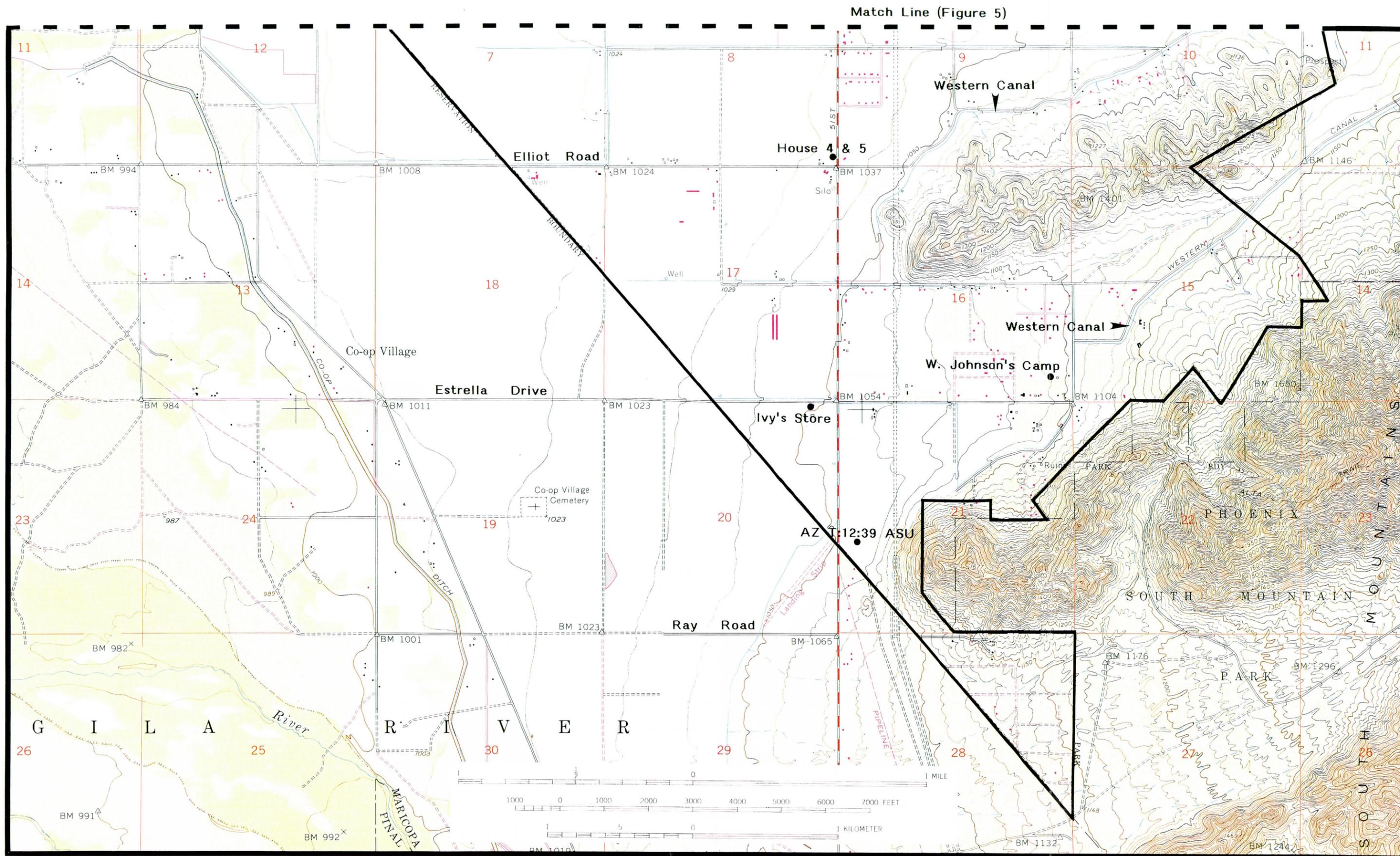


Figure 12. Certain historic sites located in the southern part of the Laveen ADMP project locale. (based on the 1952 USGS 7.5' quadrangle map of Laveen, Arizona)

his Ancient Canal No, 7, or Midvale's Canal Primero. Although heavily disputed by some, the León Canal has been described as the final successor of the Maddox Ditch, the Van Arman and Maddox Ditch, and/or the Fox Ditch, the construction of which may have begun in 1870-71 (Dunlevy 1902). This eastern canal heads in the "Broadway Slough" of Sec 23 in T1N,R2E and was fed by Salt River water that was diverted by two dams built of brush, boulders, and gravel. Being possibly about 5 feet deep and a maximum of about 15 feet wide, its main channel may then have flowed about 5.65 miles southwesterly down the central part of the stream terrace zone. Due to its higher elevation, starting at about 1,030 feet above sea level, it was able to extend farther and irrigate much more acreage than were either of its less elevated western counterparts.

The Peninsula Canal also occurs on maps by Robinson (1901) and Becker (1904), but most of the information about it has been supplied by Dunlevy (1902). As such, it was constructed in 1900, when its head was situated about 1,020 feet above sea level and about 0.87 miles west of the earlier heading of the León Canal. This Peninsula Canal taps a southern slough, or arm, of the Salt River, that occurs in the SW4 of Sec 22 in T1N, R2E. Overall, it measures about 4.9 miles long. After leaving the Salt River floodplain, its slightly longer northern section extends 2.7 miles southwestward to the intersection of 59th and Southern avenues. Thereafter, its southern section continues southwestward by using the earlier 2.2-mile-long southern section of the León Canal.

Lambeye Canal occurs only about one-quarter mile west of the Peninsula Canal, and, interestingly, its general course was also plotted by Turney (1924a) in the early 1902s. In addition, Robinson (1901) has reconstructed its more detailed location, and Dunlevy (1902) suggests that some of its flow may actually have been that of a Horowitz Ditch. This canal is 3.4 miles long and was built by Joseph Lambeye in 1895. A brush and rock dam originally diverted Salt River water into its double head, which was situated about 1,012 feet above sea level and was located slightly more than one mile below that of Peninsula Canal. Lambeye Canal begins in the NW4 of Sec 28 in T1N,R2E and has been measured as being 6 feet deep and having a maximum crest width of 14 feet. The entirety of its main channel traverses only the lower edge of the stream terrace zone.

The Indian Canal was probably named for the fact that it extended far enough southward from the Salt River to actually irrigate farmlands of the Gila River Indian Community. Within the Laveen ADMP locale, however, it is only about 2.6 miles long (Robinson 1901; U.S. Geological Survey Reclamation Service 1904; Turney 1924a, 1929a; Midvale 1997). Dunlevy (1902) reveals that this fourth canal was built in 1887, and that its double head caught water that was diverted there by a 400-foot-long dam that was 4 to 5 feet high and 15 feet wide. That intake occurs in the floodplain of the SE4 of Sec 30 in T1N,R2E, at about 990 feet above sea level. Its main channel then extends a short distance southward, westward, and finally southwestward across the stream terrace, ending just northwest of the intersection of 75th Avenue and Baseline Road.

The Champion Living Canal or, simply, the Champion Canal, is known exclusively from legal information documented by Robinson (1901) and Dunlevy (1902). Accordingly, this fifth and last of the northern project canals is especially interesting for it does not head along the southern bank of the Salt River. Instead, it originates from a well located in a marsh in the NE4SW4 of Sec 26 in T1N,R2E. The main channel of the Champion Canal totals 3.5 miles long and was dug by Joseph Lambeye, Jean Orteig, and Dominique Claboret in 1893. All of it exists in the stream terrace zone. Its shorter eastern section (1.3 miles long) basically coincides with a segment of the prehistoric Laveen Canal and extends straight to a point located immediately southeast of the intersection of 43rd Avenue and Southern Avenue. Its western section then continues 2.2 miles due westward along the immediate south side of Southern Avenue and finally intersects other canal channels located there at 59th Avenue.

The sixth and final canal is also the single southern one and, unlike those of the previous five, most aspects of it have been elaborated in a HAER (Historic American Engineering Record) report written by Andersen (1990). As discussed therein, as well as by SRP (1997) itself, the Western Canal also receives its water from the Salt River, but only via the Tempe Canal and the South Canal, which actually begins at the Granite Reef Diversion Dam northeast of Mesa, Arizona. The purpose of this canal has been to transport water for agricultural, industrial, and municipal uses. It was dug during 1911-13 by both the U.S. Reclamation Service and the Western Canal Construction Company. It is now owned by the U.S. Bureau of Reclamation and is administered for them by SRP.

Contrary to popular knowledge, apparently, the Western Canal did originally extend farther west than 27th Avenue. Specifically, two terminal branches of it exist in the present assessment area. Both of them occur there in the old alluvial fan zone of the western South Mountains, and the alignment of both are clearly delineated in the USGS 7.5' quad map of Laveen, Arizona. The first or northern branch is 2.25 miles long and occupies parts of Sec 9, 10, and 16 in T1S,R2E. Importantly, it is also the earlier of the two and must predate April 27, 1919, for it is an explicit component of the GLO map of this township (Blout 1920). The southern branch of the Western Canal is slightly shorter, being only 1.85 miles long, and extends through parts of Sec 15, 21, and 22 of the same township.

COMMUNITY GROWTH AND DEVELOPMENT

This third cultural theme of the historic era is represented by 24 sites that, collectively, denote much functional variability. Without exception, they seem directly associated with the growth and development of all three local communities: Phoenix, Laveen and the Gila River Indian Community, and, accordingly, they occur in both the northern and southern part of the Laveen ADMP project area. All of them date to the Territorial and Statehood phases of the American Period, and their locations have previously been included in Figure 5 and Figure 12.

Three of these 24 sites are assumed to have been associated with the Statehood Phase growth of south Phoenix. The two earliest ones are adjacent houses, "House 1 and 2" in Figure 5, that Dames & Moore recently encountered along the west side of 51st Avenue. Both date to the 1920s and are located about one-quarter mile north of Southern Avenue (Shepard and Rogge 1997). The third site may have been a schoolhouse. Again, Figure 5 has located it as occurring just south of Southern Avenue and immediately west of 67th Avenue, in the SE4NE4NE4 of Sec 36 in T1N,R1E. It actually occurs on the USGS 7.5' quadrangle map of Fowler, Arizona, and, thus, it had to be in existence prior to 1952, at least. Stephen (2000) first found and initially recorded this site recently in 2000, and he reports that no physical evidence of it was then found during his intensive field survey of the Laveen 500 project area. Further, he uses local informant information to say that the remnant foundations of this education structure were probably leveled in 1983.

Sixteen other sites all occur closely associated with one another in a narrow band of land that is slightly less than 1.0 mile wide but stretches 3.3 miles along the eastern GRIC boundary. They are all believed to result, directly or indirectly, therefore, from different activities of the Gila River Indian Community. All of these sites are known exclusively from graphic information provided by Patrick (1900c), who has plotted them in Figure 10 as occurring in parts of Sec 7, 8, 17, 18, 20, and 21 of T1S,R2E. This combined area consists mainly of the valley plains, but it also includes smaller parcels of both the old and especially the Recent alluvial fan zones. Twelve of the concerned sites are undesignated dirt roads, and two other ones have been specifically labeled "Road to Salt River" and "Road to Gila Crossing," which occurs 3.0 miles south of the Laveen ADMP project area on 51st Avenue. In addition, an "Old Well" occurs just southeast of the intersection of 59th Avenue and Elliot Road, and "Ivy's Store" occurs immediately south of Estrella Drive and just west of 51st Avenue. Except for the latter, all 16 of these particular sites are believed to have been destroyed by historic cultivation. The present condition of Ivy's Store is unknown, as is its possible ownership by a John Ivy, who is briefly mentioned in the court proceedings of Dunlevy (1902:15).

The five remaining sites of this particular theme variously relate to the growth of Laveen itself. As detailed exclusively in the volume titled *Laveen Centennial History, 1884-1984*, edited by Betty Kruse Accomazzo (1984), Laveen existed as a small community for 29 years before it was actually named in honor of the Laveen family, who donated land for constructing a new school there in 1913. Walter E. Laveen was appointed the town's first postmaster on March 4, 1918. He was born in Graceville, Minnesota, and had two brothers (Roger R. and Frank) and three sisters (Freida, Esther, and Agnes). His family moved to the Salt River Valley and homesteaded all four corners of the intersection of Dobbins Road and 51st Avenue, which was then known simply as Lateral 17). Walter Laveen later married Cora D. Hudlou, a teacher at Laveen School, and they had one son, Walter Jr. After leaving the Laveen community, he was a Pinal County sheriff and the State Inspector of

Weights and Measures. He died in 1946 as the result of a one-car traffic accident.

All five of the concerned Laveen sites are situated in the valley plains and have been included in Figure 12. The first one is that of the original Laveen Post Office. As plotted by Blout (1920), it occurred immediately southeast of the 51st Avenue-Dobbins Road intersection, and it has to have predated April 27, 1919. Accomazzo (1984) states that it was actually located in the Laveen family store that, in 1924, was moved 100 feet to the east, in order to allow for the construction of the Laveen Country Store. This modern store is the second of the five Laveen sites. It, as well as three neighborhood houses, has recently been surveyed and initially recorded by Dames & Moore (Shepard and Rogge 1997). As such, it is a stuccoed building with metal frame windows and door. The three local houses were all built in the 1920s. The first one, House 3, is a wood frame and metal-roofed structure situated just north of Elliot Road along the western side of 51st Avenue. Both of the two other houses, House 4 and 5, are presently owned by the Ernest and Adele Cheatham family, who are longtime residents of Laveen. The former structure serves as their family residence; the latter is used primarily for storage.

MINING

This last cultural theme is represented by the last two sites of this entire Laveen ADMP assessment project. Both of them are located in the recent alluvial fan zone, and both are believed to have been camps, or temporary residences, that were established in conjunction with undertaking various mining activities along the western foothills of the South Mountains.

Very little information is known about the first site. In fact, Blout (1920) simply named it "W. Johnson's Camp" and plotted it as occurring on both sides of an undesignated dirt road in Section 16 of T1S,R2E. He also noted that indications of gold, silver, and copper were found in adjacent sections. This site must also predate 1919, therefore, and Figure 12 has relocated it just northwest of the intersection of 43rd Avenue and Estrella Drive. If not disturbed by modern residential development there, this camp may still exist in a rather undisturbed condition.

The second mining camp occurs slightly more than one mile southwest of W. Johnson's Camp, where it is situated just due east of the intersection of 51st Avenue and the GRIC boundary and has probably been destroyed by cultivation. It was originally recorded during the Southwest Loop Freeway survey, and Bostwick and Rice (1987:65, Fig.34) place it in the NW4SW4 of Sec 21 in T1S,R2E. They further describe it as occurring in the middle of a 76-acre homestead parcel that was awarded to a Harry W. Williamson on January 23, 1922. The four major features there include a tent clearing, a long bedrock mining trench, and two small trash scatters. The artifacts there postdate 1936 and, among others, include soda bottles, meat tins, domestic debris, and miscellaneous car parts.

SUMMARY EVALUATION AND PROJECT RECOMMENDATIONS

The Laveen Area Drainage Master Plan locale is an area of proposed flood control development by the Flood Control District of Maricopa County, and future construction there may involve different undertakings by both the State and the federal government. Encompassing nearly 12,000 acres, this locale is quite large and surrounds the rural community of Laveen and overlaps southwestern parts of Phoenix, Arizona. It includes seven major environmental zones that extend westward from the South Mountains and southward from the Salt River to the Gila River Indian Community.

A surprisingly high quantity of cultural resource investigations have previously been undertaken within the defined boundaries of this particular assessment locale. To date, in fact, 29 such studies are documented herein. They began in 1868 and continue today with this SAS study. Further, they have included four general kinds of research that have been completed during four general periods. Early cadastral surveys and, later, independent research endeavors have been especially valuable for they result in having documented the existence of numerous historic and prehistoric sites that have since been disturbed or totally destroyed. Professional contract archeological projects were initiated locally only in 1988. However, they have since resulted in the intensive field examination of 11 project areas that, very importantly, total 2,710.44 non-overlapping acres, or 22.87 percent of the entire Laveen ADMP project locale.

The above projects also result in having variously recorded 49 archeological sites. Interestingly, none of those sites include any remains of either the prehistoric Paleo-Indian (pre-5500 B.C.) and Archaic Indians (5500-200 B.C.), the later protohistoric era (A.D. 1450-1534), or the Spanish (1535-1821) and Mexican (1821-1848) periods and the pre-Territorial phase (1848-1863) of the Anglo-American period of the final historic era.

Instead, all 14 of the prehistoric sites, or 28.6 percent of the project resources, are Hohokam Indian remains situated across the northern assessment area. Collectively, they represent one unknown and two identifiable themes of major cultural activity: Canal Irrigation and Residential Living, that may have occurred during the late Pioneer, Colonial, Sedentary, and Classic periods of the entire Hohokam cultural sequence. The five prehistoric canals total about 12.4 linear miles and are directly associated with 1 presumed hamlet, 5 larger villages, and 3 large scatters of shell, bone, and mainly stone and ceramic artifacts.

The 35 historic sites (71.4%) date to the later part of the Territorial Phase (1863-1912) and, primarily, the Statehood Phase (1912-1950). Understandably, therefore, they are quite variable and represent four main cultural themes. Transportation is represented by three intersettlement roads, and Canal Irrigation is represented by the Indian, Lambeye, Peninsula, León, Champion, and Western

canals. Local Mining is much less known from only two camps. On the other hand, the greatest site typological variability reflects a major preoccupation with the Community Growth and Development of southwestern Phoenix, Laveen, and the Gila River Indian Community. The actual sites of this fourth theme include: designated and undesignated roads, a post office, an old well, a schoolhouse, residential homes, and a general store.

Four other important conclusions of this archeological assessment project need to be emphasized. First, the Laveen ADMP project locale could, mathematically speaking, contain as many as 214 prehistoric or historic sites. Second, it has been well documented that the modern surface of all of the known 14 prehistoric sites and all but 7 of the 35 historic sites have subsequently been destroyed, principally by the ongoing cultivation of field crops. The few exceptions are limited to the active Western Canal, two sites of unknown disturbance, and four of the Laveen structures, which are still being used today. Third, sites with destroyed surfaces can still contain significant subsurface archeological features. Fourth, information concerning all 49 of the project sites is based entirely upon data that were collected during either reconnaissance or intensive types of field surveys. That is, no major subsurface testing and no full-scale excavation work has ever been performed and reported from any site occurring wholly within the Laveen ADMP project locale.

Finally, therefore, Scientific Archeological Services recommends that the Flood Control District should carefully consider all relevant archeological compliance guidelines of the State and federal government when designing its final plans for any flood control facility whose construction will result in land disturbance. Two principal consequences of this recommendation should be obvious: 1) all areas and even narrower alignments of proposed flood control development should be intensively examined by a professional archeologist, and 2) all prehistoric, protohistoric, and historic sites there should be appropriately recorded and properly evaluated for their potential eligibility for nomination to either the Arizona Register or the National Register of Historic Places.

REFERENCES CITED

- Accomazzo, Betty Kruse
1984 Laveen Centennial History, 1884-1984. Laveen Community Council, Laveen.
- Advisory Council on Historic Preservation
1999 Protection of Historic Properties; Recommended Approach for Consultation on Recovery of Significant Information from Archaeological Sites; Final Rule and Notice (36 CFR 800). Federal Register 64 (95): 27,071-27,087, May 18.
- Aguila, Lourdes
1999 A Cultural Resources Survey for the Proposed El Paso Natural Gas 2039 Line Relocation/Removal, Southwest Phoenix, Maricopa County, Arizona. Ms., Archaeological Consulting Services, Ltd., Tempe.
- American Geological Institute
1974 Dictionary of Geological Terms. Anchor Press/Doubleday, Garden City, New York.
- Andersen, Fred
1990 Western Canal, South Side of Salt River, Mesa, Tempe and Phoenix, Maricopa County, Arizona. Historic American Engineering Survey No. AZ-22, Western Region National Park Service, San Francisco.
- Arizona Board of Regents
1991 Arizona State Museum: Rules Implementing A.R.S. § 15-1631 and 41-841, Et Seq., the Arizona Antiquities Act. In State of Arizona Administrative Rules and Regulations, Title 12, Chapter VIII, pp. 9-52. Arizona State Museum, Tucson.
- Arizona State Historic Preservation Office
1999 Draft Guidelines for the State Historic Preservation Act. Ms., State Historic Preservation Office, Phoenix.
- Arizona Land Resource Information System Division
2000 "Arizona Surface Management Responsibility: Arizona State Land Department and U.S. Bureau of Land Management." Medium-scale (1:100,000) map, Arizona State Land Department, Phoenix.
- Arizona State Museum
1994 The Arizona State Museum Procedures Manual For State Land Permits, Records Management/Repository Agreements, and Site Files Access. Arizona State Museum, Tucson.
- Becker, William H.
1926 Irrigation District Map, Salt River Valley & Vicinity. Archival map, Department of Archives and Manuscripts, Arizona Collection, University Libraries, Arizona State University, Tempe.

- Blout, Sidney E.
1920 Township No. 1 South, Range No. 2 East, Gila and Salt River Meridian, Arizona. General Land Office map examined and approved by the Surveyor General's Office in Tucson, Arizona, on October 16.
- Bostwick, Todd W.
1993 Albert Schroeder's Excavations and the 1938-1940 WPA Salt River Valley Stratigraphic Survey. In *Archaeology of the Pueblo Grande Platform Mound and Surrounding Features, Volume 1, Introduction to the Archival Project and History of Archaeological Research*, edited by Christian E. Downum and Todd W. Bostwick, pp. 193-224. Anthropological Paper 1, Pueblo Grande Museum, Phoenix.
- Bostwick, Todd W. and Glen E. Rice
1987 *A Cultural Resource Inventory For The Southwest Loop Freeway Project*. OCRM Report 66, Office of Cultural Resource Management, Arizona State University, Tempe.
- Brown, David E.
1973 "The Natural Vegetative Communities of Arizona" (1:500,000). Arizona Game and Fish Department, Phoenix.
- Burton, Susan S.
1977 *A Regional Archaeological Overview of the Phoenix Metropolitan Area, Maricopa County, Arizona*. Office of Cultural Resource Management, Arizona State University, Tempe.
- Castetter, Edward F. and Willis H. Bell
1951 *Yuman Indian Agriculture: Primitive Subsistence on the Lower Colorado and Gila Rivers*. University of New Mexico Press, Albuquerque.
- Crary, Joseph S.
1993 *Archaeological Survey of the Picacho to Toltec and GRIC to Phoenix Segments of the Santa Fe Pacific Pipeline, Pinal and Maricopa Counties, Arizona*. Ms., Archaeological Consulting Services, Ltd., Tempe.
- Davis, Arthur Powell
1917 *Irrigation Works Constructed By The United States Government*. John Wiley & Sons, Inc., New York.
- Dean, Jeffrey S.
1991 *Thoughts on Hohokam Chronology*. In *Exploring the Hohokam: Prehistoric Desert Peoples of the American Southwest*, edited by G. J. Gumerman, pp. 61-149. University of New Mexico Press, Albuquerque.
- Douglas, Diane L.
1994 *An Archaeological Survey for the Proposed Salt River 51st Avenue Quarry, Maricopa County, Arizona*. Ms., Archaeological Consulting Services, Tempe.

Dunbar, John O.

- 1904 Map of Phoenix and the Salt River Valley. Archival map, Department of Archives and Manuscripts, Arizona Collection, University Libraries, Arizona State University, Tempe.

Dunlevy, Elias F.

- 1902 U.S. Exhibit I, United States of America Versus N. W. Haggard et al. Unpublished court transcript, Salt River Project Archives, Phoenix.

Ezell, Paul H.

- 1983 History of the Pima. In *Handbook of North American Indians: Southwest 10*, edited by Alfonso Ortiz, pp. 149-160. Smithsonian Institution, Washington, D.C.

Fenneman, Nevin M.

- 1946 "Physical Divisions of the United States." Small-scale (1:7,000,000) map, U.S. Geological Survey, Washington, D.C.

Flood Control District of Maricopa County

- 2000 Scope of Work: Laveen Area Drainage Master Plan Project, Archeology. Ms., Contracting Branch of the Administration Division of Maricopa County, Phoenix.

Forbes, R. H.

- 1911 Irrigation In Arizona. Office of Experiment Stations Bulletin 25, U.S. Department of Agriculture, Government Printing Office, Washington.

Gilpin, Dennis and David A. Phillips, Jr.

- 1999 *The Prehistoric to Historic Transition Period in Arizona, Circa A.D. 1519 to 1692*. Arizona State Parks, Phoenix.

Gladwin, Winifred and Harold S. Gladwin

- 1929 *The Red-On-Buff Culture of the Gila Basin*. Medallion Paper 3, Gila Pueblo, Globe.

Greening, Gershom K.

- 1941 Climate of Arizona. In *Climate and Man: Yearbook of Agriculture*, pp. 761-772. U.S. Department of Agriculture, Washington, D.C.

Gumerman, George J. (ed)

- 1991 *Exploring the Hohokam: Prehistoric Desert Peoples of the American Southwest*. University of New Mexico Press, Albuquerque.

Gumerman, George J. and Emil W. Haury

- 1979 *The Prehistory: Hohokam*. In *Handbook of North American Indians: Southwest 9*, edited by Alfonso Ortiz, pp. 75-90. Smithsonian Institution, Washington, D.C.

- Harwell, Henry O. and Marsha C. S. Kelly
1983 Maricopa. In *Handbook of North American Indians: Southwest 10*, edited by Alfonso Ortiz, pp. 71-85. Smithsonian Institution, Washington, D.C.
- Hartman, George W.
1977 *Soil Survey of Maricopa County, Arizona: Central Part*. USDA Soil Conservation Service, Tucson.
- Haury, Emil W.
1976 *The Hohokam: Desert Farmers and Craftsmen*. University of Arizona Press, Tucson.
- Howard, Jerry B.
1991a Fowler Quadrangle Archaeology Map. A large-scale (1:24,000) overlay map on file at the Arizona State Historic Preservation Office, Phoenix.

1991b Laveen Quadrangle Archaeology Map. A large-scale (1:24,000) overlay map on file at the Arizona State Historic Preservation Office, Phoenix.

1991c Phoenix Quadrangle Archaeology Map. A large-scale (1:24,000) overlay map on file at the Arizona State Historic Preservation Office, Phoenix.
- Howard, Jerry B. and Gary Huckleberry
1991 *The Operation and Evolution of an Irrigation System: The East Papago Canal Study*. Publications in Archaeology 18, Soil Systems. Inc., Phoenix.
- Huckell, Bruce B.
1973 *Lake Pleasant II: A Preliminary Report on the Second Excavation at the Beardsley Canal Site, A Pioneer and Colonial Hohokam Site on the Lower Agua Fria River, Central Arizona*. Ms., Arizona State Museum, Tucson.

1984 *The Paleo-Indian and Archaic Occupations of the Tucson Basin: An Overview*. *Kiva* 49 (3-4): 133-145.
- Huckell, Linda
1981 *Test Excavations at Villa Buena (AZ T:12:9), A Hohokam Site on the Gila River Indian Reservation*. Western Archaeological Center, National Park Service, Tucson.
- Ingalls, G. P.
1868a Township No. 1 North, Range No. 1 East, Gila and Salt River Meridian. General Land Office map examined and approved by the Surveyor General's Office in San Francisco, California, on October 8.

1868b Township No. 1 North, Range No. 2 East, Gila and Salt River Meridian. General Land Office map examined and approved by the Surveyor General's Office in San Francisco, California, on October 9.

Ingalls, G. P. (cont)

1868c Township No. 1 South, Range No. 1 East, Gila and Salt River Meridian. General Land Office map examined and approved by the Surveyor General's Office in San Francisco, California, on October 23.

1868d Township No. 1 South, Range No. 2 East, Gila and Salt River Meridian. General Land Office map examined and approved by the Surveyor General's Office in San Francisco, California, on October 29.

Kamilli, Robert J. and Stephen M. Richard (eds)

1998 "Geologic Highway Map of Arizona." Small-scale (1:1,000,000) map, Arizona Geological Society and Arizona Geological Survey, Tucson.

Kelley, Audie R.

1939 AZ T:12:11 PG and AZ T:12:14 PG. Unpublished site information from the Salt River Valley Stratigraphic Survey Project, Pueblo Grande Museum, Phoenix.

Mabry, Jonathan B.

1998 Paleoindian and Archaic Sites in Arizona. Arizona State Parks, Phoenix.

McGimsey, Charles R., III and Hester A. Davis (eds)

1977 The Management of Archeological Resources: The Airlie House Report. Special publication of the Society for American Archaeology.

McGuire, Randall H. and Michael B. Schiffer (eds)

1982 Hohokam and Patayan: Prehistory of Southwestern Arizona. Academic Press, New York.

Midvale, Frank J.

n.d.a An undated and untitled intersite map of the USGS 7.5' quadrangle area of Fowler, Arizona. The Frank J. Midvale Archeological Collection of 1920-1971, Department of Anthropology, Arizona State University, Tempe.

n.d.b An undated and untitled intersite map of the USGS 7.5' quadrangle area of Laveen, Arizona. The Frank J. Midvale Archeological Collection of 1920-1971, Department of Anthropology, Arizona State University, Tempe.

1966 "The Prehistoric Irrigation of the Salt River Valley." A copyrighted map, Department of Archives and Manuscripts, Arizona Collection, University Libraries, Arizona State University, Tempe.

1968 Prehistoric Irrigation in the Salt River Valley, Arizona. The Kiva (34 (1):28-32.

- Midvale, Frank J. (cont)
1997 Frank Midvale Papers (MSS 147), 1865-1972. Department of Archives and Manuscripts, Arizona Collection, University Libraries, Arizona State University, Tempe.
- Morris, Donald H.
1969 Red Mountain: An Early Pioneer Period Hohokam Site in the Salt River Valley of Central Arizona. *American Antiquity* 34 (1):40-53.
- National Park Service
1977 Recovery of Scientific, Prehistoric, and Archaeological Data: Methods, Standards, and Reporting Requirements: Proposed Guidelines (36 CFR 66). *Federal Register* 42 (19): 5374-5383, January 28.
- Owens, Jeffrey D.
1995 A Cultural Resources Survey of 59th Avenue Between Southern Avenue and Dobbins Road, Phoenix, Maricopa County, Arizona. Technical Report 95-06, Soil Systems. Inc., Phoenix.
- Patrick, Herbert R.
1900a Township No. 1 North, Range No. 1 East, Gila and Salt River Meridian, Arizona. General Land Office map examined and approved by the Surveyor General's Office in Tucson, Arizona, on October 16.
1900b Township No. 1 South, Range No. 1 East, Gila and Salt River Meridian, Arizona. General Land Office map examined and approved by the Surveyor General's Office in Tucson, Arizona, on October 16.
1900c Township No. 1 South, Range No. 2 East, Gila and Salt River Meridian, Arizona. General Land Office map examined and approved by the Surveyor General's Office in Tucson, Arizona, on October 16.
1903a "Map of Salt River Valley, Showing the Location of Ancient canals and Cities." Copyrighted map, Phoenix Free Museum, Phoenix.
1903b *The Ancient Canal Systems And Pueblos Of The Salt River Valley*. Phoenix Free Museum Bulletin 1, Phoenix.
- Peru, Donald V.
1984 *New River: A Lithic Industry of Maricopa County, Arizona*. Occasional Paper 1, Arizona Archaeological Society, Phoenix.
- Péwé, Troy L.
1987 Terraces of the Lower Salt River Valley in Relation to the Late Cenozoic History of the Phoenix Basin, Arizona. In *Guidebook to the Geology of Central Arizona*, edited by

Péwé, Troy L. (cont)

D. M. Burt and T. L. Péwé, pp. 1-45. Arizona Bureau of Geology and Mineral Technology Special Paper 2, Tucson.

Robinson, H. F.

1901 Map Showing Peninsula, Horowitz and Champion Ditches, Maricopa County, Arizona. Archival map, Salt River Project Archives, Phoenix.

Rodgers, James B.

1993 The Broadway Road Archeological Assessment Project of Phoenix and central Maricopa County, Arizona. Contract Archeological Series 992-9, Scientific Archeological Services, Phoenix.

1998 An Archeological Inventory of the 43rd Avenue Storm Water Drainage System in Laveen and Phoenix, Arizona. Contract Archeological Series 992-9, Scientific Archeological Services, Phoenix.

Russell, Frank

1975 The Pima Indians. The University of Arizona Press, Tucson.

Salt River Project

1997 SRP Canals. Salt River Project, Phoenix.

Sayles, E. B. and Ernst Antevs

1941 The Cochise Culture. Medallion Papers 29, Gila Pueblo. Globe.

Schroeder, Albert H.

1940 A Stratigraphic Survey of Pre-Spanish Trash Mounds of the Salt River Valley. Unpublished master's thesis, Department of Anthropology, University of Arizona, Tucson.

Shepard, Kristopher S. and A. E. Rogge

1997 Lower Buckeye Road to Dusty Lane: A Cultural Resource Inventory of 51st Avenue Through Laveen, Arizona. Ms., Dames & Moore, Phoenix.

Sires, Earl W.

1984 Excavations at El Polvorón (AZ U:15:59). In *Hohokam Archaeology Along the Salt-Gila Aqueduct, Central Arizona Project: Prehistoric Occupation of the Queen Creek Delta*, edited by Lynn S. Teague and Patricia L. Crown, pp. 221-354. Archaeological Series 150 (4). Arizona State Museum, Tucson.

Spier, Leslie

1933 *Yuman Tribes of the Gila River*. University of Chicago Press, Chicago.

Stephen, David V. M.

- 2000 Preliminary Report for Laveen 500 Project. Ms., Professional Archaeological Services and Technologies, Tucson.

Telles, Carol

- 1993 Cultural Resource Survey for Deed of Release of Ditch Easement. Ms., U.S. Bureau of Reclamation Arizona Project Office, Phoenix.

Turney, Omar A.

- 1922a When the Salt River Valley Was Watered by a Great Prehistoric System of Canals. *The Arizona Republican*, Phoenix.
- 1922b "Map of Prehistoric Irrigation Canals" (first edition). Copyrighted map, Department of Archives & Manuscripts, Arizona Collection, University Libraries, Arizona State University, Tempe.
- 1924a "Map of Prehistoric Irrigation Canals" (third edition). Copyrighted map, Department of Archives & Manuscripts, Arizona Collection, University Libraries, Arizona State University, Tempe.
- 1924b The Land of the Stone Hoe. *The Arizona Republican*, Phoenix.
- 1929a "Map of Prehistoric Irrigation Canals" (fifth edition). Copyrighted map, Department of Archives & Manuscripts, Arizona Collection, University Libraries, Arizona State University, Tempe.
- 1929b *Prehistoric Irrigation in Arizona*. Office of the Arizona State Historian, Phoenix.

U.S. Army Corps of Engineers

- 1990 Processing of Department of the Army Permits: Procedures for the Protection of Historic Properties; Final Rule (33 CFR 325). *Federal Register* 55(126): 27000-27007, June 29.

U. S. Geological Survey Reclamation Service

- 1904 Salt River Project, Salt River Valley Arizona, Topographic and Irrigation Map. Archival map, Department of Archives & Manuscripts, Arizona Collection, University Libraries, Arizona State University, Tempe.

Walsh-Anduze, Mary-Ellen

- 1999 Cultural Resources Survey of Nearly 56 Acres at 43rd Avenue and Baseline Road, Maricopa County, Arizona. Technical Report 99-05, Northland Research, Inc., Tempe.

Whalen, Norman M.

- 1971 Cochise Culture Sites in the Central San Pedro Drainage, Arizona. Ph.D. dissertation, Department of Anthropology, University of Arizona, Tucson.

- Wilson, Eldred D., Richard T. Moore, and H. Wesley Peirce
1957 "Geologic Map of Maricopa County, Arizona." Medium-scale (1:375,000) map, Arizona Bureau of Mines, University of Arizona, Tucson.
- Young, Holly
1988 Requirements for Processing of Archaeological Project Collections. Arizona State Museum, Tucson.
- Zarbin, Earl
1980 Salt River Valley Canals: 1867-1875. Salt River Project, Phoenix.
1984 Roosevelt Dam: A History To 1911. Salt River Project, Phoenix.
1986 Salt River Project: Four Steps Forward, 1902-1910. Salt River Project, Phoenix.
1997 Two Sides of the River: Salt River Valley Canals, 1867-1902. Salt River Project, Phoenix.