



DATA COLLECTION REPORT

VOLUME DC-A TO DC-C



Entellus



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**DATA COLLECTION -
ENVIRONMENTAL OVERVIEW**

VOLUME DC-A

Contract FCD 99-44

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ENVIRONMENTAL OVERVIEW

FCD 99-44

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May 2001

**Glendale/Peoria ADMP Update
FCD 99-44
Environmental Overview**

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**Glendale/Peoria ADMP Update
FCD 99-44**

ENVIRONMENTAL OVERVIEW

DC-A-1: INTRODUCTION

Logan Simpson Design Inc. is under contract to Entellus, Inc. who has been contracted by the Flood Control District of Maricopa County (District) to provide engineering services necessary to update the Glendale/Peoria Area Drainage Master Plan (ADMP). Figure 1 shows the study area boundaries. Current drainage facilities in the study area, provided mainly by private developers, often do not meet the requirements as developed in the original ADMP. Private developers have conducted independent hydrologic studies and made drainage improvements to protect their property. These changes alter the overall drainage in the region and result in increased downstream concerns. The Glendale/Peoria ADMP will identify current drainage problems and develop cost-effective solutions to alleviate known and potential flooding problems.

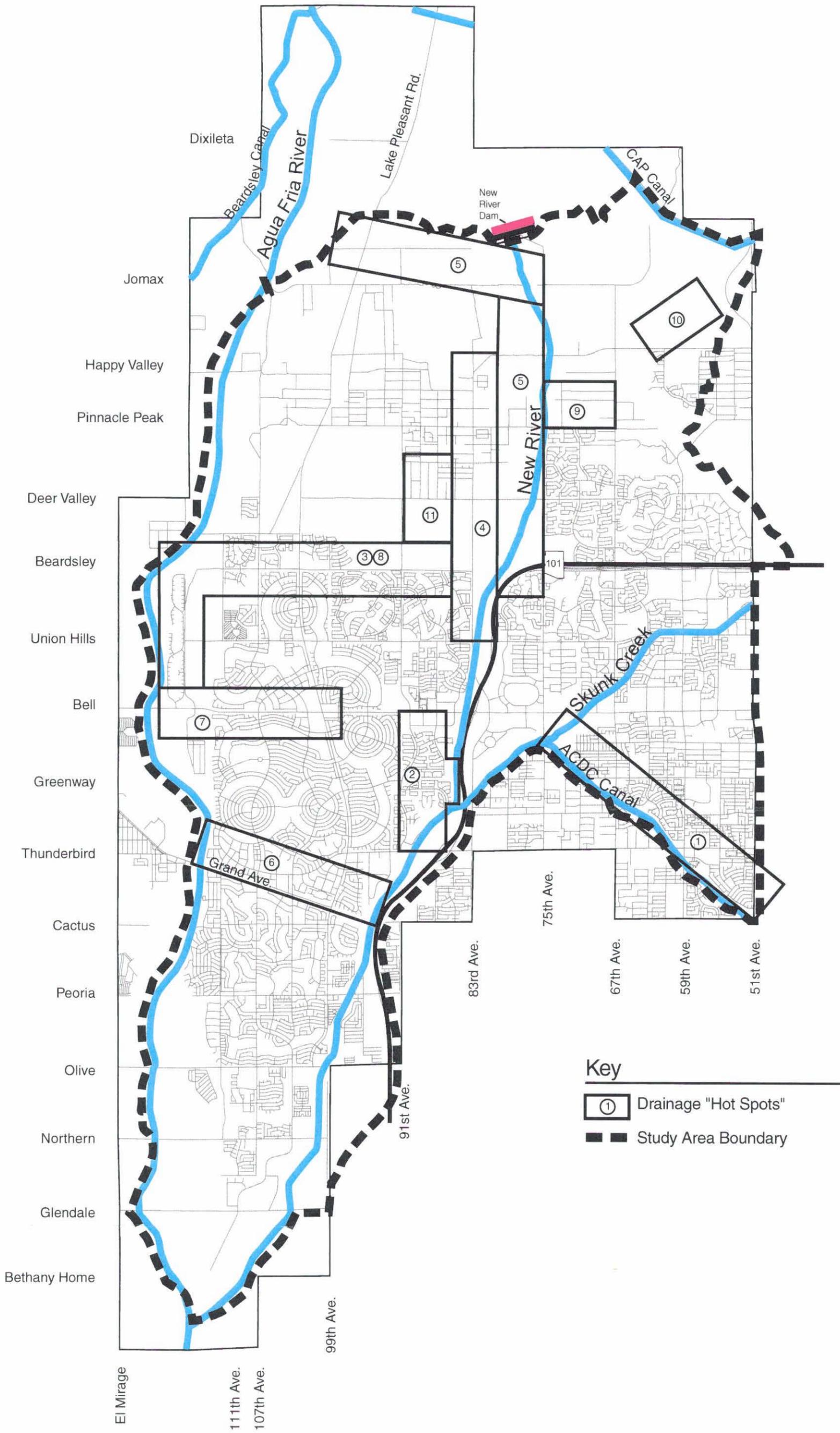
DC-A-2: STUDY PURPOSE AND NEED

The purpose of the project is to update the existing Glendale/Peoria ADMP study, completed in May 1987, by quantifying the extent of flooding problems and developing alternative solutions to those problems. This update will also quantify eleven (11) ("hot spot") drainage problems within the study area (Figure 1) and develop a plan to control runoff to prevent flood damage to existing urban development within the study area. Since current (engineering) models do not accurately reflect the conditions of the study area, this study is necessary to update the hydrology to meet current District standards. While this Environmental Overview focuses on establishing the baseline characteristics for the natural and cultural environment of the study area, much of the future work under this study will focus on solving drainage conditions within the hot spots.

DC-A-3: NATURAL, PHYSICAL, AND CULTURAL ENVIRONMENT

For the purposes of this document, the limits of the environmental overview inventory were limited to the Glendale/Peoria ADMP study area boundary, except for the hazardous material investigations and visual analysis. The hazardous material investigation focused on a limited portion of the study area that encompassed the "hot spot" boundaries. The visual conditions inventory considered the seen area or viewshed which would, in some areas, extend beyond the ADMP Update study area boundary.

This report describes the existing natural, physical and cultural environment within the study area in terms of potential habitat for Threatened, Endangered and sensitive species; visual and cultural resources; and hazardous materials. The inventory of the natural, physical, and cultural environment of the study area consisted of gathering existing resource data and information from various local, State, and Federal regulatory agencies having jurisdiction within the project area. These agencies include the Arizona Department of Environmental Quality (ADEQ), Arizona Game and Fish Department (AGFD), Arizona State Museum (ASM), State Historic Preservation Office (SHPO), US Fish and Wildlife Service (USFWS), and Maricopa County, in addition to the municipalities of Glendale and Peoria. The characteristics of the physical and natural environment were also identified based on a several reconnaissance/field surveys of the study area.



Key

- ① Drainage "Hot Spots"
- Study Area Boundary

Figure DC-A-I. Study Area

Regional and Local Setting:

The Phoenix Metropolitan Area, which includes the Glendale/Peoria ADMP study area, lies within Arizona's Basin and Range geologic province. The Basin and Range province is characterized by rocky mountain ranges that alternate with desert basins as the primary landform organization. Within the northern portion of the study area, several small, unnamed mountains and a few named mountains such as Ludden Mountain and the Hedgepeth Hills of Thunderbird Park are characteristic of the province landform. In the southern end of the study area, off-site landforms such as the White Tank Mountains and the Estrella Mountains, visible to the west and south respectively, are also larger formations characteristic of the Basin and Range province.

The study area is located in the northwestern portion of the Phoenix Metropolitan Area, primarily within the Glendale and Peoria corporate limits and encompassing the Sun City Community (Figure 2). The perimeter of the study area also overlaps lands within unincorporated Maricopa County and the cities of Phoenix, Surprise, El Mirage and Youngtown. The entire study area lies within the jurisdiction of Maricopa County. Lands within the study area are generally privately owned, except for several large tracts of State land located north of Beardsley Road. Elevations within the study area range from approximately 1450 feet above mean sea level at the Glendale Water Treatment Plant at 63rd Avenue/Jomax Road to 1025 feet above mean sea level at the New River confluence with the Agua Fria River. Minor elevational differences within the study area provide panoramic views of distant vistas, adjacent landforms, undeveloped desert areas and urban development.

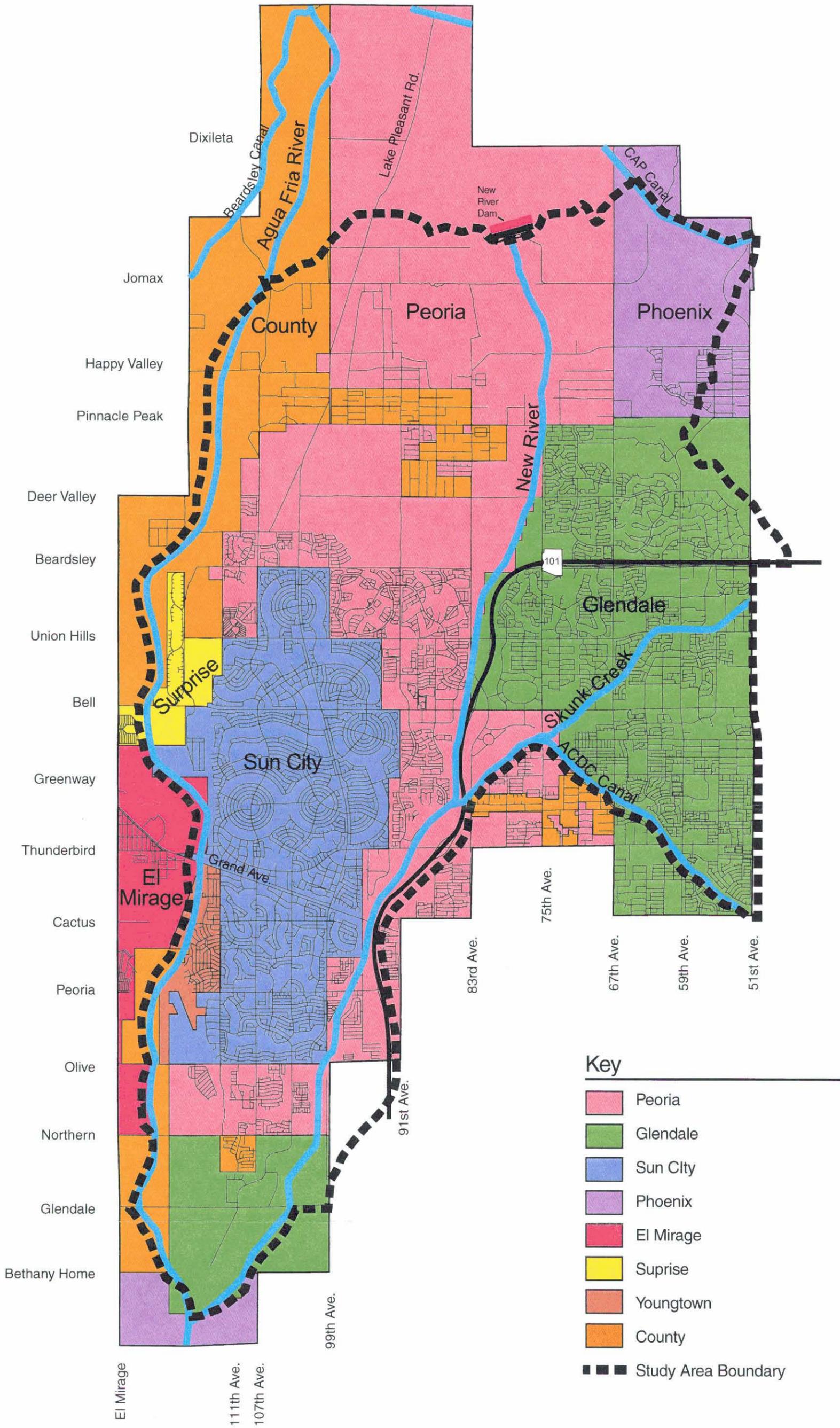
Prior to urbanization, the study area was vegetated by the Sonoran Desertscrub vegetative community. The Sonoran Desertscrub is characterized by Saguaro (*Carnegiea gigantea*), Bursage (*Ambrosia deltoidea*), Creosotebush (*Larrea tridentata*), Ocotillo (*Fouquieria splendens*), Prickly Pear/Cholla (*Opuntia* spp.), Palo Verde (*Cercidium* sp.), and Ironwood (*Olneya tesota*). The Desertscrub plant community and xeriparian vegetation associated with the Agua Fria River, New River, and Skunk Creek have been substantially eliminated by agricultural (initially) and urban development (later) in the southern two thirds of the study area. While the northern one third of the study area is dominated by desertscrub, ornamental plants and agricultural crops are the prevalent vegetative species in the study area.

DC-A-4: LAND USE AND TRANSPORTATION ENVIRONMENT

Information from affected municipalities and planning organizations were utilized in preparing the land use and transportation environment.

Existing Land Use:

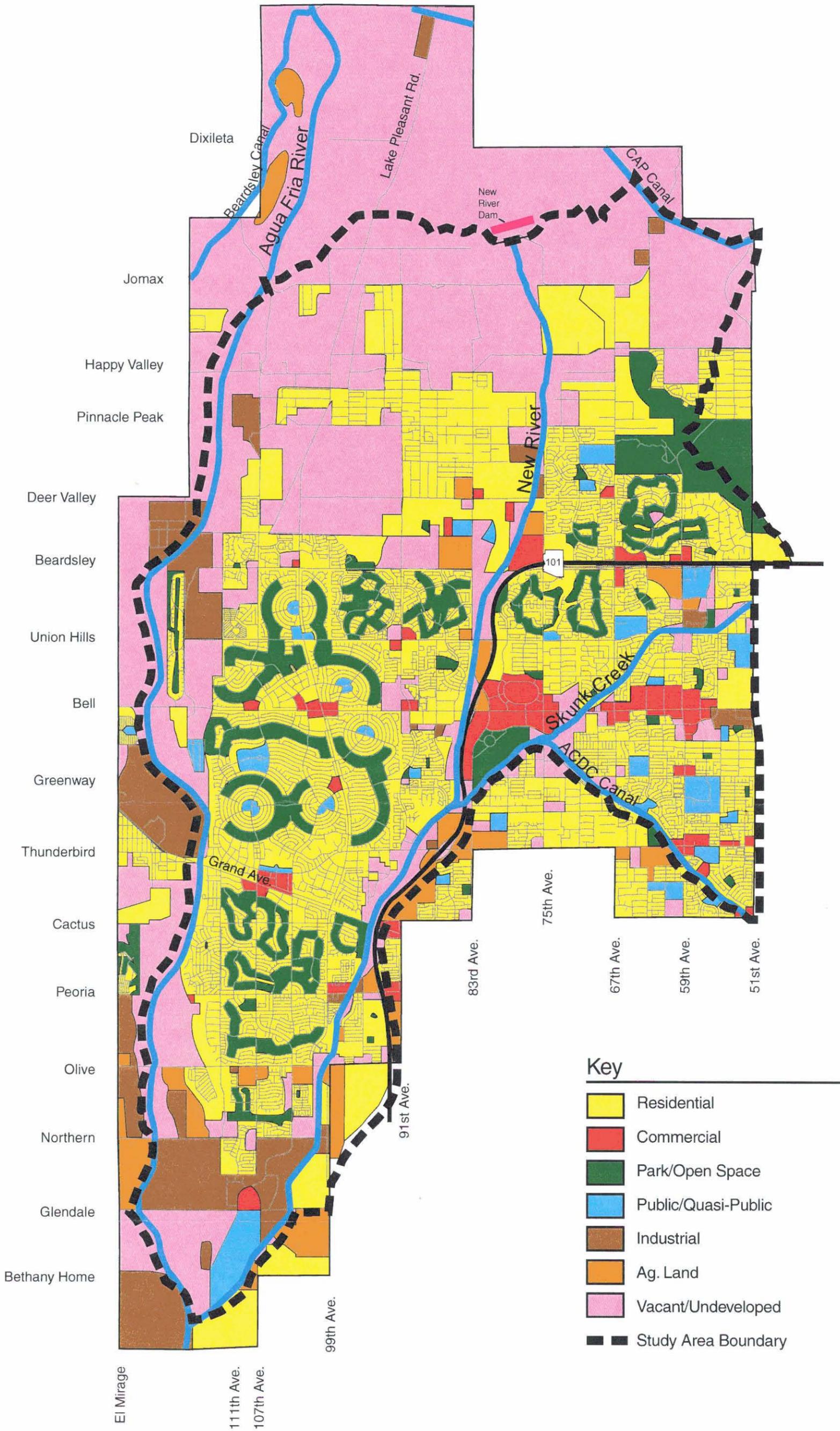
A "windshield survey" of the study area identified the existing land uses in the general categories of residential, commercial, agriculture, park/open space, industrial, public/quasi-public, and vacant (Figure 3). A majority of lands north of Beardsley Road are undeveloped natural desert (vacant). Residential lands and ancillary commercial functions, predominate the existing land uses in the southern two thirds of the study area. Industrial land uses are located in the very southernmost study areas near the confluence of the Agua Fria and New Rivers.



Key

	Peoria
	Glendale
	Sun City
	Phoenix
	El Mirage
	Suprise
	Youngtown
	County
	Study Area Boundary

Figure DC-A-2. Municipal Boundaries



Key

	Residential
	Commercial
	Park/Open Space
	Public/Quasi-Public
	Industrial
	Ag. Land
	Vacant/Undeveloped
	Study Area Boundary

Figure DC-A-3. Existing Land Use

General Plan Land Use:

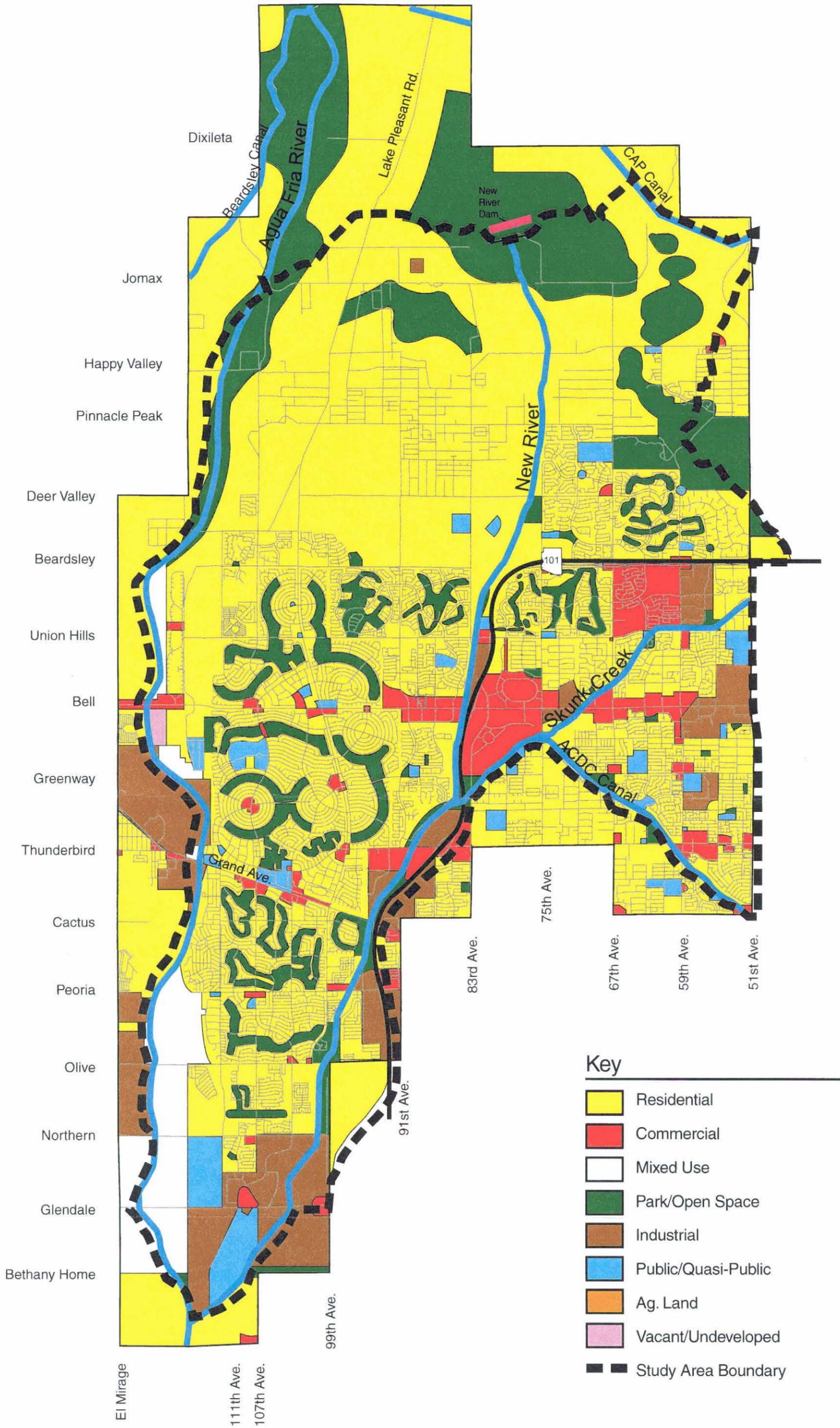
Adopted general plans from the respective municipalities of Glendale and Peoria identify the general planned land uses within the Glendale/Peoria ADMP study area. These land uses are divided into the categories of residential, commercial, mixed use, park/open space, general industrial, public/quasi-public, agricultural land, and vacant/undeveloped (Figure 4). As planned, almost all of the vacant/open space, particularly in the northern portion of the study area, is anticipated to convert to residential uses in the future. In the north, only the lands associated with natural landforms, such as Thunderbird Park, the rivers, and smaller unnamed mountain formations will not be converted into residential uses. The Lake Pleasant Road corridor will become residential in character according to the planning documents reviewed for this analysis, particularly after construction of a large resort development near the Jomax Road crossing.

Within the southern two thirds of the study area, commercial development is expected to increase at the Arrowhead Ranch area, at Arrowhead Towne Centre Mall (including along Bell Road east and west of the Mall) and along Thunderbird Road near the intersection with the Loop 101 Freeway. Industrial uses will expand within the study area in association with light industrial activities such as business parks. Some of these business parks in the central portion of the study area are associated with educational facilities such as Midwestern University and the American Graduate School of International Management. South of Thunderbird Road, industrial activities will convert agricultural lands into more intense productivity uses. Agriculture lands along the Loop 101 corridor and at the southernmost tip of the study area will be the primary conversion locations. Public/Quasi-public uses (Peoria Landfill and Glendale Municipal Airport) will utilize large areas of the remaining lands south of Olive Avenue.

Transportation Land Use Links and Nodes:

Figure 5 depicts the existing and planned intermodal transportation, traffic generators, and gathering spaces (nodes) within the study area. The information shown on the map was generated using the General Plans for each of the affected cities and several planning studies that have been recently been conducted (*Peoria Rivers Master Plan, Peoria Trails Master Plan, City of Peoria Parks, Recreation & Open Space Master Plan and the West Valley Recreation Corridor Design Concept Report*) by local cities and the District. Existing and planned multi-modal transportation links have been identified and include existing and planned multi-use pathways, existing and planned equestrian trails, existing and planned bike lanes/trails, planned pedestrian bridges/underpasses, existing transit routes, existing and proposed Loop 101 Freeway segments, proposed Loop 303, and planned routes such as the Lake Pleasant Parkway. Major utility corridors are also shown on Figure 5.

In general, multi-use trails available to the public are few, mostly associated with the Grand and ACDC (Thunderbird Paseo) canals. Intermittent segments of multi-use trail exist along Skunk Creek. As a result of the recent recreation planning during the studies noted above, a multi-use trail is planned along the unfinished segments of Skunk Creek, connecting into Thunderbird Paseo and extending southward along the east side of the New River to the Grand Canal intersection (and beyond to the Salt River). A multi-use trail is proposed to be built along Grand Avenue then heading northward along the Agua Fria River to connect into the Lake Pleasant Regional Park approximately 8 miles north of the study area's northern boundary. Another multi-use trail system is planned for north of Thunderbird Park to connect to the CAP and the trails further northward. An east-west multi-use trail is planned along Olive Avenue in the southern portion of the study area.



Key

	Residential
	Commercial
	Mixed Use
	Park/Open Space
	Industrial
	Public/Quasi-Public
	Ag. Land
	Vacant/Undeveloped
	Study Area Boundary

Figure DC-A-4. Planned Land Use

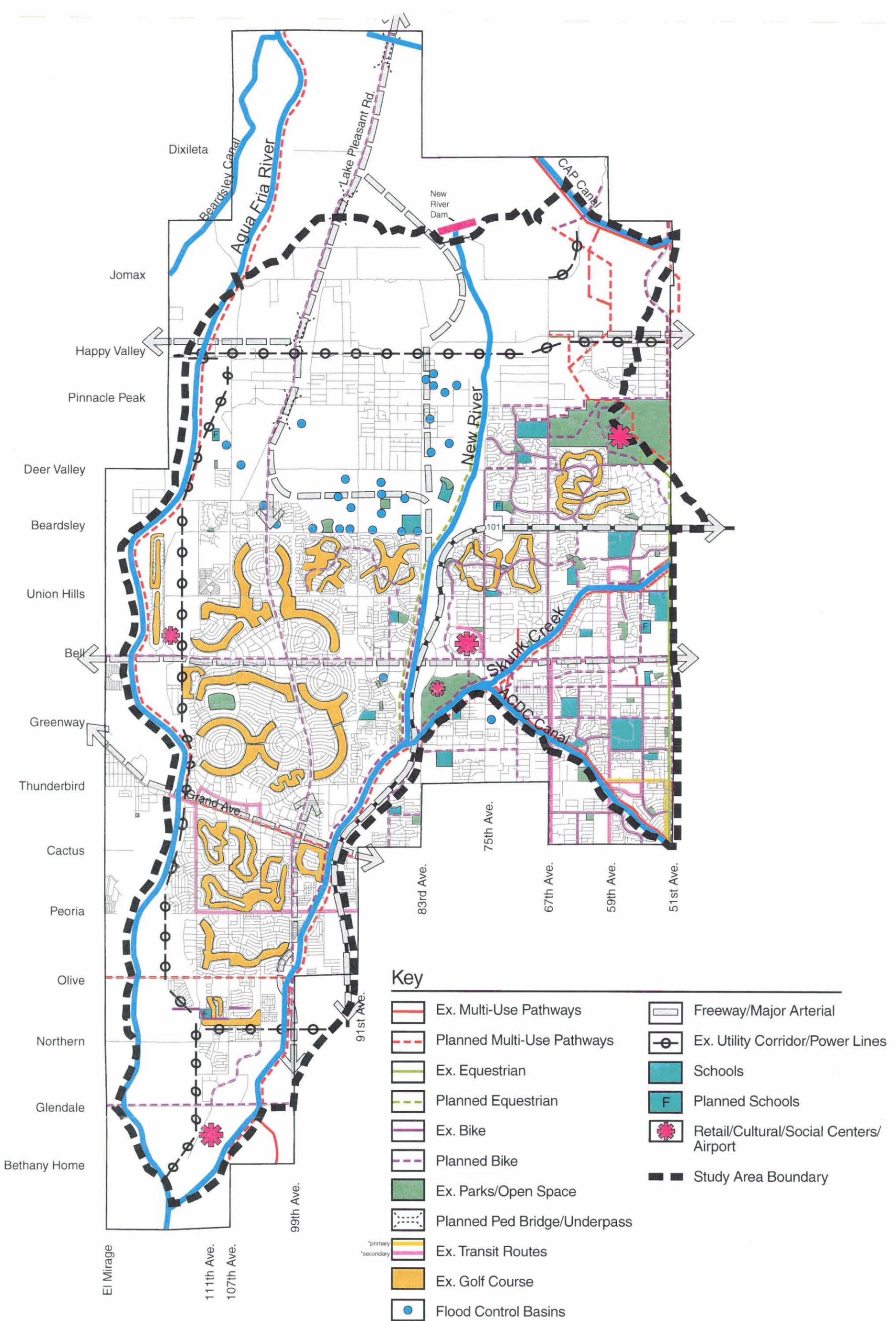


Figure DC-A-5. Transportation, Land Use, Links & Nodes

No equestrian trails have been identified in the study area, except for a single trail along 51st Avenue at the eastern study area boundary. Proposed equestrian trails include an extension of the 51st Avenue trail into Thunderbird Park and development of a trail along the New River (from the confluence with Skunk Creek to Pinnacle Peak Road). Bikeways are plentiful in the eastern portion of the study area, mostly associated with major neighborhood and arterial streets; additional trails are planned in this portion of the study to further improve the connectivity of the network. South of Olive Avenue, several bike trails are planned, including one east-west route along Glendale Avenue. Public transit routes are limited to the southeast and southcentral portions of the study area (east of Arrowhead Towne Centre Mall and in the Sun City area near Grand Avenue).

Existing parks/open spaces, and existing golf courses, flood control basins, utility corridor, schools, and retail/cultural/social centers have been shown on Figures 5 and 6, as appropriate. Significant parks both existing and planned within the study area include: the Thunderbird Paseo (ACDC Canal), Thunderbird Park, and the Peoria Sports Complex. While not separate parks or open spaces in the traditional sense, the recent recreation planning conducted by District and the city of Peoria emphasizes utilization of the Agua Fria River, New River, and Skunk Creek corridors for more dispersed recreation and trail uses than is currently taking place. These are significant recreation resources within the study area.

Environmental Justice/Title VI:

Under Title VI of the Civil Rights Act of 1964, Federal agencies are required to ensure that no person is excluded from participation in, denied benefits of, or subjected to discrimination under any program or activity receiving Federal financial assistance on the grounds of race, color, religion, national origin, sex, age, or handicap. In addition, Executive Order 12898, Federal Actions to address Environmental Justice in Minority and Low-Income Populations, signed by President Clinton on February 11, 1994, requires Federal agencies to identify and address as appropriate, disproportionately high and adverse effects on minority and low-income populations. While the anticipated activities recommended by this study are not expected to utilize Federal monies and the District is not a Federal agency, this analysis was conducted to ensure that the current activities also considered this regulation.

A comparison of the 1990 Census data of the study area (30 census tracts) to similar data for Maricopa County is shown in Table 1. While partial data is available from the 1995 Census and the TAZ (Traffic Analysis Zones from MAG) sources, neither of these is complete enough to establish the baseline population characteristics for the study area, therefore the 1990 Census data was used in the analysis presented herein. Analysis of the 1990 data reveals that the predominance of study area residents are white, non-working citizens over age 60 who are less likely than other Maricopa County citizens to be below the poverty line. The study area also contains fewer minority populations than the remainder of Maricopa County. Residents have greater mobility disabilities and fewer female heads of households are located in the study area than are found in Maricopa County. A review of the 1995 census data indicates that the Hispanic and elderly populations in Maricopa County rose substantially from 1990 to 1995(>25%); it is reasonable to conclude that this trend would also apply to the study area population. As a result of this analysis, no Title Vi/Environmental Justice issues are anticipated for activities in study area.

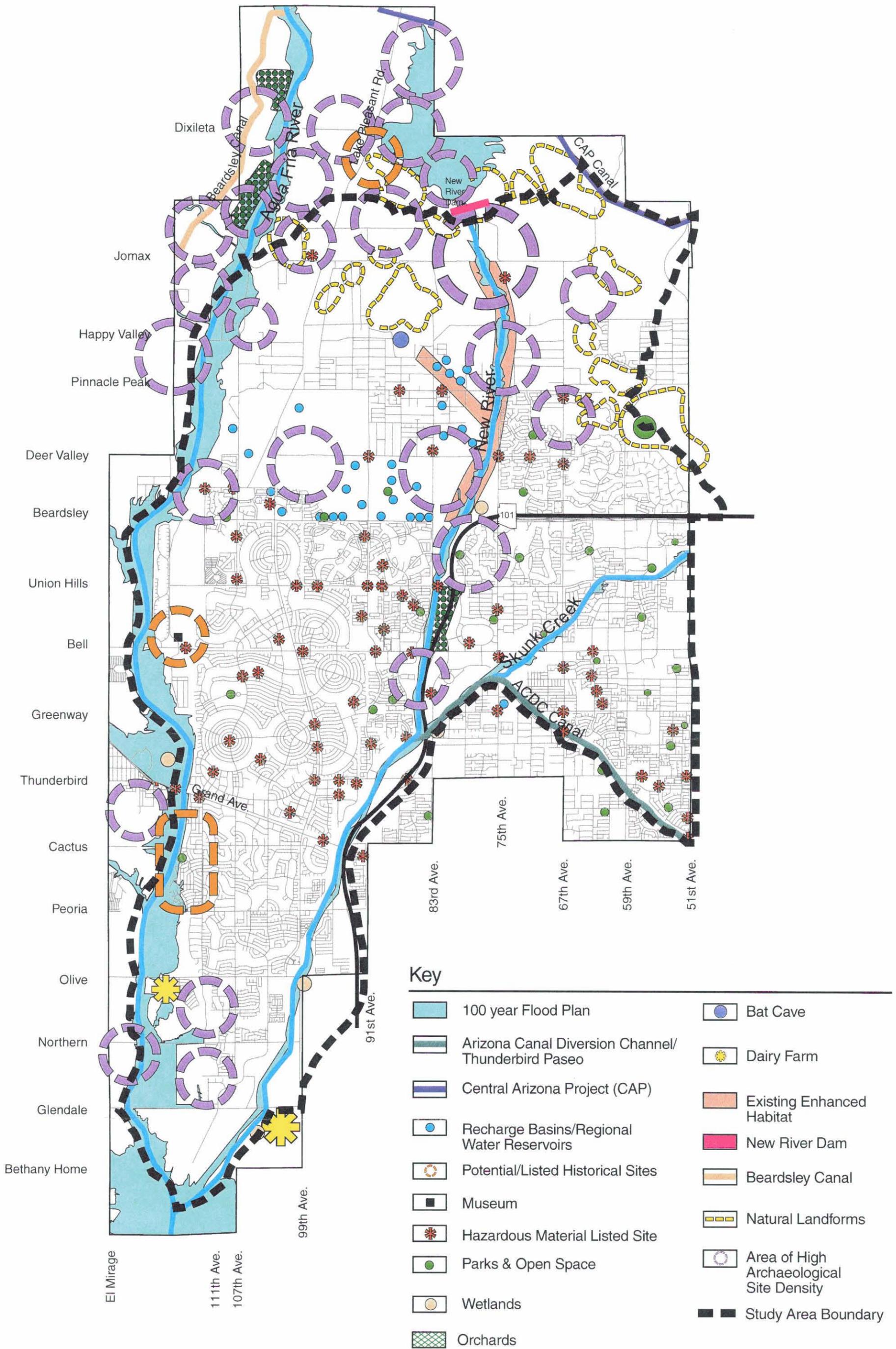


Figure DC-A-6. Natural, Physical, & Cultural Features

Table DC-A-1. Comparative 1990 Populations of Study Area Tracts/Maricopa County

<u>Characteristic</u>	<u>Study Area</u>	<u>Maricopa County</u>
Population	113,834	2,122,101
% of Civilian Population	36.4%	50.5%
% Employed	34.6%	47.4%
% Unemployed	2.8%	3.1%
Elderly (>60 yrs)	41.2%	16.4%
Below Poverty	6.7%	10.3%
Mobility Disabled	8.9%	4.2%
Female Head of Household	5.3%	9.9%
Race - White	90.5%	84.8%
Race - African American	1.1%	3.5%
Race - Native American	0.4%	1.8%
Race - Asian	1.2%	1.6%
Race - Other	6.8%	8.3%
Race - Hispanic	10.5%	16.0%

Cultural Resources:

Information for the Class I cultural resource inventory was gathered from archaeological survey and site records at the Arizona State Museum (ASM), the State Historic Preservation Office (SHPO), Pueblo Grande Museum (PGM), and at the Department of Anthropology on the Arizona State University (ASU) campus. The National Register of Historic Places (NRHP) was consulted to determine if properties or districts listed on the NRHP were located in the study area. Plats from the Government Land Office (GLO) on file at the Bureau of Land Management (BLM) were consulted to locate historically-recorded properties or features (roads, homesteads, and canals). Locations of high archaeological densities are illustrated in Figure 6. For this Class I inventory, information was compiled not only for the ADMP study area, but for lands up to one mile outside of the ADMP's boundary. This was done because SHPO typically expects discussions about undertakings potentially impacting historic properties to include summaries of related properties up to one mile away from the undertaking's area of potential effect (APE).

A total of 151 cultural resource surveys have been conducted in the study area. Seventy-nine (79) of these (52%) have been carried out during the last ten years (1991-2000). This time range is important for ADMP planners. It is important to understand that when previous cultural resource surveys for a particular study area are evaluated by SHPO, if these are equal to (or greater than) ten years old, SHPO reserves the right to require the area be re-surveyed. The SHPO will sometimes require re-surveying based on the need to comply with the current standards. Therefore, it is likely that at least half of the study area surveys will need to be redone to be acceptable to SHPO, particularly if cultural resources are affected by future drainage improvements.

The Class I inventory for the study area resulted in the identification of 309 sites dating to the prehistoric and historic eras. In addition, portions of three archaeological districts, already a part of the NRHP, are present in the study area (Skunk Creek, Calderwood Butte, and the New River Archaeological Districts) (Figure 9). A total of 28 sites (9.0%) in the project area have been determined eligible for nomination to the NRHP. Only four sites (1.0%) have been determined as potentially eligible for the Register. Of the total number of

sites recorded, 277 (90%) have been documented in detail, but determinations of eligibility have not been made. This relates to the fact that most historic properties in the study area were recorded either before the NRHP was established, or before archaeologists were directed by the SHPO to make NRHP determinations as part of their standard survey protocols. More important, it means that re-examination of these sites using contemporary standards for evaluating historic properties would likely result in determining that most sites are at least potentially eligible for the Register. In the case of sites already included in NRHP districts, these sites will have to be re-evaluated in the future in order to determine if these can be classified as contributing or non-contributing features to the Archaeological Districts.

Hazardous Materials Considerations:

A search of environmental records for the Glendale/Peoria ADMP was conducted by Environmental Data Resources, Inc., (EDR) Southport, Connecticut, including the "hot spots" being evaluated for drainage improvements a part of this study. The listings found in the search area boundaries are shown in Figure 6. Databases that were consulted include: National Priority List (NPL), NPL Deletions (Delisted NPL), Resource Conservation and Recovery Information System (RCRIS-TSD), Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS and CERC-NFRAP), Corrective Action Report (CORRACTS), Directory of Solid Waste Facilities (SWF/LF), Water Quality Assurance Revolving Fund (AZ Wqarf), Department of Defense Sites (Az DOD), Waste Water Treatment Facilities (Az WWFAC), Leaking Underground Storage Tank Listing (LUST), RCRA Administrative Action Tracking System (RAATS), Resource Conservation and Recovery Information System (RCRIS-LQG), Hazardous Materials Information Reporting System (HMIRS), PCB Activity Database System (PADS), Emergency Response Notification System (ERNS), Toxic Chemical Release Inventory System (TRIS), NPL Liens (NPL Lien), Toxic Substances Control Act (TSCA), Material Licensing Tracking System (MLTS), Az Dry Well (Dry Well), Az Aquifers (Az Aquifers), Arizona Airs Database (AIRS), ROD (ROD), Superfund (CERCLA) Consent Decrees (CONSENT), and Former Manufactured gas Sites (Coal Gas).

Within EDR's search area, listings of potential concerns (sites) were identified in two primary geographic regions. Numerous sites occur in Sun City between Grand Avenue and Beardsley Avenue. Another cluster of sites occur in the eastern portion of the study area north of the ACDC Canal (bounded by Bell Road, 67th Avenue and 59th Avenue). Other individual sites are randomly scattered throughout the search area. Many of the potential hazardous material sites will not be affected by the potential drainage activities of this project because they are located outside of the hot spot boundaries. If the hot spot boundaries are modified during the study or subsequent to the ADMP different projects are implemented than are identified in the ADMP, the potential concerns about hazardous materials issues will have to be reassessed to include those sites not being considered in this analysis.

Within the "hot spot" areas, listings were found in the records for State Hazardous Waste (5), CERC-NFRAP (4), State Landfill (2), Az WWFAC (2), LUST (21), UST (48), AST (4), RCRIS Small Quantity Generator (32), RCRIS Large Quantity Generator (5), HMIRS (2), ERNS (5), FINDS (38), and Az. Dry Well (54), AZ Spills (11), AZ Aquifers (3) and MINES (4). Further information on the hazardous materials within the study area is contained in the complete EDR Areas Study Report, dated January 25, 2000 (attached).

Ecological Assessment:

Figure 7 illustrates the natural features including areas of riparian habitat value within the study area. The ecological assessment was prepared in coordination with the Arizona Game and Fish Department (AGFD), Maricopa County, Flood Control District of Maricopa County (District), and Arizona State University. The US Fish and Wildlife Service's (USFWS) list of Threatened and Endangered Species for Maricopa County was evaluated. The AGFD's Heritage Data Management System of Wildlife of Special Concern in Arizona (WSCA) for the project area was also reviewed. A field reconnaissance survey of the study area was conducted in January 2000. The field survey included site visits with personnel from the District and AGFD.

The project area is located in the Sonoran desertscrub biotic community, comprised of two subdivisions, Lower Colorado River Valley and the Arizona Upland. The Lower Colorado River Valley Subdivision, which covers the lower two thirds of the study area, is the largest and most arid subdivision of the Sonoran Desert. Due to the high temperatures and low precipitation levels, the plant growth tends to be open and simple, due to the intense competition for water. The dominant vegetation includes creosote, triangle leaf bursage, desert ironwood, and blue paloverde. The vegetation along the drainages tends to grow in rows along the margins. The Arizona Upland association is found in the northern limits of the study area. Arizona Upland is also known as the Paloverde-Cacti desert, and includes species of leguminous trees, shrubs, and perennial succulents. The dominant vegetation includes various combinations of trees, such as foothill paloverde, desert ironwood and large tree- like cacti such as teddy bear cholla, and saguaro.

There are three basic riparian vegetation types located in the study area. Sonoran Riparian Scrubland is dominated by distinct riparian vegetation and sandy soils. The scrubland vegetation contains vegetation similar to the desertscrub adjacent to the area, but the washes support more and larger individuals of plants that also grow on the surrounding slopes. In the Sonoran Interior Strand areas, vegetation is comprised of strands of scrub with the substrate being mud, rocks, sand, or rubble. The water levels within the watercourse fluctuate annually and the aquatic/semi-aquatic animals survive during the periods of drought by remaining in the reduced or permanent segments of the system. Disturbed Areas, which constitute the third riparian vegetation type, are 100% modified by human activities and contain no habitat value.

Within the study area, the two main watercourses, the Agua Fria River and New River, were classified as Sonoran Interior Strands in the Lower Colorado River Valley subdivision and the Arizona Upland subdivision, respectively. The Interior Strand by itself, has low wildlife value. Skunk Creek is the largest tributary of New River; it is also classified as a strand. The Agua Fria River is sparsely vegetated along the southern two thirds of the study area.

The portion of the Agua Fria River located in the Arizona Uplands has tributaries that are classified as riparian scrubland. These are dry (xeririparian) washes which are characterized by more dense vegetation and sandy soils within gently sloping, sometimes rocky terrain. Wildlife value is greater in this habitat type because it provides critical components to wildlife (i.e., cover, food, prey, reproduction areas and travel corridors).

The New River watercourse is sparsely vegetated in the lower two thirds of the study area. The dominant vegetation along the banks is Desert Broom. This portion of the study area is highly developed, and most native vegetation along the watercourse has been removed. Some of the banks have been lined with cobble enclosed in wire baskets. Three wetland (hydroriparian) areas were identified along the New River. The vegetation is diverse in these areas; the vegetation includes seep willow, cottonwood, desert broom, various

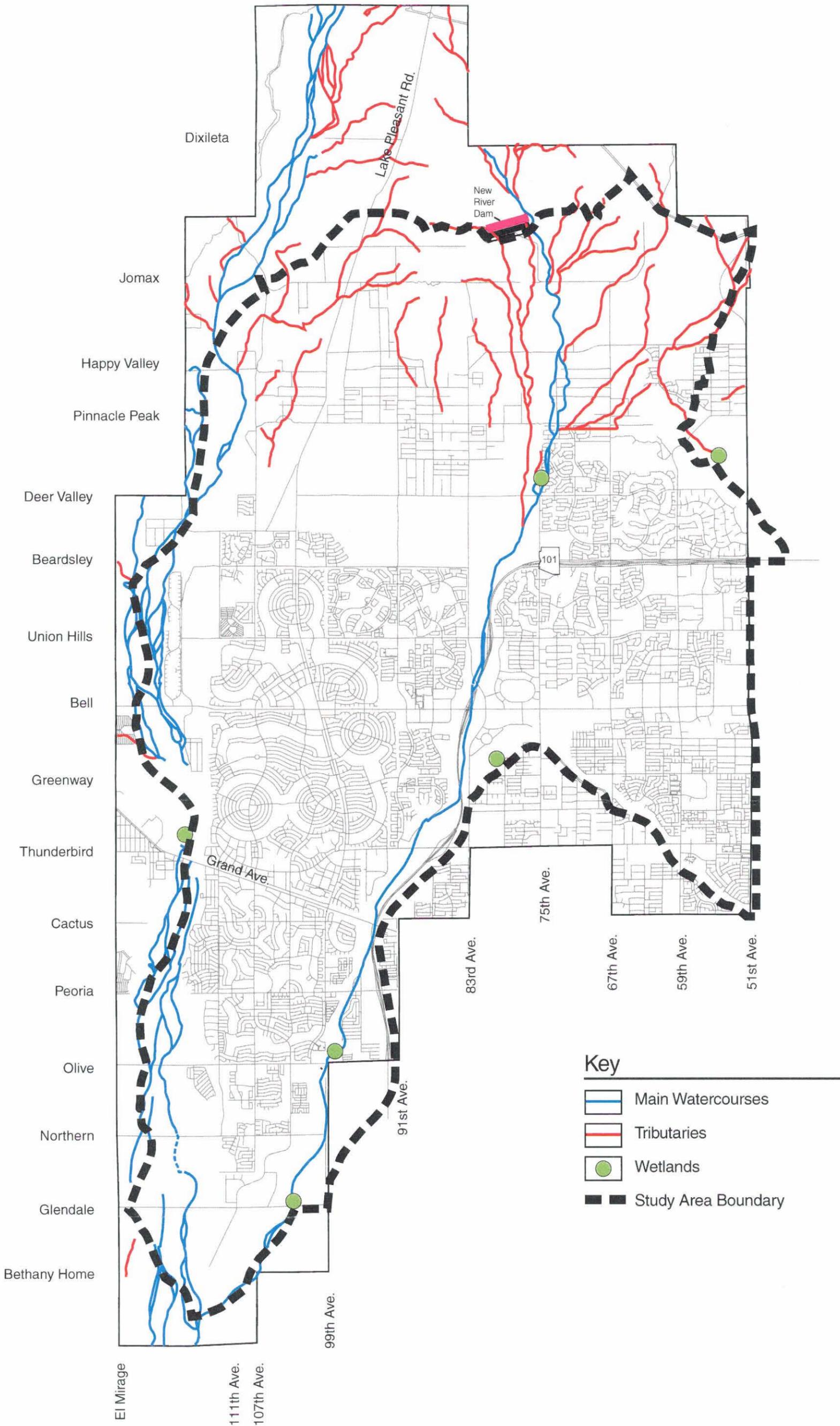


Figure DC-A-7. Riparian Habitat

grasses. The areas have standing water fed by adjacent irrigation canals or other sources. Numerous bird species were observed utilizing these areas.

Within the Arizona Upland Subdivision, the New River has secondary washes that were classified as (xeriparian) riparian scrubland. The dominant vegetation changes to paloverde-cacti associations. In the northeast portion of the study area, numerous washes drain southward from Ludden Mountain and East Wing Mountain and connect into New River. Some drainages have been cut off along the northern study limits by the CAP. Vegetation in this portion of the study area includes paloverde, mesquite, saguaro, cholla, creosote, triangle-leaf bursage, and desert broom. The plant communities contain high levels of habitat and species diversity which increases its value to wildlife.

An important wildlife feature is located in this portion of the study area. Xeriparian scrubland exists in the vicinity of 91st Avenue and Happy Valley Road. Sunrise Relief mine is currently being used as a roost site for California leaf-nosed bats as confirmed by the AGFD. Prior surveys indicate that the southwestern cave myotis have roosted there as well. In the hills to the east of the mine shaft, (xeriparian) scrubland exists, which contains paloverde, creosote, teddy bear cholla, triangle-leaf bursage, and saguaro. This relatively undeveloped area has high value to wildlife.

A wetland (hydroriparian) habitat was identified at Thunderbird Park. A single reservoir contained lush vegetation and is one of the most important wildlife use habitats in the study area. The reservoir is several acres in size and densely lined with indicator plants. A large concentration of birds, amphibians and fish were observed utilizing the area.

Along the New River, a prominent disturbed area was identified as a heavy off road vehicle recreational use area. Therefore, most of the vegetation has been destroyed and offers no value to wildlife. Other disturbed areas include sand and gravel operations sites, dam structures and past or present cattle grazing operations. Urban development in the cities of Glendale and Peoria has decreased large portions of potential habitat into fragmented segments, which maximize isolation of species.

Skunk Creek is located in the Lower Colorado River Valley Subdivision on the eastern portion of the study area. Classified as Interior Strand, the vegetation is non-existent except for a few scattered desert broom along the channel bank. One hydroriparian habitat area was identified just north of the confluence with the New River. In general, Skunk Creek has low wildlife value, but the small patch of hydroriparian habitat has medium value to wildlife.

Sensitive Species:

The list of Federally Threatened and Endangered species for Maricopa County obtained from the USFWS was evaluated to determine whether any of those species exists within the study area. Based on the biological investigations, it was determined that suitable habitat is present in the northern limits of the study area for bald eagles and lesser Long-nosed bats. There are documented eagle nest sites at Lake Pleasant Regional Park, approximately 8 miles to the north. Marginally suitable habitat exists within the northern portion of the study area for the Cactus Ferruginous Pygmy-owl. Marginally suitable habitat exists within emergent vegetation of the scattered wetlands in the study area for the Yuma Clapper Rail.

A list of Wildlife of Special Concern (WSCA) was obtained from the AGFD for species potentially occurring in the study area. No species are known to occur in the study area, although suitable habitat exists for the Black-bellied Whistling-duck, Lowland Leopard Frog and suitable habitat exists on the north end of the project for Sonoran desert Tortoises.

DC-A-5: VISUAL RESOURCES

The existing visual resources of the study area are described below based on readily accessible viewpoints along existing streets and accessible locations within the study area. The visual conditions analysis included an identification of distinct features, a demarcation high/low visual diversity, a delineation of the relative visual intactness of natural or cultural resources within the study area, and an identification of major viewpoints. Distinct features are those features comprised of contrasting landscape natural or built elements that, when combined, make a memorable visual impression or striking visual pattern. Diversity is considered to be a qualitative measure of the scenic value of a landscape; landscapes with the greatest variety (or diversity) have the greatest correlation with high scenic value. For the Glendale/Peoria ADMP visual study it is assumed that landscapes of low diversity represent opportunities for enhancement when implementing the proposed action. Conversely, highly diverse landscapes should be preserved where possible to retain their valuable qualities. Visual intactness relates to the cohesion of visual order in the natural and human built landscape and the extent to which the landscape is free from visual encroachment by conflicting uses or activities.

The second component of the visual resource evaluation for the Glendale/Peoria ADMP is the delineation of landscape character units and a definition of the existing landscape character. Landscape character is the physical appearance of the landscape including the natural, physical, and architectural/cultural features that give it an identity and “sense of place.” The existing landscape character is based on defining areas of similar land use, vegetation, spatial enclosure, landform, or architectural/cultural patterns. A relative evaluation of the overall visual quality for each unit was made in terms of distinctiveness and level of intactness.

Visual Conditions Analysis:

Figure 8 graphically represents the existing visual conditions within the Glendale/Peoria ADMP. There are numerous natural and built distinct features that contribute to the visual conditions of the study area. The distinct built features include the New River Dam, Central Arizona Project, Glendale Water Treatment Plant, Skunk Creek Wash/Channel, Arizona Canal/Thunderbird Park Paseo Linear Regional Park/Arizona Canal Diversion Channel (ACDC) complex, golf courses and built lakes, miscellaneous drainage conveyance structures, major overhead transmission lines and towers, sand and gravel extraction sites, extensive suburban neighborhood developments including the Sun City community, dairy/farm lands, the urban arterial street network, existing and proposed transportation corridors/facilities such as the Outer Loop Freeway(SR 101), Grand Avenue (US 60), AT & SF Railroad, and the Glendale Municipal Airport. Arrowhead Towne Center Mall, Peoria Sports Complex, Boswell Memorial Hospital, and the American Graduate School of International Management are cultural/educational centers within the study area. South of Happy Valley Road, built features dominate the visual environment.

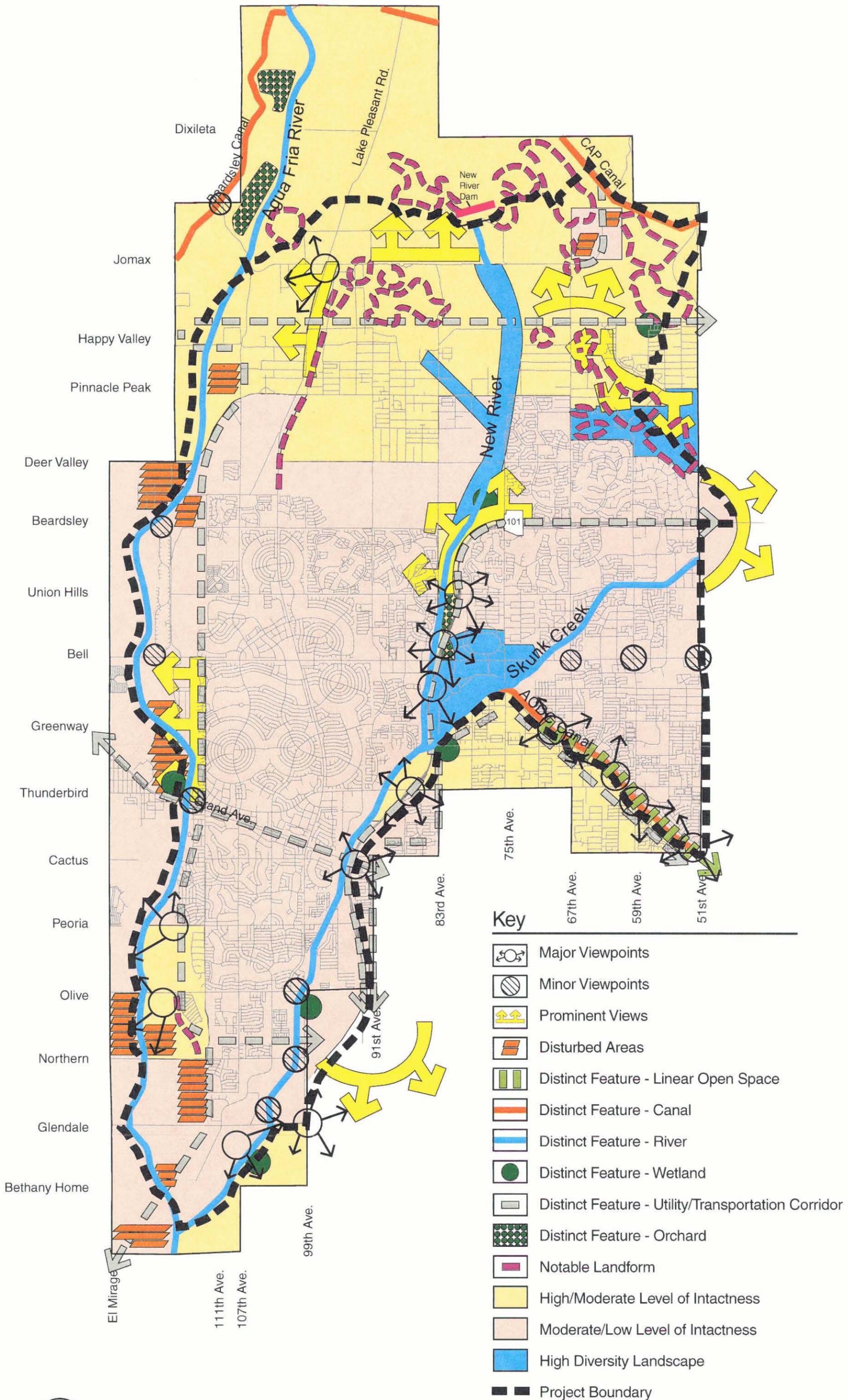


Figure DC-A-8. Visual Analysis

The outstanding natural features within the seen area include prominent on- and off-site landforms and vistas at the northern and southern limits of the study area. From the base of the New River Dam, southerly vistas overlook the riparian vegetation and dendritic drainage patterns within undeveloped desert lands in the northern one third of the study area. Also from this location, the Hedgepeth Hills within Thunderbird Park and numerous unnamed landforms can be seen within the study area to the east. Due to the lack of relief in the middle portion of the study area, views are oriented inward, focusing on built features. Views of the Agua Fria and New Rivers are limited to a narrow viewshed less than 1/16 mile on either side of these watercourses. These contribute little to the visual environment, except for a limited number of individuals/businesses situated in the small viewshed area. Occasional, isolated wetland pockets are located along the New River/Skunk Creek watercourses; these are minor visual elements that do not alter the prevailing urban character of the southern half of the study area. The White Tank and Estrella Mountains, both located off-site, are visible to the west and south, respectively, beyond the boundary of the study area at its southernmost locations and from the Loop 101 Freeway. These mountain ranges contribute to the visual setting of this portion of the study area, which contains few natural elements.

Areas of low visual diversity are landscapes that have been substantially modified or are so uniform in character that a complex visual environment is not evident. Within the study area, the expansive suburban neighborhoods and the industrial land uses in the southern portion of the site constitute low diversity landscapes because of the uniform character. Additionally, the Agua Fria and New Rivers below Happy Valley Road and the Skunk Creek Wash/Channel have a low visual diversity because of the absence of vegetation strata due to substantial disturbance within those environments. Undeveloped lands north of Happy Valley Road, except for the New River area, have a fairly uniform vegetation type and exhibit some landform/feature variety. The Sun City area has a higher level of variety of built features than the suburban neighborhoods. Therefore, these latter two areas would be considered a low to moderately diverse landscape.

High diversity landscapes are those that contain a diverse array of natural species and landforms or a combination of built features that indicate a high level of biological or cultural value. Examples of high diversity landscapes in the study area include the riparian vegetation of the upper New River (north of Happy Valley Road), the small, isolated wetlands along the study area watercourses, the mountain landforms of Thunderbird Park, and the Peoria Sports Complex/Arrowhead Towne Center Mall area.

There are few intact landscape areas within the study limits. The primary intact landscapes are the desertscrub environment north of Pinnacle Peak Road and the dairy/farm lands in the southern portion of the study area. These areas represent a unique resource within the study area; they will be lost in the future to the advancing suburban development. While it may be argued that an architectural theme of an individual master planned community or series of neighborhoods within the urban environment represents intactness, the overall visual impression of the complimentary and contrasting colors and forms of adjacent communities results in a lack of cohesion in the urban areas. Therefore, the urban portions of the study area are considered to have a low intactness rating.

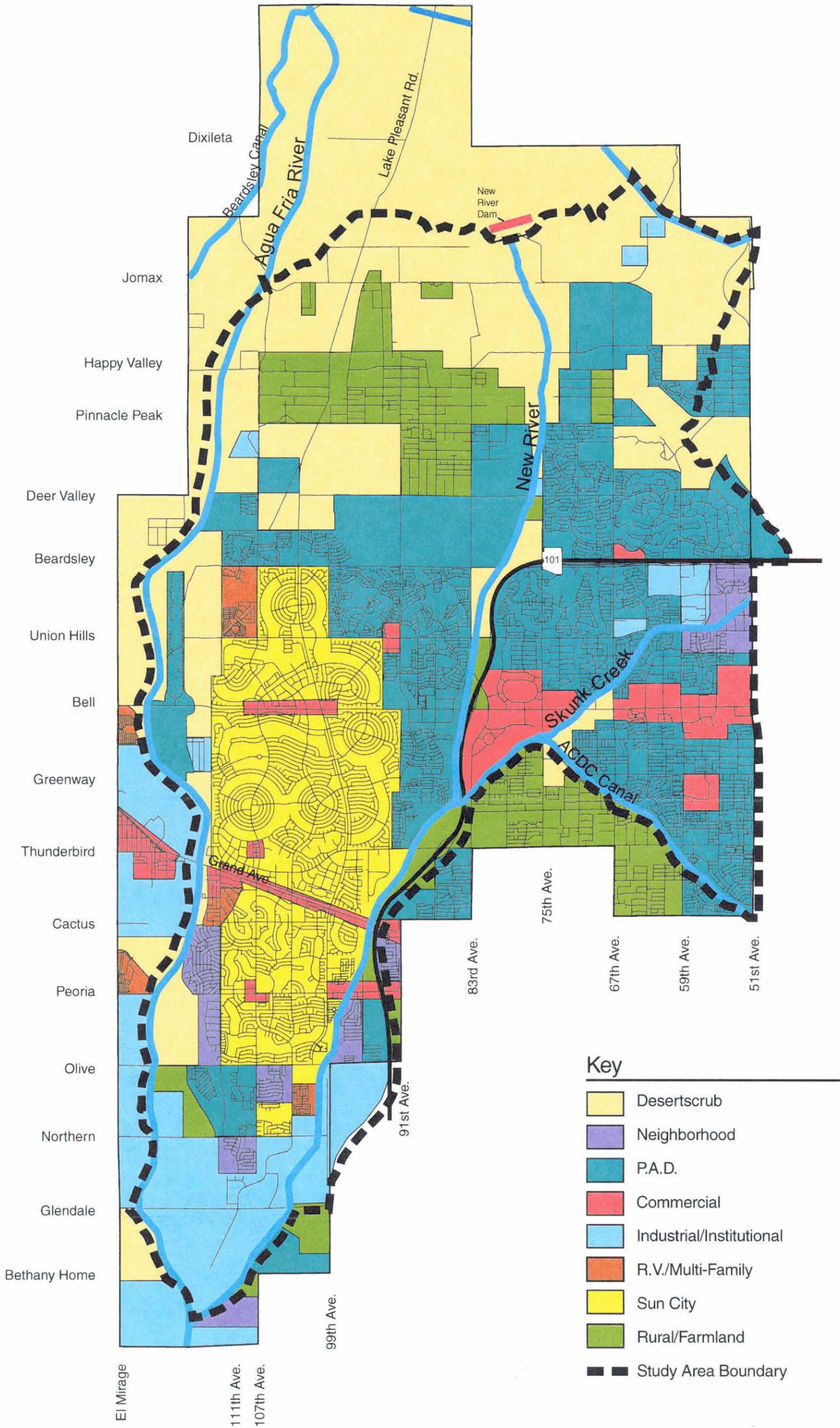


Figure DC-A-9. Existing Landscape Character

Existing Landscape Character:

To further describe the visual resources of the Glendale/Peoria ADMP, the study area has been broken into broad-based landscape character units. Landscape character units, as previously stated, are based on the presence of vegetation, changes in land use, degree of spatial enclosure, and the presence of notable landform or architectural/cultural patterns in the landscape. The resulting units are areas of similar visual character. Each unit has been named and described below in terms of its vegetative cover, landform, land use, and special features in the foreground, middle ground, or background. Distance zones refers to the relative position of the observation point as follows: (1) foreground - up to 0.25 mile; (2) middle ground - 0.25 mile to three miles; and (3) background - three to five miles. Figure 9 identifies the location of the eight units delineated within the study area.

Desertscrub. The predominant characteristic of lands within this unit is one of relatively undisturbed native desert, dotted occasionally by built features. The terrain is moderately rolling. The irregularity and color of native vegetation, particularly the trees mesquite trees along the New River, makes the vegetation readily distinguishable. Mature mesquite trees, creosote, and desert broom are prevalent and dominate the setting. Built elements are isolated visual features, including: transmission lines and canals (Arizona, Beardsley, and CAP), industrial/commercial activity and a few residences. However, these individual features do not affect the overall visual character created by the native desert. Distant views of the White Tank Mountains and Union Hills to the west and north, respectively, form a distinctive background. The overall visual quality of the unit is high because of the level of intactness would be considered moderate to high. The landscape features do not combine to make a memorable visual pattern, except that the lands are generally undisturbed.



P.A.D. The P.A.D. (planned area development) unit typically has a uniform residential character. Concrete block walls enclose the residential developments. These block walls create a strong linear form within the suburban surroundings. The P.A.D. unit has similar architectural elements, narrow lots, mixed ornamental and desert landscaping, masonry block walls, lakes or water bodies, and street lights typical of a suburban neighborhood setting. These modern, residential developments have similar materials and colors, typical of the stucco and tiled-roof, suburban architectural genre. Residences within the unit include one and two-story homes. The second floor of these homes provides views to the surroundings. The building and wall structures dominate the setting. Vegetation is predominately ornamental and turf is used frequently to create open space and connect the various built facilities within the subdivision. The vegetation is also consistently manicured to create a sense of organization and formality. Overall, the visual quality of the unit is moderate to low in terms of



vividness and intactness of the visual resources of the landscape. The landscape elements have been modified in such a way that patterns and features do not blend to create a memorable impression, but instead create a visually uniform environment.

Neighborhood. Moderate lots, scattered single- and two-story, ranch style residences having a variety of materials and colors and a mixture of mature ornamental and desert vegetation are typical in this unit. Perimeter site walls are common, while water bodies such as lakes or ponds are not. In general, the appearance and character of this unit is one of a mature, well-established neighborhood established in the 1970's and 1980's. Ornamental tree species within the yards include eucalyptus, cottonwood, and pine. Orchard trees are also evident at some locations. The vegetation and building structures are prominent in the setting. The visual quality of the unit is low to moderate in terms of vividness and intactness. The landscape elements do not combine to create a notable impression, therefore the aesthetic quality of the unit is low to moderate.



RV/Multi-Family. The character of this unit is a mixture of high density, pre-manufactured dwelling units common in suburban areas of the Phoenix Metropolitan Area. Overhead utilities, street signage and lighting are built features that dominate and are readily visible in the landscape. The existing landscapes around the residential areas are highly ornamentally decorated by the residents. The closeness of the existing structures creates a sense of high visual enclosure. Vegetation is very limited and subordinate to the built features. The architectural styles of the multi-family residences vary substantially, and there is a general lack of cohesive of shape or textures. In the RV units, the building scale, form, color and style are relatively uniform. The visual quality of the unit is moderate in terms of vividness and intactness of the visual resources of the landscape. Modifications to the natural landscape dominant the RV unit, and the built patterns, spaces, and features are the memorable impression of the landscape.



Rural/Farmland. Low density single-family residences and agriculture create a rural, pastoral pattern which characterizes the areas generally between the undeveloped and urban portions of the study area. This unit is depicted by flat terrain with expansive views in all directions with agricultural patterns and colors dominating the setting. Agricultural features found within this unit include: planted fields, livestock corrals, windmills, silos, and irrigation ditches. The color of the structures vary, and the vertical scale and reflective nature of the material associated with farm facilities attract some attention. The various canals and tailwater/irrigation ditches are built features adding to the unit's rural character. Residences are scattered throughout the unit in a desert setting, though some areas are developed more densely than others. Lots are typically surrounded by desert vegetation which is evident through open perimeter fencing. Seldom are vertical block

walls used to delineate property boundaries, instead vegetation, wood, chain-link, or wrought iron fencing are used. Horse pastures and corrals are also typical. The residential structures are conventionally constructed, single-story type residences of varying materials and colors such as wood, brick, and block. The overall visual quality of this unit ranges from moderate to high in the study area because the landscape elements such as landform, color and texture create a notable pattern and there is a high to moderate level of intactness.



Sun City. The unit is characterized by the mature manicured, ornamental landscape, including golf courses, which creates a verdent setting for the residential and commercial activities in the landscape. The dwelling units and commercial uses along the primary streets are larger than those in the RV unit. The commercial structures have no cohesive material or color palette. The architectural style of the single-story residential dwellings are codominant with the landscape features, and are very similar throughout the unit though materials and colors may vary substantially. Many houses front or back onto golf courses; this characteristic distinguishes the Sun City unit from other landscapes in the study area. The street alignments are generally curvilinear and, with the flat terrain, do not allow for either on- or off-site views, creating a moderate level of enclosure. The visual quality of the unit is considered high in terms of vividness and moderate in terms of intactness due to the disruption caused by commercial activity interspersed in the residential neighborhoods. The pattern of uniformly-scaled dwelling units interspersed with the verdent spaces are the memorable features of the landscape.



Industrial/Institutional. Industrial and institutional uses and activities characterize this unit. Large buildings, security fences, and towers are the prominent visual elements within the unit. These structures create strong vertical and horizontal elements and contrast in color and material with their surroundings. The terrain is relatively flat and vegetation is scarce. The vertical scale and color of some of the facilities, such as smoke stacks, airport control towers, and transmission lines combine to create distinct features in the landscape. The visual quality of the unit is low in terms of intactness of the visual resources of the landscape. The landscape elements have been modified in such a way that no particular cohesive patterns or forms blend to create a particularly, memorable impression in the setting.



Commercial. The character of this unit is a mixture of development including office, retail, service-oriented, and restaurant uses common to suburban development along major arterial roadways. Billboards, building signs, overhead utilities, and street signage and lighting are built features that dominate and are readily visible in the landscape. Grand Avenue, Bell Road, and SR 101 are the major local transportation corridors and consequently, act as the cores around which commercial urbanization occurs. The existing structures create high visual enclosure because of the presence of two-story buildings, signs, and other built features. Vegetation is limited and subordinate to the built features. Architectural styles vary and there is a general lack of cohesive materials, textures, or colors. The terrain is relatively flat. In terms of vividness and intactness of the visual resources of the landscape, the visual quality of the unit is low. No particular patterns, spaces, or features combine to make a memorable impression in the landscape. Modifications to the natural landscape are the dominant features in this unit.



Flood Control Structure Compliance with the Districts' Aesthetic Policy:

The District's *Policy for the Aesthetic Treatment and Landscaping of Flood Control Projects* provides general guidance for incorporating aesthetic features as an integral part of the planning, design and construction of flood control projects. This document also promotes consideration of aesthetics in the design of new structures, alterations to existing structures and other projects developed by the District. According to the Policy, aesthetic features of flood control projects shall be designed in consideration of the following: the structural integrity and function of the facility are not compromised; the safety of the site and the public is not diminished, maintenance requirements for the facility are not hindered or significantly increased; there is no significant cost increase for real estate; costs to the District are within acceptable budgetary constraints; the aesthetic treatment is compatible with the prevailing features in the surrounding area; and the aesthetic features will not increase the District's liability regarding personal safety and/or property. Multi-purpose uses are also encouraged to the extent that they do not interfere with the operations of the facility. The Policy also requires that an Aesthetics Advisory Committee be formed for each project.

The existing drainage facilities in the study area include miscellaneous retention/detention basins, channels/washes, storm drains, bridges, and other features built of various materials and techniques. There are approximately 55 existing facilities located in two primary areas within the study area. A majority of the facilities are found in an area bounded by Beardsley Road, Pinnacle Peak Road, New River, and 107th Avenue. Less than a dozen drainage facilities are situated south of Bell Road just west of the New River. A few other facilities are scattered throughout the study area.

Little is known about history, cost or multi-use objectives for these facilities. Many basins along Beardsley Road are currently under construction or have been recently finished. Final landscape treatments are completed for many of the study area basins; the remaining basins have been left in an unfinished condition (no finished surface material such as turf or decomposed gravel). The overall aesthetic appearance of the structures is mixed because of the disparate appearances of the finished and unfinished structures. The turf, gravel and cobble stone landscape treatments within some basins is in character with the surrounding residential land uses. However, untreated facilities are not compatible with the existing landscape character. Most facilities appear to have a single function, with minimal incorporation of multi-use features.

DC-A-6: PLANNING INFLUENCES/MULTI-USE OPPORTUNITIES

The inventory and evaluation of the environmental considerations associated with the Glendale/Peoria ADMP study area was synthesized to identify the opportunities and constraints (planning influences) on the development of flood control measures and multi-use facilities (Figure 10). Opportunities for multi-use recreation include adding trail and pathway segments to complete and connect the existing network, especially adding north/south pedestrian trails to the Agua Fria River (south of Grand Avenue) and the New River (north of the confluence with Skunk Creek). There are few east-west connections between the Agua Fria and New Rivers. Therefore, it is recommended that a pedestrian linkage be constructed along Beardsley Road (approximate north/south geographic center of study area) and, in the northern limits of the study area, a new trail/pathway should be built to connect the Agua Fria River with the CAP Canal. This trail would utilize the planned pedestrian underpass in Lake Pleasant Road north of Jomax Road, and its alignment would be south of the New River Dam.

Existing and planned transportation routes have a substantial affect on the development of multi-use and recreation opportunities within the study area. Transportation corridors are both a physical constraint and visual barrier that create opportunities specific to their physical characteristics. The Grand Avenue corridor presents numerous challenges for the development of multi-use facilities, particularly for north/south oriented pedestrian trails due to the high roadway traffic volume and the lack of grade separations for pedestrians/recreation users. However, there is an existing drainage facility in the right-of-way paralleling Grand Avenue (north side) that appears to be in need of repairs and replacement. Adequate land areas within the right-of-way area would allow an enhanced landscape treatment, if the facility is replaced, to improve the aesthetics and recreation experience of the Grand Avenue corridor.

The Loop 101 Freeway, in addition to visually and physically segregating portions of the study area, limits opportunities to make connections with existing/proposed trails and paths of the study area. One situation is apparent near the Greenway Road/Loop 101 area where this study recommends that trails constructed along the New River be connected into existing/planned trails along Skunk Creek. In order to make that connection, the trails would have to cross Skunk Creek west of the Loop 101 bridge. This trail convergence area should have substantial demarcation elements (signage, interpretive markers, rest facilities, etc.), to highlight its importance to users. However, because the freeway has already been sited, opportunities to fully develop the site for increased recreation benefit are limited.

The Loop 303 and other planned arterial streets in the northern portion of the study area will also have a significant role on opportunities available for recreation and multi-use activities, as well as creating opportunities to solve study area drainage problems. While the northern portion of the study area is relatively undeveloped at this time, planned land uses will convert these lands into more urban/suburban residential development. Assuming that the planned transportation routes would also contain large drainage basins and conveyance systems because of their size and scale, the potential for incorporation of the trails and other multi-use activities into these facilities is significantly increased. The current pattern of maximum residential land allocation and reduced open space exhibited in the southern portion of the study area will likely continue as the northern portion is developed; this would severely limit multi-use opportunities in the study area if these multi-use features are not incorporated into the design of the future facilities. Additionally, by constructing large drainage facilities, the Loop 303 and other arterial streets offer a long-term opportunity to resolve drainage concerns for many downstream land areas.

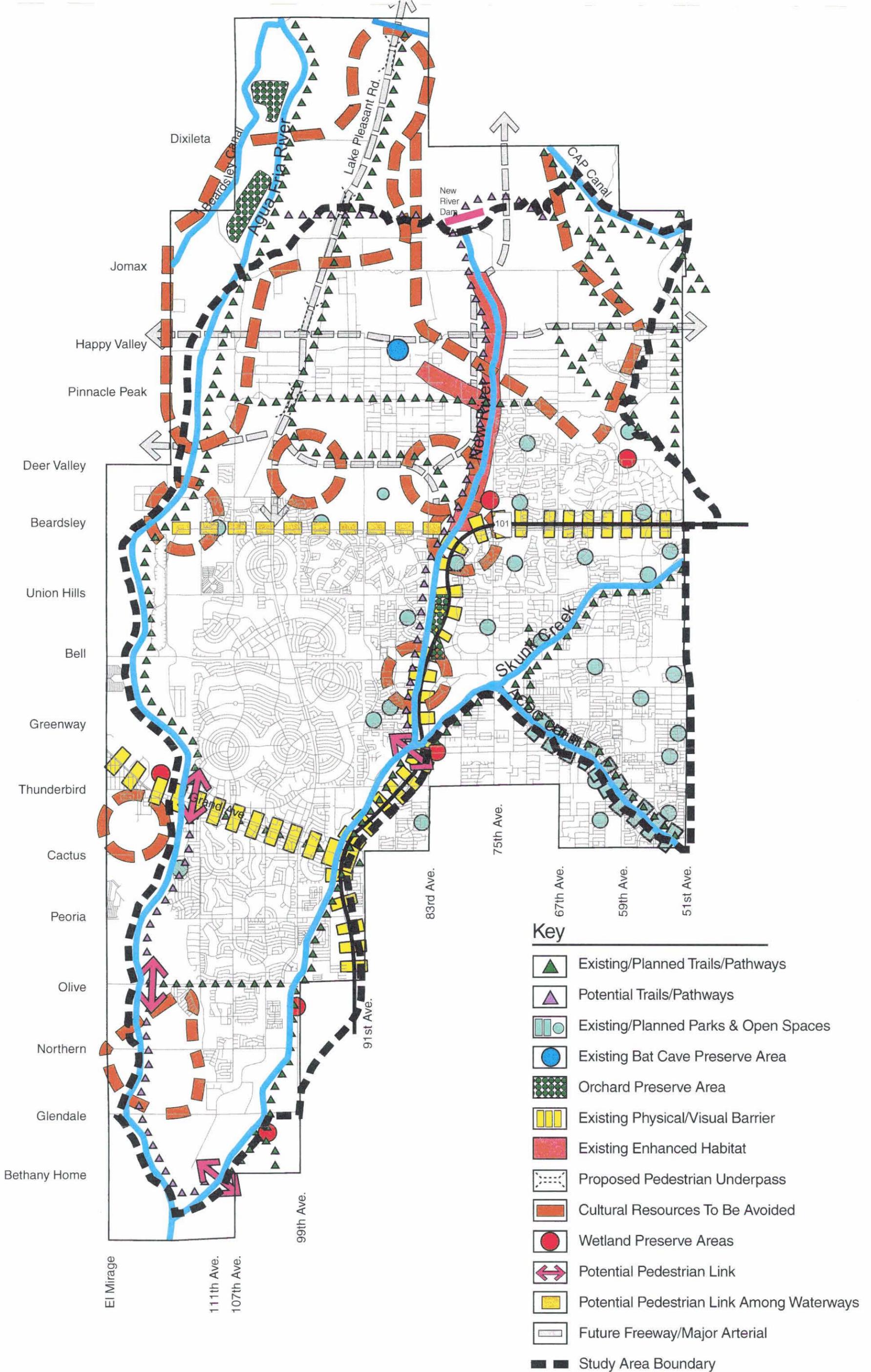


Figure DC-A-10. Planning Influences and Multi-Use Opportunities

The northern portion of the study area contains substantial natural and cultural resources which can enhance the recreation experience of users of any new trails or path systems created as a result of this study. The known resources include a bat cave, wetlands, enhanced riparian wildlife habitat along the New River, and numerous prehistoric and historic (cultural) sites. In particular, the New River (north of Beardsley Road) is an important natural resource that contains high quality wildlife habitat and offers untapped recreation opportunities. This resource is unique to the study area, and other similar riparian habitats are rapidly being lost in the Phoenix Metropolitan area due to urban encroachment. Even though the resources may be altered by other interests during the expansion of suburban development, they should be avoided where possible (or minimally affected) by actions proposed by the District. The District's actions could establish the prototype for how to address drainage issues along the New River.

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**DATA COLLECTION -
ECOLOGICAL ASSESSMENT**

VOLUME DC-B

Contract FCD 99-44

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DC-B-1. INTRODUCTION

The consulting firm of Logan Simpson Design Inc. (LSD) is under contract with the Flood Control District of Maricopa County to prepare an ecological assessment as a part of the updated Glendale/Peoria Area Drainage Master Plan (District). The project is located in Maricopa County, within the cities of Glendale and Peoria (Figure 1). The purpose of the ADMP is to update the existing Glendale/Peoria ADMP, completed in May 1987, by quantifying the extent of flooding problems, and developing alternative solutions to those problems. This update will identify current drainage problems, and develop cost-effective solutions to alleviate known and potential flooding problems within ten “hot spot” locations. This ecological assessment will identify any ecologically significant areas (riparian vegetation communities, wildlife, sensitive species, and potential wetlands) to assist in the evaluation of improvement alternatives within the “hot spots”.

This ecological assessment was prepared in coordination with the Arizona Game and Fish Department (AGFD), Arizona State University, and Flood Control District of Maricopa County (District). The US Fish and Wildlife Service’s list of Endangered and Threatened species for Maricopa County was evaluated. The AGFD’s list of Wildlife of Special Concern in Arizona (WSCA) for the project area was also reviewed. A field reconnaissance survey of the study area was conducted in January, 2000. The field survey included site visits with personnel from the AGFD and the District.

The main watercourses (Agua Fria and New River), and other riparian areas within the study area, were identified using aerial photographs and topographic maps. The field reconnaissance survey was conducted for verification; photographs were taken for a visual record. It was not possible to evaluate all washes within the 85 square mile study area. Therefore, this report is not all inclusive, and reflects riparian habitat types on a broad ecological scale. At the time of the field survey, the study area boundary did not include the area north of Dynamite Road, therefore, no analysis was made, and is not reflected in this report.

The study area identified two subdivisions within the Sonoran Desertscrub biotic community, Arizona Uplands and the Lower Colorado River Valley. Although delineation is vague, the main differences involve elevational changes, terrain, and vegetation density.

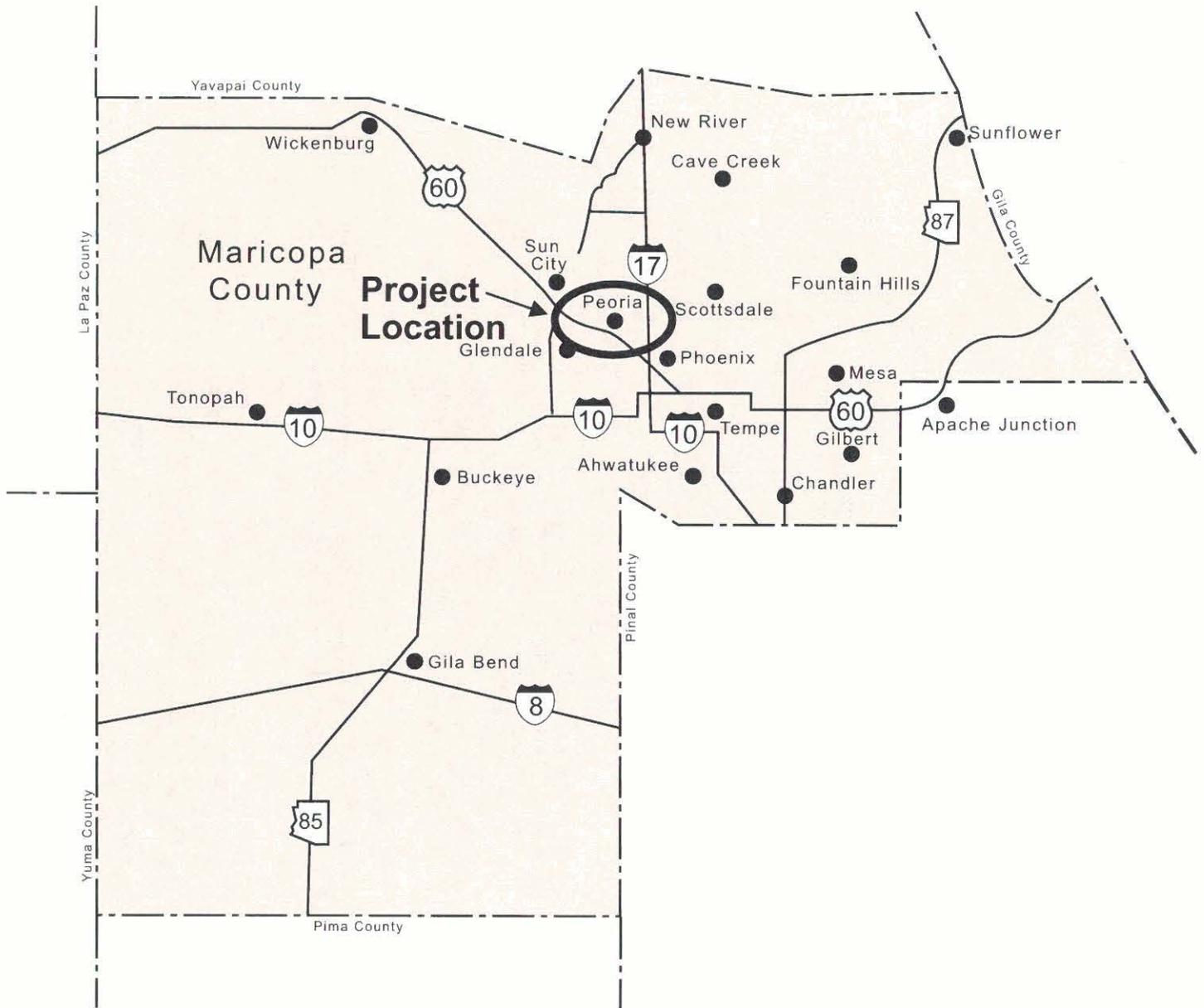


Figure DC-B-1. Maricopa County Location Map



This Ecological Assessment describes Biotic communities in Arizona according to a classification system outlined in the 1994 edition of Brown and Lowe's *Biotic Communities of Southwestern United States and Northwestern Mexico* (Brown 1994).

DC-B-2. STUDY AREA

The Glendale/Peoria ADMP Update is comprised of the area shown in Figure 2. The area includes: the Skunk Creek drainage area downstream of Adobe Dam and west of 51st Avenue, the New River drainage area downstream of the New River Dam to its confluence with Skunk Creek, the drainage area to the west of New River from its confluence with Skunk Creek to its confluence with the Agua Fria River, the drainage area to the east of the Agua Fria River downstream of the Dynamite Boulevard alignment to its confluence with New River, and a small portion of the Arizona Canal Diversion Channel (ACDC) watershed west of 51st Avenue and south of Skunk Creek. The southern boundary of the study area is formed by the ACDC structure and New River; the north and easterly boundaries are formed by 51st Avenue, the dams on Skunk Creek and New River, and the Hedgpeth Hills, East Wing, and Ludden Mountains (trending NW-SE between the two structures); the western boundary is formed by the Agua Fria River.

DC-B-3. ECOLOGICAL HISTORY OF STUDY AREA

The study area is located in the Basin and Range Physiographic Province. The mountain ranges and valleys are northwest-southeast trending ore blocks of the earth's crust, resulting from stretching and faulting. The ore blocks that didn't settle became the East Wing, and Ludden Mountains. Weather and erosion eventually produced bajadas, the Agua Fria River, New River, Skunk Creek and present drainage patterns.

The Hohokam, a Native American cultural group, settled in the valley between A.D. 300 to around 1450 along the rivers and washes that are included the study area. The construction of irrigation canals, by the Hohokam, did not significantly alter the ecology of the area.

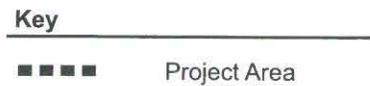
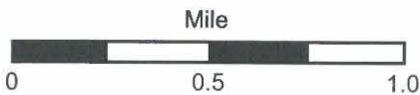
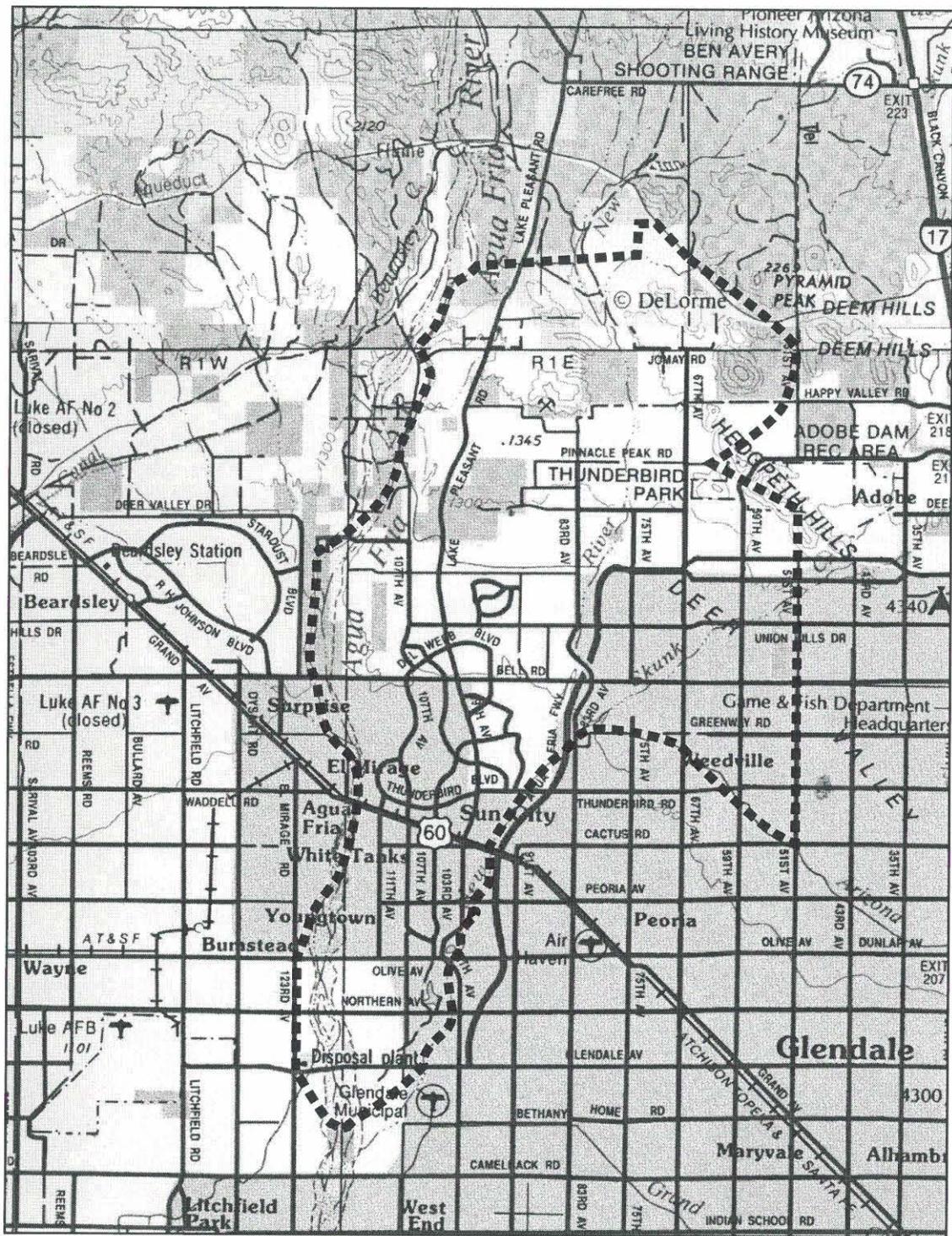


Figure DC-B-2. Project Location Map



By the 19th century, Phoenix began attracting more prospectors, miners, farmers, and ranchers. In recent years, increased off-road vehicle, motorcycle use and sand and gravel mining, altered the landscape. The most significant impact to the ecology of the study area has been increased road building and residential development.

DC-B-4. EXISTING ECOLOGICAL CONDITIONS

1. Physical Environment

The study area is within the Basin and Range physiographic province. This province is characterized by numerous mountain ranges that rise from broad plain like valleys or basins. The elevation in the study area ranges from approximately 1,025 feet above Mean Sea Level (MSL) in the southern portion to 2,137 feet MSL in the northern portion of the study area, at Ludden Mountain.

Soils are hyperthermic arid soils, and slightly thermic semiarid soils. Hyperthermic arid soils are typically found at lower elevations in western and southwestern parts of the state. Hyperthermic arid soils receive less than 10 inches of mean annual precipitation and cover about 27% of Arizona. The northern edge of the study area contains slight thermic semiarid soils that receive 10 to 16 inches in annual precipitation.

The tributaries which flow from the northern portion of the study area, into the main watercourses, are flowing in a southerly direction, and form a dendritic pattern. The summer rainfall accounts for 30-60% of the annual total, with smaller proportions in the northern region and larger in the southern region of the study area.

2. Biotic Communities Within The Study Area

The project area is located within the Sonoran Desertscrub biome, as mapped by Brown in 1994. In Arizona, the Sonoran Desertscrub biome is comprised of two subdivisions, Lower Colorado River Valley, and the Arizona Upland. They are characterized as follows:

a. *Lower Colorado River Valley Subdivision*

This is the largest and most arid subdivision of the Sonoran Desert. Due to the high temperatures and low precipitation levels, the plant growth tends to be generally open and simple, due to the intense competition for water. The dominant vegetation includes creosote (*Larrea tridentata*), triangle- leaf bursage (*Ambrosia deltoidea*), desert ironwood (*Olneya tesota*), and blue paloverde (*Cercidium floridum*). The vegetation along drainages tends to grow in rows along the margins. This vegetation is set apart from the intervening vegetation of the interfluves. In this subdivision, the drainageways may assume two forms: dendritic or reticulated. In the study area the drainage pattern is dendritic, small drainages upslope converge and carry run-off to the main watercourses. The sandy plains of this subdivision have resulted in uniquely adapted lizards and snakes, some of which are unique to the study area. The southern two-thirds of the study area is located in the Lower Colorado River Valley subdivision.

b. *Arizona Upland Subdivision*

This subdivision, also known as the Paloverde-Cacti desert (as referenced in Shreve, 1951) is located generally at higher elevations and slopes of central and south-central Arizona . It includes more lush vegetation, and has more diversity (due to the two rainy seasons), than the Lower Colorado River Valley Subdivision. This subdivision is dominated by species of leguminous trees, shrubs, perennial succulents, and combinations of trees, such as foothill paloverde (*Cercidium floridum*) , desert ironwood (*Olneya tesota*) and large tree- like cacti such as saguaro (*Carnegiea gigantea*), and teddy bear cholla (*Opuntia bigelovii*). In the Arizona Upland Subdivision, the terrain contains rolling or rocky slopes between washes, grading gradually from north to south, and from higher to lower elevations, into the creosote bush associations, typical of the Lower Colorado River Subdivision. Within the study area, the dendritic drainage pattern is present. The smaller washes drain from higher elevations and converge southerly into the two main watercourses. This is the only subdivision that experiences numerous winter frosts. Species found in lower elevations and in southerly subdivisions would not survive.

As a result of their overlap, the two subdivisions share a number of plant species due to their similar growing conditions. This area of overlap is referred to as an *ecotone*. Plants commonly occurring in both

subdivisions within the study area include, foothill palo verde (*Cercidium floridum*), creosote (*Larrea tridentata*), and triangle- leaf bursage (*Ambrosia deltoidea*).

3. Riparian Habitat Types

There are three basic habitat types used to categorize the existing riparian habitat within the study area, they are described below.

a. Sonoran Riparian Scrubland

In and along drainages, vegetation is low to medium in height and density. The scrublands are similar to the desert scrub adjacent to the area, but the channel is distinctly riparian. Common species include desert ironwood, mesquite, and paloverde, which are generally more numerous and larger in size than those found outside the washes (Figure 3). Some riparian scrubland vegetation exists within interior strands (Figure 4). Plant species that may inhabit these areas include seepwillow (*Baccharis salicifolia*), desert broom (*B. Sarothroides*), desert-willow (*Chilopsis lineraris*), desert hackberry (*Celtis pallida*), mesquite (*P. juliflora*), and saltcedar (*Tamarix sp.*).

Riparian scrublands are important habitat for many species of mammals, birds, reptiles, and fishes. This habitat type is further divided into three classes: hydroriparian, mesoriparian, and xeroriparian (see the glossary for descriptions).

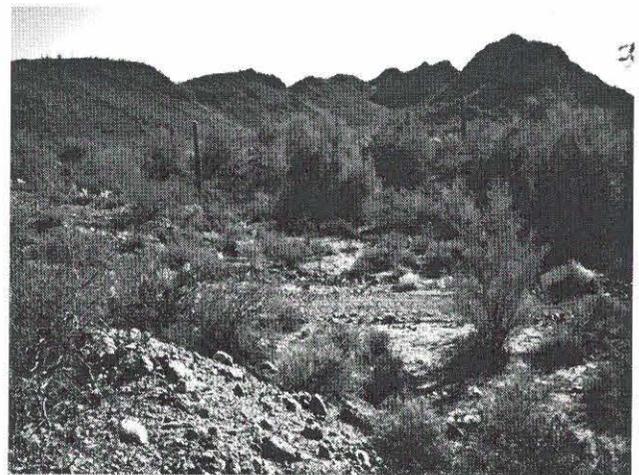


Figure DC-B-3. Sonoran Riparian Scrubland

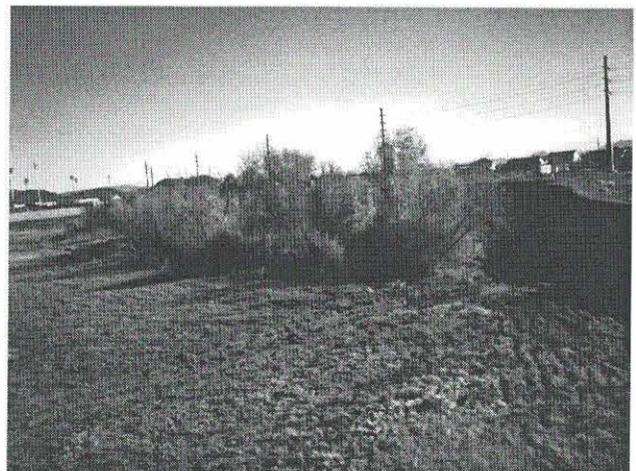


Figure DC-B-4. Sonoran Riparian Scrubland within an Interior Strand

b. Sonoran Interior Strand

The vegetation in the Sonoran Interior Strand is comprised of strands of scrublands with the substrate of mud, rocks, sand, or rubble (Figure 5). Water levels fluctuate annually, and the aquatic/semi-aquatic animals survive during the periods of drought by remaining in the reduced or permanent segments of the system. The vegetation generally includes: seepwillow (*Baccharis salicifolia*), nightshades (*Solanum spp.*), and common cocklebur (*Xanthium stumarium*). .

c. Disturbed Areas

These areas are 100% disturbed by man-made activities and are without wildlife habitat value. Examples of disturbance in the study area include sand and gravel operations, extensive off-highway vehicle usage, and broad clearings for development (Figure 6).

4. Riparian Habitat Values

The criteria for assessing the current value of riparian habitats is based on the ecological characteristics of the main watercourses, smaller riparian corridors, and wetland areas. Habitat values are assigned as high, medium, and low. They reflect the overall suitability of the landscape

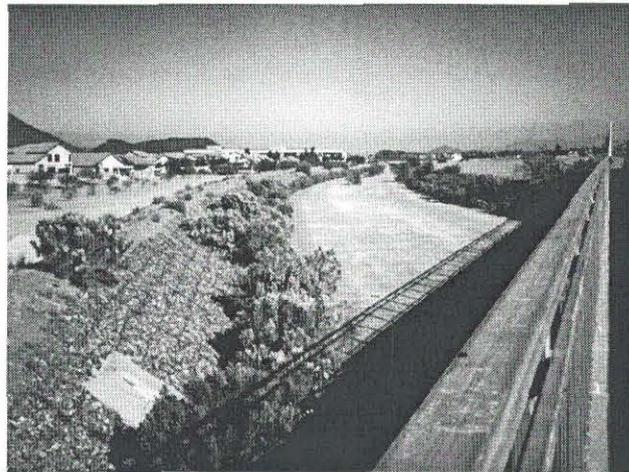


Figure DC-B-5. Sonoran Interior Strand

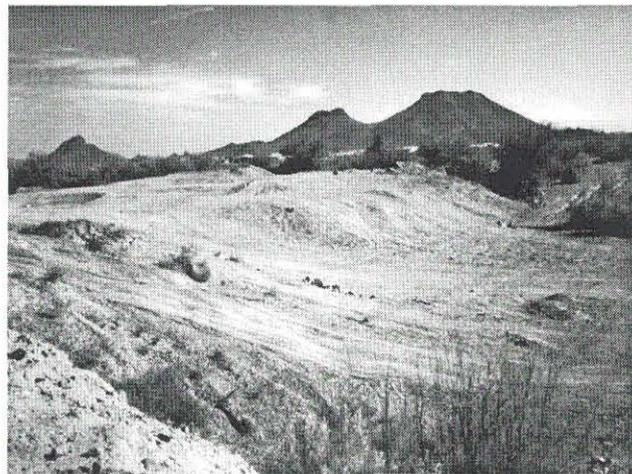


Figure DC-B-6. Disturbed Area

for wildlife. The criteria for assigning values includes tree and shrub species diversity, vegetation density, structural variety of cover, abundance of wildlife observed, and degree of human disturbance. Social values such as aesthetics, open space, and parks and schools adjacent to or incorporating a watercourse or riparian habitat are not included in this report.

5. Analysis of Habitat Types and Habitat Values Within The Study Area

Two main watercourses exist within the study area, the Agua Fria River and New River, both of which are classified as Sonoran Interior Strands in both the Lower Colorado River Valley Subdivision and the Arizona Upland Subdivision. Skunk Creek is the largest tributary of New River; it is also classified as a strand. Beginning on the west side of the study area, the Agua Fria River is sparsely vegetated and fragmented. The main channel is sandy with intermittent patches of cobble and gravel. Vegetation is dominated by desert broom (*Ambrosia sarothroides*), various grasses, and low shrubs. A small scattered number of paloverde trees (*Cercidium sp.*) landscape the bank. The Interior Strand by itself has low wildlife habitat value. However, a wetland (hydroriparian) area was identified on the west side of the Agua Fria River in the vicinity of Grand Avenue and El Mirage Road (Figure 7). This site has high wildlife value. The dominant vegetation includes cattails (*Typha sp.*), cottonwoods (*Populus sp.*), and saltcedar (*tamarix sp.*). A wide variety of ducks and songbirds were observed utilizing this area.

Portions of the Agua Fria River are located in the Arizona Uplands subdivision (northern one-third of the study area), and has tributaries that are

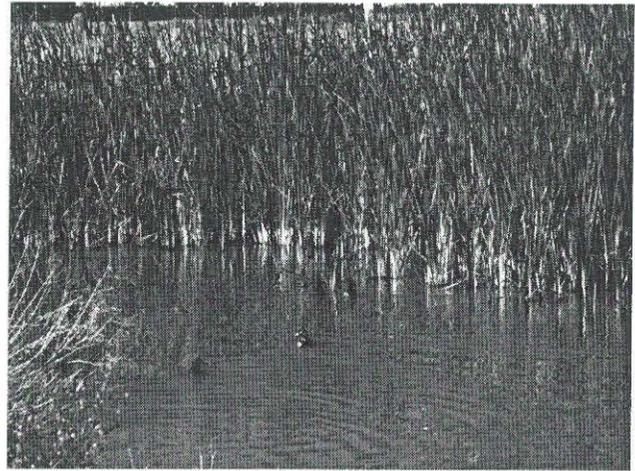


Figure DC-B-7. Wetland

classified as Sonoran Riparian Scrubland. These are dry (xeroriparian) washes, characterized by dense vegetation and sandy soils within gently



Figure DC-B-8. Xeroriparian Wash

sloping, sometimes rocky terrain (Figure 8). Dominant vegetation includes paloverde (*Cercidium sp.*), creosote (*Larrea tridentata*), triangle-leaf bursage (*Ambrosia deltoidea*), and desert broom (*Baccharis sarothroides*). Wildlife value generally increases in this habitat type because it provides critical components to

wildlife such as escape cover, food or prey sources, feeding substrate, nest or birthing substrate, reproduction, temperature regulation, and travel corridors. The habitat value is considered high in xeroriparian washes that are densely vegetated.

On the east side of the study area, the New River watercourse is sparsely vegetated in the Lower Colorado River Valley Subdivision (southern two-thirds of the study area). The dominant vegetation along the banks is desert broom (*Baccharis sarothoides*). This portion of the study area is highly developed (mostly residential); most native vegetation has been removed along the watercourse. Some banks are lined with cobble and retained by wire mesh. However, three wetland (hydroriparian) areas were identified along New River (two within Riparian Interior Strands and one in Riparian Scrubland). The most southerly wetland area is located within the river channel itself, in the vicinity of 107th Avenue and Glendale Avenue (Figure 9). The vegetation is diverse and includes seep willow (*Baccharis salicifolia*), cottonwood (*Populus* sp.), desert broom (*Baccharis sarothoides*), various grasses and possibly a eucalyptus tree. The site contains standing water which appears to be fed by adjacent irrigation canals. Numerous bird species were observed utilizing the area.



Figure DC-B-9. Wetland within an Interior Strand

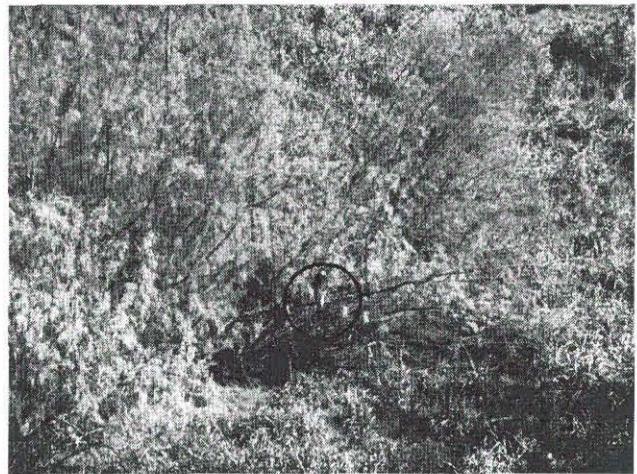


Figure DC-B-10. Sharp-Shinned Hawk in Tamarix

The habitat value is considered to be high at the wetland site, but the Interior Strand it contains has low value.

The second hydroriparian area is located in the vicinity of 99th Avenue and Olive. It is located in the main channel of New River, and contains low standing water, cattails, desert broom, fan palms, salt cedar, various grasses, and algae. Vegetation density is low and broadly scattered. Even though a sharp-shinned hawk was observed foraging at

this site, the habitat is of low to medium value to wildlife (Figure 10 and 11).

Within the upper reaches of the Lower Colorado River Valley subdivision along New River, the third hydriparian area was identified in the vicinity of 75th Avenue and Deer Valley Road. This apparent basin includes a cobble stone wash lined with large trees dominated by large willows (*Salix* sp.), saltcedar (*Tamarix* sp.), desert broom (*Baccharis sarothroides*), cattails (*Typha* sp.), and various grasses. The trees were approximately 30 feet in height and most contained bird nests (Figure 12). A wash flowed into a large open pond lined with white clover (*Trifolium repens*), seep willow (*Baccharis salicifolia*), and desert broom (*Baccharis sarothroides*)(Figure 13). Several species of ducks were observed feeding on the pond, numerous songbirds (including a gray flycatcher)could be heard/observed in the area. (Figure 14). The habitat value is considered to be high.

Heading north along New River, within the Arizona Upland Subdivision, the secondary washes were classified as Riparian Scrubland (xeroriparian), where dominant vegetation changes to paloverde-cacti associations. In the northeast portion of the study area, numerous washes drain southward from Ludden Mountain

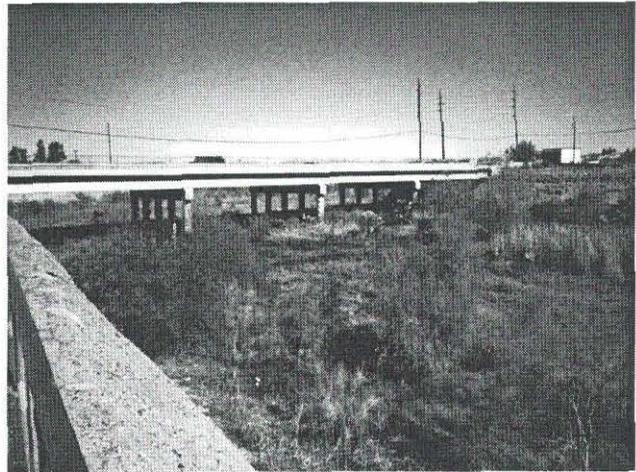


Figure DC-B-11. Hydriparian within a Strand

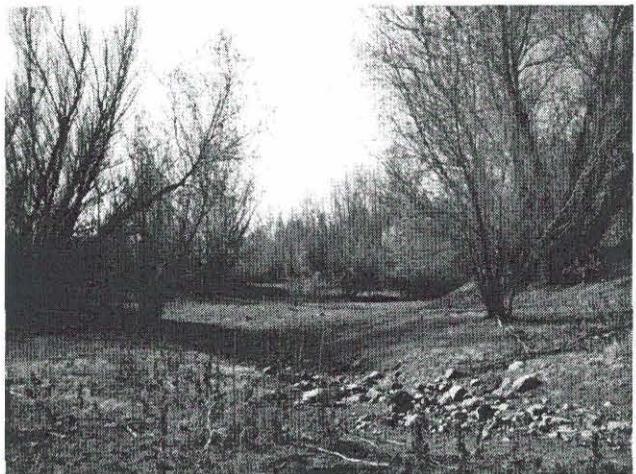


Figure DC-B-12. Riparian Scrubland

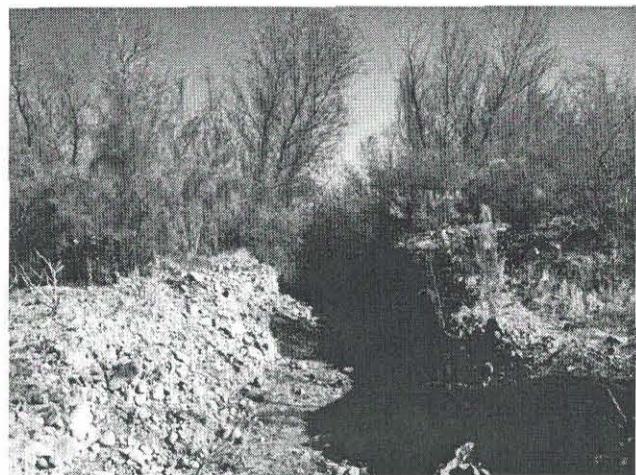


Figure DC-B-13. Wash Dominated by Seep Willow

and East Wing Mountain in a northeast to southwest direction, converging into New River. Some of the drainages have been bisected at the Central Arizona Project (CAP), which borders the study area. Vegetation in the area includes foothill paloverde (*Cercidium floridum*), mesquite (*Prosopis* sp.), saguaro (*Cercus giganteus*), chain fruit cholla (*Opuntia fulgida*), creosote (*Larrea tridentata*), triangle-leaf bursage (*Ambrosia deltoidea*), and desert broom (*Baccharis sarothroides*). The lush, diverse plant community maximizes animal habitat and species diversity, and is considered to be high in this portion of the study area.

An important wildlife feature is located in the Arizona Upland portion of the study area. This Sonoran Riparian Scrubland xeroriparian area, is in the vicinity of 91st Avenue and Happy Valley Road. The mine is currently being used as a roost site for California leaf-nosed bats (*Macrotus californicus*) (Figures 15 and 16). On February 14, 2000, the Arizona Game and Fish Department (AGFD) surveyed the mine and counted over 500 individuals exiting the shaft. Prior surveys have indicate that the southwestern cave myotis (*Myotis velifer brevis*) utilizes the mine.

In the hills east of the mine shaft, pristine Sonoran Desertscrub exists, which contains foothill

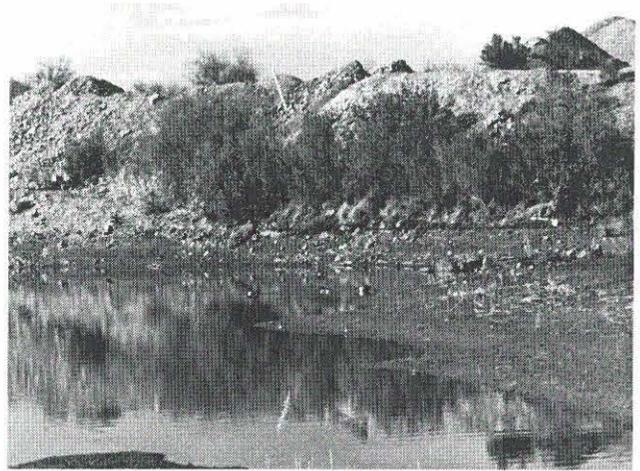


Figure DC-B-14. Wetland

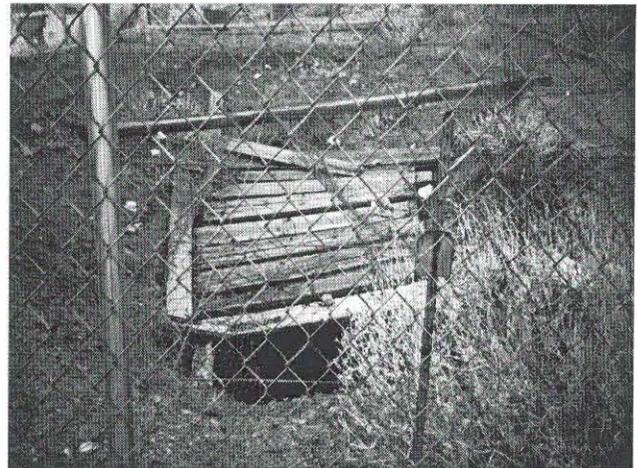


Figure DC-B-15. Mine Shaft

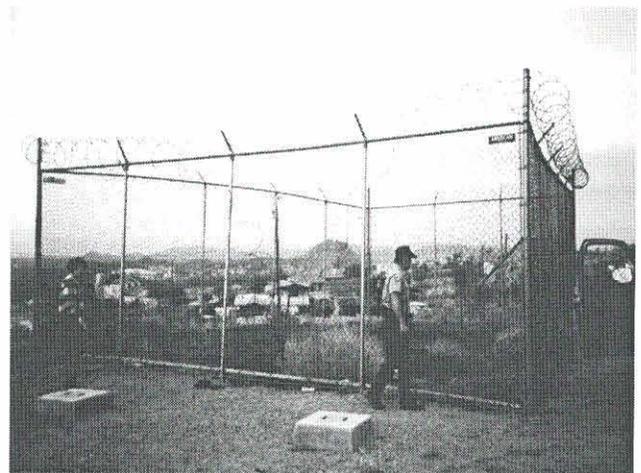


Figure DC-B-16. Mine Shaft -Bat Roost

paloverde (*Cercidium floridum*), creosote (*Larrea tridentata*), teddy bear cholla (*Opuntia bigelovii*), triangle-leaf bursage (*Ambrosia deltoidea*), and saguaro (*Carnegiea gigantea*). This relatively undeveloped area has high value to wildlife.

A hydroriparian habitat within the Riparian Scrubland community was identified at Thunderbird Park, in the vicinity of 59th Avenue and Pinnacle Peak Road. This reservoir contained lush vegetation and identifies the area as one of the most important wildlife use habitats in the study area. The reservoir is several acres in size and is densely lined with seep willow (*Baccharis salicifolia*), desert broom (*Baccharis sarothroides*), desert globemallow (*Sphaeralcea ambigua*), creosote (*Larrea tridentata*), and other unidentified trees (Figure 17). A large concentration of birds, amphibians, and fish were observed in the area (Figure 18). The reservoir is connected to a man-made lake in the residential community to the south. An inlet channel is located just northwest of the reservoir which appears to connect to the wash that drains south from the study boundary at the CAP.

Along New River, in the Arizona Upland Subdivision, in the northern portion of the study area, a highly disturbed area was identified for heavy off-road vehicle recreational use. Most of

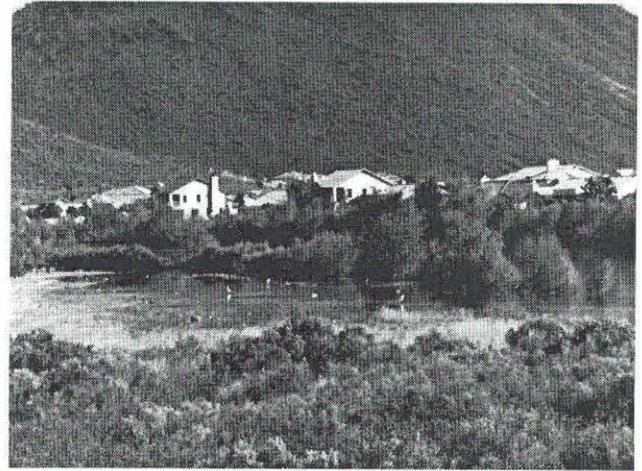


Figure DC-B-17. Hydroriparian Wetland Habitat

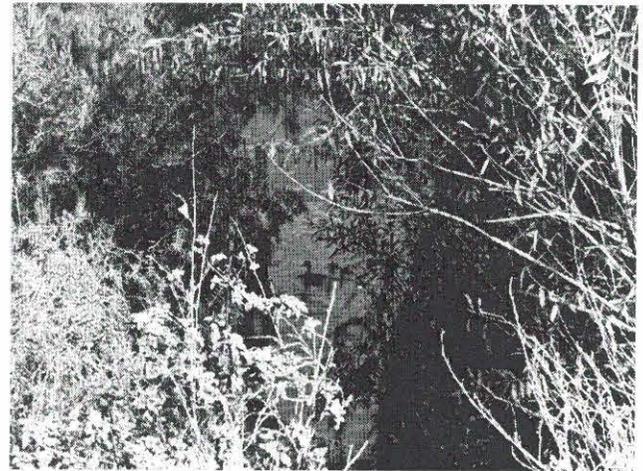


Figure DC-B-18. High Habitat Value Area

the vegetation has been destroyed and offers no value to wildlife. Other disturbed areas within the study area include, sand and gravel operation sites, and dam structures. As a result of urban development in the cities of Glendale and Peoria habitat has been fragmented maximizing the isolation of species.

Skunk Creek, the main tributary to New River, is located in the Lower Colorado River Valley Subdivision on the eastern side of the study area. It flows from northeast to southwest and converges with New River in the vicinity of 83rd Avenue and Thunderbird Road. Classified as Sonoran Interior Strand, vegetation is absent except for a few desert broom (*Baccharis sarothroides*) along the channel bank. Hydroriparian habitat is located just north of the New River Skunk Creek confluence in a side channel. The vegetation includes, seep willow (*Baccharis salicifolia*), cottonwood (*Populus* sp.), mesquite (*Prosopis* sp.), low shrubs, grasses, with low standing water. A killdeer (*Charadrius vociferus*) was observed feeding along the water's edge. This site has medium to low habitat value.

DC-B-5. SENSITIVE SPECIES

1. Federally Listed Threatened and Endangered Species

A list of federally listed Threatened and Endangered Species for Maricopa County was obtained from the U.S. Fish and Wildlife Service. A copy of this list is included in the Appendix. The following is a discussion of each species, its status, habitat requirements, and occurrence or potential occurrence within the study area. The results of the analyses for these species are based on the U.S.D.A. Forest Service (USFS) classifications: *No Suitable Habitat*, *Suitable Habitat Present*, or *Suitable Habitat Occupied*.

Arizona Agave (*Agave arizonica*)

Status: Endangered.

Habitat: The Arizona agave is native to a small area in central Arizona (New River Mountains and Sierra Anches). It is usually found on steep, rocky slopes between 3,600 - 5,800 feet above MSL, between Oak-Juniper Woodlands and Mountain Mahogany-Oak Scrub.

Analysis: *No Suitable Habitat*.

Arizona Cliffrose (*Purshia subintegra*)

Status: Endangered

Habitat: This species is associated with white soils of Tertiary limestone lakebed deposits at elevational ranges between 2,500 - 4,000 feet above MSL.

Analysis: *No Suitable Habitat.*

Arizona Hedgehog Cactus (*Echinocereus triglochidiatus arizonicus*)

Status: Endangered

Habitat: The Arizona hedgehog cactus is usually found between Interior Chapparal and Madrean Evergreen Woodlands in rugged canyons and boulder-pile ridges, in narrow cracks between boulders, and in the understory of shrubs. This plant is found at elevations between 3,400 - 5,300 feet above MSL.

Analysis: *No Suitable Habitat.*

Bald Eagle (*Haliaeetus leucocephalus*)

Status: Threatened

Habitat: Bald Eagles are found in areas with large trees or cliffs that are near water (reservoirs, rivers and streams), and contain an abundance of prey. In Arizona, Bald Eagles have been observed at elevations between 460 - 7,930 feet above MSL.

Analysis: *No Suitable Habitat.*

Bonytail Chub (*Gila elegans*)

Status: Endangered

Habitat: The Bonytail Chub occupies main stream portions of mid-sized to large rivers and streams, usually over mud or rocks. A small population exists in Lake Mohave with possible individuals down river as far as Parker Dam.

Analysis: *No Suitable Habitat.*

Cactus Ferruginous Pygmy-Owl (*Glaucidium brasilianum cactorum*)

Status: Endangered

Habitat: These owls are typically found in mature cottonwood/willow woodlands, mesquite bosques and Sonoran desertscrub, at elevations below 4,000 feet above MSL.

Analysis: *Suitable Habitat Present* (marginal). The northern edge of the study area contains Sonoran desertscrub with strands of saguaros, and desert washes with mature paloverde, mesquite, and ironwood.

Desert Pupfish (*Cyprinodon macularius*)

Status: Endangered

Habitat: Historically, the pupfish range included the lower Gila River basin. It occupies shallow waters of springs, small streams, and marshes. The fish is associated with areas of soft substrates and clear water, at elevations below 4,920 feet above MSL.

Analysis: *No Suitable Habitat*. However, a captive stock population exists adjacent to the study area. This population is operating through the Deer Valley High School District.

Gila Topminnow (*Poeciliopsis occidentalis*)

Status: Endangered

Habitat: The topminnow occupies small streams, springs, and cienegas/vegetated shallows below 4,500 feet above MSL. It is associated with dense aquatic vegetation.

Analysis: *No Suitable Habitat*.

Lesser Long-nosed Bat (*Leptonycteris curasoae yerbabuenae*)

Status: Endangered

Habitat: The Lesser long-nosed bat occupies desertscrub and grasslands to oak communities. It normally feeds on flower nectar, pollen, and sometimes fruit from agave and columnar cacti. The bat is found at elevations below 3,500 feet above MSL from April to July and up to 5,500 feet above MSL from July to late September. These bats roost during the day in caves and abandoned tunnels.

Analysis: *No Suitable Habitat.* It is not likely that the study area is used for foraging. The presence of Arizona Upland vegetation, and mature armed saguaros in particular, suggest a potential for foraging in late spring and early summer when saguaros are blooming and fruiting.

Mexican Spotted Owl (*Strix occidentalis lucida*)

Status: Threatened

Habitat: These owls are usually found elevations between 4,100 to 9,000 feet above MSL. This species occupies dense forested areas with multi-layered foliage structure and nests in canyons.

Analysis: *No Suitable Habitat.*

Razorback Sucker (*Xyrauchen texanus*)

Status: Endangered

Habitat: This fish occupies rivers, lakes, in slow moving water, found below 6,000 feet above MSL.

Analysis: *No Suitable Habitat.* This species is associated with rivers at depths greater than 3 feet.

Sonoran Pronghorn (*Antilocapra americana sonoriensis*)

Status: Endangered

Habitat: This subspecies of antelope occupies broad, intermountain alluvial valleys with creosote-bursage and paloverde-mixed cacti, at elevations between 400 - 1,600 feet above MSL.

Analysis: *No Suitable Habitat.* This subspecies has never been documented north of the Gila River.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

Status: Endangered

Habitat: This species is found in riparian areas along rivers and streams, associated with cottonwood/willow and tamarisk vegetative communities. They occupy areas of elevation between below sea level to 8,240 feet above MSL.

Analysis: *No Suitable Habitat.* This subspecies prefers dense canopy cover, a large volume of foliage, and surface water.

Yuma Clapper Rail (*Rallus longirostris yumanensis*)

Status: Endangered

Habitat: This rail is associated with dense emergent riparian vegetation, with wet substrate and dense herbaceous or woody vegetation. They tend to occupy fresh and brackish water marshes at elevations below 4,500 feet above MSL.

Analysis: *Suitable Habitat Present (marginal).* Emergent vegetation, such as cattails and bulrushes, is present in isolated patches of wetlands but this vegetation is neither dense nor extensive.

2. Wildlife of Special Concern

A list of WSCA was documented for the study area and was obtained from AGFD. A copy of this list is included in the Appendix.

The following is a discussion of each species, its status, habitat requirements, and occurrence or potential occurrence within the study area. This list also includes federally listed Threatened and Endangered Species. The results of the analyses for these species are based on the U.S.D.A Forest Service (USFS) classification *No Suitable Habitat*, *Suitable Habitat Present*, or *Suitable Habitat Occupied*.

Black-bellied Whistling-duck (*Dendrocygna autumnalis*)

Status: WSCA

Habitat: This bird frequently nests in tree cavities, where cottonwoods are present. Nests are usually adjacent to, or over water, but may be as far away as 3.5 miles from water. Reported observations suggest that they follow main watercourses to wetlands.

Analysis: *Suitable Habitat Present*. This species is frequently seen at sewage ponds in the summer. Since 1960, nesting and young Black-bellied Whistling ducks have been observed near Peoria at area ponds.

Great Plains Narrowmouth Frog (*Gastrophryne olivacea*)

Status: WSCA

Habitat: This species occupies mesquite semi-desert grasslands to oak woodlands, in the vicinity of streams, springs and rain pools. They are found at elevations extending from sea level to around 4,100 feet above MSL.

Analysis: *No Suitable Habitat*.

Lowland Leopard Frog (*Rana yavapaiensis*)

Status: WSCA

Habitat: The Lowland leopard frog occupies the northwestern part of the state, Colorado River near Yuma, west, central, and southeastern Arizona, south of the Mogollon Rim. It frequents the desert, grassland, oak and oak-pine woodland, permanent pools of foothill streams, rivers and permanent stock tanks. Found in elevations from 800 feet to 5,500 feet above MSL.

Analysis: *Suitable Habitat Present (marginal)*. This species was documented after 1975 just north and south of the study area.

Roundtail Chub (*Gila robusta*)

Status: WSCA

Habitat: This chub occurs in mainstem tributaries of the Verde and Salt Rivers, as well as canals in metropolitan Phoenix. The roundtail chub occupies cool to warm water, in mid-elevation streams and rivers. Cover is usually present, and consists of large boulders, tree rootwads, submerged large trees and branches, undercut cliff walls in deep water.

Analysis: *No Suitable Habitat*.

Sonoran Desert Tortoise (*Gopherus agassizii*)

Status: WSCA

Habitat: This species of tortoise occupies a range south and east of the Colorado River, inhabiting the bajadas, rocky slopes, creosote bush flats, and Sonoran desertscrub in elevations from 520 feet up to 5,330 feet above MSL. The tortoise typically occurs in the Paloverde-cacti mixed scrub. Shelter sites, or dens are located in cavities in the sides of washes and/or crevices beneath rocks, and pallets in depressions under shrubs.

Analysis: *Suitable Habitat Present*. Occurrences have been documented within five miles of the project area (post 1975). The upper portion of the study area contains rocky slopes and bajadas suitable for the tortoise.

3. Summary of Sensitive Species

The study area does not fall within critical habitat for any of the listed species. However, suitable habitat exists for the Black-bellied Whistling-duck (*Dendrocygna autumnalis*), Cactus Ferruginous Pygmy-Owl (*Glaucidium brasilianum cactorum*), lowland leopard frog (*Rana yavapaiensis*), Sonoran desert tortoise (*Gopherus agassizii*), and the Yuma Clapper Rail (*Rallus longirostris yumanesis*).

DC-B-6. SUMMARY/RECOMMENDATIONS

Summary

Historical streamflow data (United States Geological Survey report) suggests that on average, New River discharges more water in cubic feet per second (CFS), than the Agua Fria River. For example, in 1995 the El Mirage station recorded less than 10 CFS on the Agua Fria; the Glendale station recorded 1000 CFS on New River, during the same time period. This could explain the higher numbers of hydric conditions observed along New River compared to the Agua Fria River.

The main watercourses (Riparian Interior Strands) identified within the study area offer little, if any value to wildlife, unless Riparian Scrubland is present within the strand. The Riparian Interior Strands in the study area were classified as either xeroriparian or hydroriparian (with Riparian Scrublands present), with no mesoriparian areas present. The hydroriparian areas within Riparian Scrubland maintain the highest value to the wildlife. These areas provide the three major factors necessary for wildlife habitat: food, water, and cover. The xeroriparian areas within Riparian Scrubland are also hold valuable they to wildlife because they provide travel corridors, shelter, and hunting opportunities. The populations that depend on wetland habitat for survival include all taxonomic groups. Wetlands are known for the abundance of waterfowl and migratory species of birds and vegetation. Wetlands provide flood mitigation, storm abatement, aquifer recharge, water-quality improvement, aesthetics, and general subsistence. Overall, habitat value in the north portion of the study area is considered to be high. The wetlands identified along New River and the Agua Fria River is considered to be high.

Recommendations

1. In the Arizona Upland Subdivision (northern portion of the study area), prevent fragmentation of washes and vegetation (by roads or clearing) by minimizing the contacts to the adjacent areas.
2. Slow and spread the water using natural washes.
3. Prevent erosion by:
 - a. Prevent loss or reduction of ground vegetation
 - b. Prevent ground disturbance where possible
 - c. Prevent concentration of water flow by scraping and road building.
4. Prevent exotic plant species by minimizing ground disturbance, which will allow seeds to germinate.
5. Maintain diversity of animal habitats and species. Preserving plant community diversity can maximize wildlife habitat.
6. Preserve as large an area as possible to maintain species diversity.
7. Preserve the wetland areas identified along the Agua fria River and New River.

DC-B-7. LITERATURE REVIEWED

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DC-B-8. COORDINATION

The following persons were contacted in relation to this project:

Arizona Game and Fish Department

Main Office (Phoenix): Sue Schuetze, HDMS Data Manager, Habitat Branch
Sabra Schwartz, HDMS Coordinator

Region VI (Mesa) Bill Berger, Nongame Wildlife Specialist
Tim Wade, Habitat Specialist

Arizona State University

East Campus (Mesa): Dr. Douglas Green, Environmental Resources Department

Main Campus (Tempe) Joseph Ewan, Assistant Professor
Herberger Center

Flood Control District

Maricopa County Theresa Hoff, Environmental Planner/Biologist

DC-B-9. APPENDIX

Glossary

Endangered Species List for Maricopa County (USFWS)
Arizona Game and Fish Department List of Special Status Species

Glossary

Biomes	Biotic communities that are natural formations and are characterized by distinctive vegetation physiognomy that lies within a biotic province (Brown 1994).
Ecotone	Transition zone. The ecotone between Arizona Upland and Lower Colorado River Valley Subdivisions includes vegetation from both.
Hydroriparian	Saturated conditions with vegetation adapted to saturated conditions.
Hyperthermic Arid Soils	These soils are found at lower elevations in western and southwestern Arizona. The mean annual precipitation received is less than 10 inches (Hendricks 1985).
Mesoriparian	Moist conditions, not saturated, nor dry.
Riparian	Reference to the zones along the banks of rivers, shoreline communities, or along slow or non-flowing waters like marshes and lakes (Arizona-Sonora Desert Museum 2000).
Riparian Wetlands	Areas occurring on or along rivers and streams, occasionally flooded by the bodies of water, but are otherwise dry for varying portions of the growing season. These areas can be fed by subsurface waters, through the bedrock, producing standing water for long periods of time (Green 2000).
Thermic Semi Arid Soils	These soils are found at low to intermediate elevations in northwestern Arizona, in and along the Grand Canyon. The mean annual precipitation is between 5 to 10 inches (Hendricks 1985).
Wetlands	Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. These areas are usually circular in nature with weak herbaceous vegetation, still water, and fine sedimentation (Green 2000).
Xeroriparian	Dry conditions.



GAME & FISH DEPARTMENT

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Dennis D. Manning, Alpine
Michael M. Golightly, Flagstaff
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Director
Duane L. Shroufe

Deputy Director
Steve K. Ferrell

December 28, 1999

Ms. Barbara A. Garrison
Logan Simpson Design, Inc.
51 West Third St, Suite 450
Tempe, AZ 85281

Re: Special Status Species; Glendale/Peoria Area Master Plan

Dear Ms. Garrison: ~~Barb~~,
Barb,

The Arizona Game and Fish Department (Department) has reviewed your letter, dated December 9, 1999, regarding special status species in the above-referenced area, and the following comments are provided.

The Department's Heritage Data Management System has been accessed and current records show that the special status species listed below have been documented as occurring in the project vicinity.

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
black-bellied whistling-duck	<i>Dendrocygna autumnalis</i>	WC
desert pupfish	<i>Cyprinodon macularius macularius</i>	LE,WC
Great Plains narrowmouth frog	<i>Gastrophryne olivacea</i>	WC
lowland leopard frog	<i>Rana yavapaiensis</i>	WC,S
roundtail chub	<i>Gila robusta</i>	WC,S
Sonoran desert tortoise	<i>Gopherus agassizii</i>	WC

STATUS DEFINITIONS

- LE - Listed Endangered.** Species identified by the U.S. Fish and Wildlife Service under the Endangered Species Act as being in imminent jeopardy of extinction.
- WC - Wildlife of Special Concern in Arizona.** Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Department's listing of **Wildlife of Special Concern in Arizona** (WSCA, in prep.). Species included in WSCA are currently the same as those in **Threatened Native Wildlife in Arizona** (1988).
- S - Sensitive.** Species classified as "sensitive" by the Regional Forester when occurring on lands managed by the U.S.D.A. Forest Service.

Ms. Barbara A. Garrison

December 28, 1999

2

At this time, the Department's comments are limited to the special status species information provided above. This correspondence does not represent the Department's evaluation of impacts to wildlife or wildlife habitat associated with activities occurring in the subject area. If you have any questions regarding this letter, please contact me at (602) 789-3606.

Sincerely,



Nancy Olson
Project Evaluation Specialist
Habitat Branch

NLO:no

cc: Russ Haughey, Habitat Program Manager, Region VI, Mesa

AGFD# 12-14-99(10)



Endangered Species List

[Back to Start](#)

List of species by county for Arizona:

Counties Selected: Maricopa

Select one or more counties from the following list to view a county list:

- Apache
- Cochise
- Coconino
- Gila
- Graham

[View County List](#)

Maricopa County

<u>Common Name</u>	<u>Scientific Name</u>	<u>Listing Status</u>
Arizona agave	<i>Agave arizonica</i>	Endangered
Arizona cliffrose	<i>Purshia subintegra</i>	Endangered
Arizona hedgehog cactus	<i>Echinocereus triglochidiatus arizonicus</i>	Endangered
Bald eagle	<i>Haliaeetus leucocephalus</i>	Threatened
Bonytail chub	<i>Gila elegans</i>	Endangered
Cactus ferruginous pygmy owl	<i>Glaucidium brasilianum cactorum (AZ)</i>	Endangered
Desert pupfish	<i>Cyprinodon macularius</i>	Endangered
Gila topminnow	<i>Poeciliopsis occidentalis</i>	Endangered
Lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuena</i>	Endangered
Mexican spotted owl	<i>Strix occidentalis lucida</i>	Threatened
Razorback sucker	<i>Xyrauchen texanus</i>	Endangered
Razorback sucker	<i>Xyrauchen texanus</i>	Endangered
Sonoran pronghorn	<i>Antilocapra americana sonoriensis</i>	Endangered
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	Endangered



**DATA COLLECTION -CLASS 1
CULTURAL RESOURCE SURVEY**

VOLUME DC-C

Contract FCD 99-44

Prepared by:



**LOGAN SIMPSON
DESIGN INC.**

*51 WEST THIRD STREET
SUITE 450
TEMPE, AZ 85281
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In association with:



LTM Engineering, Inc.
3923 East Thunderbird Road Suite 26-121
Phoenix, Arizona 85032

Class 1 Cultural Resources Survey

Glendale Peoria Area Drainage Masterplan



FCD 99-44



Flood Control District of Maricopa County

CONFIDENTIAL

Prepared by
Logan Simpson Design Inc.
May 2001

ABSTRACT AND MANAGEMENT SUMMARY

- Sponsoring Agency:** Glendale/Peoria ADMP
- Project Title:** A Class I Cultural Resources Inventory for the Glendale/Peoria Area Drainage Master Plan (ADMP).
- Report Date:** March 2000
- LSD Project Number:** 99-5220
- Project Description:** A Class I archaeological survey was undertaken as part of an Environmental Overview for the Glendale/Peoria ADMP. This survey was part of a larger study designed to update an existing Glendale/Peoria ADMP study, completed in May 1987, by quantifying the extent of flooding problems and developing alternative solutions to those problems.
- Land Ownership:** The study area is located in the northwestern portion of the Phoenix Metropolitan Area, within the jurisdiction of Maricopa County. It is primarily within the Glendale and Peoria corporate limits, and encompasses Sun City Community. The perimeter of the study area also overlaps lands within unincorporated Maricopa County and the cities of Phoenix, Surprise, El Mirage and Youngtown. Lands within the study area are generally privately owned, except for several large tracts of State land located north of Beardsley Road.
- Location:** The study area ranges from north to south, between Townships (T) 5 and 2 N, and from west to east between Ranges (R) 1 W to 2 E. It encompasses portions of six 7.5' U.S.G.S quadrangles and associated sections as follows:
- Baldy Mountain: T5N, R1E Sections 19-21
 - Biscuit Flat: T5N, R1E Sections 22-24
T5N, R2E Sections 19-22
 - Calderwood Butte: T5N, R1W Sections 35-36
T5N, R1E Sections 28-33
T4N, R1W Sections 1-3, 10-15, 22-27, 34-36
T4N, R1E Sections 4-9, 16-21, and 28-33
T3N, R1W Sections 1-3
T3N, R1E Sections 4-6
 - El Mirage: T3N, R1W Sections 1-3, 10-15, 22-27
T3N, R1E Sections 4-9, 16-21, 28-33
T2N, R1W Sections 1-3, 10-15, 33-35
T2N, R1E Sections 4-8, 16-18, 31-33
 - Glendale: T3N, R1E Sections 1-3, 10-13, 22, 27
T3N, R2E Sections 7-10, 15-22, 27-34
T2N, R1E Sections 3, 34
 - Hedgepeth Hills: T5N, R1E Sections 1-3, 10-15, 22-27, 34-36
T5N, R2E Sections 27-34

Hedgepeth Hills: T4N, R1E Sections 1-3, 10-15, 22-27, 34-36
T4N, R2E Sections 2-11, 15-22, 27-34

Total Acres: The Class I Cultural Resources Inventory encompasses approximately 54,400 acres (85 miles²).

Methods: Archaeological survey and site information were gathered from the Arizona State Museum (ASM), the Department of Anthropology on the Arizona State University Tempe campus, Pueblo Grande Museum, and the State Historic Preservation Office. Information about potential historic properties located in the study area was based on GLO (General Land Office) maps maintained by the Bureau of Land Management (BLM) at their Phoenix Office, as well publications covering such resources.

Listed Sites: 1

Eligible Sites: 46

Potentially Eligible Sites: 9

Ineligible Sites: 104

Sites of Unknown/ Unreported Eligibility: 123

Recommendations:

A total of 148 cultural resource surveys have been conducted in the study area. Eighty-three of these (56%) have been carried out during the last ten years (1990-2000). This time range is important for ADMP planners. It is important to underscore the fact that when previous cultural resource surveys for a project area are evaluated by the Arizona State Historic Preservation Office (SHPO), if these are equal to (or greater than) ten years old, this office reserves the right to require this area be re-surveyed. The SHPO will sometimes require re-survey based on the quality and completeness of the previous surveys for a project area, based on more recent standards.

The Class I inventory for the study area resulted in the identification of 283 sites dating to the prehistoric and historic eras. In addition, portions of three archaeological districts, are present in the study area (Skunk Creek, Calderwood Butte, and the New River Archaeological Districts). One site has been listed on the National Register of Historic Places (NRHP). A total of 46 sites (16%) in the project area have been determined eligible for nomination to the NRHP. Only nine sites (3%) have been determined as potentially eligible for the Register. One hundred and four sites (37%) have been recommended as ineligible for nomination on the NRHP. These recommendations are as originally recorded; therefore, many of these sites would likely be considered potentially eligible, or eligible for inclusion on the NRHP under current standards. Of the total number of sites recorded, 123 (43%) have been documented in detail, but determinations of eligibility have not been made. This relates to the fact that most historic properties in the study area were recorded either before the NRHP was established, or before archaeologists were directed by the Arizona SHPO to make NRHP determinations as part of their standard operating procedure during survey. More important, it means that re-examination of these sites using contemporary standards for evaluating historic properties would likely result in determining most were at least potentially eligible for the Register. In the case of sites already included in NRHP districts, sites will have to be re-

evaluated in the future in order to determine if these can be classed as contributing or non-contributing features to these districts.

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INTRODUCTION

Logan Simpson Design Inc. was retained by Entellus, Inc., who, in turn, contracted with the Flood Control District of Maricopa County (District) to provide engineering services necessary to update the Glendale/Peoria Area Drainage Master Plan (ADMP). Logan Simpson Design's (LSD) role in this study was to provide environmental and cultural inventories for the ADMP study area. The Glendale/Peoria ADMP study area is located in the south central portion of Arizona (Figure 1). The cultural inventory for this study was compiled from archaeological survey and site records maintained at the Arizona State Museum on the University of Arizona campus in Tucson, Arizona, at the Department of Anthropology on the Arizona State University campus in Tempe, Arizona, at the State Historic Preservation Office in Phoenix, Arizona and at Pueblo Grande Museum in Phoenix, Arizona. In addition, locations for early historic sites and features were determined by compiling General Land Office (GLO) maps for the entire study area. These maps are maintained at the Phoenix Office of the Bureau of Land Management.

The Glendale/Peoria ADMP study area is shown in Figure 2. It includes: the Skunk Creek drainage area downstream of Adobe Dam and west of 51st Avenue, the New River drainage area downstream of the New River Dam to its confluence with Skunk Creek, the drainage area to the west of New River from its confluence with Skunk Creek to its confluence with the Agua Fria River, the drainage area to the east of the Agua Fria River downstream of the Dynamite Boulevard alignment to its confluence with New River, and a small portion of the Arizona Canal Diversion Channel (ACDC) watershed west of 51st Avenue and south of Skunk Creek. The southern boundary of the study is formed by the ACDC structure and New River; the eastern and northern boundaries are formed by 51st Avenue, the dams on Skunk Creek and New River, and the Hedgpeth Hills, East Wind and Ludden Mountains (trending NW-SE between the two structures); the western boundary is formed by the Agua Fria River.

DC-C-1. STUDY PARAMETERS AND REGULATORY SETTING

Several qualifications about the cultural resources inventory for the Glendale/Peoria ADMP study area should be underscored. First, in the cultural history section of this report, not all of the survey areas and cultural resources inventoried and plotted in Appendices A through C are discussed in the text. The objective of the cultural resources overview was to focus on the main periods of temporal use in the study area, and to generally discuss developmental trends associated with these occupations. Individual sites are only cited where they provide the "best" examples of temporal periods or trends discussed. Consequently, more survey areas and sites will be found in the report Appendices than in the culture history overview text. These appendices should be consulted when individual projects designed by the ADMP are being planned and developed. Such consultation will help planners determine if cultural resources might be impacted as a result of future projects.

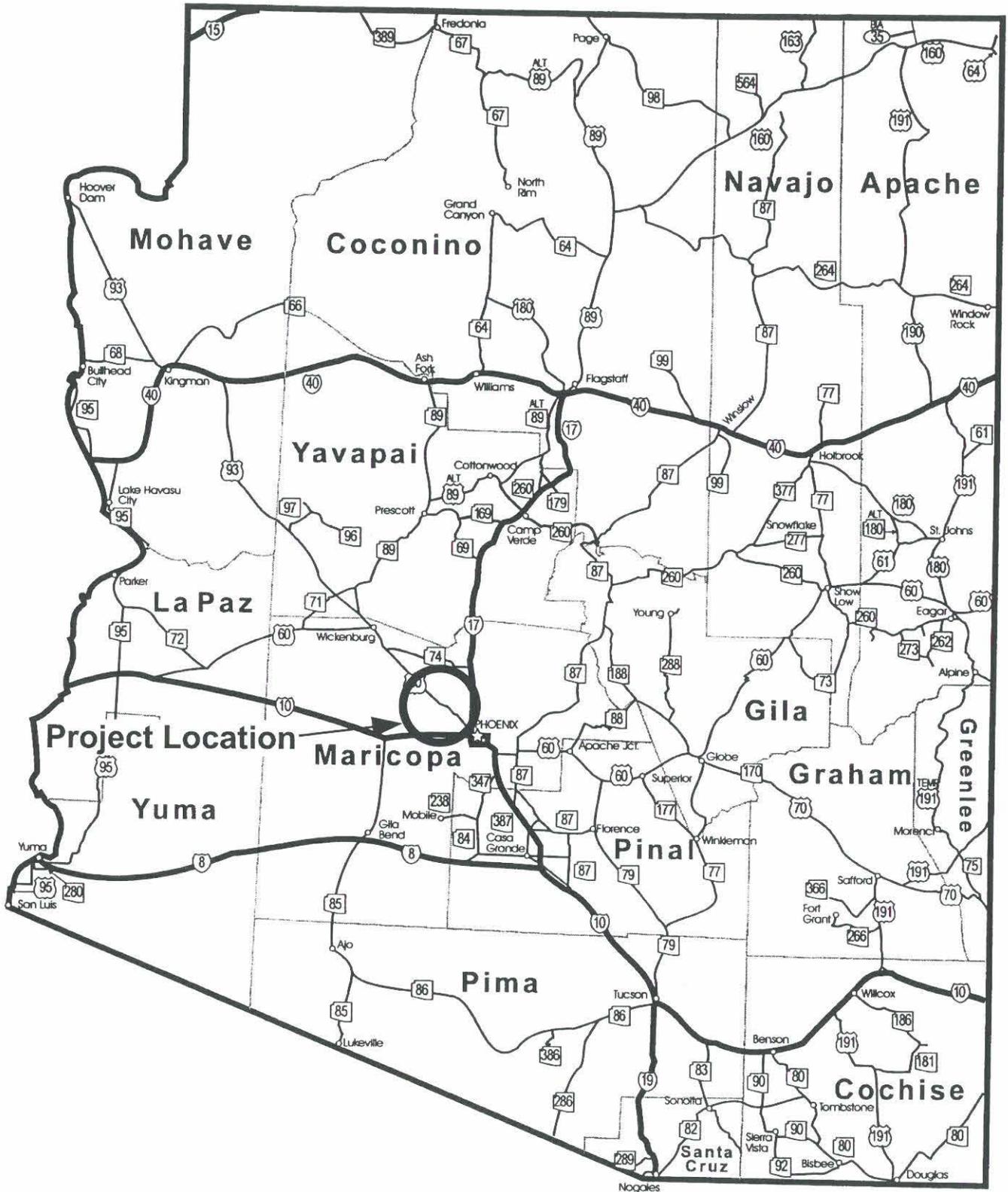
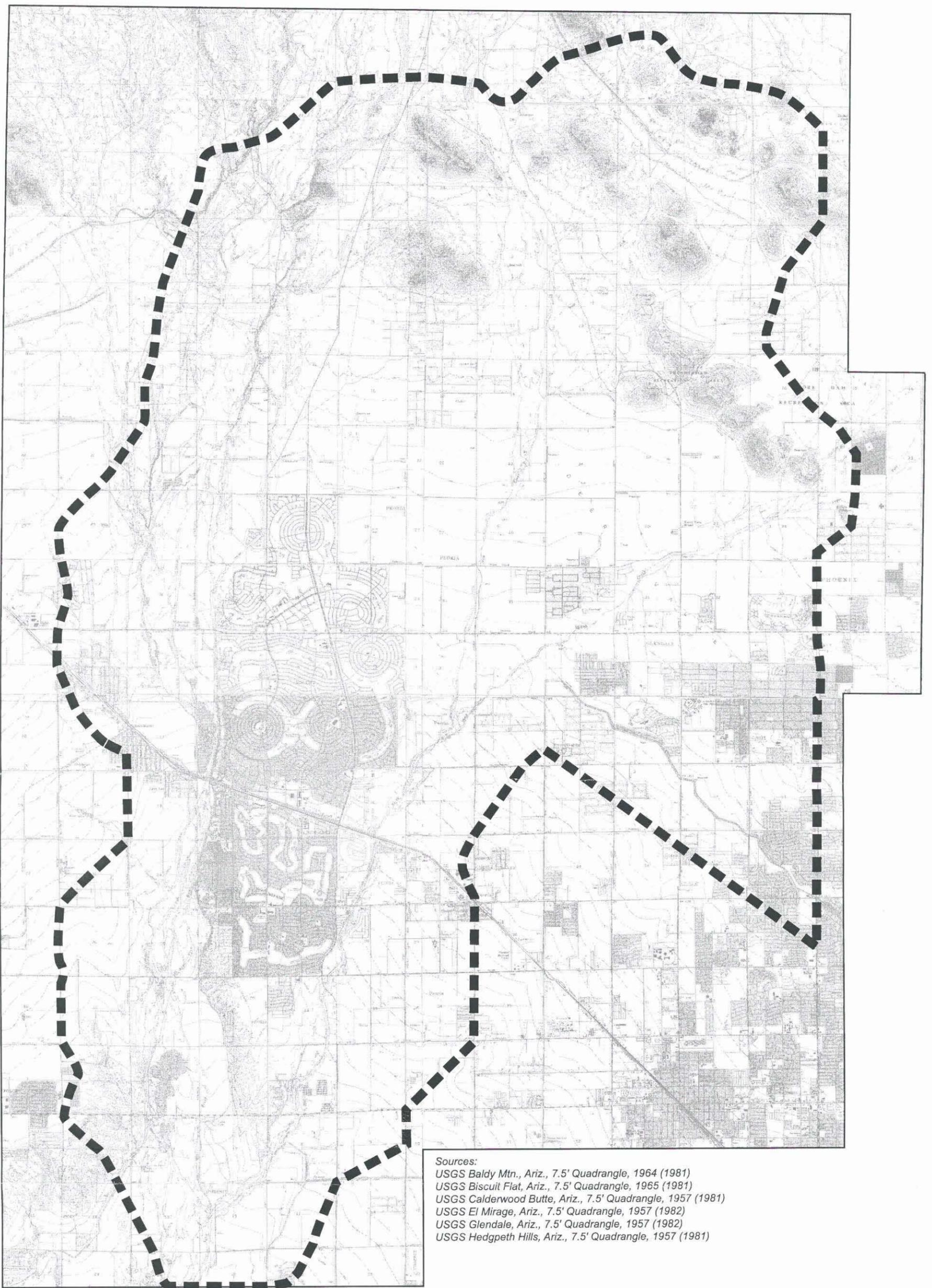


Figure DC-C-1. State Location Map

Glendale Peoria ADMP
 Class 1 Cultural Resources Survey
 FCD 99-44



May 2001



Key
 ■ ■ ■ Project Area

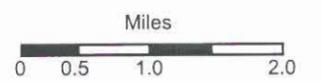


Figure DC-C-2. Project Area.



A second qualification relates to National Register of Historic Places (NRHP) eligibility assessments of individual archaeological sites and/or historic properties inventoried in Appendices B. The eligibility assessments provided in Appendix B are those reported by the original site/ property recorders. LSD has not assessed or re-evaluated the NRHP eligibility of cultural resources within the project area.

Federal Laws

Federal and State laws ensure that historic properties are documented, protected and, if endangered, appropriately treated to ensure that the information contained therein is not lost. *Historic properties are defined as prehistoric and historic sites, buildings and structures, districts, and objects listed on, or eligible to be listed on, the National Register of Historic Places (NRHP), as well as artifacts, records, and remains related to such properties (NHPA §301[5]).* Federal acts pertaining to the inventory and protection of historic properties include the National Historic Preservation Act (NHPA), listed in the Codes of the Federal Register (CFR), 1966 (NHPA, 36 CFR 60.4 and 36 CFR 800), the Archaeological Resources Protection Act, 1979 (ARPA, 43 CFR 7), the American Indian Religious Freedom Act, 1978 (AIRFA, P.L. 95-341), and the Native American Graves Protection and Repatriation Act, 1990 (NAGPRA (Public Law (P.L.) 101-601).

Section 106 of the NHPA directs all Federal agencies to take into account the effects of their undertakings on historic properties. These agencies, in turn, obtain direction for implementing policy potentially affecting historic properties, as well as advice on how to deal with specific properties eligible for the NRHP, from the *Advisory Council on Historic Preservation* (Department of the Interior). The Section 106 process directs federal agencies to inventory historic properties located in areas to be impacted by their projects, determine their NRHP eligibility, oversee treatment plans designed to avoid, or mitigate the loss of, significant properties, and consult with Native American groups (and other interested parties) about the significance of historic properties in their project areas. The Section 106 process must be completed by Federal agencies “prior to the approval of the expenditure of any Federal funds on an undertaking or prior to the issuance of any license”.

State Laws

Arizona laws exist to protect historic properties located on State lands in the same way that Federal laws protect those properties on lands managed by the Federal government. The act and associated regulations relevant in this case include the Arizona Historic Preservation Act (AHPA) and its Revised Statutes (A.R.S.), 1990 (A.R.S. § 41-844 and §41-865). Agencies with oversight of State land are directed to work in concert with the Arizona State Historic Preservation Office (SHPO) to locate, inventory, and nominate to the Arizona Register of Historic Places (ARHP) all historic properties. Oversight for documentation and treatment of historic properties on State land is shared by several agencies who maintain a system for permitting and reviewing archaeological

and historic investigations conducted by professional organizations working on state lands. The agencies involved in this process include the SHPO, the Arizona State Land Division (ASLD), and the Arizona State Museum (ASM).

Both State and Federal lands are present within the Glendale/Peoria ADMP study area. In this context, agencies managing these lands are legally obligated to locate and inventory historic properties, as well as to nominate qualified properties to the NRHP. Agencies must be consulted about the presence, as well as treatment of, historic resources located on lands under their jurisdiction when plans developed by the ADMP might impact these resources.

DC-C-2. PHYSICAL SETTING

The Glendale/Peoria ADMP study area is located in the north-central portion of the Sonoran Desert section of the Basin and Range physiographic province (Figure 3; Fenneman 1946; Wilson 1962). This section's physiography is characterized by generally north-south trending alluvial valleys constrained by long, frequently interrupted mountain ranges. Elevation in the study area ranges between approximately 1,025 ft above mean sea level (amsl) in the southern portion, to 2,137 ft amsl at Ludden Mountain, in the northern portion of the study area. Tributaries flow in a southerly direction from the northern portion of the study area into the main watercourses, forming a dendritic pattern.

The climate of southern Arizona is semi-arid. The project area receives less than 25 cm of precipitation on an annual basis; temperatures average 17° C annually (Sellers and Hill 1974). Most areas in southern Arizona receive precipitation in both winter and summer. However, precipitation consistently falls during the mid-summer months (July-August). Summer rainfall is the product of convective thunderstorms which form as a result of high temperatures and the presence of moist tropical air over much of Arizona during the summer monsoon season (Hales 1994). Summer rainfall accounts for 30 to 60 percent of the annual total, with small proportions in the northern region and larger in the southern region of the study area (LSD 2000). The warm average temperatures of central Arizona contribute to a long growing season of 270 to 300 frost-free days annually (Sellers and Hill 1974).

The project area is located in the Sonoran Deserscrub biome, as mapped by Brown (1994). In Arizona, this biome is composed of two subdivisions: the Lower Little Colorado Valley and the Arizona Upland (Turner and Brown 1994). These subdivisions overlap within the project area.

The southern two-thirds of the study area is within the Lower Colorado River Valley subdivision, the largest and most arid subdivision of the Sonoran Desert. The dominant vegetation includes creosote, triangle-leaf bursage, desert ironwood, and blue paloverde. In this subdivision, drainage ways may assume two forms: dendritic or reticulated. The drainage pattern of the study area is



Figure DC-C-3. Physiographic Map



dendritic; small drainages upslope converge and carry run-off to the main watercourses (see LSD 2000).

The northern third of the project area is within the Arizona Upland subdivision, also referred to as the Paloverde-Cacti desert. It is located at higher elevations and slopes, includes more lush vegetation, and exhibits greater botanical diversity than the Lower Colorado River Valley subdivision. This subdivision is dominated by species of leguminous trees, shrubs, perennial succulents, and combinations of trees such as foothill paloverde, desert ironwood, and arborescent (tree-like) cacti like saguaro and teddy bear cholla. Terrain contains rolling or rocky slopes between washes, which grade gradually from north to south, and from higher to lower elevations, into the creosote bush associations more typical of the Lower Colorado River subdivision.

Riparian habitat types in the study area are somewhat distinctive, consisting of three basic types. These types include 1) a Sonoran Riparian Scrubland, 2) a Sonoran Interior Strand, and 3) disturbed areas. Common plants associated with the Sonoran Riparian Scrubland include desert ironwood, mesquite, and paloverde, which are generally larger and more numerous than those found outside of the washes. Other plants found in this habitat include seepwillow, desert broom, desert-willow, desert hackberry, mesquite, and saltcedar. The vegetation in the Sonoran Interior Strand is composed of scrubland strands occurring in substrate containing mud, rocks, sand, or rubble, where water levels fluctuate annually. Vegetation generally includes seepwillow, nightshades, and common cocklebur. Disturbed areas are 100% man-made, and currently considered to be without wildlife habitat value. Examples of disturbance in the study area include sand and gravel operations, extensive off-high vehicle usage, and broad clearings for development.

DC-C-3. CULTURE HISTORY

An overview of cultural resource surveys in the project area is presented in Figure 4. Prehistoric and historic sites recorded during various cultural resource surveys conducted in study area are shown in Figure 5. More detailed information about each of these surveys and sites, as well as their plotted locations, can be found in Appendices A and B. The appendices maps were reproduced at the scale of standard 7.5' U.S.G.S. maps (1:24,000). Presentation in this form will make these maps of greater utility, since they are at the scale with which archaeologists are most familiar. Appendix C contains reproductions of all of the GLO maps for the study area, dating to the various years in which they were officially filed with the General Land Office. These maps, and the potential historic features plotted on them, are discussed in greater detail below.

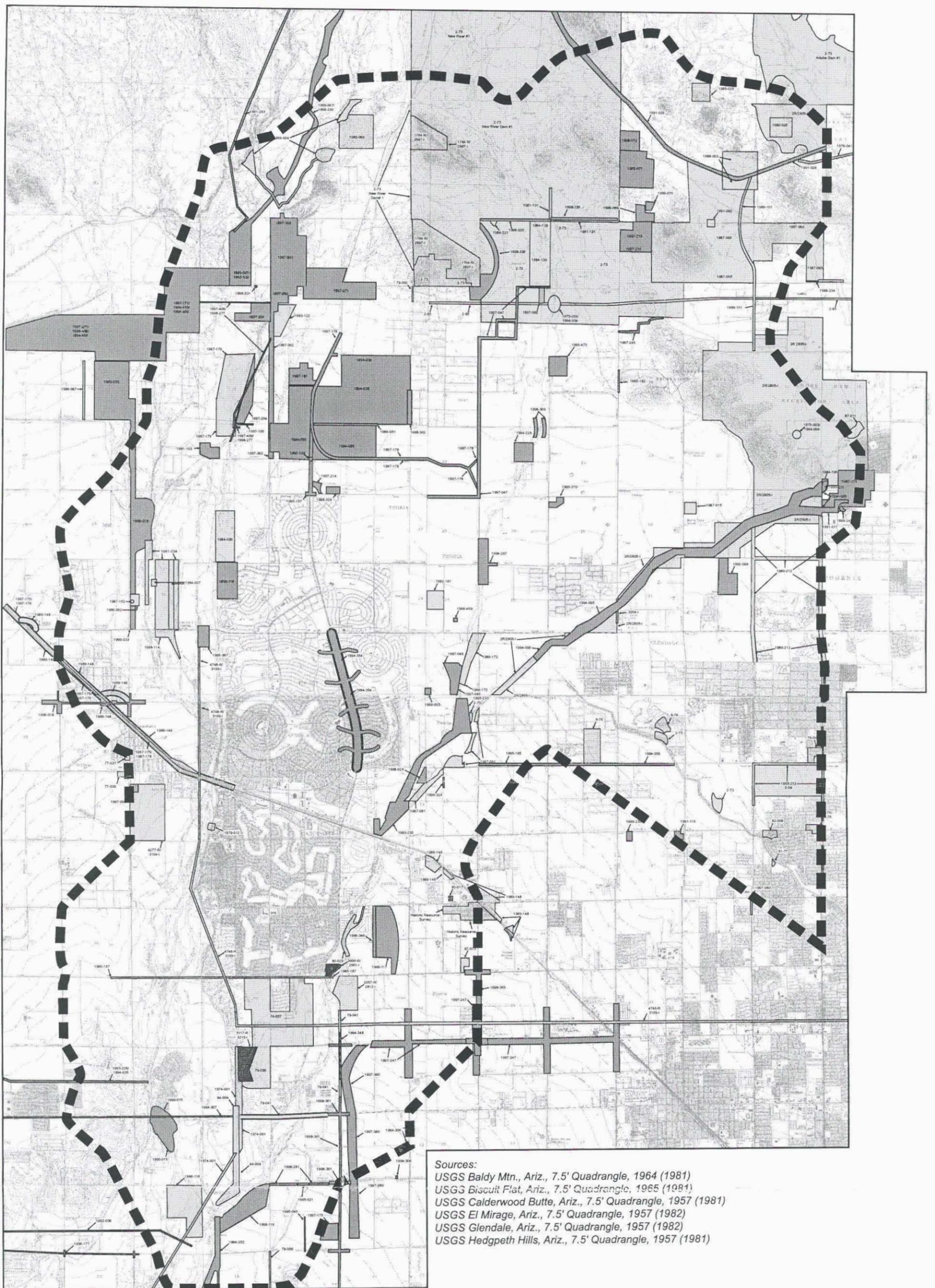
In addition to individual properties located in the project area, four cultural resource districts are located within the project area: the Calderwood Butte, Skunk Creek, and New River Dam archaeological districts, and a potential historic district in Peoria. The Calderwood Butte

Archaeological District is located in the northwest corner of the project area. This district is composed of over 30 sites located along the lower Agua Fria River. It was nominated to the NRHP in 1974, but SHPO files do not indicate a subsequent determination of eligibility. The New River Dam Archaeological District is located in the northeastern portion of the project area. The Skunk Creek Archaeological District is located in the eastern portion of the project area. Both districts were determined eligible for inclusion on the NRHP in January of 1975 (SHPO files). The three archaeological districts have not been recently surveyed. Therefore, additional archaeological sites are likely present.

A historic resource survey of Peoria identified a potential NRHP-eligible historic district located in the southern portion of the project area (Carriker and Sturgeon 1997). It contains six individually eligible, and twenty-two contributing, structures constructed between 1899 and 1947. More information of historic use of the project area is discussed below.

Prehistoric Background

The Glendale/Peoria ADMP study area lies in that part of south-central Arizona traditionally recognized as part of the Hohokam northern periphery. The periphery extends north from the Phoenix Basin (Salt-Gila River Basins), covering an area between the Agua Fria River on the west to the Verde River on the east. The periphery's northern extent has been debated, but it is currently accepted as a line drawn roughly from Lake Pleasant to Bartlett Dam (see Doyel and Elson 1985:701; Henderson and Rodgers 1979:11). Northern periphery prehistory has been summarized in various sources over the last twenty years (e.g., Rodgers 1977:18-20; Doyel and Elson 1985:701-704; Doyel and Sullivan 1985:15-18; Henderson and Rodgers 1979:11-15). Whittlesey et al. (1997) provide one of the most recent, and thorough, discussions of central Arizona archaeology. For purposes of this overview, discussion is confined largely to the western and southernmost portions of central Arizona (this particular part of the Hohokam northern periphery). Those areas of upmost concern include the lower and middle Aqua Fria River from the river's confluence with the Gila River, north to Lake Pleasant (roughly in line with the Bradshaw Mountains on the west and the New River mountains on the East). Archaeological remains along some of the Aqua Fria's major tributaries, including New River and Skunk Creek, are also of concern. Archaeological remains along Cave Creek, which flows east of New River and Skunk Creek, are also relevant in discussing this portion of the Hohokam northern periphery.



Sources:
 USGS Baldy Mtn., Ariz., 7.5' Quadrangle, 1964 (1981)
 USGS Biscuit Flat, Ariz., 7.5' Quadrangle, 1965 (1981)
 USGS Calderwood Butte, Ariz., 7.5' Quadrangle, 1957 (1981)
 USGS El Mirage, Ariz., 7.5' Quadrangle, 1957 (1982)
 USGS Glendale, Ariz., 7.5' Quadrangle, 1957 (1982)
 USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

Key

- Project Area
- Surveys Conducted after 1990
- Surveys Conducted before 1990
- Surveys Conducted at an unknown date

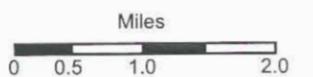
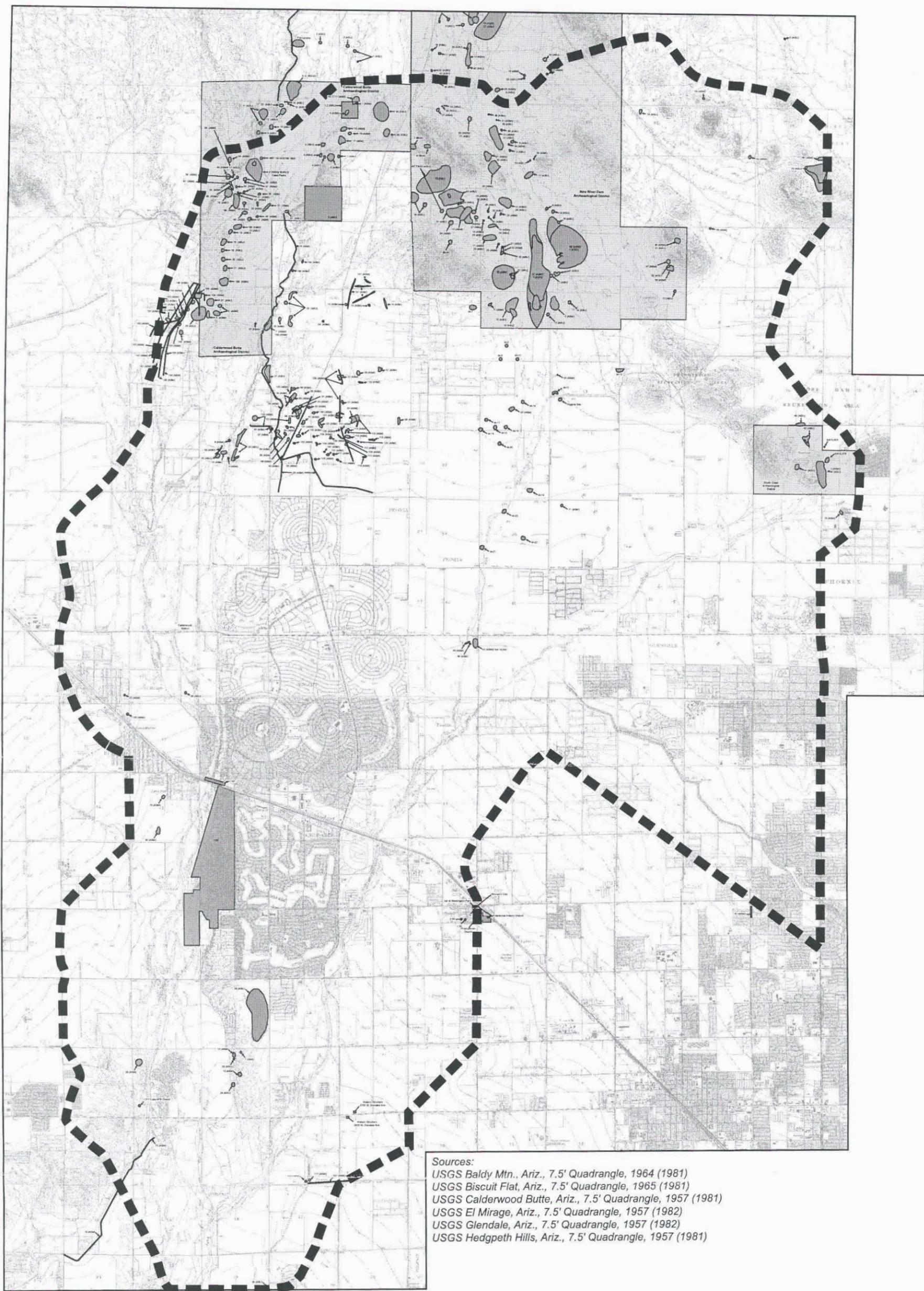


Figure DC-C-4. Previous Cultural Resources Surveys in the Study Area (See Appendix A for Enlargements).





Sources:
 USGS Baldy Mtn., Ariz., 7.5' Quadrangle, 1964 (1981)
 USGS Biscuit Flat, Ariz., 7.5' Quadrangle, 1965 (1981)
 USGS Calderwood Butte, Ariz., 7.5' Quadrangle, 1957 (1981)
 USGS El Mirage, Ariz., 7.5' Quadrangle, 1957 (1982)
 USGS Glendale, Ariz., 7.5' Quadrangle, 1957 (1982)
 USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

- Key
- Project Area
 - Cultural Resources
 - Archaeological District



Figure DC-C-5. Previous Cultural Resources in the Study Area (See Appendix B for Enlargements).

In their overview for the Hohokam northern periphery, on reviewing the explosion of archaeological survey throughout this region in the 1970s, Henderson and Rodgers (1979:11) noted the following:

“This research has revealed an extreme diversity of prehistoric remains including trash mounds, farm or field houses, canals, check-dam systems, agricultural terracing, ball courts, pit houses, jacal and surface masonry structures, compounds, pueblos, mountain lookouts, cliff dwellings, petroglyphs, and the ubiquitous sherd and lithic scatters. The region also displays considerable time depth with sites ranging from Archaic period campsites to early historic ranches ...”

The range in prehistoric and historic resources documented for the northern periphery, as well as the time depth represented, can be considered applicable in generalizing about the resources and temporal periods represented in that part of the northern periphery with which this study is concerned.

The Archaic period in the American Southwest dates from ca. 7550 B.C. to ca. A.D. 450 (Huckell 1984). It essentially coincides with the Holocene climatic epoch (Van Devender and Spaulding 1979). Archaic period sites have been documented in various locations throughout the Hohokam northern periphery (Breternitz 1960; Dittert 1976; Fish and Fish 1977; Green 1989:1068-1069). Dittert (1976) identified a number of Archaic complexes along the Agua Fria and New River, which he related to the general Western Pecos grouping as defined by Irwin-Williams (1979). Radiocarbon dates indicating Archaic period use of the New River drainage were obtained during excavations at the New River-Strickland site by Archaeological Consulting Services (Green 1989:1068). In addition, an Archaic period site has been reported from the town of Anthem (cited in Hackbarth, n.d.). Doyel (1985:727), on the other hand, countered early evidence for the presence of numerous Archaic period sites in the southernmost reaches of the New River drainage (originally discussed in Ciolek-Torrello 1981, 1982). Evidence from sites throughout much of central Arizona dating to the Archaic period indicates relatively nomadic lifeways, with widespread seasonal movements over broad geographic areas. Sites dating to the Archaic period in the northern periphery have not been extensively studied.

The earliest agriculture in the Salt and Gila River valleys is associated with the Hohokam, who may have begun farming in the Phoenix Basin as early as 300 B.C. (Haury 1976). Hohokam chronology is divided into periods and phases. Periods represent long intervals (usually several hundred years) and are distinguished by particular complexes of traits in domestic architecture and items of material culture. Phases represent shorter intervals of time within periods and are distinguished almost exclusively by stylistic attributes associated with decorated ceramics (Crown 1994:231). The Hohokam periods discussed below, along with bracket dates, are listed in Table 1 (bracket dates follow Dean 1991).

Table 1. Hohokam Chronology for the Phoenix Basin (Following Dean 1991).

Bracket Date	Hohokam Period
1500 A.D.	↕
1400 A.D.	↕
1300 A.D.	Classic Period
1200 A.D.	↕
1100 A.D.	↕
1000 A.D.	Sedentary Period
900 A.D.	↕
800 A.D.	Colonial Period
700 A.D.	↕
600 A.D.	↕
500 A.D.	↕
400 A.D.	Pioneer Period
300 A.D.	↕
200 A.D.	↕
100 A.D.	↕
1 A.D.	↕

The Pioneer period (A.D. 200-775) begins with the Red Mountain phase (Cable and Doyel 1987). In the Phoenix Basin, this phase has been established on the basis of excavations at three locations (Cable 1991; Cable and Doyel 1987; Henderson 1989; Morris 1969). At Pueblo Patricio, within the City of Phoenix, this phase was represented by a small square pit structure, shallow basin metates, corner-notched projectile points, flexed inhumations, and clay figurines (Cable 1991; Cable and Doyel 1987; Morris 1969). At all three sites there is evidence for dependence on maize; canal irrigation (as documented at the site of La Cuenca del Sedimento - Henderson 1989) has been inferred to be present as early as A.D. 1, based on radiocarbon dates (also see Cable 1991:113).

The Vahki phase (A.D. 300-500) follows the Red Mountain Phase with the production of red-slipped pottery. This phase is better represented at sites throughout the Phoenix Basin. During this period, domestic structures were typically houses in pits arranged around open courtyards. Large rectangular structures, frequently thought to represent communal structures, also appear at some

sites dating to the Vahki phase (Haury 1976:72; see Doyel 1991:243). Decorated pottery first appeared around A.D. 500, as did the practice of cremation. Canal irrigation was probably well established before the end of the Pioneer period (Wilcox and Shenk 1977:180-181). During the Colonial period (A.D. 775-975), the Hohokam began expanding into many of the secondary river drainages along the Salt and Gila Rivers. Ballcourts first appeared between ca. A.D. 775-850 (see Wilcox 1988). The appearance of these courts may mark the beginning of increasing differentiation in site function (Wilcox 1987; 1988). Site types during the Colonial period included fieldhouses, farmsteads, and large villages (or hamlets) with communal trash mounds and cemeteries.

Some of the earliest evidence for Hohokam occupation in the study area occurs in the lower reaches of the New River drainage at what has been designated the Baccharis Site (Greenwald 1989). At this location, a cluster of pithouses and other pit structures occurred (identified as a farmstead), along with a linear arrangement of houses and structures (identified as sequentially occupied farm houses). Decorated ceramics, archaeomagnetic, and radiocarbon estimates date site occupation to the late Pioneer/early Colonial period (A.D. 600-800; see Greenwald 1988:184-185). Another site with a possible Pioneer period component occurs to the northwest, along the Agua Fria River. This is the Beardsley Canal site, where excavated pit houses and cremations appear to date to an early part of the Pioneer period (Fish 1971; Huckell 1973; Weed 1972).

Sites which appear to exclusively date to the Colonial period are also documented along the lower and middle reaches of the Aqua Fria River. In the lower Aqua Fria area, sites containing components securely dated to the Colonial period include the Henderson site (Weed and Ward 1970) as well as the Beardsley Canal site (Weed 1972). Further north, in the area where Lake Pleasant is now located, occupation appears to have begun during the Colonial period (Green 1989). Sites dating to this period consist largely of small, seasonally occupied farmsteads associated with agricultural fields. Further south, along the middle Aqua Fria River, numerous sites recorded as a result of survey and limited site excavation reveal evidence for initial occupation during the Colonial period (Dove 1970:27-29; Rodgers 1987). Most of the sites thought to date to this early Hohokam period are located on the west side of the Aqua Fria River, in the vicinity of Casa de Piedras (Dove 1970:13; originally recorded by Turney 1924, 1929). To the southeast, in the area of the upper New River (New River Mountains), sites do not contain ceramic remains dating to the Colonial period (Spoerl and Gumerman 1984). Along the lower New River and throughout the Cave Creek area to the southwest, ceramics dating to the Colonial period occur in small quantities at sites which appear to have been more intensively used during the prehistoric period to follow; i.e., during the Sedentary period (A.D. 1,000 to 1,100 ; e.g., see Doyel 1985:728; Green 1989; Rodgers 1977; Henderson and Rodgers 1979; Shaw 1999:74-87).

Larger habitation sites that have been excavated or tested conforming to a pattern of initial occupation during the Late Pioneer/Colonial period, followed by expanded use during the Sedentary period, include Palo Verde Ruin in the southern New River area (Ciolek-Torrello 1982; Doyel 1985), the Terrace Garden further north along New River (Doyel and Elson 1985:91), as well as the complex of sites in the southern Cave Creek area ascribed to the Fort Mountain

Archaeological complex (in the area immediately south of the Cave Buttes recreation area - see Rodgers 1977, 1978; Smith 1974).

In the Salt-Gila River Basin, the Sedentary Period (A.D. 975-1150, following Dean 1991:84-85) was characterized by a proliferation in ballcourt construction and use, growth in villages, expansion in canal systems and dry farming systems, and the beginning of artificial mound construction. By the end of this period some of the largest prehistoric communities to be established in the Phoenix Basin were abandoned, and new, some even larger, settlements were established. Some northern periphery investigators see Hohokam influence in the periphery waning toward the end of the Sedentary period.

During the Sedentary period in the study area, population in various areas appears to have expanded; this is typically considered the period of greatest Hohokam influence throughout much of the northern periphery. For example, in the Calderwood Butte area along the middle Aqua Fria, site frequency along the east side of the River during the Sedentary period came to match what characterized the river's west side during the earlier Colonial period (Dove 1970:13). To the north, in the Lake Pleasant area, evidence appears to indicate continued expansion in communities probably first established during the Colonial period (Bostwick and Lerner 1986; Hackbarth, n.d.). To the east, in the area of the New River Mountains, the majority of recorded sites can be ascribed to the Sedentary period, based principally on the preponderance of Hohokam decorated ceramics (Spoerl and Gumerman 1984:172). The major periods of prehistoric use along southern portions of New River, along Skunk Creek, and along Cave Creek all appear to date to the Sedentary period (Bruder 1983; Doyel 1985:728, 734; Henderson and Rodgers 1979; Phillips 1998; Rodgers 1978:151; for Cave Creek see review in Shaw 1999:84). Along the southernmost portion of the Agua Fria River, Sedentary period houses and associated features were excavated at the Westwing site (Weaver 1974). It should be noted, however, that ceramics recovered from this site point to earlier periods of prehistoric use (Pioneer and Colonial), thus suggesting occupations dating to earlier time periods (Hackbarth, n.d.).

In the Phoenix Basin during the Classic Period (A.D. 1150-1350), large compounds containing multi-unit above ground rooms surrounding open courtyards appear in numerous locations. Few new ballcourts were built at this time. There was, however, a corresponding increase in the construction of rectangular platform mounds (Fish 1989; Gregory 1987; Wilcox and Sternberg 1983). Platform mounds have thus been viewed as the "principal form of public architecture in community centers during the early Classic period" (Fish and Fish 1994:121). Polychrome and redware pottery generally replaced buffware ceramic vessels during this period, and inhumations (as opposed to cremations) became increasingly common. Settlement in the peripheral areas associated with the Phoenix Basin during the Classic period underwent certain changes. Some areas reflect evidence for population increase (or population consolidation), while others appear to have been abandoned, or at the very least, subject to less intensive use than during the preceding Sedentary period. Some investigators have argued for a general population contraction of Hohokam groups into the northernmost portion of the Phoenix Basin during the Classic period

(Weaver 1972; also see Gumerman 1991). Much of the Hohokam core area (Phoenix Basin) appears to have then been abandoned some time between A.D. 1350- 1400. Abandonment may have occurred in response to flooding, internal social conflict, environmental uncertainty, influences from other culture areas, or a combination of several of these factors (see reviews and discussions in Ackerly 1988:305; Doyel 1991:266; Weaver 1972, but also see Nials et al. 1989:75-76).

The Classic period is variably represented in the study area. Dove (1970) suggests that evidence from the Calderwood Butte area indicates that population began to consolidate into large masonry structures along the Agua Fria, in the vicinity of a nearby fortified hill site (a site Turney [1924, 1929] initially classed as a *trincheras* site; i.e., a defensive site more commonly encountered in parts of northern Mexico which appear to have been established at roughly the same time). Hackbarth (n.d.) views the west side of the Agua Fria River, in the Calderwood Butte locality, as the site of at least one relatively large, consolidated Classic period community (in the area where Turney recorded *Casa de Piedras*). The community of Calderwood Butte (Dove 1970) occurs on the east side of the Agua Fria, on the opposite side of the river from *Casa de Piedras*. This latter site is known to exhibit at least three large masonry compounds (Hackbarth, n.d.). Hackbarth notes that a review of extant site records indicates that "multiple sites with masonry structures were reported on the Agua Fria River between Lake Pleasant and Sun City". This, in turn, suggesting that Classic period use of the Agua Fria may have been more intensive than it was in areas farther south and east. For example, there seems to be little evidence for occupation in the New River Mountains, east of the middle Agua Fria, much after ca. A.D. 1200 (Spoerl and Gumerman 1984:172). To the southeast, along the middle and southern portions of New River, there is evidence for prehistoric use following the Sedentary period. However, this evidence may be indicative of far more transitory use than was the case during the earlier Sedentary period (Doyel 1985:734). Along Skunk Creek, there is scant evidence for prehistoric use during the Classic period (Bruder 1983). In the Cave Creek area, a more transitory occupaton, like that inferred by Doyel for the southern New River area, appears evident (see Shaw 1999:85). At least some of the populations once residing along Skunk Creek and Cave Creek during the Sedentary period may have consolidated into large settlements established in the upper reaches of Cave Creek during the Classic period (Redman and Minnis 1990). Hackbarth (n.d.), alternatively, suggests that populations along these drainages may have moved to the Agua Fria, thus accounting for the growth in sites inferred for localities like Calderwood Butte. In the Cave Creek area, what was *once thought to constitute a fortified hill site dating to the Classic period*(Holiday 1974) was re-evaluated. Following more extensive study of this site, along with studies of nearby sites associated with the Fort Mountain archaeological complex in the 1970s (Henderson and Rodgers 1979:148; Rodgers 1978), it was determined that the site likely dated to the Sedentary, rather than the Classic, period. This assessment reinforces the view that this part of the northern periphery was most intensively utilized by Hohokam groups prior to the Classic period.

Historic Native American Occupation

By the time of Spanish contact (mid to late 16th century) the Gila River was occupied by the Pima and Maricopa. The Pima have been traditionally considered the descendants of the Hohokam in the Phoenix Basin (Doyel 1991:266-267; Haury 1976), although the validity in this particular prehistoric-historic connection has been debated (Doelle 1981; Masse 1981). In the mountainous areas north of the Salt River, western reaches were largely occupied by the Yavapai while eastern reaches were occupied by groups affiliated with both Yavapai and Apache cultural traditions (see Schroeder 1959; Whittlesey and Benaron 1997). The Yavapai are classified by linguists as Yuman-speakers (better known from areas farther west like the Lower Little Colorado area in western Arizona and southern California). Gifford (1932) considered the Yavapai most closely aligned, in terms of cultural traits, with the upland Yuman Walapai and Havasupai of northwestern Arizona. For the area of concern in this study, the southeastern Yavapai (as distinguished by Gifford 1932) are likely most relevant, although the geographic range between what Gifford (1936) distinguished as the northeastern Yavapai and the southeastern Yavapai (1932) appears to have significantly overlapped. Originally, the southeastern Yavapai occupied the area from the lower reaches of the Agua Fria River as far east as the southern Tonto Basin, and southeast from this point to the confluence of the San Pedro and Gila Rivers in southeastern Arizona (Schroeder 1959). The northeastern Yavapai range, on the other hand, extended from the middle reaches of the Agua Fria River to the northeast into the northern Tonto Basin. The wider geographic ranges for both of these groups appears to have been predicated largely on hunting-gathering lifeways with movements being determined by the seasonal availability of particular plants and animals at upper and lower altitudes throughout both ranges (Gifford 1932, 1936). The most significant economic plants among the southeastern Yavapai included mescal (agave), sahuaro, mesquite, acorns, and pinon (Gifford 1932:205). Preferred animal resources included deer, woodrats, rabbits, mountain sheep, and quail (ibid.). The northeastern Yavapai showed similar proclivities in plant and animal preferences (Gifford 1936: 256-2161). According to Gifford (1932:214), among the southeastern Yavapai, "agriculture was at a minimum". Whereas, Winter (1974:57) has characterized the northeastern Yavapai as "off-and-on farmers with occasional agricultural periods separated by years of non-horticultural gathering".

According to Gifford (1932), caves, rock shelters, and other cavernous recesses were favored occupation sites for the southeastern Yavapai. However, both the northeastern and southeastern groups constructed small houses (or huts); especially in areas chosen for winter encampment. These were basically pole and thatch structures with stone supports, enclosed using arrowweed, bear grass, and in the modern period, canvas tarps (Gifford 1932, 1936; see Whittlesey and Benaron 1997:150).

Among the southeastern Yavapai, distinctive traits in material culture included a limited range in ceramic vessels, a preponderance of baskets and milling stones, along with flaked knives and projectile points (Gifford 1932:249-250). In addition, the dead were cremated, "usually within

the dwelling, which was pulled down with the corpse, or on a pile of brush outside if the dwelling were a cave" (Gifford 1932:232).

Euro-american Settlement

The earliest evidence for documented Euro-american settlement in the study area can be derived from the GLO. maps for this region (Appendix C). These maps can be used to identify early houses established largely within rural areas, as well as locations of known and undesignated roads used for early transportation (Table 2). During the course of future cultural resource surveys for specific project locations within the ADMP, these GLO maps should be consulted in order to field check for remnants of these particular types of properties. On locating properties of this nature, their integrity and eligibility for inclusion on the NRHP should then be evaluated. Additional early architectural structures, which could potentially be associated with early homesteads in the project area, have been identified as a result of previous cultural resource ground surveys carried out in the project area (Appendix A and B). During specific projects for flood control in the Glendale/Peoria ADMP these types of properties will require additional evaluation for integrity and determinations of eligibility for inclusion on the NRHP, if such assessments have not already been made.

Table 2. Historic properties Recorded on GLO Maps for the Glendale Peoria ADMP Area.

Feature (F) No.	Township (T), Range (R), Section (S)	Property Type	Recorder	Year Filed
1	T3N, R1W, S 6, 8,9,16,15,23, & 24; crosses Agua Fria River	Unmarked Road	S. Day	1870
2	T3N, R1W, S 18, 20, 21, 27, 26, & 26; intersects 2 roads & crosses Agua Fria River	Unmarked Road	S. Day	1870
3	T3N, R1W, S 1, 12, 13, 24, 25, & 36 intersects F 1 in S 24, joins F 2 in S 36	Unmarked Road	S. Day	1870
4	T3N, R1W, S 12, west of F 3	House	S. Day	1870
5	T4N, R1W S 18, 19, 20, 21, 28, 27, 26, 35, & 36; crosses Agua Fria River	"Wagon Road from Prescott to Phoenix"	G. Roskruge	1896
6	T4N, R1W, trail in S 2, 11, & N½ of 14; road in S 14, 23, & 26; joins F 5 in SE ¼ of S 26	Marked "Wagon"	G. Roskruge	1896
7	T4N, R1W, S 36; joins F 5 in S½ of S 36	Unmarked Road	G. Roskruge	1896
8	T4N, R1W, S 36; west of F 5 & F 7 intersection	"Elder's Well"	G. Roskruge	1896
9	T2N, R1E S 6, 5, 4, 9, 10, 11, 14, & 13	"Wagon Road Wickenburg to Fort McDowell	S. Day	1870
10	T2N, R1E S 33	"Old Road"	S. Day	1870
11	T2N, R2E, S 4, 5, 10, 14, & 13; crosses F 12 (Location of "Hadsell's Addition" which led to official platting for Glendale townsite in 1892 [Grahm, et al. 1997:7-8])	Marked "Road"	S. Day/ J.H. Martineau	1870/ 1893
12	T2N, R2E, S½ of S 13	Marked "Old Ditch	S. Day/ J.H. Martineau	1870/ 1893
13	T2N, R2E, NE ¼ of S 24	Marked "Old Road"	S. Day/ J.H. Martineau	1870/ 1893
14	T2N, R2E, S 19, 20, 28, 27, 35, & 36	"Road from Wickenburg to Fort McDowell"	S. Day/ J.H. Martineau	1870/ 1893
15	T3N, R1E S 5, 9, 10, 15, 23, 24, & 25	Marked "Road"	S. Day/ J.H. Martineau	1870/ 1893
16	T3N, R2E S 30, 31, & 32	Marked "Road"	S. Day/ J.H. Martineau	1870/ 1893
17	T4N, R1E, SW¼ of S 8 to NW ¼ of S 17; through S 19, 30, & 31	Unmarked Road	S. Day/ J.H. Martineau	1895
18	T4N, R1E, NW¼ of S 17; off F 17, & through SE ¼ of S 17, 20, 29, 32, & SE ¼ of 33	Unmarked Road	L. H. Maurino	1895

Table 2. Historic properties Recorded on GLO Maps for the Glendale Peoria ADMP Area.

Feature (F) No.	Township (T), Range (R), Section (S)	Property Type	Recorder	Year Filed
19	T4N, R1E, S 13, off F 18, & through SW¼ of S 13, 24, 25, & NW ¼ of S 36	Unmarked Road	L. H. Maurino	1895
20	T4N, R1E, SE¼ of S 33	Unmarked Road	L. H. Maurino	1895
21	T4N, R2E, SW¼ of S 18, to 19, 29, & 33	"Road from Frog Tanks to Phoenix"	L. H. Maurino	1895
22	T4N, R2E, NE¼ of S 2; joins F 23 in S 1; through S 12, 13, 24, 25, & 26	"Road from Phoenix to Prescott"	L. H. Maurino	1895
23	T4N, R2E, NW¼ of S 1; joins F 22 in S 1	Unmarked Road	L. H. Maurino	1895
24	T5N, R1E, NE¼ of S 5 & 8; crosses Agua Fria River; to S 7, 20, 29, & S 31	"Acequia Road"	L. H. Maurino	1895
25	T5N, R1E, S 3, 10, 15, & NE¼ of S 22; joins F 26; through S 22, crosses New River; through S 26, 35, & S 36	"Road to Frog Tanks"	L. H. Maurino	1895
26	T5N, R1E, NE¼ of S 22, off F 25; through S 22, 27, 28, & 33	Unmarked Road	L. H. Maurino	1895
27	T5N, R1E, NW¼ of S 20	Marked "Marlows"	L. H. Maurino	1895
28	T5N, R1E, S 23, between New River & F 25.	House marked: "Smith and Green"	L. H. Maurino	1895
29	T5N, R1E, SW 1/4 of NE 1/4 Sec. 35	Marked "Verde Canal House"	L. H. Maurino	1895
30	TN5, R2E, NE¼ of S 3, 2, 14, 23, 26, 35; crosses "Dry Wash"; through SW¼ of S 36	"Road from Phoenix to Prescott"	L. H. Maurino	1895
31	TN5, R2E, NE¼ of S 32	Possible Fenced Segment	L. H. Maurino	1895
32	TN5, R2E, W¼ of S 32	Possible Fenced Segment	L. H. Maurino	1895

Another important type of historic property appearing in various locations throughout the Glendale/Peoria ADMP study area are historic canals. The original Beardsley canal alignment, along with associated historic laterals, extended along land areas on both the eastern and western sides of the Agua Fria River, beginning north of Calderwood Butte and extending south to almost Sun City's northern city limit. This canal was studied by Rodgers (1987) who referred to this as the Marinette Canal. Also included with this category of historic properties is the Arizona Canal Extension (Greenwald 1989) which carried water west from New River north of Peoria, Arizona. The segment studied by Greenwald is located several hundred feet from the southwest corner of the intersection at Bell Road and 83rd Avenue.

For the city of Glendale, a number of studies designed to identify historic houses and structures within the City limits have been completed. These are summarized, and reviewed in comprehensive fashion in Grahm et al. (1997). On the basis of this latter inventory, a total of 630 properties were determined to be contributing, or potentially contributing, elements to "an Historic Preservation Overlay Zoning District" developed for the city of Glendale (see Graham et al. 1997:2). Fortunately, for future reference these properties were listed by addresses in Graham et al. (1997: Appendix A). It is recommended that any development within the vicinity of one of these properties will have to consider the potential physical and visual impacts on this property before development proceeds.

DC-C-4. RECOMMENDATIONS

A total of 148 cultural resource surveys have been conducted in the study area. Eighty-three of these (56%) have been carried out during the last ten years (1990-2000). This time range is important for ADMP planners. It is important to underscore the fact that when previous cultural resource surveys for a project area are evaluated by the Arizona State Historic Preservation Office (SHPO), if these are equal to (or greater than) ten years old, this office reserves the right to require this area be re-surveyed. The SHPO will sometimes require re-survey based on the quality and completeness of the previous surveys for a project area, based on more recent standards.

The Class I inventory for the study area resulted in the identification of 283 sites dating to the prehistoric and historic eras. In addition, portions of three archaeological districts, are present in the study area (Skunk Creek, Calderwood Butte, and the New River Archaeological Districts). One site has been listed on the National Register of Historic Places (NRHP). A total of 46 sites (16%) in the project area have been determined eligible for nomination to the NRHP. Only nine sites (3%) have been determined as potentially eligible for the Register. One hundred and four sites (37%) have been recommended as ineligible for nomination on the NRHP. These recommendations are as originally recorded; therefore, many of these sites would likely be considered potentially eligible, or eligible for inclusion on the NRHP under current standards.

Of the total number of sites recorded, 123 (43%) have been documented in detail, but determinations of eligibility have not been made. This relates to the fact that most historic properties in the study area were recorded either before the NRHP was established, or before archaeologists were directed by the Arizona SHPO to make NRHP determinations as part of their standard operating procedure during survey. More important, it means that re-examination of these sites using contemporary standards for evaluating historic properties would likely result in determining most were at least potentially eligible for the Register. In the case of sites already included in NRHP districts, sites will have to be re-evaluated in the future in order to determine if these can be classed as contributing or non-contributing features to these districts.

DC-C-5. REFERENCES CITED

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DC-C-5. Appendices

Appendix A: Previous Surveys

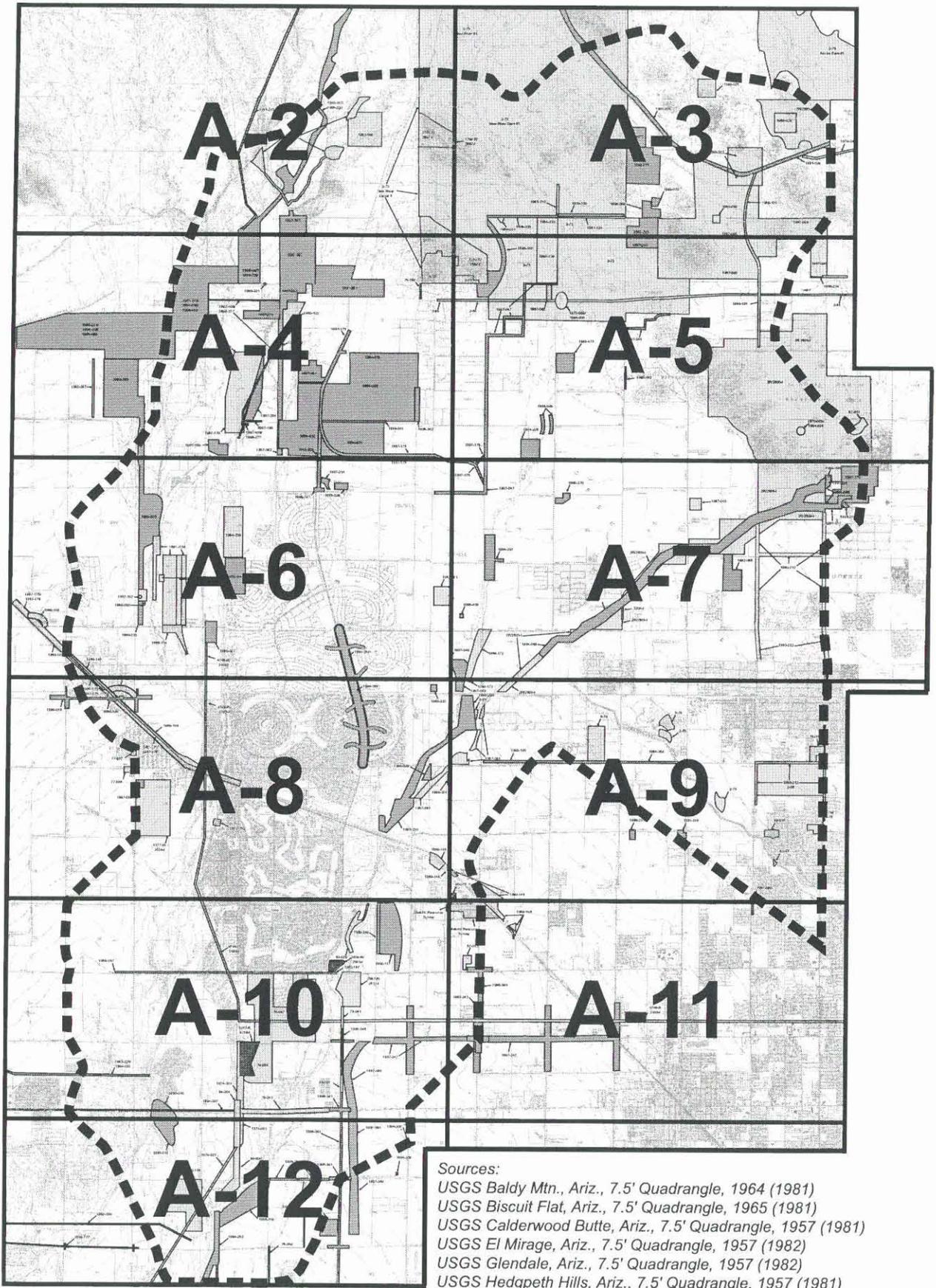
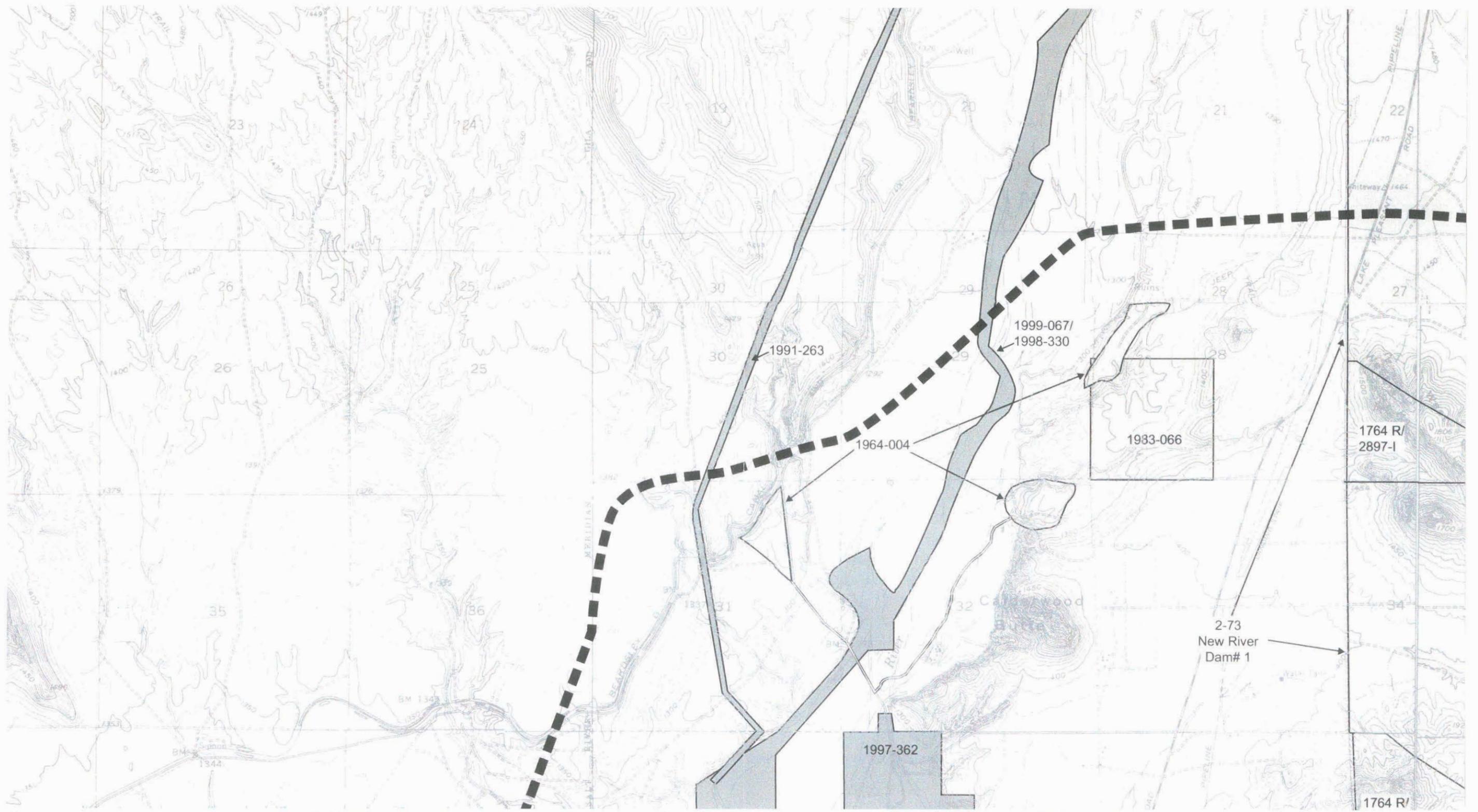


Figure DC-C-A1. Previous Survey Map Key.



Sources: USGS Baldy Mtn., Ariz., 7.5' Quadrangle, 1964 (1981); USGS Biscuit Flat, Ariz., 7.5' Quadrangle, 1965 (1981); USGS Calderwood Butte, Ariz., 7.5' Quadrangle, 1957 (1981); USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

Key

- ■ Project Area
- Surveys Conducted After 1990
- Surveys Conducted Before 1990
- Surveys Conducted at an Unknown Date

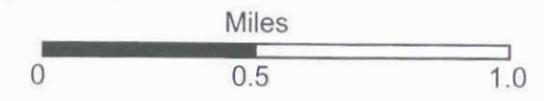
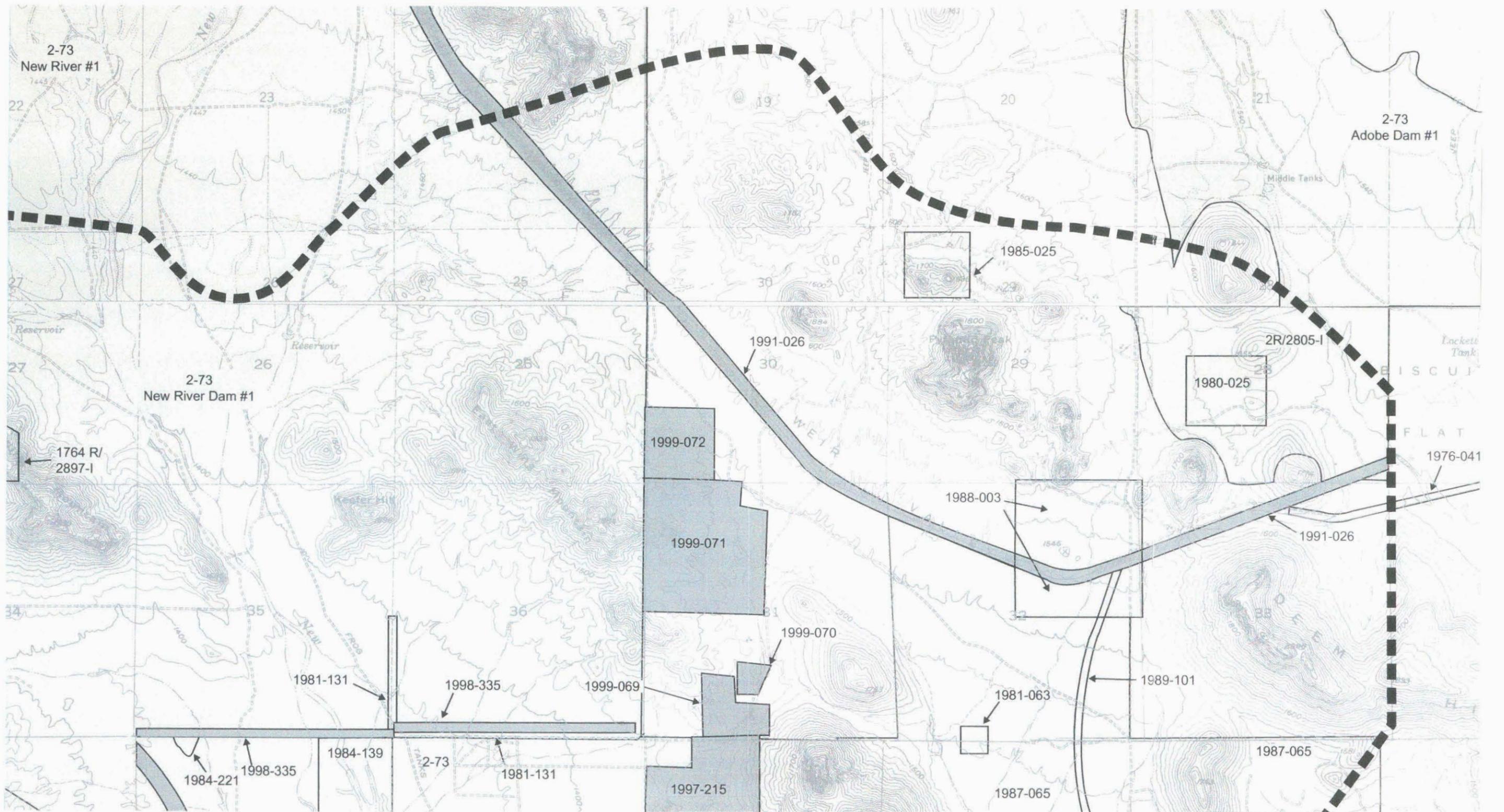


Figure DC-C-A-2. Previous Surveys.





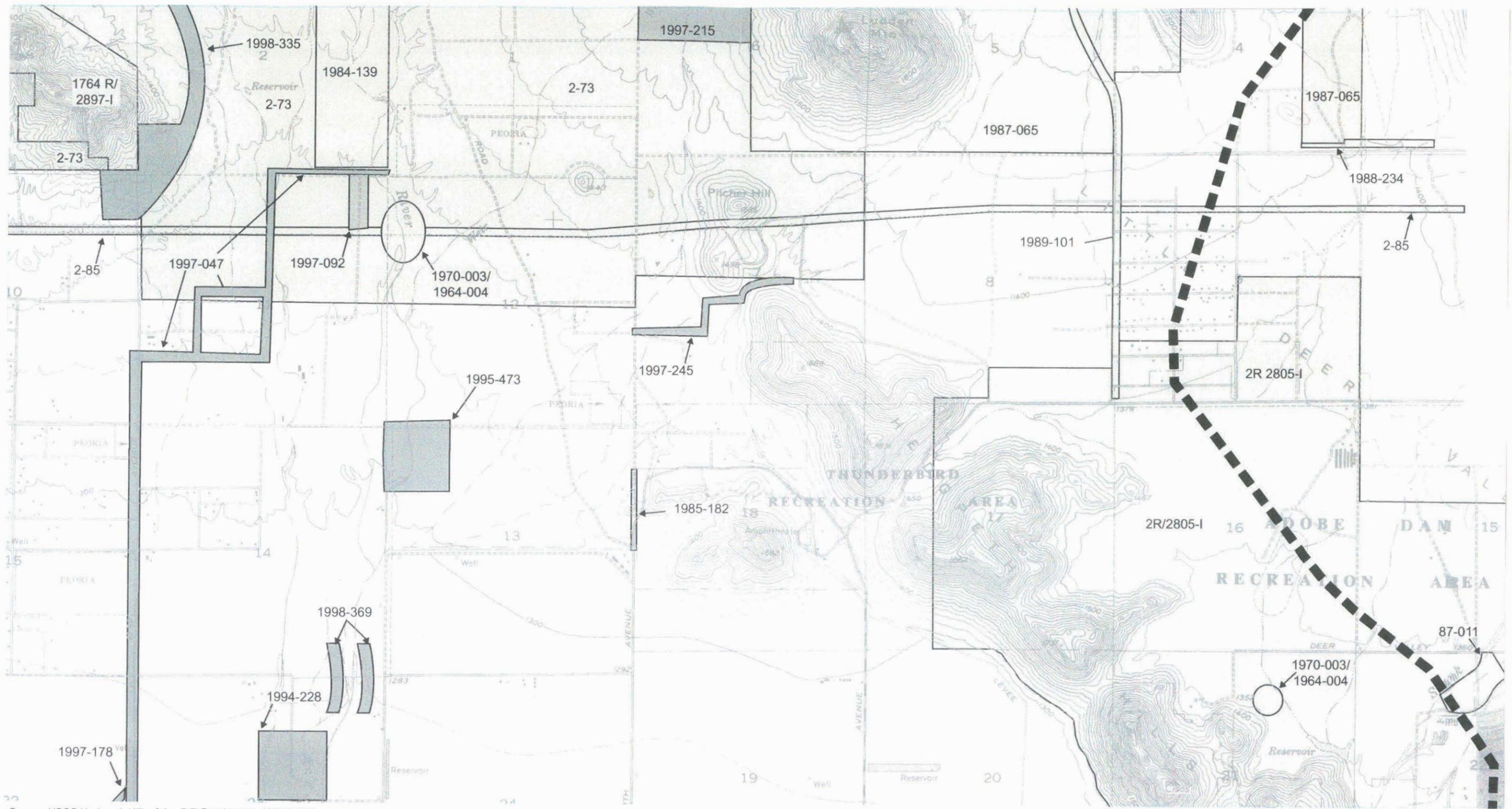
Sources: USGS Biscuit Flat, Ariz., 7.5' Quadrangle, 1965 (1981); USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

Key

- Project Area
- Surveys Conducted After 1990
- Surveys Conducted Before 1990
- Surveys Conducted at an Unknown Date

Figure DC-C-A-3. Previous Surveys.





Source: USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

Key

- Project Area
- Surveys Conducted After 1990
- Surveys Conducted Before 1990
- Surveys Conducted at an Unknown Date

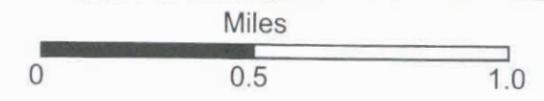
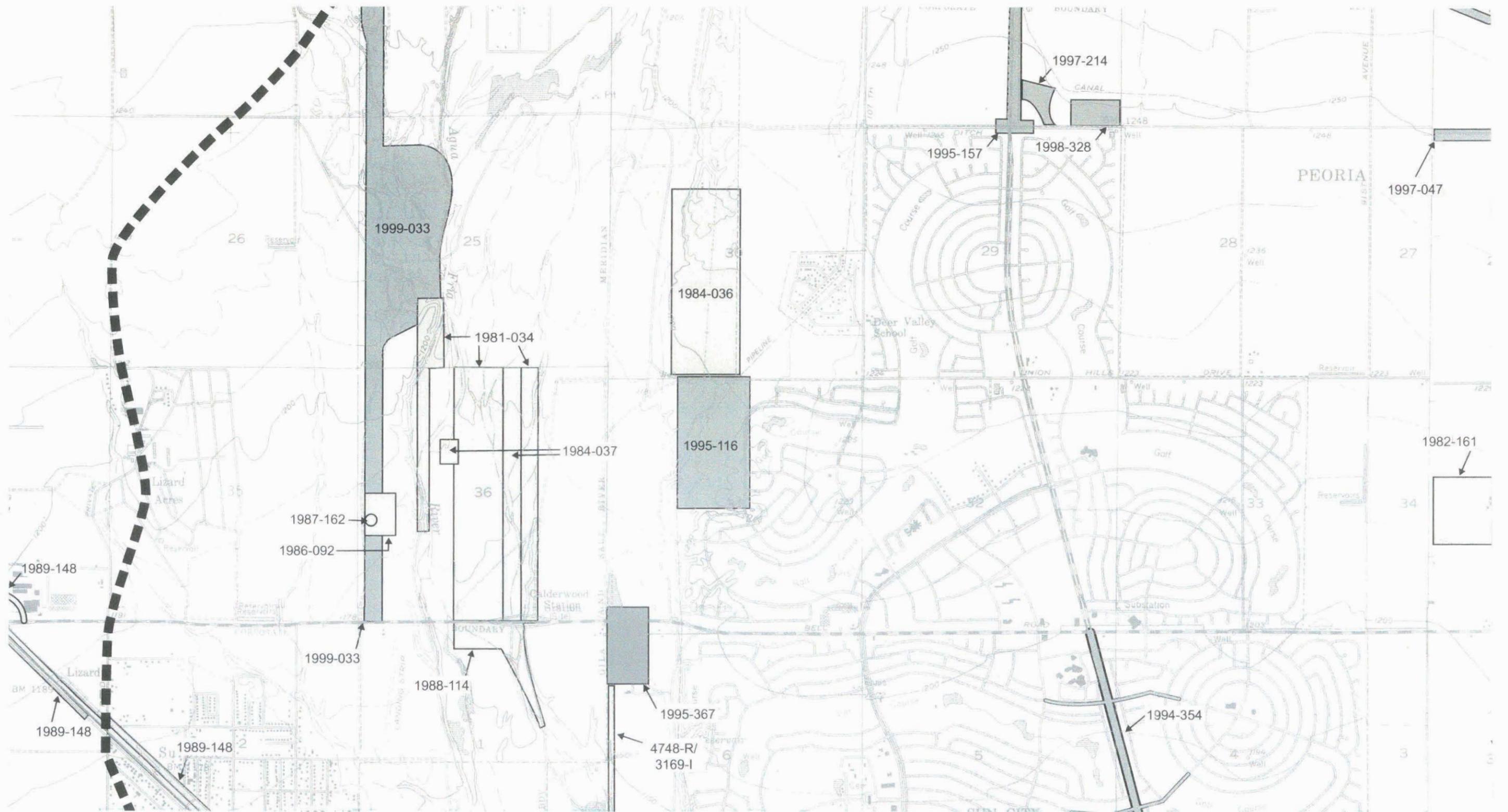


Figure DC-C-A-5. Previous Surveys.





Sources: USGS Calderwood Butte, Ariz., 7.5' Quadrangle, 1957 (1981); USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

Key

- ■ Project Area
- Surveys Conducted After 1990
- Surveys Conducted Before 1990
- Surveys Conducted at an Unknown Date

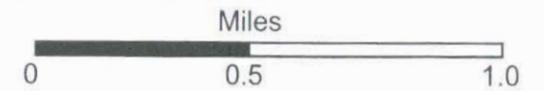
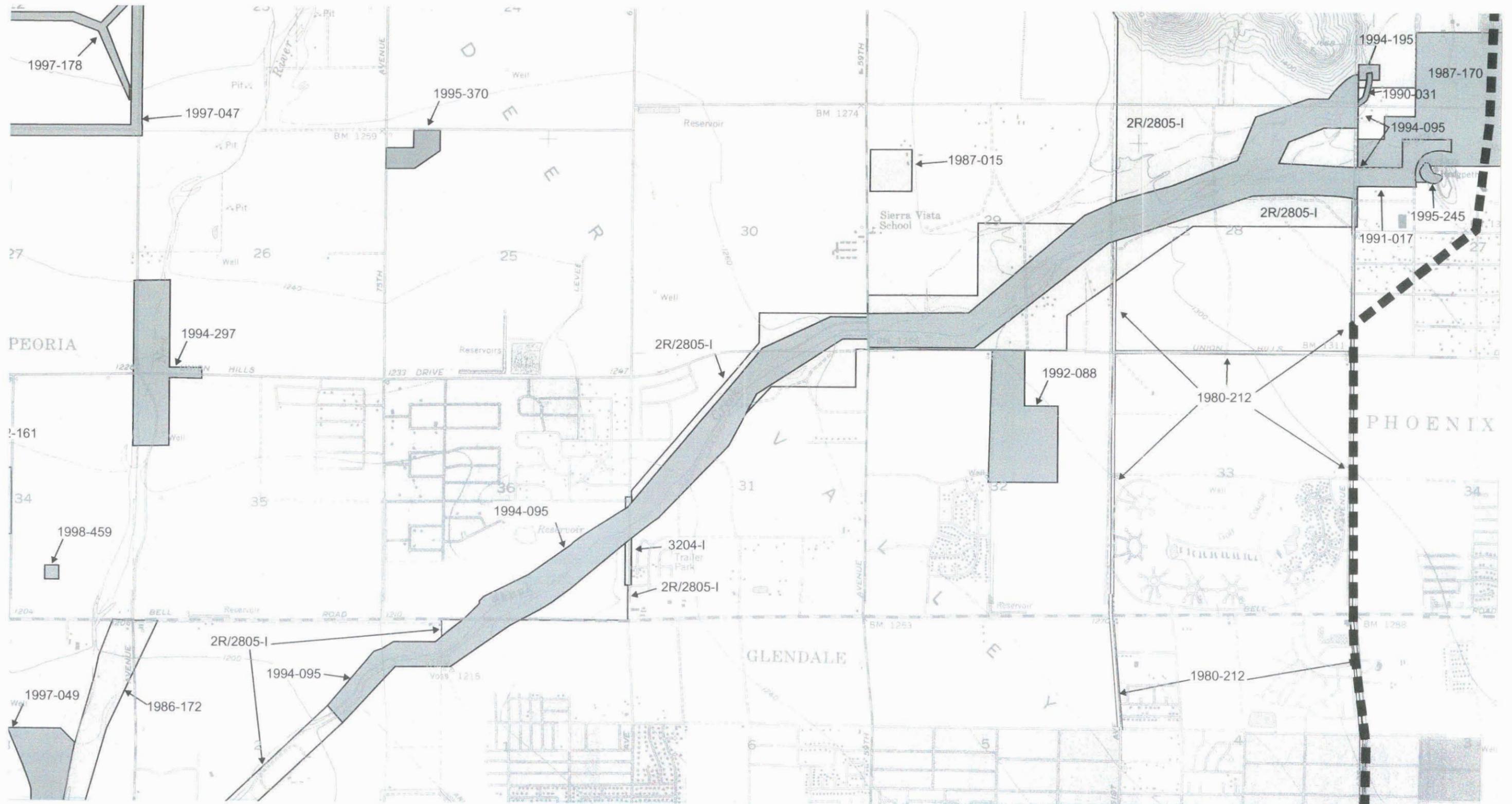


Figure DC-C-A-6. Previous Surveys.





Source: USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

Key

- Project Area
- Surveys Conducted After 1990
- Surveys Conducted Before 1990
- Surveys Conducted at an Unknown Date

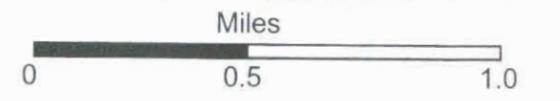
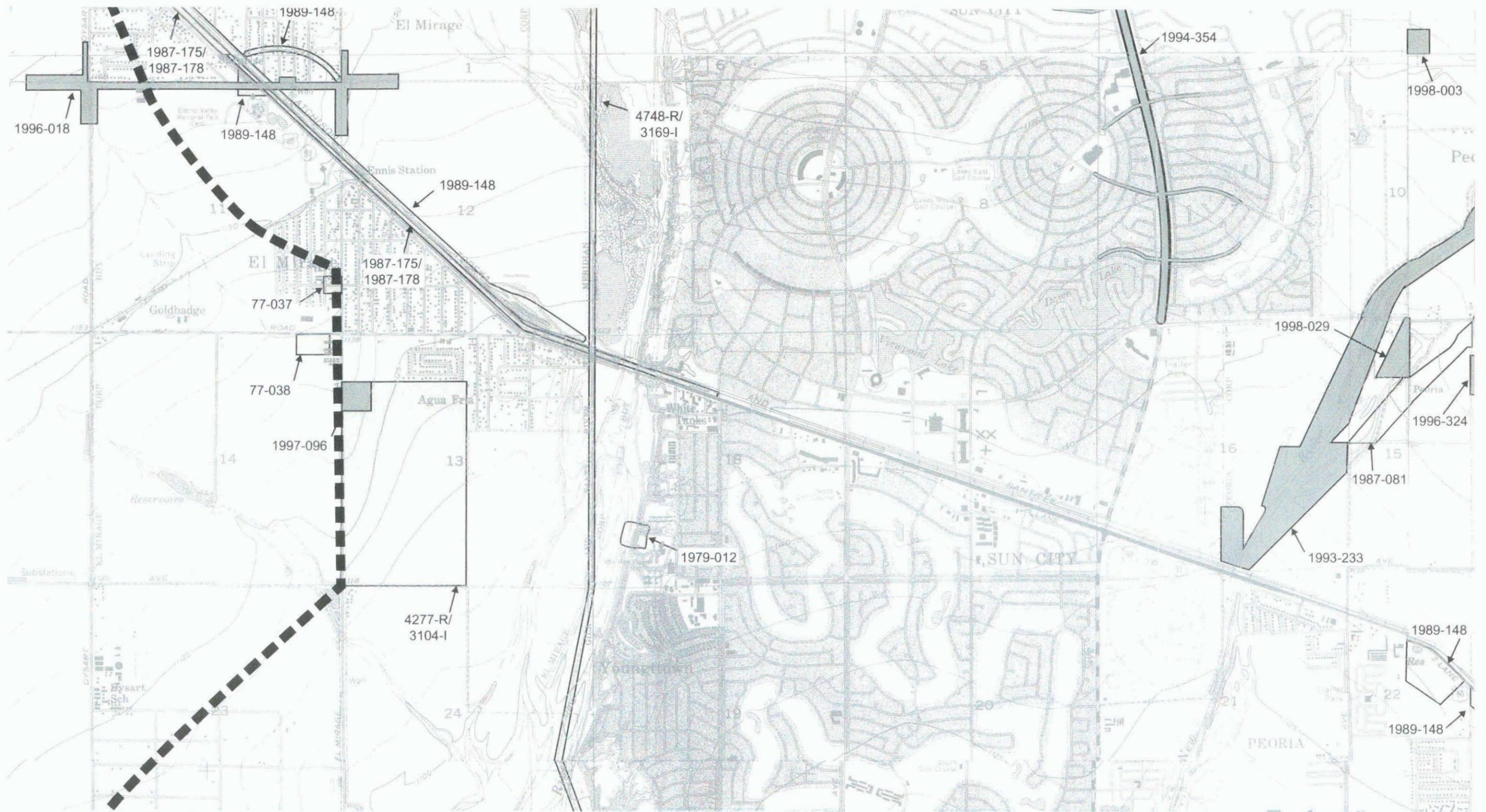


Figure DC-C-A-7. Previous Surveys.



Sources: USGS Calderwood Butte, Ariz., 7.5' Quadrangle, 1957 (1981); USGS El Mirage, Ariz., 7.5' Quadrangle 1957 (1982); USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981); USGS Glendale, Ariz., 7.5' Quadrangle 1957 (1982)

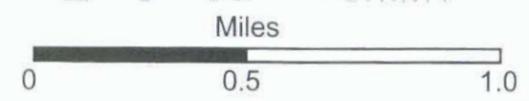
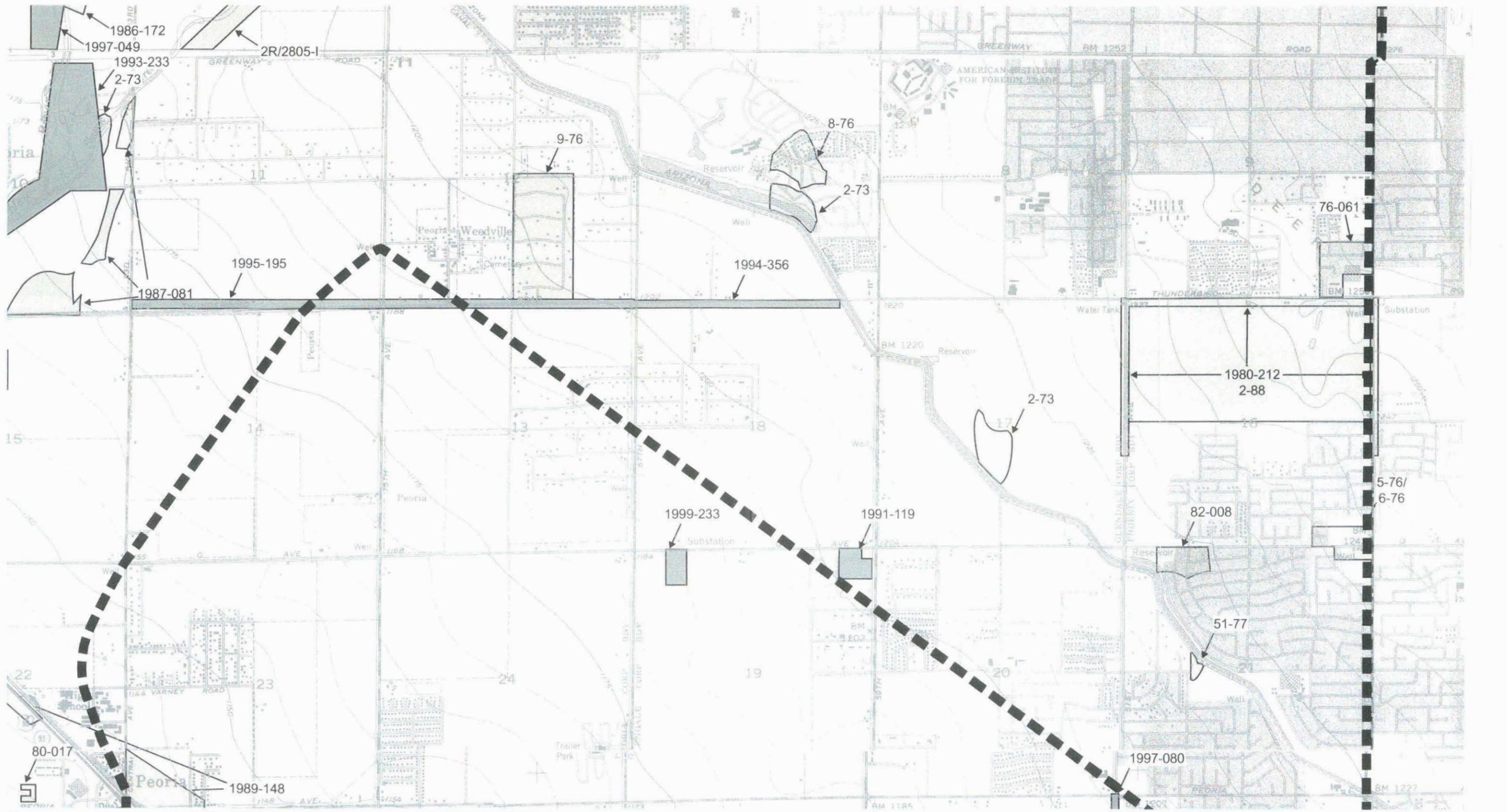


Figure DC-C-A-8. Previous Surveys.



Sources: USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981); USGS Glendale, Ariz., 7.5' Quadrangle 1957 (1982)

Key

- Project Area
- Surveys Conducted After 1990
- Surveys Conducted Before 1990
- Surveys Conducted at an Unknown Date

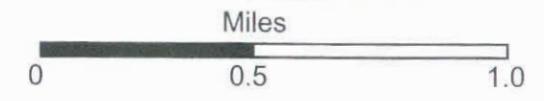
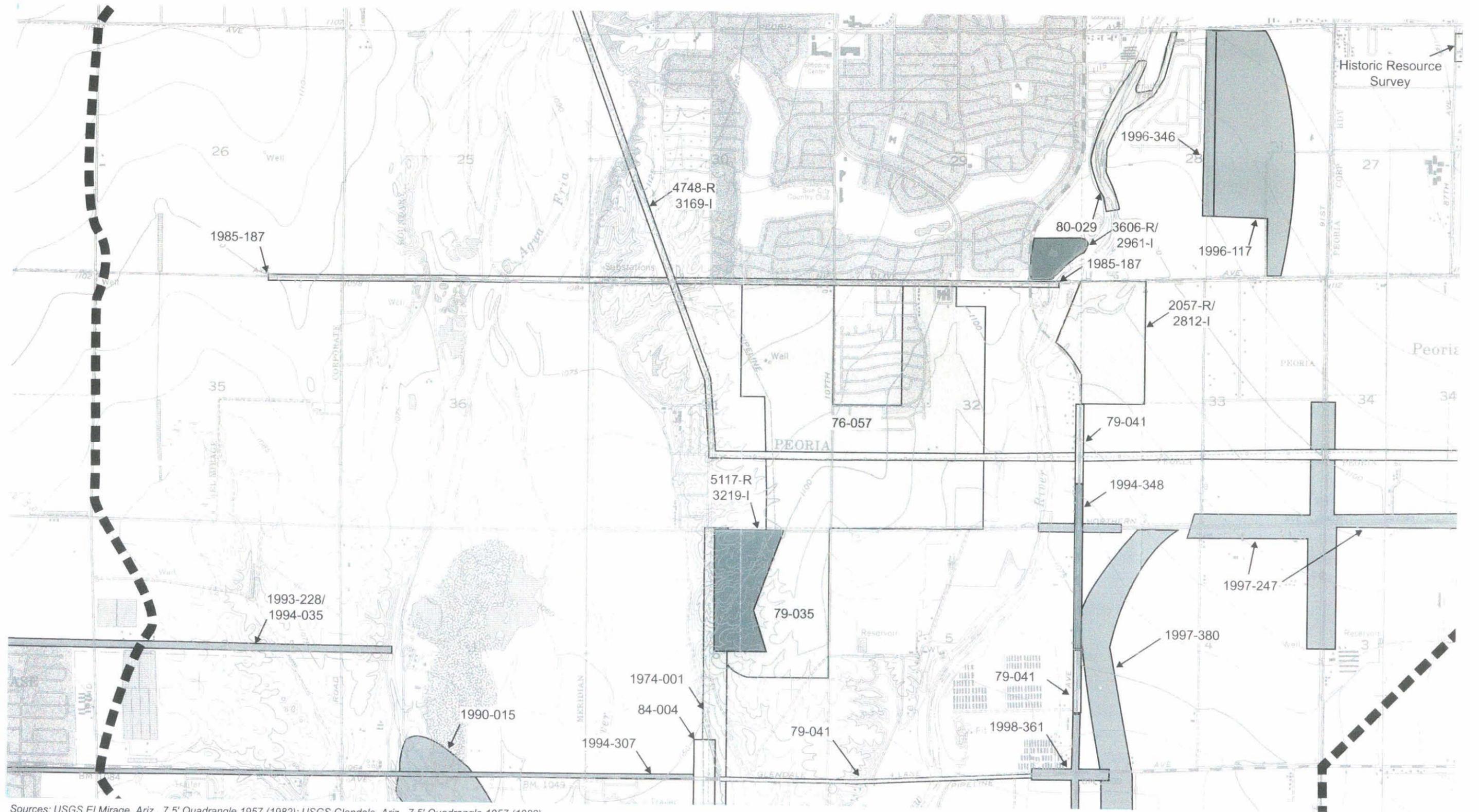


Figure DC-C-A-9. Previous Surveys.





Sources: USGS El Mirage, Ariz., 7.5' Quadrangle 1957 (1982); USGS Glendale, Ariz., 7.5' Quadrangle 1957 (1982)

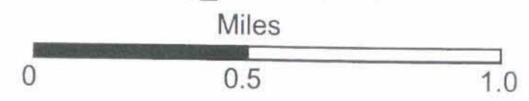
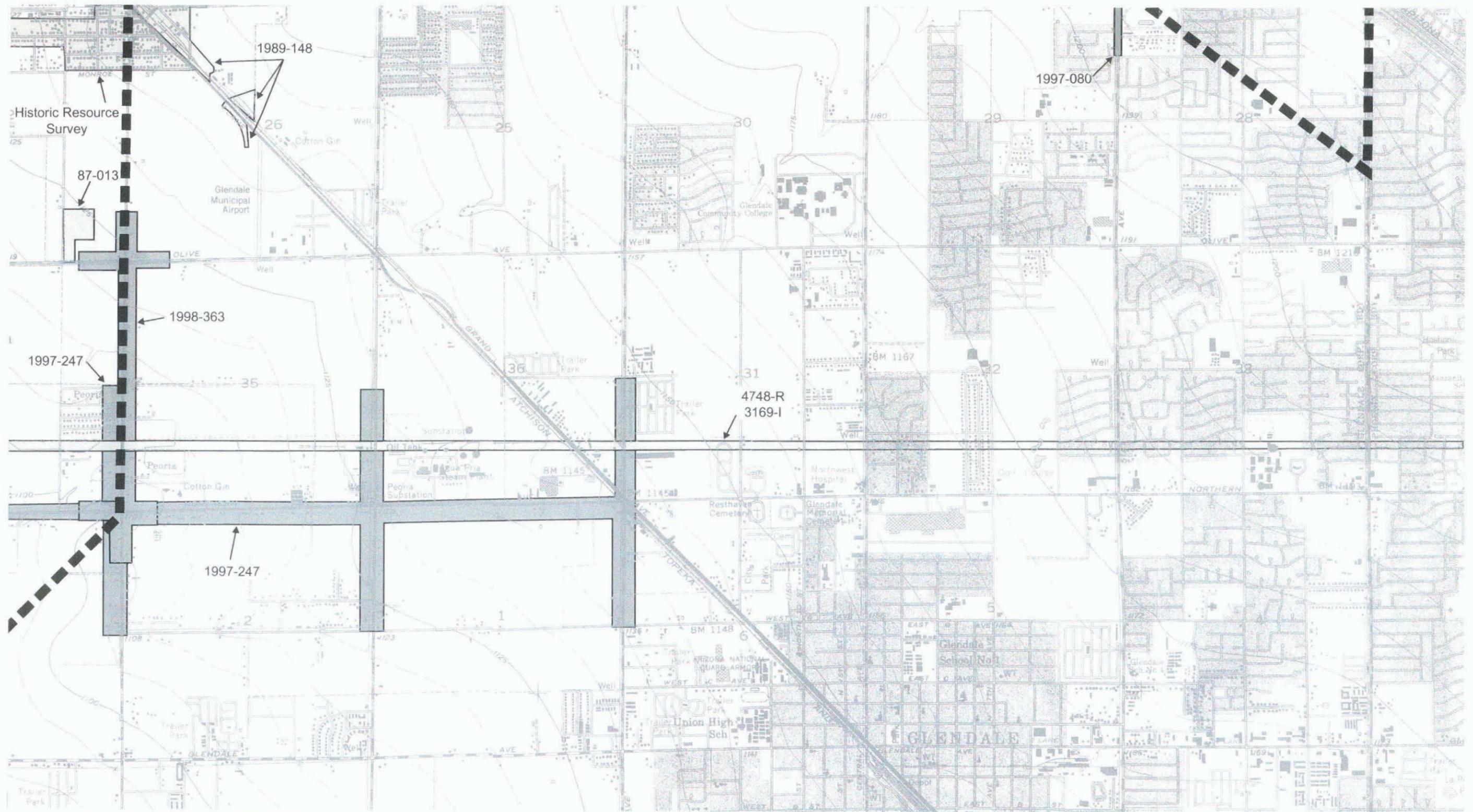


Figure DC-C-A-10. Previous Surveys.





Source: USGS Glendale, Ariz., 7.5' Quadrangle 1957 (1982)

Key

- Project Area
- Surveys Conducted After 1990
- Surveys Conducted Before 1990
- Surveys Conducted at an Unknown Date

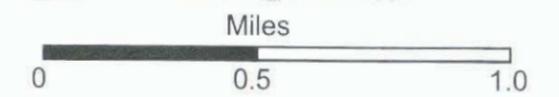
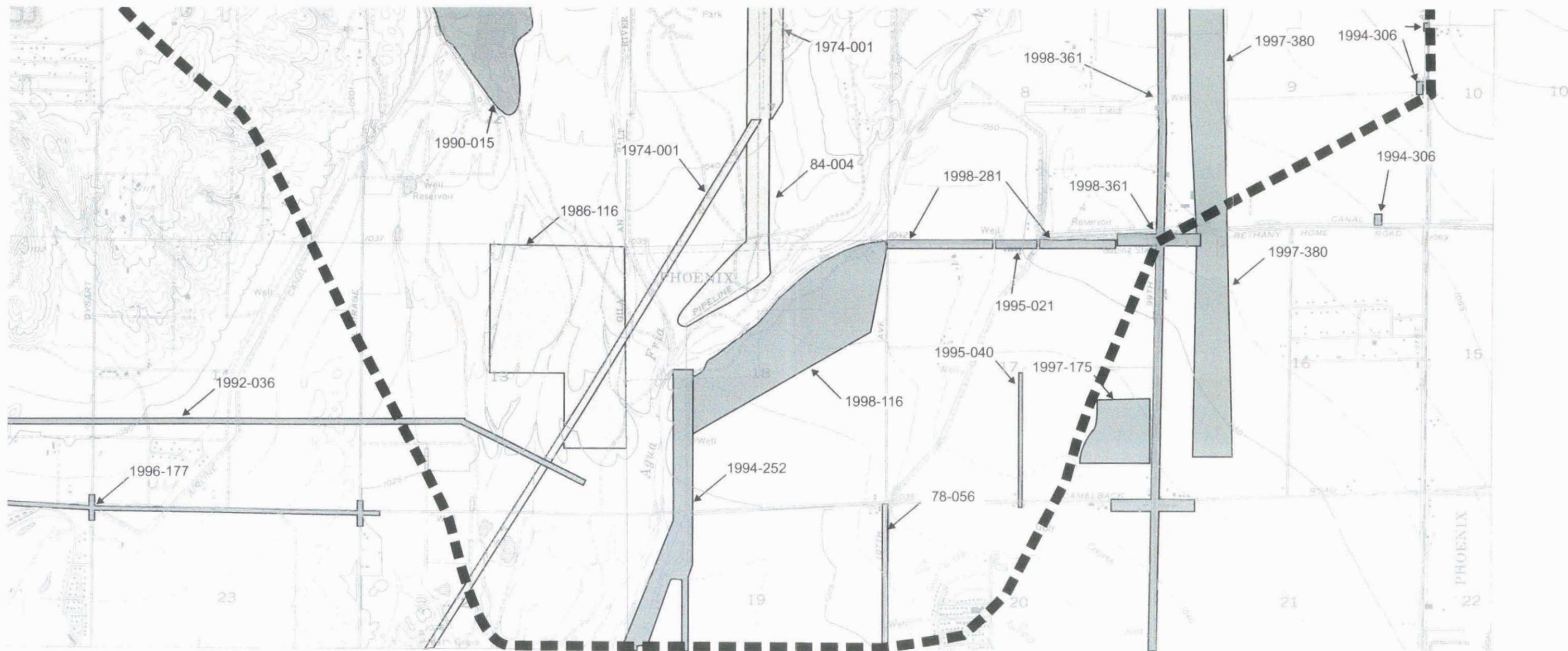


Figure DC-C-A-11. Previous Surveys.





Source: USGS El Mirage, Ariz., 7.5' Quadrangle 1957 (1982);

Key

- Project Area
- Surveys Conducted After 1990
- Surveys Conducted Before 1990
- Surveys Conducted at an Unknown Date

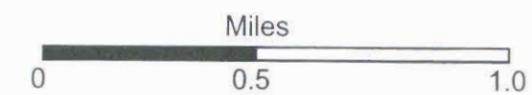
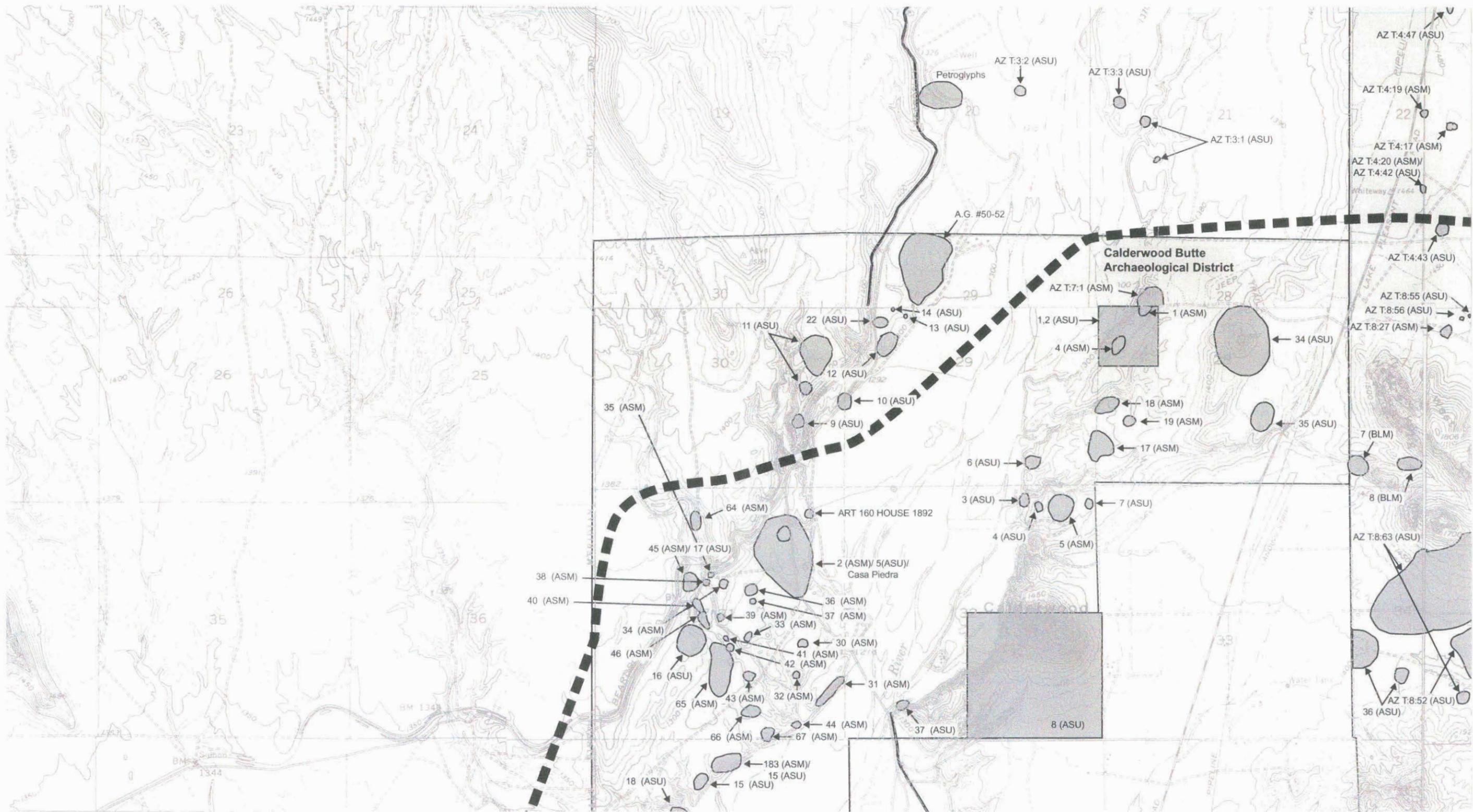


Figure DC-C-A-12. Previous Surveys.





Sources: USGS Baldy Mtn., Ariz., 7.5' Quadrangle, 1964 (1981); USGS Biscuit Flat, Ariz., 7.5' Quadrangle, 1965 (1981); USGS Calderwood Butte, Ariz., 7.5' Quadrangle, 1957 (1981); USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

Key

- Project Area
- Cultural Resources
- Archaeological District

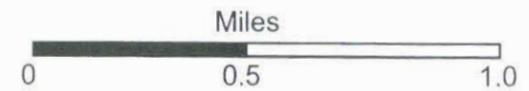
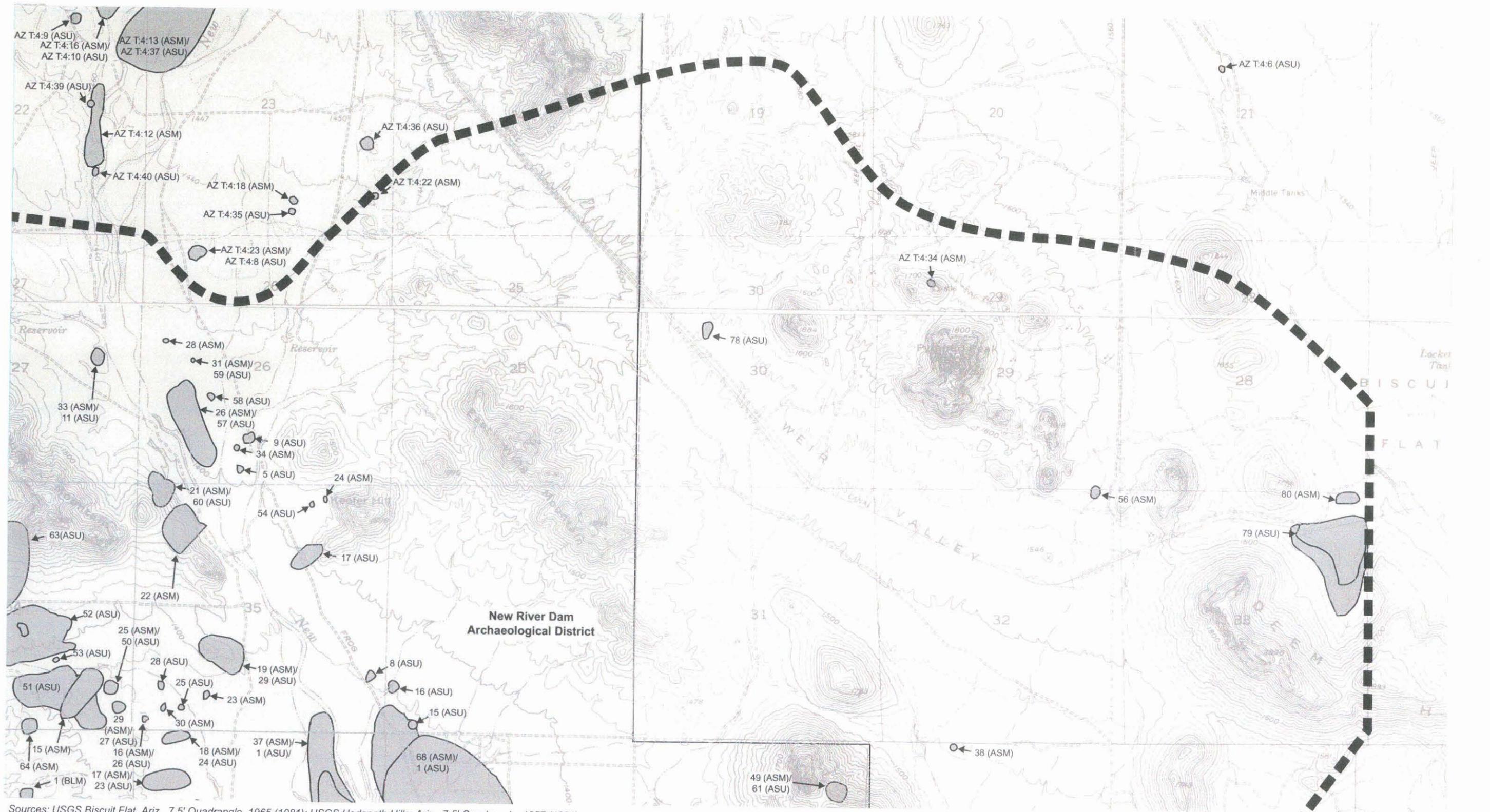


Figure DC-C-B-2. Cultural Resources (all sites AZ T:7:_ unless otherwise noted).





Sources: USGS Biscuit Flat, Ariz., 7.5' Quadrangle, 1965 (1981); USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

Key

- Project Area
- Cultural Resources
- Archaeological District

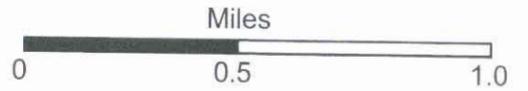
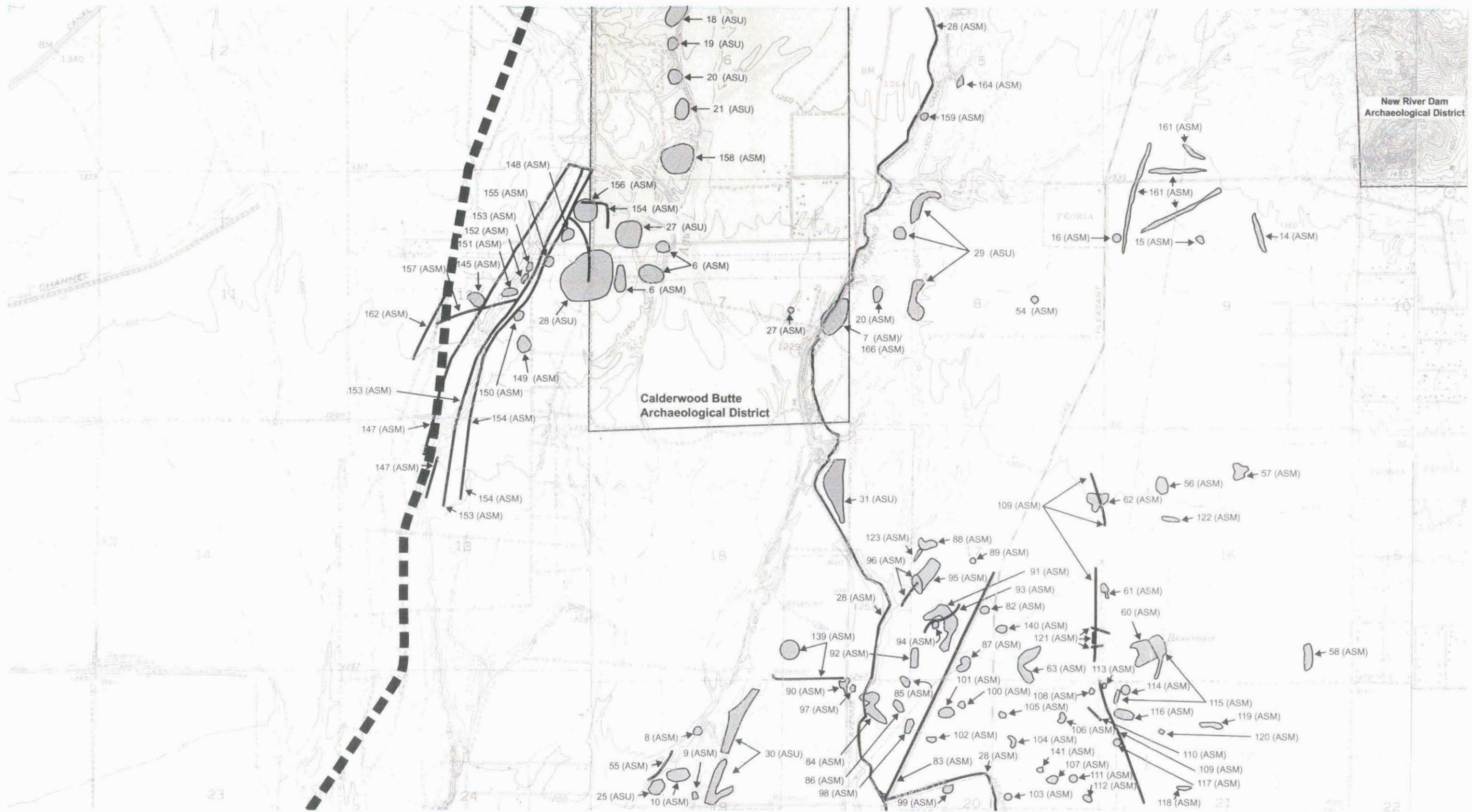


Figure DC-C-B-3. Cultural Resources (all sites AZ T:8:_ unless otherwise noted).



Sources: USGS Calderwood Butte, Ariz., 7.5' Quadrangle, 1957 (1981); USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

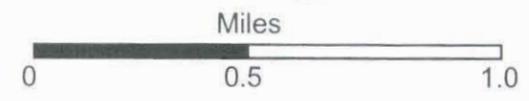


Figure DC-C-B-4. Cultural Resources (all sites AZ T:7:_).



Source: USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

Key

- Project Area
- Cultural Resources
- Archaeological District

Figure DC-C-B-5. Cultural Resources (all sites AZ T:8:_).





Sources: USGS Calderwood Butte, Ariz., 7.5' Quadrangle, 1957 (1981); USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

Key

- Project Area
- Cultural Resources
- Archaeological District

Figure DC-C-B-6. Cultural Resources (all sites AZ T:7:_) .





Source: USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981)

Key

- Project Area
- Cultural Resources
- Archaeological District

Figure DC-C-B-7. Cultural Resources (all sites AZ T:8:_).





Sources: USGS Calderwood Butte, Ariz., 7.5' Quadrangle, 1957 (1981); USGS El Mirage, Ariz., 7.5' Quadrangle 1957 (1982); USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981); USGS Glendale, Ariz., 7.5' Quadrangle 1957 (1982)

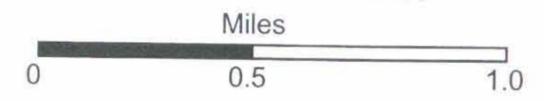
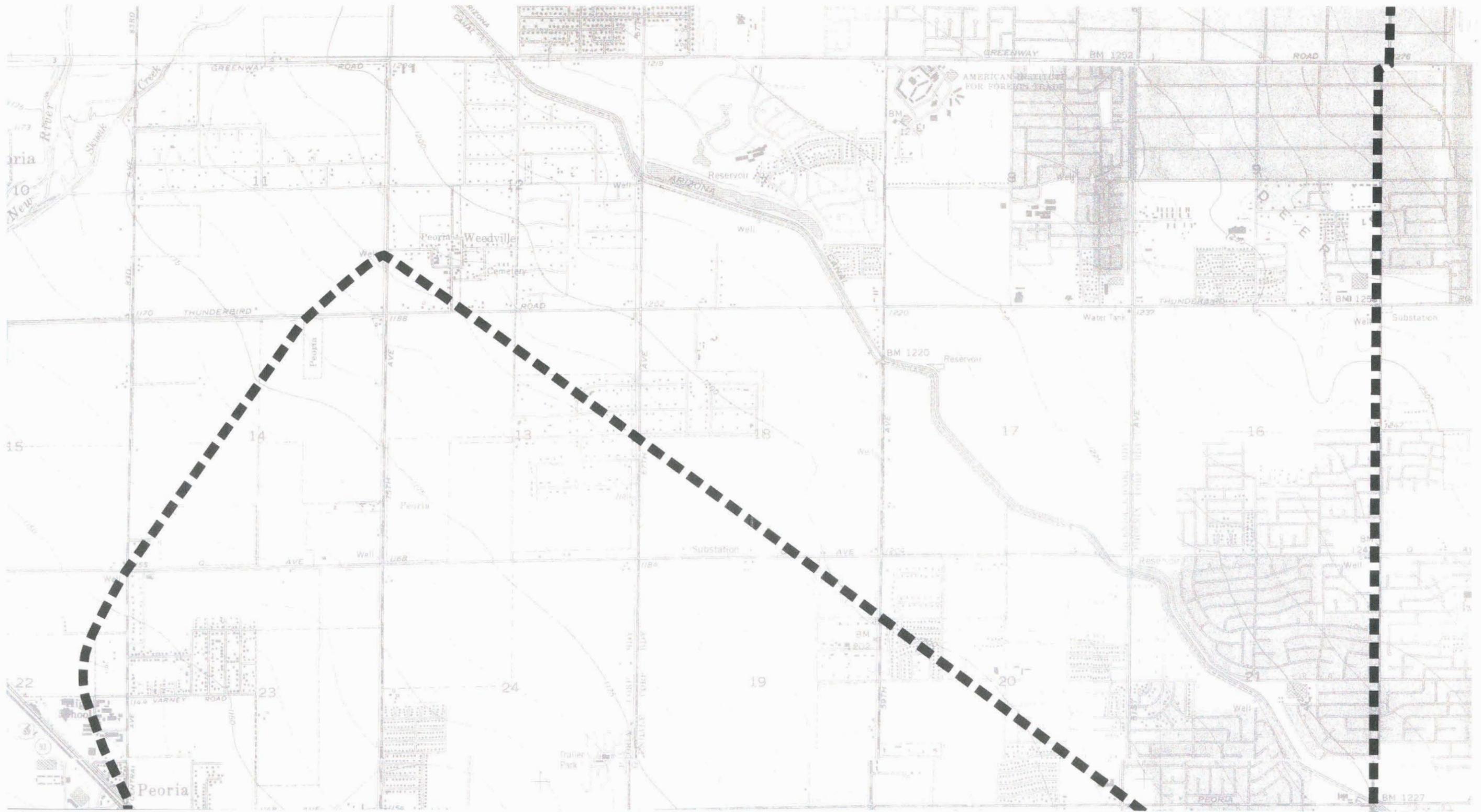


Figure DC-C-B-8. Cultural Resources (all sites AZ T:7:_)



Sources: USGS Hedgpeth Hills, Ariz., 7.5' Quadrangle, 1957 (1981); USGS Glendale, Ariz., 7.5' Quadrangle 1957 (1982)

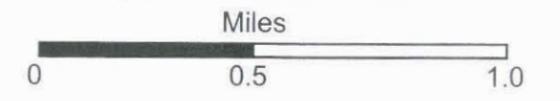


Figure DC-C-B-9. Cultural Resources.



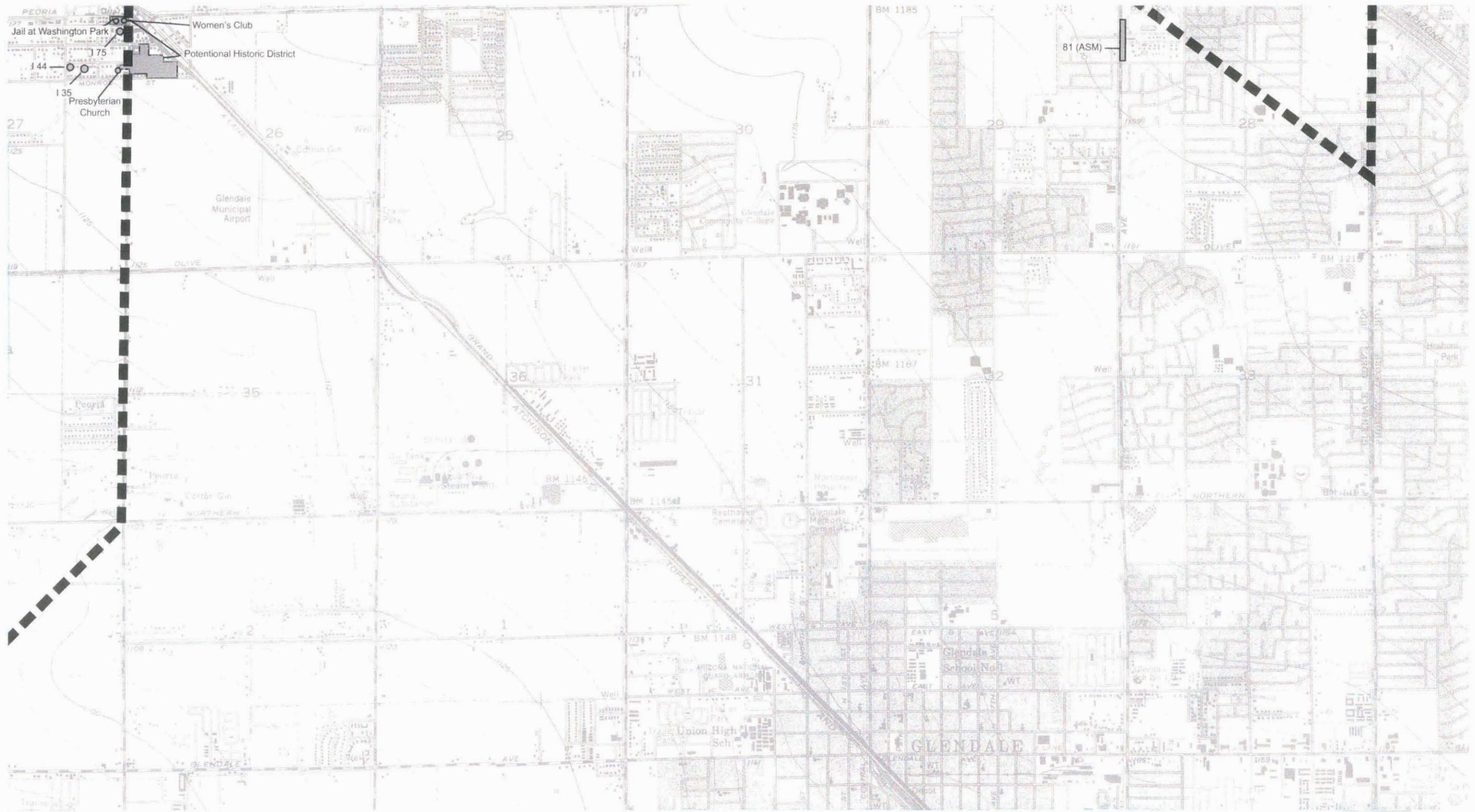
Sources: USGS El Mirage, Ariz., 7.5' Quadrangle 1957 (1982); USGS Glendale, Ariz., 7.5' Quadrangle 1957 (1982)

Key

- Project Area
- Cultural Resources
- Archaeological District

Figure DC-C-B-10. Cultural Resources (all sites AZ T:7:_).





Source: USGS Glendale, Ariz., 7.5' Quadrangle 1957 (1982)

Key

- ■ Project Area
- Cultural Resources
- Archaeological District

Figure DC-C-B-11. Cultural Resources (all sites AZ T:8:_).



Source: USGS El Mirage, Ariz., 7.5' Quadrangle 1957 (1982);

Key

- ■ Project Area
- Cultural Resources
- Archaeological District



Figure DC-C-B-12. Cultural Resources (all sites AZ T:7:_ unless otherwise noted).

Previous Surveys

Survey No	Map Refence	Acreage	ites Found	Survey Reference
1764R	Calderwood Butte;Hedgepeth Hills; Biscuit Flat	366	3	K. McQuestion & W. R.
1964-004	Calderwood Butte; Hedgepeth Hills; Baldy mtn.	7868	352	J. E. Ayres 1965
1970-003	Hedgepeth Hills	300	12	R. G. Vivian 1970
1974-001	El Mirage	7300	33	J. McDonald et al. 1974
1976-041	Hedgepeth Hills	120	8	P. Brown 1976
1979-012	El Mirage	0	0	L. Hammack 1979; no a
1979-092	Calderwood Butte	1.56	0	M. Walker 1979
1980-025	Hedgepeth Hills	45	0	J. Madsen 1980a
1980-087	Calderwood Butte	15	0	J. Madsen 1980b
1980-212	Glendale; Hedgepeth Hills	0	0	M. Green & R. Effland 1
1981-014	Calderwood Butte	4	0	J. Madsen 1981a
1981-034	Calderwood Butte	44	0	M. Raring-Hart 1981
1981-063	Hedgepeth Hills	20	1	J. Madsen 1981b
1981-131	Hedgepeth Hills	8	1	J. Madsen 1981c
1982-161	Hedgepeth Hills	33	0	L. Stone 1982
1983-066	Calderwood Butte	160	3	J. Madsen 1983
1983-122	Calderwood Butte	140	1	D. Keller & D. Weaver 1
1984-036	Calderwood Butte	120	0	R. Lange 1984a
1984-037	Calderwood Butte	242	0	R. Lange 1984b
1984-139	Hedgepeth Hills	358	2	J. Madsen 1984a
1984-221	Hedgepeth Hills	5.58	1	J. Madsen 1984b
1985-025	Biscuit Flat	40	1	K. Rozen 1985
1985-182	Hedgepeth Hills	0.04	0	B. Rosenburg 1985
1985-187	El Mirage	17.69	0	N. Swidler 1985
1986-051	Calderwood Butte	2.42	0	K. Rozen 1986a
1986-092	Calderwood Butte	10	1	K. Rozen 1986b
1986-116	El Mirage	200	0	S. Fedick 1986
1986-172	Hedgepeth Hills	0.86	1	D. H. Greenwald 1986
1987-015	Hedgepeth Hills	0	0	

Survey No	Map Reference	Acreage	ites Found	Survey Reference
1987-065	Hedgepeth Hills	2200	8	J. Cable 1987
1987-081	Glendale; El Mirage; Hedgepeth Hills; Calderwood Butte	76.3	0	D. Greenwald 1987
1987-162	Calderwood Butte	0.05	0	Macnider 1987
1987-170	Hedgepeth Hills	200	0	D. Bontrager & L. Stone
1987-175	El Mirage; Calderwood Butte	11.4	1	D. Bontrager & L. Stone
1987-178	Calderwood Butte; El Mirage	60.2	0	L. Stone 1987
1987-179	Calderwood Butte	650	1	J. Madsen 1987
1988-003	Hedgepeth Hills	160	1	B. Roth 1988
1988-114	Calderwood Butte	160	1	K. Rozen 1988
1988-234	Hedgepeth Hills	8.6	0	D. Bontrager 1988
1989-101	Hedgepeth Hills	3.6	0	D. Laush 1989
1989-148	El Mirage; Calderwood Butte; Glendale	422	2	R. Curtis 1989
1990-015	El Mirage	435	2	L. Slawson & R. Maldon
1990-031	Hedgepeth Hills	15	1	R. Curtis 1990
1991-017	Hedgepeth Hills	22	0	J. B. Rodgers 1991a
1991-026	Hedgepeth Hills	100.7	0	T. R. Lincoln 1991
1991-103	Calderwood Butte	5	1	J. B. Rodgers 1991b
1991-119	Glendale	13.6	0	K. Adams 1991
1991-263	Baldy Mtn; Calderwood Butte	25.5	4	L. E. Rhodes et al. 1992
1992-036	El Mirage	111	1	J. B. Rodgers 1992
1992-088	Hedgepeth Hills	60	0	D. V.M. Stephan 1992
1993-228	El Mirage	248	0	J. B. Rodgers 1993 (&19
1993-233	El Mirage; Glendale	180	0	J. B. Rodgers 1994b
1994-035	El Mirage	4.3	0	J. B. Rodgers 1994c
1994-036	Calderwood Butte	1352	50	Crary et al. 1994
1994-095	Hedgepeth Hills	385	0	J. B. Rodgers 1994d
1994-195	Hedgepeth Hills	6.2	0	J. B. Rodgers 1994e
1994-228	Hedgepeth Hills	40	0	J. T. Marshall 1994
1994-252	El Mirage	87.5	0	W. Punzmann 1994
1994-297	Hedgepeth Hills	69.58	0	P. Davis 1994
1994-306	El Mirage	50	0	C. Davies & M. S. Foster

Survey No	Map Reference	Acres	ites Found	Survey Reference
1994-307	El Mirage	88	0	C. Davies & M. S. Foster
1994-348	El Mirage	24	0	C. Wenker 1994
1994-354	Calderwood Butte; El Mirage	3	0	D. Mitchell & M. Stubin
1994-356	Glendale	15.1	0	M. Stubing 1994
1994-458	Calderwood Butte	569.3	3	D. Purcell 1994
1994-459	Calderwood Butte	1994.37	13	D. Purcell & T. Chadder
1995-021	El Mirage	0.18	0	C. Telles 1995
1995-040	El Mirage	0.36	0	D. Gifford 1995
1995-116	Calderwood Butte	80	0	D. Mitchell & M. Stubin
1995-157	Calderwood Butte	75	1	D. Mitchell 1995
1995-195	Glendale	64	0	M. Stubiong 1995
1995-229	Calderwood Butte	0.61	0	T. Hoffman 1995
1995-245	Hedgepeth Hills	25	1	T. Bostwick 1995
1995-367	Calderwood Butte	28	0	Stubing & Mitchell 1995
1995-370	Hedgepeth Hills	17	1	Crary & Mitchell 1995
1995-473	Hedgepeth Hills	40.11	1	R. A. Larkin 1995
1996-018	Calderwood Butte; El Mirage	64	1	M. Stubing 1996a
1996-117	El Mirage	152.14	0	W. Punzmann 1996
1996-177	El Mirage	106.3	0	M. Stubing 1996b
1996-324	Glendale	0.1	0	T. Lincoln 1996
1996-346	El Mirage	1.4	0	C. Telles 1996
1997-047	Hedgepeth Hills	17.45	1	M. Hackbarth 1997a
1997-049	Hedgepeth Hills	53	0	K. Adams 1997a
1997-080	Glendale	1.5	1	G. Woodall 1997
1997-092	Hedgepeth Hills	20	0	L. Aguila 1997
1997-096	El Mirage	13	0	M. L. Heutt 1997
1997-175	El Mirage	24.7	0	J. Marshall 1997
1997-178	Calderwood Butte; Hedgepeth Hills	109.1	2	M. Hackbarth 1997b
1997-181	Calderwood Butte	0	0	
1997-195	Calderwood Butte	5	2	K. Adams 1997b
1997-204	Calderwood Butte	120	1	D. Boloyan 1997

Survey No	Map Reference	Acreage	ites Found	Survey Reference
1997-214	Calderwood Butte	12	0	M. Stubing 1997
1997-215	Hedgepeth Hills	90.3	0	R. Ryden 1997
1997-245	Hedgepeth Hills	3	0	M. Hackbarth 1997c
1997-247	El Mirage; Glendale	365	0	K. Adams 1997c
1997-271	Calderwood Butte	2768.8	21	K. Adams 1997d
1997-362	Calderwood Butte	451.6	9	K. Shepard et al. 1997
1997-380	El Mirage	256.62	1	B. Stone 1997
1997-409	Calderwood Butte	3.25	2	K. Adams 1997e
1998-003	Glendale; Hedgepeth Hills	6	0	C. S. Crownover 1998
1998-029	El Mirage	14.42	0	H. DeMaagd 1998
1998-116	El Mirage	113.3	0	J. B. Rodgers 1998a
1998-277	Calderwood Butte	3.25	4	K. Adams & B. Macnide
1998-281	El Mirage	35.8	2	B. Stone 1998
1998-328	Calderwood Butte	15	0	C. Wenker 1998
1998-330	Calderwood Butte; Baldy Mtn	350	0	M. Stubing 1998a
1998-331	Calderwood Butte	0.002	0	M. Stubing 1998b
1998-335	Hedgepeth Hills	143	1	R. Ryden et al. 1998
1998-361	El Mirage	179	0	L. Aguila 1999a
1998-362	Calderwood Butte	18	0	L. Aguila 1998a
1998-363	Glendale	47	0	L. Aguila 1998b
1998-369	Hedgepeth Hills	2	0	L. Aguila 1999b
1998-459	Hedgepeth Hills	4	0	J. Hutira 1998
1999-033	Calderwood Butte	536	0	M. Lackey & S. Lewenst
1999-067	Calderwood Butte	350	0	M. Stubing 1999a
1999-069	Hedgepeth Hills	30	0	M. Stubing 1999b
1999-070	Hedgepeth Hills	6	0	M. Stubing 1999c
1999-071	Hedgepeth Hills	142	0	M. Stubing 1999d
1999-072	Hedgepeth Hills	40	0	M. Stubing 1999e
1999-233	Glendale	7	0	M. Stubing 1999f
2- 88	Glendale	0	0	ASU files: no reference f
2057R/2812 I	El Mirage	85	0	SHPO files: no author 19

Survey No	Map Reference	Acreage	ites Found	Survey Reference
2-073	Hedgepeth Hills; Biscuit Flat; Calderwood Butte; Glendale; Baldy Mtn	0	0	ASU files: no reference f
2-85	Hedgepeth Hills	0	3	ASU files: no reference f
2R/2805 I	Hedgepeth Hills	0	64	Dittert et al. 1976: no ac
3204 I	Hedgepeth Hills	4.4	0	SHPO files: no report fo
3606R/ 2961 I	El Mirage	15.3	0	J. Rodgers 1990
4277R	El Mirage	0	0	SHPO files: no report fo
4748R/ 3169 I	El Mirage	0	0	SHPO files: no report fo
51-077	Glendale	3.2	0	K. H.-Ditzler 1977a
5117R/ 3219 I	El Mirage	80	1	J. Rodgers 1988b
5-76/ 6-76	Glendale	30	0	D. Greenwald 1976/ B.
76-057	El Mirage	25	0	K. H.-Ditzler 1976c
76-061	Glendale	26	0	D. Connors 1976
77-037	El Mirage	0	0	ASU files: no report fou
77-038	El Mirage	45	0	K.H. Ditzler 1977
78-056	El Mirage	0	0	K. Roy 1978: no acerage
79-035	El Mirage	63	0	J. Neitzel 1979
79-041	El Mirage	16	0	L. Williams 1979: acera
80-017	Glendale	0	0	B. Larson 1980: no acera
80-29	El Mirage	984	0	J. McKenna 1980
8-076	Glendale	22.131	0	K. H.-Ditzler 1996a
82-008	Glendale	28	0	R. Most 1983
84-004	El Mirage	3.05	0	S. Fowler 1989a
87-011	Hedgepeth Hills	35.4	0	S. Fowler 1989b
87-013	Glendale	20.7	0	S. Fowler 1989c
9-076	Glendale	80	0	K. H.-Ditzler 1996b
Historic Resource Surve	Glendale	0	0	R. Carriker et al. 1997

Appendix B: Cultural Resources

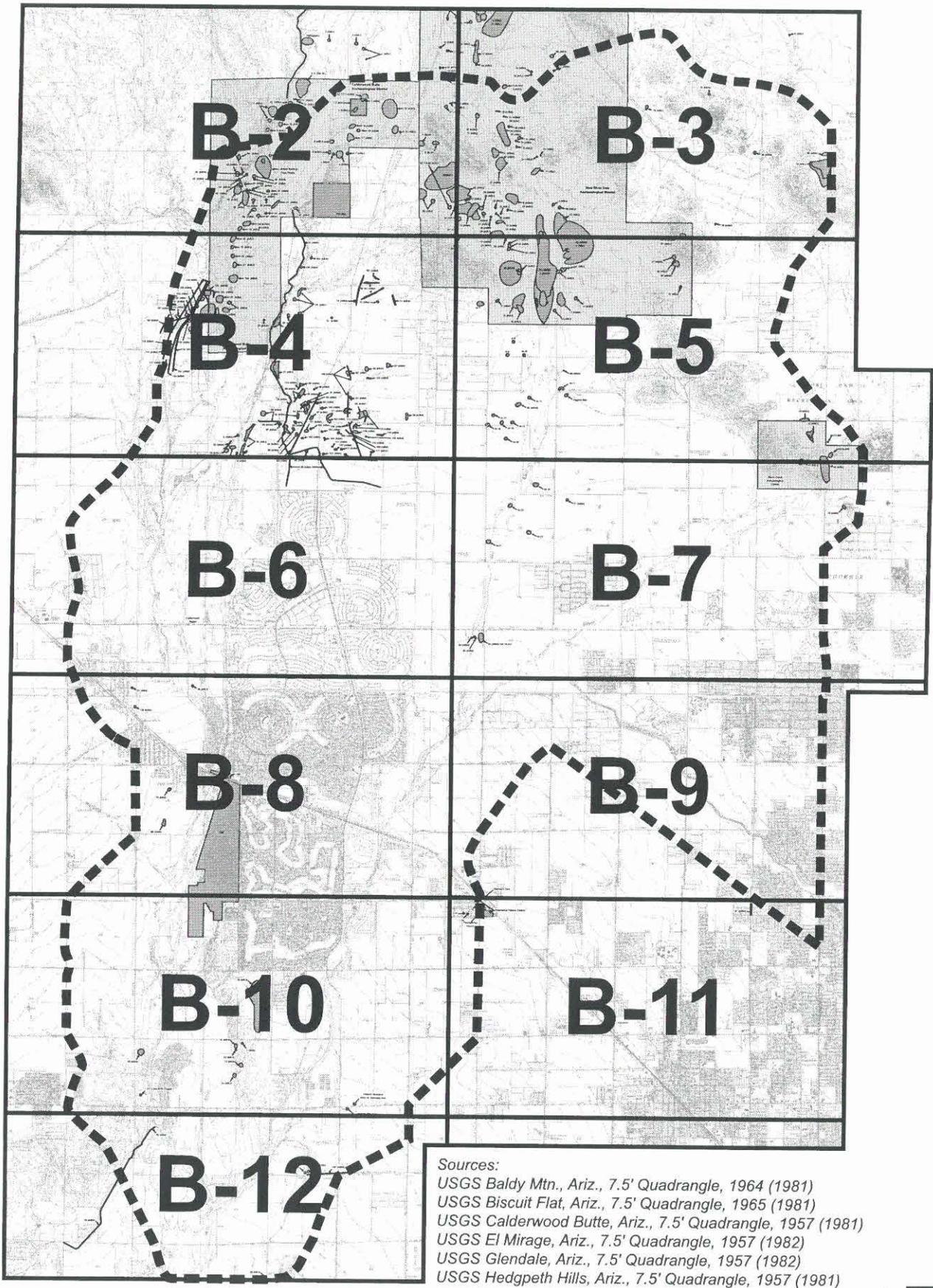


Figure DC-C-B-1. Cultural Resources Map Key.



Cultural Resources

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:3:6 (ASM)	Baldy Mountain	2,500m2	P-Artifact scatter, rock pile, cleared area	Unreported	ASM site files
AZ T:3:21 (ASM)	Baldy Mountain	1,000m2	P-Artifact scatter	Unreported	ASM site files
AZ T:3:22 (ASM)	Baldy Mountain	2,600 m2	P- Artifact scatter	Unreported	ASM site files
AZ T:3:24 (ASM)	Baldy Mountain	4,500m2	P- Artifact scatter	Unreported	ASM site files
AZ T:3:25 (ASM)	Baldy Mountain	2,800 m2	P-Structure, artifact scatter	Unreported	ASM site files
AZ T:3:26 (ASM)	Baldy Mountain	1,600m2	P-check dams (2), lithic scatter	Unreported	ASM site files
AZ T:3:4 (ARS)	Baldy Mountain	8 miles	H- Beardsley canal	Unreported	SHPO files
AZ T:3:2 (MNA)/ NA 11,588	Baldy Mountain	2,500m2	P- Trash mound, roasting pit	Unreported	SHPO files
AZ T:3:27 (ASM)	Baldy Mountain	850 m2	P- Artifact scatter	Unreported	ASM site files
AZ T:3:27 (ASU)	Baldy Mountain	3,500m2	P- Artifact scatter	Eligible	ASU site files
AZ T:3:28 (ASM)	Baldy Mountain	3,700m2	P-Artifact scatter	Unreported	ASM site files
AZ T:3:31 (ASM)	Baldy Mountain	1,500m2	H- Structure, artifact scatter	Unreported	ASM site files
AZ T:3:32 (ASM)	Baldy Mountain	2,200m2	P- Artifact scatter	Unreported	ASM site files
AZ T:3:33 (ASU)	Baldy Mountain	132m2	P- Artifact scatter (cs, fs, gs)	Eligible	ASU site files
AZ T:3:31 (ASU)	Baldy Mountain	2,800m2	P- Rooms (7), artifact scatter	Eligible	ASU site files
AZ T:3:30 (ASM)	Baldy Mountain	5,600m2	P- Rock alignment, rock piles, artifact sca	Unreported	ASM site files
AZ T:3:5 (ASU)	Baldy Mountain	150m2	P- Artifact scatter	Unreported	ASU site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:3:1 (MNA)/ NA 11,587	Baldy Mountain	400m2	P- Artifact scatter	Unreported	SHPO files
AZ T:3:29 (ASM)	Baldy Mountain	300m2	P- Structure, rock ring, possible structure	Unreported	ASM site files
AZ T:3:30 (ASU)	Baldy Mountain	990m2	P- Walls (2), artifact scatter	Eligible	ASU site files
AZ T:3:4 (ASU)	Baldy Mountain	2.5 acres	P- Pueblo, artifact scatter	Unreported	ASU site files
AZ T:3:2 (ASU)	Baldy Mountain	Unreported	P- Trash mound, roasting pit	Unreported	ASU site files
AZ T:3:1 (ASU)	Baldy Mountain	Unreported	P- Trash mound, artifact scatter	Unreported	ASU site files
AZ T:3:3 (ASU)	Baldy Mountain	Unreported	P- Rock ring, artifact scatter	Unreported	ASU site files
AZ T:3:23 (ASM)	Baldy Mountain	4,816 m2	P- trash mounds (2), cleared area, artifact s	Unreported	ASM site files
AZ T:4:6 (ASU)	Biscuit Flat	90,000m2	P- Lithic scatter	Eligible	ASU site files
AZ T:4:53 (ASM)/AZ T:4:53 (ASU)/ AZ	Biscuit Flat	40,000m2	P- Clearing, artifact scatter (c & cs)	Eligible	ASM & SHPO site fil
AZ T:4:46 (ASU)	Biscuit Flat	Unknown	U- Unknown	Unknown	ASM site files
AZ T:4:45 (ASU)	Biscuit Flat	12,960 m2	P- rock alignment agricultural fields	Unreported	ASU site files
AZ T:4:16 (ASM)/ AZ T:4:10 (ASU)/ AZ	Biscuit Flat	272,000m2	P- trash mounds (6),rock ring, rock pile,	Unreported	ASM site files
AZ T:4:47 (ASU)	Biscuit Flat	706m2	P- Artifact scatter	Not Eligible	ASU site files
AZ T:4:9 (ASU)	Biscuit Flat	100m2	P- Artifact scatter	Unreported	ASU site files
AZ T:4:19 (ASM)/ AZ T:4:9 (MNA)/ NA	Biscuit Flat	3,025m2	H- Artifact scatter	Unreported	ASM site files
AZ T:4:17 (ASM)/ AZ T:4:41 (ASU)/ AZ	Biscuit Flat	1,700m2	P- Artifact scatter	Not Eligible	ASM & ASU site files
AZ T:4:20 (ASM)/AZ T:4:42 (ASU)/ AZ	Biscuit Flat	2,000m2	P- Artifact scatter	Unreported	ASM site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:4:12 (ASM)/ AZ T:4:39 (ASU)/ AZ	Biscuit Flat	40,500m2	P- rock rings (2), petroglyph, mound, roa	Unreported	ASM & ASU site files
AZ T:4:40 (ASM)	Biscuit Flat	184,800m2	P- linear rock borders (34), rockpiles (49)	Unreported	ASM site files
AZ T:4:23 (ASM)/ AZ T:4:20 (MNA)/ N	Biscuit Flat	Unknown	H- Stage station, foundation, platform, du	Unreported	ASM site files
AZ T:4:43 (ASU)	Biscuit Flat	Unreported	P- Lithic scatter	Not Eligible	ASU site files
AZ T:4:18 (ASM)/ AZ T:4:35 (ASU)/ AZ	Biscuit Flat	3,375m2	P- Artifact scatter	Unreported	ASM site files
AZ T:4:35 (ASU)	Biscuit Flat	1,700m2	P- Artifact scatter	Not Eligible	ASU site files
AZ T:4:36 (ASU)	Biscuit Flat	12500m2	P- Horseshoe shaped stone alignment, arti	Not Eligible	ASU site files
AZ T:4:22 (ASM)/ AZ T:4:36 (ASU)/ AZ	Biscuit Flat	7,200M2	P- Rock ring, cleared area, lithic scatter	Unreported	ASM site files
AZ T:4:34 (ASM)	Biscuit Flat	225m2	U- Fortified hill, clearings (3), artificial r	Unreported	ASM site files
AZ T:4:13 (ASM)/ AZ T:4:37 (ASU)/ AZ	Biscuit Flat	388,500m2	P- Structure, roasting area, rock alignmen	Unreported	ASM site files
AZ T:7:138 (ASM)	El Mirage	851m2	P- Artifact scatter	Eligible	ASM site files
AZ T:7:79 (ASM)	El Mirage	3,375m2	P- Artiifact scatter	Potentially Eligible	ASM site files
AZ T:7:80 (ASM)	El Mirage	6,000ft2	P- Artifact scatter	Potentially Eligible	ASM site files
AZ T:7:30 (ASU)	Calderwood Butte	1,300 (no units give	P- Ovens, hearths, lithic scatter	Not Eligible	ASU site files
AZ T:7:33 (ASU)	El Mirage	323,738m2	P- Artifact scatter (cs, fs, gs)	Not Eligible	ASU site files
AZ T:7:25 (ASM)/ AZ T:7:3 (GCC)/ Oua	El Mirage	40,000m2	P- Middens, mounds, artifact scatter	Unreportes	ASM site files
AZ T:7:12 (ASM)/ AZ T:7:23 (ASU)	El Mirage	3,200m2	P- Artifact scatter	Unreported	ASM site files
AZ T:7:1 (SAS)	El Mirage				

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:7:23 (ASU)	El Mirage	2,800m2	P- Possible structure, ceramic scatter	Not Eligible	ASU site files
AZ T:7:13 (ASM)	El Mirage	1,536m2	P- Artifact scatter	Unreported	ASM site files
AZ T:7:24 (ASU)	El Mirage	2,166m2	P- "Habitation", trash mounds (4), stone c	Not Eligible	ASU site files
AZ T:7:171 (ASM)	El Mirage	11,210m2	H- Segemnt of Roosevelt Irrigation Distri	Not Eligible	ASM site files
AZ T:7:172 (ASM)	El Mirage	366m2	H/M- Irrigation canal	Not Eligible	ASM site files
AZ T:7:167 (ASM)	El Mirage	11,210 m2	H- Grand canal wasteway: this segment i	Eligible	ASM site files
AZ T:7:76 (ASM)/ Air Line Canal	El Mirage	27,676m2	H- Canal	Unreported	ASM site files
AZ T:7:26 (ASU)	El Mirage	300m2	H- Farm house and outbuilding	Not Eligible	ASU site files
AZ T:7:22 (ASU)	Calderwood Butte	Unreported	P- Stone structure, trash mound	Not Eligible	ASU site files
AZ T:7:9 (ASU)	Calderwood Butte	Unreported	P- Masonry rooms (2), artifact scatter	Not Eligible	ASU site files
AZ T:7:10 (ASU)	Calderwood Butte	16m2	P- Structure, trash mound, artifact scatter	Not Eligible	ASU site files
AZ T:7:11 (ASU)	Calderwood Butte	Unreported	P- Waffle garde, artifact scatter	Not Eligible	ASU site files
AZ T:7:12 (ASU)	Calderwood Butte	396,000m2	P- Rooms (3), trash mounds (3), circular	Not Eligible	ASU site files
AZ T:7:13 (ASU)	Calderwood Butte	Unreported	P- Circular structure, rock alignments, tra	Not Eligible	ASU site files
AZ T:7:14 (ASU)	Calderwood Butte	Unreported	P- Stone structure, rooms (5-10), artifact	Not Eligible	ASU site files
AZ T:7:1 (ASU)/ AZ T:7:2 (ASU)/ Calde	Calderwood Butte	8,750m2	P- Pueblo, 28+ rooms, trash mounds (12),	Not Eligible	ASU site files
AZ T:7:4 (ASM)/ AZ T:7:2 (PG)	Calderwood Butte	Unreported	P- fortified compound, 15-20 rooms	Unreported	ASM site files
AZ T:7:34 (ASU)	Calderwood Butte	250,000m2	P- Fort, house, lithic scatter	Eligible	ASU site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:7:18 (ASM)	Calderwood Butte	11,000m2	P- Masonry Pithouse (plaster wall), artifa	Unreported	ASM site files
AZ T:7:19 (ASM)	Calderwood Butte	3,600m2	P- Artifact scatter	Unreported	ASM site files
AZ T:7:17 (ASM)	Calderwood Butte	90,000m2	P- Cobble feature, rock alignemtns (2), ar	Unreported	ASM site files
AZ T:7:35 (ASM)	Calderwood Butte	1,920 sq ft	U- Rock wall	Unreported	ASM site files
AZ T:7:7 (BLM)	Calderwood Butte	11,000 sq m	P- Quarry, artifact scatter	Eligible	BLM site files
AZ T:7:8 (BLM)	Calderwood Butte	6,000sq m	P- Artifact scatter	Eligible	BLM site files
AZ T:7:61 (ASM)	Calderwood Butte	3,134 sq m	P- Chpping stations (3), rock circle, artifa	Eligible	ASM site files
AZ T:8:39 (ASM)/ NA 15,909	Hedgepeth Hills				UNKNOWN GET CA
AZ T:7:36 (ASU)	Calderwood Butte	75,000m2	P- Artifact scatter	Eligible	ASU site files
AZ T:7:7 (ASU)	Calderwood Butte	87,120 ft2	P- Pueblo	Unreported	ASU site files
AZ T:7:161 (ASM)	Calderwood Butte	4,300+ft	U- canal system	Not Eligible	ASM site files
AZ T:7:14 (ASM)	Calderwood Butte	2.5m wide	P?- Canal	Unreported	ASM site files
AZ T:7:15 (ASM)	Calderwood Butte	805m2	P-Lithic scatter	Unreported	ASM site files
AZ T:7:16 (ASM)	Calderwood Butte	80m2	P- Pot breaks (2)	Unreported	ASM site files
AZ T:7:54 (ASM)	Calderwood Butte	18,700ft2	H- Homestead	potentially Eligible	SHPO files
AZ T:7:20 (ASM)/ AZ T:7:29 (ASU), NA	Calderwood Butte	210,000m2	P- Possible house remains, trash mounds,	Unreported	ASM site files
AZ T:7:29 (ASU)	Calderwood Butte	675m2	P- Cobble alignment, artifact scatter	Not Eligible	ASU site files
AZ T:7:164 (ASM)	Calderwood Butte	875m2	H- Artifact scatter	Potentially Eligible	ASM site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:7:8 (ASU)	Calderwood Butte	Unreported	P- Structure	Not Eligible	ASU site files
AZ T:7:5 (ASM)/ AZ T:7:2 (ASU)	Calderwood Butte	40,000m2	P- Masonry rooms (3), trash mounds (3),	Unreported	ASM site files
AZ T:7:4 (ASU)	Calderwood Butte	152,460ft2	P- Pueblo (5+ rooms), middens, compoun	Not Eligible	ASU site files
AZ T:7:3 (ASU)	Calderwood Butte	130,680ft2	P- Possible pit houses, trash area,	Not Eligible	ASU site files
AZ T:7:6 (ASU)	Calderwood Butte	40,000ft2	Unreported	Unreported	SHPO files
AZ T:7:37 (ASU)	Calderwood Butte	Unreported	P-Petreoglyphs (51+), ditches, dykes	Eligible	ASU site files
AZ T:7:64 (ASM)	Calderwood Butte	7,650 m2	P- Artifact scatter	Unreported	ASM site files
AZ T:7:45 (ASM)/ AZ T:7:17 (ASU)	Calderwood Butte	45,000ft2	P- Artifact scatter	Unreported	ASM site files
AZ T:7:2 (ASM)/ AZ T:7:5 (ASU)/ Casa	Calderwood Butte	Unreported	P- Compound, trash mounds, slab lined r	Unreported	ASM site files
AZ T:7:36 (ASM)	Calderwood Butte	Unreported	P- Artifact scatter	Unreported	ASM site files
AZ T:7:37 (ASM)/AZ T:7:31 (ASU)	Calderwood Butte	625 ft2	P- Masonry structure, artifact scatter	Unreported	ASM site files
AZ T:7:30 (ASM)	Calderwood Butte	120,000ft2	P- Roomblock, small rock walled features	Unreported	ASM site files
AZ T:7:41 (ASM)	Calderwood Butte	2,500ft2	P-Artifact scatter	Unreported	ASM site files
AZ T:7:33 (ASM)	Calderwood Butte	56,250ft2	P- Artifact scatter (c, cs)	Unreported	ASM site files
AZ T:7:39 (ASM)	Calderwood Butte	750 ft2	P-Masonry rooms (2), artifact scatter	Unreported	ASM site files
AZ T:7:34 (ASM)	Calderwood Butte	75,000ft2	P- Possible stone rooms (2), artifact scatt	Unreported	ASM site files
AZ T:7:46 (ASM)/ AZ T:7:2 (SAS)	Calderwood Butte	78m2	P- Lithic scatter	Unreported	ASM site files
AZ T:7:16 (ASU)	Calderwood Butte	1,549m2	P- Masonry rooms (1+), artifact scatter	Not Eligible	ASU site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:7:65 (ASM)	Calderwood Butte	49,776 m2	P- Rock alignment (3), petroglyph (1), ch	Unreported	ASM site files
AZ T:7:43 (ASM)	Calderwood Butte	60,000ft2	P- Check dam, mound, artifact scatter	Unreported	ASM site files
AZ T:7:32 (ASM)	Calderwood Butte	5,000ft2	P- Artifact scatter (cf, cs, gs)	Unreported	ASM site files
AZ T:7:42 (ASM)	Calderwood Butte	30,000ft2	P- Masonry structure (4), artifact scatter	Unreported	ASM site files
AZ T:7:31 (ASM)	Calderwood Butte	12,500ft2	P- Stone structure, artifact scatter	Unreported	ASM site files
AZ T:7:44 (ASM)	Calderwood Butte	5,625 ft2	P- Field house, artifact scatter	Unreported	ASM site files
AZ T:7:66 (ASM)	Calderwood Butte	7,500m2	P- Pit house (3), trash pit, artifact scatter	Unreported	ASM site files
AZ T:7:67 (ASM)	Calderwood Butte	5,214 m2	P- Rock alignments, Hearths (2), check d	Unreported	ASM site files
AZ T:7:183 (ASM)/ AZ T:7:15 (ASU)	Calderwood Butte	54,900m2	P- Rock piles (13), rock concentrations (2	Eligible	ASM site files
AZ T:7:15 (ASU)	Calderwood Butte	Unreported	P- Stone structures (3), trash mounds, roc	Not Eligible	ASU site files
AZ T:7:18 (ASU)	Calderwood Butte	Unreported	P- Artifact scatter	Unreported	ASU site files
AZ T:7:19 (ASU)	Calderwood Butte	161,739m2	P- Circular structure, trash area, rock ring	Not Eligible	ASU site files
AZ T:7:20 (ASU)	Calderwood Butte	18,543m2	P- boulder rooms, possible cremation, tra	Not Eligible	ASU site files
AZ T:7:21 (ASU)	Calderwood Butte	225ft2	P- Circular stone structure	Not Eligible	ASU site files
AZ T:7:158 (ASM)	Calderwood Butte	47,280m2	P- Cremation, rocpiles (7), artifact scatter	Eligible	ASM site files
AZ T:7:156 (ASM)	Calderwood Butte	58,500m2	P- Cremation, rock cluster, artifact scatter	Eligible	ASM site files
AZ T:7:154 (ASM)	Calderwood Butte	13,728ft+	H- Canal system	Not Eligible	ASM site files
AZ T:7:27 (ASU)	Calderwood Butte	5,000m2	P- structure (possibly jacal), excavated: 2	Not Eligible	ASU site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:7:6 (ASM)	Calderwood Butte	2,500m2	P- Sherd scatter	Unreported	ASM site files
AZ T:7:28 (ASM)	Calderwood Butte	1,478,400ft2	H- Marinette Heading Canal, associated b	Eligible	ASM site files
AZ T:7:7 (ASM)	Calderwood Butte	10,000m2	P- Village, cobblestone dweeling, rock ali	Unreported	ASM site files
AZ T:7:166 (ASM)	Calderwood Butte	Unreported	H- concrete foundation, rock alignment,	Eligible	ASM site files
AZ T:7:148 (ASM)	Calderwood Butte	4,500m2	P- Roasting Pit, groundstone manufacturi	Eligible	ASM site files
AZ T:7:153 (ASM)	Calderwood Butte	1.61 m2	U- Rectangualr rockpile, possible grave	Not Eligible	ASM site files
AZ T:7:155 (ASM)	Calderwood Butte	2,992m2	P- Roasting pit, artifact scatter	Potentially Eligible	ASM site files
AZ T:7:145 (ASM)	Calderwood Butte	6,020m2	P- Rock cluster, artifact concentration, art	Not Eligible	ASM site files
AZ T:7:151 (ASM)	Calderwood Butte	930m2	U- cobble structure, rock alignment	Unknown	ASM site files
AZ T:7:152 (ASM)	Calderwood Butte	2.2m2	U- Rectangular rockpile, possible grave	Not Eligible	ASM site files
AZ T:7:157 (ASM)	Calderwood Butte	15,150ft2	U- Cobble bermed road	Not Eligible	ASM site files
AZ T:7:162 (ASM)	Calderwood Butte	6,900+ ft	H- Canals (3)	Not Eligible	ASM site files
AZ T:7:149 (ASM)	Calderwood Butte	6,279m2	P- Artifact scatter	Unknown	ASM site files
AZ T:7:150 (ASM)	Calderwood Butte	6,460 m2	P- Rock clusters (8), rockpile, Chipping s	Unknown	ASM site files
AZ T:7:57 (ASM)	Calderwood Butte	5,732 m2	P- Chipping stations (5), potbreak, artifac	Not Eligible	ASM site files
AZ T:7:56 (ASM)	Calderwood Butte	7,322m2	P- Artifact scatter	Eligible	ASM site files
AZ T:7:122 (ASM)	Calderwood Butte	32m2	U- Trail segment	Not Eligible	ASM site files
AZ T:7:62 (ASM)	Calderwood Butte	6,289m2	P- Chipping stations (8), lithic scatter	Not Eligible	ASM site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:7:60 (ASM)	Calderwood Butte	18,459m2	P- Chipping stations (10), lithic scatter, G	Eligible	ASM site files
AZ T:7:58 (ASM)	Calderwood Butte	5,229m2	P- Chipping stations (3), pot breaks (5), a	Not Eligible	ASM site files
AZ T:7:113 (ASM)	Calderwood Butte	451m2	P- Chipping stations (2), lithic scatter	Not Eligible	ASM site files
AZ T:7:114 (ASM)	Calderwood Butte	2,202m2	P- Chipping stations (5), lithic scatter	Not Eligible	ASM site files
AZ T:7:31 (ASU)	Calderwood Butte	Unreported	P- Ovens, hearth, artifact scatter	Not Eligible	ASU site files
AZ T:7:88 (ASM)	Calderwood Butte	5,749m2	P- chipping stations (4), lithic scatter	Not Eligible	ASM site files
AZ T:7:123 (ASM)	Calderwood Butte	34m2	U- Trail segment	Not Eligible	ASM site files
AZ T:7:96 (ASM)	Calderwood Butte	5,044m2	P- Chipping stations (5), lithic scatter	Not Eligible	ASM site files
AZ T:7:95 (ASM)	Calderwood Butte	8,218m2	U- Trail segments (3)	Not Eligible	ASM site files
AZ T:7:91 (ASM)	Calderwood Butte	16,098m2	P- Chipping stations (19), Groundstone	Not Eligible	ASM site files
AZ T:7:93 (ASM)	Calderwood Butte	66m2	U- Trail	Not Eligible	ASM site files
AZ T:7:82 (ASM)	Calderwood Butte	595m2	P-chipping ststaions (2), artifact scatter H	Not Eligible	ASM site files
AZ T:7:140 (ASM)	Calderwood Butte	144m2	H- Artifact scatter	Not Eligible	ASM site files
AZ T:7:87 (ASM)	Calderwood Butte	4,331m2	P- Chipping stations (3),lithic scatter	Not Eligible	ASM site files
AZ T:7:63 (ASM)	Calderwood Butte	5,216m2	P- Chipping stations (10), artifact scatter,	Eligible	ASM site files
AZ T:7:100 (ASM)	Calderwood Butte	291m2	H- Artifact scatter	Not Eligible	ASM site files
AZ T:7:101 (ASM)	Calderwood Butte	4,440m2	P- Chipping stations (2), lithic scatter H-	Not Eligible	ASM site files
AZ T:7:94 (ASM)	Calderwood Butte	1,349m2	H- Artifact scatter	Not Eligible	ASM site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:7:139 (ASM)	Calderwood Butte	177,755m2	U- Ditch and rock pile	Not Eligible	ASM site files
AZ T:7:92 (ASM)	Calderwood Butte	4,162m2	P- Chipping stations (10), lithic scatter	Not Eligible	ASM site files
AZ T:7:90 (ASM)	Calderwood Butte	260 m2	H- Canal, possible associated with the M	Not Eligible	ASM site files
AZ T:7:85 (ASM)	Calderwood Butte	1,601m2	P- Chipping station, lithic scatter	Not Eligible	ASM site files
AZ T:7:97 (ASM)	Calderwood Butte	602m2	H- Artifact scatter	Not Eligible	ASM site files
AZ T:7:89 (ASM)	Calderwood Butte	91m2	P-Chipping station. Ground stone manufa	Not Eligible	ASM site files
AZ T:7:86 (ASM)	Calderwood Butte	2,598m2	P- Pot break, artifact scatter	Not Eligible	ASM site files
AZ T:7:98 (ASM)	Calderwood Butte	3,267m2	P- Chipping stations (3), lithic scatter	Not Eligible	ASM site files
AZ T:7:83 (ASM)	Calderwood Butte	19,800m2	H- Road segment, artifact scatter	Not Eligible	ASM site files
AZ T:7:99 (ASM)	Calderwood Butte	1,940m2	P- Chipping station (1), artifact scatter	Not Eligible	ASM site files
AZ T:7:102 (ASM)	Calderwood Butte	852m2	P- Chipping station, artifact scatter	Not Eligible	ASM site files
AZ T:7:105 (ASM)	Calderwood Butte	702m2	P- Chipping stations (3), potbreaks (2), ar	Eligible	ASM site files
AZ T:7:108 (ASM)	Calderwood Butte	448m2	P- Chipping stations, lithic scatter	Not Eligible	ASM site files
AZ T:7:104 (ASM)	Calderwood Butte	1,963m2	P- chipping stations (2), lithic scatter	Not Eligible	ASM site files
AZ T:7:106 (ASM)	Calderwood Butte	2,875m2	P- Chipping stations (7), lithic scatter	Not Eligible	ASM site files
AZ T:7:141 (ASM)	Calderwood Butte	8.4 m2	P- Waffle garden, lithic scatter	Not Eligible	ASM site files
AZ T:7:107 (ASM)	Calderwood Butte	667m2	P- Chipping station (3), lithic scatter	Not Eligible	ASM site files
AZ T:7:111 (ASM)	Calderwood Butte	28m2	P- Chipping ststion, rock cluster, lithic sc	Eligible	ASM site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:7:103 (ASM)	Calderwood Butte	304m2	P- Pot break, artifact scatter	Not Eligible	ASM site files
AZ T:7:112 (ASM)	Calderwood Butte	1,206m2	P- Lithic scatter, trail segmnet	Not Eligible	ASM site files
AZ T:7:118 (ASM)	Calderwood Butte	20m2	U- Trail segment	Not Eligible	ASM site files
AZ T:7:117 (ASM)	Calderwood Butte	1,077m2	P-Chipping stations (2), rock cluster, lithi	Eligible	ASM site files
AZ T:7:109 (ASM)	Calderwood Butte	2,250m2	H- Road, artifact scatter	Eligible	ASM site files
AZ T:7:110 (ASM)	Calderwood Butte	14m2	U- Trail segment	Not Eligible	ASM site files
AZ T:7:120 (ASM)	Calderwood Butte	159m2	P-Chipping station, artifact scatter	Not Eligible	ASM site files
AZ T:7:119 (ASM)	Calderwood Butte	1,152m2	P- Chipping station, ground stone manufa	Not Eligible	ASM site files
AZ T:7:115 (ASM)	Calderwood Butte	2,500 m2	P- Trail segements (6)	Not Eligible	ASM site files
AZ T:7:116 (ASM)	Calderwood Butte	2,306m2	P- Chipping stations (5), artifact scatter	Not Eligible	ASM site files
AZ T:7:8 (ASM)	Calderwood Butte	400m2	P-Stone structure (2 rooms), artifact scatt	Unreported	ASM site files
AZ T:7:55 (ASM)	Calderwood Butte	1,140 sq m	H/M- canal	Unknown	ASM site files
AZ T:7:10 (ASM)	Calderwood Butte	13,125 m2	P- Village, dwellings (2+)	Unreported	ASM site files
AZ T:7:9 (ASM)	Calderwood Butte	400m2	P- Rock Alignemnt and lithic scatter	Unreported	ASM site files
AZ T:7:147 (ASM)	Calderwood Butte	387,680+ m2	P-Chipping stations , Groundstone manuf	Eligible	ASM site files
AZ T:7:22 (ASM)	Calderwood Butte	225m2	P- Rock cliuster and lithic scatter	Unreported	ASM site files
AZ T:7:38 (ASU)	Calderwood Butte	1,200m2	P- Artifact scatter	Unreported	ASU site files
AZ T:8:56 (ASU)	Hedgepeth Hills	90m2	P- Artifact scatter	Unreported	ASU site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:8:55 (ASU): see AZ T:8:27 (ASM)	Hedgepeth Hills	-	-	-	-
AZ T:8:33 (ASM)/ AZ T:8:11 (ASU)/ AZ	Hedgepeth Hills	1,500m2	P-Rock piles (2), artifact scatter	Unreported	ASM site files
AZ T:8:28 (ASM)/ AZ T:8:21 (MNA)/ A	Hedgepeth Hills	1,500m2	P- Artifact scatter	Unreported	ASM & SHPO site fil
AZ T:8:31 (ASM)/ AZ T:8:59 (ASU)	Hedgepeth Hills	700 m2	P- Lithic scatter	Unreported	ASM site files
AZ T:8:26 (ASM)/ AZ T:8:57& 58 (ASU)	Hedgepeth Hills	91,000m2	P- Artifact scatter	Unreported	ASM & SHPO site fil
AZ T:8:58 (ASU)	Hedgepeth Hills	900m2	P- Rock concentration, artifact scatter	Not Eligible	ASU site files
AZ T:8:34 (ASM)/ NA 16,366/ AZ T:8:1	Hedgepeth Hills	4,500 sq m	P- Artifact scatter	Unreported	ASM site files
AZ T:8:9 (ASU)	Hedgepeth Hills	Unreported	P- Artifact scatter	Not Eligible	ASU site files
AZ T:8:60 (ASU)	Hedgepeth Hills	125,000m2	P- Circular rock alignment, lithic scatter	Unreported	ASU site files
AZ T:8:78 (ASU)	Hedgepeth Hills	2.5m2	P- Isolated mano and metate in situ (100	Not Eligible	ASU site files
AZ T:8:56 (ASM)	Hedgepeth Hills	2,250m2	P-Rock feature, rock alignment, artifact s	Unreported	ASM site files
AZ T:8:80 (ASM)	Hedgepeth Hills	500m2	P- Rock ring	Unreported	SHPO site files
AZ T:8:79 (ASU)	Hedgepeth Hills	360,000m2	P- Terraces, check dams, circular rock rin	Not Eligible	ASU site files
AZ T:8:38 (ASM)	Hedgepeth Hills	Unknown	P- Rock features, artifact scatter	Unreported	ASM site files
AZ T:8:5 (ASU)	Hedgepeth Hills	1,500m2	P- Artifact scatter	Not Eligible	ASU site files
AZ T:8:63 (ASU)	Hedgepeth Hills; Calderwood Butte	320,000m2	P- Rock platforms (2), rock ring, trail, lit	Eligible	ASU site files
AZ T:8:62 (ASU)	Hedgepeth Hills	8,000m2	P- Possible rock quarry, lithic scatter	Unreported	ASU site files
AZ T:8:53 (ASU)	Hedgepeth Hills	10,000m2	P- Artifact scatter	Eligible	ASU site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:8:50 (ASU)	Hedgepeth Hills	15,000m2	P- Artifact scatter	Eligible	ASU site files
AZ T:8:25 (ASM)/ AZ T:8:50 (ASU)/ N	Hedgepeth Hills	28,380m2	P- Artifact scatter	Unreported	ASM site files
AZ T:8:27 (ASM)/ AZ T:8:55 (ASU)/ AZ	Hedgepeth Hills	2,400m2	P- Artifact scatter with possible rock align	Unreported	ASU & ASM site files
AZ T:8:29 (ASM)/ AZ T:8:27 (ASU)/ N	Hedgepeth Hills	6,205m2	P- Rock concentrations, artifact scatter;	Unreported	ASM site files
AZ T:8:15 (ASM)	Hedgepeth Hills	16,000m2	P-Rock quarry, artifact scatter, rock align	Unreported	ASM & ASU site files
AZ T:8:51 (ASU): see AZ T:8:15 (ASM)	Hedgepeth Hills	-	-	-	-
AZ T:8:64 (ASM)	Hedgepeth Hills	36m2	P- Artifact scatter	Unreported	ASM site files
AZ T:8:21 (ASM)/ AZ T:8:22 MNA/ NA	Hedgepeth Hills	Unknown	P- Rock ring, rock pile, basalt quarry	Eligible	ASM & SHPO site fil
AZ T:8:54 (ASU)	Hedgepeth Hills	600m2	P-Artifact scatter	Not Eligible	ASU site files
AZ T:8:24 (ASM)/ AZ T:8:18 (MNA)/ A	Hedgepeth Hills	2,200m2	P- Fire pit, artifact scatter	Unreported	ASM & SHPO site fil
AZ T:8:17 (ASU)	Hedgepeth Hills	68,000m2	P- Series of earthen berms, rock wall, arti	Not Eligible	ASU site files
AZ T:8:22 (ASM)/AZ T:8:3 (MNA)	Hedgepeth Hills	5,200m2	P- Artifact scatter	Eligible	ASM & SHPO site fil
AZ T:8:19 (ASM)/ AZ T:8:29 (ASU)/ N	Hedgepeth Hills	129,575m2	P- Rock art, bedrock metate, trails, rock s	Eligible	ASM & SHPO site fil
AZ T:8:28 (ASU)	Hedgepeth Hills	10,000m2	P- Rock concentration, artifact scatter	Not Eligible	ASU site files
AZ T:8:25 (ASU)	Hedgepeth Hills	3,600m2	P- Rock concentrations, artifact scatter	Not Eligible	ASU site files
AZ T:8:16 (ASM)/AZ T:8:26 (ASU)/ NA	Hedgepeth Hills	13,572m2	P- Artifact scatter	Eligible	SHPO site files
AZ T:8:23 (ASM)/ NA 16,784	Hedgepeth Hills	3,250m2	P- Artifact scatter	Eligible	ASM & SHPO site fil
AZ T:8:8 (ASU)	Hedgepeth Hills	Unreported	P- Artifact scatter	Not Eligible	ASU site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:8:16 (ASU)	Hedgepeth Hills	100m2	P- Sherd scatter	Not Eligible	ASU site files
AZ T:8:1 (BLM)/ AZ T:8:68 (ASM)	Hedgepeth Hills	1,147 sq m	P- Rock alignments, rock pile, artifactsca	Eligible	BLM site files
AZ T:8:18 (ASM)/ AZ T:8:24 (ASU)/ N	Hedgepeth Hills	14,560 m2	P- Pit house, artifact scatter	Eligible	ASM & SHPO site fil
AZ T:8:17 (ASM)/ AZ T:8:23 (ASU)/ N	Hedgepeth Hills	16,478m2	P- Stone feature, artifact scatter	Eligible	SHPO site files
AZ T:8:30 (ASM)/ AZ T:8:25 (ASU)/ N	Hedgepeth Hills	8820 m2	P- Rock concentration, artifact scatter	Eligible	ASM & SHPO site fil
AZ T:8:20 (ASM)/ AZ T:8:21 (ASU)/ N	Hedgepeth Hills	7303 m2	P- Rock concentrations (2), artifact scatte	Eligible	ASM & SHPO site fil
AZ T:8:32 (ASM)/ AZ T:8:22 (ASU)/ N	Hedgepeth Hills	10,000m2	P- Rock concentrations (6), rock ring, roc	Unreported	ASM & SHPO site fil
AZ T:8:86 (ASM)	Hedgepeth Hills	9,916m2	P- Artiifact scatter	Eligible	ASM site files
AZ T:8:20 (ASU)	Hedgepeth Hills	11,250m2	P- Agricultural field, artifact scatter	Not Eligible	ASU site files
AZ T:8:15 (ASU)	Hedgepeth Hills	2,500m2	P- Artifact scatter	Not Eligible	ASU site files
AZ T:8:68 (ASM): Palo verde Ruin	Hedgepeth Hills	720,000m2	P- Village	Eligible	ASM site files
AZ T:8:1 (ASU)	Hedgepeth Hills	6,969,599ft2	P- trash mounds, agricultrual fields, canal	Unreported	ASU site files
AZ T:8:2 (ASU): see AZ T:8:1 (ASU)	Hedgepeth Hills	-	Part of AZ T:8: 1 (ASU): SEE CHET PA	-	-
AZ T:8:14 (ASU)	Hedgepeth Hills	100m2	P-Ceramic scatter	Not Eligible	ASU site files
AZ T:8:2 (ASM)	Hedgepeth Hills	999,999m2	P- Village, trash mounds, artifact scatter	Unreported	SHPO files
AZ T:8:13 (ASU)	Hedgepeth Hills	4,500m2	P-Canal remnant, rock concentrations, ga	Not Eligible	ASU site files
AZ T:8:11 (ASM)	Hedgepeth Hills	3850 m2	P- Artifact scatter	Unreported	ASM site files
AZ T:8:10 (ASU)	Hedgepeth Hills	Unreported	P- canal remnent	Not Eligible	ASU site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:8:19 (ASU)	Hedgepeth Hills	60,000m2	P- Canal remnant, rock concnetnration, ar	Unreported	ASU site files
AZ T:8:37 (ASM)/ AZ T:8:1 (ASU)/ AZ	Hedgepeth Hills	720,000m2	P- Artifact scatter	Unreported	ASM site files
M-7	Hedgepeth Hills	Unreported	P- moderate site on canal system	Unreported	SHPO files
M-9	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
M-8	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
M-10	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
M-12	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
AZ T:8:12 (ASU)	Hedgepeth Hills	210m2	P-Artifact scatter	Unreported	ASU site files
AZ T:8:49 (ASM)/ AZ T:8:61 (ASU)	Hedgepeth Hills	900m2	P- Rock concentration, lithic scatter	Unreported	ASM site files
AZ T:8:47 (ASM)	Hedgepeth Hills	11,250m2	P- Stone quarry	Unreported	ASM site files
M-14	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
AZ T:8:62 (ASM)	Hedgepeth Hills	4,000m2	P- Artifact scatter	Unreported	ASM site files
AZ T:8:40 (ASM)/ NA 16,378	Hedgepeth Hills	2,000m2	P- Cooing pit, artifact scatter (Tested)	Unreported	ASM site files
M-17	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
M-15	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
M-16	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
M-18	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
M-20	Hedgepeth Hills	Unreported	P- Series of rockpiles	Unreported	SHPO files

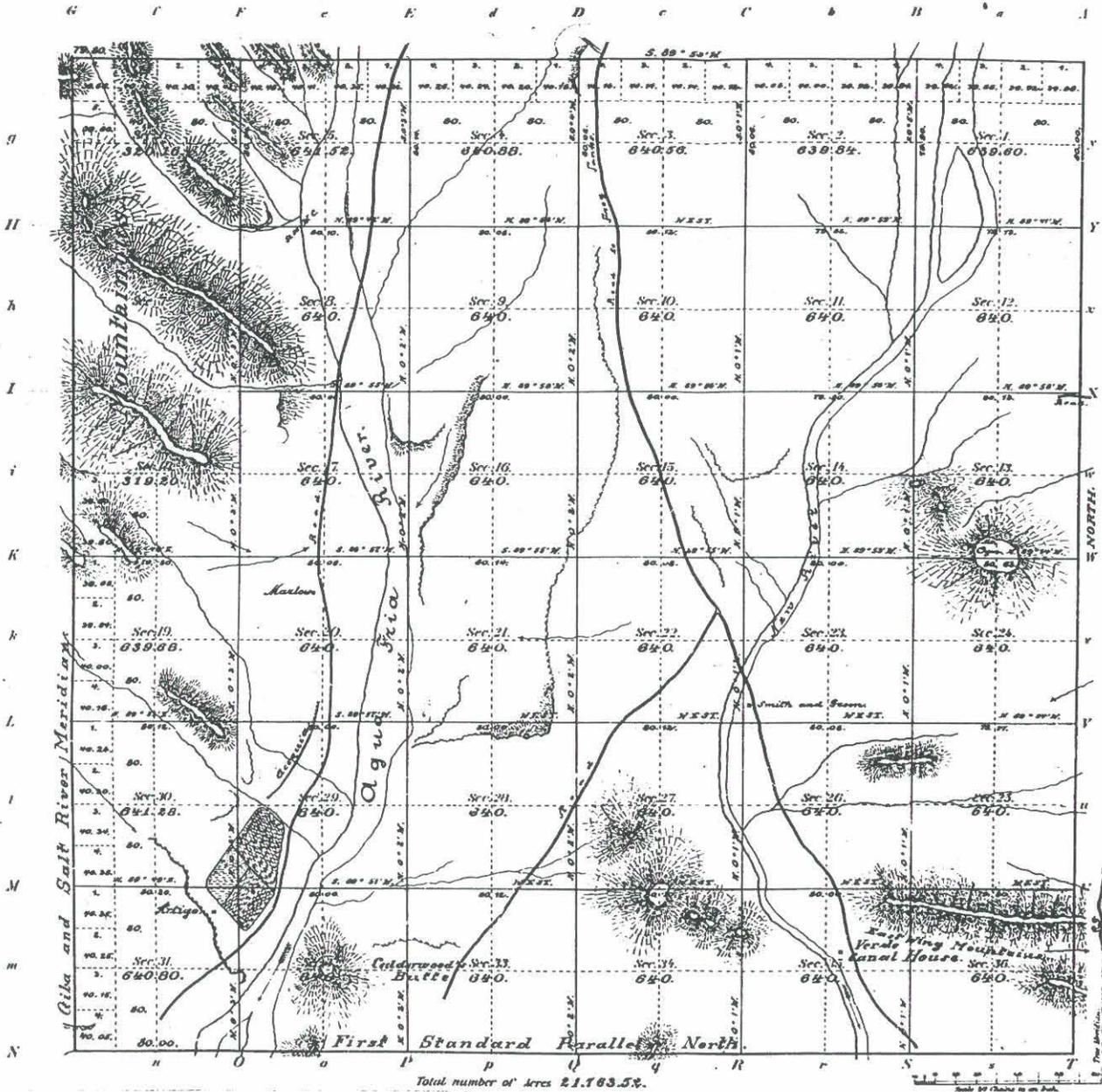
Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:8:69 (ASM)	Hedgepeth Hills	225m2	H- Cement foundation, dirt roads, artifact	Not eligible	ASM site files
M-11	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
Higgins Site	Hedgepeth Hills	40,000ft2	P- Artifact scatter	Unreported	SHPO site files
M-19	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
M-23	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
M-22	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
M-21	Hedgepeth Hills	Unreported	P- Presumed debris scatter	Unreported	SHPO files
AZ T:8:71 (ASM)	Hedgepeth Hills	164m2	P- Artifact scatter	Not Eligible	ASM site files
AZ T:8:42 (ASU)	Hedgepeth Hills	1,875m2	P- FCR concentrations (100s)/ Tested	Eligible	ASU site files
AZ T:8:41 (ASU)	Hedgepeth Hills	4,000m2	P/H- Structures, stone rings, lithic scatter	Not Eligible	ASU site files
AZ T:8:3 (ASM)/ AZ T:8:40 (ASU)/ AZ	Hedgepeth Hills	2,500 m2	P- Petroglyphs (1000s)	Listed	ASM & SHPO site fil
AZ T:8:83 (ASM)	Hedgepeth Hills	17,500ft2	H- Canal, canal features	Eligible	ASM site files
AZ T:8:84 (ASM)	Hedgepeth Hills	68,400ft2	H- Structure, foundation, artifact scatter	Potentially Eligible	ASM site files
AZ T:8:52 (ASM) / NA 19,342	Hedgepeth Hills	14,400 sq m	P- Pit features, cremations, trash H- canal	Unreported	ASM site files
AZ T:7:25 (ASU)	Calderwood Butte	Unreported	P- Trash mounds (3), rock rings, possible	Unreported	ASU site files
AZ T:7:35 (ASU)	Calderwood Butte	20,000 sq. m	P-Rock rings, platforms, rock clusters, pe	Unreported	Asu site files
AZ T:8:50 (ASM)	Hedgepeth Hills				
AZ T:8:45 (ASU)	Hedgepeth Hills	400 sq m	P- Artifact scatter	Unreported	ASU site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
AZ T:8:52 (ASU)	Hedgepeth Hills	227,500 sq m	P- Rock rings (3), trail, artifact scatter	Unreported	ASU site files
AZ T:8:81 (ASM)	Glendale	6,900 sq. ft	H- Irrigation Ditch	Not Eligible	ASU site files
AZ T:7:38 (ASM)	Calderwood Butte	625 sq ft	P- Rock circles, artifact scatter	Unreported	ASM site files
Presbyterian Church	Glendale	Unreported	H- 1899 Structure	Eligible	R. Carriker & Sturgeo
AZ T:7:40 (ASM)	Calderwood Butte	100,000 sq ft	P- Structure, artifact scatter, rock alignme	Unreported	ASM site files
AZ T:7:084 (ASM)	Calderwood Butte	8,437 sq m	P- Chipping stations (14), artifact scatter	Not Eligible	ASM site files
AZ T:7:121 (ASM)	Calderwood Butte	43 sq m	U-Trail Segment	Not Eligible	ASM site files
AZ T:8:70 (ASM)	Hedgepeth Hills	5,000 sq m	P- Ground Stone Manufacturing Station	Potentially Eligible	ASM site files
I 75	Glendale	Unreported	H- 1918 Structure at 8325 W. Washingto	Eligible	R. Carriker & Sturgeo
Jail	Glendale	Unreported	H- 1926 Jail at Washington Park	Eligible	R. Carriker & Sturgeo
I 35	Glendale	Unreported	H- 1929 Structure at 8415 W. Madison	Eligible	R. Carriker & Sturgeo
AZ T:7:1 (ASM)	Calderwood Butte	34,356 sq m	P- Compounds, rooms (5+), trash areas	Unreported	ASM site files
I 44	Glendale	Unreported	H- 1925 Structure at 8491 W. Madison	Eligible	R. Carriker & Sturgeo
AZ T:7:159 (ASM)	Calderwood Butte				ASM site files
AZ T:7:27 (ASM)	Calderwood Butte	Unreported	U- Rock Alignments	Unreported	ASM site files
Women's Club	Glendale	Unreported	H- 1919 Structure at Washington Park	Eligible	R. Carriker & Sturgeo
House at 9702 W. Glendale Ave	El Mirage	Unreported	H- Structure	Unreported	ASM site files
House at 9825 W. Glendale Ave.	El Mirage	Unreported	H- Structure	Unreported	ASM site files

Site Number	Map Reference	Site Area	Description	NRHP rec	Reference
ART 160 House	Calderwood Butte	Unreported	H- 1892 Structure	Unreported	SHPO files
Petroglyphs	Baldy Mtn.	Unreported	P/H- Petroglyphs	Unreported	SHPO files

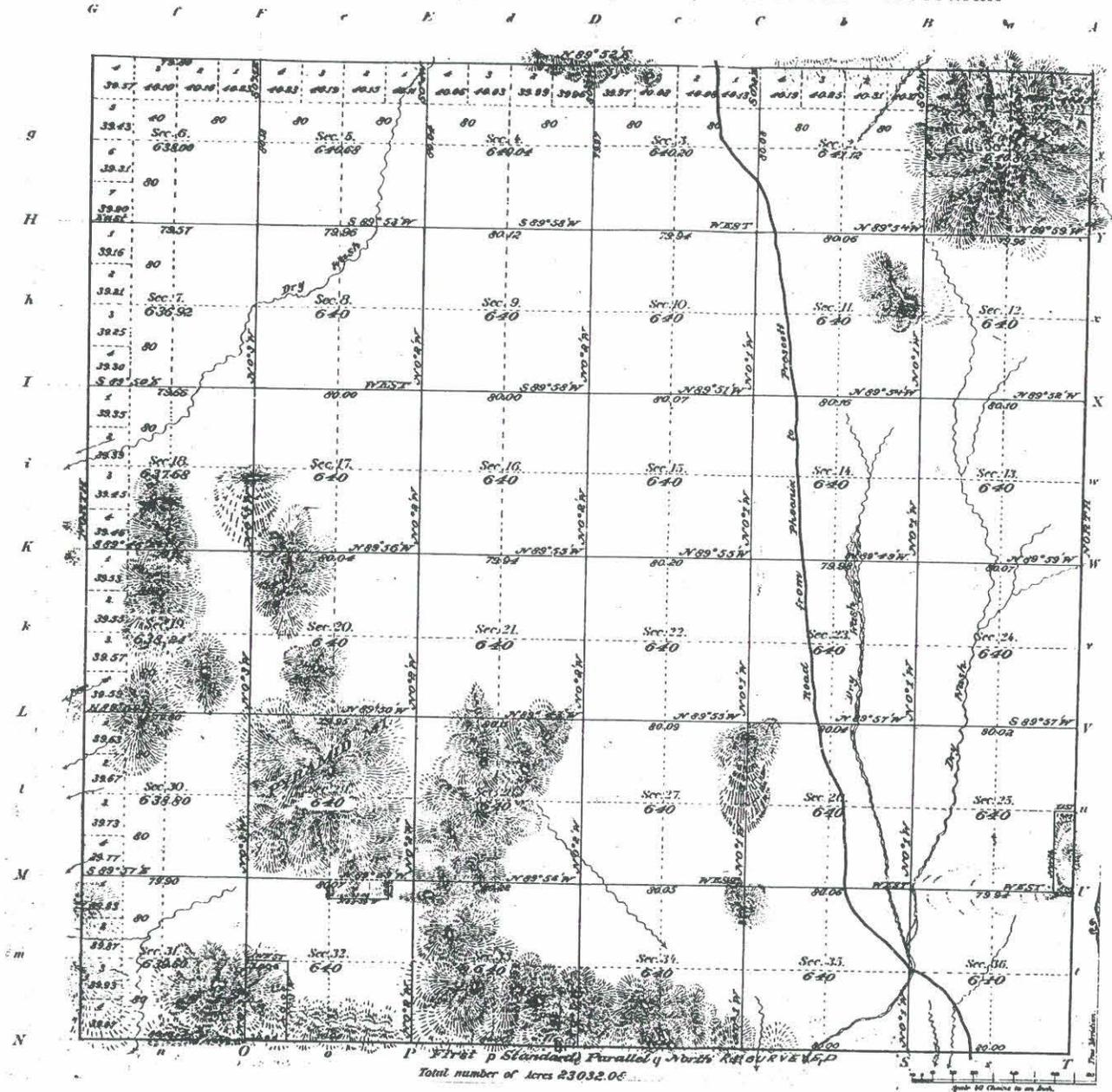
Appendix C: GLO Plats

Township N^o 5 North Range N^o 1 East Sila and Salt River Meridian



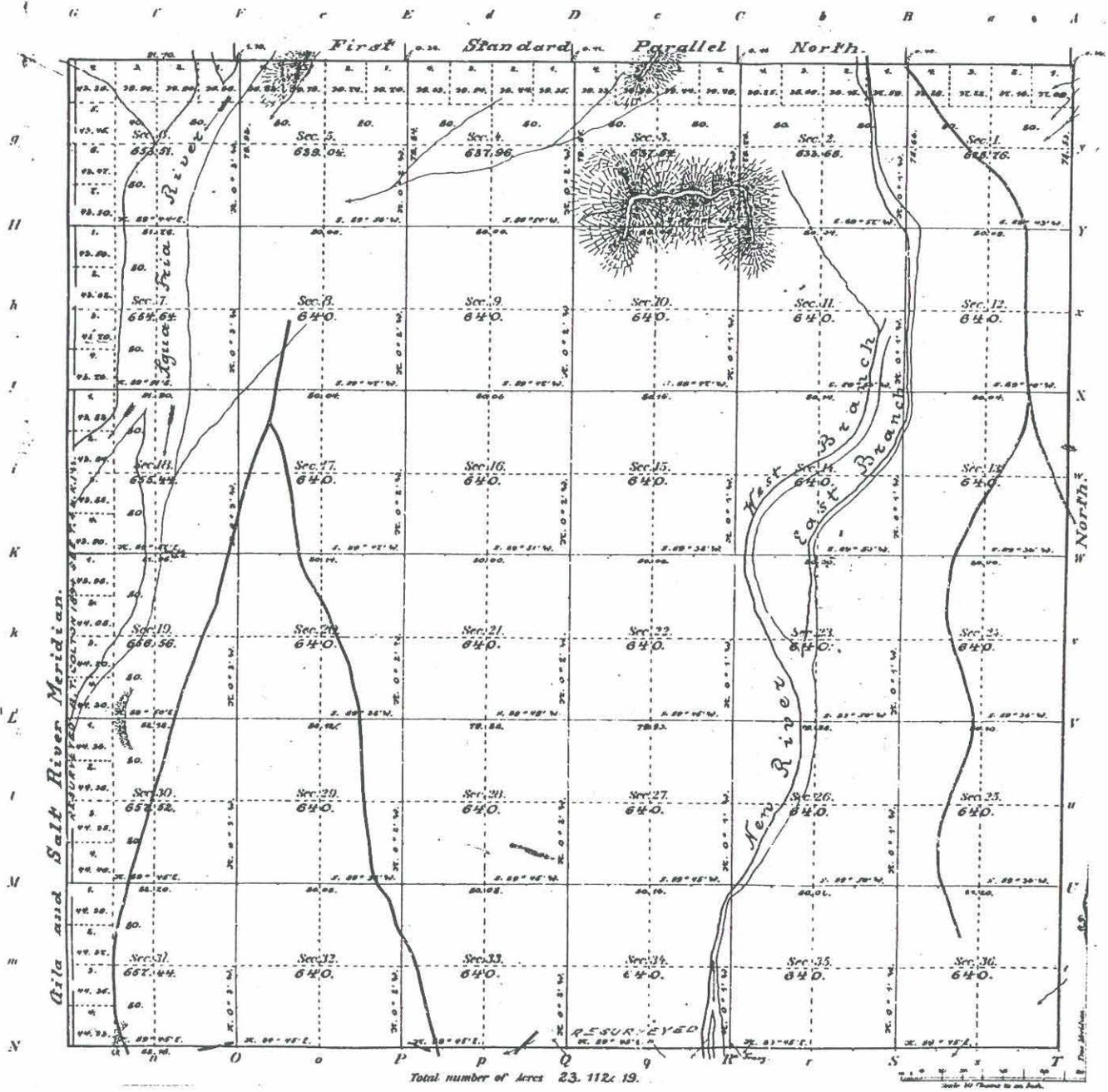
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Township N^o 5 North Range N^o 2 East, Gila & Salt River Meridian



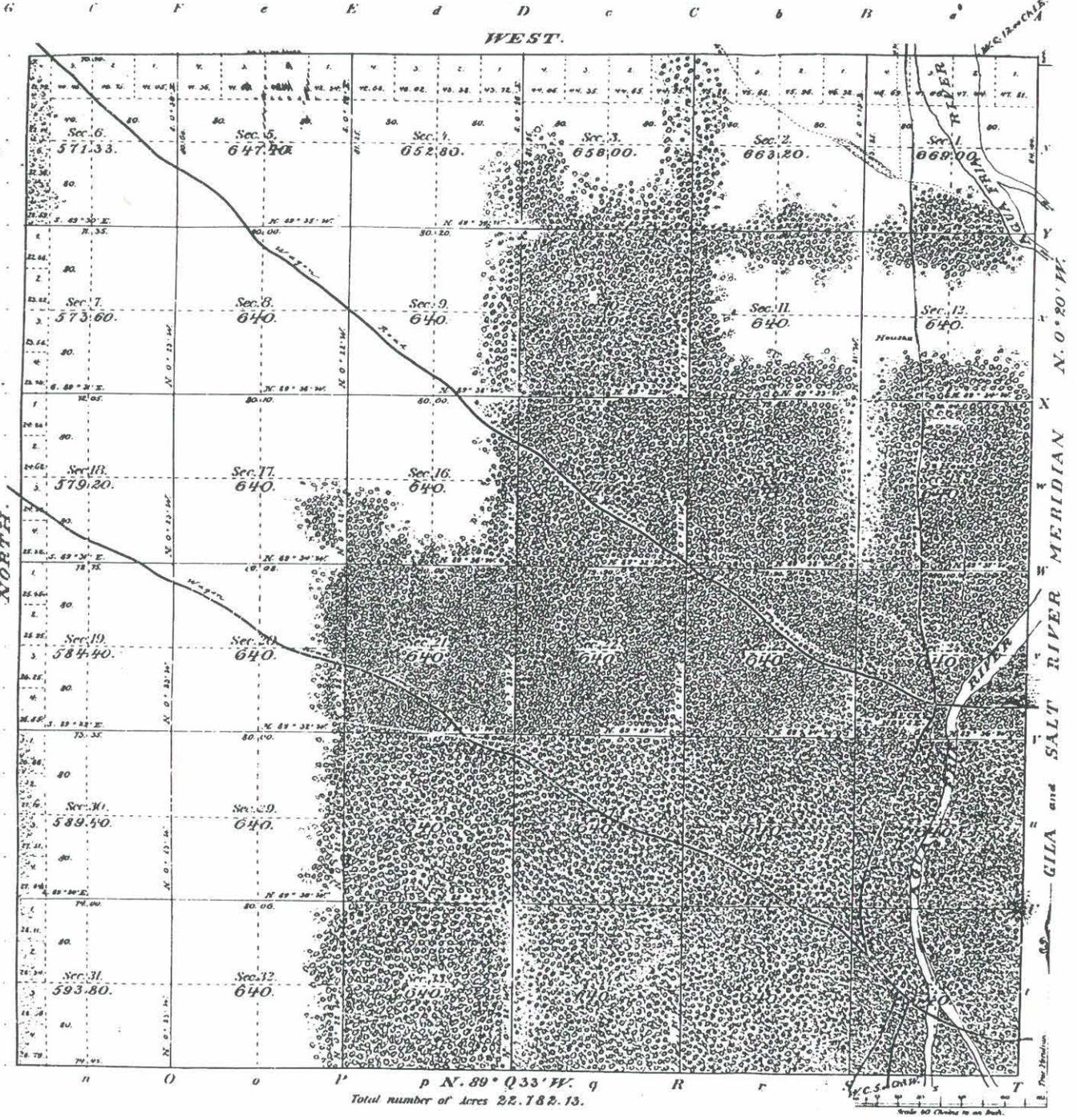
OFFICIALLY FILED 5-18-1895

Township N^o 4 North Range N^o 1 East Sila and Salt River Meridian



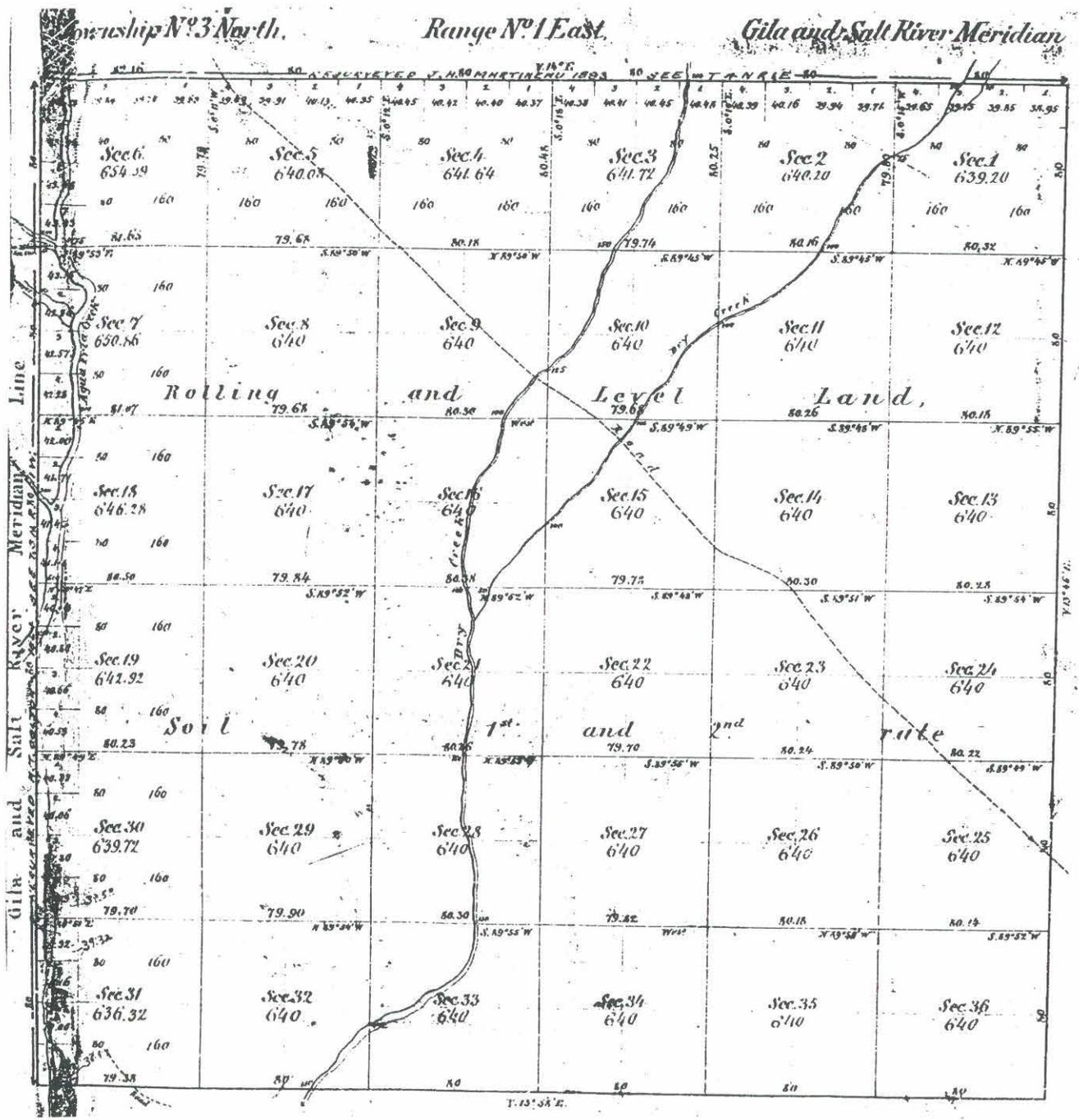
OFFICIALLY FILED 5-20-1895

Township No 3 North Range No 1 West Gila and Salt River Meridian, Ariz.



Total number of Acres 22,182.13.

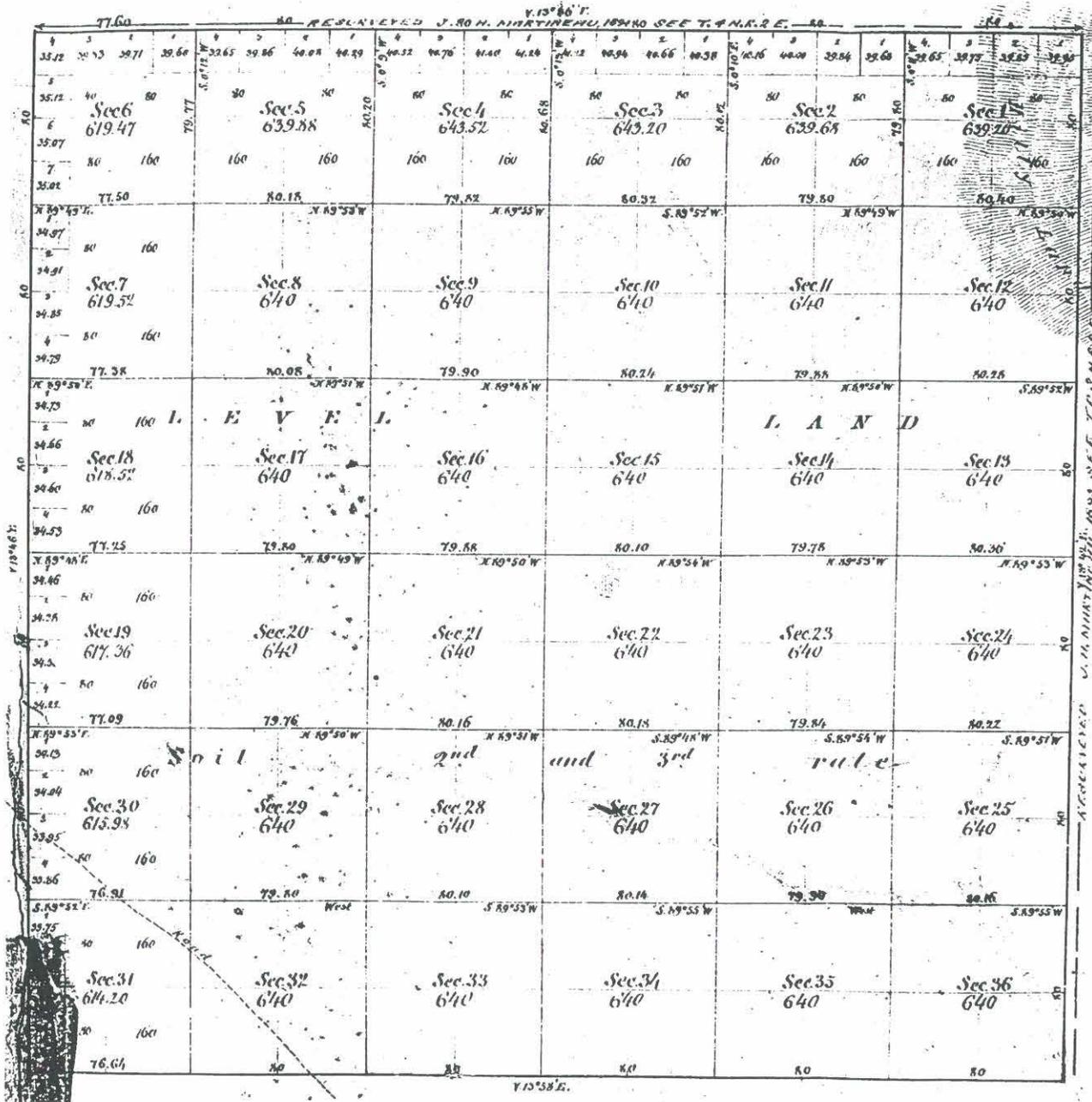
OFFICIALLY FILED 11-12-1896



Township N^o 3 North,

Range N^o 2 East,

Gila and Salt River Meridian

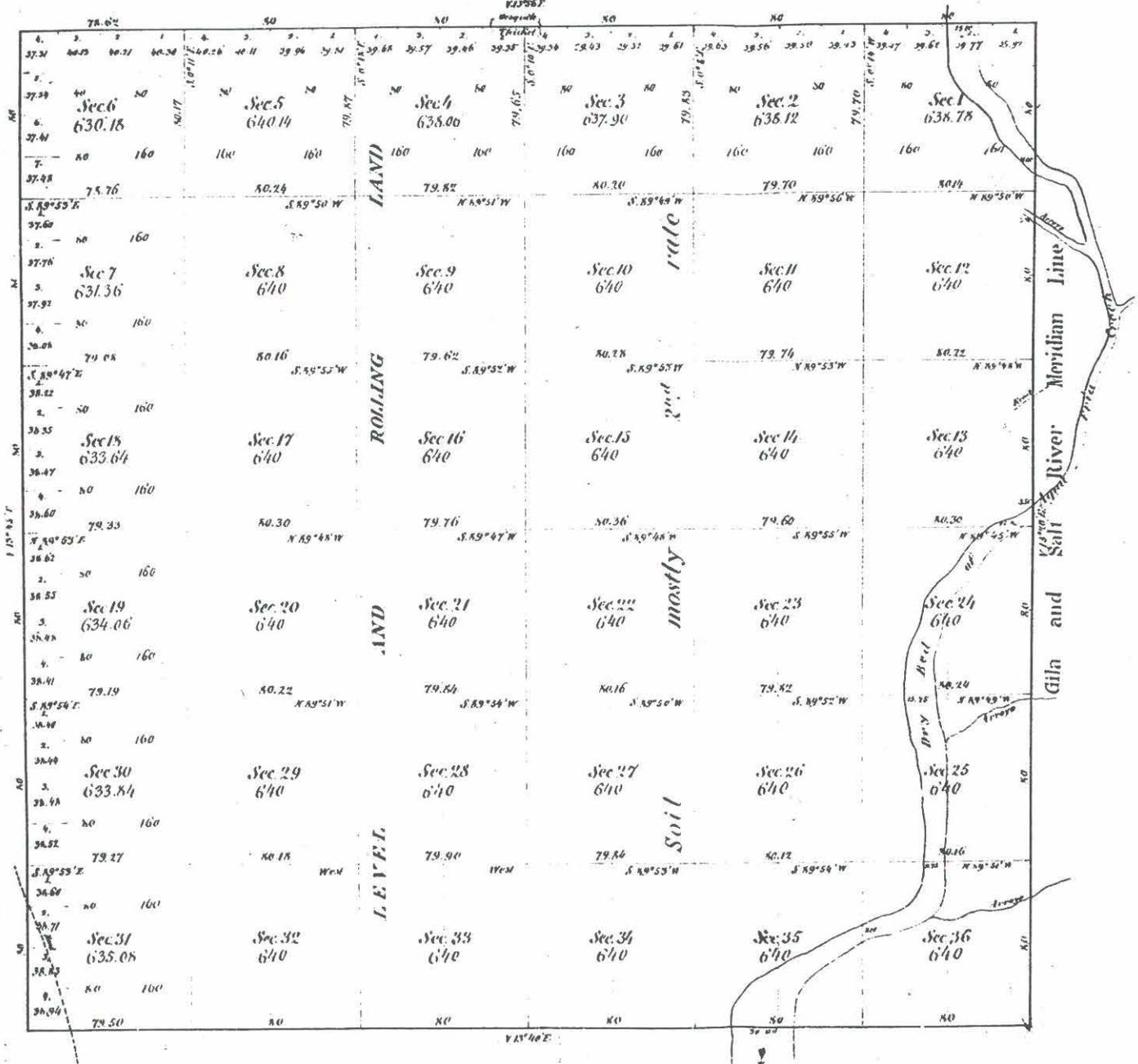


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Township N^o 2 North.

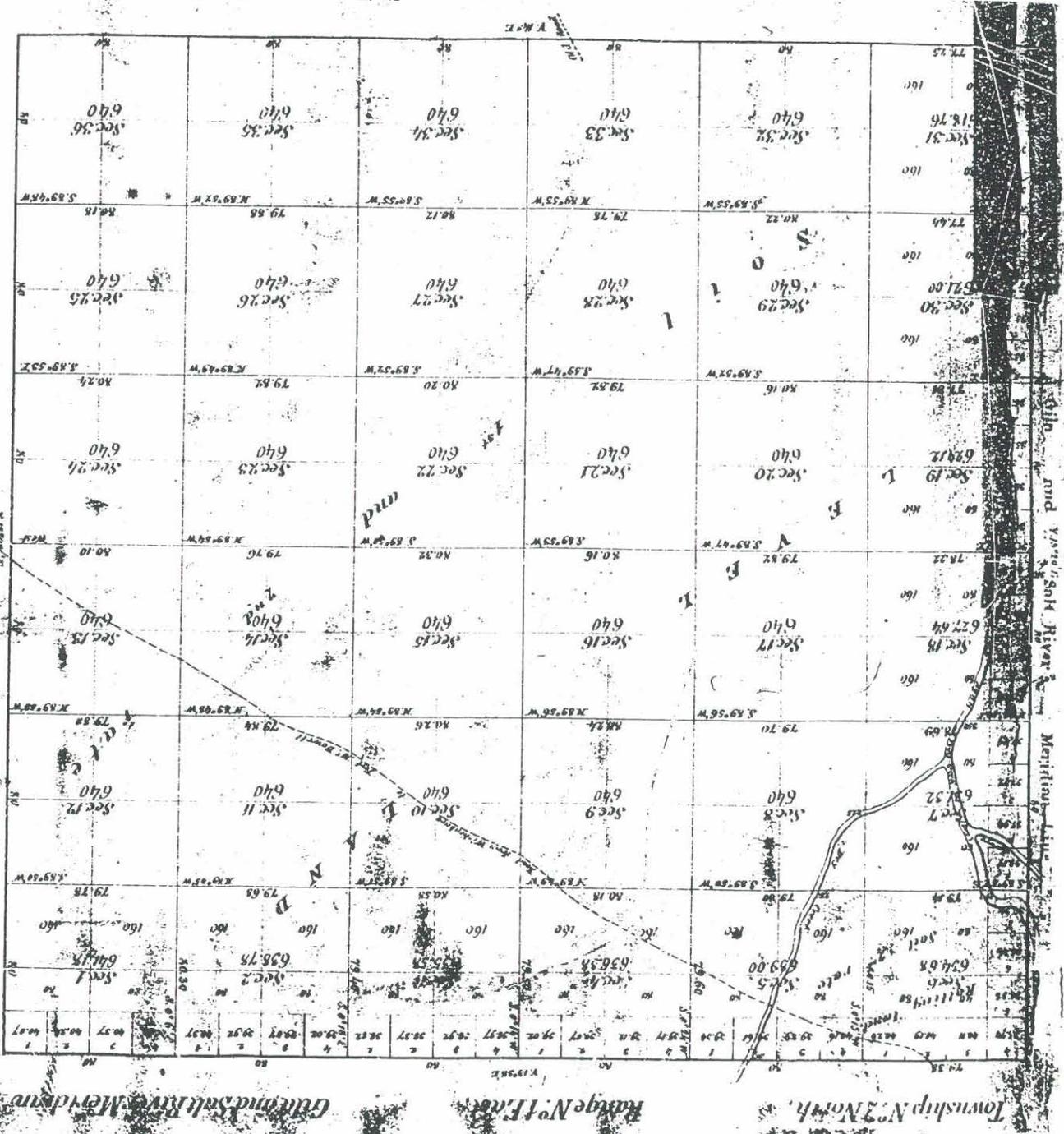
Range N^o 1 West.

Gila and Salt River Meridian



OFFICIALLY FILED 12-2-1870

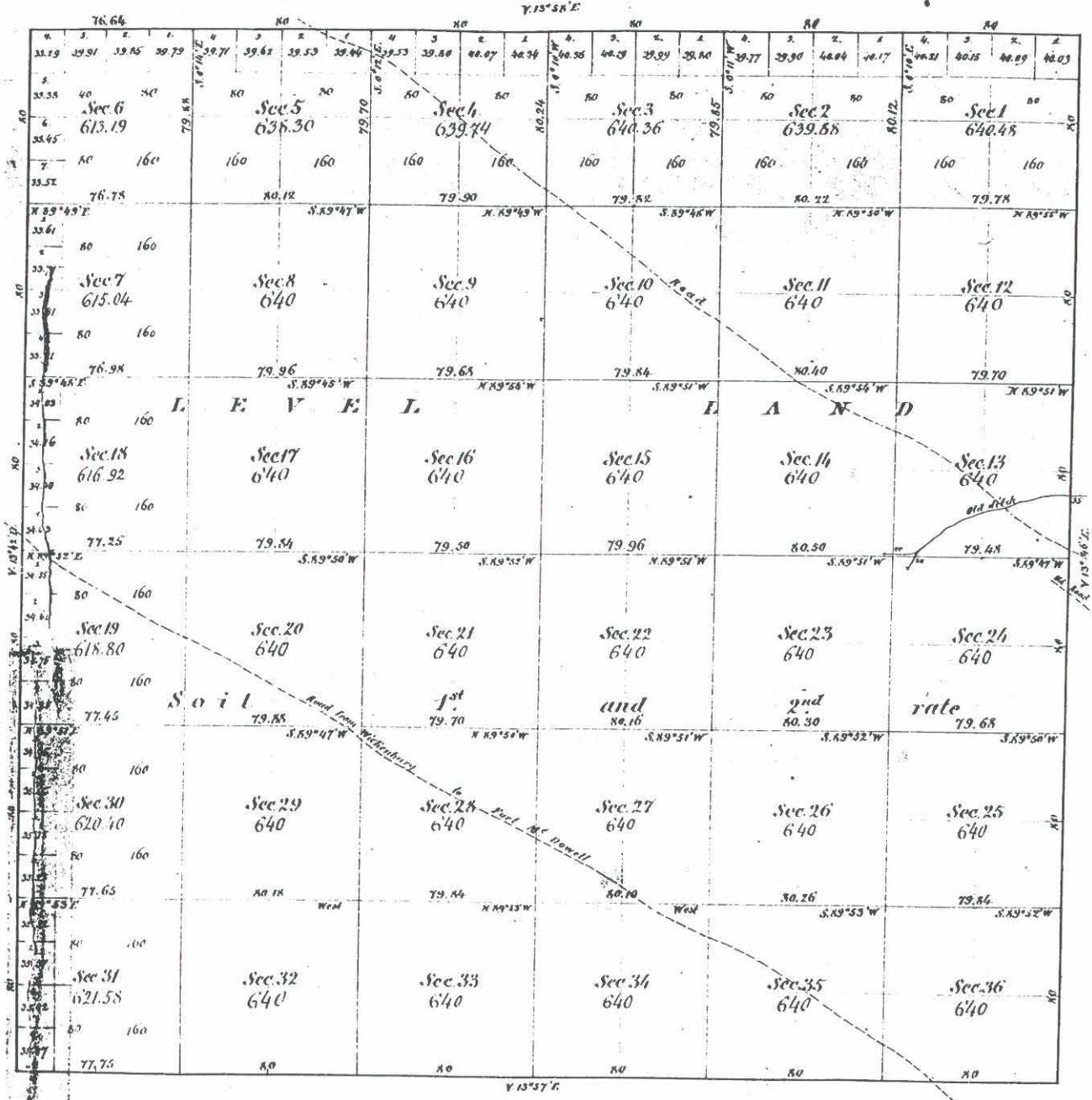
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Township N^o 2 North.

Range N^o 2 East,

Gila and Salt River Meridian



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