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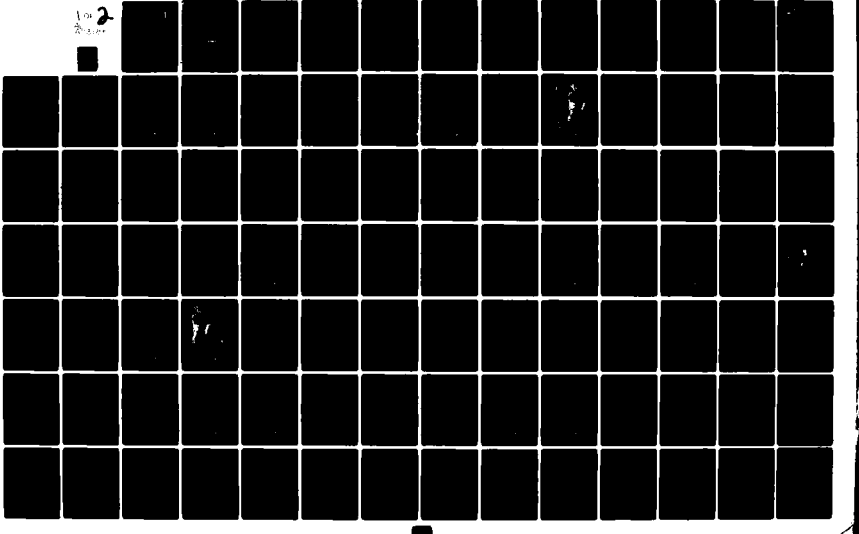

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E-TR-48-III-II

FIELD SURVEYS, IOC VALLEYS
CULTURAL RESOURCES SURVEY
PINE AND WAH WAH VALLEYS, UTAH

VOLUME III PART II

Prepared for:

U.S. DEPARTMENT OF AIR FORCE
Ballistic Missile Office (BMO)
Norton Air Force Base, California 92409

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In Support of:

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Long Beach, California 90807

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Results of the cultural resources survey of Pine and Wah Wah Valleys, Utah that Pine Valley was utilized by archaic, Fremont and Shoshone peoples for as long as 7,600 years and that Wah Wah Valley has a number of sites in the vicinity of Seven Lake and the Wah Wah Valley Headgate.

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FOREWORD

This report was prepared for the Department of the Air Force, Ballistic Missile Office (BMO), in compliance with Contract No. F04704-80-C-0006, Task 4.5. The report, in three volumes, describes and evaluates procedures for shelter layouts and field studies consisting of land and environmental surveys and geotechnical inspections of sites and some road corridors in the IOC valleys.

Volume I presents an overview of the program, evaluates the procedures and summarizes the findings in Dry Lake Valley, Nevada, and Pine and Wah Wah valleys, Utah. Volume II describes in two parts the biological resources of the area. Volume III, describes the cultural resources and is divided into Part I-Dry Lake Valley and this volume, Part II-Pine and Wah Wah valleys.

Changes to the baseline criteria and requirements made during the field surveys include:

- Deletion of the Remote Surveillance Sites (RSSs) as of 12 March 1981;
- Major rerouting of the Designated Transportation Network (DTN) in northern Wah Wah Valley; and
- Modification of the road pattern from straight-line to direct-connect.

No shelter relocations or reorientations were made as a result of the baseline change from straight-line cluster roads to direct-connect roads. Recent layout studies indicate that shelter sites investigated for the study can be used for the direct connect concept, however, the orientation of some shelters could be improved if new direct connect layouts were performed. It is expected that most or all of the CMF sites will have to be relocated for the direct-connect concept.

Additional studies are planned as part of the IOC program. These include:

- Consultations with Utah and Nevada State Historic Preservation Offices (SHPO) to evaluate significance of sites in the IOC valleys and their potential for inclusion in the National Register of Historic Places;
- determination of project effects on significant cultural resources;
- development of possible cultural resource mitigation measures; and

- Native American consultations.

The results of these additional tasks will be incorporated in revisions of Volume III of this report and in a supplemental report which will be complete during FY 82.

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
	1.1 Background	1
	1.2 Objectives	3
	1.3 Report Organization	7
2.0	BACKGROUND RESEARCH	11
	2.1 Methods	11
	2.2 Results	11
	2.2.1 General Physiographic and Environmental Description	11
	2.2.2 Prehistoric Overview	21
	2.2.3 Ethnographic Overview	48
	2.2.4 Historical Overview	52
3.0	FIELD RESEARCH	63
	3.1 Methods	63
	3.1.1 Research Strategy	63
	3.1.2 Location and Layout of Sample Unit Survey Areas	64
	3.1.3 Data Recording	74
	3.1.4 Determination of Significance and Criteria for Avoidance	79
	3.1.5 Collection Policy	81
	3.2 Results	81
	3.2.1 Inventoried Areas	81
	3.2.2 Recorded Sites	89
	3.2.3 Summary	109
4.0	NATIONAL REGISTER OF HISTORIC PLACES RECOMMENDATIONS	120
	4.1 National Register Criteria for Eligibility	120
	4.2 Pine Valley	121
	4.3 Wah Wah Valley	121
5.0	MITIGATION RECOMMENDATIONS	123
	5.1 Avoidance Mitigation Recommendations	123
	5.2 Resitings	125
	5.3 Limitations of Avoidance Mitigation and Recommendations for Future Work	125

TABLE OF CONTENTS
(Continued)

Page

6.0 BIBLIOGRAPHY 128

LIST OF APPENDICES

A. List of Preparers
B. Agencies, Institutions, and Individuals Consulted
C. Pine Valley Shelter Summary Table
D. Wah Wah Valley Shelter Summary Table
E. Bureau of Land Management Letter on Significance and Avoidance Mitigation Criteria

LIST OF TABLES

Table Number		Page
	2.0 BACKGROUND RESEARCH	
2-1	Previously Recorded Prehistoric Sites in Pine Valley	38
2-2	Previously Recorded Prehistoric Sites in Wah Wah Valley	45
2-3	Previously Recorded Historic Sites in Pine Valley	60
2-4	Previously Recorded Historic Sites in Wah Wah Valley	61
	3.0 FIELD RESEARCH	
3-1	Archeological Site Significance Criteria List	80
3-2	Pine and Wah Wah Valleys Collected Artifacts	82
3-3	Survey Areas - Pine Valley	85
3-4	Resurveyed Areas - Pine Valley	86
3-5	Survey Areas - Wah Wah Valley	88
3-6	Resurveyed Areas - Wah Wah Valley	90
3-7	Historic Sites - Pine Valley	95
3-8	Isolated Lithics - Pine Valley	98
3-9	Lithic Artifact Typology	99
3-10	Lithic Scatters - Pine Valley	101
3-11	Historic Sites - Wah Wah Valley	103
3-12	Isolated Lithics - Wah Wah Valley	105
3-13	Lithic Scatters - Wah Wah Valley	107
3-14	Site Summary - Pine Valley IOC Survey	110
3-15	Landform and Vegetation - Pine Valley	112
3-16	Site Summary - Wah Wah Valley IOC Survey	115
3-17	Landform and Vegetation - Wah Wah Valley	116
	5.0 MITIGATION RECOMMENDATIONS	
5-1	Units Recommended for Avoidance Mitigation	124

LIST OF FIGURES

Figure Number		Page
	1.0 INTRODUCTION	
1-1	IOC Valleys	2
1-2	Initial Cluster Layouts Dry Lake Valley	4
1-3	Initial Cluster Layouts Pine Valley	5
1-4	Initial Cluster Layouts Wah Wah Valley	6
1-5	Completed Schedule	8
1-6	Study Area	10
	2.0 BACKGROUND RESEARCH	
2-1	Southwestern Utah Archeological Sites	33
2-2	Previously Recorded Sites - Pine Valley	42
2-3	Previously Recorded Sites - Wah Wah Valley	46
	3.0 FIELD RESEARCH	
3-1	Pine Valley Initial Cluster Layouts	65
3-2	Wah Wah Valley Initial Cluster Layouts	66
3-3	MX Facility Layouts and Cultural Resource Survey Areas	67
3-4	Area Surveyed at Shelter Sites	70
3-5	Area Surveyed at Remote Surveillance Sites	73
3-6	Area Surveyed at Cluster Maintenance Facilities	75
3-7	Collected Projectile Points	83
3-8	Sample Cluster Layout and Archeological Site Map - Pine Valley	87
3-9	Sample Cluster Layout and Archeological Site Map - Wah Wah Valley	91

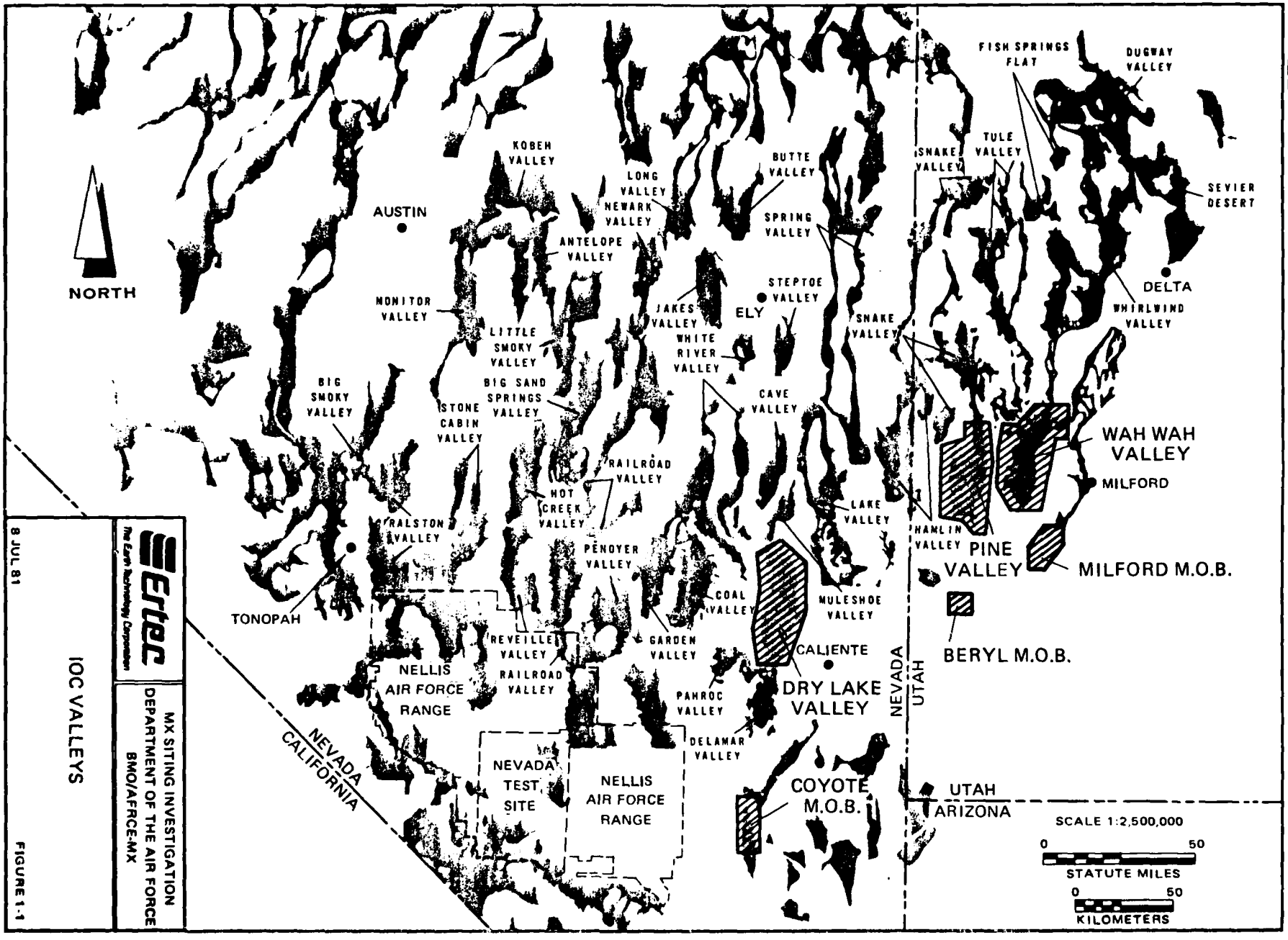
1.0 INTRODUCTION

1.1 BACKGROUND

In April and May of 1980, the AFRCE proposed to initiate field studies in selected Nevada and Utah valleys for the purposes of testing cluster layout procedures and determining potential field problems in actual shelter siting. Dry Lake, Nevada, was selected because it was large enough to support 10 clusters and was relatively close to the proposed Operational Base (OB) site in Coyote Spring Valley. Pine and Wah Wah valleys, Utah, were selected because they were the closest valleys to proposed OB sites near the towns of Beryl and Milford and, together, could support 10 clusters (Figure 1-1).

According to present Air Force plans, there is to be an Initial Operational Capability (IOC) of 10 clusters by mid-1986. There is a high likelihood that shelter construction would start either in Dry Lake Valley, Nevada, or Pine and Wah Wah valleys, Utah, to meet the IOC schedule. For this reason, the present program is referred to as field surveys, IOC valleys.

The intent of the IOC field surveys program was to support the development of the siting methodology and the land withdrawal application being submitted to Congress by the U.S. Air Force. The land withdrawal package must include a legal description of federal lands to be withdrawn for MX. The field program for the IOC valleys was developed after consultations with AFRCE-MX and Utah and Nevada state offices of the Bureau of Land Management (BLM).



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IOC VALLEYS

8 JUL 81

FIGURE 1-1

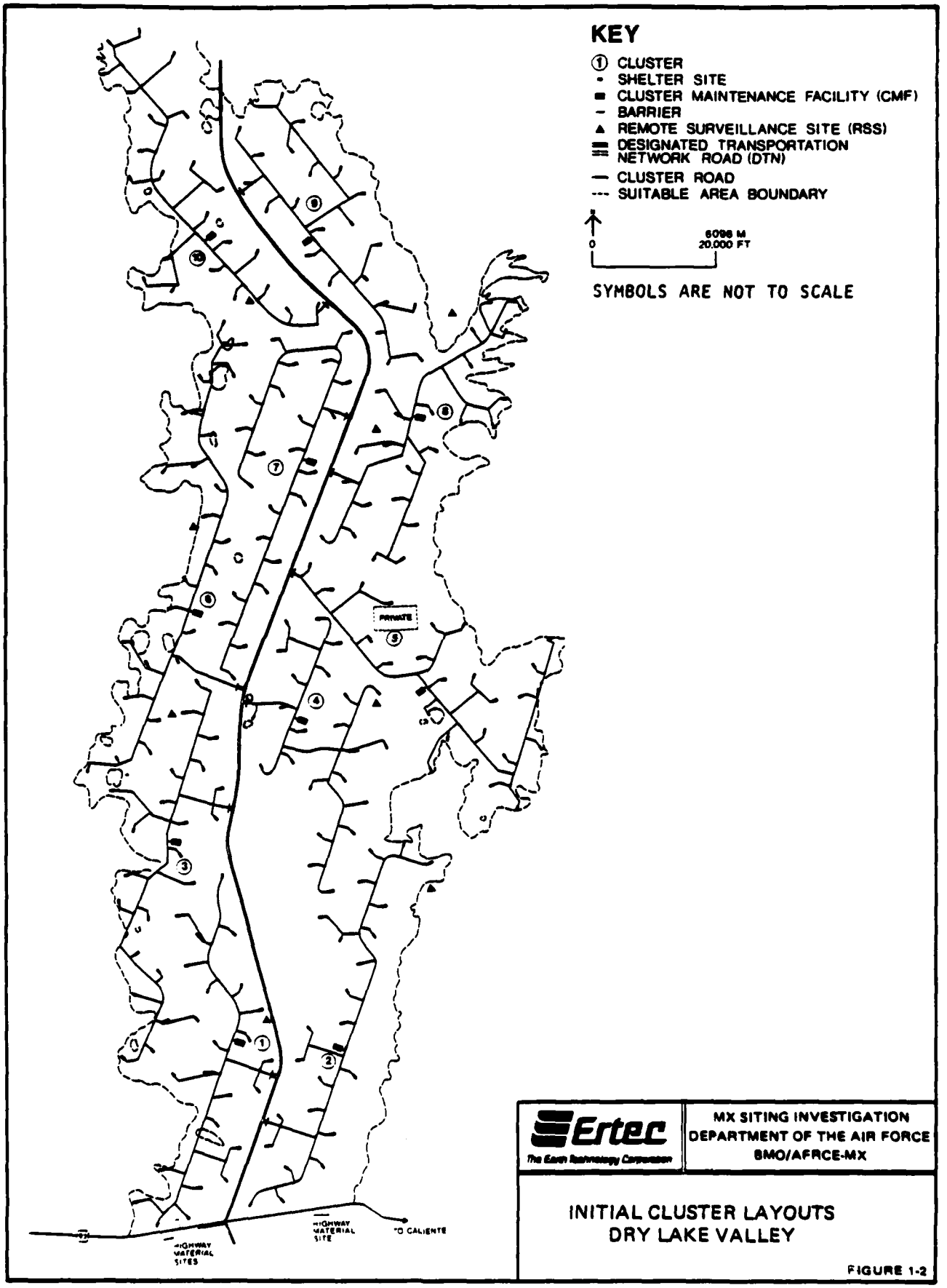
1.2 OBJECTIVES

The primary objectives of the IOC field surveys were to:

- Identify problems associated with siting criteria or layout procedures by actually locating Horizontal Shelter Sites (HSSs), Cluster Maintenance Facilities (CMFs) and Remote Surveillance Sites (RSSs) in the field;
- Assess environmental and geotechnical conditions at the shelter, CMF, and RSS sites and along a few road corridors and determine what changes are needed to minimize impacts;
- Develop a methodology for performing field surveys in the Designated Deployment Area (DDA); and
- Provide legal descriptions of surveyed sites for the land withdrawal application.

The elements of the program are as follows:

- Complete shelter layouts for Dry Lake, Pine, and Wah Wah valleys at a scale of 1:62,500 showing all shelter, CMF, and RSS sites (Figures 1-2, 1-3 and 1-4).
- Submit layouts to BMO/AFRCE for review. Modify the layouts, if needed, in accordance with review comments.
- Transfer the layout to 1:9600 scale topographic maps. Adjust site locations, if necessary, to avoid drainages and other features that can be identified on the drawings at this scale.
- Determine the state plane coordinates and bearings of all structures. In Dry Lake Valley, determine the coordinates of points of intersection of the Designated Transportation Network (DTN) and Cluster 2 roads. Provide the land surveyors with these data.
- Perform field surveys to locate and monument each site and stake the centerline of the DTN and Cluster 2 roads in Dry Lake Valley.
- Perform geotechnical inspection of sites to determine if they are located in suitable area and to evaluate site-specific geotechnical and terrain conditions. Based on evaluations, recommend which sites should be relocated.
- Inventory cultural resources including prehistoric and historical artifacts and sites and determine which resources may be adversely affected by project construction. Based on consultation with Bureau of Land Management archeologists,


KEY
① CLUSTER
• SHELTER SITE
■ CLUSTER MAINTENANCE FACILITY (CMF)
– BARRIER
▲ REMOTE SURVEILLANCE SITE (RSS)
DESIGNATED TRANSPORTATION NETWORK ROAD (DTN)
— CLUSTER ROAD
--- SUITABLE AREA BOUNDARY
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20,000 FT
SYMBOLS ARE NOT TO SCALE
PRIVATE
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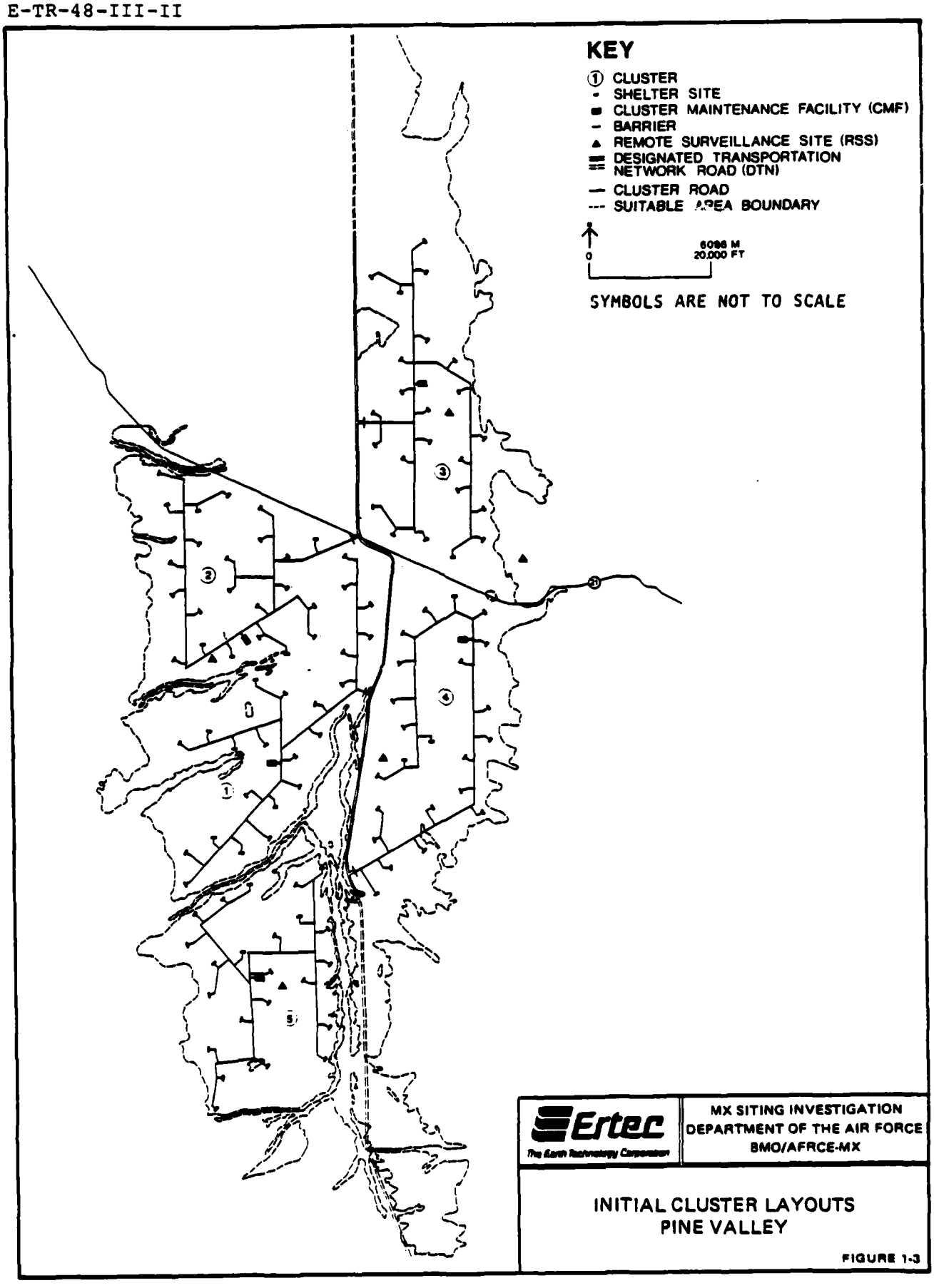
INITIAL CLUSTER LAYOUTS
DRY LAKE VALLEY
FIGURE 1-2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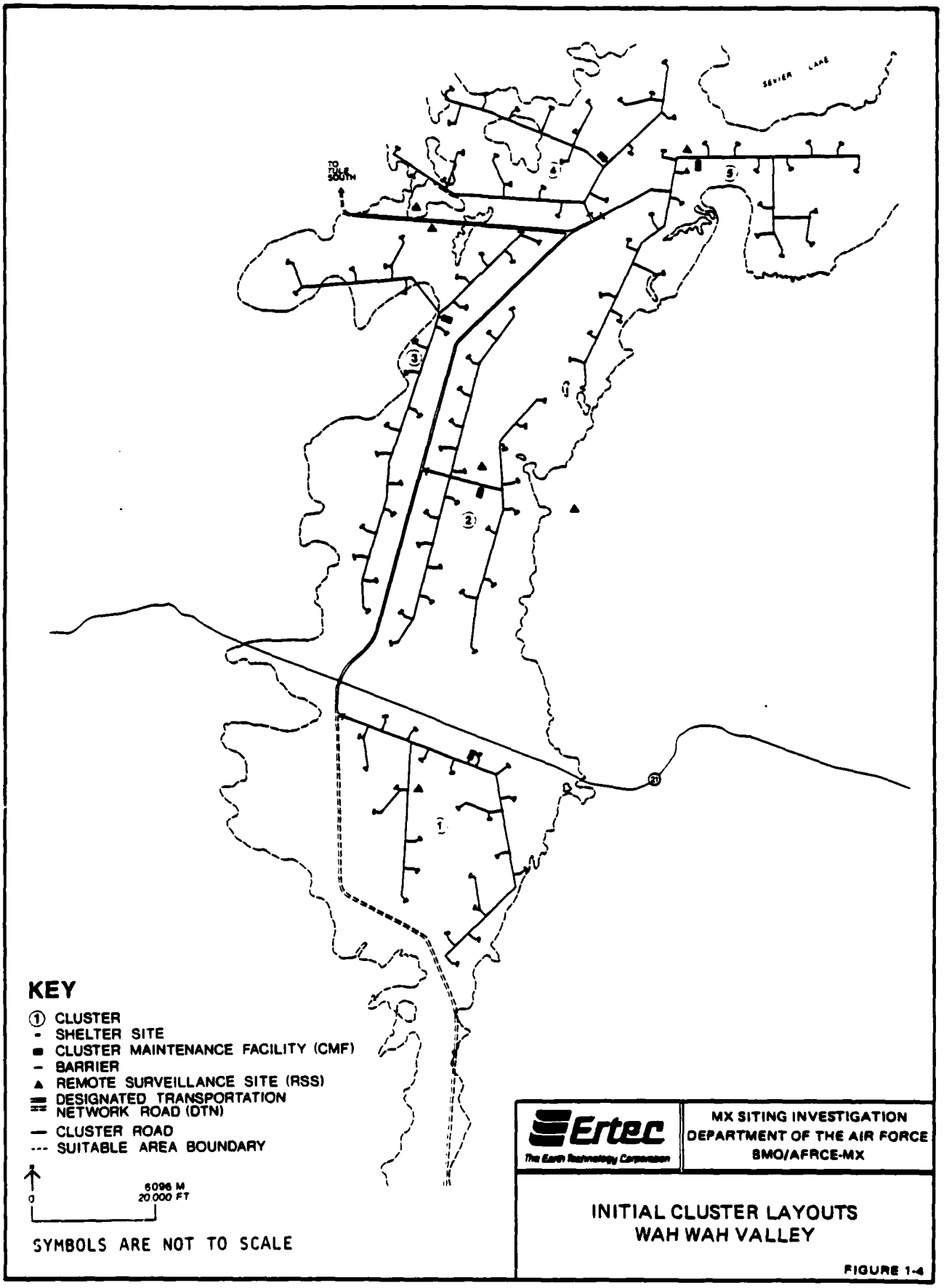
INITIAL CLUSTER LAYOUTS
PINE VALLEY
FIGURE 1-3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TO MILE SOUTH
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KEY
① CLUSTER
SHELTER SITE
CLUSTER MAINTENANCE FACILITY (CMF)
BARRIER
▲ REMOTE SURVEILLANCE SITE (RSS)
DESIGNATED TRANSPORTATION NETWORK ROAD (DTN)
CLUSTER ROAD
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INITIAL CLUSTER LAYOUTS
WAH WAH VALLEY
FIGURE 1-4

make recommendations to mitigate adverse effects on resources eligible for the National Register of Historic Places or considered significant for other reasons.

- Perform biological field surveys to determine the location of sensitive, threatened, and endangered plant and wildlife species that may be adversely affected by project construction. Recommend mitigative measures, when possible, based upon consultation with personnel from state and federal agencies.
- Submit recommendations to BMO/AFRCE for field and office review. After final decisions have been made regarding the number of sites to be relocated, layouts are revised, new coordinates are generated, sites are resurveyed, and monumented, and environmental surveys are completed.
- Prepare legal descriptions of the land at each site that will be withdrawn from public use.
- Prepare an environmental report and general report of the program.

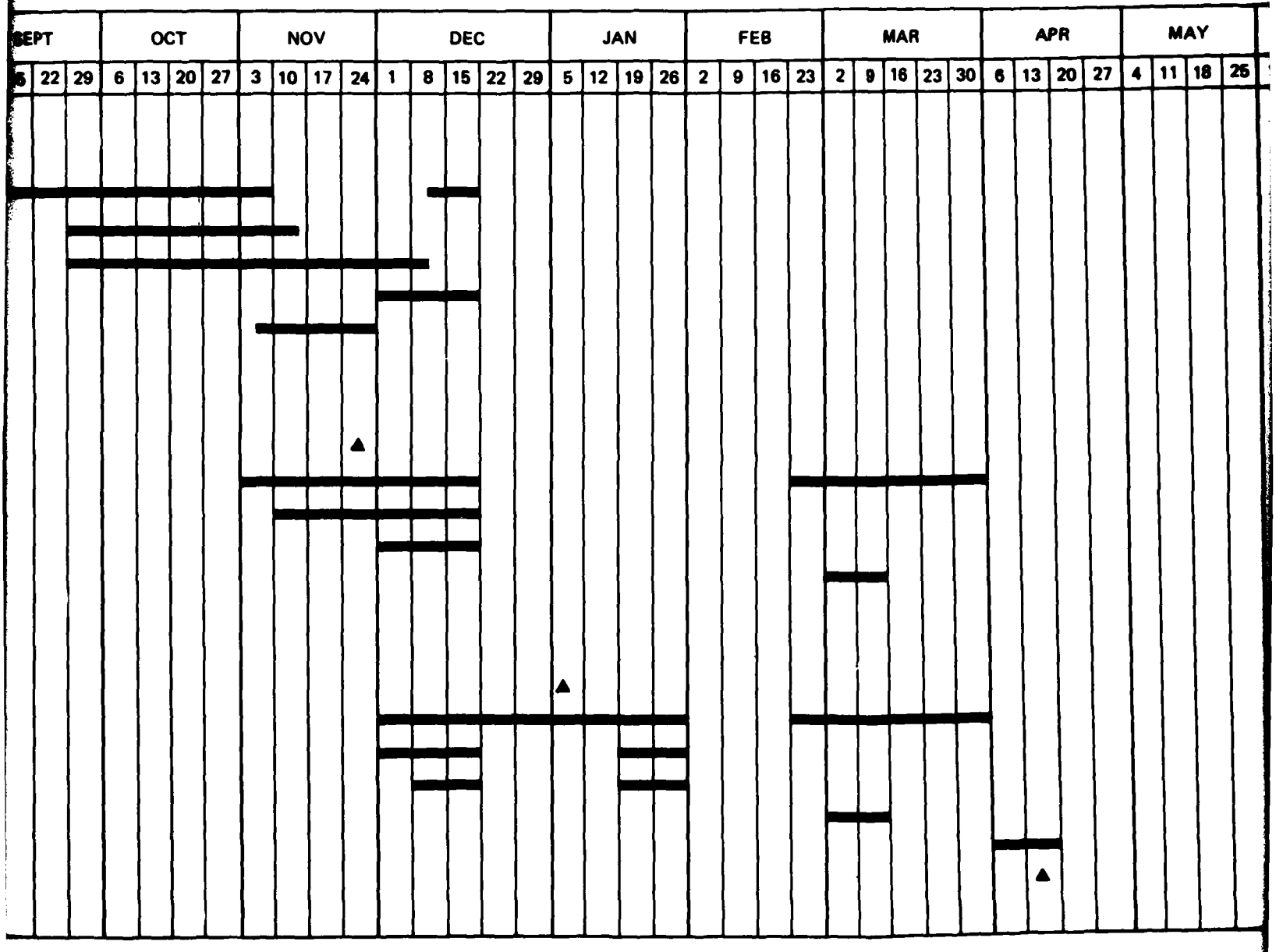
The layouts for Dry Lake, Pine, and Wah Wah valleys, at a scale of 1:9600, were completed 8 September 1980, 25 November 1980, and 8 January 1981, respectively. Locating existing survey controls and establishing a control grid over Dry Lake Valley began on 28 August 1980; surveying and monumenting shelter sites began shortly thereafter. The cultural resources and biological field surveys and geotechnical inspections began 29 September 1980 in Dry Lake Valley and were completed for all valleys on 15 March 1981. An effort was made to complete as much field work as possible by December 1980 knowing there would be delays in the winter months because of weather conditions. A completed schedule is shown in Figure 1-5.

1.3 REPORT ORGANIZATION

This report presents a description of the data and techniques used to derive shelter layouts. Valley specific information and results of the field surveys for the three IOC valleys are

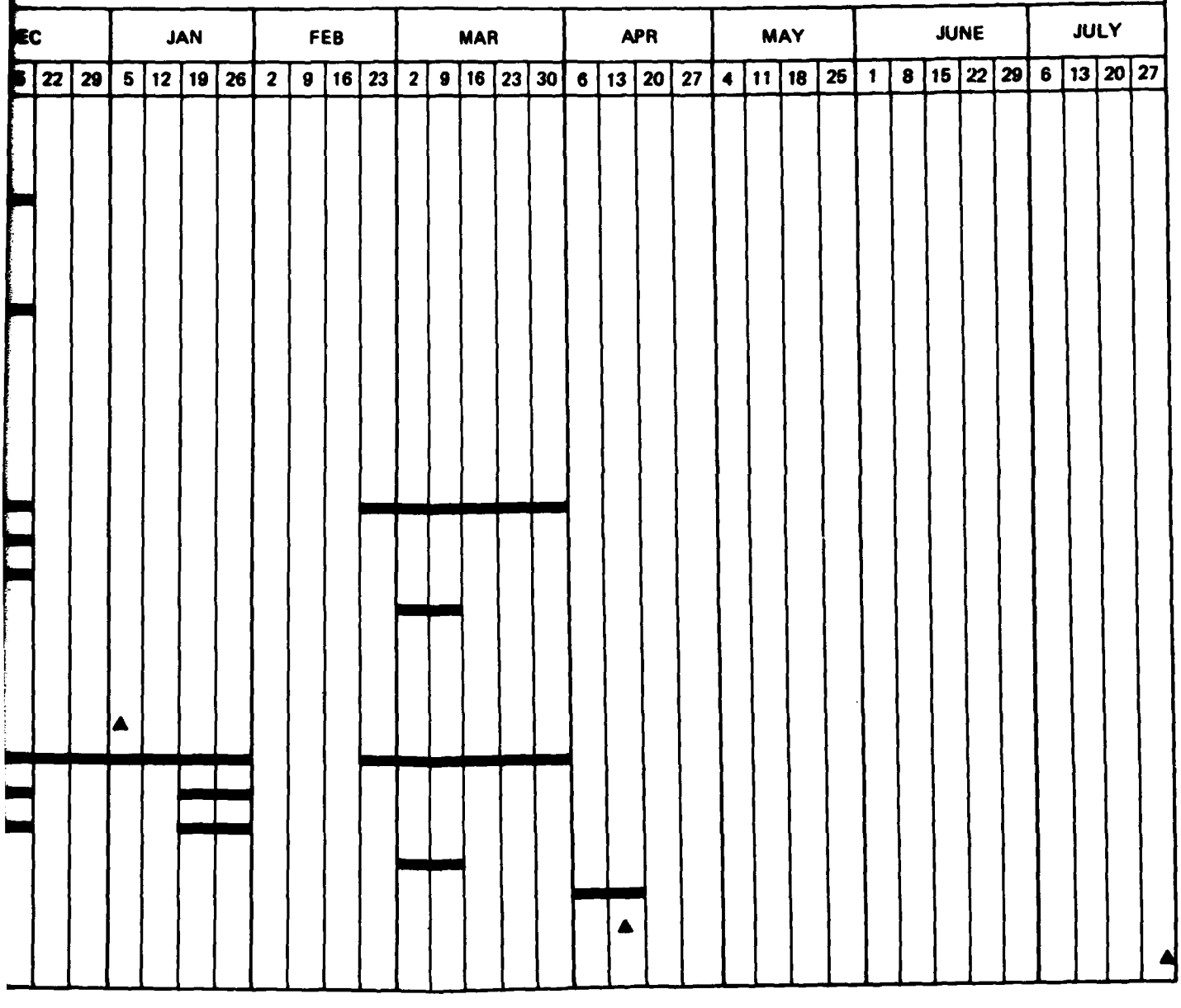
TASK DESCRIPTION	AUG			SEPT				OCT		
	11	18	25	8	15	22	29	6	13	20
DRY LAKE VALLEY										
LAYOUT COMPLETED (1:9600 SCALE)				▲						
SURVEYING AND MONUMENTING			━	━	━	━				
ENVIRONMENTAL INSPECTIONS							━	━	━	━
GEOTECHNICAL INSPECTIONS							━	━	━	━
ENVIRONMENTAL FIELD SURVEYS--RESITINGS							━	━	━	━
DETAIL OF CLUSTER 2 (SURVEYING)							━	━	━	━
PINE VALLEY										
LAYOUT COMPLETED (1:9600 SCALE)										
SURVEYING AND MONUMENTING										
ENVIRONMENTAL FIELD SURVEYS										
GEOTECHNICAL INSPECTIONS										
ENVIRONMENTAL FIELD SURVEYS--RESITINGS										
WAH WAH VALLEY										
LAYOUT COMPLETED (1:9600 SCALE)										
SURVEYING AND MONUMENTING										
ENVIRONMENTAL FIELD SURVEYS										
GEOTECHNICAL INSPECTIONS										
ENVIRONMENTAL FIELD SURVEYS--RESITINGS										
COMPLETE RESITINGS (CHANGES TO LAYOUT AFTER FIELD SURVEYS)										
DRAFT REPORT TO U.S. AIR FORCE										
FINAL REPORT										

TIME SCHEDULE



NOTE: FIGURE 1-5 SAMES AS 1-2 IN VOL. I

TIME SCHEDULE



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SCHEDULE OF FIELD SURVEYS

NOTE: FIGURE 1-5 SAMES AS 1-2 IN VOL. I

FIGURE 1-6

summarized. An evaluation of the methods and techniques forms the basis for recommended program and method changes.

The report consists of three volumes. Volumes II and III contain two parts which are bound separately. The contents of each volume are as follows:

Volume I - Program Overview and Methodology;

Volume II, Part I - Biological Resources, Dry Lake Valley, Nevada;

Volume II, Part II - Biological Resources, Pine and Wah Wah valleys, Utah;

Volume III, Part I - Cultural Resources, Dry Lake Valley, Nevada; and

Volume III, Part II - Cultural Resources, Pine and Wah Wah valleys, Utah.

This volume (Volume III, Part II) presents the methodology for and the results of cultural resources surveys of 10 CMFs, 8 RSSs, and 230 HSSs in Pine and Wah Wah Valleys, Utah (Figure 1-6). These surveys were conducted in Beaver and Millard Counties, Utah, between 31 October 1980 and 12 March 1981. Background research methods and results for this study are presented in Section 2.0, field survey methods and results are presented in Section 3.0, National Register of Historic Places Recommendations are given in Section 4.0, and cultural resources mitigation recommendations are given in Section 5.0. Section 6.0 contains a list of references cited in the text. Appendices include a list of preparers, agencies, institutions, and individuals consulted, shelter summary tables including legal descriptions, map references, and archeological sites discovered in Pine and Wah Wah valleys, and the Bureau of Land Management letter on significance and avoidance mitigation criteria.

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(reduced 49%)

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STUDY AREA

FIGURE 1-6

2.0 BACKGROUND RESEARCH

2.1 METHODS

The methods used to obtain background data on the environment, prehistory, ethnography, and history of Pine and Wah Wah Valleys consisted of library research, visits to agencies and institutions with information on the project area, and consultations with persons familiar with Pine and Wah Wah Valleys.

Records searches for known archeological and historical sites were conducted at the University of Utah Archeological Center, The Utah State Historical Society Antiquities Section, and the Bureau of Land Management Utah State Office. A table of agencies, institutions, and individuals consulted is included in Appendix B.

2.2 RESULTS

The results of the background literature, records searches, and consultations are presented in the following sections. Section 2.2.1 discusses the present environment and the paleoenvironmental characteristics of the valleys. Section 2.2.2 provides an overview of previous archeological research and known archeological sites in Pine and Wah Wah valleys. Section 2.2.3 discusses the ethnographic occupants of southwestern Utah, and Section 2.2.4 considers the historic period.

2.2.1 General Physiographic and Environmental Description

Pine Valley is located in southwestern Utah and includes portions of Beaver and Millard counties. The total area of Pine

Valley is 730 square miles (1890 km^2); the elevation range of the valley floor is 5087 feet (1551 m) to 6396 feet (1950 m). The valley is bounded on the west and southwest by the Needles and the Indian Peak Ranges, at elevations of up to 9790 feet (2980 m). The Wah Wah Mountains, with peaks of up to 9000 feet (2740 m), constitute the eastern boundary of Pine Valley. To the north is Snake Valley, the Tunnel Spring Mountains, and the Ferguson Desert.

On the eastern side of the Wah Wah Range is Wah Wah Valley, encompassing an area of 600 square miles (1550 km^2) in portions of Millard and Beaver counties. Valley floor elevations range from 4694 feet (1431 m) to 5595 feet (1706 m). The southern portion of Wah Wah Valley merges with the Escalante Desert. On the east, the valley is bounded by the San Francisco Mountains, with elevations reaching 9660 feet (2944 m). Sevier Lake and Whirlwind and Tule valleys border the north end of Wah Wah Valley.

Both valleys are typical of the Basin and Range Province, characterized by parallel, north-south trending mountain ranges, separated by hydrologically closed basins. Pine and Wah Wah valleys each have hardpan-playas in their lowest areas. State Highway 21 runs roughly northwest-southeast through both valleys. The nearest town is Milford, Utah, which is 20 miles east of Wah Wah Valley and 36 miles east of Pine Valley.

a. Geology. The geological characteristics of Pine and Wah Wah valleys are presented below. This discussion focuses on those

geological resources that may have been important for prehistoric and historic use of the area.

Pine Valley: Pine and Wah Wah valleys are closed alluvial basins. The central part of Pine Valley consists primarily of alluvial fans of intermediate age and channel deposits, with playa deposits in the Pine Valley Hardpan. One feature of Pine Valley is a large active dune field near the hardpan in the northeastern area of the valley. Lake Bonneville deposits do not occur in Pine Valley, although there may be lacustrine deposits from smaller, local Pleistocene lakes beneath the Quaternary alluvial fill in the valley.

Wah Wah Valley: The floor of Wah Wah Valley is composed of Quaternary alluvium and lacustrine deposits, including fans, channel deposits, and ancient Lake Bonneville sediments. Playa deposits occur in the Wah Wah Valley Hardpan. Sand dunes are limited to areas north of Wah Wah Valley Hardpan.

Lithic outcrops that could have provided materials for tool manufacture during prehistoric times within the valleys include large quartzite outcrops in northeastern Pine Valley, associated with Crystal Peak, and rhyolite outcrops at the southern end of Wah Wah Valley. Chert nodules and chunks, some large enough for use in tool manufacture, are found on the western alluvial slopes of Wah Wah Valley.

Surrounding Mountain Ranges: The Wah Wah Mountains between the two valleys consist primarily of Paleozoic limestones,

dolomites, and quartzites, with extensive Tertiary lavas and ash-flow tuffs at the southern end of the range. The Needle Mountains on the western side of Pine Valley consist of Paleozoic carbonates and quartzites capped by Tertiary volcanic rocks. The San Francisco Mountains on the eastern side of Wah Wah Valley are comprised primarily of Paleozoic limestone, carbonate, and quartzite, with overthrust Pre-Cambrian quartzites and phyllites; extrusive Tertiary volcanic rocks are also present. Various non-ferrous metals, notably silver, have been mined in the San Francisco Mountains for over one hundred years. Numerous small fault systems occur within the valleys and surrounding mountain ranges.

b. Hydrology. The nature and distribution of water resources were extremely important to prehistoric and historic populations in the Great Basin.

Pine Valley: There is no inflow or outflow of surface water to or from the Pine Valley watershed. Surface flow within the valley results primarily from precipitation, which averages 10.6 inches (27 cm) per year. A well-developed stream system extends from the mountains on both sides of the valley to the playa. Springs also occur in the valley, mostly on the western flanks, with some in the southeastern valley foothills.

Wah Wah Valley: Wah Wah Valley is also a topographically closed basin with no surface inflow or outflow. The average annual precipitation is 9 inches (23 cm). A number of ephemeral

streams and several springs flow from the mountains around the valley towards the Wah Wah Valley Hardpan. The major springs are Wah Wah Springs on the west side of the valley and Squaw Springs on the east side. A low topographic divide separates Wah Wah Valley from Sevier Lake to the north, although hydrologic data suggests there is some groundwater flow from Wah Wah Valley into the Sevier Lake basin.

c. Vegetation. Pine and Wah Wah valleys lie within the Artemisia belt of the Upper Sonoran zone which is dominated by sagebrush, greasewood, and pinyon-juniper plant associations (Euler, 1966; Rudy, 1953; Steward, 1938). The flora is adapted to semiarid conditions, cold winters, and hot summers. On the alluvial fans of Pine Valley (except in the southern portion) and Wah Wah Valley, little rabbitbrush (Chrysothamnus greenei and C. viscidiflorus) and shadscale (Atriplex confertifolia) associations are the most common. The southern part of Pine Valley is characterized by a sagebrush (Artemisia tridentata) association. The alluvial plains are covered by winterfat (Ceratoides lanata) or greasewood (Sarcobatus vermiculatus) associations, with some barren playa areas, notably the Pine Valley Hardpan and the Wah Wah Valley Hardpan.

In Pine Valley, Indian ricegrass (Oryzopsis hymenoides) is an abundant species. Grasses are usually limited in the Upper Sonoran zone due to aridity (Euler, 1966; Rudy, 1953), but the last two years have been wet in Pine Valley greatly augmenting the growth of grass. This may more closely reflect the prehis-

toric environment, as there were probably more grasses before the introduction of cattle and sheep in the Great Basin valleys (Young et al., 1976). Some of the higher alluvial fans in Pine Valley are in the pinyon-juniper association belt, and a few juniper trees (Juniperus osteosperma) occur on the higher fans in Wah Wah Valley.

Ethnographic Use of Native Plants: The economy of the ethnographic populations of the eastern Great Basin was based essentially on the gathering of wild plant foods, including a wide variety of grasses, seeds, berries, roots, fruits, and nuts. The seasonal and geographic distribution of edible plants guided the movements of people and the locations of settlements. In the Artemisia belt, grasses were the most important resource exploited. Winter villages were located in the upper portions of this belt, against the mountains near springs and streams (Steward, 1938), and near the pinyon-juniper belt.

The seeds of Indian ricegrass, which is found at various elevations, provided a fairly constant food source during ethnographic times. The nuts of pinyon pines (Pinus monophylla and P. edulis), which occur in the pinyon-juniper belt in the foothills surrounding the valley floors, were also important, especially during the fall. On the valley floors, sagebrush (Artemisia tridentata and A. nova), which was eaten in times of food shortage (Steward, 1938), numerous grasses, yucca (Yucca baccata and others), cacti, especially prickly pear (Opuntia basilaris and others), saltbrush (Atriplex canescens), shadscale

(Atriplex confertifolia), and juniper (Juniperus osteosperma) provided additional sources of food.

Historic Use of Native Plants: The arrival of Euroamerican peoples in the Great Basin resulted in drastic changes in native vegetation patterns. Grazing reduced the grasses on the valley floors, which were replaced by various shrub associations. Only in areas where grazing has not occurred for some time, such as the Nevada Test Site, are native grasses beginning to regain their earlier abundance and distribution (Fowler et al., 1981). Pinyon, too, was greatly reduced in mining areas, where the trees were cut for timbers to use in the mines. Such deterioration of plant populations, which had provided staple food supplies to ethnographic groups, often resulted in the decline of human populations.

d. Wildlife. In the Basin and Range Province, small game such as rabbits and rodents are most plentiful. Jackrabbits (Lepus californicus) are especially common as are a wide variety of squirrels, mice, and rats. Badger (Taxidea taxus), foxes (Vulpes spp.), and coyote (Canis latrans) occur in the valleys, and larger game, including mule deer (Odocoileus hemionus), antelope (Antilocapra americana), mountain sheep (Ovis canadensis), and elk (Cervus canadensis) also inhabit the area. A large herd of Pronghorn antelope occupies Pine Valley, and there is a small herd in Wah Wah Valley. Elk have been reported in southwestern Pine Valley in the Needle Range. Various

reptiles, such as snakes, lizards, birds, and insects also inhabit the valley regions.

Ethnographic Use of Wildlife: The great diversity of fauna exploited by prehistoric peoples provided food, as well as skins, bones, and other materials used in manufacturing a variety of items. Steward (1938) reports that approximately one third of the mammalian species found in the Southern Paiute territory were used as food. Small game provided a large portion of the animal protein in the aboriginal diet. Jackrabbits were captured during large communal net drives in the fall on the valley floors. Rodents were usually taken individually. Large game species were taken less frequently, but were valuable sources of food and skins. Mule deer were the most important large game (Steward, 1938; Euler, 1966), although elk, mountain sheep, bison, antelope, and bear were also hunted for food (Stewart, 1942). Large game was hunted by individual hunters with bow and arrow or during group drives, as was the case with antelope. Edible insects, such as ants, crickets, and worms (Stewart, 1942), as well as birds and reptiles were important elements of the aboriginal diet (Euler, 1966; Kelly, 1964; Steward, 1938; Stewart, 1942).

Historic Use of Wildlife: The effects of Euroamerican activity have been most noticeable among the large game species. Grazing competition between native animals and domestic livestock has undoubtedly occurred. In some areas, over-hunting has reduced

animal populations, and the establishment of towns has also altered wildlife distribution.

e. Paleoenvironments

The environment has not remained constant in the Great Basin. During the pluvial period 24,000 to 12,000 years B.P. (Before Present), deep lakes were characteristic (Mehringer, 1977). Lake Bonneville covered much of western Utah during this period. Evidence of Lake Bonneville's extent is found throughout the northeastern Great Basin in beach lines, terraces, deltas, bars, dunes, arroyo cuts, and lake sediments. While recent studies of pollen and plant macrofossils, especially from wood rat middens, peat bog cores, fossil animals, and tree rings (dendroclimatology) have been important in understanding pluvial and post pluvial climates (Mehringer, 1977; Currey and James, 1981), at present, knowledge of former environments in Pine and Wah Wah Valleys must be drawn from other areas, since little paleoenvironmental work has been done for this specific region.

About 12,000-10,000 B.P., the last pluvial lakes shrank, and many rivers and springs dried. Plant macrofossils from wood rat middens in the Snake Range west of Pine Valley provide evidence of the transition from mesic to more xeric conditions between 11,000 and 10,500 B.P. A large freshwater lake, Lake Gunnison, covered the Sevier Desert at the north end of Wah Wah Valley until about the same time, although the paleoenvironmental situation of Sevier Lake is still poorly understood (Currey and James, 1981). Megafauna, including horse, camel, mammoth,

musk ox, and certain species of bison, goat, and bear, which had previously inhabited the marsh and grassland areas near the lakes, became extinct at the latest by 7000 B.P. in the Bonneville basin (Currey and James, 1981). Carbon 14 dates from archeological and paleontological sites in the Great Basin indicate that few megafauna survived past 10,000 B.P. (Grayson, 1981).

Since the disappearance of the pluvial lakes at about 10,000 B.P. the general climatic trend has been toward increasing aridity. However, significantly cooler moister periods appear to have occurred shortly before 10,000 B.P., shortly after 3000 B.P., and in the last few centuries. A significant hot dry period is indicated shortly after 7000 B.P. Less substantial evidence indicates possible maxima at about 8000 B.P. and at 5000 B.P. (Currey and James, 1981). However more data are required to support these theses, and given evidence of intra-regional climatic variation, broad generalizations are difficult to maintain (Mehringer, 1977).

Although climatic shifts, since the disappearance of the pluvial lakes 10,000 years ago, have never approached the magnitude of those associated with the end of the Pleistocene, "there were several periods when regional climatic change was sufficient to warrant investigations of its possible influence on human populations" (Mehringer, 1977).

In low rainfall areas, such as the Great Basin, an increase of only a few inches of precipitation per year causes a marked

increase in the density of plant species. Increased plant cover in turn, may cause an increase in animal populations. As a result the area immediately becomes more attractive for human use. Grayson (in press) presents evidence that certain mammals inhabited areas in the Great Basin during the Holocene where they are not found now, and speculates that there were species of animals inhabiting the Great Basin during the Holocene that have become extinct throughout the entire region. Local resource fluctuation certainly would have influenced human use of the environment (Aikens, 1980).

2.2.2. Prehistoric Overview

This section summarizes previously known archeological data from the eastern Great Basin in general, for southwestern Utah, and for Pine and Wah Wah valleys. A regional chronology is presented first to provide a basis for discussion. Following this, previous investigations in southwestern Utah are considered and data on previously recorded sites are presented.

2.2.2.1. Regional Chronology

Four temporal periods or cultural stages are defined for the prehistoric period of the eastern Great Basin in Utah: Paleo-Indian, Western Archaic, Anasazi-Fremont, and Shoshone. A tentative chronology follows.

Cultural Tradition	Approximate Time Period
Paleo-Indian	11,000-12,000 B.P. to 7,000-8,000 B.P.
Western Archaic	10,000 B.P. to historic times
Anasazi	1,500 A.D. to 1,300 A.D.
Fremont	500 A.D. to 1,300 A.D.
Shoshone	1,300 A.D. to historic times

a. Paleo-Indian: The evidence from Utah for a Paleo-Indian, or early big game hunting, cultural tradition is minimal. However, some evidence does exist for human occupation as early as 12,000 B.P. (Bryan, 1977). Two traditions are recognized as predating the Western Archaic: the "chopper-scraper" industry and the big game hunting complex. The Paleo-Indian period is usually given a temporal span of approximately 11,000-12,000 B.P. to 7000-8000 B.P., based on comparisons with datable materials from other areas (Hauck, 1977; Hester, 1973; Aikens, 1978a).

The poorly understood chopper-scraper industry is represented by a complex of large, crude scrapers, choppers, and knives which often occur in association with post-Pleistocene lakes (Jennings, 1978) where peoples may have focused on big game and lakeside resources. This complex was first examined in a controlled situation at the C.W. Harris site in California (Warren, 1966 and 1967). Here, Warren (1967) assigned the term "San Dieguito" to the tool complex hypothesized to represent a hunting culture dating from 10,000 to 8000 B.P.

San Diequito type assemblages tend to be located along the western edge of the Great Basin, and extend north to the Columbia Plateau (Warren, 1967; Jennings, 1978). Typologically comparable specimens are noted in Utah on the Ouray Wildlife Refuge, where limited surface deposits of large crude bifaces, edge chipped pebbles, elongated knives, and scrapers are recorded (Jennings, 1978), and at Smith Creek Cave, on

the western flank of Snake Valley in extreme eastern Nevada (Bryan, 1977). Smith Creek Cave contains an assemblage carbon 14 dated to 12,000-10,000 years B.P., consisting of steep edged scrapers, elongated stemmed points, knives, and reworked point bases. This San Diequito-type assemblage apparently represents an occupation by people who prepared hides of bison, camel, and other artiodactyls.

The second early tradition is a big game hunting complex. The well-known Llano and Folsom phases are associated with the hunting of now-extinct large game, while the Plano phase peoples hunted modern species. Although no big game hunting sites have been excavated in Utah, 20 isolated Clovis and Folsom points are recorded (Fike, 1981). However, it should be noted that "there are no sites from this region that unequivocally document human predation on late Pleistocene mammals" (Grayson, 1981). The presence of Plano peoples in Utah is poorly documented (Hauck, 1977).

The Llano cultural phase is characterized by mammoth hunting and dates from approximately 12,000 to 10,000 B.P. (Hauck, 1977). A number of Clovis points, associated with the Llano phase, are known from Utah. In the vicinity of the project area, these include 42Be93, a potential Clovis site near Milford; 42In110, an isolated Clovis point located in the Escalante Desert just west of Modena; 42Jb180, an isolated Clovis point located in the Sevier Desert near Leamington; and a possible Clovis component at 42Md300 in the Sevier Desert near Clear Lake (Fike, 1981).

The subsequent Folsom phase, dating from approximately 11,000 to 9000 B.P., is associated with the hunting of extinct bison, and represented by the Folsom point (Hauck, 1977). Folsom sites in the vicinity of the project area include 42In462, an isolated Folsom point located in the Escalante Desert south of the Wah Wah Mountains; 42Md381 and 42Md454, Folsom isolates located in the Sevier Desert near Delta; and a possible Folsom component at 42Md300 in the Sevier Desert near Clear Lake (Fike, 1981).

During the Plano phase, 9000 to 7000 B.P., the basic subsistence pattern continued to be the hunting of big game, particularly bison (Hauck, 1977). A diversity of projectile points characterize the Plano phase, particularly lanceolate, nonfluted forms. In the vicinity of the project area, Keller and Hunt (1967) report a number of surface artifacts from the Escalante Desert in southwestern Utah which are similar to types regarded elsewhere as Llano or Plano (Jennings, 1978). However, in general the Plano phase is poorly represented in Utah, and most Plano sites are located in the High Plains east of the Rocky Mountains (Hauck, 1977).

b. Western Archaic: The Western Archaic tradition is represented from an early date in the eastern Great Basin and persists into historic times, when Shoshone peoples represent the ethnographic end of the sequence. The term "Western Archaic" has been used to describe the cultural adaptation to the arid, desert conditions which have typified much of the Great Basin since the end of the Pleistocene (Jennings, 1974). The Western

Archaic tradition is characterized by the hunting and gathering of a wide variety of plant species and small game. Small groups of people moved frequently in a yearly cycle between mountains and valley bottoms, following the seasonal and geographic distribution of food resources (Aikens, 1978b). Areas with abundant localized resources, such as marshes, allowed more sedentary occupations at times (Fowler et al., 1980). Most sites were temporary, however, and population remained sparse. Diagnostic artifacts include milling stones, basketry, projectile points, and an array of stone, bone, and other tools evidencing both specialized tasks and wide technological skills (Jennings, 1974).

The Western Archaic pattern is essentially like the lifeway described by Steward (1938) for ethnographic peoples of the Basin and Plateau. This pattern provided a stable existence through the development of highly adapted subsistence patterns. The traditional view of the impoverishment of the Great Basin environment grossly underestimates both natural and cultural resources. The seemingly harsh environment provided 65 plant species at Danger Cave and 40 animal species at Hogup Cave many of which were used as food, as well as the raw materials for tools, utensils, clothing, ritual items and medicine. Very few materials were imported (Jennings, 1978).

Much remains to be learned about the Western Archaic lifeway in the Great Basin. However, recent studies reveal a great deal of variability across space and time (Fowler et al., 1980). Adova-

sio and Fry (1972) describe the Western Archaic as a series of regional and subregional adaptations to diverse micro-environments, with a flexible subsistence pattern that was based on an awareness of the available plant and animal species. The subsistence pattern within any given area undoubtedly varied through time depending upon fluctuations in the abundance and distribution of local food resources. Therefore, generalizations about subsistence and settlement are difficult to make due to a high degree of variability between conditions in individual subregions of the Great Basin.

Numerous Western Archaic sites are known from Utah. Several sites have been excavated and reported. Stratified, artifact-rich cave sites, in particular, have outlined a consistent Western Archaic pattern for thousands of years. The oldest known occupation is at Danger Cave in northwestern Utah, dated between 10,300 B.P. and post-A.D. 1, although there may have been intervals when the cave was not occupied (Jennings, 1957, 1978). Nearby Hogup Cave (Aikens, 1970) covers a time span of 8400 B.P. to A.D. 1470. These caves have well-stratified deposits, numerous perishable and non-perishable artifacts, and abundant evidence of the plants and animals exploited by the inhabitants. Together, these caves present a picture of Archaic life in Utah for close to 10,000 years. Jennings (1978) considers Danger and Hogup caves to represent the "purest manifestation" of the Western Archaic in the eastern Great Basin. Even so, these two caves were only one stop within the

yearly cycles of the Western Archaic groups which utilized them. Danger and Hogup caves seem to have been inhabited only during the autumn, when local pickleweed and rushes were in fruit (Jennings, 1978), but this fall occupation occurred repeatedly over thousands of years.

A number of other shelter and cave sites in Utah evidence the same pattern. Cowboy Cave, in southeastern Utah, was a specialized grass seed gathering and milling station occupied during the summer season from 8300 B.P. to 1200 B.P. (Jennings, 1978). Sudden Shelter, in central Utah, also served as a base camp during the summer. Groups of about 25 individuals inhabited the site seasonally from approximately 8000 B.P. to 3000 B.P. (Jennings et. al., 1980).

c. Anasazi: The Western Archaic in Utah was followed by or transformed into a series of cultures dependent upon horticulture or gardening between 1 and 500 A.D. (Jennings, 1978). Southern Utah is included in the Southwest culture area which is centered in the Four Corners area and contains evidence of the Anasazi tradition. Three branches of the Anasazi; Kayenta, Virgin, and Mesa Verde have been defined. Numerous Anasazi sites occur throughout southern Utah, and their influence is also evident in much of the rest of Utah, and in southeastern Nevada.

Anasazi cultures are characterized by horticulture with some irrigation, several distinctive pottery styles, and the con-

struction of permanent dwellings in small villages. In general, the Utah Anasazi were not as developed as the groups further south. The Utah environment was extremely marginal for farming, even with the Anasazi's skill in utilizing scarce water resources (Jennings, 1978). Jennings (1978) notes that while the addition of horticulture, masonry, pithouses, and pottery to a basic Archaic pattern expanded the subsistence base and enriched the culture, the Anasazi in Utah could only survive by continuing to hunt and gather some or all of the same resources as Archaic peoples.

Several Utah sites illustrate the Anasazi pattern (see Jennings, 1978). Coombs Village (Lister, 1959), for example, is a Kayenta Anasazi site inhabited between 1075 and 1275 A.D. by a group or groups which moved into the previously unoccupied area from northeastern Arizona. The village contains an extensive complex of above ground dwellings, pithouses, and storage rooms, utilizing masonry and jacal construction. Ceramics evidence trade or contact with Fremont peoples and other Anasazi groups. The artifact content at Coombs is a large collection of chipped stone, bone artifacts, beads (including turquoise), and various ground stone items, in addition to pottery. The 77 rooms at the village appear to have been used contemporaneously.

d. Fremont/Sevier: Spanning about the same time period as the Anasazi, (500 to 1300 A.D.), the Fremont Culture is a semi-sedentary tradition defined by numerous village sites and distinctive artifacts. Large and small Fremont villages, temporary

camps, and isolated artifacts occur all over Utah and in southeastern Nevada. The Fremont lifestyle is dominated by older Archaic patterns with the addition of pottery, some horticulture, and permanent structures. Artifacts which are distinctively Fremont include various grey, painted, and corrugated ceramic wares which define and date Fremont occupation (Madsen, 1977), and several small series of projectile (arrow) points (Holmer and Weder, 1980).

Although the Fremont Culture has been the focus of extensive study and debate, it remains poorly understood. The major problem in Fremont studies has been the question of origins. The Fremont begin to appear in Utah around 500 A.D. The differing theses regarding Fremont origins are:

> "... (1) that the Fremont constitute an extension of the Anasazi north of the Colorado River ...; (2) that the Fremont are derived from an in situ Archaic base with a thin veneer of overlying traits derived from the Southwest ...; (3) that the Fremont are derived from the northern Plains and acquired some Southwestern traits ..." (Madsen, 1979).

Another problem has been in defining the cultural group that is termed "Fremont". The traditional view of the Fremont describes a cultural tradition dependent upon corn agriculture and the gathering of wild resources by groups living in horticulturally based permanent villages (Marwitt, 1970). Five distinct sub-areas are defined for the Fremont in Utah. These include the Uinta, San Rafael, Great Salt Lake, Sevier, and Parowan. Although the Fremont are seen as a single cultural

entity, each sub-area has distinguishing artifacts and characteristics, particularly pottery types.

All Fremont researchers have noted the heavy harvest of wild foods when comparing the Fremont to the Anasazi (Jennings, 1978). Other differences are also observed within the Fremont culture, particularly in regard to subsistence economy. Although the Fremont are considered to be corn agriculturalists, species lists suggest a gathering system dominated by wild plants from a variety of ecosystems (Madsen, 1980). Recent data, particularly in pollen from Backhoe Village (Madsen and Lindsay, 1977), reveal that corn was not necessarily the principal staple upon which the sedentary villages depended. Although corn is evident from most villages, it is absent or minimal from sites near marshes (Madsen, 1980). The environment in such areas may have had a sufficient resource base to sustain sedentary villages without corn agriculture.

Thus, the Fremont may not constitute a single cultural entity, and based on subsistence patterns, two or possibly three groups have been recently defined by Madsen (1979). The "Sevier" inhabited the eastern Great Basin, where they subsisted on marsh collecting, supplemented by corn agriculture. The "Fremont" are defined as corn agriculturalists of the Colorado Plateau, whose diet was supplemented by hunting. A third, unnamed culture to the north of these may possibly be related to the Plains cultures.

Whatever the origins or internal divisions, the Fremont culture as a whole is clearly distinguishable from surrounding cultures in terms of architecture, settlement pattern, and artifacts, although regional variants are recognized (Lohse, 1980). Two or three pithouses, the common Fremont dwelling structures of stone masonry, adobe, or jacal, in random arrangement constitute a typical Fremont village (Jennings, 1978; Lohse, 1980). Villages were typically located near arable land and dependable water or near marshes. Away from the villages, temporary camps were established for the exploitation of various wild foods. Areas from valley floors to the upper reaches of the pinyon-juniper zones were visited, and a wide variety of plants and animals were hunted (Simms, 1979). Those Fremont groups practicing horticulture utilized a local strain of maize which was resistant to drought, extremes of climate, and a short growing season (Jennings, 1978).

After 1300 A.D., the Fremont and Anasazi groups disappeared from the archeological record in Utah. Madsen (1975) describes one possible reason for this. Although the Fremont were horticultural peoples, they supplemented their diet with native flora and fauna, perhaps to a larger extent than was previously assumed (Madsen, 1979). Crop failure would have caused them to rely more heavily on natural resources than usual. With the influx of Shoshone peoples into the area, who were full time subsistence gatherers, a draught year would have cause competition between Fremont and Shoshone peoples for the same resources. In this case the Shoshone would probably have had

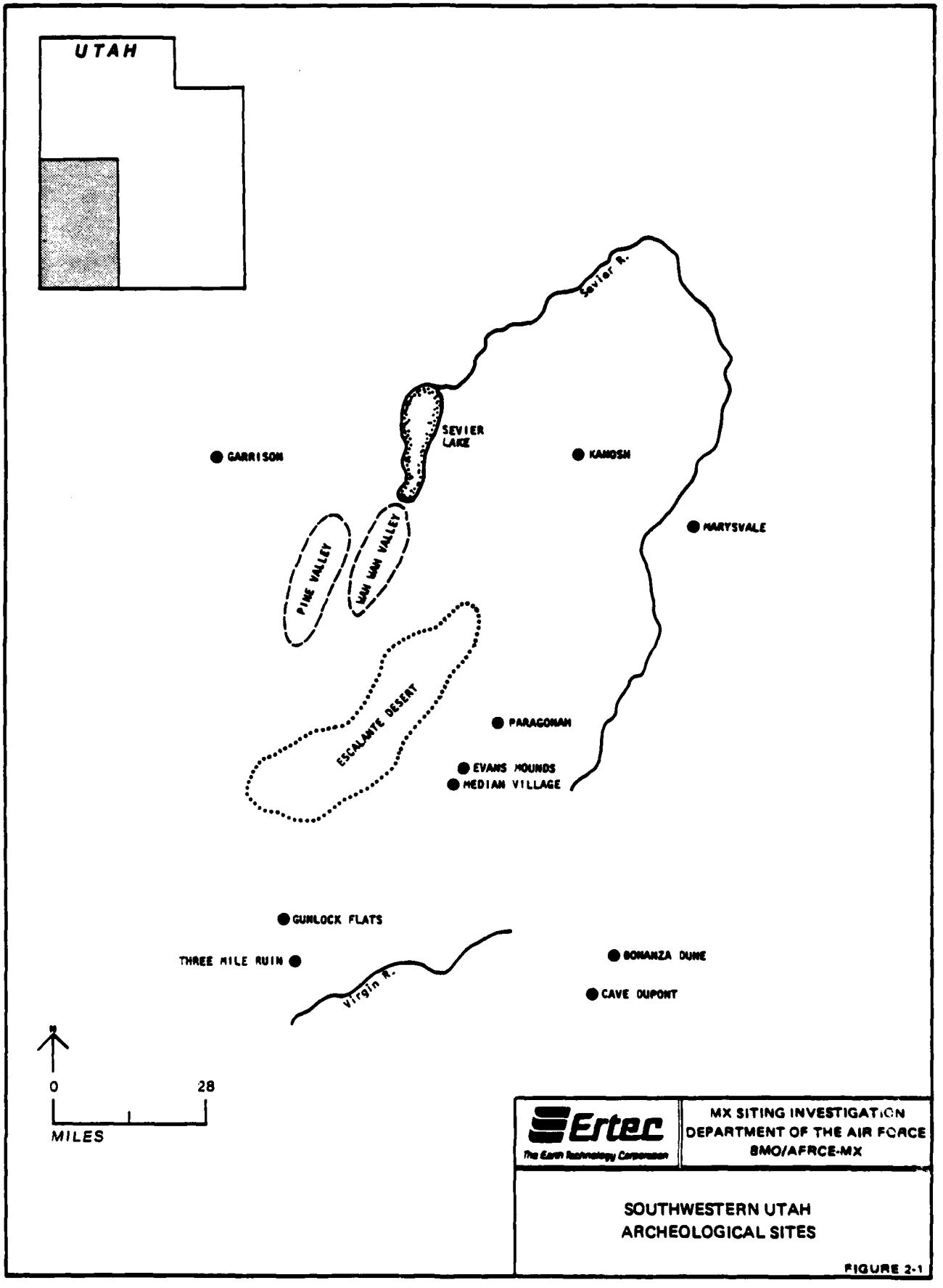
the advantage, since subsistence gathering was their usual way of life. Mixed Shoshone and Fremont or Anasazi ceramics are found in the upper levels of stratified sites, above levels containing only Fremont or Anasazi wares, and below levels containing only Shoshonean pottery (Euler, 1964; Jennings, 1978). The Shoshone are discussed in Section 2.2.3 of this report.

2.2.2.2 Previous Archeological Research in Southwestern Utah

Archeological research has been conducted in Southwestern Utah for many years. Evidence of Paleo-Indian, Western Archaic, Anasazi, Fremont, and Shoshone (Southern Paiute/Ute) cultures indicates a long history of human occupation. Overlapping cultural traditions often occur at the same site or in the same region. Figure 2-1 shows the locations of many of the southwestern Utah sites described below.

a. Paleo-Indian: As elsewhere in Utah, Paleo-Indian evidence is sparse and limited to surface finds. In the Escalante Desert, Keller and Hunt (1967) describe a number of lithic materials similar to artifacts from other areas regarded as Llano or Plano types. Isolated finds of Clovis and Folsom points have also been reported in southwestern Utah (Hauck, 1977; Fike, 1981).

b. Archaic: Western Archaic sites are not well known in Southwestern Utah. Rudy (1953) reports a number of campsites from the Milford area, the northwestern shore of Sevier Lake,



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SOUTHWESTERN UTAH
ARCHEOLOGICAL SITES

FIGURE 2-1

and south and west of Black Rock. While some of these and other similar sites in southwestern Utah may be attributed to Archaic peoples, more have been associated with the Fremont culture. The best known Western Archaic sites occur elsewhere in Utah. In southwestern Utah, Western Archaic sites are not as well studied, possibly due to the presence of more spectacular Fremont and Anasazi sites.

c. Anasazi: Several sites in southwestern Utah are within the Kayenta-Virgin-Mesa Verde Anasazi area, just south of the Parowan Fremont sub-area. Cave DuPont is a famous Basketmaker II cache site near Kanab, Utah. Aikens (1965) reports a number of Virgin Branch sites in southwestern Utah. One of these sites is Bonanza Dune, a Pueblo II site near Kanab, which has the best preserved pithouses reported in Utah.

Another site, Three Mile Ruin, is in extreme southwestern Utah. Aikens (1965) describes this small village as characterized by a circular pattern of connected rooms around a central plaza. The site was occupied for a few years during Pueblo II times, as is typical of villages on the Virgin River drainage (Jennings, 1978). Gunlock Flats (Day, 1966) is a Pueblo II village on the Santa Clara River. Semi-subterranean pithouses built on sand dunes, and cobble masonry storage facilities, with flagstone paved floors are present. The pithouses are like those at Bonanza Dune.

d. Fremont: A number of Fremont sites are located in the Parowan Fremont sub-area of southwestern Utah. The Parowan area

is distinguished by several features (Jennings, 1978; Marwitt, 1970). Villages are typically located on alluvial fans where streams enter valleys, or on the flat, well-watered Parowan Valley floor. The villages are much larger than in any of the other Fremont sub-areas, and were occupied for much longer periods of time. Building and rebuilding commonly occurred, resulting in numerous large mounds containing remains of superimposed pithouses, granaries, and kivas. Surface dwellings of coarse adobe or jacal are also present. Surface coiled-adobe granaries are characteristic. Snake Valley wares are the predominant pottery types throughout the area (Madsen, 1977). Two phases are defined for the Parowan area. The Summit phase dates from 900 to 1050 A.D.; the Paragonah phase dates from 1050 to 1300 A.D. (Jennings, 1978).

The Parowan Valley has been the scene of more archeological activity than any other part of Utah except for the Anasazi occupied areas of southern Utah (Marwitt, 1970). Scientific investigations began in 1917, when Judd (1919) excavated a mound at Paragonah, the largest Parowan Valley site. At least 320 mounds were discovered at Paragonah and they indicate an occupation of about 200 years. Meighan et al. (1956) estimate a permanent population of about 250. Median Village, dated to the Summit phase (900-1050 A.D.) probably had a maximum total community population of about 30 individuals (Marwitt, 1970). Nearby Evans Mound is later than Median Village, dating to 1050-1150 A.D. and representing the Paragonah Phase, but

is otherwise similar. In general, the fertile Parowan Valley permitted the development of larger villages with a greater dependence upon horticulture than other areas, although local animals and plants were also heavily exploited to supplement the diet (Jennings, 1978; Marwitt, 1970).

Outside of Parowan Valley, typical Parowan Fremont sites are also common. The Garrison Site in Snake Valley is the type site for Snake Valley ceramics (Taylor, 1954). The site is smaller and of shorter duration than Parowan Valley sites, with more granaries than dwellings; horticulture apparently was not as productive. Steward (1931) explored Kanosh, and discovered adobe house structures and a square kiva. Another group of sites occur near Marysvale (Gillin, 1941), where excavations exposed pithouses, kivas, sherds of Fremont types, and some Anasazi wares. The adobe houses are like those in the Parowan Valley and Kanosh.

Petroglyph and pictograph sites are also known from southwest Utah. At least some of these are affiliated with the Fremont. Rock art localities in Parowan Valley include Parowan Gap, Black Rock Spring, Hobo Cave, and Red Creek Canyon near Paragonah (Meighan et al., 1956). Gillin (1941) recorded numerous sites in the vicinity of Clear Creek Canyon Cave near Marysvale.

2.2.2.3 Previous Research in Pine Valley

Previous research in Pine Valley has recorded 57 prehistoric sites and isolated artifacts representing various site types

affiliated with a number of cultural traditions. These are listed in Table 2-1, and their general locations are displayed in Figure 2-2. The first 19 sites in the table were recorded by the Bureau of Land Management, University of Utah, or the Nevada Archeological Survey prior to the MX related research in the valley. The remaining sites were discovered during the MX regional sampling survey.

Six petroglyph sites and one pictograph site are known in Pine Valley. In the Cottonwood Wash area of western Pine Valley, four petroglyph localities occur. A petroglyph site is located just west of Pot Sum Pa Spring, and another is found in the foothills of the Wah Wah Mountains. The pictograph locality is in the extreme northern part of the valley. The styles represented include circles and other geometrics, mazes, and zoomorphic and human forms. No other artifacts occur with the rock art sites.

Within the lower alluvial fan, plain, and playa areas of the valley floor, sites consist primarily of isolated finds of flakes, points, or other tools, often fragmented. Habitation of the valley floor area is not indicated, however, the modern surface of the valley floor may be quite young, and archeological material may be buried. The evidence suggests that the valley was utilized by prehistoric peoples for temporary activities such as hunting, gathering, or other resource procurement. The artifacts may also have been dropped by people traveling in the valley or washed down from campsites in the foothills around the valley.

Site #	Location	Type/Contents	Affiliation
42Be853 (MX-5c-28-P3)	bench/terrace overlooking creek - P/J	lithic/pottery scatter: obsidian, quartz, Snake Valley sherds	Fremont
42Be854 (MX-5c-28-P4)	stream terrace - P/J	hunting station/lithic scatter: points, Snake Valley sherds, scrapers, debitage	Archaic, Fremont, Shoshone
42Be855 (MX-5c-28-P5)	outcrop - P/J	debitage, some utilized flakes, groundstone, Snake Valley sherds, point: Elko corner-notched mostly white chert	Archaic, Fremont
42Be856 (MX-5c-28(off)-P1)	base of ridge - P/J	small campsite - Snake Valley sherds, mano, flakes	Fremont
42Be857 (MX-5c-28-P6)	base of ridge - P/J	Snake Valley and Shoshone sherds, metate, Rose Spring projectile point, lithics, tools, charcoal/ash deposit	Fremont, Shoshone
MX-5c-29-PIF1	between washes on alluvial fan -shadscale	isolated biface fragment	unknown
42Be858 (MX-5c-31-P1)	alluvial fan near creek - P/J	large lithic scatter - tools, flakes, scrapers, points: Pinto, Rose Spring, "birds," fragments	early Archaic through Fremont
42Be859 (MX-5c-32-M1)	ridge/plain-sagebrush and P/J	historic log cabin and debris with lithic scatter	historic, unknown
42Md562 (MX-5c-33-P1)	sand dunes - P/J	small dense scatter of quartzite, biface, and point	unknown
42Md563 (MX-5c-34-P1)	sand dunes - juniper	temporary camp - Shoshone sherds (from 1 pot), flakes, scrapers, biface, utilized/retouched flakes, points: 1 Cottonwood triangular, 2 Rose Spring	Shoshone

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PREVIOUSLY RECORDED PREHISTORIC SITES IN PINE VALLEY

Site #	Location	Type/Contents	Affiliation
42Be844 (MX-5c-18-P2)	ridge over creek - P/J	depression, cleared areas, ground stone, Snake Valley sherds, point: Rose Spring corner-notched	Fremont 900-1,100 A.D.
42Be845 (MX-5c-19-p1)	colluvial/alluvial slope near spring - P/J	Sevier Grey sherds, biface, burnt bone, point: Elko, utilized flakes	Late Archaic -Fremont
42Be846 (MX-5c-19-P2)	near spring - P/J	8 obsidian flakes (some utilized)	unknown
42Be847 (MX-5c-19-P3)	alluvial fan - P/J	scatter of 6 punctate Shoshone sherds	Shoshone 1,150 A.D. - historic
MX-5c-21-PIF1	alluvial fan - sagebrush	obsidian projectile point	probably Archaic
MX-5c-21-PIF2	ephemeral wash on alluvial fan - sagebrush	isolated chert flake	unknown
MX-5c-21(off)-PIF1	NO INFORMATION AVAILABLE		
MX-5c-22-PIF1	alluvial fan/foothills-P/J	isolated red chert flake (util)	unknown
MX-5c-25-PIF1	alluvial plain - P/J	obsidian projectile point tip	Late Archaic
MX-5c-25-PIF2	alluvial plain-edge of P/J	obsidian base fragment of San Rafael side-notch point	unknown
42Be848 (MX-5c-27-P1)	overlooking wash on alluvial plain - P/J	Utilized chert and obsidian flakes, 1 corrugated sherd	Fremont
42Be849 (MX-5c-27-P2)	alluvial plain-P/J opposite42Be848	sparse lithics, Sevier Grey sherds, 1 Elko corner-notched point	Fremont
42Be850 (MX-5c-27-P3)	alluvial plain - P/J	biface fragments, drill, utilized flakes	unknown
42Be851 (MX-5c-28-P1)	alluvial fan on creek-P/J	campsite-resource area - charcoal stains, Snake Valley sherds, Shoshone sherds, groundstone, points: Rose Spring, Humboldt, Elko, Parowan	Archaic, Fremont, Paiute
42Be852 (MX-5c-28-P2)	alluvial fan P/J	extended campsite - ground stone, bifaces, Snake Valley sherds, point: Rose Spring, lithics	Fremont

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PREVIOUSLY RECORDED PREHISTORIC SITES IN PINE VALLEY

Site #	Location	Type/Contents	Affiliation
42Md268	ridge area, some dunes - sagebrush, juniper, Mormon tea	open site - possible hearth, ground stone, lithics, crude lanceolate point	possibly Archaic
42Md391	sides of basalt walls of steep, deep canyon	petroglyphs	unknown
42Md392	alluvial plain - shadscale, cold desert shrub	petroglyphs	unknown
MX-5c-3-PIF1	alluvial plain - edge of hardpan - little rabbitbrush	utilized/retouched chert flake	unknown
MX-5c-4-PIF1	playa - greasewood	isolated quartzite flake	unknown
MX-5c-4-PIF2	playa - greasewood	isolated obsidian chunk	unknown
MX-5c-5-PIF1	alluvial fan - shadscale	quartzite biface base fragment	unknown
42Be842 (MX-5c-11-P1)	ridge near spring - P/J	flakes, Snake Valley sherds, ground stone, points: 2 Desert side-notched, 1 Elko Eared, 1 Elko/Rose Spring	Archaic, Fremont, Shoshone
MX-5c-14-PIF1	alluvial plain - winterfat	isolated obsidian flake	unknown
MX-5c-16-PIF1	alluvial plain - sagebrush	obsidian projectile point	unknown
MX-5c-16-PIF2	alluvial plain - sagebrush	obsidian Elko corner-notched point	Archaic 7,600 B.P. to historic
MX-5c-16-PIF3	alluvial plain - sagebrush	obsidian Pinto point	Archaic 8,300-6,200 B.P.
MX-5c-17-PIF1	ephemeral wash on alluvial fan - sagebrush	isolated obsidian flake	unknown
MX-5c-17-PIF2	between ephemeral washes on alluvial fan - sagebrush	obsidian biface base fragment-edge grinding	unknown
MX-5c-17-PIF3	ephemeral wash on alluvial fan - sagebrush	obsidian secondary flake/ chunk with retouch	unknown
42Be843 (MX-5c-18-P1)	creek on alluvial fan-P/J	Snake Valley sherds, points: 1 Rose Spring corner-notched, 1 Humboldt, 1 early Archaic, 2 unknown	Archaic, Fremont

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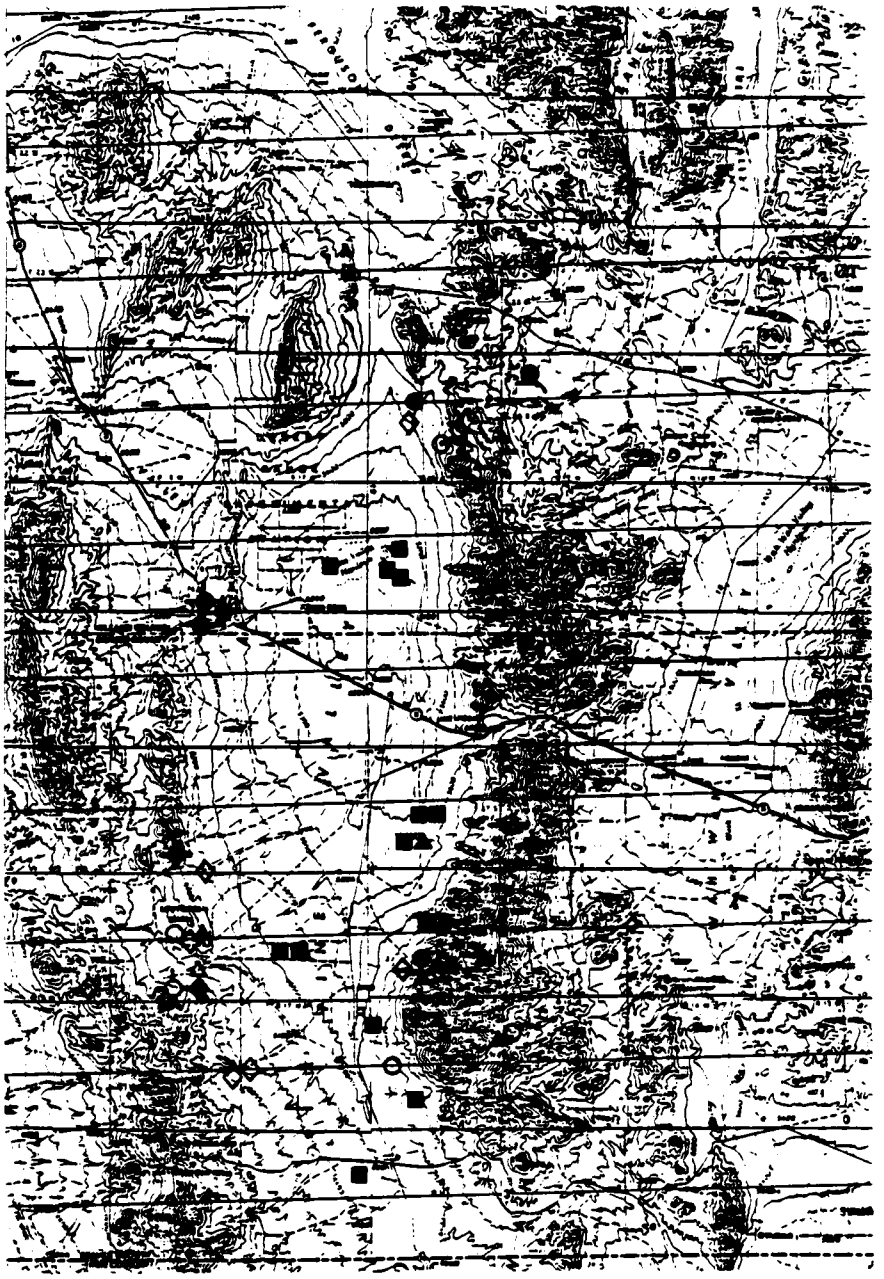
PREVIOUSLY RECORDED PREHISTORIC SITES IN PINE VALLEY

Site #	Location	Type/Contents	Affiliation
42Be16	low ridge near creek - P/J[1]	open lithic/pottery scatter	unknown
42Be17	P/J	open lithic/pottery scatter	unknown
42Be18	near spring - P/J	house mounds, hearths, ground stone, flakes, sherds	Pueblo (?)
42Be51	P/J	hearth, prehistoric wood structure, flakes, sherds	Ute-Paiute
42Be91	ridge saddle near spring-P/J	petroglyphs	unknown
42Be265	foothills of Wah Wah Mts. - sagebrush and grass	petroglyphs	unknown
42Be266	ridge slope - P/J	cave-artifact content not determined (?)	unknown
42Be810	bank of creek - P/J	mound of stone rubble	unknown
42Be811	near creek	flakes, plain and corrugated sherds	Fremont AD 900-1,100
42Be812	brush covered flat - P/J slope	obsidian flakes, plain and corrugated Snake Valley sherds	Fremont AD 900-1,100
42Be813	on creek - brush covered flat, some P/J	historic site with some plain and corrugated Snake Valley sherds	poss. Fremont AD 1000
42Be814	limestone ridge-P/J	lithic scatter, point fragment, 1 sherd	Parowan Fremont AD 900-1,100
42Md53	rocky wash	petroglyphs	unknown
42Md182	wash betwen Pine and Antelope Valleys	petroglyphs	unknown
42Md183	wash-steep ignimbrite walls	petroglyphs	unknown
42Md267	ridge-sagebrush, juniper, Mormon tea	open lithic scatter	unknown

(1) Pinyon/Juniper



KEY

- ○ LARGE LITHIC SCATTER
- ● SMALL LITHIC SCATTER
- ▲ HISTORIC SITE
- △ CHIPPING CIRCLE
- ■ ISOLATED ARTIFACT PREHISTORIC
- ◆ MILLING STATION
- ◇ TEMPORARY CAMP PREHISTORIC
- POTTERY SCATTER
- PETROGLYPH(S)
- CAVE SITE

SCALE: 1:250,000
(reduced to 49%)
SYMBOLS ARE NOT TO SCALE

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PREVIOUSLY RECORDED SITES
PINE VALLEY

FIGURE 2-2

A number of habitation sites occur in the pinyon-juniper areas of the valley's foothills. These sites are campsites around springs or permanent creeks. Most typical are open lithic scatters with flakes, projectile points, chipped stone tools, and some ground stone and ceramics. The ceramics include both Fremont and Shoshone types. The points are of various Archaic and Fremont types. In the pinyon-juniper areas food resources and shelter are available, permanent water is near, and there are hunting areas in the vicinity. Prehistoric peoples would have found such areas attractive and occupied them repeatedly.

The prehistoric pattern in Pine Valley is typical of other Great Basin areas. The foothills offered more resources; therefore seasonal habitation sites occur in these areas. Valley floors had fewer resources and were used for limited activity, probably by peoples inhabiting the foothill zone. A fairly long time frame is suggested, with utilization by various cultural groups: Archaic, Fremont, and Shoshone.

In a survey for Earth Sciences, Inc., Berge (1974) recorded 79 sites in the southern Wah Wah Mountains between Pine and Wah Wah valleys. The study area is entirely within the pinyon-juniper area. Most of the sites are lithic scatters or chipping circles consisting of debitage and tools. Fremont ceramic types, and projectile points similar to Fremont points from other areas suggest Fremont habitation of the area (Berge, 1974). Projectile points range from early Archaic to Shoshone types.

2.2.2.4 Previous Research in Wah Wah Valley

Prior to the MX cultural resource regional sampling survey, conducted in the summer of 1980, little was known about the prehistoric occupation of Wah Wah Valley. Only four sites had been recorded from the valley and surrounding foothills, with the exception of Berge's survey. These are listed at the top of Table 2-2, and are discussed below. See Figure 2-3 for the general distribution of these sites.

Site 42Md423 is a temporary campsite-chipping station, located northwest of the valley floor, which contains projectile points (including one identified as an Eastgate Expanding Stem) as well as debitage. One petroglyph locality, 42Be621, is reported from the western side of the valley. Two small lithic scatters, sites 42Md469 and 42Md470 are part of an extensive area of cultural material in the northern part of the valley floor, west of the Wah Wah Valley Hardpan. These sites were all discovered during small scale cultural resources surveys in the valley.

A total of fourteen prehistoric sites or isolates were recorded during the MX regional sample survey in the Wah Wah Valley watershed during the summer of 1980 (see Table 2-2). Of these, four are lithic scatters or campsites containing flakes and flaked tools of quartzite and obsidian. These sites are typically located in the pinyon-juniper foothills above the valley floor. The isolates include various utilized or retouched flakes, bifaces, and debitage found throughout the valley. No diagnostic artifacts were recorded.

Site #	Location	Type/Contents	Affiliation
42Be621	alluvial plain - salt desert	petroglyphs	unknown
42Md423	base of ridge - juniper	camp/chipping station-flakes, (obsidian, chert) points: Eastgate	early Fremont 500-800 A.D.
42Md469	alluvial fan - sage & halogeton	lithic scatter/chert debitage, cores and worked shatter	unknown
42Md470	alluvial fan - sage & halogeton	lithic scatter/chert debitage, cores and worked shatter	unknown
42Md547 (MX-54-1-P1)	ridge along dry wash - pinyon juniper	campsite/flakes, utilized quartzite flakes, scrapers	unknown
42Md548 (MX-54-1-P2)	ridge along dry wash - pinyon juniper	lithic procurement area, quartzite debitage, cores, utilized flakes	unknown
42Md549 (MX-54-2-P1)	ephemeral wash on valley floor (plain) - pinyon juniper	utilized flakes, quartzite debitage, bifaces	unknown
42Md550 (MX-54-3-P1)	alluvial fan, on rise along wash -shadscale	lithic scatter - obsidian and quartzite debitage, bifaces, utilized flakes	unknown
MX-54-5-PIF1	sand dunes - pinyon juniper	4 quartzite flakes	unknown
MX-54-8-PIF1	alluvial fan - shadscale	isolated chert flake	unknown
MX-54-11-PIF1	alluvial fan (near Wah Wah Hardpan) - shadscale	isolated obsidian flake	unknown
MX-54-12-PIF1	valley floor/lacustrine - shadscale	isolated obsidian triangular biface	unknown
MX-54-15-PIF1	gravelly wash on alluvial fan - shadscale	isolated obsidian triangular biface	unknown
MX-54-18-PIF1	alluvial plain - small sagebrush	isolated obsidian utilized flake	unknown
MX-54-22-PIF1	alluvial plain - winterfat	isolated obsidian utilized/ retouched flake	unknown
MX-54-23-PIF1	alluvial fan - little rabbit-brush	isolated obsidian retouched flake	unknown
MX-54-26-PIF1	alluvial fan - sagebrush	isolated chert flake	unknown
MX-54-26-PIF2	ephemeral wash on alluvial plain-sagebrush	isolated chert utilized flake	unknown

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PREVIOUSLY RECORDED PREHISTORIC SITES IN WAH WAH VALLEY

TABLE 2-2

N

KEY

- ○ LARGE LITHIC SCATTER
- ● SMALL LITHIC SCATTER
- ▲ HISTORIC SITE
- ■ ISOLATED ARTIFACT PREHISTORIC
- □ ISOLATED ARTIFACT HISTORIC
- ◇ TEMPORARY CAMP PREHISTORIC
- ✦ PETROGLYPH(S)
- ⊸ CAVE SITE
- ⊙ QUARRY

SCALE: 1:250,000
(reduced to 49%)
SYMBOLS ARE NOT TO SCALE

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PREVIOUSLY RECORDED SITES
WAH WAH VALLEY

FIGURE 2-3

The prehistoric pattern suggested by previously known sites in Wah Wah Valley is for habitation sites to be located in the foothill pinyon-juniper areas where resources, water, and shelter were available. The valley floor has numerous isolates, evidencing use of the valley for limited activities such as hunting, gathering, and transit. Without additional diagnostic artifacts the time period for this occupation cannot be definitely determined. The one reported Eastgate Expanding Stem point has a time range of 500 to 800 A.D. (Holmer and Weder, 1980).

2.2.2.5 National Register Sites

The current National Register of Histroic Places and the Utah State Historical Society were consulted to determine if any prehistoric sites within the study area are on the National Register.

a. Pine Valley: No prehistoric sites in Pine Valley are currently listed on the National Register. However, three petroglyph localities in Pine Valley have recently been recommended for nomination to the National Register. These include: the Mountain Home Wash Petroglyphs (42Md182), the Cottonwood Wash Petroglyphs (42Md53, 42Md183), and the petroglyphs near Mud Spring (42Be91) (Sammons-Lohse, 1981).

b. Wah Wah Valley: There are no sites currently listed on or nominated to the National Register of Historic Places in Wah Wah Valley.

2.2.3 Ethnographic Overview

About 1300 A.D., Fremont and Anasazi cultures disappear from the archeological record in Utah. As mentioned above, it is possible that competition with Shoshone groups was a factor in their disappearance. Shoshone ceramics and projectile point types become more common in archeological sites after 1300 A.D. However, ethnographic sources give a better acount of the culture of Shoshone peoples than does the archeological record. In historic times, various Shoshonean groups inhabitated Utah, including the Southern Paiutes, the Utes, and the Gosiutes.

2.2.3.1 *Ethnographic Occupation of Southwestern Utah*

The ethnographic groups that occupied southwestern Utah were members of the Shoshonean, or Numic language family, a branch of the Uto-Aztecan stock. This language family is divided into three main groups: Western, Central, and Southern (Fowler and Matley, 1979). In Utah, the Southern Paiutes and Utes are part of the Southern Numic group, and the Gosiutes are Central Numics. While all groups are Numic speakers, various languages and dialects are recognized. The Utes and Southern Paiutes speak dialects of a Ute-Chemehuevi branch language (Steward, 1974). The Gosiutes speak a dialect of a language associated with the various Shoshone bands of the Central Numic area (Fowler and Matley, 1979).

The Southern Paiute inhabited southern Utah, southern Nevada, and northern Arizona in historic times (Stewart, 1942; Fowler

and Matley, 1979). They practiced an essentially Western Archaic, nomadic lifestyle, dependent upon a great variety of wild plants and animals (Fowler and Fowler, 1971; Kelly, 1964; Jennings, 1978). Some horticulture was practiced, but it constituted a minor supplement to the wild diet (Kelly, 1964; Steward, 1938). Corn and squash were the primary plants grown, although sunflower and other plants were sometimes cultivated (Kelly, 1964). In addition to the typical Archaic artifacts, such as baskets, milling stones, and chipped stone projectile points, the Southern Paiute manufactured simple ceramic vessels. The pottery is crude, has minimal surface decoration, and breaks easily (Baldwin, 1950; Kelly, 1964). Caves, overhangs, and sand dunes were favored places for temporary camps. Sagebrush huts were constructed at open sites.

Fowler and Matley (1979) note that the general distinction between the Southern Paiute and the Ute is the possession of the horse by the Ute prior to Euroamerican settlement in the 1840's. Most Utes had horses by 1850, which they used for transportation, but what horses the Southern Paiute obtained, they usually ate (Steward, 1938). The Utes inhabited central and eastern Utah (Fowler and Matley, 1979). Ute peoples were entirely dependent upon wild foods, with no agriculture, although mounted groups could travel widely to hunt. Several areas of Ute territory had abundant resources, permitting the establishment of permanent villages (Steward, 1974).

The Gosiute inhabited west-central Utah, southwest of the Great Salt Lake Desert (Stewart, 1942; Steward, 1938; O'Neil, 1976).

Theirs is considered the most impoverished environment of any Shoshone area (Steward 1938). In general, they practiced a hunting-gathering lifestyle. Like the Southern Paiute, the Gosiute did not possess the horse until the 1860's (Fowler and Fowler, 1971).

2.2.3.2 Ethnographic Groups in Historic Times

The Southern Paiute and Gosiute were frequent targets of slave raids by Utes, Navajos, and Mexicans (Fowler and Matley, 1979). In the early 1800's, they began retreating into inaccessible areas. They thus had less contact, and later contact, with Euroamericans than those groups which had horses. The arrival of Euroamerican settlers, particularly the Mormons, in the 1840's, further disrupted the traditional lifestyles. Native food supplies were depleted by the settlers through plowing and hunting, and the slave trade, disease, and indentured servitude to the Mormons decimated the native populations (Steward, 1938; O'Neil, 1976).

The Euroamerican encroachment caused Numic peoples to be displaced from their hunting and gathering areas into less productive regions. By 1856, starvation had become chronic, and Indians began to raid frequently (O'Neil, 1976). The culmination was the Black Hawk War of 1865 to 1870, in which the native peoples were defeated and ordered to reservations. Many groups resisted the move for many years, and continued to practice their traditional ways.

O'Neil (1976) notes that the Utes now own substantial reservation land in Utah. The Utes earn income from oil and gas leases on reservation lands.

Two Gosiute reservations, Deep Creek and Skull Valley, were established by the government in Gosiute territory. Southern Paiute Reservations were located at Las Vegas, Moapa, Indian Peak, near St. George, as well as several smaller colonies. Not all of these areas are still occupied by Indian groups, however, a recent federal act (the Paiute Indian Tribe of Utah Restoration Act, P.L. 96-227, April 3, 1980) provided for the acquisition of up to 15,000 acres to provide a reservation. Land will be selected within two years from federal, state, or private lands in Beaver, Iron, Millard, Sevier, or Washington counties, Utah (*HDR Sciences, 1980*).

2.2.3.3 Ethnographic Groups in the Vicinity of the Study Area

Southwestern Utah was the home of the Beaver Band and the Panguitch Band, or the To'ovinuts of the Southern Paiute in historic times (Kelly, 1934, 1964; Stewart, 1942). Steward (1938) recorded several Southern Paiute/Shoshone villages in Snake Valley and Antelope Valley to the west of the study area. Some horticulture was practiced, but antelope drives, rabbit drives, and mudhen drives were also common in Snake Valley and surrounding areas. The boundary between Southern Paiutes and Utes is in the vicinity of Sevier Lake. Pahvant Ute groups were recorded south of this boundary at Kanosh, Beaver Valley, Parowan, Black Rock, Lyndyl, Corn Creek, Scipio, and

Holden, where they would have been inhabiting Southern Paiute territory (Steward, 1974).

2.2.4 Historical Overview

The following sections present a brief historical overview of southwestern Utah with limited references to specific events and locations in Pine and Wah Wah Valleys. This section is not intended to present a complete historical overview of the valleys or meet the requirements of the Preliminary Memorandum of Agreement (PMOA). Such a study was beyond the scope of this survey, and would duplicate BLM Class I studies.

While there is substantial written history of Wah Wah Valley because of the extensive mining in the valley, little has been written about Pine Valley. The following sections reflect this disparity in information.

2.2.4.1 Regional Chronology

a. Early Exploration: It is not known when Euroamericans first came to southwestern Utah. Spanish explorers first approached Utah in 1540, when an expedition under Captain Garcia Lopez de Cardenas discovered and attempted to cross the Grand Canyon and the Colorado River in southcentral Utah (Bancroft, 1889).

An expedition by two Franciscan friars, Francisco Atanasia Dominguez and Silvestre Velez de Escalante, set out from Santa Fe, New Mexico, in 1776 searching for a better route from New Mexico to Monterey and the California missions (Bancroft, 1889; Creer, 1947). They were also interested in setting up

missions with the Indians in Utah. They entered Utah along the eastern border, traveling west to Utah Lake, where they turned southwest. They camped at Sevier Lake, where they encountered Indians. Continuing south, they stopped at present Black Rock, east of Wah Wah Valley, and were snowbound for a few days. While, there, two men were sent west to look for a trail toward California, but were unsuccessful. Winter conditions and low provisions forced the expedition to abandon their mission and return to New Mexico. They went south through Milford, near Minersville and on to Santa Fe.

Various fur trappers, traders, and explorers came to Utah in the early part of the 19th century. James Bridger is credited with the discovery of the Great Salt Lake in 1825 (Bancroft, 1889). That same year, William Ashley of the Rocky Mountain Fur Company established Fort Ashley at Utah Lake. Jedediah Smith set out from Great Salt Lake on a trapping and exploring tour of southern Utah in 1826. His route was south and southwest from Utah Lake, through Paiute territory, to a point on the Virgin River (Bancroft, 1889).

By 1830, travelers were crossing Utah along what was called the Old Spanish Trail enroute from Santa Fe to Los Angeles. Spanish traders regularly traveled along the Old Spanish Trail into southern Utah and the Sevier Valley in search of Indians to capture as slaves (Creer, 1947). On his fifth and final expedition across the West in 1853-4, John Fremont set out to find a

route through southern Utah. Fremont's party traveled from Kansas City through southern Utah to Parowan, where they picked up the Old Spanish Trail (Creer, 1947).

b. Mormon Settlement and Statehood: Brigham Young and the Mormon settlers arrived in the Great Salt Lake Valley in the summer of 1847. Settlements and forts were quickly established in and around the valley, and parties were sent out to other parts of Utah to seek out locations for colonies. Various parties were sent into southern Utah, notably the Southern Exploring Company in 1849-50, which traveled from the Sevier Valley south to Parowan. Within six months after the company's return, Brigham Young had established a colony at Parowan (Hunter, 1946). Within ten years, colonists had been sent to most of the sites recommended by the expedition.

By 1849, a small, but growing number of non-Mormons were settling in the Mormon colonies and they wanted a form of civil government, rather than a church government. A constitution was drafted, and the State of Deseret was established by the Mormons, with Brigham Young as governor. The United States Congress established the Utah Territory in 1850, and Young served as the first territorial governor. During the 1850's, plans were made for a transcontinental railroad. On May 10, 1869, the Union Pacific and the Central Pacific railroads met and were joined in Promontory, Utah. After several requests, Utah was admitted to the Union as the 45th state in 1896.

c. The Mining Industry: Brigham Young was against Mormons exploring for gold and silver (Hunter, 1946), but Utah proved to be rich in mineral resources. The mining industry was largely developed by non-Mormons. Almost every county reported substantial mineral desposits, and 135 mining districts were established in Utah. During the 1870's and 1880's, districts in Beaver County were among the largest producers in the state (Hunter, 1946). More than $54 million worth of ore are rumored to have been produced, primarily by the Horn Silver Mine in the San Francisco Mountains just east of Wah Wah Valley (Murbarger, 1956; Hunter, 1946).

d. History of Pine Valley: As mentioned previously, there is very little written history of early Euroamerican activity in Pine Valley. Scattered historic artifactual remains are indicative of small early settlements which are probably associated with ranching activities. Given the intensity of mining activity just to the east in the vicinity of Wah Wah Valley, the probability exists of early mining activity in Pine Valley as well.

Use of Pine Valley as rangeland by cattle and sheep began as early as the 1870's; by 1930 unrestricted grazing had substantially reduced the range value of much of the desert. To combat this problem, the U.S. Forest Service Intermountain Forest and Range Experiment Station of Ogden, Utah established the Desert Range Experimental Range in Pine Valley in 1933 (Close, 1981).

With the establishment of this agricultural range experiment station an inventory of plant cover was made and fences were constructed to serve as a basis for planning grazing studies. A weather station was also set up. Since then, studies have been conducted on a number of aspects of desert ecology and land management (Holmgren, 1973).

In 1915, President Wilson established the Indian Peak Reservation of 10,240 acres for two bands of Southern Paiutes in southwestern Pine Valley. Pine nut gathering was the chief source of income for the resident Paiutes. In a good year, several thousand pounds of nuts could be collected (Writers Program, 1941). In 1954 the reservation was sold to the state of Utah to pay back taxes. It is now the Indian Peak State Game Management Area.

e. History of Wah Wah Valley: The Horn Silver Mine was established in 1875 by Jim Ryan and Sam Hawkes, two prospectors from Pioche, Nevada, who were camping at Squaw Springs enroute to another mining area (Murbarger, 1956). They named their claim "Bonanza", which was changed to "Horn Silver Mine" in 1876 when the mine was sold to Matt Cullen, Dennis Ryan, and A.G. Campbell. Jay Cooke purchased the mine in 1879, and set out to improve transportation to the mine. In 1880, an extension of the Powers and Utah Southern Railroad was built from Provo and Salt Lake City to the Horn Silver Mine (Murbarger, 1956). The mine produced heavily between 1880 and 1885. Heat exhaustion caused by temperatures of 108° to 110° in the mine, and "miners'

con" resulting from breathing ore dust made working in the mine unhealthy. As many as forty men a month were hospitalized with "miners' con" (Murbarger, 1956).

Shortly after the mine opened, a "shirttail" town began in a barren, flat area about one mile east of the mine. Water had to be hauled into the town from seven miles away, as the only easily available water was considered fit only for livestock. The town, named Frisco for St. Francis of Assisi (Murbarger, 1956), had a reputation for being the wildest mining camp in Utah's history (Writers Program, 1941).

By 1879, Frisco was booming, and attracting people from all over, including "gamblers, gunslingers and goodtime women" (Murberger, 1956). Each of the town's twenty-one saloons boasted of killings. Marshall Pearson arrived from Pioche, Nevada, in 1879 to clean up the town with his motto, "Get out or shoot it out" (Murbarger, 1956). His method of law and order was effective, even if a "body wagon" had to patrol the streets every morning to pick up corpses from the previous night's activities.

There had been little regard for safety in the mine. In 1885, a cave-in closed the mine, but, fortunately, occurred between work shifts when no one was inside. After the mine closed, people began leaving Frisco. Although the mine was later reopened, Frisco was never rebuilt. In its heyday, Frisco's population was 6000. At the present time, the charcoal kilns, a cemetery,

several collapsed buildings, mining equipment, and shafts attract relic hunters, miners, and tourists to Frisco.

The Cactus Mine was established in 1870 on the west slopes of the San Francisco Mountains overlooking Wah Wah Valley. Attempts to work the mine were unsuccessful until Samuel Newhouse acquired the property in 1900. The town of Newhouse was founded about one mile west of the mine. Between 1905 and 1910, the mine produced $3.5 million in ore, and a railroad extension was built from Frisco to Newhouse.

Newhouse was a model community of over 500 people (Holmer et. al., 1980) with comfortable houses, well managed cafes and clubs, and a commendable amount of law and order (Murbarger, 1956). Profits from the Cactus Mine were used to build the Newhouse Hotel and other prominent buildings in Salt Lake City. The ore ran out in 1910, and people began to move away from Newhouse. Some of the businesses moved to Milford, and only one cafe remained open, catering to ranchers and the few miners who were left. It burned down in 1921 and was not rebuilt.

Around 1906, large sheep shearing corrals were built at Newhouse. Most of the sheep processed were from outside herds. From 1906 to 1925 these were the largest sheep shearing corrals in the state. When the railroad tracks to Newhouse were removed in 1934, the shearing corrals were relocated to Milford. Today, only a few standing buildings, acres of rubble, and innumerable pits left by relic collectors remain at Newhouse.

The town of Milford was founded in 1870, consisting mostly of mine supply stores. Milford was entirely dependent upon Newhouse and Frisco. With the decline of ore production at these two mining towns, Milford also declined. The coming of the railroad in 1880, however, kept Milford from becoming a ghost town, too, as it was a division point for the Union Pacific Railroad (Writers Program, 1941).

2.2.4.2 Previously Recorded Historic Sites

a. Pine Valley: A total of five historic sites were previously recorded in Pine Valley. These are listed in Table 2-3.

The historic sites in Pine Valley suggest occupation of the area by limited numbers of Euroamericans in the late 19th and early 20th centuries. Permanent structures are evidenced at four of the sites. The fifth site is probably a temporary campsite. These sites are probably attributable to early ranching or mining activities in Pine Valley.

b. Wah Wah Valley: One historic site and four historic isolates were previously recorded in Wah Wah Valley. These are listed in Table 2-4.

Site 42Be862 is the town of Newhouse, which has been discussed above. Three of the isolated artifacts are remnants of purple glass bottles, which date from 1880 to 1920. The isolated artifacts suggest temporary utilization or travel in Wah Wah Valley, probably related to Newhouse, Frisco, or ranching.

Site #	Location	Type/Contents	Affiliation
42Be264	slope of Wah Wah Mountains juniper, sage, rice grass	historical buildings, buggies, other artifacts	Anglo-American 1890-1940's
42Be813**	brush-covered flat on creek-pinyon-juniper	masonry, cut timber, glass and habitation debris	Anglo-American 1900
42Be861 (MX-5c-27-H1)	alluvial plain - pinyon-juniper	depression, wood trough, timbers, stone alignment, cans, glass, nails, auto wheels	Anglo-American early 20th Century
42Be851** (MX-5c-28-P1	alluvial fan near creek - pinyon-juniper	historic cans and glass	Anglo-American mid 20th Century
42Be859** (MX-5c-32-M1)	ridge/plain - sagebrush and juniper	log cabin, glass, nails, cans, debris	Anglo-American early 20th Century

* includes multi-component sites also listed under "Prehistoric Sites"
** multi component sites

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PREVIOUSLY RECORDED HISTORIC SITES IN PINE VALLEY

TABLE 2-3

Site #	Location	Type/Contents	Affiliation
MX-54-6-HIP1	alluvial fan-shadscale	2 glass bottle fragments	Anglo-American
42Be862 (MX-54-20-H1 off)	alluvial fan and large canyon drainage	Newhouse mining town	Anglo-American 1900 - 1934
MX-54-22-HIP1	alluvial fan - winterfat	"Log Cabin" syrup tin	Anglo-American
MX-54-23-HIP1	alluvial fan - little rabbit-brush	purple bottle fragments	Anglo-American
MX-54-25-HIP1	alluvial fan on ephemeral wash - snakeweed and cheat grass	purple bottle lip fragment	Anglo-American

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PREVIOUSLY RECORDED HISTORIC SITES IN WAH WAH VALLEY

TABLE 2-4

2.2.4.3 National Register Sites

Current listings of National Register sites and the Utah State Historical Society were consulted to determine if any historic sites in the study area are on the National Register.

a. Pine Valley: There are no historical sites in Pine Valley listed or currently recommended for listing on the National Register of Historic Places.

b. Wah Wah Valley: There are no historical sites in Wah Wah Valley listed or currently recommended for listing on the National Register of Historic Places.

3.0 FIELD RESEARCH

3.1 METHODS

3.1.1 Research Strategy

The archeological survey of Pine and Wah Wah valleys was designed to inventory and evaluate cultural resources in proposed MX construction areas. Procedures for conducting the survey, recording data, and making significance determinations were developed by the Air Force and its cultural resources consultants in conjunction with the Bureau of Land Management. Because the Pine and Wah Wah valleys IOC project involved Class III inventory, locations of survey units were based on geotechnical and engineering criteria (see Volume I of this report) independent of archeological considerations.

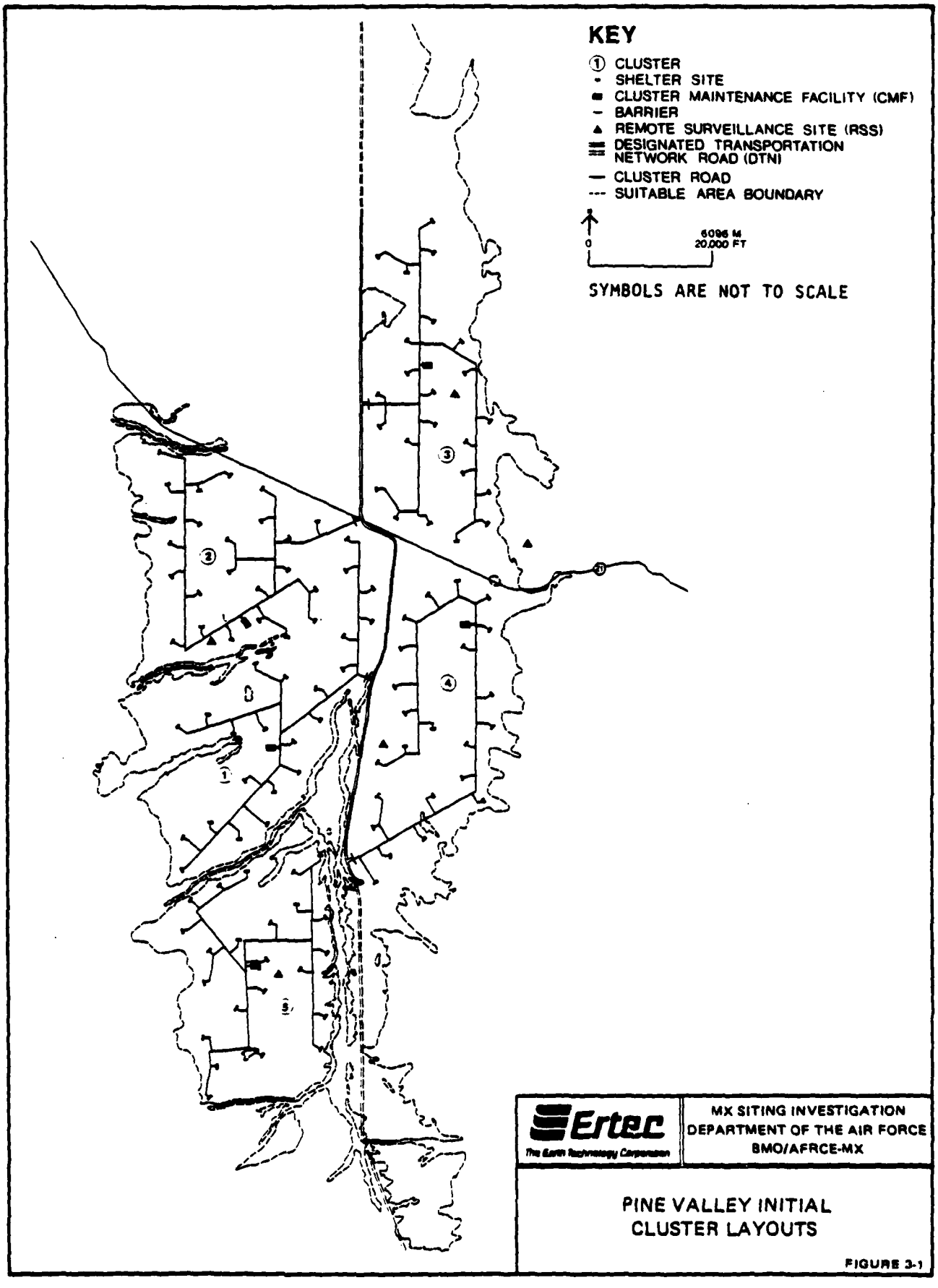
The overall research design for the inventory, evaluation, and protection of cultural resources in proposed MX deployment valleys was not completed prior to the planning of the Pine and Wah Wah Valley IOC project. The preliminary research design (Woodward-Clyde Consultants, 1980) became available during the course of the field work. It presents a set of problem domains, or general questions about past human activities that serve to systematically structure the nature of archeological inquiry in the Great Basin. In addition, it proposes a model of subsistence and settlement (one of the problem domains) which stresses viewing archeological sites in terms of their positions in a regional subsistence system. The model provides a useful construct for organizing information and is the working part of the research design.

Field survey procedures and data collection methods developed for the regional sampling survey were used during the IOC cultural resources survey with some modifications needed to meet special requirements of the project and BLM policy. These modifications are reflected in the data collection form and are discussed in Section 3.1.3. Use of procedures and methods developed for the MX regional survey allows the IOC data to be consistent with other data collected and analyzed during MX cultural resources studies.

3.1.2 Location and Layout of Sample Unit Survey Areas

Three different kinds of construction sites are proposed in Pine and Wah Wah valleys: Horizontal shelter sites (HSSs), remote surveillance sites (RSSs), and cluster maintenance facilities (CMFs). Each of these areas was treated as a survey sample unit for the IOC cultural resources inventory. Shelter sites are arranged in clusters, each containing 23 shelters. Each of the clusters contains one cluster maintenance facility, and four remote surveillance sites are located within each valley. Five clusters in Pine Valley and five clusters in Wah Wah Valley were laid out. Figure 3-1 presents the arrangement of these sites in Pine Valley and Figure 3-2, Wah Wah Valley.

The area surveyed at each location was much larger than the area expected to be directly impacted by the facility itself, the area to be withdrawn and fenced. This larger area was intended to allow for disturbances to adjacent areas during facility construction. Figure 3-3 shows the area of direct impact (the fenced area) in relation to the survey areas.


KEY
① CLUSTER
• SHELTER SITE
■ CLUSTER MAINTENANCE FACILITY (CMF)
– BARRIER
▲ REMOTE SURVEILLANCE SITE (RSS)
DESIGNATED TRANSPORTATION NETWORK ROAD (DTN)
— CLUSTER ROAD
--- SUITABLE AREA BOUNDARY
0
6096 M
20,000 FT
SYMBOLS ARE NOT TO SCALE
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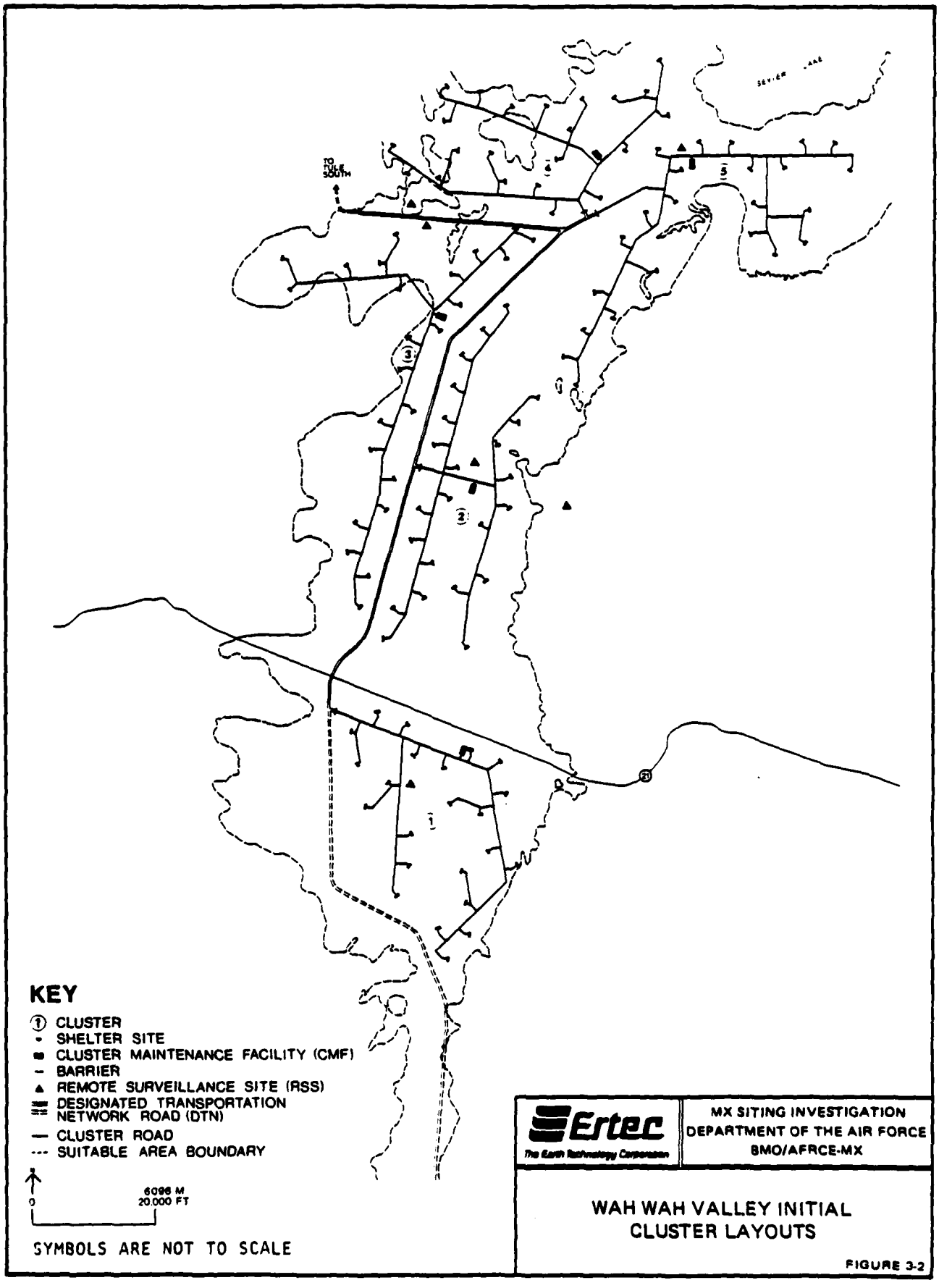
PINE VALLEY INITIAL
CLUSTER LAYOUTS
FIGURE 3-1


SEVIER LAKE
TO FILLMORE
4
5
3
2
1
21
KEY
1 CLUSTER
SHELTER SITE
CLUSTER MAINTENANCE FACILITY (CMF)
BARRIER
REMOTE SURVEILLANCE SITE (RSS)
DESIGNATED TRANSPORTATION NETWORK ROAD (DTN)
CLUSTER ROAD
SUITABLE AREA BOUNDARY
0
6096 M
20,000 FT
SYMBOLS ARE NOT TO SCALE
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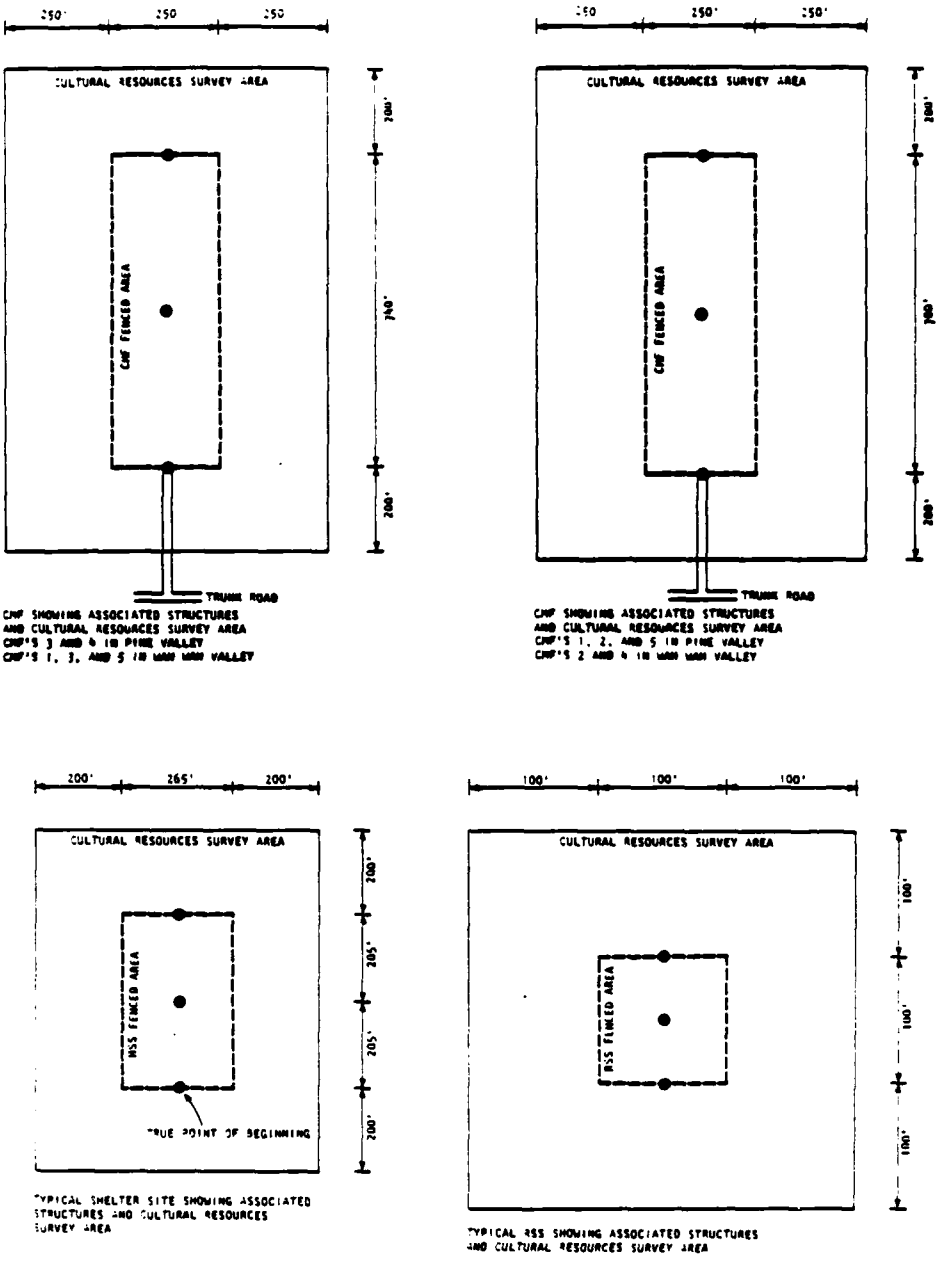
WAH WAH VALLEY INITIAL CLUSTER LAYOUTS
FIGURE 3-2



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MX FACILITY LAYOUTS AND CULTURAL RESOURCES SURVEY AREAS

FIGURE 3-3

The survey sample units are plotted on maps drafted by Ertec Western at the 1:62,500 and 1:9600 scale. These were used as field maps for the location of survey units and for initial plotting of cultural resource data. The survey units, and archeological site locations were also transferred to U.S.G.S. 7.5-minute or 15-minute topographic maps in the field.

Survey units were identified on the ground by 3-inch (8-cm) diameter aluminum monuments with adjacent temporary survey stakes. To minimize adverse impacts to the local environment, environmental survey crews used existing roads as much as possible and followed existing surveyor's tire tracks off-road, except on occasions when no existing off-road tire tracks could be located.

Survey teams consisted of two field archeologists usually accompanied by two biologists. Each survey unit was systematically examined for cultural resources by walking straight-line transects at 82-foot (25-m) intervals. An 82-foot (25-m) interval was used because it is the same as that employed for the regional sampling survey.

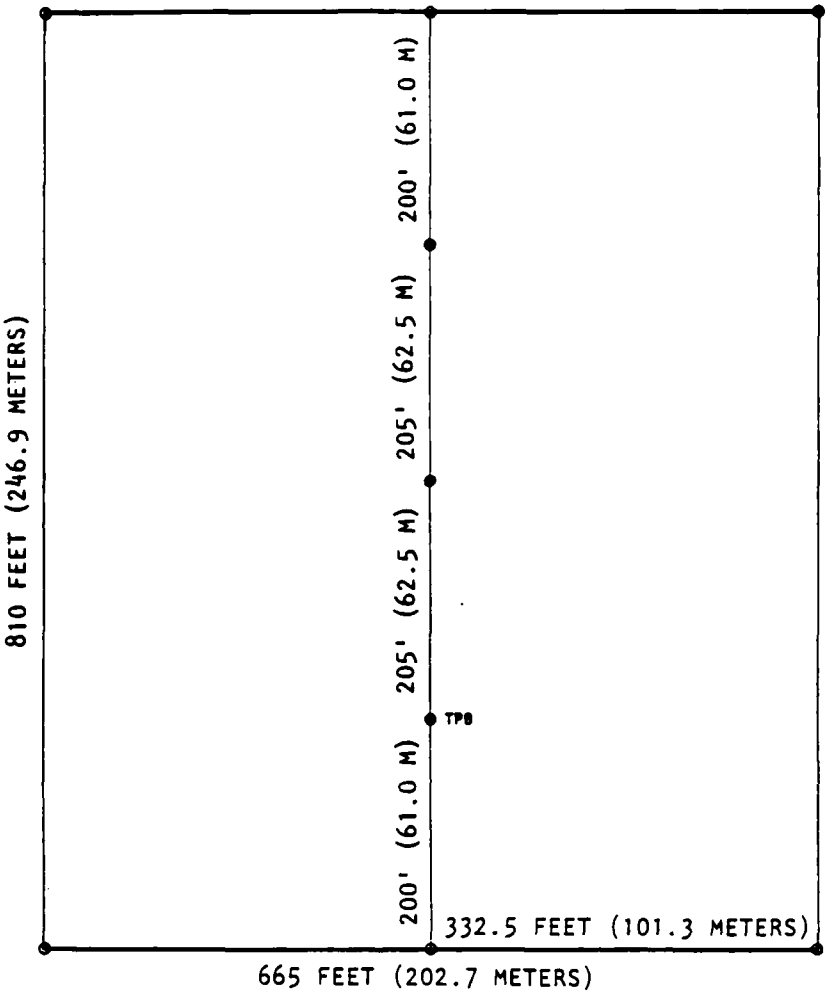
The centerline of the environmental survey area was identified by cadastral survey. Because only the center line was marked by the surveyors, the perimeters of the survey areas were identified by the archeologists or biologists prior to conducting the survey. This procedure consisted of measuring out the

appropriate distance from the cadastral survey monuments to the archeological survey perimeter and then establishing the corners with the use of a right angle prism. Measurements were made with metric calibrated hip chains. Since the dimensions of various HSS, CMF, and RSS units vary, the procedures used to establish and transect sample survey areas are discussed separately below.

3.1.2.1 Horizontal Shelter Sites

Horizontal shelter sites were identified on the ground by three capped rebar survey monuments and adjacent temporary survey stakes. The three monuments are located 205 feet (62.5 m) apart along the centerline of the long axis of each shelter site. The monument designating "the true point of beginning" (TPB), that is, the intersection of the shelter center line with the fence line (i.e., rectangular fence configuration) at the front of the shelter, is stamped with an arrow pointing into the shelter.

The survey area for each shelter site is 665 feet (203 m) by 810 feet (247 m) encompassing 12.36 acres (5 ha). The corners of the survey area were flagged as follows. First, a flag was placed along the centerline of the unit, 200 feet (61 m) from the end or TPB survey monument. Then a flag was placed at both corners 332.5 feet (101 m) out from and at right angles to the centerline. The procedure was then repeated for the other end of the survey unit. The layout of the survey unit area is illustrated in Figure 3-4.



MEASUREMENTS FOR SURVEYING SHELTER SITES

● EXISTING SURVEY STAKE
○ SURVEY PERIMETER REFERENCE FLAG
TPB TRUE POINT OF BEGINNING MONUMENT

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AREA SURVEYED AT SHELTER SITES

FIGURE 3-4

After the perimeters of the survey area were delineated with flagged corners, the area was systematically examined for cultural material by the two-person field crew walking at 82-foot (25-m) intervals along the long axis of the unit. Specific transect placement within shelter survey units was determined in advance so that relevant cultural and environmental data could be recorded on specially designed shelter sample unit map forms gridded at 82-foot (25-m) intervals along transect lines. The transects were therefore walked down the long axis of the survey unit at 41, 123, 205, and 287 feet (12.5, 37.5, 62.5, and 87.5 m) out from and on both sides of the centerline flag.

3.1.2.2 Remote Surveillance Sites

Remote Surveillance Sites were identified on the ground by three capped rebar monuments and adjacent temporary survey stakes located 50 feet (15 m) apart. The survey area for each of the RSS sample units is 300 feet (91 m) by 300 feet (91 m) encompassing 2.06 acres (1 ha).

Two different staking patterns were employed for the RSS units. In one pattern, the stakes were placed along the centerline. The corners were flagged by first placing a flag on the centerline 100 feet (31 m) out from each of the two end monuments. Corner flags were then placed at 150 feet (46 m) out from and at right angles to the centerline. The other staking pattern, less commonly used, placed the three stakes along one end of the fenced/construction area. A flag was first placed

along the outer limit of the environmental area, 100 feet (31 m) from an end monument. Corner flags were placed at right angles to this flag, at distances of 100 feet (31 m) and 200 feet (61 m). This layout appears in Figure 3-5.

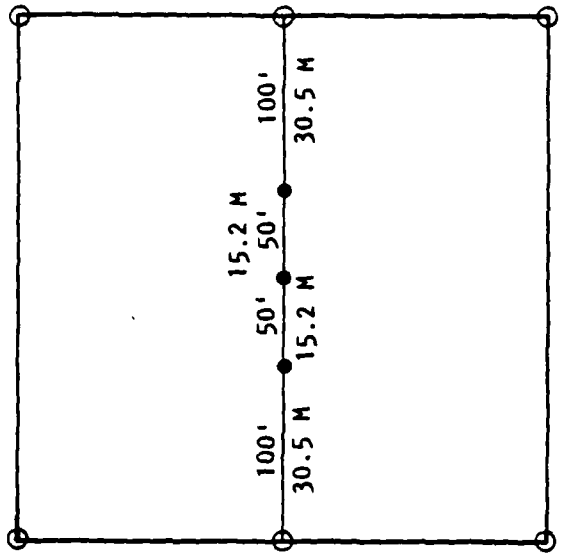
Each RSS was archeologically surveyed with four transects located 82 feet (25 m) apart with the first placed along one side and the fourth located slightly outside the survey unit area.

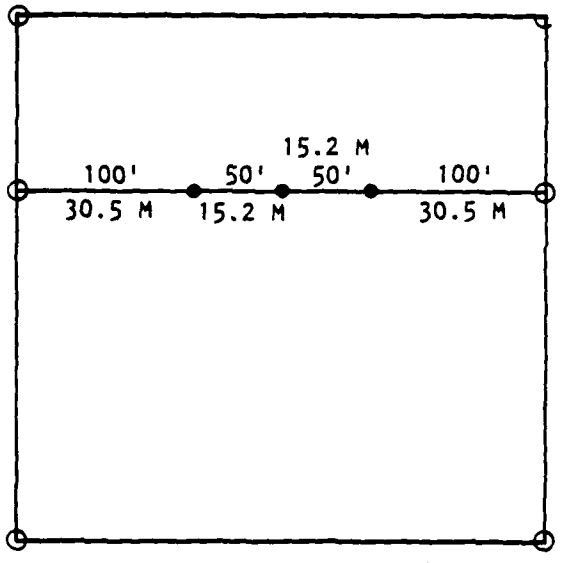
3.1.2.3 Cluster Maintenance Facility Sites

Two different sized areas were surveyed for cluster maintenance facilities. The survey area for CMFs 3 and 4 in Pine Valley and CMFs 1, 3, and 5 in Wah Wah Valley was 750 feet (229 m) by 1140 feet (348 m) encompassing 19.62 acres (8 ha). The survey area for CMFs 1, 2, and 5 in Pine Valley and CMFs 2 and 4 in Wah Wah Valley was 750 feet (229 m) by 1100 feet (335 m) encompassing 18.94 acres (8 ha). Monuments for these two sizes of CMFs were located 370 feet (113 m) and 350 feet (107 m) apart, respectively.

CMFs were located on the ground by three capped survey monuments and adjacent temporary survey stakes placed along the long axis of the centerline of the CMF.

The corners of the CMF survey areas were flagged in the following way. First, a flag was placed in line with the survey





MEASUREMENTS FOR SURVEYING
REMOTE SURVEILLANCE SITES

● EXISTING SURVEY STAKE
○ SURVEY PERIMETER REFERENCE FLAG

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AREA SURVEYED AT REMOTE
SURVEILLANCE SITES

FIGURE 3-8

monuments 200 feet (61 m) out from TPB monument. Then, facing into the unit, corner flags were placed out 375 feet (114 m), at right angles to the monument line. The procedure was then repeated for the other end of the CMF. The layout of the CMF's is illustrated in Figure 3-6.

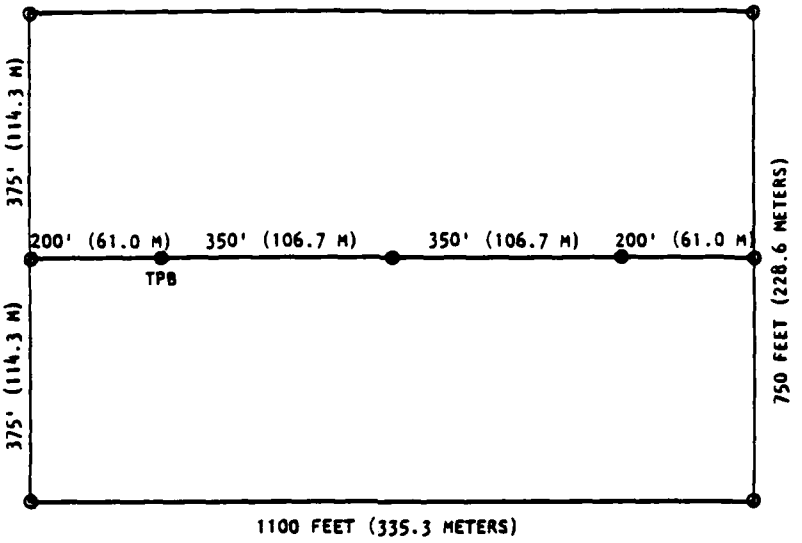
Each CMF was surveyed for cultural resources by walking ten transects at 82 feet (25 m) intervals along the long axis of the unit.

3.1.3 Data Recording

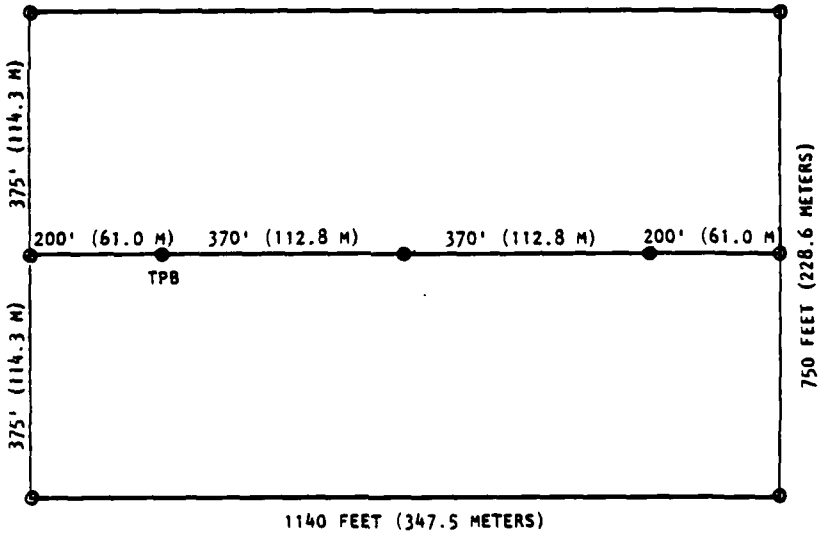
Locational and environmental data were systematically recorded for each sample unit area (HSS, CMF, and RSS) on "Sample Unit Record" forms. These forms were designed during the MX regional survey for the entire MX project so that directly comparable information could be collected for the overall archeological research project. Archeological sites were recorded on "The Utah Antiquities Site Form." These forms were only slightly modified to accommodate the specific requirements of the IOC survey. Field crews received both prefield and field training in proper recording procedures. Each crew member received a copy of the revised Field Manual, giving detailed recording instructions. Recording procedures are further described below.

3.1.3.1 Sample Unit Record Forms

The "Sample Unit Record" forms were only slightly modified from those used during the MX regional survey to accommodate the



MEASUREMENTS FOR SURVEYING CLUSTER MAINTENANCE FACILITIES
2 AND 4 IN WAH WAH VALLEY AND 1, 2, AND 5 IN PINE VALLEY



MEASUREMENTS FOR SURVEYING CLUSTER MAINTENANCE FACILITIES
1, 3, AND 5 IN WAH WAH VALLEY AND 3 and 4 IN PINE VALLEY

● EXISTING SURVEY SITE
○ SURVEY PERIMETER REFERENCE FLAG
TPB TRUE POINT OF BEGINNING MONUMENT

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AREA SURVEYED AT
CLUSTER MAINTENANCE FACILITIES

FIGURE 3-6

different sizes of sampling units and potential mitigation requirements. The "Vegetation" and "Landform Maps" were redrawn to represent the dimensions of the sample units, which were much smaller than those of the regional sampling survey.

Vegetation associations for each sample unit area were selected from the choices provided on the unit form under the "Sites and Vegetation Map" so that sample units might be made directly comparable to the regional survey data. The actual vegetation pattern is more diverse than the list on the form provides for. Therefore, vegetation was further described by listing each species in order of conspicuousness. A full discussion of the vegetation of Pine and Wah Wah valleys is provided in Volume II, Part II of this report.

Landforms for each sample unit area were also selected from the choices provided on the unit form under the "Landform Map" to make data comparable to the regional survey data.

A detailed map was added to the sample unit form to facilitate recording of cultural materials along survey transects and in relation to the cadastral survey monuments. The compass bearing of the centerline of each unit was recorded on each detailed map and later compared to the computer printout as a check on unit locations and as a means of checking the orientation of the survey areas on the ground. A contour map based on the 1:9600 field maps was then overlaid on the form. Washes, outcrops, roads, fences, section markers, and other

prominent features were also indicated. Consequently, cultural materials were easily and accurately plotted on the maps representing the survey areas. Vegetation and wildlife data recorded by the field biologists on similar forms were directly comparable.

A black-and-white verification photograph was taken from the southwest corner of each survey area. The biological field crew took a color photo of each unit from the same location.

3.1.3.2 Archeological Recording Procedures

All cultural materials older than 50 years, including isolated artifacts, were recorded on the standard "Utah State Antiquities Site Form." Black-and-white photographs were taken of all archeological sites, temporally diagnostic artifacts, and isolated artifacts. In addition, drawings were made of all isolated artifacts, projectile points, and certain other artifacts such as groundstone and bifaces. A sketch map was drawn for each site to represent it within the survey unit area. Each site was plotted on U.S.G.S. 7.5-minute or 15-minute maps, a copy of which was then appended to each site form. Supplementary information on prehistoric lithic assemblages was incorporated into the artifact description on the Utah Antiquities Site Form. This included a biface and flake typology developed by Richard Hanes, Nevada State BLM archeologist, and a description of lithic material type. A copy of Hanes' typology is included in Section 3.2.2.3 of this report.

3.1.3.3 The MX Numbering System

Temporary archeological field numbers were assigned to archeological sites according to the system developed by HDR for the MX project. These were slightly modified to accommodate the IOC project. There are two basic parts to the standard MX site designation. The first is the designation for the sample unit in which the site was found. There are three fields to each sample unit designation, separated by dashes. All sample unit designations begin with the prefix "MX", followed by a U.S.G.S. number for the specific watershed in which the sample unit is found. The watershed number, in turn, is followed by a second dash and a final set of numbers. This last series of numbers are those assigned to the horizontal shelter sites, cluster maintenance facilities, or remote surveillance sites. For example, MX-5c-2/23 refers to shelter number 23 in Cluster 2 (2/23) in Pine Valley (5c). Cluster maintenance facilities are also indexed by letter abbreviation (CMF) and cluster number (2), i.e., MX-5c-CMF/2. Remote surveillance sites are referenced by letter abbreviation and sequential number designated on the field maps, i.e., MX-5c-RSS/4.

The second part of the site designation is a letter, H, HI, P, PI, or M (depending on whether the site is a historic site, a historic isolate, a prehistoric site, a prehistoric isolate, or contains elements of both), coupled with a sequential integer. For example, a prehistoric site recorded in shelter 23 of Cluster 2 would receive the designation MX-5c-2/23-P1; a

prehistoric isolate in the same shelter would be designated MX-5c-2/23-PI1.

Sites located entirely outside the sample unit boundaries were referenced to the nearest sample unit and received the designation "(off)" immediately following the sample unit number, for example, MX-5c-2/23(off)-P1.

3.1.4 Determination of Significance and Criteria for Avoidance

All sites recorded during the IOC field survey of Pine and Wah Wah valleys were evaluated according to the Site Significance Criteria list provided by the Bureau of Land Management (see Appendix E) to determine which sites would require avoidance mitigation. Determination of significance should not be confused with National Register potential. The criteria list merely reflects a guiding agreement between the Air Force and the BLM regarding the protection of cultural resources from potential direct MX construction impacts. These criteria provided the means by which determinations of significance could be made in the course of the survey so that proposed construction areas could be moved to archeologically less sensitive areas. This procedure is experimental and its feasibility as an overall mitigation measure is still under consideration. The list of criteria for avoidance mitigation is provided in Table 3-1.

The preliminary research design developed for MX research in the Great Basin (Woodward-Clyde Consultants, 1980) stresses

Prehistoric

1. Sites exhibiting a high likelihood of depth (e.g., dune sites, sites located on alluvial fans exhibiting high densities of chipped stone artifacts or hearth features).
2. Isolated features which demonstrate a possibility of depth (e.g., caches partially exposed by deflation).
3. Rockshelters immediately exposed to project location.
4. Rock art sites.
5. Large lithic scatters containing temporally diagnostic artifacts or artifacts indicative of specific cultural affiliations, multicomponent sites, or sites composed of discrete multiple activity areas.
6. Burial sites.
7. Rock alignments and cairns.

Historic

1. Structures greater than 50 years of age (e.g., ranches, ore mills).
2. Multicomponent or multiple activity sites (e.g., mining camps or towns).
3. Mining developments (e.g., shafts, adits).
4. Cemeteries.
5. Road or trail traces of early transportation routes.

In addition to the above prehistoric and historic site type listings, unusual or enigmatic anomalies should also be included.

Source: Richard Hanes, Nevada BLM State Archeologist

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ARCHEOLOGICAL SITE SIGNIFICANCE CRITERIA LIST

TABLE 3-1

the importance of viewing significance in a regional framework. Archeological sites are evaluated in terms of how they serve to describe and explain the prehistoric human activity within a particular region. While not involving any specific criteria, this evaluation of significance is also important in determining the impact to cultural resources by proposed MX construction.

3.1.5 Collection Policy

During the course of the IOC survey in Pine and Wah Wah valleys, only isolated diagnostic artifacts were collected. However, all isolates were recorded, whether or not they were diagnostic. This was according to BLM established guidelines for Utah. A list of collected artifacts is provided in Table 3-2. The artifacts are illustrated in Figure 3-7.

Curation

Collected artifacts will be curated by the Department of Anthropology, Southern Utah State College, Cedar City, under the direction of Dr. Richard Thompson.

3.2 RESULTS

3.2.1 Inventoried Areas

3.2.1.1 Pine Valley

A total of 1718.20 acres (695 ha) were inventoried in Pine Valley. This includes the original shelter sites, resited shelter sites, cluster maintenance facility sites, and remote surveillance sites. The breakdown of total areas, by BLM

Pine Valley:	
MX-5c-2/16-HI1	broken bottle
MX-5c-3/17-HI1	purple whiskey bottle
MX-5c-3/6-HI1	hole-in-the-top can
MX-5c-3/22-PI1	obsidian Rose Spring point (a)
MX-5c-CMF/5-PI1	stemmed projectile point base (b)
MX-5c-3/10A-PI1	obsidian Rose Spring point (c)
MX-5c-2/15A-PI1	large side-notched point/biface (d)
Wah Wah Valley:	
MX-54-2/20-PI1	projectile point base (e)
MX-54-4/1-HI1	unidentified rectangular can
MX-54-5/8A-PI1	Elko Corner-Notched point (f)

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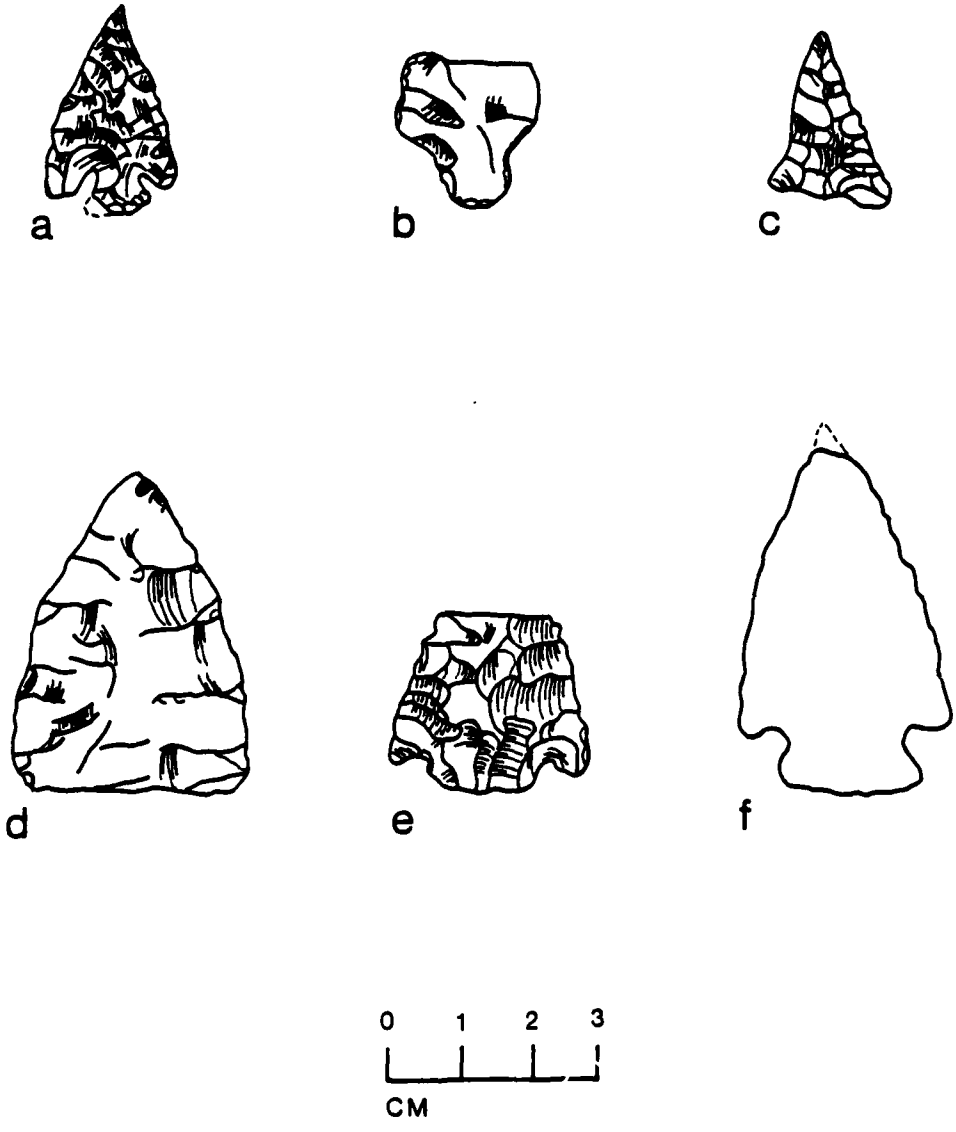
PINE AND WAH WAH VALLEYS
COLLECTED ARTIFACTS

TABLE 3-2



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COLLECTED PROJECTILE POINTS

FIGURE 3-7

district and by state land is illustrated in Table 3-3.

A total of 115 shelter sites, four remote surveillance sites, and five cluster maintenance facilties were originally surveyed. Twenty-five shelter sites were resited for geotechnical or engineering reasons, or to avoid sensitive archeological or biological resources. Of these, ten units were moved only a few hundred feet from the original unit. As a result, the survey areas frequently overlapped, and only small areas required additional survey. The resited units and additional survey acreage for Pine Valley are listed in Table 3-4.

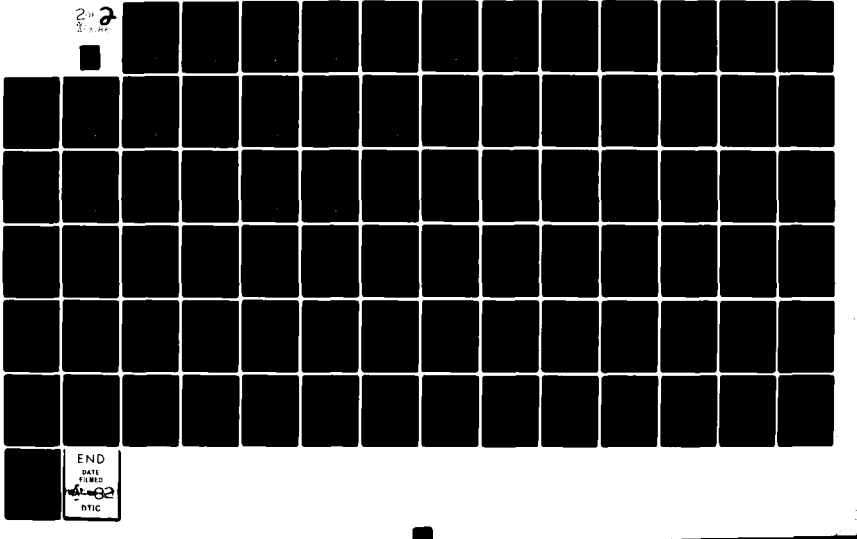
Twenty-eight archeological sites were recorded on sample units in Pine Valley. Of the total of 150 sample unit areas (including resited units), 23 units contained one or more cultural resources. The locations of archeological sites in relation to sample unit areas are shown in Figure 3-8.

3.2.1.2 Wah Wah Valley

A total of 1677.82 acres (679 ha) were inventoried in Wah Wah Valley. Included are the original shelter sites, cluster maintenance facilities, remote surveillance sites, and resited shelter sites. The breakdown of total areas, by BLM district and by state land is listed in Table 3-5.

The original survey included 115 shelter sites, four remote surveillance sites, and five cluster maintenance facilities. Twenty-two shelter sites were resurveyed for geotechnical or engineering reasons, or to avoid sensitive archeological or

AD-A113 186 ERTEC WESTERN INC LONG BEACH CA F/G 5/6
FIELD SURVEYS, IOC VALLEYS. VOLUME III, PART II. CULTURAL RESOU--ETC(U)
AUG 81 F04704-80-C-0006
UNCLASSIFIED E-TR-48-VOL-3-PT-2 NL



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a. BLM DISTRICT LANDS

Survey Units	Cedar City District Acres	Hectares	Richfield District Acres	Hectares	Total Acres	Hectares
HSS(111), RSS(4), CMF(5)	1283.58	519.34	194.72	78.78	1478.30	598.12
Resited Units	159.49	64.53	18.61	7.53	178.10	72.06
TOTAL	1443.07	583.87	213.33	86.31	1656.40	670.18

b. UTAH STATE LANDS

Survey Units	Acres	Hectares
HSS(4)	49.44	20.00
Resited Units	12.36	5.00
TOTAL	61.80	25.00

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SURVEY AREAS – PINE VALLEY

TABLE 3-3

Sample Unit Number	Survey Area (Acres)
MX-5C-1/1A	4.92
MX-5C-1/14A	3.12
MX-5C-1/21A	3.12
MX-5C-1/22A	6.77
MX-5C-2/13A	6.77
MX-5C-2/14A	3.12
MX-5C-2/15A	12.36
MX-5C-2/18A	3.12
MX-5C-3/6A	12.36
MX-5C-3/7A	7.62
MX-5C-3/8A	4.92
MX-5C-3/9A	3.12
MX-5C-3/10A	12.36
MX-5C-3/13A	12.36
MX-5C-3/16A	6.25
MX-5C-4/5A	3.12
MX-5C-4/6A	12.36
MX-5C-4/7A	12.36
MX-5C-4/9A	3.12
MX-5C-4/10A	12.36
MX-5C-4/11A	4.57
MX-5C-5/1A	12.36
MX-5C-5/2A	3.12
MX-5C-5/3A	12.36
MX-5C-5/8A	12.36

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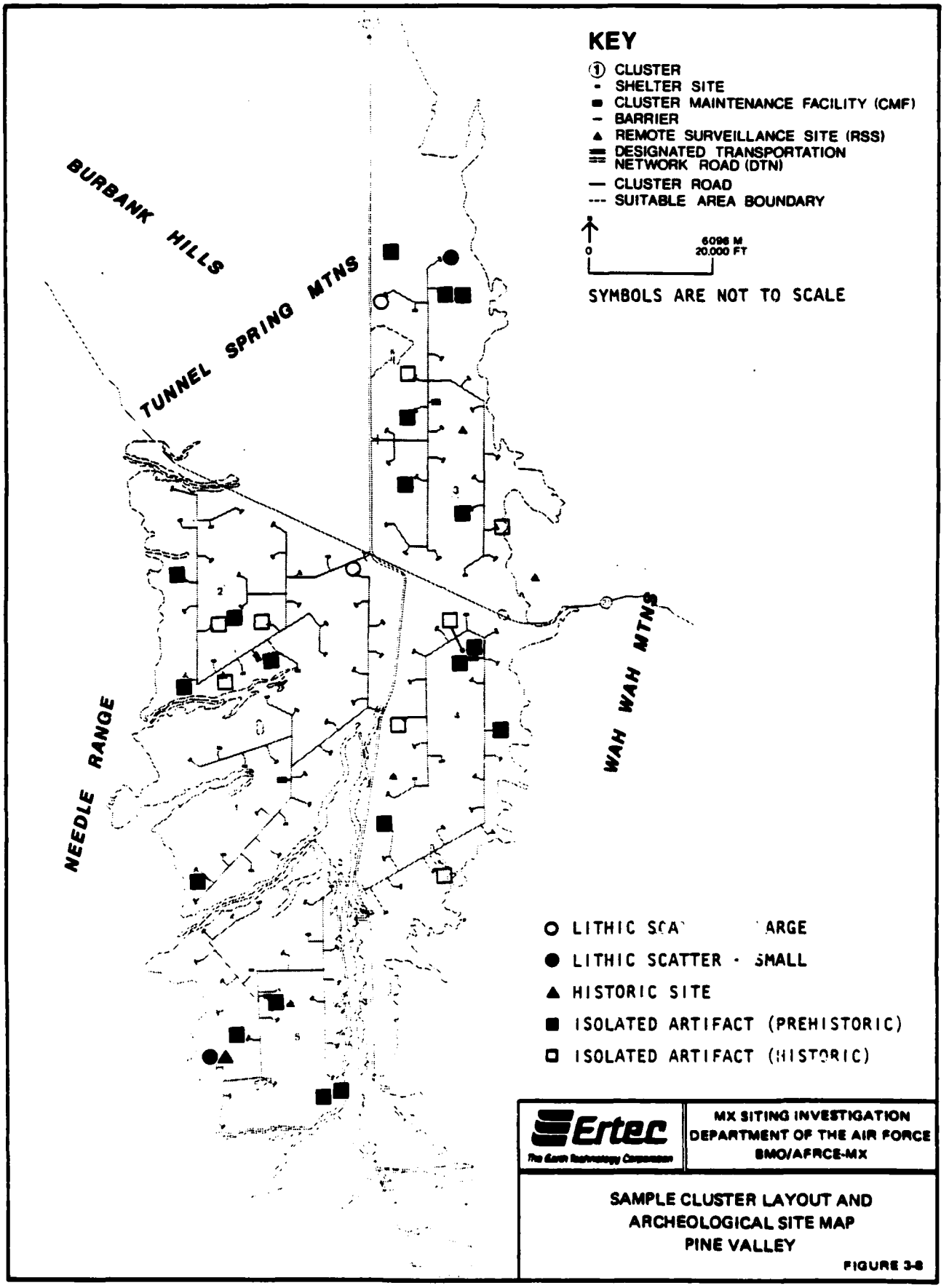
RESURVEYED AREAS – PINE VALLEY

TABLE 3-4


KEY
① CLUSTER
SHELTER SITE
CLUSTER MAINTENANCE FACILITY (CMF)
BARRIER
REMOTE SURVEILLANCE SITE (RSS)
DESIGNATED TRANSPORTATION NETWORK ROAD (DTN)
CLUSTER ROAD
SUITABLE AREA BOUNDARY
0
6096 M
20,000 FT
SYMBOLS ARE NOT TO SCALE
BURBANK HILLS
TUNNEL SPRING MTNS
NEEDLE RANGE
WAH WAH MTNS
LITHIC SCATTER - LARGE
LITHIC SCATTER - SMALL
HISTORIC SITE
ISOLATED ARTIFACT (PREHISTORIC)
ISOLATED ARTIFACT (HISTORIC)
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SAMPLE CLUSTER LAYOUT AND
ARCHEOLOGICAL SITE MAP
PINE VALLEY
FIGURE 3-8

a. BLM DISTRICT LAND

Survey Units	Cedar City District Acres	Hectares	Richfield District Acres	Hectares	Total Acres	Hectares
HSS(107), RSS(4), CMF(5)	510.98	206.74	917.88	371.37	1428.86	578.11
Resurveyed Units	21.73	8.79	125.30	50.69	147.03	59.48
TOTAL	532.71	215.53	1043.18	422.06	1575.89	637.59

b. UTAH STATE LANDS

Survey Units	Acres	Hectares
HSS(8)	98.88	40.00
Resurveyed Units	3.05	1.23
TOTAL	101.93	41.23

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SURVEY AREAS – WAH WAH VALLEY

TABLE 3-5

biological resources. Of this total, seven units were resited to new locations. The remaining fifteen units were moved a few hundred feet, so that survey areas frequently overlapped, and only small areas required additional survey. Resurveyed units and additional survey acreage for Wah Wah Valley are listed in Table 3-6.

A total of 55 archeological sites were recorded in Wah Wah Valley on sample units. Of the total of 146 sample units (including resited units), 42 units contained one or more cultural resources. Archeological sites in relation to sample unit areas are displayed in Figure 3-9.

3.2.2 Recorded Sites

3.2.2.1 Factors Conditioning Site Preservation and Discovery

Site preservation in Pine and Wah Wah valleys is variable. Both valleys have been grazed by cattle and sheep, in some areas, intensively. One section in Pine Valley (T28S, R17W, Section 32) has been plowed and planted in crested wheat grass (Agropyron desertorum). Erosion by washing affects site preservation, and large ephemeral washes are found in parts of both valleys. Off-road vehicle tracks and trails are also found throughout both valleys.

Survey conditions were generally average to good in both valleys, although some units were surveyed under poor conditions. The vegetation was typically sparse, permitting good ground visibility, however, grass did tend to obscure the ground in

Sample Unit Number	Survey Area (Acres)
MX-54-1/21A	6.25
MX-54-2/16A	6.18
MX-54-2/19A	3.12
MX-54-2/21A	12.36
MX-54-3/14A	6.18
MX-54-3/15A	12.36
MX-54-3/16A	12.36
MX-54-3/17A	12.36
MX-54-3/22A	9.27
MX-54-4/14A	12.36
MX-54-4/17A	3.81
MX-54-5/5A	4.04
MX-54-5/7A	6.10
MX-54-5/8A	3.05
MX-54-5/13A	3.12
MX-54-5/14A	3.12
MX-54-5/18A	12.36
MX-54-5/19A	4.64
MX-54-5/20A	12.36
MX-54-5/22A	2.78
MX-54-5/23A	1.90

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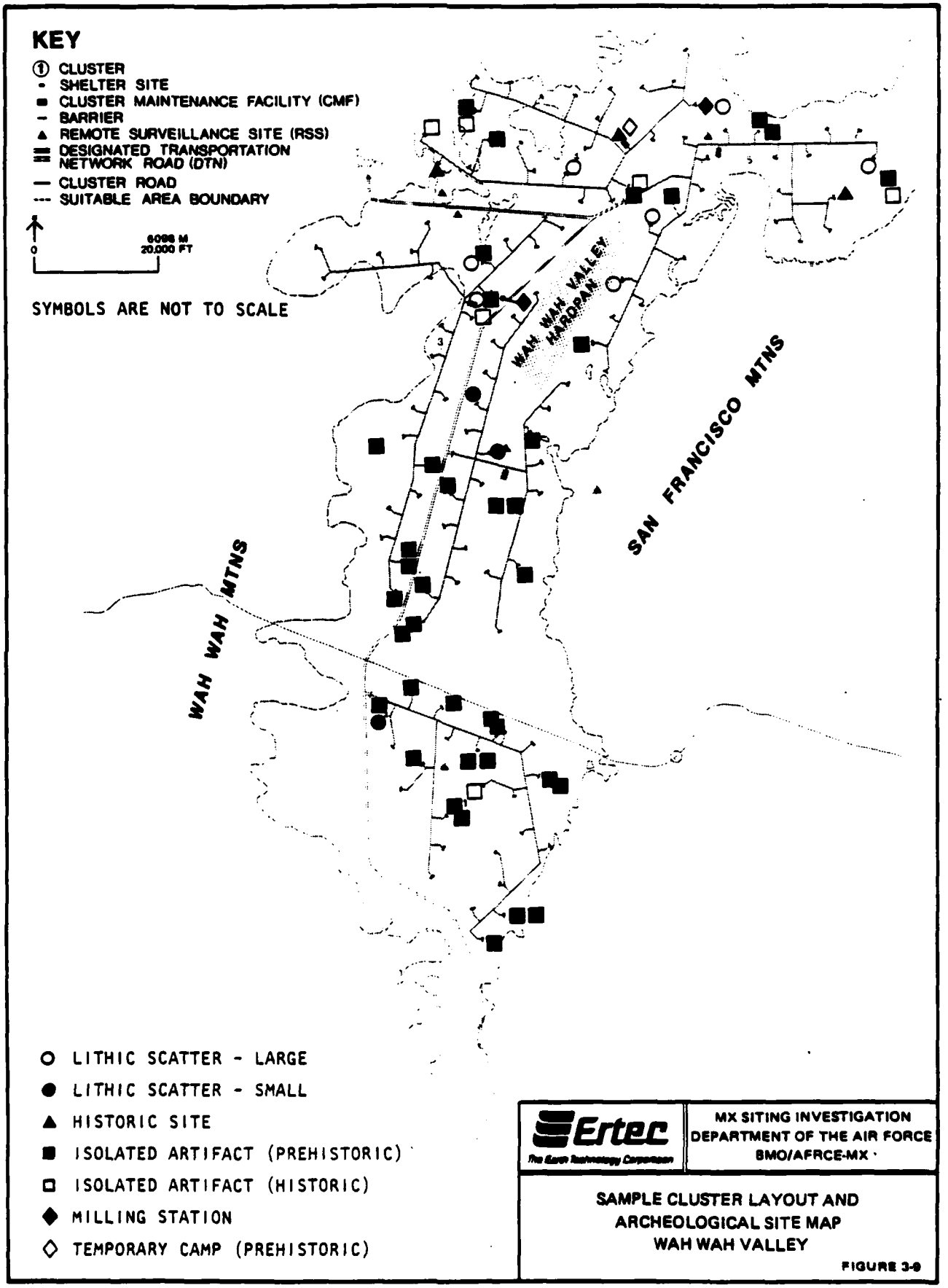
RESURVEYED AREAS –
WAH WAH VALLEY

TABLE 3-6


KEY
① CLUSTER
SHELTER SITE
CLUSTER MAINTENANCE FACILITY (CMF)
BARRIER
REMOTE SURVEILLANCE SITE (RSS)
DESIGNATED TRANSPORTATION NETWORK ROAD (DTN)
CLUSTER ROAD
SUITABLE AREA BOUNDARY
0
6096 M
20,000 FT
SYMBOLS ARE NOT TO SCALE
WAH WAH VALLEY
HARDPAN
SAN FRANCISCO MTNS
WAH WAH MTNS
LITHIC SCATTER - LARGE
LITHIC SCATTER - SMALL
HISTORIC SITE
ISOLATED ARTIFACT (PREHISTORIC)
ISOLATED ARTIFACT (HISTORIC)
MILLING STATION
TEMPORARY CAMP (PREHISTORIC)
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SAMPLE CLUSTER LAYOUT AND
ARCHEOLOGICAL SITE MAP
WAH WAH VALLEY
FIGURE 3-9

less than 20 percent of the areas surveyed. The major factor causing poor survey conditions in both valleys was the weather. Snow partially covered the ground during survey in the southern part of Pine Valley, although survey was not attempted unless coverage was less than 30 percent. Foggy and overcast conditions, cold temperatures, and biting winds undoubtedly affected visibility, as well as surveyor performance, on some days.

Given that the survey interval used for the survey was 82 feet (25 m) it is probable that not all isolated artifacts were seen and recorded. However, all prehistoric or historic sites occurring in the study area were probably discovered.

3.2.2.2 Site Typology

For the purposes of the IOC survey sites are defined by the presence of one or more prehistoric artifacts. The typology used to describe the prehistoric sites discovered during the IOC cultural resources survey includes isolated artifacts, lithic scatters, milling stations, and temporary camps. This typology is based on one used during the MX regional sampling survey but was modified somewhat following discussions with Dr. Richard Hanes, BLM Nevada State Archeologist.

An isolated artifact is a single artifact that is located at least 30.5 feet (100 m) from another artifact or feature. Isolated artifacts are not considered archeological sites in Utah, and therefore, were not assigned permanent site numbers according to the Utah State Bureau of Land Management policy. However, Utah Antiquities Site Forms were completed for all such discoveries.

Lithic scatters are defined by the presence of two or more tools, flakes, or other reduction byproducts within 305 feet (100 m) of each other. In addition to this, several subtypes of lithic scatters are described. Quarries consist primarily of unmodified reduction waste products, including shatter and flakes. Chipping circles consist of the byproducts from the reduction of a single specimen. Where these subtypes could not be identified, lithic scatters were designated small, those 537.9 square feet (50 m^2) or less, and large, those greater than 537.9 square feet (50 m^2).

Milling stations consist of artifacts or features indicative of milling activities such as groundstone manos and metates. Temporary camps are defined by the presence of some combination of flaked stone artifacts, groundstone, fire cracked rocks, or ceramics which indicate limited subsistence and maintenance activities.

The MX regional research design (Woodward-Clyde Consultants, 1980) views archeological sites as parts of a regional subsistence system. Principal site types described include: residential bases, field camps, and locations. A "residential base" is a habitation site from which other activities, such as resource procurement, were based. Evidence of resource processing and maintenance tasks are used to identify residential bases. From a residential base, task groups might go out to gather specific resources and make a temporary "field camp" while away from the residential base. Evidence of limited camping and the processing of a single resource are used to identify field camps. The

place where a resource is procured is a "location." Evidence of minimal processing is used to identify a location, although many have few or no archeological remains. These site types are integrated into a regional framework that describes the subsistence-settlement of a given area.

3.2.2.3 Pine Valley

A total of 32 discrete sites were recorded in Pine Valley, 23 prehistoric, 8 historic, and 1 multicomponent. All sites are described according to type and subtype.

a. Historic Sites: The historic sites in Pine Valley include seven isolated artifacts and one section marker. Site 42Be27 (MX-5c-5/14(off)-M1) contains a historic campsite/trash dump with a prehistoric site. These sites are summarized in Table 3-7.

The one historic campsite recorded in Pine Valley is a scatter consisting of two glass containers, about ten cans, and a small metal pillbox. The glass containers include one purple food jar and a clear glass medicine bottle which would have had a cork stopper. The cans are all hole-in-the-top, dated 1810 to early 1900s.

The historic isolates in Pine Valley include two glass bottles, four cans, one nail, and one benchmark. One of the bottles is a purple whiskey bottle with embossed lettering, "J. RIEGER & CO., DISTRIBUTORS, KANSAS CITY, MO., 32 ozs. FULL QUART." The bottle is dated 1895-1915 The other bottle is a fragmented machine

Permanent No. Temporary No.	Description	Date
MX-5c-RSS/1-HI1	bench mark - U.S.G.L.O.	1913
MX-5c-2/8-HI1	hole-in-the-top can	1810-early 1900s
MX-5c-2/16-HI1	broken green bottle	1900-1915
MX-5c-3/6-HI1	hole-in-the-top can	1810-early 1900s
MX-5c-3/17-HI1	purple whiskey bottle	1870-1920
MX-5c-4/5-HI1	hole-in-the-top can	1810-early 1900s
MX-5c-4/19-HI1	hole-in-the-top can	1810-early 1900s
MX-5c-CMF/4-HI1	cut nail in a timber	1820-1890
42Be27 MX-5c-5/14(off)-HI1	campsite/trash dump	1880-1920

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HISTORIC SITES – PINE VALLEY

TABLE 3-7

made green quart beer bottle, dated 1915-1920 (Fike, 1981). The cans are all hole-in-the-top. The nail is a square, cut nail, which is dated 1820-1890. The benchmark placed by the U.S. General Land Office Survey has a stamped date of 1913.

b. Prehistoric Sites

Isolated Artifacts

A total of 20 isolated prehistoric artifacts were recorded in Pine Valley. The distribution of these artifacts in Pine Valley is illustrated in Figure 3-8. The isolated artifacts are summarized by type below.

Type	Number
Projectile Points	4
Bifaces/Cores	4
Flakes	12
Total	20

Isolated Projectile Points

Of the four isolated projectile points discovered in Pine Valley, two were obsidian Rose Spring corner-notched points (MX-5c-3/22-PI1, MX-5c-3/10A-PI1). The other two projectile points were more difficult to describe by type. Site MX-5c-CMF/5-PI1 is the basal portion of a white chert, stemmed point. This point is most like a Gypsum type, although it is also similar to stemmed points from western Utah, which Rudy (1953) defines as pre-ceramic and Pueblo types. Isolate MX-5c-2/15A-PI1 is the distal fragment of a large, side-notched point or hafted

biface of dark orange-brown chert. The point may be Elko Series or one of the large, side-notched types defined at Sudden Shelter (Holmer, 1980). The points are illustrated in Figure 3-7.

Bifaces, Cores, and Flakes

In Pine Valley, the majority of isolated artifacts (80 percent) are lithic reduction products, including bifaces, and flakes, some of which are characterized by retouch or utilization. These artifacts are listed in Table 3-8.

In describing the lithic material, chert refers to any cryptocrystalline silicate material, such as jasper, agate, or chalcedony (Elston, 1971). Richard Hanes, BLM Nevada State Archeologist, developed an artifact typology to systemize lithic descriptions for the IOC survey. Bifaces, cores, and flakes are divided into the types described in Table 3-9.

In Pine Valley, 4 (25 percent) of the isolated lithics are bifaces, representing almost all stages in tool reduction. The remaining 12 artifacts (75 percent) are flakes, including 9 interior flakes (type IID) and 3 broken flakes (type IIB). Retouch or utilization is present on 8 (66 percent) of the flakes.

The material types present in Pine Valley for isolated artifacts are: 65 percent chert, 20 percent obsidian, and 15 percent quartzite.

Lithic Scatters

A total of 3 lithic scatters were recorded in Pine Valley. In addition, one site which includes historic materials with a

Temporary No.	Material Type	Material Color	Artifact Type	Retouch and/or Utilization
MX-5c-1/22(off)-PI1	quartzite	red	IID	+
MX-5c-2/11-PI1	chert	gold	IB (?)	-
MX-5c-2/16-PI1	quartzite	red	IA	-
MX-5c-2/18-PI1	obsidian	black	IID	+
MX-5c-3/7-PI1	chert	red/gold	IID	+
MX-5c-3/8(R)-PI1	chert	orange	IIB	-
MX-5c-3/15-PI1	quartzite	white	IID (scraper)	+
MX-5c-3/22-PI1	chert	red	IE	-
MX-5c-4/4-PI1	chert	red brown	ID	-
MX-5c-4/11(R)-PI1	chert	gold	IID	+
MX-5c-CMF/4-PI1	chert	gold	IID	-
MX-5c-CMF/4-PI1	chert	gold	IID	+
MX-5c-5/8(R)-PI1	obsidian	black	IIB	+
MX-5c-5/8(R)off-PI1	chert	white	IID	-
MX-5c-5/12(off)-PI1	chert	white	IID	-
MX-5c-5/21-PI1	chert	brown	IIB	+

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ISOLATED LITHICS – PINE VALLEY

TABLE 3-8

I. Cores and Bifaces

Type A. Angular thick specimens with large, frequently irregular, flake removals that produce uneven shapes, sections and edges; shape categories are difficult to define due to unevenness of morphological parameters.

Type B. Roughly shaped by percussion thinning; edges and outlines are irregular, but section is moderately regular; outline symmetry is noticeable. Other descriptive terms defining shape should be used, such as polyhedral, tortoise, pyramidal, etc.

Type C. Moderately regular in outline and section but edges still comparatively ragged and sinuous. This type is equivalent to a "blank."

Type D. Section and edge even in outline, but usually lacks hafting modifications and edges not systematically pressure trimmed.

Type E. Even outlines, regular sections, and pressure or fine percussion edge finishing. Hafting modifications absent or unfinished.

II. Flake Categories

A. Shatter (miscellaneous manufacturing by-products) - *featureless chips, angular splinters,* amorphous chunks.

B. Broken flakes - flake fragments missing the bulbs of force and striking platforms.

C. Decortification flakes - dorsal surface entirely or partly covered by cortex.

D. Interior percussion flakes - struck core-interior or bifacial blanks, relatively large in size with prominent bulbs of force and (frequently) plain simple platform surfaces.

E. Biface thinning flakes - commonly exhibit multifaceted striking platform edge; thin in cross-section and broad in outline.

F. Pressure flakes - relatively small with minute acuminate bulbs of force, thin cross-sections, and symmetrical outlines.

Source: Richard Hanes, BLM State Archeologist, Nevada.

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LITHIC ARTIFACT TYPOLOGY

TABLE 3-9

prehistoric lithic scatter is reported. A lithic scatter is defined by the presence of two or more lithic artifacts within 305 feet (100 m) of each other. These sites were further distinguished as small or large lithic scatters as mentioned above. There were two small and two large lithic scatters discovered in Pine Valley. All of the lithic scatters recorded in Pine Valley are low density; that is, less than 30 artifacts per 107.6 square feet (10 m^2).

The artifacts in each lithic scatter are listed according to number and type in Table 3-10. Material types are given by percentage of artifacts observed at the site.

Small Lithic Scatters

In Pine Valley, small lithic scatters contain only unmodified quartzite and chert interior flakes (type IID) with no diagnostic artifacts.

Large Lithic Scatters

The two large lithic scatters in Pine Valley are composed of unmodified flakes thinly scattered over large areas. Obsidian is the predominant raw material at one site, and constitutes just less than half the material at the other site, where chert is more common. The Pine Valley lithic scatters contain no functionally specific or temporally diagnostic artifacts, making any inferences about resource gathering, processing activities, or age difficult. Since the lithic materials were not local, perhaps tool production for resource procurement was taking

Permanent Site Number Temporary Number	Size	Density	Artifacts	Material (By %)
42Be26 MX-5c-1/1-P1	Large - $800m^2$	Low	20 IID, 3 IIa	56% chert, 44% obsidian
42Md608 MX-5c-3/21-P1	Large - $200m^2$	Low	20-30 IID	primarily obsidian
42Md609 MX-5c-3/23-P1	Small - $35m^2$	Low	2 IIB, 1 IID	67% quartzite, 33% chert
42Be27 MX-5c-5/14(off)-M1	Small - $10m^2$	Low	2 IID	100% quartzite

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LITHIC SCATTERS – PINE VALLEY

TABLE 3-10

place at the site, and tools were carried from the site when it was abandoned. Limited tool reduction activity, primarily the removal of interior flakes from a core, is evidenced by the lithic assemblages.

3.2.2.4 Wah Wah Valley

In Wah Wah Valley, 59 discrete sites and isolates, including 50 prehistoric, 8 historic, and 1 multi-component, were reported.

a. Historic Sites: In Wah Wah Valley, historic sites include six isolated artifacts and three campsite/dumps. Of these, site 42Md597 (MX-54-CMF/4 (off)-M1) is a historic campsite area, with prehistoric materials also present. The historic sites are described in Table 3-11.

b. Prehistoric Sites:

Isolated Artifacts

A total of 38 isolated prehistoric artifacts were recorded in Wah Wah Valley. The distribution of isolated artifacts is illustrated in Figure 3-9. The isolated artifacts are summarized by type below.

Type	Number
Projectile Points	2
Bifaces/Cores	6
Flakes	30
Total	38

Permanent Site Number Temporary Site Number	Description	Date
MX-54-1/16-HI1	brown beer bottle fragments	1900-1921
MX-54-CMF/3-HI1	hole-in-the-top can	1810-early 1900s
MX-54-4/1-HI1	rectangular metal can	unknown
42Md595 MX-54-4/2HI1	campsite	pre 1920
MX-54-4/10-HI1	purple bottle fragments	1880-1920
MX-54-4/17(R)-HI1	purple jar fragments	1880-1920
42Md597 MX-54-CMF/4(off)-M1	campsite	early 1900s
MX-54-5/18(r)-HI1	hole-in-the-top can	1810-early 1900s
42Md596 MX-54-5/20-HI	campsite	early 1900s

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HISTORIC SITES – WAH WAH VALLEY

TABLE 3-11

Isolated Projectile Points

Two isolated projectile points were discovered in Wah Wah Valley. Site MX-54-2/20-PI1 is the proximal portion of an obsidian basal-notched projectile point. The type is not firmly determined, although it may belong to the Elko series. Site MX-54-5/8A-PI1 consists of a large, complete white quartzite Elko corner-notched point. These points are illustrated in Figure 3-7.

Bifaces, Cores, and Flakes

The majority of isolated artifacts in Wah Wah Valley (94 percent) are lithic reduction products such as bifaces, cores, flakes, and non-distinctive flake tools characterized by retouch or utilization. These artifacts are listed in Table 3-12.

The 36 isolated non-diagnostic lithics in Wah Wah Valley include 7 (19 percent) bifaces or cores. The type IA artifact is a thick, angular specimen with irregular flaking, and is probably an exhausted core. The single type IB specimen is the distal portion of a roughly shaped artifact. Four bifaces are type IC, representing an intermediate stage of tool manufacture. One type IE midsection is a fragment of a finished tool.

Twenty-nine (81 percent) of the 36 isolated non-diagnostic lithics in Wah Wah Valley are flakes. Of these 18 (62 percent) are type IID, interior flakes, 2 (7 percent) are type IIA, shatter, 3 (10 percent) are type IIB, broken flakes, 4 (14 percent) are type IIC, cortex flakes, and 2 (7 percent) are type IIE, biface thinning flakes. It is possible that some of the

Temporary No.	Material Type	Material Color	Artifact Type	Edge Modification[a]
MX-54-1/1-PI1	obsidian	black	IID	+
MX-54-1/3-PI1	chert	light color	IID	-
MX-54-1/4-PI1	chert	white	IID (scraper)	+
MX-54-1/5-PI1	obsidian	black	IB (distal)	-
MX-54-1/7-PI1	obsidian	black	IID	-
MX-54-1/7-PI2	obsidian	black	IIB/D	-
MX-54-1/11-PI1	chert	white	IID	-
MX-54-1/11-PI2	chert	white	IIC	+
MX-54-1/14-PI1	chert	brown	IID	-
MX-54-1/14-PI2	obsidian	black	IID	-
MX-54-1/21(R)-PI1	obsidian	black	IIB	-
MX-54-1/21(R)-PI2	chert	beige	IID	-
MX-54-1/23-PI1	chert	white	IC	-
MX-54-CMF/1-PI1	chert	tan	IA	-
MX-54-CMF/1-PI2	chert	tan/light color	IIC	+
MX-54-2/1-PI1	chert	gold	IID	+
MX-54-2/1(off)-PI1	chert	gold	IIC	-
MX-54-2/2-PI1	obsidian	black	IID	-
MX-54-2/6-PI1	obsidian	black	IID	+
MX-54-2/16-PI1	chert	black	IIE	-
MX-54-2/20-PI1	chert	gold	IID	+
MX-54-2/21-PI1	obsidian	black	IID	+
MX-54-3/1-PI1	chert	gold	IID	+
MX-54-3/2-PI1	quartzite	white	IID (scraper)	+
MX-54-3/2-PI2	chert	gold	IIA	+
MX-54-3/6-PI1	chert	orange	IIB	-
MX-54-3/14-PI1	obsidian	black	IE (midsection)	-
MX-54-3/15(R)-PI1	chert	gold	IID	+
MX-54-CMF/3-PI1	obsidian	dark grey	IC	+
MX-54-4/4-PI1	quartzite	white	IIC	-
MX-54-4/10-PI1	obsidian	black	IIA	+
MX-54-4/17-PI1	chert	white	IC (?)	+
MX-54-5/2-PI1	quartzite	grey/white	IID	+
MX-54-5/13-PI1	chert	tan	IIE	+
MX-54-5/13(R)-PI1	quartzite	white	IID	-
MX-54-5/18(R)-PI1	obsidian	grey/black	IC	-

(a) + = Present; - = Absent.

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ISOLATED LITHICS – WAH WAH VALLEY

TABLE 3-12

interior or broken flakes may also be biface thinning flakes. Retouch or utilization is indicated on 15 (52 percent) of the flakes, including two scrapers.

Material types for isolated artifacts in Wah Wah Valley include: 50 percent chert, 39 percent obsidian, and 11 percent quartzite.

Lithic Scatters

A total of 10 lithic scatters are recorded for Wah Wah Valley, including 3 small and 7 large.

All of the recorded lithic scatters are low density. Figure 3-9 illustrates the general distribution of small and large lithic scatters in Wah Wah Valley. Characteristics of the assemblage of each lithic scatter are described in Table 3-13. Material types are reported by percentage of all artifacts present in the site.

Small Lithic Scatters

Two of the three small scatters in Wah Wah Valley are similar, each containing two unmodified chert interior flakes (type IID), or biface thinning flakes (type IIE). The third site has one chert biface thinning flake (type IIE) and one obsidian Elko corner-notched point.

Large Lithic Scatters

In Wah Wah Valley, seven large lithic scatters of sparsely distributed materials are recorded. Four of these sites contain only unmodified flakes and shatter, primarily obsidian, with no

Permanent Site Number / Temporary Site Number	Size	Density	Artifacts	Material (By %)
42Be28 MX-54-1/1-P1	Small - < 50m^2	Low	2 IID	100% chert
42Md599 MX-54-2/8-P1	Small - 50m^2	Low	1 Elko corner-notched point,	50% obsidian, 50% chert
42Md600 MX-54-2/10-P1	Small - 8m^2	Low - 2/8m^2	1 IIE, 2 II3	100% chert
42Md602 MX-54-3/14-P1	Large - 2,400m^2	Low	1 Humboldt point, 1 IID, 1 IIE	100% obsidian
42Md601 MX-54-CMP/3-P1	Large - 65m^2	Low - 1/16m^2	4 IIE	100% obsidian
42Md603 MX-54-4/8-P1	Large - 2,000m^2	Low - 4/10m^2	total of 8: IID, IIE	100% obsidian
42Md604 MX-54-4/20(off)P1	Large - 3,900m^2	Low - 2-6/10m^2	3 IB, 2 IIA, 1 IIB, 1 IID, 9 IIE, 1 IIF	53% chert, 29% quartzite, 18% obsidian
42Md605 MX-54-5/5-P1	Large - 1,000m^2	Low	1 IIA, 2 IIB, 5 IID, 2 IIF	90% obsidian, 10% chert
42Md606 MX-54-5/7-P1	Large - 30,000m^2	Low	1 IA, 1 IE, 1 IIC, 9 IIE 1 split obsidian cobble	92% obsidian, 8% chert
42Md607 MX-54-5/18-P1	Large - 700m^2	Low	1 IIA, 2 IID	100% obsidian

LITHIC SCATTERS – WAH WAH VALLEY

TABLE 3-13

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tools or diagnostic artifacts. An obsidian Humboldt Concave Base projectile point occurs with two obsidian interior flakes (type IID) at site 42Md602 (MX-54-3/14-P1). Two sites 42Md604 (MX-54-4/20(off)-P1) and 42Md606 (MX-54-5/7-P1) contain bifaces of types IA, IB, and IE, as well as flakes representing various stages in the lithic reduction sequence. In addition, a split obsidian cobble occurs at one of these sites. In general, the lithic scatters in Wah Wah Valley reflect greater internal variety in terms of tool and flake types. This difference may reflect the fact that the Wah Wah Valley sites primarily represent workshop activities, rather than resource gathering or processing. The survey results suggest that artifact material and sites are sparsely distributed, indicating that workshop activity was not heavy in the valley.

Milling Stations

In Wah Wah Valley, two small sites contain ground stone artifacts, and are classified as milling stations. Site 42Md598 (MX-54-4/20-P1) consists of a quartzite mano fragment and a large obsidian projectile point or biface (type IE) fragment. The mano is ground on all surfaces and is ovoid in form. The projectile point or biface is fairly large, with notches for hafting (Figure 3-7). The site occurs on a low beach feature overlooking Sevier Lake. Site MX-54-CMF/3-PI2 is an isolated metate fragment. The metate is thin, ground on one surface, portable, and made of a volcanic material. Both sites probably reflect the processing of seeds, such as grass seeds, which

could be gathered in the valley. During the survey Oryzopsis hymenoides and other grasses were seen in Wah Wah Valley. These grasses are likely to have been much more abundant prior to the advent of ranching, and during periods of greater moisture. This phenomena was observed in Pine Valley, where wetter weather in the past few years has greatly increased the grass cover.

Temporary Camp

One site evidencing limited occupation is recorded for Wah Wah Valley. Site 42Md597 (MX-54-CMF/4(off)-M1) contains historic materials as well as two probable prehistoric hearths, sparse obsidian flakes, and one projectile point. The hearths consist of concentrations of fire-cracked rocks, but no charcoal was observed. The flakes are primarily unmodified, although one shows utilization. The obsidian projectile point is the distal portion of a small point, perhaps Rose Spring or Desert side-notched. The site is located on a sandy terrace in Wah Wah Valley, and probably represents limited camping activity by a small group of prehistoric peoples.

3.2.3 Summary

3.2.3.1 Pine Valley

The archeological sites recorded during the IOC survey in Pine Valley are summarized in Table 3-14. Included are two large lithic scatters, two small lithic scatters, and one historic campsite. In addition, twenty prehistoric isolates and eight

Permanent Site Number Temporary Site Number	Location	Map	Type	Affiliation	Owner	Date Recorded
42 Be 26 (MX-5C-1/1-P1)	T26S, R[illegible] SW of SE of 24	Wah Wah Summit 15'	Large Lithic Scatter	Not Determined	BLM Cedar City	12-5-80
42 Md 608 (MX-5C-3/21-P1)	T25S, R16W NW of SW of 7	Wah Wah Summit 15'	Large Lithic Scatter	Not Determined	BLM Richfield	11-11-80
42 Md 609 (MX-5C-3/23-P1)	T25S, R16W SE of SW of NW of 4	Wah Wah Summit 15'	Large Lithic Scatter	Not Determined	BLM Richfield	11-11-80
42 Be 27 (MX-5C-5/14(off)-M1)	T29S, R17W NW of NE of SW of 5	Buckhorn Spring 7.5'	Small Lithic Scatter	Not Determined	BLM Cedar City	12-20-80
			Historic Campsite	1880-1920		

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SITE SUMMARY – PINE VALLEY
IOC SURVEY

TABLE 3-14

historic isolates were recorded. Table 3-15 presents the landform and vegetation associations of prehistoric sites, and the distribution of sites and isolates in reference to landform and vegetation.

When compared to previous investigations, the sites discovered during the Pine Valley IOC survey are consistent with the previously summarized pattern for prehistoric activities in the valley. The lower alluvial fan, plain, and playa areas contain evidence of temporary utilization for hunting, gathering, other resource procurement activities, and may indicate travel within the valley. Some materials may have been washed down from higher areas, where habitation sites are located. None of the lithic scatters recorded on the IOC survey contain artifacts characteristic of habitation or more than temporary use.

The MX regional sampling survey conducted during the summer of 1980 recorded a greater number of sites, particularly habitation sites with ground stone and ceramics, in Pine Valley than the IOC survey. This is predictable, however, because the regional survey focused more heavily on areas with permanent water sources in the pinyon-juniper uplands, which were preferred locations for prehistoric habitation. In contrast, the IOC survey areas are not close to permanent water, shelter, or the kind of food resources available in the pinyon-juniper zone.

Evidence from previous research suggests that Pine Valley was utilized by prehistoric peoples from early Archaic through Shoshone times. The diagnostic artifacts found during the IOC

a. ASSOCIATIONS OF SITES

Permanent Site Number Temporary Site Number	Site Type	Vegetation	Landform
42Be26 (MX-5C-1/1-P1)	large lithic scatter	winterfat	dune on alluvial plain
42Md608 (MX-5C-3/21-P1)	large lithic scatter	little rabbitbrush	alluvial plain above playa
42Md609 (MX-5C-3/23-P1)	small lithic scatter	little rabbitbrush	alluvial fan
42Be27 (MX-5C-5/14(off)-M1)	small lithic scatter	sagebrush	alluvial fan

b. SITE DISTRIBUTION

Landform	Vegetation	Number
dune-playa	little rabbitbrush-winterfat	3
alluvial plain	little rabbitbrush-sagebrush-shadscale	7
alluvial fan	little rabbitbrush-sagebrush-shadscale	14
	Total sites and isolates	24

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LANDFORM AND VEGETATION – PINE VALLEY

TABLE 3-15

survey include four projectile points which are assigned to periods within this broad time frame. Two specimens are Rose Spring corner-notched points, dated to early Fremont, 300-950 A.D. (Holmer and Weder, 1980). One large, side-notched projectile point or hafted biface is probably Archaic (7600 B.P. - historic). Another, untyped stemmed point may also be associated with Archaic times.

Fremont artifacts are reported from Pine Valley, but no "classic" Fremont village sites have been discovered. Water resources in the valley were probably not adequate to support either horticulture or subsistence based semi-permanent villages. Nonetheless, Fremont peoples did utilize the area, presumably to collect the wild foods which supplied the major portion of their diet. The Fremont occupation in Pine Valley is reflected by temporary camping or habitation sites and isolated artifacts.

In summary, the IOC survey in Pine Valley supports earlier evidence that the valley had been utilized by Archaic, Fremont, and Shoshone peoples for as long as 7600 years. The valley floors were not permanently occupied because water, shelter, and abundant food sources are not available. Activities in these lowland areas were limited primarily to resource procurement, which leaves few archeological remains. As a result, the extent of exploitation in these areas is not readily determined. Campsites and habitation areas are found in the pinyon-juniper areas, which are much more attractive due to the presence of permanent water, shelter, and food.

Interpreted in terms of the MX regional research design, the archeological sites and isolates recorded on the MX-IOC project would be termed "locations". There is no evidence of camping at any of these sites, and processing is also limited. Lithic manufacture includes primarily later stages of reduction. The occurrence of large lithic scatters is suggestive of resource procurement locations which may have been visited repeatedly (Homer et al., 1980).

3.2.3.2 Wah Wah Valley

Table 3-16 summarizes the archeological sites recorded during the IOC survey in Wah Wah Valley. Three small lithic scatters, seven large lithic scatters, two milling stations, one prehistoric campsite, and three historic campsites are included. Thirty-eight prehistoric isolates and six historic isolates were also recorded and have been discussed previously.

Landform and vegetation associations of sites, and site distribution relative to landform and vegetation are presented in Table 3-17. Nine (69 percent) of the recorded sites are located in or near dunes or old lake features.

Previous research in Wah Wah Valley suggests a similar occupation and use pattern to that in Pine Valley. Campsites are located in pinyon-juniper foothills near permanent water, shelter, and food resources. Isolated artifacts evidence temporary use occurring throughout the valley. As in Pine Valley, a number of sample units were placed in upland areas during the regional sample survey. The IOC survey, however,

Temporary No.	Location	Map	Type	Affiliation	Owner	Date Recorded
42Be28 MX-54-1/1-P1	T27S, R14W SW of SW of SW of 1	Frisco 15'	Small Lithic Scatter	Not Determined	BLM Richfield	12-20-80
42Md599 MX-54-2/8-P1	T26S, R14W SW of SE of SW of 1	Frisco Peak 15'	Small Lithic Scatter	Archaic 7600 BP - Historic	BLM Richfield	12-18-80
42Md600 MX-54-2/10-P1	T25S, R14W NW of SE of NE of 35	Frisco Peak 15'	Small Lithic Scatter	Not Determined	BLM Richfield	12-18-80
42Md602 MX-54-3/14-P1	T25S, R14W NW of NW of NW of 12	Frisco Peak 15'	Large Lithic Scatter	Archiac 7600-6100 BP (?)	BLM Richfield	12-15-80
42Md601 MX-54-CMP/3-P1	T25S, R14W NE of SW of NE of 4	Frisco Peak 15'	Large Lithic Scatter	Not Determined	BLM Richfield	12-18-80
42Md595 MX-54-4/2-H1	T24S, R14W NW of NE of NE of 27	Frisco Peak 15'	Historic Campsite	Late 19th/Early 20th Cent.	BLM Richfield	12-9-80
42Md603 MX-54-4/8-P1	T24S, R13W W of SW of NE of 29	Frisco Peak 15'	Large Lithic Scatter	Not Determined	BLM Richfield	12-9-80
42Md598 MX-54-4/20-P1	T24S, R13W NE of SW of NE of 13	Frisco Peak 15'	Milling Station	Archaic	BLM Richfield	12-17-80
42Md604 MX-54-4/20-(off)-P1	T24S, R13W SE of NE of NE of 13	Frisco Peak 15'	Large Lithic Scatter	Not Determined	BLM Richfield	12-11-80
42Md597 MX-54-CMP/4(off)-H1	T24S, R13W NW of SW of SW of 22	Frisco Peak 15'	Prehistoric Temp. Camp	Not Determined	BLM Richfield	12-13-80
42Md605 MX-54-5/5-P1	T24S, R13W NE of NE of SW of 10	Frisco Peak 15'	Large Lithic Scatter	Not Determined	Patented Mining Claim	1-23-81
42Md606 MX-54-5/7-P1	T24S, R13W SW of SW of 35	Frisco Peak 15'	Large Lithic Scatter	Not Determined	BLM Richfield	12-20-80
42Md607 MX-54-5/18-P1	T24S, R12W NW of NE of NW of 25	Beaver Lake Mtns. 15'	Large Lithic Scatter	Not Determined	BLM Richfield	12-18-80
42Md596 MX-54-5/20-H1	T24S, R12W E 1/2 of NE of NE of 34	Beaver Lake Mtns. 15'	Early auto road/trash dump	Early 20th Century	BLM Richfield	12-19-80

SITE SUMMARY – WAH WAH VALLEY
IOC SURVEY

TABLE 3-16

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Site Number	Site Type	Vegetation	Landform
42Be28 (MX-54-1/1-P1)	small lithic scatter	shadscale	alluvial plain
42Md599 (MX-54-2/8-P1)	small lithic scatter	shadscale	alluvial plain
42Md600 (MX-54-2/10-P1)	small lithic scatter	horsebrush	dune above old shoreline
42Md602 (MX-54-3/14-P1)	large lithic scatter	shadscale	alluvial fan
42Md601 (MX-54-CMF/3-P1)	large lithic scatter	horsebrush	alluvial plain near dune
42Md603 (MX-54-4/8-P1)	large lithic scatter	horsebrush	alluvial plain
42Md598 (MX-54-4/20-P1)	milling station	horsebrush	extinct lake feature on alluvial fan
42Md604 (MX-54-4/20 (off)-P1)	large lithic scatter	horsebrush	dune
42Md597 (MX-54-CMF/ 4(off)-M1)	temporary camp	little rabbitbrush	extinct lake terrace
42Md605 (MX-54-5/5-P1)	large lithic scatter	shadscale	extinct shoreline between dunes
42Md606 (MX-54-5/7-P1)	large lithic scatter	small sagebrush	extinct lake terrace on alluvial fan
42Md607 (MX-54-5/18-P1)	large lithic	sagebrush	dune

Landform	Vegetation	Number
dune-playa-lake feature	horsebrush-shadscale-little rabbitbrush-sagebrush	16
alluvial plain	winterfat-shadscale-little rabbitbrush	23
alluvial fan	little rabbitbrush-winterfat	12
	Total sites and isolates	51

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LANDFORM AND VEGETATION – WAH WAH VALLEY

TABLE 3-17

focused upon the lowland, valley floor areas, where a number of sites, and isolates were recorded. Overall, the previous research indicated more intensive prehistoric utilization of Pine Valley, but the IOC survey resulted in twice as many sites being recorded in Wah Wah Valley as compared to Pine Valley (51 in Wah Wah Valley/24 in Pine Valley).

Water, especially permanent sources, is an important factor in site location for people inhabiting a desert environment such as the Great Basin. Permanent streams, springs, and lakes were attractive, not only for water, but also for the association of plants and animals which occurred near sources of water. Within the Great Basin, locations around lake margins are known to have been heavily utilized by prehistoric peoples. The sites in Wah Wah Valley, including lithic scatters, milling stations, and one temporary camp, are primarily located in reference to extinct lake features. These features are associated with the sizeable Wah Wah Valley Hardpan (playa) and Sevier Lake.

A large freshwater lake (Lake Gunnison) occupied the Sevier Desert until the drying trend at the end of the Pleistocene. At that time, Sevier Lake became the terminal lake for the Sevier River system (Currey and James, 1981). Today, Sevier Lake contains standing water seasonally. Rudy (1953) notes that irrigation has diverted much water from the Sevier River, and thus from Sevier Lake. In the past, when a lake, or perhaps a seasonal lake occupied the now dry playa, prehistoric groups may have established temporary camps or resource procurement sites near the water. The season or frequency of this occupation

cannot be ascertained without more research; the paleoenvironment of Sevier Lake is only beginning to be understood (Currey and James, 1981). Given that two milling stations are recorded, summer seed-gathering may be suggested.

Prior to the IOC survey in Wah Wah Valley, only one diagnostic artifact, an Eastgate projectile point dating to early Fremont times (500-800 A.D.) was known (Holmer and Weder, 1980). Five projectile points recorded during the IOC survey include: two Elko corner-notched points (Archaic, 7600 B.P. - historic); another possible Elko series point; one Humboldt Concave Base (early Archaic, 7600-6100 B.P.); and the distal fragment of a small (arrow) projectile point, which could be Archaic, Fremont, or Shoshone. While data are still limited, the occupation in Wah Wah Valley is western Archaic, with Fremont and Shoshone presence suggested, but not confirmed.

To summarize, the IOC survey in Wah Wah Valley reveals a number of possible lake-related sites in the vicinity of Sevier Lake and the Wah Wah Valley Hardpan. These sites suggest various stages of lithic reduction activities, resource processing (seeds), and temporary camping on the valley floor. Previous research has suggested a pattern of upland, pinyon-juniper sites, with limited temporary activities on the valley floor. When combined with previous data, the IOC survey information presents a more complete picture of the utilization of resources in Wah Wah Valley. The evidence indicates Western Archaic occupation, and probably early Archaic as well. Fremont and

Shoshone presence is inferred, but may have been limited in the valley. While the recorded sites are numerous, they are individually small and seemingly "insignificant." When viewed in the broader sense, they describe an important aspect of prehistoric occupation in Wah Wah Valley.

In the terms of the regional research design, the majority of the sites and isolates in Wah Wah Valley can be considered locations. The one temporary camp and the milling stations are probably field camps, as camping and resource processing are indicated. Some of the other sites evidencing various stages of lithic reduction may also be field camps, although data are too limited to make this determination.

4.0 NATIONAL REGISTER OF HISTORIC PLACES RECOMMENDATIONS

The cultural resources discovered during the Pine and Wah Wah IOC survey are discussed below in terms of their potential National Register eligibility.

4.1 NATIONAL REGISTER CRITERIA FOR ELIGIBILITY

To qualify for the National Register of Historic Places, a cultural property must meet one of the criteria for significance established by the President's Advisory Council on Historic Preservation. The following criteria are used to evaluate potential entries to the National Register:

> The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> (1) That are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (2) That are associated with the lives of persons significant in our past; or
>
> (3) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (4) That have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 800.10).

Normally only those properties at least 50 years old are eligible, unless they are of exceptional importance.

4.2 PINE VALLEY

It is unlikely that any of the cultural resources discovered during the IOC survey of Pine Valley would qualify for the National Register of Historic Places. Twenty-eight of the resources consist of isolated artifacts: 20 are prehistoric isolates and 8 are historic isolates including one section marker. Although the distribution pattern of these artifacts may provide some data on the prehistoric and historic utilization of Pine Valley, it is unlikely that any isolated artifact can provide significant information by itself.

Only 4 lithic scatters were discovered in Pine Valley. Two are small lithic scatters [less than 537.9 square feet (50 m^2)] both of which consist of only unmodified flakes and which contain no diagnostic artifacts. The 2 large lithic scatters also consist only of unmodified flakes and contain no diagnostics. Based on surface observations, it appears that these sites can provide only limited information on the prehistory of Pine Valley and would not qualify for the National Register. However, subsurface testing would be necessary to determine their actual potential.

4.3 WAH WAH VALLEY

Only one of the sites recorded in Wah Wah Valley is likely to qualify for the National Register of Historic Places. This site is the temporary camp 42Md597, which contains two possible hearths, lithic reduction flakes, and a small projectile point. Subsurface testing would be necessary, however, to determine its actual potential.

There were 44 isolated artifacts discovered, 6 historic and 38 prehistoric. As noted previously, even though these isolated artifacts can provide important information on the prehistoric and historic occupation of Wah Wah Valley, they would not qualify for the National Register.

There were 10 lithic scatters discovered in Wah Wah Valley; 3 small and 7 large ones. These are all low density and contain fewer than 30 artifacts. Diagnostic artifacts were found at 2 of the sites. These scatters do not appear to have any depth and it is unlikely that they would qualify for the National Register.

Neither of the 2 milling stations discovered in Wah Wah Valley would be eligible, as they include only one isolated metate fragment and one mano fragment associated with a biface. These sites can provide data on nature of resource exploitation in the valley but individually they would not qualify for the National Register.

5.0 MITIGATION RECOMMENDATIONS

5.1 AVOIDANCE MITIGATION RECOMMENDATIONS

Avoidance mitigation was recommended for two units in Pine Valley and four units in Wah Wah Valley which contained archeological sites. Archeological sites recommended for avoidance are listed in Table 5-1. No historic sites found within the survey areas were determined to be significant enough to require avoidance.

a. Pine Valley

Neither of the archeological sites recommended for avoidance in Pine Valley meet the criteria for significance listed in Table 3-1. Interpreted within a regional framework, however, the two lithic scatters in Pine Valley increase in significance. As these lithic scatters are the only sites known from the floor of Pine Valley, they can offer significant information about the pattern of prehistoric activity.

b. Wah Wah Valley

The two large lithic scatters in Wah Wah Valley contain a variety of lithic manufacture by-products and occur on extinct shorelines. Depth is suggested at least one of these sites. In general, however, the sites recommended for avoidance do not meet significance criteria in Table 3-1. Within a regional framework, however, the sites gain importance because little research has been conducted in Wah Wah Valley, and that has not explored the possibility of lake-associated sites.

Valley	Unit	Archeological Site	
Pine Valley:	MX-5C-1/1	42Be26	large lithic scatter
	MX-5C-3/21	42Md608	large lithic scatter
Wah Wah Valley:	MX-54-CMF/3	42Md601	large lithic scatter
		PI2	milling station
	MX-54-4/8	42Md603	large lithic scatter
	MX-54-5/5	42Md605	large lithic scatter
	MX-54-5/7	42Md606	large lithic scatter

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UNITS RECOMMENDED FOR AVOIDANCE MITIGATION

TABLE 5-1

5.2 RESITINGS

a. Pine Valley

In Pine Valley unit MX-5C-1/1 was resited to avoid archeological site 42Be26. Due to engineering constraints however, MX-5C-3/21 could not be moved, and archeological site 42Md608 could not be avoided. Through discussions with the Bureau of Land Management (Fike, 1981) it was determined that no avoidance mitigation was necessary.

b. Wah Wah Valley

Units MX-54-5/5 and MX-54-5/7 were relocated to avoid archeological sites 42Md605 and 42Md606, respectively. Unit MX-54-4/8, which contains site 42Md603, could not be moved, due to constraints imposed by its location relative to other shelter sites. However, through discussions with Bureau of Land Management personnel it was determined that no avoidance was necessary for the site. In the case of unit MX-54-CMF/3, a rearrangement of road patterns, necessitating relocation of all cluster maintenance facilities was proposed. As a result CMF/3 was not resited, but may be relocated at a future date.

5.3 LIMITATIONS OF AVOIDANCE MITIGATION AND RECOMMENDATIONS FOR FUTURE WORK*

The IOC cultural resources survey project was a test case and several limitations in the methodology can be discussed. The most important of these limitations is that avoidance as a

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* These limitations and recommendations have been developed through discussions with Richard Hanes, BLM Nevada State Archeologist.

principal means of mitigating impacts to cultural resource sites is not expected to be sufficient in all situations.

A second limitation is that determining site significance and making mitigation recommendations on a case-by-case basis may not be sufficient. The significance of any given archeological site can be assessed only in relation to other resources in the area. Because these surveys were the most intensive ever carried out in the valleys, there was little prior information on which to evaluate the resources and determine significance. Thus, making recommendations for avoidance on a site-by-site basis was difficult.

For example, in both Pine and Wah Wah Valleys, there were no sites found that met the BLM criteria for avoidance. However, because so few sites were known from those areas or found during the survey, the large lithic scatters can be considered quite important and avoidance mitigation was recommended. This could not be evaluated until the entire valley had been surveyed. It is therefore suggested that recommendations for relocating units be based on an assessment of regional resources, after analysis of a valley is complete, rather than on a site-by-site basis.

It is also recommended that the list of criteria be considered the baseline for those sites that should be avoided if possible but that it be revised to allow for the avoidance of other site types when they are considered particularly important. In cases where avoidance is not possible other forms of mitigation, such

as excavation or systematic surface collection, should be employed.

Another limitation in determining the significance of resources discovered during the survey is that no systematic surface collection or subsurface testing was carried out. It is recommended that follow-up studies be conducted prior to construction activities. During this phase, a sample of each type of site should be systematically collected and tested, allowing for the development of more effective mitigation plans for specific sites and site types.

Finally, the issue of Native American concerns were not addressed as part of the initial scope of study for this project, although presently plans for such are being formulated. Studies should include determinations of significance relative to the Native American Religions Freedom Act and to the National Register of Historic Places. This should be done at the beginning of or concurrently with the field survey so that Native American input can be considered in National Register of Historic Places determinations of archeological sites, and so important non-archeological sites can be effectively mitigated.

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APPENDIX A

APPENDIX A

LIST OF PREPARERS

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APPENDIX B

APPENDIX B

AGENCIES, INSTITUTIONS, AND INDIVIDUALS CONSULTED

INSTITUTION	INDIVIDUAL CONSULTED	SUBJECT
Utah BLM - Salt Lake City, Utah	Richard Fike	Prehistory, History
Utah BLM - Cedar City, Utah	Gardiner Dalley	History
Utah State Historical Society - Salt Lake City, Utah	Jim Dykeman Dotty Sammons-Lohse	Prehistory, National Register
University of Utah Archeological Center - Salt Lake City, Utah	Joel Janetski Richard Holmer Steve James	Prehistory Prehistory Prehistory
Southern Utah State University - Cedar City, Utah	Dr. Richard Thompson	Prehistory
HDR Sciences Santa Barbara, California	Linda Mayro William Doelle	Prehistory (and methods of research design)
Intermountain Forest and Range Experiment Station - Ogden, Utah	Elizabeth Close	History

APPENDIX C

SHELTER SUMMARY TABLE
PINE VALLEY
CLUSTER 1

Units:	Legal Descriptions			Maps			Findings:	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.		Archeological Site	
MX-5C-1/1	T26S,	R17W,	SW 1/4 and SE 1/4 Sec. 24	#21	Wah Wah Summit	15'	MX-5C-1/1-P1	Lithic scatter; large low density
MX-5C-1/1A*	T26S,	R17W,	SW 1/4 and SE 1/4 Sec. 21	#21	Wah Wah Summit	15'	None	
MX-5C-1/2	T26S,	R17W,	SE 1/4 Sec. 25	#21	Wah Wah Summit	15'	None	
MX-5C-1/3	T26S,	R16W,	NW 1/4 Sec. 31	#21	Wah Wah Summit	15'	None	
MX-5C-1/4	T27S,	R16W,	NW 1/4 and SW 1/4 Sec. 6	#26	Lamerdorf Peak NW	7.5'	None	
MX-5C-1/5	T27S,	R17W,	SW 1/4 and SE 1/4 Sec. 1	#26	Lamerdorf Peak NW	7.5'	None	
MX-5C-1/6	T27S,	R17W,	SW 1/4 Sec. 12	#26	Lamerdorf Peak NW	7.5'	None	
MX-5C-1/7	T27S,	R17W,	NE 1/4 Sec. 14	#26	Lamerdorf Peak NW	7.5'	None	
MX-5C-1/8	T27S,	R17W,	NE 1/4 Sec. 23	#26	Lamerdorf Peak NW	7.5'	None	
MX-5C-1/9	T27S,	R17W,	SW 1/4 Sec. 23	#26	Lamerdorf Peak NW	7.5'	None	
MX-5C-1/10	T27S,	R17W,	SE 1/4 Sec. 10 NE 1/4 Sec. 15	#25	Lamerdorf Peak NW	7.5'	None	
MX-5C-1/11	T27S,	R17W,	SE 1/4 and NE 1/4 Sec. 9	#25	Sawtooth Peak Lamerdorf Peak NW	7.5' 7.5'	None	
MX-5C-1/12	T27S,	R17W,	SW 1/4 Sec. 22	#25	Lamerdorf Peak NW	7.5'	None	
MX-5C-1/13	T27S,	R17W,	SW 1/4 Sec. 21	#25	Sawtooth Peak	7.5'	None	
MX-5C-1/14	T27S,	R17W,	NW 1/4 Sec. 20	#25	Sawtooth Peak	7.5'	None	
MX-5C-1/14A*	T27S,	R17W,	NW 1/4 Sec. 20	#25	Sawtooth Peak	7.5'	None	
MX-5C-1/15	T27S,	R17W,	NW 1/4 and SW 1/4 Sec. 19	#25	Sawtooth Peak	7.5'	None	
MX-5C-1/16	T27S,	R17W,	SW 1/4 Sec. 26	#32	Lamerdorf Peak NW	7.5'	None	
MX-5C-1/17	T27S,	R17W,	SW 1/4 Sec. 34	#31	Lamerdorf Peak NW	7.5'	None	

PINE VALLEY
CLUSTER 1
(Continued)

Units:	Legal Descriptions			Maps			Findings:	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.		Archeological Site	
MX-5C-1/18	T27S,	R17W,	NW 1/4 and NE 1/4 Sec. 33	#31	Sawtooth Peak	7.5'	None	
MX-5C-1/19	T28S,	R17W,	NW 1/4 and SW 1/4 Sec. 3	#31	Lamerdorf Peak NW	7.5'	None	
MX-5C-1/20	T28S,	R17W,	SW 1/4 Sec. 4 NW 1/4 Sec. 9	#31	Sawtooth Peak	7.5'	None	
MX-5C-1/21	T28S,	R17W,	NW 1/4 Sec. 5	#31	Sawtooth Peak	7.5'	None	
MX-5C-1/21A*	T28S,	R17W,	NW 1/4 Sec. 5	#31	Sawtooth Peak	7.5'	None	
MX-5C-1/22	T28S,	R17W,	SE 1/4 Sec. 6	#31	Sawtooth Peak	7.5'	MX-5C-1/22(off)PI1	Isolated interior flake; reddish quartzite
MX-5C-1/22A*	T28S,	R17W,	SE 1/4 Sec. 6	#31	Sawtooth Peak	7.5'	None	
MX-5C-1/23	T28S,	R17W,	SE 1/4 Sec. 7	#31	Sawtooth Peak	7.5'	None	

* Resiting

Ertec

SHELTER SUMMARY TABLE
PINE VALLEY
CLUSTER 2

Units:	Legal Descriptions			Maps			Findings:	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.		Archeological Site	
MX-5C-2/1	T26S,	R17W,	NE 1/4 Sec. 23	#21	Wah Wah Summit	15'	None	
MX-5C-2/2	T26S,	R17W,	SE 1/4 Sec. 22	#20	Wah Wah Summit	15'	None	
MX-5C-2/3	T26S,	R17W,	NW 1/4 Sec. 22	#20	Wah Wah Summit	15'	None	
MX-5C-2/4	T26S,	R17W,	NW 1/4 Sec. 15	#20	Wah Wah Summit	15'	None	
MX-5C-2/5	T26S,	R17W,	SW 1/4 Sec. 21	#20	Halfway Summit	7.5'	None	
MX-5C-2/6	T26S,	R17W,	SW 1/4 Sec. 28	#20	Halfway Summit	7.5'	None	
MX-5C-2/7	T26S,	R17W,	SE 1/4 Sec. 27	#20	Wah Wah Summit	7.5'	None	
MX-5C-2/8	T26S,	R17W,	NE 1/4 Sec. 33	#20	Halfway Summit	7.5'	MX-5c-2/8-HI1	Isolated historic can
MX-5C-2/9	T26S,	R17W,	NE 1/4 Sec. 35	#21	Wah Wah Summit	15'	None	
MX-5C-2/10	T27S,	R17W,	NE 1/4 Sec. 2	#26	Lamerdorf Peak NW	7.5'	None	
MX-5C-2/11	T27S,	R17W,	NE 1/4 Sec. 4	#25	Sawtooth Peak	7.5'	MX-5c-2/11-PI1	Isolated biface; gold chert
MX-5C-2/12	T27S,	R17W,	SE 1/4 Sec. 3	#25	Lamerdorf Peak NW	7.5'	None	
MX-5C-2/13	T27S,	R17W,	SW 1/4 Sec. 4	#25	Sawtooth Peak	7.5'	None	
MX-5C-2/13A*	T27S,	R17W,	SW 1/4 Sec. 24	#25	Sawtooth Peak	7.5'	None	
MX-5C-2/14	T27S,	R17W,	NW 1/4 Sec. 5	#25	Sawtooth Peak	7.5'	None	
MX-5C-2/14A*	T27S,	R17W,	NW 1/4 and SW 1/4 Sec. 5	#25	Sawtooth Peak	7.5'	None	
MX-5C-2/15	T27S,	R17W,	SW 1/4 Sec. 6	#25	Sawtooth Peak	7.5'	None	
MX-5C-2/15A*	T27S,	R17W,	SW 1/4 Sec. 6 NW 1/4 Sec. 7	#25	Sawtooth Peak	7.5'	MX-5c-2/15A-PI1	Isolated projectile point fragment; brown crypto-crystalline
MX-5C-2/16	T26S,	R17W,	NW 1/4 Sec. 32	#20	Halfway Summit	7.5'	MX-5c-2/16-PI1	Isolated biface fragment; red-pink quartzite
						7.5'	MX-5c-2/16-HI1	Isolated historic bottle; green glass
MX-5C-2/17	T26S,	R17W,	SW 1/4 Sec. 30	#20	Halfway Summit	7.5'	None	
MX-5C-2/18	T26S,	R17W,	SW 1/4 Sec. 19	#20	Halfway Summit	7.5'	MX-5c-2/18-PI1	Isolated utilized flake; obsidian

PINE VALLEY
CLUSTER 2
(Continued)

Units:	Legal Descriptions			Maps			Findings:
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.		Archeological Site
MX-5C-2/18A*	T26S,	R17W,	SW 1/4 Sec. 19	#20	Halfway Summit	7.5'	None
MX-5C-2/19	T26S,	R17W,	NW 1/4 Sec. 20	#15	Halfway Summit	7.5'	None
MX-5C-2/20	T26S,	R17W,	NW 1/4 Sec. 18	#20	Halfway Summit	7.5'	None
MX-5C-2/21	T26S,	R17W,	NW 1/4 Sec. 17	#20	Halfway Summit	7.5'	None
MX-5C-2/22	T26S,	R17W,	SW 1/4 Sec. 9	#15	Halfway Summit	7.5'	None
MX-5C-2/23	T26S,	R17W,	NE 1/4 Sec. 12	#14	Halfway Summit	7.5'	None

* Resiting

SHELTER SUMMARY TABLE
PINE VALLEY
CLUSTER 3

Units:	Legal Descriptions			Maps		Findings:	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-5C-3/1	T26S,	R16W,	NW 1/4 Sec. 18	#21	Wah Wah Summit 15'	None	
MX-5C-3/2	T26S,	R16W,	NW 1/4 Sec. 21	#22	Wah Wah Summit 15'	None	
MX-5C-3/3	T26S,	R16W,	SE 1/4 Sec. 21	#22	Wah Wah Summit 15'	None	
MX-5C-3/4	T26S,	R16W,	NE 1/4 Sec. 22	#22	Wah Wah Summit 15'	None	
MX-5C-3/5	T26S,	R16W,	NW 1/4 Sec. 20	#21	Wah Wah Summit 15'	None	
MX-5C-3/6	T26S,	R16W,	NE 1/4 and SE 1/4 Sec. 15	#22	Wah Wah Summit 15'	MX-5c-3/6-HI1	Isolated historic can; hole-in-top
MX-5C-3/6A*	T26S,	R16W,	NW 1/4 Sec. 14	#22	Wah Wah Summit 15'	None	
MX-5C-3/7	T26S,	R16W,	SW 1/4 Sec. 10	#17	Wah Wah Summit 15'	MX-5c-3/7-PI1	Isolated interior flake; red and gold banded cryptocrystalline
MX-5C-3/7A*	T26S,	R16W,	SW 1/4 Sec. 17	#17	Wah Wah Summit 15'	None	
MX-5C-3/8	T26S,	R16W,	SW 1/4 Sec. 5	#16	Wah Wah Summit 15'	None	
MX-5C-3/8A*	T26S,	R16W,	SW 1/4 Sec. 5	#16	Wah Wah Summit 15'	MX-5c-3/8A-PI1	Isolated flake, orange chert
MX-5C-3/9	T26S,	R16W,	SW 1/4 Sec. 3	#17	Wah Wah Summit 15'	None	
MX-5C-3/9A*	T26S,	R16W,	SW 1/4 Sec. 3	#17	Wah Wah Summit 15'	None	
MX-5C-3/10	T26S,	R16W,	SE 1/4 Sec. 6	#16	Wah Wah Summit 15'	None	
MX-5C-3/10A*	T25S,	R16W,	SW 1/4 Sec. 6	#12	Wah Wah Summit 15'	MX-5c-3/10A-PI1	Isolated Rose Springs projectile point fragment; obsidian
MX-5C-3/11	T26S,	R16W,	NW 1/4 Sec. 4	#17	Wah Wah Summit 15'	None	
MX-5C-3/12	T26S,	R16W,	NE 1/4 Sec. 3	#17	Wah Wah Summit 15'	None	
MX-5C-3/13	T25S,	R16W,	SW 1/4 Sec. 31	#16	Wah Wah Summit 15'	None	
MX-5C-3/13A*	T24S,	R16W,	SW 1/4 Sec. 32	#10	Wah Wah Summit 15'	None	
MX-5C-3/14	T25S,	R16W,	SW 1/4 Sec. 33	#17	Wah Wah Summit 15'	None	
MX-5C-3/15	T25S,	R16W,	NW 1/4 Sec. 32	#16	Wah Wah Summit 15'	MX-5c-3/15-PI1	Isolated utilized flake; white quartzite
MX-5C-3/16	T25S,	R16W,	NW 1/4 Sec. 34	#17	Wah Wah Summit 15'	None	
MX-5C-3/16A*	T25S,	R16W,	NW 1/4 Sec. 34	#17	Wah Wah Summit 15'	None	

PINE VALLEY
CLUSTER 3
(Continued)

Units:	Legal Descriptions			Maps		Findings:	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-5C-3/17	T25S,	R16W,	NW 1/4 Sec. 29	#16	Wah Wah Summit 15'	MX-5c-3/17-HI1	Isolated historic bottle; purple glass
MX-5C-3/18	T25S,	R16W,	NW 1/4 Sec. 27	#17	Wah Wah Summit 15'	None	
MX-5C-3/19	T25S,	R16W,	SW 1/4 Sec. 21	#13	Wah Wah Summit 15'	None	
MX-5C-3/20	T25S,	R16W,	NW 1/4 Sec. 17 SW 1/4 Sec. 8	#12	Wah Wah Summit 15'	None	
MX-5C-3/21	T25S,	R16W,	SW 1/4 and SE 1/4 Sec. 7	#12	Wah Wah Summit 15'	MX-5c-3/21-P1	Lithic scatter; large low density
MX-5C-3/22	T25S,	R16W,	NW 1/4 Sec. 9	#13	Wah Wah Summit 15'	MX-5c-3/22-PI1	Isolated Rose Spring projectile point; obsidian
						MX-5c-3/22-PI2	Isolated projectile point or biface; red chert
MX-5c-3/23	T25S,	R16W,	NW 1/4 Sec. 4	#13	Wah Wah Summit 15'	MX-5c-3/23-P1	Lithic scatter; small low density

* Resiting

Ertec

SHELTER SUMMARY TABLE
PINE VALLEY
CLUSTER 4

Units:	Legal Descriptions			Maps				Findings:	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.			Archeological Site	
MX-5C-4/1	T28S,	R16W,	SW 1/4 Sec. 18	#38	Lamerdorf Peak N.W. Pine Grove Reservoir	7.5' 7.5'		None	
MX-5C-4/2	T28S,	R16W,	SE 1/4 Sec. 7	#32	Lamerdorf Peak N.W.	7.5'		None	
MX-5C-4/3	T28S,	R16W,	SW 1/4 Sec. 6	#32	Lamerdorf Peak N.W.	7.5'		None	
MX-5C-4/4	T27S,	R16W,	SE 1/4 and SW 1/4 Sec. 31	#32	Lamerdorf Peak N.W.	7.5'		MX-5c-4/4-PI1	Isolated biface fragment; red brown chert
MX-5C-4/5	T28S,	R16W,	NE 1/4 Sec. 8	#32	Lamerdorf Peak N.W.	7.5'		MX-5c-4/5-HI1	Isolated historic can; hole-in-top
MX-5C-4/5A*	T28S,	R16W,	NE 1/4 Sec. 8	#32	Lamendorf Peak N.W.	7.5'		None	
MX-5C-4/6	T27S,	R16W,	SW 1/4 Sec. 33	#33	Lamerdorf Peak N.W.	7.5'		None	
MX-5C-4/6A*	T27S,	R16W,	SW 1/4 Sec. 33	#33	Lamerdorf Peak N.W.	7.5'		None	
MX-5C-4/7	T27S, T28S,	R16W, R16W,	SE 1/4 Sec. 34 NE 1/4 Sec. 3	#33	Lamerdorf Peak N.W.	7.5'		None	
MX-5C-4/7A*	T27S, T28S,	R16W, R16W,	SE 1/4 Sec. 34 NE 1/4 Sec. 3	#33	Sewing Maching Pass	7.5'		None	
MX-5C-4/8	T27S,	416W,	NW 1/4 Sec. 34	#33	Lamerdorf Peak N.W.	7.5'		None	
MX-5C-4/9	T27S,	R16W,	NW 1/4 Sec. 27	#33	Lamerdorf Peak N.W.	7.5'		None	
MX-5C-4/9A*	T27S,	R16W,	NW 1/4 Sec. 27	#33	Lamerdorf Peak N.W.	7.5'		None	
MX-5C-4/10	T27S,	R16W,	SW 1/4 Sec. 23	#27	Sewing Machine Pass	7.5'		None	
MX-5C-4/10A*	T27S,	R16W,	SW 1/4 Sec. 23	#27	Sewing Machine Pass	7.5'		None	
MX-5C-4/11	T27S,	R16W,	SW 1/4 Sec. 14 SE 1/4 Sec. 15	#27	Sewing Machine Pass	7.5'		None	
MX-5C-4/11A*	T27S,	R16W,	SW 1/4 Sec. 14 SE 1/4 Sec. 15	#27	Sewing Machine Pass	7.5'		MX-5C-4/11A-PI1	Isolated utilized interior flake; gold chert
MX-5C-4/12	T27S,	R16W,	NW 1/4 Sec. 10	#27	Lamerdorf Peak N.W.	7.5'		None	
MX-5C-4/13	T27S,	R16W,	SE 1/4 Sec. 3	#27	Sewing Machine Pass	7.5'		None	
MX-5C-4/14	T26S,	R16W,	SE 1/4 Sec. 34	#22	Wah Wah Summit	15'		None	
MX-5C-4/15	T26S,	R16W,	NE 1/4 Sec. 33	#22	Wah Wah Summit	15'		None	

PINE VALLEY
CLUSTER 4
(Continued)

Units:	Legal Descriptions		Maps			Findings:
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-5C-4/16	T26S,	R16W,	SW 1/4 and NW 1/4 Sec. 33	#22	Wah Wah Summit 15'	None
MX-5C-4/17	T27S,	R16W,	NW 1/4 Sec. 5	#26	Lamerdorf Peak N.W. 7.5'	None
MX-5C-4/18	T27S,	R16W,	NW 1/4 Sec. 8	#26	Lamerdorf Peak N.W. 7.5'	None
MX-5C-4/19	T27S,	R16W,	NW 1/4 Sec. 17	#26	Lamerdorf Peak N.W. 7.5'	MX-5c-4/19-HI1 Isolated historic can; hole-in-top
MX-5C-4/20	T27S,	R16W,	NW 1/4 Sec. 20	#26	Lamerdorf Peak N.W. 7.5'	None
MX-5C-4/21	T27S,	R16W,	SW 1/4 Sec. 21	#27	Lamerdorf Peak N.W. 7.5'	None
MX-5C-4/22	T27S,	R16W,	NW 1/4 Sec. 29	#32	Lamerdorf Peak N.W. 7.5'	None
MX-5C-4/23	T27S,	R16W,	SW 1/4 and SE 1/4 Sec. 30	#32	Lamerdorf Peak N.W. 7.5'	None

* Resiting

SHELTER SUMMARY TABLE
PINE VALLEY
CLUSTER 5

Units:	Legal Descriptions			Maps		Findings:	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-5C-5/1	T28S,	R17W,	SE 1/4 Sec. 10	#31	Lamerdorf Peak N.W. 7.5'	None	
MX-5C-5/1A*	T28S,	R17W,	NE 1/4 Sec. 15	#37	Lamerdorf Peak N.W. 7.5'	None	
			NW 1/4 Sec. 14				
			SE 1/4 Sec. 10				
			SW 1/4 Sec. 11				
MX-5C-5/2	T28S,	R17W,	NE 1/4 Sec. 11	#32	Lamerdorf Peak N.W. 7.5'	None	
MX-5C-5/2A*	T28S,	R17W,	NE 1/4 Sec. 11	#32	Lamerdorf Peak N.W. 7.5'	None	
MX-5C-5/3	T28S,	R17W,	SW 1/4 Sec. 14	#38	Pine Grove Reservoir 7.5'	None	
MX-5C-5/3A*	T29S,	R17W,	NE 1/4 Sec. 15	#42	Pine Grove Reservoir 7.5'	None	
MX-5C-5/4	T28S,	R17W,	NE 1/4 Sec. 23	#38	Pine Grove Reservoir 7.5'	None	
MX-5C-5/5	T28S,	R17W,	NW 1/4 and	#38	Pine Grove Reservoir 7.5'	None	
			SW 1/4 Sec. 25				
			NE 1/4 and				
			SE 1/4 Sec. 26				
MX-5C-5/6	T28S,	R17W,	SW 1/4 Sec. 26	#38	Pine Grove Reservoir 7.5'	None	
MX-5C-5/7	T29S,	R17W,	NE 1/4 and	#43	Pine Grove Reservoir 7.5'	None	
			SE 1/4 Sec. 2				
MX-5C-5/8	T29S,	R17W,	NE 1/4 Sec. 11	#43	Pine Grove Reservoir 7.5'	None	
MX-5C-5/8A*	T29S,	R17W,	SE 1/4 Sec. 11	#43	Pine Grove Reservoir 7.5'	MX-5C-5/8A-PI1	Isolated broken flake; obsidian
						MX-5C-5/8A(off)-PI1	Isolated interior flake; white chert
MX-5C-5/9	T28S,	R17W,	SW 1/4 and	#37	Pine Grove Reservoir 7.5'	None	
			NW 1/4 Sec. 22				
MX-5C-5/10	T28S,	R17W,	SW 1/4 Sec. 27	#37	Pine Grove Reservoir 7.5'	None	
MX-5C-5/11	T28S,	R17W,	SW 1/4 Sec. 34	#37	Pine Grove Reservoir 7.5'	None	
MX-5C-5/12	T29S,	R17W,	NW 1/4 Sec. 4	#42	Buckhorn Spring 7.5'	MX-5c-5/12 (off)-PI1	Isolated interior flake; white chert
MX-5C-5/13	T29S,	R17W,	SE 1/4 Sec. 9	#42	Pine Grove Reservoir 7.5'	None	

PINE VALLEY
CLUSTER 5
(Continued)

Units:	Legal Descriptions			Maps			Findings:	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.		Archeological Site	
MX-5C-5/14	T29S,	R17W,	NW 1/4 Sec. 8	#42	Buckhorn Spring	7.5'	MX-5c-5/14 (off)-M1	Historic trash dump with 2 flakes
MX-5C-5/15	T29S,	R17W,	SE 1/4 and SW 1/4 Sec. 8	#42	Buckhorn Spring	7.5'	None	
MX-5C-5/16	T29S,	R17W,	SW 1/4 Sec. 17	#42	Buckhorn Spring	7.5'	None	
MX-5C-5/17	T28S,	R17W,	SW 1/4 Sec. 21 NW 1/4 Sec. 28	#37	Buckhorn Spring	7.5'	None	
MX-5C-5/18	T28S,	R17W,	NW 1/4 Sec. 29	#37	Buckhorn Spring	7.5'	None	
MX-5C-5/19	T28S,	R17W,	NW 1/4 Sec. 32	#37	Buckhorn Spring	7.5'	None	
MX-5C-5/20	T28S,	R17W,	SE 1/4 Sec. 19	#37	Buckhorn Spring	7.5'	None	
MX-5C-5/21	T28S,	R17W,	SE 1/4 Sec. 18	#37	Buckhorn Spring	7.5'	MX-5c-5/21-PI1	Isolated flake; brown chert
MX-5C-5/22	T28S,	R17W,	NE 1/4 Sec. 17 SE 1/4 Sec. 8	#37	Sawtooth Peak Buckhorn Spring	7.5' 7.5'	None	
MX-5C-5/23	T28S,	R17W,	SE 1/4 Sec. 9	#31	Sawtooth Peak	7.5'	None	

* Resiting

SHELTER SUMMARY TABLE
PINE VALLEY
REMOTE SURVEILLANCE SITES

Units:	Legal Descriptions			Maps			Findings:	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.		Archeological Site	
RSS/1	T27S,	R17W,	SE 1/4 Sec. 5	#25	Sawtooth Peak	7.5'	MX-5c-RSS/1-HI1	1913 Benchmark
RSS/2	T25S,	R16W,	SE 1/4 Sec. 33	#17	Wah Wah Summit	15'	None	
RSS/3	T27S,	R16W,	NE 1/4 Sec. 30	#32	Lamerdorf Peak N.W.	7.5'	None	
RSS/4	T28S,	R17W,	NE 1/4 Sec. 34	#37	Pine Grove Reservoir	7.5'	None	

PINE VALLEY
CLUSTER MAINTENANCE FACILITIES

Units:	Legal Descriptions			Maps			Findings:	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.		Archeological Site	
MX-5c-CMF/1	T27S,	R17W,	NW 1/4 Sec. 27	#31	Lamerdorf Peak	7.5'	None	
MX-5c-CMF/2	T27S,	R17W,	NE 1/4 Sec. 4	#25	Sawtooth Peak	7.5'	None	
MX-5c-CMF/3	T25S,	R16W,	SE 1/4 Sec. 29	#16	Wah Wah Summit	15'	None	
MX-5c-CMF/4	T27S,	R16W,	SW 1/4 Sec. 3	#27	Lamerdorf Peak N.W.	7.5'	MX-5c-CMF/4-PI1	Isolated flake; gold chert
							MX-5c-CMF/4-PI2	Isolated flake; gold chert
							MX-5c-CMF/4-HI1	Isolated square-cut nail embedded in a cut timber
MX-5c-CMF/5	T28S,	R17W,	SE 1/4 Sec. 28 SW 1/4 Sec. 27	#37	Pine Grove Reservoir	7.5'	MX-5c-CMF/5-PI1	Isolated projectile point fragment; white crypto-crystalline

APPENDIX D

SHELTER SUMMARY TABLE
WAH WAH VALLEY
CLUSTER 1

Units:	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-54-1/1	T27S,	R14W,	SW 1/4 Sec. 16	#25	Frisco 15'	MX-54-1/1-P1	Lithic scatter; small low density
						MX-54-1/1-PI1	Isolated utilized flake; obsidian
MX-54-1/2	T27S,	R14W,	SW 1/4 Sec. 21	#25	Frisco 15'	None	
MX-54-1/3	T27S,	R14W,	NE 1/4 Sec. 16	#25	Frisco 15'	MX-54-1/3-PI	Isolated flake; caramel crypto-crystalline
MX-54-1/4	T27S,	R14W,	SE 1/4 Sec. 15	#25	Frisco 15'	MX-54-1/4-PI	Isolated utilized scraper; white chert
MX-54-1/5	T27S,	R14W,	NW 1/4 Sec. 27	#25	Frisco 15'	MX-54-1/5-PI	Isolated biface fragment; obsidian
MX-54-1/6	T27S,	R14W,	NE 1/4 and NW 1/4 Sec. 33	#25	Frisco 15'	None	
MX-54-1/7	T27S,	R14W,	SE 1/4 Sec. 34	#25	Frisco 15'	MX-54-1/7-PI1	Isolated interior flake; obsidian
						MX-54-1/7-PI2	Isolated interior flake; obsidian
MX-54-1/8	T28S,	R14W,	SE 1/4 Sec. 3	#28	Frisco 15'	None	
MX-54-1/9	T27S,	R14W,	SW 1/4 and SE 1/4 Sec. 10	#28	Frisco 15'	None	
MX-54-1/10	T27S,	R14W,	NE 1/4 and SE 1/4 Sec. 22	#25	Frisco 15'	None	
MX-54-1/11	T27S,	R14W,	SE 1/4 Sec. 23	#26	Frisco 15'	MX-54-1/11-PI1	Isolated flake; white chert
						MX-54-1/11-PI2	Isolated utilized flake; white chert
MX-54-1/12	T27S,	R14W,	NE 1/4 Sec. 24	#26	Frisco 15'	None	
MX-54-1/13	T27S,	R13W,	SE 1/4 Sec. 19	#26	Frisco 15'	None	
MX-54-1/14	T27S,	R13W,	SE 1/4 Sec. 30	#26	Frisco 15'	MX-54-1/14-PI1	Isolated flake; brown crypto-crystalline
						MX-54-1/14-PI2	Isolated flake; obsidian
MX-54-1/15	T27S,	R14W,	NE 1/4 Sec. 36	#26	Frisco 15'	None	
MX-54-1/16	T27S,	R14W,	NE 1/4 Sec. 35, SW 1/4 Sec. 25, SE 1/4 Sec. 26, NW 1/4 Sec. 36	#26	Frisco 15'	MX-54-1/16-HI1	Isolated historic bottle fragments; brown glass

WAH WAH VALLEY
CLUSTER 1
(Continued)

Units:	Legal Descriptions	Maps		Findings	
Sample Unit No.	Twn Range Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-54-1/17	T28S, R13W, NW 1/4 Sec. 6	#29	Frisco 15'	None	
MX-54-1/18	T28S, R13W, SW 1/4 Sec. 5	#29	Frisco 15'	None	
MX-54-1/19	T28S, R14W, NW 1/4 and NE 1/4 Sec. 13	#29	Frisco 15'	None	
MX-54-1/20	T28S, R14W, NW 1/4 Sec. 12	#29	Frisco 15'	None	
MX-54-1/21	T28S, R14W, SE 1/4 Sec. 13 NE 1/4 Sec. 24	#29	Frisco 15'	None	
MX-54-1/21A*	T28S, R14W, NE 1/4 Sec. 24			MX-54-1/21A-PI1	Isolated broken flake; obsidian
				MX-54-1/21A-PI2	Isolated interior flake; white chert
MX-54-1/22	T28S, R14W, SE 1/4 Sec. 14	#29	Frisco 15'	None	
MX-54-1/23	T28S, R14W, SE 1/4 Sec. 23	#29	Frisco 15'	MX-54-1/23-PI1	Isolated flake; white crypto-crystalline

SHELTER SUMMARY TABLE
WAH WAH VALLEY
CLUSTER 2

Units:	Legal Descriptions			Maps			Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.		Archeological Site	
MX-54-2/1	T27S,	R14W,	NW 1/4 Sec. 3	#22	Frisco	15'	MX-54-2/1-PI1	Isolated interior flake; gold chert
			NE 1/4 Sec. 4					
	T26S,	R14W,	SW 1/4 Sec. 34				MX-54-2/1(off)-PI1	Isolated flake; gold chert with cortex
			SE 1/4 Sec. 33					
MX-54-2/2	T26S,	R14W,	NW 1/4 Sec. 34	#22	Frisco	15'	MX-54-2/2-PI1	Isolated interior flake; grey obsidian
			SW 1/4 Sec. 27					
MX-54-2/3	T26S,	R14W,	SW 1/4 Sec. 26	#23	Frisco Peak	15'	None	
MX-54-2/4	T26S,	R14W,	SE 1/4 Sec. 23	#19	Frisco Peak	15'	None	
MX-54-2/5	T26S,	R14W,	NE 1/4 Sec. 22	#18	Frisco Peak	15'	None	
			SE 1/4 Sec. 15					
MX-54-2/6	T26S,	R14W,	NW 1/4 Sec. 14	#19	Frisco Peak	15'	MX-54-2/6-PI1	Isolated interior flake; black obsidian
MX-54-2/7	T26S,	R14W,	SW 1/4 Sec. 12	#19	Frisco Peak	15'	None	
MX-54-2/8	T26S,	R14W,	SW 1/4 Sec. 1	#19	Frisco Peak	15'	MX-54-2/8-P1	Lithic scatter; small low density (unidentified projectile point)
MX-54-2/9	T26S,	R14W,	NE 1/4 Sec. 2	#19	Frisco Peak	15'	None	
MX-54-2/10	T25S,	R14W,	NE 1/4 Sec. 35	#15	Frisco Peak	15'	MX-54-2/10-P1	Lithic scatter; small low density
MX-54-2/11	T25S,	R14W,	NW 1/4 Sec. 25	#15	Frisco Peak	15'	None	
MX-54-2/12	T25S,	R14W,	SW 1/4 and	#15	Frisco Peak	15'	None	
			NW 1/4 Sec. 24					
MX-54-2/13	T25S,	R14W,	SE 1/4 Sec. 13	#15	Frisco Peak	15'	None	
	T25S,	R13W,	SW 1/4 Sec. 18					
MX-54-2/14	T25S,	R13W,	NE 1/4 Sec. 18	#15	Frisco Peak	15'	None	
			SE 1/4 Sec. 7					
MX-54-2/15	T26S,	R13W,	SE 1/4 Sec. 6	#19	Frisco Peak	15'	None	
			NE 1/4 Sec. 7					

WAH WAH VALLEY
CLUSTER 2
(Continued)

Units:	Legal Descriptions	Maps		Findings
Sample Unit No.	Twn Range Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-54-2/16	T26S, R13W, NW 1/4 Sec. 6	#15	Frisco Peak 15'	MX-54-2/16-PI1 Isolated thinning flake; black chert
MX-54-2/16A*	T26S, R13W, NE 1/4 and NW 1/4 Sec. 6	#19	Frisco Peak 15'	None
MX-54-2/17	T25S, R13W, SW 1/4 Sec. 32	#15	Frisco Peak 15'	None
MX-54-2/18	T25S, R13W, SE 1/4 Sec. 29	#15	Frisco Peak 15'	None
MX-54-2/19	T26S, R13W, NE 1/4 Sec. 18	#19	Frisco Peak 15'	None
MX-54-2/19A*	T26S, R13W, NE 1/4 Sec. 18 SE 1/4 Sec. 7	#19	Frisco Peak 15'	None
MX-54-2/20	T26S, R13W, SW 1/4 Sec. 18	#19	Frisco Peak 15'	MX-54-2/20-PI1 Isolated Parowan basal-notched projectile point; obsidian
				MX-54-2/20-PI2 Isolated utilized flake; gold cryptocrystalline
MX-54-2/21	T26S, R13W, NW 1/4 Sec. 30	#23	Frisco Peak 15'	MX-54-2/21-PI1 Isolated utilized flake; obsidian
MX-54-2/21A*	T26S, R13W, NW 1/4 Sec. 30 SW 1/4 Sec. 19	#23	Frisco Peak 15'	None
MX-54-2/22	T26S, R14W, NW 1/4 and SW 1/4 Sec. 25	#23	Frisco Peak 15'	None
MX-54-2/23	T27S, R14W, NE 1/4 Sec. 1	#23	Frisco Peak 15'	None

* Resiting

SHELTER SUMMARY TABLE
WAH WAH VALLEY
CLUSTER 3

Units:	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.		Archeological Site
MX-54-3/1	T26S,	R14W,	NW 1/4 Sec. 33	#22	Frisco Peak 15'	MX-54-3/1-PI1	Isolated utilized flake; gold chert
MX-54-3/2	T26S,	R14W,	NE 1/4 Sec. 28	#22	Frisco Peak 15'	MX-54-3/2-PI1	Isolated utilized scraper; white quartzite
						MX-54-3/2-PI2	Isolated retouched chunk; gold chert
MX-54-3/3	T26S,	R14W,	NE 1/4 Sec. 20	#18	Frisco Peak 15'	None	
MX-54-3/4	T26S,	R14W,	SW 1/4 and NW 1/4 Sec. 16	#18	Frisco Peak 15'	None	
MX-54-3/5	T26S,	R14W,	NW 1/4 Sec. 15	#18	Frisco Peak 15'	None	
MX-54-3/6	T26S,	R14W,	NW 1/4 Sec. 10	#18	Frisco Peak 15'	MX-54-3/6-PI1	Isolated interior flake; orange chert
MX-54-3/7	T26S,	R14W,	NE 1/4 Sec. 4	#18	Frisco Peak 15'	None	
MX-54-3/8	T25S,	R14W,	NE 1/4 Sec. 33	#14	Frisco Peak 15'	None	
MX-54-3/9	T25S,	R14W,	NE 1/4 Sec. 34	#14	Frisco Peak 15'	None	
MX-54-3/10	T25S,	R14W,	SE 1/4 and SW 1/4 Sec. 22	#14	Frisco Peak 15'	None	
MX-54-3/11	T25S,	R14W,	SE 1/4 Sec. 15	#14	Frisco Peak 15'	None	
MX-54-3/12	T25S,	R14W,	SE 1/4 Sec. 14	#15	Frisco Peak 15'	None	
MX-54-3/13	T25S,	R14W,	NW 1/4 Sec. 13 SW 1/4 Sec. 12	# 9	Frisco Peak 15'	None	
MX-54-3/14	T25S,	R14W,	SW 1/4 Sec. 1 NW 1/4 Sec. 12	# 9	Frisco Peak 15'	MX-54-3/14-P1	Lithic scatter; small low density (one Humboldt projectile point)
						MX-54-3/14-PI1	Isolated biface fragment; black obsidian with white phenocrysts
MX-54-3/14A*	T25S,	R14W,	SW 1/4 Sec. 1 NW 1/4 Sec. 12	# 9	Frisco Peak 15'	None	
MX-54-3/15	T25S,	R14W,	NE 1/4 Sec. 1	# 9	Frisco Peak 15'	None	
MX-54-3/15A*	T26S,	R14W,	NE 1/4 Sec. 5	#18	Frisco Peak 15'	MX-54-3/15A-PI1	Isolated utilized flake; caramel chert

WAH WAH VALLEY
CLUSTER 3
(Continued)

Units:	Legal Descriptions			Maps		Findings
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-54-3/16	T25S,	R13W,	SE 1/4 Sec. 6	# 9	Frisco Peak 15'	None
MX-54-3/16A*	T26S,	R14W,	SE 1/4 Sec. 32	#22	Frisco Peak 15'	None
MX-54-3/17	T24S,	R13W,	SE 1/4 Sec. 32	# 9	Frisco Peak 15'	None
	T25S,	R13W,	NE 1/4 Sec. 5			
MX-54-3/17A*	T25S,	R14W,	SE 1/4 Sec. 6	# 8	Frisco Peak 15'	None
MX-54-3/18	T25S,	R14W,	NE 1/4, SW 1/4 and NW 1/4 Sec. 10	# 8	Frisco Peak 15'	None
MX-54-3/19	T25S,	R14W,	SE 1/4 Sec. 4	# 8	Frisco Peak 15'	None
MX-54-3/20	T24S,	R14W,	SW 1/4 Sec. 34	# 8	Frisco Peak 15'	None
MX-54-3/21	T25S,	R14W,	SE 1/4 Sec. 5 SW 1/4 Sec. 4	# 8	Frisco Peak 15'	None
MX-54-3/22	T25S,	R14W,	NW 1/4 Sec. 7	# 8	Frisco Peak 15'	None
MX-54-3/22A*	T25S,	R14W,	SW 1/4 and NW 1/4 Sec. 7	# 8	Frisco Peak 15'	None
MX-54-3/23	T25S,	R15W,	NE 1/4 and SE 1/4 Sec. 1 NW 1/4 and SW 1/4 Sec. 6	# 8	Frisco Peak 15'	None

* Resiting

SHELTER SUMMARY TABLE
WAH WAH VALLEY
CLUSTER 4

Units:	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-54-4/1	T24S,	R14W,	NW 1/4 Sec. 22	# 2	Frisco Peak 15'	MX-54-4/1-HI1	Isolated historic can; single seam rectangular
MX-54-4/2	T24S,	R14W,	SE 1/4 Sec. 22 NE 1/4 Sec. 27	# 8	Frisco Peak 15'	MX-54-4/2-HI1	Historic trash; glass, metal
MX-54-4/3	T24S,	R14W,	NE 1/4 Sec. 26	# 9	Frisco Peak 15'	None	
MX-54-4/4	T24S,	R14W,	NW 1/4 Sec. 24	# 3	Frisco Peak 15'	MX-54-4/4-PI1	Isolated flake; white quartzite with cortex
MX-54-4/5	T24S,	R13W,	NW 1/4 Sec. 31	# 9	Frisco Peak 15'	None	
MX-54-4/6	T24S,	R13W,	NE 1/4 Sec. 30	# 9	Frisco Peak 15'	None	
MX-54-4/7	T24S,	R13W,	NW 1/4 Sec. 19	# 3	Frisco Peak 15'	None	
MX-54-4/8	T24S,	R13W,	NE 1/4 Sec. 29	# 9	Frisco Peak 15'	MX-54-4/8-P1	Lithic scatter; small low density
MX-54-4/9	T24S,	R13W,	NW 1/4 Sec. 33	#10	Frisco Peak 15'	None	
MX-54-4/10	T24S,	R13W,	SE 1/4 Sec. 27	#10	Frisco Peak 15'	MX-54-4/10-HI1	Isolated historic bottle; purple glass
						MX-54-4/10-PI1	Isolated utilized chunk; obsidian
MX-54-4/11	T24S,	R13W,	NW 1/4 and SW 1/4 Sec. 21	# 4	Frisco Peak 15'	None	
MX-54-4/12	T24S,	R13W,	SE 1/4 Sec. 16	# 4	Frisco Peak 15'	None	
MX-54-4/13	T24S,	R13W,	SW 1/4 Sec. 10	# 4	Frisco Peak 15'	None	
MX-54-4/14	T24S,	R13W,	SW 1/4 Sec. 9	# 4	Frisco Peak 15'	None	
MX-54-4/14A*	T24S,	R13W,	SE 1/4 Sec. 8 SW 1/4 Sec. 9	# 3	Frisco Peak 15'	None	
MX-54-4/15	T24S,	R13W,	SW 1/4 Sec. 8	# 3	Frisco Peak 15'	None	
MX-54-4/16	T24S,	R14W,	NE 1/4 Sec. 12 T24S, R13W, NW 1/4 Sec. 7	# 3	Frisco Peak 15'	None	
MX-54-4/17	T24S,	R14W,	NW 1/4 Sec. 13 NE 1/4 Sec. 14	# 3	Frisco Peak 15'	MX-54-4/17-PI1	Isolated biface fragment; white chert

WAH WAH VALLEY
CLUSTER 4
(Continued)

Units:	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-54-4/17A*	T24S,	R14W,	NE 1/4 Sec. 14	# 3	Frisco Peak 15'	MX-54-4/17A-HI1	Isolated broken jar; purple glass
MX-54-4/18	T24S,	R14W,	NW 1/4 Sec. 12	# 3	Frisco Peak 15'	None	
MX-54-4/19	T24S,	R13W,	NW 1/4 Sec. 23	# 4	Frisco Peak 15'	None	
MX-54-4/20	T24S,	R13W,	NE 1/4 Sec. 13	# 4	Frisco Peak 15'	MX-54-4/20-P1	Milling station; small low density
						MX-54-4/20(off)-P1	Lithic scatter; large low density
MX-54-4/21	T24S,	R13W,	SW 1/4 and NW 1/4 Sec. 12	# 4	Frisco Peak 15'	None	
MX-54-4/22	T24S,	R13W,	SW 1/4 Sec. 11	# 4	Frisco Peak 15'	None	
MX-54-4/23	T24S,	R13W,	NW 1/4 and SW 1/4 Sec. 1	# 4	Frisco Peak 15'	None	

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SHELTER SUMMARY TABLE
WAH WAH VALLEY
CLUSTER 5

Units:	Legal Descriptions			Maps		Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site	
MX-54-5/1	T25S,	R13W,	SE 1/4 and NE 1/4 Sec. 28	#16	Frisco Peak 15'	None	
MX-54-5/2	T25S,	R13W,	NE 1/4, NW 1/4, SE 1/4 and SW 1/4 Sec. 21	#16	Frisco Peak 15'	MX-54-5/2-PI1	Isolated flake; gray-white quartzite
MX-54-5/3	T25S,	R13W,	SW 1/4 Sec. 15	#16	Frisco Peak 15'	None	
MX-54-5/4	T25S,	R13W,	NW 1/4 Sec. 14 NE 1/4 Sec. 15	#16	Frisco Peak 15'	None	
MX-54-5/5	T24S,	R13W,	SE 1/4 and SW 1/4 Sec. 10	#10	Frisco Peak 15'	MX-54-5/5-P1	Lithic scatter; large low density
MX-54-5/5A*	T25S,	R13W,	SW 1/4 and SE 1/4 Sec. 10	#10	Frisco Peak 15'	None	
MX-54-5/6	T25S,	R13W,	SW 1/4 Sec. 1	#10	Frisco Peak 15'	None	
MX-54-5/7	T24S,	R13W,	SW 1/4 Sec. 35	#10	Frisco Peak 15'	MX-54-5/7-P1	Lithic scatter; large low density
MX-54-5/7A*	T24S,	R13W,	SW 1/4 Sec. 35	#10	Frisco Peak 15'	None	
MX-54-5/8	T24S,	R13W,	NE 1/4 Sec. 35 NW 1/4 Sec. 36	#10	Frisco Peak 15'	None	
MX-54-5/8A*	T24S,	R13W,	NE 1/4 Sec. 35 NW 1/4 Sec. 36	#10	Frisco Peak 15'	MX-54-5/8A-PI1	Isolated Elko corner-notched projectile point
MX-54-5/9	T24S,	R13W,	SE 1/4 Sec. 25	#10	Frisco Peak 15'	None	
MX-54-5/10	T24S,	R12W,	SW 1/4 Sec. 19	# 5	Beaver Lake Mtns. 15'	None	
MX-54-5/11	T24S,	R13W,	NW 1/4 Sec. 24	# 4	Frisco Peak 15'	None	
MX-54-5/12	T24S,	R12W,	SE 1/4 Sec. 18 NE 1/4 Sec. 19	# 5	Beaver Lake Mtns. 15'	None	
MX-54-5/13	T24S,	R12W,	NE 1/4 Sec. 20	# 5	Beaver Lake Mtns. 15'	MX-54-5/13-PI1	Isolated thinning flake; brown chert with red and black bands

WAH WAH VALLEY
CLUSTER 5
(Continued)

Units:	Legal Descriptions		Maps		Findings	
Sample Unit No.	Twn Range Section		MX 1:9600	U.S.G.S.	Archeological Site	
MX-54-5/13A*	T24S, R12W, NE 1/4 Sec. 20		# 5	Beaver Lake Mtns. 15'	MX-54-5/13A-PI1	Isolated interior flake; white quartzite
MX-54-5/14	T24S, R12W, SW 1/4 Sec. 21		# 5	Beaver Lake Mtns. 15'	None	
MX-54-5/14A*	T24S, R12W, SW 1/4 Sec. 21		# 5	Beaver Lake Mtns. 15'	None	
MX-54-5/15	T24S, R12W, SW 1/4 Sec. 22		# 5	Beaver Lake Mtns. 15'	None	
MX-54-5/16	T24S, R12W, SE 1/4 Sec. 15 NE 1/4 Sec. 22		# 5	Beaver Lake Mtns. 15'	None	
MX-54-5/17	T24S, R12W, NE 1/4 Sec. 23		# 6	Beaver Lake Mtns. 15'	None	
MX-54-5/18	T24S, R12W, NW 1/4 Sec. 25 SW 1/4 Sec. 24		#12	Beaver Lake Mtns. 15'	MX-54-5/18-P1	Lithic scatter; small low density
MX-54-5/18A*	T24S, R12W, NE 1/4 Sec. 25		#12	Beaver Lake Mtns. 15'	MX-54-5/18A-PI1 MX-54-5/18A-HI1	Isolated crescent shaped biface, obsidian Isolated can hole-in-top
MX-54-5/19	T24S, R12W, SW 1/4 Sec. 28		#11	Beaver Lake Mtns. 15'	None	
MX-54-5/19A*	T24S, R12W, SW 1/4 Sec. 28		#11	Beaver Lake Mtns. 15'	None	
MX-54-5/20	T24S, R12W, NW 1/4 Sec. 35 NE 1/4 Sec. 34		#11 #12	Beaver Lake Mtns. 15'	MX-54-5/20-H1	Isolated historic trash; bottles and cans
MX-54-5/20A*	T24S, R12W, SE 1/4 Sec. 27		#11 #12	Beaver Lake Mtns. 15'	None	

WAH WAH VALLEY
CLUSTER 5
(Continued)

Units:	Legal Descriptions			Maps		Findings
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.	Archeological Site
MX-54-5/21	T25S,	R12W,	NE 1/4 Sec. 3	#11	Beaver Lake Mtns. 15'	None
MX-54-5/22	T24S,	R12W,	SW 1/4 Sec. 33	#11	Beaver Lake Mtns. 15'	None
MX-54-5/22A*	T24S,	R12W,	SW 1/4 Sec. 33	#11	Beaver Lake Mtns. 15'	None
	T25S,	R12W,	NW 1/4 Sec. 4			
MX-54-5/23	T25S,	R12W,	NE 1/4 and SE 1/4 Sec. 4	#11	Beaver Lake Mtns. 15'	None
MX-54-5/23A*	T25S,	R12W,	NE 1/4 Sec. 4	#11	Beaver Lake Mtns. 15'	None

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SHELTER SUMMARY TABLE
WAH WAH VALLEY
CLUSTER MAINTENANCE FACILITIES

Units:	Legal Descriptions			Maps			Findings	
Sample Unit No.	Twn	Range	Section	MX 1:9600	U.S.G.S.		Archeological Site	
MX-54-CMF/1	T27S,	R14W,	SW 1/4 and NW 1/4 Sec. 24	#26	Frisco	15'	MX-54-CMF/1-PI1	Isolated core; yellow tan chert
							MX-54-CMF/1-PI2	Isolated retouched chunk; cryptocrystalline
MX-54-CMF/2	T26S,	R14W,	SE 1/4 and NE 1/4 Sec. 12	#19	Frisco Peak	15'	None	
MX-54-CMF/3	T25S,	R14W,	NE 1/4 Sec. 14	#15	Frisco Peak	15'	MX-54-CMF/3-HI1	Isolated historic can; hole-in-top
							MX-54-CMF/3-P1	Lithic scatter; small low density
							MX-54-CMF/3-PI1	Isolated biface fragment; translucent grey obsidian
							MX-54-CMF/3-PI2	Isolated rectangular metate; volcanic
MX-54-CMF/4	T24S,	R13W,	NW 1/4 and NE 1/4 Sec. 22	# 4	Frisco Peak	15'	MX-54-CMF/4(off)-MI	Multi-component; historic trash and lithic scatter; large low density
MX-54-CMF/5	T24S,	R12W,	SW 1/4 19	# 5	Beaver Lake Mtns.	15'	None	

SHELTER SUMMARY TABLE
WAH WAH VALLEY
REMOTE SURVEILLANCE SITES

Units:	Legal Descriptions	Maps			Findings
Sample Unit No.	Twn Range Section	MX 1:9600	U.S.G.S.		Archeological Site
MX-54-RSS/1	T27S, R14W, NE 1/4 Sec. 27	#25	Frisco Peak	15'	None
MX-54-RSS/2	T26S, R14W, SE 1/4 Sec. 1	#19	Frisco Peak	15'	None
MX-54-RSS/3	T24S, R14W, SW 1/4 Sec. 35	# 9	Frisco Peak	15'	None
MX-54-RSS/4	T24S, R12W, NW 1/4 Sec. 19	# 5	Beaver Lake Mtns.	15'	None

APPENDIX E

APPENDIX E

BUREAU OF LAND MANAGEMENT LETTER ON SIGNIFICANCE AND AVOIDANCE MITIGATION CRITERIA

E-TR-48-III-II

IN REPLY REFER TO

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Nevada State Office
300 Booth Street
P.O. Box 12000
Reno, Nevada 89520

September 12, 1980

Subject: Archaeological Site Significance---Nevada/Utah MX-IOC Areas

The following statements describe the types of sites that shall require avoidance recommendations based on the ground rules presented by Air Force representatives at the August 12, 1980 Reno meeting. Briefly, those rules state that this project is a "dry-run" test case to determine the feasibility of the systems design to avoid all sites requiring such action. Consequently, data recovery is to be limited only to small site diagnostics that may establish temporal occupation periods or cultural affiliation. Formulation of mitigation strategies and implementation of the Nevada small site collection policy is not appropriate at this time.

Prehistoric

1. Sites exhibiting a high likelihood of depth (e.g. dune sites, sites located on alluvial fans exhibiting high densities of chipped stone artifacts or hearth features).

2. Isolated features which demonstrate a possibility of depth (e.g. caches partially exposed by deflation)

3. Rockshelters immediately exposed to project location.

4. Rock art sites.

5. Large lithic scatters containing temporally diagnostic artifacts or artifacts indicative of specific cultural affiliations, multi-component sites, or sites composed of discrete multiple activity areas.

6. Burial sites

7. Rock alignments and cairns

Historic

1. Structures greater than 50 years of age (e.g. ranches, ore mills)

2. Multi-component or multiple activity sites (e.g. mining camps or towns)

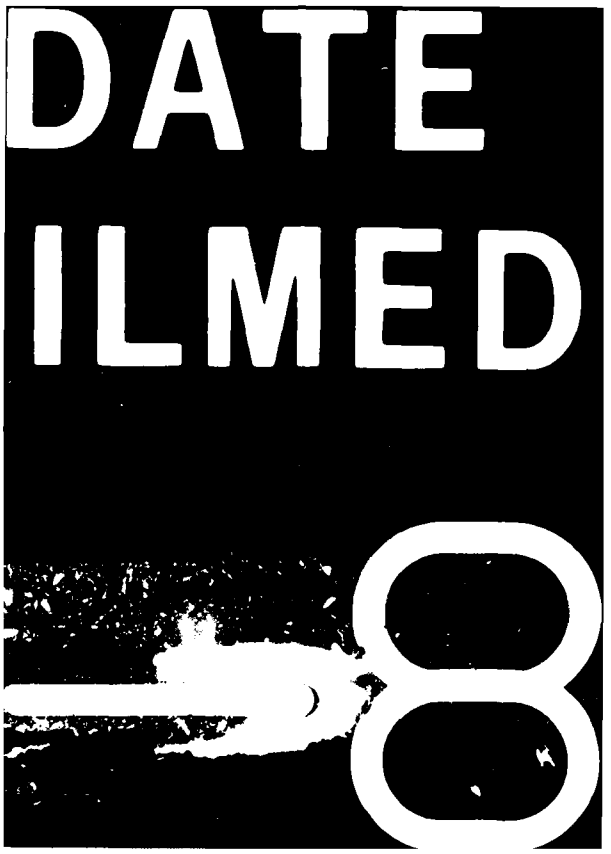
3. Mining developments (e.g. shafts, addits)

4. Cemeteries

5. Road or trail traces of early transportation routes.

In addition to the above prehistoric and historic site type listings, unusual or enigmatic anomalies should also be included.

Richard Hanes
Nevada BLM State Archaeologist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