

**A CULTURAL RESOURCES MONITORING AND DISCOVERY PLAN
FOR MAINTENANCE AND MINOR CONSTRUCTION ACTIVITIES
AT EXISTING WESTERN AREA POWER ADMINISTRATION–DESERT
SOUTHWEST REGION TRANSMISSION LINES, FACILITIES, AND
PROPERTIES IN ARIZONA**

Prepared for:
**Western Area Power Administration
Desert Southwest Region
615 S. 43rd Avenue
Phoenix, Arizona 85005**

Prepared by:
**Christopher E. Rayle, MA, RPA
Cara Lonardo**

**Environmental Planning Group, LLC
4141 N. 32nd Street, Suite 102
Phoenix, Arizona 85018**

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ABSTRACT

Project Title: Monitoring and Discovery Plan for Western Area Power Administration Properties in Arizona

Report Title: A Cultural Resources Monitoring and Discovery Plan for Maintenance and Minor Construction Activities at Existing Western Area Power Administration – Desert Southwest Region Transmission Lines, Facilities, and Properties in Arizona

Report Date: August 2014

Agencies: Western Area Power Administration–Desert Southwest Region (Western-DSW), Advisory Council on Historic Preservation (ACHP), Arizona State Historic Preservation Officer (AZ SHPO), Arizona State Land Department, Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, National Park Service, U.S. Forest Service, Yuma Proving Ground, Ak-Chin Indian Community, Colorado River Indian Tribes, Fort Mojave Indian Tribe, Fort Yuma-Quechan Tribe, Gila River Indian Community, Hualapai Tribe, Navajo Nation, Salt River Pima-Maricopa Indian Community, and Tohono O’odham Nation

Project Number: EPG Job Number: WOC-1305

Project Description: The purpose of this document is to lay out procedures for monitoring before, during and after maintenance activities. In 2013, Western-DSW executed a programmatic agreement (PA) between the ACHP and AZ SHPO and numerous signatories that created a streamlined approach to the Section 106 process for undertakings associated with Western’s routine maintenance and minor construction activities occurring on private, state, federal, and tribal lands.

Because some of the maintenance includes ground-disturbing activities within boundaries of known historic properties, project-specific permits and associated monitoring plans are required, which slows the process and incurs additional fees for Western. To streamline this requirement, Western’s PA calls for the development of a monitoring and discovery plan for use during monitoring on routine maintenance activities that occur within the boundaries of historic properties. Western-DSW will ensure that its contractors obtain all appropriate permits and curation agreements, based on the location and jurisdiction of each project.

Location and Jurisdiction: Western-DSW’s rights-of-way and easements cross federal, tribal, state, county and private lands within Arizona including:

ABSTRACT

Arizona State Land Department
Bureau of Land Management
Bureau of Reclamation
U.S. Forest Service
National Park Service
Ak-Chin Indian Community
Cocopah Indian Tribe
Colorado River Indian Tribes
Fort Mohave Indian Tribe
Gila River Indian Community
Navajo Nation
Salt River Pima Maricopa Indian Community
Tohono O'odham Nation
Yuma Proving Ground

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INTRODUCTION

The purpose of this document is to lay out procedures for monitoring before, during and after maintenance activities. Western Area Power Administration–Desert Southwest Region (Western-DSW) operates and maintains an electrical power delivery system that consists of transmission lines, substations, communication sites, and ancillary facilities. As of 2013, Western maintains 19,500 structures, 123 facilities, and over 3,000 miles of transmission lines on private lands as well as those managed by various state and federal agencies, and tribes in Arizona (Figure 1). Information about Western’s transmission lines in Arizona is presented in Table 1.

In December 2013, Western-DSW executed a programmatic agreement (PA) pursuant to the National Historic Preservation Act of 1966, as amended and its implementing regulation, 36 CFR Part 800 for streamlining the Section 106 process regarding undertakings associated with Western-DSW’s routine maintenance procedures on private, state, federal, and tribal lands. The PA was signed by Western, the ACHP, AZ SHPO and numerous invited signatories. Stipulation VI of the PA calls for the development of a monitoring and discovery plan to guide archaeological activities that might occur within Western-DSW’s rights-of-way and associated facilities. This monitoring and discover plan complies with the provisions of the PA.

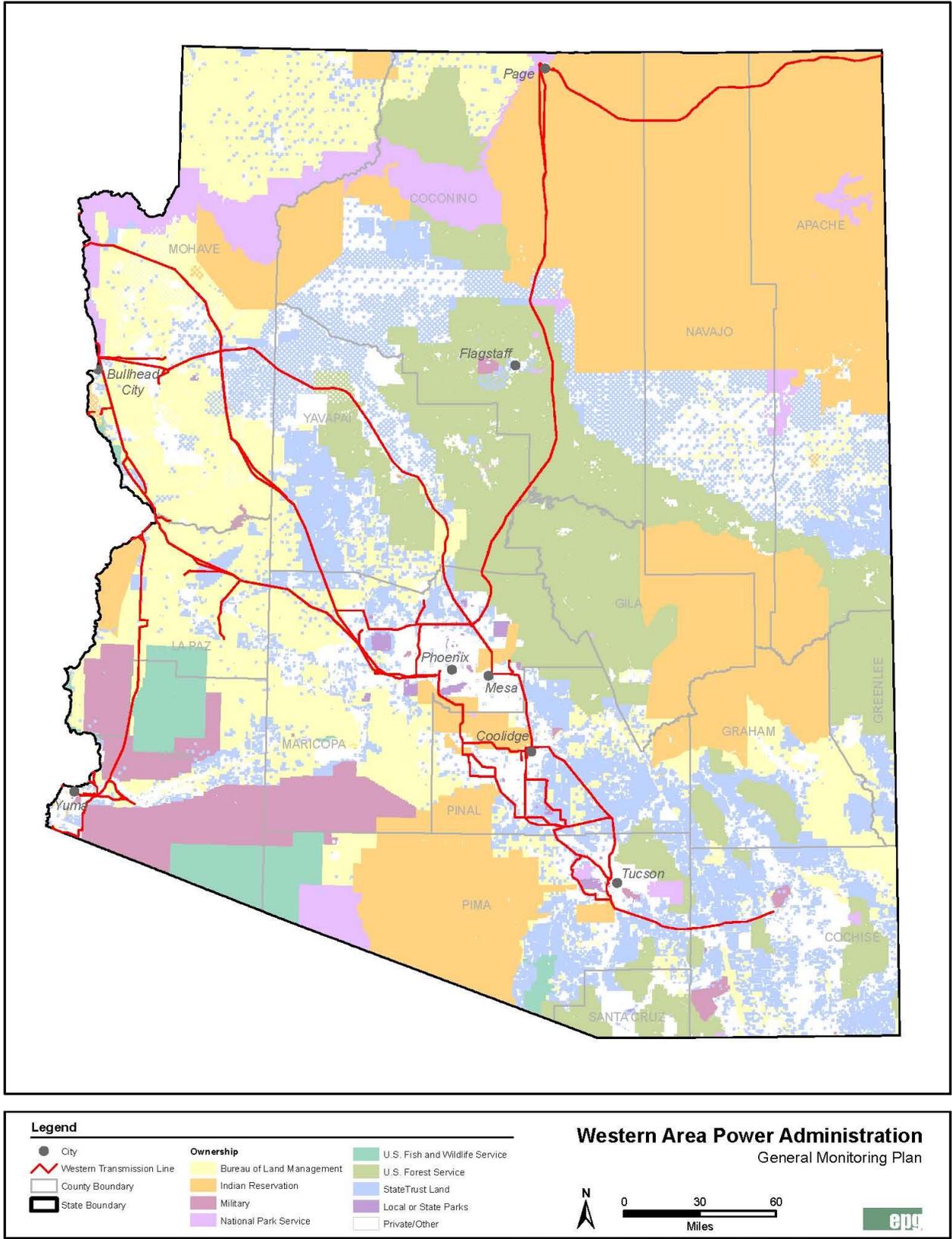


Figure 1. Western's statewide transmission line system.

Table 1. Western-DSW Transmission Lines in Arizona			
Name	Abbreviation	Miles in Arizona	Jurisdiction(s)
Central Arizona Power System			
Bouse Hills-Harcuvar 115-kV	BHP-HCR	23.3	Federal, State, Private
Davis Dam-McCullough 230-kV	DAD-MCC	0.4	Federal
Davis Dam-Parker No. 2 230-kV	DAD-PAD2	0.9	Federal, State, Private
Del Bac-Rattlesnake 115-kV	DLB-RSK	24.4	Federal, State, Private
Electrical District 2-Saguaro No. 1 & 2 115-kV	ED2-SGR1 ED2-SGR2	72.7	Federal, State, Private
Harcuvar-Little Harquahala 115-kV	HCR-LHP	27.0	Federal, State
Hassayampa Tap-Hassayampa 230-kV	HAT-HAP	6.0	Federal, State, Private
New Waddell-Westwing 230-kV	NWD-WWG	10.5	Federal, State, Private
Rattlesnake-Del Bac 115-kV	RSK-DLB	8.0	Federal, State, Private, Tribal
Spook Hill-Salt Gila Pump Plant 69-kV	SPH-SGL	6.7	Federal, State, Private
Colorado River Front Work & Levee Power System			
Gila-Gila Valley 34.5-kV	GLA-GIV	8.5	Federal, Private
Gila-North Gila 69-kV	GLA-NGA	9.5	Federal, State, Private
North Gila-Senator Wash 69-kV	NGA-SEW	6.5	Federal, State, Private
Colorado River Storage Power System			
Flagstaff-Pinnacle Peak No. 1 & 2 345-kV	FLG-PPK1 FLG-PPK2	227.6	Federal, State, Private
Glen Canyon-Flagstaff No. 1 & 2 345-kV	GC-FLG1 GC-FLG2	248.4	Federal, State, Private, Tribal
Glen Canyon-Powell No. 1 & 2 69-kV	GC-PWL	5.6	Federal, Private
Glen Canyon-Shiprock 230-kV	GC-SHR	154.5	Federal, Private, Tribal
Pinnacle Peak-Rogers No. 1 & 2 230-kV	PPK-RGS1, PPK-RGS2	21.9	Federal, State, Private, Tribal
Colorado River Salinity Control Power System			
Gila-Sonora 69-kV	GLA-SON	18.9	Federal, State, Private
Knob-Desalter 161-kV	KNB-DST	3.9	Federal, Private, Tribal
Sonora-Welfield 34.5-kV	SON-WFD	14.2	Federal, State, Private
Intertie Power System			
Liberty-Westwing 230-kV	LIB-WWG	33.8	Federal, State, Private
Mead-Perkins 500-kV	MED-PES	231.3	Federal, State, Private
Pinnacle Peak-Westwing 230-kV	PPK-WWG	22.3	Federal, State, Private
Parker-Davis Power System			
Agua Fria-Westwing 230-kV	AGF-WWG	0.2	State, Private
Casa Grande-Empire 115-kV	CAG-EMP	3.5	Private
Casa Grande-Empire 230-kV	CAG-EMP	14.1	State, Private, Tribal
Claude Lewis-Davis 69-kV	CDL-DAD	0.4	Federal
Coolidge-Electrical District 2 No. 1 & 2 115-kV	COL-ED2 #1 COL-ED2 #2	17.7	Private
Coolidge-Oracle 115-kV	COL-ORA	44.6	Federal, State, Private
Coolidge-Sundance No. 1 & 2 230-kV	COL-SUD1 COL-SUD2	18.0	State, Private

Table 1. Western-DSW Transmission Lines in Arizona

Name	Abbreviation	Miles in Arizona	Jurisdiction(s)
Davis Dam-Kingman Tap 69-kV	DAD-MKT	54.7	Federal, State, Private
Davis Dam-Mead 230-kV	DAD-MED	6.9	Federal
Davis Dam-Parker No. 1 230-kV	DAD-PAD1	1.2	Federal, State, Private
Davis Dam-Prescott 230-kV	DAD-PRS	72.3	Federal, State, Private
Davis Dam-Riviera 69-kV	DAD-RIV	0.2	Federal
Dome Tap-Wellton Mohawk Ligurta 161-kV	DME-WML	11.5	Federal, State, Private
Electrical District 5-Test Track 230-kV	ED5-TTT	20.8	State, Private
Empire -Electrical District 5 230-kV	EMP-ED5	8.8	State, Private
Firehouse-No Name 69-kV	FHS-NON	3.7	Private, Tribal
Gila-Knob 161-kV	GLA-KNB	9.6	Federal, State, Private
Gila-Wellton Mohawk Ligurta 161-kV	GLA-WML	12.8	Federal, Private
Gila-Yuma Tap 34.5-kV	GLA-YUT	9.7	Private
Gold Strike Tap-Hoover King 69-kV	GSP-HKT	0.6	Federal
Griffith-McConnico 230-kV	GTH-MCI	7.8	Federal, Private
Griffith-Peacock 230-kV	GTH-PCK	29.9	Federal, State, Private
Headgate Rock-Blythe No. 1 161-kV	PAD-BLY1	10.4	State, Private, Tribal
Liberty-Lone Butte 230-kV	LIB-LOB	3.4	Private
Liberty-Orme 230-kV	LIB-ORM	8.4	Private
Liberty-Panda 230-kV	LIB-PND	0.1	Private
Liberty-Parker Dam No. 1 & 2 230-kV	LIB-PAD1 LIB-PAD2	238.5	Federal, State, Private
Liberty-Phoenix 230-kV	LIB-PHX	22.0	State, Private
Liberty-Sundance 230-kV	LIB-SUD	59.8	State, Private, Tribal
Maricopa-Test Track 69-kV	MAR-TTT	0.1	Private
Oracle-Tucson 115-kV	ORA-TUC	25.0	State, Private
Parker Dam-Gila 161-kV	PAD-GLA	117.8	Federal, State, Private
Parker Dam-Havasu 230-kV	PAD-HAV	2.2	Federal, State, Private
Parker Dam-Planet Tap 69-kV	PAD-PNT	7.1	Federal, State, Private
Parker Dam Reroute 161-kV	PADRR	6.5	State, Tribal
Peacock-Liberty 345-kV Mead-Liberty 345-kV	PCK-LIB MED-LIB	226.6	Federal, State, Private
Peacock-Prescott 230-kV	PCK-PRS	70.0	Federal, State, Private
Phoenix-Test Track 230-kV	PHX-TTT	4.8	Private, Tribal
Pinnacle Peak-Prescott 230-kV	PPK-PRS	74.4	Federal, State, Private
Lone Butte-Phoenix 230-kV	LOB-PHX	1.0	Private
South Point-Topock No. 1 69-kV	SPT-TOP1	0.7	Federal, Tribal
Rogers-Coolidge 230-kV	RGS-COL	39.6	Federal, State, Private, Tribal
Saguaro-Oracle 115-kV	SGR-ORA	18.9	State, Private
Saguaro-Tucson 115-kV	SGR-TUC	35.3	Federal, State, Private
South Point-Topock No. 1 & 2 230-kV	SPT-TOP1	12.6	Federal, Tribal

Name	Abbreviation	Miles in Arizona	Jurisdiction(s)
	SPT-TOP2		
Test Track-Saguaro 115-kV	TTT-SGR	17.1	State, Private
Test Track-Saguaro 230-kV	TTT-SGR	14.9	State, Private
Tucson-Apache 115-kV	TUC-APE	79.6	Federal, State, Private, Tribal
Wellton Mohawk-Wellton Mohawk Ligurta Tie Line 34.5-kV	WML-WMS	0.2	Federal
Wellton Mohawk-Wellton Mohawk Pumping Plant No. 1 34.5-kV	WMS-WM1	5.0	Federal, Private
Wellton Mohawk-Wellton Mohawk Pumping Plant No. 3 34.5-kV	WMS-WM3	3.5	Federal, State, Private

CULTURE HISTORY OF ARIZONA

A culture history provides a general understanding of the history of different cultural groups that lived in an area, and how their past actions and practices are reflected in the archaeological record in terms of material remains. A detailed Culture History is found in Appendix A for Arizona, with emphasis on those parts of the state where Western’s facilities are located. The culture history of Arizona spans approximately 12,000 years of human occupation and is represented by a number of periods and cultural traditions (Table 2).

<i>Historic Periods</i>		
Period	Dates	
Statehood	1912–present	
Territorial	1856–1912	
Mexican	1821–1856	
Spanish Colonial	1691–1821	
<i>Prehistoric Periods</i>		
Period	Cultural Tradition	Dates
Protohistoric	Quechan Mojave Hualapai Pima/Tohono O’odham Apache	AD 1450–1691
Ceramic Period	Hohokam Patayan Cerbat Cohonina Anasazi Sinagua	ca. AD 500–1450 ca. AD 700–1900 ca. AD 700–1850 ca. AD 700–1200 ca. AD 500–1600 ca. AD 500–1300
Early Agricultural		ca. 1200 BC–AD 50
Archaic	Cochise San Dieguito	ca. 8000/7500–1200 BC
Paleoindian	Clovis	ca. 10000–8000 BC

ANTICIPATED RESOURCE TYPES

This Monitoring and Discovery Plan addresses the requirements for monitoring historic properties within Western’s transmission line rights-of-way and facilities that might be affected by routine maintenance projects and minor construction activities covered under Western’s PA executed in 2013. As defined by 36 CFR 800.16(l)(1), a historic property “ means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria. Monitoring may occur around a historic property known to exist to ensure avoidance of the property or to minimize harm to the property. Discovery situations occur when previously unidentified cultural resources or human remains (hereinafter, remains) are found during maintenance activities or the monitoring of maintenance activities.

Table 3 provides examples of resource types known in the State of Arizona that may occur within Western rights-of-way and facilities; however, this list is not comprehensive because countless resource types exist throughout the state. The list is based on resource types found in the ASM data files and consist of functional or morphological classifications. More detailed discussion of anticipated resources types is provided in Appendix B.

Artifact Scatter	Garden	Pictograph
Ash Stain	Graffiti	Pithouse
Atalaya	Grain Mill	Plaza
Ball Court	Great Kiva	Posthole
Barn	Hearth	Pottery Kiln
Battle Site	Historic Settlement	Public Building
Bedrock Grinding Stone	Hogan	Quarry
Bedrock Steps	House Extant	Railroad Track Bed
Bin/Cist	House Foundation	Ramada/Shelter
Brick Kiln	Human Remains	Reservoir
Bridge	Hunting Feature	Resource Procurement
Burial Grave	Intaglio	Road Trail
Burned Rock Midden	Kiln	Roasting Pit
Cache	Kiva	Rock Alignment
Cairn	Lime Kiln	Rock Feature
Canal	Linear Border	Rock Pile
Car Body	Lithic Quarry	Rock Ring
Cavate Room	Livestock Enclosure	Sawmill
Cemetery Depression	Log Cabin	Scatter, Sherd
Charcoal Stain	Masonry Structure	Scatter, Trash
Church Religious	Midden	Shed
Clay Quarry	Milled Lumber Structure	Shrine

Clearing in Desert	Mine	Soil Control Structure
Coke Oven	Mine Waste	Spring Control Device
Communication System	Monument	Stage Stop
Compound Walls	Mound, Structural	Stockade
Constructed Linear	Mound, Trash	Structure
Corral Area	One Room Structure	Sweat Lodge
Cremation	Orchard	Tank
Depression, Undefined	Ore Processing Facility	Tent Base
District	Ore Transport Feature	Tower
Dugout Undefined	Other	Trading Post/Mercantile
Dump	Outbuilding	Trailer
Excavated Linear	Outhouse	Trincheras
Feature, Undefined	Oven	Undefined
Feature, Undefined	Painted Petroglyph	Wall
Fence	Pavement	Water Control Device
Field House	Pecked Bedrock	Well
Fired Brick Structure	Petroglyph	Wickiup

RESEARCH DESIGN

Western's primary concern regarding historic properties is avoidance. However, discovery situations may arise, requiring NRHP eligibility evaluations. Therefore, the following research design identifies the probable themes, questions, and data needs commonly identified with historic properties within Arizona and Western-DSW's rights-of-way. The themes and research questions presented below are not exhaustive, as new themes and questions may be developed on a project-specific basis. Five general research themes are expected to apply to historic properties monitored or discovered during maintenance activities: 1) chronology; 2) social organization and interaction; 3) cultural affiliation/ethnicity, 4) subsistence; and 5) land use and settlement patterns. Detailed Culture History and Anticipated Resource Type sections can be found in Appendix A and Appendix B, respectively (see Table 2 and Table 3).

Research Theme 1: Chronology

Datable objects or assemblages allow archaeologists to build or refine chronologies, providing a temporal context for various resource types. In addition, placing resource types within a historic context allows for comparisons with other resources of similar or differing periods, and provides opportunities to address changes in land use or cultural characteristics over time. Temporally diagnostic materials or objects include, but are not limited to, ceramic vessel fragments, projectile points, and unique objects or features of limited time duration. Additionally, when multiple features are present, their spatial orientation and layout may inform on temporal use of the resource.

Research questions include, but are not limited to:

- When were features occupied or in use?
- Are features contemporaneous?
- Are artifacts contemporaneous?

Data needed to address the questions include:

- Specialized samples (radiocarbon/archaeomagnetic/thermoluminescence)
- Architectural and processing feature data
- Diagnostic artifacts (e.g., decorated sherds, projectile points, maker's marks)

Research Theme 2: Social Organization and Interaction

Social organization and interaction address how people construct their social environments and how interaction within and between groups contributes to those constructions. A number of studies, ranging from the small-scale household level to the large-scale regional level, form the basis for understanding prehistoric social organization and interaction in Arizona (Abbott 1994, 2000; Bernardini 2005; Duff 2002; Harry 1989; Hill et al. 2004; Howard 1985; Mills and Clark 2012; Neuzil 2008; Wilcox et al. 1981). New information gained while monitoring Western maintenance activities within historic properties can be compared to these patterns, if sufficient artifacts or features are present.

Research questions include, but are not limited to:

- How are social groups organized?
- What interaction occurred between disparate cultural groups (e.g., Mimbres black-on-white ceramics observed in a Hohokam village or Hohokam red-on-buff in northern Arizona)?
- How does social organization compare on an inter-site basis?

Data needed to address the questions include:

- Architectural and processing feature data
- Temporally diagnostic artifacts, particularly trade goods (e.g., ceramics, shell, and obsidian)
- Comparative data for inter-site analysis

Research Theme 3: Cultural Affiliation and Ethnic Associations

Cultural affiliation and ethnic associations are described as shared group identity that is traceable prehistorically or historically (Bernardini 2005) (Duff 2002). Because ethnic associations and cultural affiliations are fluid, identification of cultural signatures associated with different groups is often difficult to detect. Prehistorically, relationship groups are identified based on shared cultural traits such as house construction, ceramic technology and design, subsistence strategies, and mortuary rituals. Central and western Arizona provides opportunities to examine the prehistoric relationship between the Patayan and Hohokam groups because artifacts from both groups have been recorded at many locations. In addition, migrations during late prehistory are noted from northern Arizona and New Mexico into southern and central Arizona. Anasazi

enclaves are noted in the Safford and San Pedro areas among Hohokam settlements (Neuzil 2008). In historic contexts, ethnic associations and cultural affiliation may be identified from residential architecture or spatial patterning, culturally-diagnostic artifacts (e.g., imported artifact types), and subsistence strategies (e.g., domestic cooking features) (Keane and Rogge 1992).

Research questions include, but are not limited to:

- What ethnic associations or cultural affiliations are represented?
- Do ethnic associations and/or cultural affiliation suggest trade, cultural mingling or possible residence?
- Do relationships between ethnically associated groups change over time?

Data needed to address the questions include:

- Architectural and processing feature data
- Temporally- and culturally-diagnostic artifacts (e.g., decorated sherds, projectile points, maker's marks)

Research Theme 4: Subsistence

Examinations of subsistence can provide information on the types of food resources used by past cultural groups, the time of year that the area was occupied, and the social organization of the inhabitants. Studies involving prehistoric and historic subsistence are based primarily on artifacts, faunal remains, and macrobotanical remains. Analyses of prehistoric cultural material such as groundstone, fire-cracked rock, stone tools, and identified ceramic vessel types can provide information on prehistoric subsistence, particularly in regards to procurement, processing, and food storage. Moreover, palynological analyses in conjunction with lithic use-wear analyses may provide information on how plants were procured and utilized.

Within historic contexts, cultural materials such as glass and metal containers, utensils, and food processing tools can provide insight into the types of foods that were consumed. Butchered animal bones can aid in identifying the livestock raised, or determine whether historic cultural groups took advantage of locally available wild game. Additionally, examinations of consumption patterns have the potential to inform on demographics, such as ethnicity and social class.

Research questions include, but are not limited to:

- What wild plant resources or game animals were exploited prehistorically?
- Were resources processed on-site or did processing and consumption occur elsewhere?
- What tools were used for hunting and flora and fauna processing?
- What faunal materials are present? Do faunal materials represent disturbance or are they associated with past human occupation? What faunal elements are present? How were animals butchered or processed (e.g., burning or cut marks)?
- Does the evidence inform on the types of game or wild plants in the diet?
- Were wild plant species cultivated (e.g., cholla or agave)?

- Did the occupants practice intensive farming of domesticated plant species such as maize?
- Were the occupants dependent on maize?
- What kinds of farming techniques were employed (e.g., dry, Ak-Chin, or irrigation farming)?
- How did subsistence practices change through time?
- Are the types of subsistence activities consistent with what would be expected given the surrounding environment?
- Did the occupants practice different resource procurement, cultivation, or farming strategies from nearby communities?
- What types of foods were procured and consumed historically?
- Was there a diversity of foodstuffs?
- To what extent does the historic artifact assemblage indicate the consumption of home-produced foods versus mass-produced foods?
- How much wild resource exploitation vs. local agricultural practices occurred?

Data needed to address the questions include:

- Specialized samples (faunal/pollen/phytolith/macrobotanical)
- Temporally diagnostic artifacts for typing and analyses (e.g., functional, petrographic, use-wear, residue, etc.), particularly specialized tools and groundstone types to conduct morphological and use-wear analyses
- Agricultural feature data (spatial extent and other morphological characteristics) to provide information on farming strategies
- Historic records for environmental and historical contexts
- Comparative data from nearby communities

Research Theme 5: Land Use and Settlement Patterns

Land use and settlement patterns refer to the ways that prehistoric and historic inhabitants interacted with their landscape, and to patterns of their spatiotemporal distribution. In some cases, the distribution and arrangement of settlements can inform on the nature of sociopolitical organization. Although land use and settlement patterns are best viewed from a larger context than a single resource or portions of a single resource, it is necessary to keep in mind the interconnected nature of resource types to each other and to the landscape. Examples of prehistoric land use and settlement patterns may include, but are not limited to, campsites, specialized procurement and processing areas, agricultural landscapes, semi-permanent (seasonal) and permanent settlements (e.g., hamlets, farmsteads, villages), and trails. Examples of historic land use include homesteads/farmsteads, ranches, mining districts and their associated communities, as well as resources associated with transportation.

Research questions include, but are not limited to:

- How are resources distributed across the landscape?
- How do resource types relate with specific topographic settings or landforms?
- Were the inhabitants mobile or residentially stable?

- Do resources represent short-term procurement/processing locations, seasonally occupied residential locales, or year-round habitations?
- During what season(s) were resources used or occupied?
- What was the size and composition of cultural groups?
- Are hierarchical structures present?
- For multicomponent resources, do functions change over time?
- Is there a correlation between environment and function?
- What was the effect on the local or regional environment due to transhumance or sedentism?
- Was there cultural continuity between cultural groups (e.g., population density estimates)?
- Did population densities remain stable, or were there significant changes over time?
- Were contemporaneous settlements connected?
- Are trails present and where do they lead?
- Are shrines or trail markers present in the area? What might have been the use for trails?
- What were the economic effects of electrification?
- Regarding rural electrification, what affect did the expansion of electrical systems have on land use and settlement?

Data needed to address the questions include:

- Temporally diagnostic artifacts for typing and analyses (e.g., functional, petrographic, use-wear, residue, etc.), particularly specialized tools and groundstone types to conduct morphological and use-wear analyses
- Artifact density calculations
- Collections of formal or informal tools complete enough for performing morphological analyses
- Feature descriptions and diagrams, including evidence for remodeling, feature superpositioning, or dismantling at abandonment
- Recovery of seasonally sensitive botanical data (e.g., charred plant remains, pollen)
- Agricultural feature data (spatial extent and other morphological characteristics) to provide information on prehistoric and historic land use
- Historic maps that show locations of trails (e.g., GLO survey plats)
- Historic records for environmental and historical contexts
- Comparative data from nearby communities
- Features associated with ranching, agriculture, mining, and historic trail and road networks
- Historic documentation of chronology and use of an area

STANDARD PROCEDURES FOR NATIONAL REGISTER EVALUATIONS AND MONITORING ACTIVITIES

Pursuant to Stipulation VI of the PA, Western-DSW may use archaeological monitors and/or tribal cultural monitors during implementation of maintenance activities to ensure avoidance of historic properties and to make available personnel who could respond quickly to potential discovery situations and to evaluate the discoveries eligibility for NRHP listing.

National Register of Historic Places Eligibility Evaluation

This monitoring plan addresses historic properties as defined at 36 CFR Part 800.16(l)(1), which means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

Unevaluated cultural resources are treated as eligible, but may be evaluated for NRHP eligibility during monitoring. Evaluations are based on national, state, or local significance, and importance in American history, architecture, archaeology, engineering, or culture. A property is significant in these categories if it meets one or more of the NRHP criteria listed in 36 CFR § 60.4:

- Criterion A – Properties associated with events that have made a significant contribution to the broad patterns of our history
- Criterion B – Properties associated with the lives of persons significant in our past
- Criterion C – Properties that embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values; or represent a significant and distinguishable entity whose components may lack individual distinction
- Criterion D – Properties that have yielded, or may yield, information important in prehistory or history

In addition to demonstrating significance in one or more criteria cited above, a property must also retain integrity. The historic property must be a “preservable entity” that demonstrates the qualities that make it significant based on the integrity of the property’s location, setting, design, materials, workmanship, feeling, and association.

Monitoring Procedures Before Maintenance Activities

In most cases, archaeological monitoring will occur to ensure avoidance of historic properties. Archaeological monitors will coordinate with the crew supervisor or maintenance inspector assigned by Western-DSW as a point of contact regarding scheduled training and monitoring. Coordination with the supervisor or inspector is necessary to evaluate the location and condition of historic properties recommended for monitoring.

Prior to maintenance activities, Western-DSW’s contractor will complete background research on any historic property scheduled for monitoring. Research will provide information concerning the type of resource, location of artifacts and/or feature(s), and past investigations, including any previous monitoring, testing, or data recovery. Documentation of historic properties by the archaeological monitor before maintenance activities begin will consist of a boundary evaluation, photographic documentation of the current conditions, and field checking of relevant features

near the maintenance activity. Blue and white flagging, recognized by Western as demarcating sensitive areas, will mark the boundary and include a 30-meter buffer. Also during this time, replacement of the datum will occur if missing or damaged. Prior to ground disturbing activities, the monitor will document artifacts/features within the proposed maintenance work area, but no collections will occur.

Permitting and Reporting

Western's contractor will obtain all appropriate permits based on the location and jurisdiction of each project. A state-wide contact list is provided in Appendix C (Table C-1), which will be updated annually. Contractors should double check the contact list for the most current information prior to monitoring activities. The contractor will also request a burial agreement should ASM determine one is necessary. At the conclusion of each project, SHPO reporting requirements will be followed. When approved, the report will be made available to qualified individuals and organizations.

Training of Maintenance Personnel

At the beginning of a maintenance project, Western-DSW's contractor will provide training for maintenance crews and visitors to the project area, as required by Western's PA. During the 15- to 30-minute training sessions, the maintenance workers will be informed as to where and what archaeological resources are being monitored, and the penalties for vandalizing historic properties or collecting artifacts will be outlined. The rules for entering the project area and movement within restricted areas will be outlined to all crews or persons who enter the project area. Phone numbers of the responsible monitoring archaeologists and principal investigator will be provided to the maintenance leaders. During training, appropriate responses to discovery situations will also be discussed for discoveries located outside of protected areas. Each individual that attends a training session will be required to record his/her name on a sign-in sheet maintained by Western's contractor and will be provided stickers to display on their hard hats indicating that they received training for the project. Training for new crewmembers and visitors will occur as needed and documented photographically, per Western's guidelines.

Western-DSW's contractor will coordinate monitoring schedules and activities with Western's assigned supervisor or inspector. The archaeological monitor will be present for maintenance activities conducted within the boundaries of a historic property (see Appendix B). Depending on the resource type and the nature of the proposed work, the archaeological monitor may be present for maintenance activities to be conducted within proximity of the historic properties. Daily monitoring logs will be completed, documenting the results of the monitoring activities for the day, and compiled as an appendix to the final monitoring report.

Monitoring During Maintenance Activities: Encountering Subsurface Cultural Materials

Western-DSW's contractor will at times also monitor within the boundaries of known historic properties. Situations may arise during maintenance activities where subsurface artifacts and/or features are encountered.

Identification of Subsurface Artifacts and Features

In the event that subsurface artifacts and/or features are encountered during maintenance activities, the monitoring archaeologist shall halt work and discuss the situation with the appropriate supervisor or inspector. The monitoring archaeologist shall investigate the area to identify the source of the artifacts and/or features and determine whether the artifacts are associated with the known historic property and in their original context. Photographs of the area and artifacts, notes associated with the monitoring activities for that area, and Global Positioning System (GPS) location data shall be sufficient documentation if only artifacts are present. If subsurface features are present, the monitoring archaeologist shall investigate the area to identify the type of feature, determine if there are associated artifacts, and assess its function and context. This may necessitate cleaning the area to expose enough of the feature to make appropriate conclusions.

Subsurface artifacts and features within historic properties that contribute to their NRHP eligibility and that may be adversely affected by the undertaking may require data recovery. In such cases, consultation with the appropriate land-managing agency, Tribes, THPOs, and/or SHPO is required, and field visits with the agencies/tribes may occur. If data recovery is necessary, a memorandum of agreement (MOA), a separate curation agreement, project-specific permit, and research design will be required. If it is determined through the consultation process that the artifacts or feature(s) are not contributing to the eligibility of the property or that the artifacts and feature(s) can be avoided by the undertaking; maintenance activities will continue in the area provided that the historic property is not adversely affected. If the monitor determines that the artifacts or feature(s) encountered are not part of the historic property being monitored, the artifacts and feature(s) will be considered a discovery and the monitor will follow the provision outlined below for discovery situations.

Tribal Cultural Monitoring

In addition to archaeological monitoring, tribal cultural monitoring may occur in certain circumstances. Western-DSW will coordinate with individual tribe(s) to determine appropriate procedures and reporting.

Monitoring Procedures After Maintenance Activities

As part of continued coordination with Western's supervisor or inspector, the supervisor will contact the monitoring archaeologist when the project is completed. The monitoring archaeologist will then examine the monitored historic properties to take final photographs, assess condition, and remove the flagging, staking and signage within 2 weeks of project completion. In addition, Western-DSW's contractor will complete the appropriate artifact analysis (if needed), artifact curation (if needed), and report preparation.

Artifact Analysis

Temporally and functionally diagnostic artifacts include such items as decorated ceramics, projectile points, carved shell, and carved stone artifacts. These objects will be analyzed in the field according to the following standard methodology.

Ceramic Analysis

Ceramics have the potential to provide information concerning the temporal and cultural associations of the resource, as well as its function and use. The standard methodology for sorting sherds includes dividing the ceramics into ware and type. Further refinements in analysis are dependent upon the location of the project and the types of ceramics available for analysis. For example, more information may be obtained from plainware ceramics in the Phoenix Basin, given the extensive studies (Abbott 2000) already conducted on these types of ceramics, than from plainwares located in the Verde Valley.

Ceramic Ware

A ceramic assemblage could contain a variety of pottery categories, including buff ware (Hohokam, Patayan); brown ware (Hohokam, Mogollon); red ware (Hohokam, Mogollon, Anasazi); grey ware (Hohokam, Anasazi); white ware (Tusayan, Cibola, Little Colorado, Mimbres); and polychrome (White Mountain red ware, Roosevelt red ware). Buff ware has a porous paste that is tempered with micaceous schist and is usually decorated with red paint and/or incised. Brown paste variants usually contain sand temper and have surface decoration of red paint. Red ware sherds are distinguished by the oxidized red slip. Grey ware sherds are grey- or brown-fired ceramics that are decorated with red paint and/or usually deeply incised on the exterior surface. White ware ceramics are distinguished by either a light or a dark paste and are covered by a kaolin rich white slip and decorated in black paint. Polychrome ceramics have three colors: (usually) red, white, and black. After sherds are initially sorted by ware, they are then subdivided with different criteria, according to the specific ware.

Ceramic Type

Hohokam grey ware and buff ware ceramics are sorted by type as described by Haury (Haury 1976). In addition, buff ware sherds are further broken down into micro styles when certain elements are present (Late Snaketown, Early Gila Butte, Middle Sacaton I, etc.) as outlined by Wallace (2001). Hohokam red wares are sorted according to typology refined by Abbott and Walsh-Anduze (1995). Patayan buff wares are sorted by type as described by Seymour (1997). White ware ceramics are associated with the Anasazi and Mogollon. Tusayan, Little Colorado, and Cibola white wares are classified using Colton (1955), Hays-Gilpin and Van Hartesveldt (1996), and Cleland and Apple (2003). Tusayan white ware consists of a sand-tempered pottery with light colored paste and organic paint. Styles associated with Tusayan white ware include Lino black-on-white, Kana-a black-on-white, Black Mesa black-on-white, Sosi black-on-white, Flagstaff black-on-white, Dogoszhi black-on-white, Tusayan black-on-white, and Kayenta black-on-white. Little Colorado white ware consists of a dark paste ware tempered with sherds and decorated with organic paint. Styles associated with Little Colorado white ware include St.

Joseph's black-on-white, Holbrook black-on-white, Padre black-on-white, Walnut black-on-white, and Leupp black-on-white. Cibola white ware is a sherd tempered pottery with mineral paint. Styles associated with Cibola white ware include Red Mesa black-on-white, Puerco black-on-white, Reserve black-on-white, Wingate black-on-white, Snowflake black-on-white, Tularosa black-on-white, and Socorro black-on-white.

Polychromes are associated with a variety of groups, including the Hohokam, Mogollon, and Anasazi. Roosevelt Redware (Salado Polychrome) is perhaps the most well-known type and is classified according to Gladwin and Gladwin (1930) and Crown (1994); it includes three main types: Pinto, Gila, and Tonto. A less commonly found type is Cliff Polychrome (Lyons 2004). White Mountain red ware is classified according to Carlson (1970). Some polychromes associated with White Mountain red ware include Wingate polychrome, St. Johns polychrome, Fourmile polychrome, and Pinedale polychrome.

The project location and the types of ceramics available for analysis will determine what additional analysis will be conducted.

Chipped and Groundstone Analysis Methodology

Chipped stone and groundstone artifacts can provide insight into resource procurement, subsistence strategies, cultural affiliation, chronology, trade and exchange, social organization and mobility. If, during the monitoring of maintenance activities, groundstone and/or chipped stone artifacts are identified, they will be 100 percent sampled and analyzed in accordance with the following methodology.

Chipped stone artifacts will be sorted into two categories (formal tools and debitage), and will be documented according to artifact class, tool type, and raw material. Formal tools include items such as projectile points, bifaces, choppers, scrapers, graters, knives, and perforators. Debitage includes flaking by-products such as cores, flakes, and shatter, and discarded, in-process tools such as bifaces broken during manufacture. Projectile point types are based on typologies developed by Loendorf and Rice (2004), Silva (1997), and additional information from Justice (2002). Debitage will be examined by attributes to include, material, size (length, width, thickness), platform type (eg. simple, multifaceted, u-shaped, isolated, prepared, crushed, etc.), presence of lipping, number of dorsal scars/arises and direction of scars, ventral surface attributes (eg. pronounced or diffuse bulb of percussion, hackles), termination type (eg. feathered, hinged, stepped, overshot), condition (whole or fragmented), presence and location of cortex, and evidence for use wear or retouch. These attributes will allow for interpretations as to the types of techniques employed on-site (biface reduction, bipolar, split cobble, basal thinning, fluting, etc.). Definitions of attributes identified will be provided in the monitoring report. If large numbers of flakes are present a sample will be analyzed. Cores will be described by type (eg. bifacial, unifacial, angular, split cobble, bipolar). Items with retouch or use-wear will be examined under magnification using a hand-lens to identify retouch techniques and wear patterns.

Groundstone artifacts are distinguished by their wear, ground and pecked surfaces, which are the often the result of intentional modifications and subsequent use. Specific types of artifacts include polishing stones, manos, metates, bowls, mortars, and pestles. If groundstone items are

identified during monitoring activities, they will be measured and analyzed according to presumed function, type, shape and material. Measurements and location of use wear will also be noted.

Other Items and Exotics

Uncommon artifact types (e.g., jewelry, spindle whorls, clay figurines, Paleoindian points) would be photographed, sketched and documented in the field. Attributes recorded will include material type, dimensions, evidence for manufacturing technique and use wear, and identification of style (if relevant). In instances where the artifact is extremely rare and/or valuable, and perceived in danger of being stolen or damaged, Western-DSW's contractor will contact Western-DSW to discuss collecting the artifact. Western-DSW will consult with the appropriate land managing agency's point of contact about, and prior to, any artifact collections.

Curation

If for some unusual reason artifacts are collected, the materials would be curated at ASM or another appropriate repository that meets the federal requirements of 36 CFR 79: Curation of Federally-Owned and Administered Archeological Collections that is approved by Western. Western will be sensitive to the land managing agency preference.

Report Preparation and Historic Property Form Updates

During monitoring activities, a weekly monitoring report will be prepared for Western and historic property update forms will be completed. At the completion of monitoring, those forms will be compiled in an appendix to the final monitoring report. If artifacts are collected is completed during monitoring, then the results of the investigations will also be included in the final monitoring report, which will be submitted to Western-DSW and ASM.

At all historic properties for which monitoring is conducted, an update form will be completed noting the activities conducted, and specifying any significant modification to the property. Items documented on the update form at a minimum will include the date of monitoring activities, whether any artifacts or features are identified during monitoring, whether boundaries are adequate, the presence of any previously unidentified features or diagnostic artifacts, and whether the condition of the resource has degraded since the original recordation.

DISCOVERIES

Pursuant to Stipulation VI of the PA, if archaeological materials are discovered as a result of any maintenance activity, the discovery will be protected, all earth disturbing activities will cease within 30 meters (100 ft) of the discovery, and heavy equipment will be removed from the area until the discovery is assessed and documented. The discovery will be reported to Western's Regional Preservation Official (RPO) or Federal Preservation Officer (FPO). Discoveries may be evaluated for NRHP listing (see criteria on p. 12).

If the discovery is an isolated occurrence and is determined not eligible for NRHP listing, it will be documented and the activity will proceed with no further consultation. For all other discoveries, Western will either assume the materials eligible for NRHP listing pursuant to 36 CFR 800.13(c) or consult with the appropriate land-managing agency, Tribes, THPOs, and SHPO regarding eligibility, and will also consult if the discovery was, or will be, adversely affected by the activity. Western-DSW RPO or FPO will notify the appropriate land-managing agency, SHPO, state agency and Tribes by phone within 48 hours of the discovery.

If human remains are discovered the following procedures will be followed: All human remains and associated funerary objects (hereinafter, remains) will be treated with dignity and respect. In accordance with *Discovery of Human Remains, Sacred Ceremonial Object, Object of National and Tribal Patrimony* (Arizona Revised Statutes §41-844) and the Native American Graves Protection and Repatriation Act (NAGPRA; 43 CFR Part 10), all work in the vicinity of the discovery of remains will cease immediately. Western requires cessation of activities within 30 meters (100 ft) of the discovery and that the remains are protected.

If remains are found on federal or tribal lands the monitoring archaeologist will immediately notify Western and the land managing agency or Bureau of Indian Affairs (BIA) (if found on tribal lands), followed by written notification within 24 hours. Compliance with laws concerning discoveries of remains on federal lands is the responsibility of the federal land managing agency or BIA (if remains are on tribal lands).

For remains found on state or private lands, Western will comply with state procedures: *Discovery of Human Remains, Sacred Ceremonial Object, Object of National and Tribal Patrimony* (Arizona Rev. Stat. Â§41-844) and the Repatriation Coordinator at ASM will be notified within 24 hours.

A NAGPRA Plan of Action (POA) is included in Appendix B, and describes the treatment of human remains and associated funerary objects, sacred objects or objects of cultural patrimony found on Western's fee-owned lands.

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Appendix A: Culture History

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Paleoindian Period (ca. 10,000 to 8000 BC)

The Paleoindian Period in Arizona is understood to span approximately from 10,000 to 8,000 BC, and is typically identified on the basis the presence of one or more large, distinctive artifacts such as “Clovis” or “Folsom” projectile points. Paleoindian populations were comprised of small, mobile hunting and gathering groups who occupied temporary campsites (Cordell 1997). Subsistence included collection of wild plant foods and hunting of very large game, including the now-extinct megafauna such as mammoths. Material remains of Paleoindian peoples are very infrequent in Arizona, due to their mobile demographic pattern, the extreme age of Paleoindian sites, soil accumulation that may obscure surface manifestations (Cordell 1979), and the dearth of temporally diagnostic materials (e.g., Binford and Anderson 1992). Paleoindian site types may include, but are not limited to, kill sites, temporary hunting camps, base camps, processing sites, resource procurement sites, and quarries (Cordell 1997; Frison 1993; Haury 1953; Hemmings 1970b; Hemmings and Haynes 1969).

Paleoindian sites with fluted “Clovis” projectile points are known to occur across much of Arizona, but are best known from southeast Arizona. Important Clovis sites include the Naco, Lehner, and Murray Springs sites (AZ FF:9:1, EE:12:1 and EE:8:25, all Arizona State Museum [ASM]) which have yielded evidence of Paleoindian hunters in association with extinct megafauna and bison dating between 11,500 and 11,000 years ago (Haynes 1970). Naco, the first recorded Clovis site in Arizona, yielded eight Clovis projectile points in association with a bull mammoth (Antevs 1953). The Lehner Mammoth site yielded over a dozen Clovis points, 8 scrapers, and 3 hearths in association with 12 mammoths and several bison, as well as horse, tapir, and camel bones (Wasley 1956). The Murray Springs site consists of a surface camp with five buried animal kill and butchering areas. Chipped stone artifacts in the buried portions exhibited Clovis characteristics, while the surface camp assemblage included Clovis and later chipped stone materials (Hemmings 1970a; Kayser 1968).

Evidence for Paleoindian remains in other areas of Arizona includes mammoth sites along the Colorado River, isolated finds across the Coconino Plateau (Anderson 1990; Lyndon 2005; Simonis 2001), a single Paleoindian point near Painted Rocks Reservoir (Whittlesey et al. 1994), and several Clovis points in southwestern Arizona on the Barry M. Goldwater Range (Bruder et al. 2001). Two fluted points are also known from the Tucson Basin, including one at the Valencia site (AZ BB:13:74[ASM]) in the southern Tucson Basin (Doelle 1985), and one at Rattlesnake Pass, in the northern Tucson Basin (Agenbroad 1967).

Archaic Period (ca. 8000/7500 to 1200 BC)

It remains unclear to what extent climatic change and hunting contributed to the extinction of Pleistocene megafauna; however, scholars recognize that the disappearance of very large game animals resulted in a significant alteration to Paleoindian subsistence practices. As such, this horizon marks the transition to the Archaic period. The change from Paleoindian lanceolate and stemmed points to the Archaic side-notched types appears abrupt and is easily detected in the archaeological record (Frison 1991).

Spring dominant storms, declines in plant cover, and water tables resulted in increased erosion and arroyo cutting (Albanese 1982). By 7000 BC the short-grass browsing areas appear to have reached their maximum, and lower effective moisture allowed for the invasion of the Southwest by a xerophytic desert community dominated by juniper and mesquite. Faunal remains recovered from archaeological contexts indicate a general reduction in animal populations and the intrusion of desert-adapted species. By 2700 BC, the dry conditions that prevailed during the earlier phases appear to have abated. A southern shift in winter and summer frontal zones at approximately 1500 BC resulted in a general cooling trend in the region. This was followed by a warming trend, which produced climatic conditions similar to present day (Greiser 1980).

Archaic peoples increasingly incorporated a reliance on wild plants into their subsistence strategies as evidenced by stone tool assemblages: chipped stone tools became less specialized than in the preceding period, while groundstone technology became more specialized, likely reflecting increased emphasis on plant food processing (Cordell 1984; Hayden 1982; Rogers 1966). In addition to subsistence, incremental changes occurred throughout the period in regard to settlement patterns and social organization as evidenced by the shift from temporary camp sites to long-term, seasonal habitations exhibiting domestic architecture, associated storage and food processing features, and substantial midden deposits (Irwin-Williams 1973; Pendleton 1986). The timing of the introduction of cultigens from Mexico is not known; however, radiocarbon dates on maize suggest that its cultivation in the Tucson Basin and other areas of the Southwest was underway by 2100 BC (Gregory 2001; Huckell et al. 1999; Mabry 2008; Thiel and Diehl 2006).

Common feature types may include, but are not limited to, trails, “sleeping circles”, shrines, milling features (e.g., bedrock mortars/grinding slicks), lithic scatters, storage pits, food processing features (e.g., hearths, roasting pits, hornos), and pithouses.

Early Agricultural Period (ca. 1200 BC to AD 50)

The Early Agricultural Period signifies the introduction of early farming practices, pottery production, and the beginnings of settled villages in the greater Southwest. Although this period marks significant changes in subsistence for many prehistoric peoples, the appearance of pottery and the transition to agriculture varied among cultural groups and geographic areas.

Along the Lower Colorado River, increasing populations resulted in more sedentary, river-to-upland pattern of land use. Large, stationary sites containing structures, roasting pits, and burned Bighorn Sheep and deer bones dating to this period are known in the Kofa and Castle Dome mountains. Distinctions between temporary camps, quarries, and base camps also are made in the Kofa, Castle Dome, and Plomosa ranges (Stone 1986). Small- and large-sized game hunting, increased concentrations of diverse, local plant resources, and the early cultivation of crops such as maize and squash characterized a much broader subsistence base.

In the Tucson Basin, sites tend to contain small, round to oval, semisubterranean pithouses, many with large internal storage pits. At some sites, a larger round structure is also present, which is thought to have been for communal or ritual purposes. Stylistically distinctive projectile points are common, as are a range of groundstone and flaked stone tools, ornaments, and marine shell jewelry (Diehl 1997; Mabry 1998). The presence of marine shell and certain lithic materials not

locally available in the Tucson area suggests trade networks were operating. Agriculture, particularly the cultivation of maize, was important in the diet; however, dependence on hunting and gathering remained.

Recent excavations at the Las Capas site (AZ AA:12:111[ASM]) in the western Tucson Basin revealed an Early Agricultural component (recorded as site AZ AA:12:753[ASM]), with numerous canals dating from 1250 to 500 BC. These early canals indicate an increasing reliance on irrigation-based agriculture along the Santa Cruz River (Mabry 2008). However, agricultural sites dating to this time depth have not been documented in the Phoenix Basin. Research at Los Morteros, AZ AA:12:57(ASM), suggests experimentation and transition to new technologies characteristic of the period, such as pottery production and farming (Hackbarth 1998).

In northern Arizona, the Basketmaker II tradition is associated with the earliest Anasazi presence on the Colorado Plateau. Subsistence patterns reflect a mixed strategy, reliant on hunting with atlatl and dart, gathering, and early horticulture that relied on floodplain and runoff irrigation. Rock shelter sites in the Marsh Pass area have returned dates on maize that cluster in the first few centuries BC (Cordell and Gumerman 1989). Excavations at Bat Cave in western New Mexico, as well as other rock shelters in the region intermittently occupied from 8000 BC to AD 250, have revealed hearths and large pits from which maize and squash were recovered (Dick 1952). Yielding radiocarbon dates of circa 2000 BC, these samples represent some of the earliest evidence for the cultivation of these crops in North America (Smiley 2002).

The proliferation of pithouse settlements underscores the gradual decrease in residential mobility and was an important precedent for the evolution of more sedentary communities that followed. Throughout most of Basketmaker II times, pithouses were generally small, oval, or circular in shape, and set in shallow basins (Lipe 1993). Beginning around AD 200, at least semi-sedentary pithouse settlements were established throughout the Southwest, typically involving loosely arranged clusters of noncontiguous pithouses that provide evidence of increasing social and political complexity at this time (Smiley 2002).

Ceramic Period (AD 50 to 1450)

The Ceramic Period represents a time of significant socioeconomic/political changes for the prehistoric peoples of Arizona and the greater Southwest. Increasingly dependent on agricultural subsistence, many semi-sedentary villages became permanently settled. The regular use of pottery for containers and storage vessels, as well as the settlement of pit house villages, highlights the transition from the Early Agricultural Period to the agrarian lifeways that typified this era. As population densities increased in aggregated village settings, agricultural groups expanded into territories occupied by hunter-gatherers, which resulted in the reduction of the latter's population (Cordell 1997). Once committed to agrarian subsistence, elaborate technological innovation and approaches to increasing crop yields occurred (Cordell 1997; Plog 1997). New ideas regarding property ownership, communal religious architecture, and symbols of differential social status also developed (Plog 1997). Within the area associated with Western's facilities, archaeologists have identified and defined the following distinct cultural traditions: Hohokam, Patayan, Anasazi, Sinagua, Cohonina, and Cerbat. These cultural traditions are discussed below.

The Hohokam (AD 500 to AD 1450)

The Hohokam tradition developed in the deserts of central and southern Arizona sometime around AD 500, and is characterized by the introduction of red ware and decorated ceramics; red-on-buff ware in the Phoenix Basin and red-on-brown ware in the Tucson Basin (Doyel 1991; Wallace et al. 1995). Red ware pottery was introduced to the ceramic assemblage during the Tortolita phase (AD 500 to 700). Through time, Hohokam pottery became increasingly decorated with highly distinctive geometric figures and life forms such as birds, humans, and reptiles. The Hohokam sequence is divided into the pre-Classic (AD 500 to 1150) and Classic (AD 1150 to 1450) occupations.

Tucson Basin

At the start of the pre-Classic, small pit-house hamlets and villages were clustered around the Santa Cruz River. Around AD 750, large, nucleated villages were established along the river or its major tributaries. Smaller settlements in outlying areas served as seasonal camps for hunting, gathering, or limited agriculture (Doelle and Wallace 1991). Some riverine villages had large, basin-shaped earthen embankments. These features probably served as arenas for playing a type of ball game, as well as for holding religious ceremonies and for other communal purposes (Wilcox 1991; Wilcox and Sternberg 1983).

Between AD 950 and 1150, Hohokam settlement in the Tucson area became more dispersed, with people using the extensive bajada zone and the valley floor (Doelle and Wallace 1986). Possibly driven by an increase in population, functionally-specific seasonal sites and more permanent habitations were now situated away from the river. The largest sites were still situated on the terraces just above the Santa Cruz. There is evidence for increasing specialization in ceramic manufacture at this time, with some village sites producing decorated red-on-brown ceramics for trade throughout the Tucson area (Harry 2000; Heidke 1988, 1996; Huntington 1986).

Dramatic changes in settlement patterns and possibly in social organization are seen in the Classic period. Above-ground adobe compound architecture appears for the first time, supplementing traditional semisubterranean pithouse architecture (Wallace et al. 1995). Maize agriculture was still the primary subsistence focus; however, extremely large Classic period rock-pile field systems associated with the cultivation of agave have been found in both the northern and southern portions of the Tucson Basin (Doelle and Wallace 1991; Fish et al. 1992).

Platform mounds are found at a number of Tucson Basin villages dating around AD 1175 to 1300, and are typical of mounds that occur throughout southern and central Arizona (Doelle and Wallace 1991; Fish et al. 1992). Platform mounds typically consist of a central structure that was deliberately filled, creating an elevated room upon a platform. The function of this room is unclear. Some were undoubtedly used for habitation, while others may have been primarily ceremonial. The construction of a platform mound required a fair degree of organization and labor, such that the mounds are thought to be symbols of a socially differentiated society (Elson 1998; Gregory 1987). Around the time that the platform mounds were constructed, most of the smaller sites were abandoned. The Tucson Basin settlement was largely concentrated at a half-dozen large, aggregated communities. Research has suggested that aggregation and abandonment

in the Tucson area may be related to an increase in conflict and possibly warfare (Wallace and Doelle 1998). By AD 1450, the Hohokam tradition, as presently understood, disappeared from the archaeological record.

Phoenix Basin and Gila Bend

Following a similar cultural trajectory as that of the Tucson Basin, the Phoenix Basin Hohokam began arranging architectural units into clusters or courtyard groups sometime after 750 AD (Howard 1985; Wilcox et al. 1981). Monumental architecture, in the form of ballcourts, is recognized at some but not all villages in Phoenix Basin and the Gila Bend area, where it is believed permanent villages had been established by this time. Further expansion of settlements and canal irrigation systems as well as the development of various alternate agricultural strategies characterizes the period after 975 AD. The construction of ballcourts continued, and another form of monumental architecture, the platform mound, took shape (Gregory 1991).

Contrasting sharply with the pre-Classic period, the Classic period exhibited radical shifts in material culture, architecture, mortuary practices, and settlement patterning. Agricultural intensification occurred in the Phoenix and Tucson basins and it has been argued (Doelle and Wallace 1991) that the Tucson Basin increases in importance as a regional center during this time. Doelle and Wallace see Cerro de Trincheras sites as evidence for warfare, or at least hostilities, between the Phoenix and Tucson basins. However, a more recent assessment concludes that evidence for the use of Cerro de Trincheras sites as defensive or fortified locations is not convincing (Downum et al. 1994). A change in relations with the Phoenix Basin is evident in the Gila Bend area, where architectural styles no longer mirror those observed in the core area; pit houses continue to be construed (in contrast to the above-ground structures that come into favor in the core), irrigation canals are abandoned, and the Cerro de Trincheras sites are constructed.

A Late Classic or post-Classic occupation has been identified at a small number of sites in the Phoenix Basin (Crown and Sires 1984; Sires 1983). Researchers are still debating on how to interpret this phase (Chenault 1995; Craig 1995; Hackbarth 1995) that is characterized as having clustered houses, some of which were constructed on top of previously abandoned platform mounds and high quantities of obsidian. Salado Polychromes were the dominant ceramic ware at this time.

Hohokam villages along the Gila River extended as far west as the Gila Bend area, with some of the villages along the Gila River being quite large and having public architectural features such as ballcourts and platform mounds. However, there is little evidence of permanent settlement in the arid upland areas away from the Gila River Valley. Archaeological sites in these uplands tend to be surface scatters of artifacts representing briefly used camps and hunter-gatherer locations (Brown and Stone 1982). The region was simply too dry to support agriculture, except in very unique topographic situations that facilitated floodwater farming, such as along Four Mile Wash below Flatiron Mountain (Sires 1989).

Patayan (AD 700 to 1900)

The Patayan cultural tradition along the Lower Colorado River Valley is poorly understood because it has not been the focus of many research projects, and excavations of Patayan sites have not been reported in detail (McGuire and Schiffer 1982; Stone 1986, 1987, 1991). The Patayan practiced floodwater farming rather than building canal systems like the Hohokam. The Patayan sequence was defined by Malcolm Rogers (1945) and later refined by Michael Waters (1982). Three phases in the sequence have been assigned ranges of time based on the presence of certain Hohokam ceramic types found in association with Patayan types. Patayan I dates from AD 700 to AD 1000. Patayan II extends to approximately AD 1500, and Patayan III continues into the 1800s or even 1900s (Roberts 1996). Today the Patayan sequence is viewed as virtually synonymous with the Tucson Basin Hohokam sequence (Rankin 1995).

Many Patayan sites consist of the remains of camps or limited activity places; however, larger sites have been recorded, particularly along the Gila River, representing more permanent villages (McGuire and Schiffer 1982). In addition, fairly substantial Patayan sites that represent repeated visitation over long periods have been noted in the interior desert, south of Gila Bend (Bruder and Hill 2000; Huckell 1979).

The Patayan tradition is characterized by plain and decorated Lower Colorado buff ware ceramics (Rogers 1945; Waters 1982). Subsistence focused on floodwater farming along the Colorado River and lower Gila River. Sites with Patayan ceramics are found throughout the western Papaguera and indicate an adaptation that relied on nonriverine resources, as well as agrarian pursuits. The co-occurrence of Hohokam and Patayan ceramic types at sites in the western Papaguera is common (Bruder and Hill 2000). The presence of these different types of wares, sometimes at the same site, is interpreted as evidence for either exchange relationships or co-use of the region. Some researchers (Ezell 1954, 1955; Fontana 1965; Hayden 1967) postulate that the presence of Patayan ceramics at sites in the interior desert, away from riverine areas, indicates exchange relationships between groups following a prolonged Archaic hunter-gatherer way of life and agricultural groups along the Colorado and Gila rivers.

Cerbat (AD 700 to 1850)

The Cerbat cultural tradition, regarded as the antecedent culture to modern Pai groups, represents an Upland Patayan cultural group whose range extended across northwest Arizona between the Colorado and Verde rivers and south to the Bill Williams River. Primarily hunter-gatherers, the Cerbat resided in rock shelters or temporary settlements consisting of wickiup construction. However, the Cerbat practiced a limited form of agriculture and produced a distinctive series of pottery known by archaeologists as Tizon Brown Ware. The Cerbat cultural sequence consists of the following periods: Desert (AD 700 to 1150), Expansion (AD 1150 to 1300), and Stability (AD 1300 to 1850) (Euler 1963, 1982).

Knowledge of the Desert Period (AD 700 to 1150) remains limited to the distribution of Tizon Brown ceramics within lowland environs west of the Grand Wash Cliffs. During the Expansion Period (AD 1150 to 1300), the Cerbat extended their range to the Colorado Plateau, where they displaced the Cohonina. The Stability Period (AD 1300 to 1850) represents the culmination of cultural patterns in settlement, subsistence, and material culture considered to approximate those

of the Historic Period Hualapai. Although archaeological evidence regarding subsistence and settlement remains very limited for the earlier Desert Period, it is likely that Cerbat groups residing closest to the Colorado River practiced a seasonal round of limited agriculture in the bottomlands during the summer months, with gathering activities taking place in the uplands at other times of the year (Stone 1987).

Archaeological evidence from later periods, as well as ethnographic data, indicates that the Cerbat seasonal round followed the subsequent scenario. During the winter, groups of three or four families occupied large base camps established near water sources. These groups survived the winter months by living on stored resources cached during the summer and early fall. In the spring, these familial groups dispersed into yet smaller groups of two or three families, collecting wild plant resources such as agave and grass seeds from the foothills and valley floors. In the summer, groups of one or two families spent their time collecting cactus fruits and mesquite beans for the following winter.

Cerbat material culture includes a suite of stone tools, basal and side-notched projectile points, groundstone, basketry, and the previously mentioned Tizon Brown Ware. Eight types of Tizon Brown have been identified in Arizona, consisting of Cerbat Brown, Cerbat Red-on-Brown, Cerbat Black-on-Brown, Aquarius Brown, Aquarius Black-on-Brown, Sandy Brown, Tizon Wiped, and Orme Ranch Plain. These wares, constructed by coil and scrape as well as paddle and anvil techniques, remain poorly dated with beginning dates ranging from as early as AD 700 to as late as AD 1300 (Clauss 2001; Goetze and Mills 1993).

Cohonina (AD 700 to 1200)

The Cohonina occupied an area between the Colorado and Little Colorado rivers, which extended south from the Grand Canyon to the Mogollon Rim. Although not conclusive, some researchers consider the Cohonina to represent a migrant culture that moved into the region sometime after AD 600 (Lyndon 2005). It has been argued that the Cohonina, like the Cerbat, represent the cultural antecedent of the Havasupai (Schwartz 1966); however, other researchers suggest that the Cohonina abandoned the region following the migration of Cerbat cultural groups into the area beginning in the twelfth century (Dobyns 1956; Euler 1958; Euler and Green 1978). Colton developed the initial chronological framework for the Cohonina, which consisted of the Coconino (AD 700 to 900) and Medicine Valley (AD 900 to 1120) phases (Colton 1939). A number of chronologies were developed over the successive decades since Colton's time, and the better known Pecos Classification of Pueblo I, II, and III for the Cohonina are sometimes used.

Indicative of Cohonina occupations is the distribution of a distinctive series of paddle-and-anvil constructed pottery types known as San Francisco Gray Ware (Cordell 1997). San Francisco Gray Ware types include Floyd Gray (AD 700 to 900), Floyd Black-on-gray (AD 700 to 900), Deadman's Gray (AD 775 to 1200), Deadman's Fugitive Red (AD 850 to 1150), Deadman's Black-on-Gray (AD 900 to 1100), Kirkland Gray, and Bill Williams Gray (Roberts 2001).

A semi-sedentary culture, the Cohonina practiced limited agriculture while remaining primarily reliant on hunting and gathering. Spatial patterning of identified Cohonina archaeological sites reveals that some communities exploited seasonal resources in marginal environments such as

the Hualapai Valley, while others aggregated in woodland areas at the base of the region's major ranges such as the Kendrick, Sitgreaves, and Bill Williams mountains (Cartledge 1979). Cohonina residential architecture represents a combination of wickiups and pit houses at semi-permanent settlements, and masonry pueblos at permanent settlements. Public architecture at permanent settlements included plazas and ballcourts; the Cohonina did not construct kivas (Bone 2002; Cartledge 1979).

Anasazi (AD 500 to AD 1600)

Emerging from the Basketmaker cultural tradition, the Anasazi occupied settlements throughout the northern Southwest, which includes much of present-day northeastern Arizona, northwestern New Mexico, southeastern Utah, southwestern Colorado, and a portion of southern Nevada (Plog 1997). Archaeologists divide the Anasazi into eastern and western groups based on the present-day Eastern and Western Pueblo peoples (Reid and Whittlesey 1997). Likewise, archaeologists recognize a number of different branches among the groups; the Chaco Canyon, Mesa Verde, Kayenta, and Rio Grande branches are among the most distinctive and frequently compared (Cordell 1997).

Anasazi settlements generally consisted of several families living in small groups of 10 to 20 people, practicing small-scale farming along drainages where seasonal floodwaters spread following heavy rains (Plog 1997). The Anasazi cultural sequence consists of the following five periods: Basketmaker III (AD 500 to 700), Pueblo I (AD 700 to 900), Pueblo II (AD 1000 to 1100), Pueblo III (AD 1100 to 1300), and Pueblo IV (AD 1300 to 1600) (Cordell 1997).

The adoption of the bow and arrow, production of ceramics, and increased dependence on agriculture characterizes the Basketmaker III Period. Pit house settlements are larger than those of any previous period, and the trend towards increased size signals the development of large-scale communities (Cordell 1997). Excavations at Juniper Cove near Marsh Pass west of Kayenta, Arizona suggest that some degree of great kiva ceremonialism was functioning by this time period (Cummings 1953).

The Pueblo I Period marks an interval of major population growth and dispersion throughout most of the Southwest. Significant architectural changes involving the transition from pit house to pueblo accompany these trends. Commonly associated with Pueblo I sites are Kana-a and Black Mesa Black-on-white ceramics, as well as marine shell artifacts (Cordell 1997; Gilman 1983, 1987; Plog 1974).

The appearance of corrugated gray ware and slipped white ware pottery marks the beginning of the Pueblo II Period. Similar to preceding Pueblo I habitations, Pueblo II sites exhibit both pit and surface structures; however, masonry generally replaces jacal construction for surface structures and for lining pit structures. Common Pueblo II ceramic types include corrugated gray ware, decorated red (or orange), and black-on-white pottery such as Red Mesa Black-on-White, Gallup Black-on-White, and Puerco Black-on-White. Anasazi population levels may have peaked in the Pueblo II Period, and maximum geographic dispersal throughout most of the northern Southwest is clearly in evidence during this period (Lekson 1991).

Occupation of most Pueblo III sites and communities occurred from AD 1200 to 1275. Eventually, environmental and demographic conditions in the Eastern San Juan reached a breaking point and the entire area was abandoned between AD 1300 and AD 1350. Warfare, starvation, and related diseases affecting the region's population may have contributed to this evacuation of the region. Many of the survivors of this "abandonment" of the Four Corners area eventually settled among other populations in the northern and middle Rio Grande region (Cordell 1997).

In the beginning of the Pueblo IV Period, large numbers of people aggregated in areas with arable land and water, such as the Zuni Pueblo, Hopi Mesas and along the Little Colorado River, and the Rio Grande Valley. This period saw the growth of large pueblos such as Gran Quivira, a long-inhabited, major trade center whose inhabitants interacted with groups from the High Plains to Mexico (Cordell 1994). Sites dating to the Pueblo IV Period consist of several hundred rooms configured as large room blocks situated around a central plaza or as parallel rows of rooms separated by open spaces that may have served as communal plazas. Corrugated gray ware was replaced by plain gray ceramics, and black-on-white wares by red, orange, and yellow wares. By the time of the Spanish *entrada*, the large sites in the greater region (except those on the Hopi Mesas) had been abandoned (Roberts 1996).

Sinagua (AD 500 to 1300)

Colton (1939, 1946) applied the term Sinagua to the Ceramic Period inhabitants of the Flagstaff area, based on a broad list of cultural characteristics. Although he identified many distinctive traits, significant similarities to neighboring Anasazi, Hohokam, and Mogollon groups occur. For example, researchers have drawn comparisons between Sinagua and Anasazi black-on-white ceramics as well as Sinagua and late Mogollon domestic architecture. Moreover, Hohokam ballcourts occur in the area (Cordell 1997). Despite these similarities, Sinagua Alameda Brown Ware differs from Anasazi-made Tusayan Gray Ware and Mogollon Brown Ware. In addition, timber and masonry-lined Sinagua pit houses exhibit morphological characteristics that distinguish them from the residential architecture of the Anasazi, Hohokam, and Mogollon (Plog 1989). These conditions suggest that the Sinagua area represents a nexus linking the other defined cultural traditions of the region (Cordell 1997).

Sinagua origins remain unclear. Schroeder (1979) suggests that the Sinagua represent Hakataya migrants; in the same volume, Plog (1979) theorizes that the Sinagua are a manifestation of the Anasazi cultural tradition. Further uncertainty stems from Hohmann's (1983) use of the term Sinagua in reference to material culture only (Plog 1989). The Sinagua cultural sequence was conceived within the context of the effects of the eruption of Sunset Crater in AD 1064. The sequence consists of the following phases: Cinder Park (AD 500 to 700), Sunset (AD 700 to 900), Rio de Flag (AD 900 to 1070), Padre/Angell/Winona (AD 1070 to 1120), Elden (AD 1120 to 1200), Turkey Hill (AD 1200 to 1300), and Clear Creek (AD 1300 to 1400) (Colton 1960). Essentially, Cinder Park, Sunset, and Rio de Flag represent pre-eruptive phases when the Sinagua culture is more homogeneous in regards to ceramics and architecture as well as settlement and subsistence. Likewise, the Padre/Angell/Winona through Clear Creek phases represent the post-eruptive sequence marked by increasing cultural variability (Cordell 1997).

The first Sinagua settlements emerged around AD 600, and consisted of small clusters of pit houses along the eastern flanks of the San Francisco Peaks and in the Anderson Mesa area. Taking advantage of areas favorable for floodwater farming, the Sinagua constructed their settlements at the edges of parks in the forests, as well as along the banks of the Little Colorado River. In addition to pit houses, feature types dating to this time include field houses, check dams, and irrigation ditches. Public architecture at this time consisted of large circular pit structures, which most likely served as the place for intercommunity ceremonial activities (Cordell 1997; Downum 1992). The proliferation of Alameda Brown Ware ceramics characterizes the Sinagua region; however, a significant quantity of Cohonina, Anasazi, and Hohokam trade wares occur at Sinagua sites dating to the Sunset and Rio de Flag phases. The distribution of these intrusive pottery types suggests that the Sinagua undertook direct trade with their neighbors in the latter part of the pre-eruptive period (Downum 1992).

The eruption of Sunset Crater in AD 1064-1066 devastated the immediate environs surrounding the volcano, while blanketing the greater region in a layer of ash and cinders. A prevailing archaeological notion suggests that volcanic ejecta of ash and cinders functioned as mulch, and improved soil characteristics in the years following the eruption by increasing water retention. Initially displaced by these events, the Sinagua eventually repopulated the area, and came to recognize the improved soil conditions. Nearby Cohonina, Anasazi, Hohokam, and Mogollon populations eventually learned of the increased agricultural output of these soils, and migrated into the region to take advantage of the improved growing conditions during the contemporaneous Padre/Angell/Winona phases. Bringing their own cultural traits and traditions, the migration of these differing cultural groups significantly altered the dominant Sinagua culture, resulting in a mix of influences that never fully merged into a single distinctive culture. By the Clear Creek phase, erosion of the volcanic ash resulted in the abandonment of the region (Colton 1939, 1946; Downum 1992).

Within the last three decades, Colton's scenario has been challenged by geological studies that indicate volcanic activity continued at Sunset Crater for 200 years following the initial eruption in AD 1064. Moreover, analyses of post-eruptive Sinagua sites do not support Colton's model for immigration. Increased soil production and changing Sinagua cultural patterns are more likely the result of environmental changes and region-wide cultural trends that occurred throughout the AD 1100s to 1200s (Downum 1992; Pilles 1979).

By AD 1300, most Sinagua settlements in the Flagstaff region were abandoned as populations shifted to the south and east. At this time, Sinagua populations on the Colorado Plateau aggregated into large pueblos centered in the area of Anderson Mesa. Reasons for this shift in settlement remain unclear; however, suggestions include environmental degradation, lack of rainfall, and changes in regional trade networks. By AD 1450, abandonment of the large pueblos occurred, and the remaining populations migrated to the Hopi mesas. This migration is regarded as one of the pivotal moments in the development of Hopi culture during the Protohistoric Period (Downum 1992).

Protohistoric (AD 1450 to 1691)

The Protohistoric in the American Southwest was a time of transition between the prehistoric and historic periods, ranging from AD 1450 to 1700 (Gilpin and Phillips 1998; Ravesloot and

Whittlesey 1987; Riley 1987; Wilcox and Masse 1981). In North America, the most common definition of the Protohistoric is the period that postdates the arrival of Europeans to the New World, to the time of continuous occupation or contact with Europeans (Ravesloot and Whittlesey 1987). Arizona archaeologists broadly define the end of the Protohistoric with the entrance of Spanish Jesuit missionaries into southern Arizona at the beginning of the eighteenth century (Gilpin and Phillips 1998).

The period from AD 1300 to 1500 marked the beginning of an episode of mass abandonment, migration, and social reorganization throughout the Southwest. The Protohistoric Native American world in Arizona at the time of the Spanish *entrada* consisted of numerous tribal groups representing a mix of sedentary and nomadic cultural groups.

Quechan

The Quechan occupied the immediate environs at the Colorado-Gila confluence, while to the north were the lands of the Halchidhoma and the Mojave. Along the lower Gila were the Kavelcadom (a band of the Halchidhoma) who occupied the valley up to Gila Bend, and the Maricopa whose settlements stretched upriver to its confluence with the Salt River (Spier 1978; Stone 1991). Subsistence strategies of river groups consisted of a mix of floodplain agriculture and fishing as well as general hunting and gathering. Likewise, settlement patterns of the lowland populations reflect their subsistence strategies, in that they occupied seasonal rancherías on the terraces above the rivers during the winter and spring, and moved down onto the floodplain following the spring floods (Underwood 2005).

Mojave

The Mojave occupied approximately 125 miles of territory stretching from present-day Needles, California, south beyond the Bill Williams River where they lived in rancherías (Kroeber 1925; Stewart 1983; Stone 1986). Relying on fishing and floodwater farming for a significant portion of their food resources, the Mojave subsisted on native fish species such as the Colorado Salmon, Humpbacked Sucker, and Gila Chub, and cultivated several varieties of flint and sweet corn, tepary beans, pumpkins, squash, and gourds (Stewart 1983; Stone 1991). Variable environmental conditions led to frequent agricultural crop failures, which in turn caused a heavier reliance on native mesquite beans, amaranth, cactus fruit, and yucca (Bauer et al. 1997). Considered the most warlike of the Colorado River tribes, the Mojave consistently resisted Anglo intrusions into their territory well into the nineteenth century (Trimble 1989).

Prior to 1800, life on the lower Colorado River was punctuated by endemic warfare. In this environment, the allied Quechan and Mojave continuously encroached on the lands of other river peoples who eventually fled to the east (Kroeber 1925; Spier 1978). Following the expulsion of the Halchidhoma in the 1820s, the Mojave expanded across an area stretching approximately 125 miles along the lower Colorado River (Kroeber 1925; Stewart 1983; Stone 1986). Forming alliances with the Mojave and the Quechan, the Chemehuevi arrived in the area around 1800, where they settled on former lands of the Halchidhoma. Influenced by their new surroundings, the Chemehuevi took on floodplain agriculture and adopted some degree of Mojave socio-political cultural attributes (Kroeber 1925). It is suggested that the Maricopa, a Yuman-speaking

Gila River tribe, once resided on the lower Colorado, representing the first cultural group to set the precedent for an eastward migration that eventually included the Kaveltcadom and the Halchidhoma (Spier 1978).

Hualapai

From AD 1300 to the mid-eighteenth century, the Hualapai ranged throughout northwestern Arizona. Believed to be the cultural descendants of the Ceramic Period Cerbat cultural tradition, archaeologists suggest that the Hualapai and the Havasupai diverged into separate cultural groups at some undetermined point in the past. Following this divergence, the Hualapai occupied an area bordered by the Colorado River to the north, the Black Mountains to the west, the Bill Williams and Santa Maria rivers to the south, and the Coconino Plateau to the east (McGuire 1983). Like the Cerbat, the Hualapai followed the seasonal round of winter base camps, followed by hunting and gathering in the foothills and on the valley floors during the spring and summer months (Stone 1987). Although primarily hunter-gatherers, some later groups grew crops along the Bill Williams and Big Sandy rivers, and bartered with their neighbors for agricultural products such as maize, beans, pumpkins, and other cultivated foods (Huber 1999).

Pima and Tohono O’odham

Despite the fact that the first contact between the Piman-speaking peoples of the region and Europeans occurred around 1539–1540 with the passing of the de Niza and subsequent Coronado expeditions, little is known of the period from AD 1450 to AD 1691. Although the Spanish Crown claimed this region, the failure of Coronado’s expedition to find and conquer the fabled Seven Cities of Cibola resulted in Spain directing its efforts of colonial expansion to more accessible parts of its ever-expanding empire. As such, the region remained relatively free of European contact for another full century and a half (Farish 1915; Kessell 2002).

By the time Jesuit priest Eusebio Francisco Kino first traveled to the Tucson Basin, the Hohokam tradition had already disappeared (Doelle 1984). West of the Santa Cruz River were the Tohono O’odham, and along the San Pedro and Santa Cruz rivers were a people known as the Sobaipuri (Di Peso et al. 1953; Doelle and Wallace 1990; Masse 1981). Both groups spoke the Piman language and lived in oval, *jacal* (vertical wattle and daub) surface dwellings. Historic documentation indicates that the mission of San Xavier del Bac was established by Spanish Jesuit priests at one of the larger Sobaipuri communities. More recent research (Seymour 2009) has documented the presence of Sobaipuri-O’odham and proto-Apache groups living along the Upper San Pedro River by the time of Coronado’s expedition.

Apache

Athabaskan-speaking Apache groups ranged across a significant portion of the Southwest in the Terminal Prehistoric and Historic periods, from northern Mexico into eastern Arizona and western New Mexico, and across the southern Great Plains to southwest Texas (Gunnerson and Gunnerson 1971). Linguistically, Athabaskan is a branch of the Na-Dene language family of northwestern North America. Geographically, Athabaskan speakers reside throughout the interior of Alaska and western Canada, with outliers along the Pacific Coast of Oregon and

California, as well as in the Southwest, as represented by Navajo and Apache cultural groups (Ruhlen 1998). It is unclear when the first Athabaskan-speaking cultural group migrations to the region occurred, particularly in regards to groups that would become the Apache of Arizona and New Mexico. Traditional views hold that following the abandonment of Mogollon settlements in eastern Arizona and western New Mexico in the late fourteenth century, the region remained depopulated, resulting in the *despoblado* (unsettled/uninhabited land) encountered by later Spanish explorers (Cordell 1984; Haury 1985; Reid and Whittlesey 1997; Seymour 2008). This has led some scholars to suggest that Apache groups only arrived in the region in the mid-1600s (Schroeder 1974; Seymour 2008). However, others suggest Athabaskan migrations occurred prior to the arrival of the Spanish to the area, and Apache, or proto-Apache groups, were present at the time of Coronado's *entrada* in AD 1540 (Forbes 1960; Goodwin 1942; Oakes 1996; Seymour 2008, 2009b, 2013b). Recent research that focused specifically on this question provided a suite of radiocarbon and luminescence dates that show a continuous ancestral Apache presence beginning in the AD 1300s (Seymour 2013a).

Spanish and Mexican Periods (AD 1691 to 1856)

Although the crown colony of Nuevo México first sent Franciscan missionaries to the Hopi pueblos in 1629, sustained contact with Europeans in the territory encompassing present-day Arizona did not begin until the end of the seventeenth century, when Jesuit priest Eusebio Francisco Kino began a mission building program in the region (Doelle 1984; Trimble 1989). Kino's program provided the conduit for additional Spanish settlement in the region, and eventually led to the establishment of the Presidio San Agustín del Tucsón (present-day Tucson) in 1775 (Dobyns 1976). With the presidio for protection, Spanish colonists established farms along the Santa Cruz River and mines in the surrounding hills, and grazed cattle. Spanish goods and the relative safety provided by the presidio attracted indigenous settlers. The Spanish and Native American farmers grew corn, wheat, and vegetables, and cultivated fruit orchards (Williams 1986).

Following independence from Spain in 1821, economic instability and periodic civil war greatly affected the newly established Mexican government's ability to maintain control in the far northern reaches of the country. In the Pimería Alta, lack of leadership from the central government resulted in increasing indigenous hostilities and mass abandonments. In 1831, the San Agustín Mission was abandoned, as were most of the settlements in the Tucson Basin (Elson and Doelle 1987; Hard and Doelle 1978).

Following the annexation of Texas in 1846, the United States exerted pressure on Mexico to cede the New Mexico territory east of the Rio Grande. However, Mexico refused to recognize any of the United States' claims west of the Nueces River in Texas, and war quickly followed (Prince 1883). On August 18, 1846, American forces under the command of Brigadier General Stephen W. Kearny entered Santa Fé and secured the city without firing a shot (Lavender 1980; Simmons 1977). That October, approximately 340 soldiers of the Mormon Battalion led by Lieutenant Colonel Philip St. George Cooke departed from Santa Fé for San Diego in Alta California. Tasked with blazing a wagon trail to the Pacific, the battalion crossed into the Pimería Alta, where they seized the Presidio San Agustín de Tucsón from provisional Mexican forces who had retreated there prior to the army's arrival. The Cooke wagon road became the first American

wagon route extending from New Mexico to the Pacific Coast. In the ensuing years, thousands of immigrants would travel this road during the California Gold Rush of 1848–1849. The route subsequently became known as the Gila Trail (Pike 2004; Trimble 1989).

American Territorial and American Statehood Periods (AD 1856 to Present)

The Mexican-American War ended with the signing of the Treaty of Guadalupe Hidalgo in 1848. Under terms of the treaty, Mexico ceded most of its northern territories to the United States; this included disputed land in Texas, California, and New Mexico, and all land north of the Gila River in present-day Arizona. Following the Gadsden Purchase of 1854, the United States acquired the rest of the land south of the Gila River to the present-day international boundary with Mexico (Trimble 1989). With annexation, the United States government quickly established a series of military forts, and began the first surveys of the region with the U.S. Army Corps of Topographical Engineers. Throughout the 1850s, survey parties mapped waterways and springs, noted soils and climate, and searched for potential wagon and railroad routes. Coinciding with the California Gold Rush, the U.S. Army constructed Fort Yuma (originally named Camp Calhoun and then Camp Independence) in 1849 on the California side of the lower Colorado River at Yuma Crossing, in order to provide protection for gold prospectors and settlers following the Gila Trail through Arizona (Lavender 1980; Trimble 1989).

After the end of the Civil War, immediate concerns in Arizona focused on Indian resettlement and economic expansion (Lavender 1980). Following the failure of the forced relocation to Bosque Redondo in New Mexico, in 1867 the Navajo were eventually awarded 3.5 million acres in their former homeland in northeastern Arizona and northwestern New Mexico. Although the sedentary Pima and Papago of southern Arizona had provided supplies to immigrants bound for California during the gold rush, labored on Anglo ranches in the Santa Cruz Valley, and fought with U.S. troops against the Apache throughout the 1860s, Anglo settlers insisted on appropriating their lands. As such, the United States government instituted a system of reservation lands for the various tribal groups (Pritzker 2000). Subjugation and resettlement of the Apache, particularly the Chiricahua, proved more difficult for the government. Final peace with the Apache only came with the surrender of Geronimo and the last of his band (some two dozen followers) in 1886 (Sweeney 1992; Trimble 1989).

After the California Gold Rush waned, many prospectors moved to Arizona (part of the New Mexico Territory until 1863) in the 1850s and 1860s. Gold mines were established in La Paz and Yuma, and along the Bill Williams River, north of Parker. Silver and copper mines also were established along the lower Colorado River. Prior to construction of transcontinental railroads, access to the Arizona interior remained limited. As such, miners approached the interior from the various landings and river communities that had been established along the lower Colorado River. For several decades, steamboats ferried miners and supplies upriver from Yuma to the various landings; however, many inland mines were unsuccessful due to the high transportation costs and lack of water (Keane and Rogge 1992).

In 1869, John Wesley Powell, a self-taught geologist, ethnologist, and natural historian, led a successful expedition through the Grand Canyon along the Colorado River. Impressed with Powell's accomplishment, Congress authorized funding for the Powell Survey, a systematic study of the Colorado Plateau. Powell published the results of this survey work 4 years later in

his seminal work *Report of the Exploration of the Columbia River of the West and Its Tributaries, Explored in 1869, 1870, 1871, and 1872, under the Direction of the Secretary of the Smithsonian Institution*. With this book, Powell crafted an exciting narrative of his adventures through the Grand Canyon while providing a scientific text detailing the geography, geology, and hydrology of the region. Although tourism at the Grand Canyon remained many years in the future, Powell's volume highlighted the natural wonders of the region to an unacquainted American public (Sheridan 1995).

Construction of the Arizona and California Railway (a subsidiary of the Atchison, Topeka, and Santa Fe Railroad) at the turn of the twentieth century connected Phoenix, Arizona with Cadiz in southern California. Extending southwest from Parker, the line prompted the establishment of a number of communities along the railway's route, including Bouse, Utting, Vicksburg, Salome, Wenden, Love, Aguila, and Matthie (Myrick 2001).

With native resettlement relatively complete, rural development and industrialization increased unimpeded throughout Arizona in the 1870s. The introduction of the telegraph and railroad significantly improved conditions for Anglo settlement and growth. During this period, cattle ranching, mining, and farming expanded throughout the territory (Trimble 1989). Beginning in the 1890s, the first reclamation projects were undertaken by the federal government; these involved the construction of dams, reservoirs, and canals throughout the region's river valleys. Although the guiding policy was the reclamation of arid lands in the West, the construction of dams decreased the threats posed by seasonal floods to irrigation agriculture, provided a stable delivery of water for the region's farms, and most importantly, generated hydroelectric power (Clark 1987; Trimble 1989). Presently, the region's reclamation projects provide agricultural, municipal, and industrial water to approximately one third of the population in the Southwest (Bureau of Reclamation 2000).

On February 14, 1912, the Arizona territory became the last of the contiguous states admitted to the Union. Its population continued to increase after statehood; however, the region remained rural in character and economically dependent on mining and agriculture. These conditions peaked following the United States' entry into World War I in 1917, which produced a high demand for resources such as copper, cattle, and agricultural products. Although the war boosted the regional markets, the post-war years proved detrimental for the traditional economies, sparking repeated economic restructuring that continued throughout the twentieth century (Nash 1987; Trimble 1989).

Tourism provided the needed boost to the region throughout the 1920s. Dude ranches and resorts were very popular with the American public. Arizona constructed additional and improved highways, which resulted in the emergence of such cultural roadside icons as gas stations, auto lodges (motels), campgrounds, cafes, curio shops, and other recreational facilities (Nash 1987; Trimble 1989). Like the rest of the nation during the 1930s, Arizona was hit hard by the Great Depression as agricultural prices fell, mines closed, and populations declined. In 1933, congress created the Civilian Conservation Corps (CCC), which put approximately three million young men to work on park, soil, and water conservation projects throughout the country (Cornebise 2004). Throughout the late 1930s, CCC workers built roads, bridges, trails, wells, reservoirs, and recreational facilities. By the end of the program in 1942, twenty-seven CCC camps had been established in Arizona.

Following the United States' entry into World War II, Arizona's natural resources were once again in demand for the war effort. Production in the raw materials industry increased; however, the biggest changes occurred in the expansion of manufacturing and service industries. Because of the expanding manufacturing sector, a significant portion of the rural population migrated to the major centers at Tucson and Phoenix, contributing to the loss of their small-town characters (Nash 1987; Sheridan 1995). This change in trajectory of the regional economy grew and strengthened in the post-war years, and produced the diverse and complex economy that exists today (Nash 1987).

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Appendix B: Anticipated Resource Types

The following section provides an overview of resource types known in the State of Arizona that may occur within Western rights-of-way and facilities; however, this list is not comprehensive because countless resource types exist throughout the state. The list is based on resource types found in the ASM data files and consist of functional or morphological classifications. Prehistoric and protohistoric resource types are discussed below according to classification; while historic resources are grouped by historic context.

Prehistoric/Protohistoric Resources (pre-1700)

Prehistoric/protohistoric resource types are those associated with cultural groups that occupied Arizona prior to the arrival of Spanish missionaries at end of the seventeenth century.

Trails

Trails represent the surface manifestations of repeated human travels along informal or formal pathways. Trails may develop through the repeated use of pre-existing game trails or natural corridors between resource areas, or may be the result of intentionally constructed travel corridors. Well-used trails, as maintained by differing ethnic groups over time, would have served a number of functions in regards to mobility (e.g., seasonal migration, resource procurement, exchange, and religious/spiritual observances) (Darling and Eiselt 2003). Beyond stable desert pavement environments, prehistoric trails typically no longer exhibit physical tracks or traces of passage, instead manifesting as linear artifact scatters or isolated finds (Swanson and Sunderman 2011).

Darling and Eiselt (2003:222) classify three trail types (Type I to Type III) for modeling prehistoric modes of travel. Type I trails as those in which movement is intra-regional between settlements and hinterlands, while Type II trails provide access to resources and materials outside of settlements. Movement along Type 1 trails involves travel from the security of settlements to outlying areas where the potential for danger and the loss of possessions increases. Therefore, trail segments between settlements may exhibit higher frequencies of broken pottery, particularly ceramic jars, as well as shrines, rock art, and other features. Type III trails represent long-distance routes used for ritualized travel (e.g., salt journeys, warfare, pilgrimages, etc.).

Artifact Scatters

Artifact scatters are patterned or random arrays of cultural materials across a ground surface. The classification of artifact scatter is used when features are not present, or functional aspects associated with other specific resource types are undetermined due to the nature of the assemblage. However, the absence of surface architecture or pit depressions does not necessarily negate the potential for subsurface cultural deposits or architecture. Small, low-density scatters may indicate the presence of a temporary campsite or limited activity area (e.g., tool maintenance or resource processing) associated with a nearby habitation, while larger scatters exhibiting a high density and diversity of artifacts may indicate a buried habitation or one lacking surface architecture.

Resource Procurement and Processing Areas

These resource types generally exhibit artifacts and features indicative of procurement and processing of food and/or raw materials. These activities are associated with hunting wild game and gathering wild plant resources (e.g., *Chenopodium* sp., *Opuntia* sp., piñon nuts, mesquite beans), as well as the cultivation (e.g., agave, cholla) and/or farming of domesticated plants (e.g., maize). In upland areas, this includes quarries for the procurement of raw materials for stone tool production. Artifact types include, but are not limited to, ceramics, lithic debitage, groundstone processing tools (e.g., manos and metates), and formal tools (e.g., projectile points, scrappers, agave knives). Feature types may include temporary structures (e.g., ramadas, brush kitchens), food processing features (e.g., hearths, hornos, roasting pits, bedrock mortars), and features associated with tool manufacture (e.g., chipping stations).

Agricultural Landscapes

Agricultural landscapes exhibit significant variation depending on the types of subsistence strategies employed (e.g., dry farming, Ak-Chin farming, irrigation farming). Feature types include those directly associated with agricultural production such as rock-lined garden plots and terraces, planting beds (e.g., agricultural rock piles), diversion structures (e.g., rock piles and check dams), and irrigation canals, as well as temporary habitation structures (e.g., ramadas/field houses). In general, artifact densities on agricultural landscapes are low in relation to the resource size, and typically consist of lithic debitage and tools (e.g., agave knives), groundstone processing tools (e.g., mano and metates), and ceramics (i.e., storage vessels).

Campsites

Campsites represent temporary occupations and lack permanent structures. Features are usually limited to temporary structures (e.g., clearings, rock-lined circles, support rocks for wickiups, etc.), and those associated with food preparation and tool maintenance (e.g., hearths and chipping stations). Artifacts are typically limited to low frequencies of lithic debitage, ceramics, or groundstone.

Habitations

Habitations, permanent or semi-permanent, are the loci of sustained human occupation. Habitations consist of a single dwelling or a rock shelter, and range in size from small hamlets or farmsteads with a few domestic structures up to large villages exhibiting divisions of public and private space (e.g., plazas, compound walls, and platform mounds) and ceremonial architecture (e.g., kivas, ballcourts). Artifact densities are typically higher at habitations, reflecting the continuous, multi-generational use or re-use of the area. In addition to greater variations in ceramic, lithic, and groundstone functional types, well-established locals or larger villages may exhibit a greater diversity of artifact classes (e.g., shell, turquoise, copper, etc.), resulting from household production or specialized production associated with intra- or inter-regional trade. Domestic residential architecture may consist of single-room pithouse dwellings or aboveground jacal, masonry, or adobe structures, as well as large, multi-room masonry and adobe pueblos.

Features of habitations that are not architectural include trash pits and middens, extramural activity areas, and burials.

Sacred Resource Types and Traditional Cultural Properties

Within an archaeological context, sacred resource types are the locations of religious activities or places that held spiritual significance for past cultural groups. These resource types do not necessarily adhere to ASM site criteria, and may be isolated features or a constituent part of a larger area. Features associated with sacred resource types include platform mounds, kivas, intaglios/geoglyphs, rock art (petroglyphs and pictographs), cairns, caches, trails and burials. However, natural features and landscapes (e.g., springs, caves, rockshelters, and high vistas) may also be considered sacred resource types. Frequently, the spiritual significance applied to prehistoric resource types transcends time, and many such locations and landscapes remain sacred to modern Native Americans.

This historical connection has led to the concept of the traditional cultural property (TCP). As defined in *National Register Bulletin No. 38* (National Park Service 1990), a TCP is a site, building, structure or object that is NRHP-eligible based on its association with the cultural practices or beliefs of a living community that are rooted in that community's history, and are important in maintaining the continuing cultural identity of the community. There are a number of TCPs identified and recognized on federal lands throughout the State of Arizona.

Historic Resources (post-1700)

Historic resources are those associated with cultural groups occupying Arizona since the arrival of Spanish missionaries at the end of the seventeenth century. Historic resources exhibit considerable variation in regards to types, features, and material culture. This is particularly true for resources dating to the American Territorial and Statehood periods (post-1856), which reflect the mass production nature of the Industrial Revolution. Due to this variability, potential historic resource types are discussed within the following historic contextual themes, including transportation, homesteading, and industry. In addition to the discussion of resource types within these historic contextual themes, a brief overview of Western transmission lines and associated facilities is provided on page B-8.

Trails and Transportation Corridors

Numerous Historic-era trails and transportation corridors extend across Arizona, most of which derive from prehistoric antecedents. A historic context prepared by the Arizona SHPO (Stein 1994) provides a typology for these types of resources which consist of the following:

- Native American Trails
- Spanish Period Trails and Roads
- Mexican Period Trails and Roads
- U.S. Government Trails and Roads of the Early American Period
- Mormon Trails and Roads
- Stagecoach, Freight, and Toll Roads

- Stock Trails
- Early Automotive Routes
- Other Historic Trails and Transportation Corridors

Native American Trails

Often consisting of footpaths intended for pedestrian use, Native American trails are apt to be narrow, exhibiting a tread typically less than two-feet wide (see Trails section) (Stein 1994:37).

Spanish Period Trails (ca. 1539 to 1821)

Spanish Period Trails refers to the first routes traveled by Spanish explorers, missionaries, miners, and colonizers. In general, these types of resources post-date the establishment of the Jesuit mission program in the Santa Cruz River Valley of southern Arizona (1690s); however, this type includes travel routes associated with earlier sixteenth century explorations in Arizona (e.g., the Coronado Expedition). Of particular significance during this period was the first road construction for *carretas* (wheeled vehicles), the physical evidence of which may consist of two-track ruts, grooves in rock surfaces, rock alignments, and vegetation anomalies. Additional indicators may consist of period-specific artifacts as well as period-specific inscriptions on adjacent outcrops (Stein 1994:38).

Mexican Period Trails and Roads (1821 to 1848/1854)

Mexican period trails and roads refers to travel corridors for which major use first occurred during the period following Mexican independence from Spain until annexation by the United States in 1848 (1854 in southern Arizona). Many travel routes established during this period consist of trails blazed by trappers and traders (e.g., the Jedediah Smith and Antonio Armijo trails), or by American soldiers during the Mexican American War (1846 to 1848) (e.g., the Mormon Battalion Trail/Gila Trail). Physical indicators follow those established in the preceding section. Additional archaeological signatures, particularly in regards to the Mormon Battalion Trail, may include trailside graves as well as wagon parts or other baggage train-related artifacts concentrated in areas where difficult terrain resulted in wagon breakdowns or the abandonment of equipment (e.g., river or canyon crossings) (Stein 1994:40).

U.S. Government Trails and Roads of the Early American Period (1848 to 1886)

Following the signing of the Treaty of Guadalupe Hidalgo (1848), the U.S. government began surveying and establishing travel routes throughout the annexed territories. Trails and roads associated with western expansion (i.e., Manifest Destiny) consist of transcontinental routes and roads, international boundary survey routes, and regional exploration routes. Roads and trails of this type include military roads established to fortify the newly-annexed territory (e.g., Crook Trail, Stoneman Trail, and Reno Road). Physical indicators follow those established in the preceding sections. Additional archaeological signatures may include period-specific military-related artifacts (e.g., buttons and insignia from uniforms, firearm cartridges) as well as the physical remains of former telegraph lines typically constructed adjacent and parallel to territorial trails and roads (Stein 1994:40-41).

Mormon Trails and Roads (1864 to late-1870s)

These types of trails and roads refer to those associated with the period of Mormon colonization in Arizona undertaken by members of the Church of Jesus Christ of Latter-day Saints' (LDS) (e.g., Honeymoon Trail and Temple Trail). Physical indicators follow those established in the preceding sections; however, a distinguishing characteristic of Mormon trails is a predisposition to extend north-south linking parent communities in Utah to the Arizona colonies (Stein 1994:41).

Stagecoach, Freight, and Toll Roads (mid-19th to early 20th centuries)

These types of travel routes represent commercial corridors established to facilitate the exchange of goods and services in the growing Arizona territory (e.g., Bouse-Swansea Wagon Road, Hardy Toll Road, Grand Canyon Stage Route, and Butterfield Overland Mail and Stagecoach). Physical indicators follow those established in the preceding sections; however, these types of resources may include ancillary facilities such as stage stations and more developed surfaces, although engineered roadways did not occur until automobiles were introduced (Stein 1994:42).

Stock Trails (post-1850s)

These types of resources consist of short-drive (e.g., the Black Canyon Trail) and long-drive trails dedicated to the movement of livestock (sheep and cattle) through Arizona. Long-drive trails in Arizona became obsolete following the construction of the transcontinental railroads (1877 to 1881), and no examples have been inventoried in the state. Short-drive trails moved livestock to better pasturage, as well as to shipping railheads or local markets. Archaeological indicators for stock trails typically consist of poorly-defined swaths, which prove very difficult for researchers to identify. It is possible that traces of a stock trail may occur in constricted areas (e.g., canyon, pass, river, etc.), resulting in a more linear-appearing feature. It is also possible to identify a stock trail from signage posted by the Forest Service on trees, fences, and other objects (Stein 1994:43).

Early Automotive Routes

This type of travel route consists of roads constructed in the 1930s, specifically for automotive traffic. Under the *Interim Procedures for the Treatment of Historic Roads* adopted in November 2002 by ADOT, SHPO, and the Federal Highways Administration, early state highways are considered part of the Historic State Highway System (SHS) (e.g., US 60 or US 95); a network of roadways developed between 1912 and 1955 whose remnants are preserved as in-use roadways and abandoned segments of roadway. This designation automatically qualifies roads as eligible for listing on the Arizona State Register of Historic Places, as well as the NRHP under Criterion D. Physical characteristics of early automotive routes consist of advanced engineering and modern materials (e.g., concrete culverts, bridges, and retaining walls; steel guard rails; asphalt surfacing; etc.). Associated cultural materials may include car parts, as well as automobile-related artifacts (e.g., oils cans, car batteries, tires, and windshield glass) (Stein 1994:44) and those associated with roadside dumping.

Homesteading

Homesteading in Arizona refers to the settlement of land through the Homestead Act of 1862, the Forest Homestead Act of 1906, the Enlarged Homestead Act of 1909, and the Stock Raising Homestead Act of 1916. Physical remains of homesteads may include residential structures (e.g., dugouts, adobe brick, tent-house and wood-frame construction), structures for water collection and storage, outhouses, agricultural fields, and structures associated with livestock. Artifacts may be present in dumps or dispersed within trash scatters (Stein 1990), and typically include glass, metal, porcelain, ceramics, wood, concrete, ceramics, and nails. Homesteads may vary in size from 40 to 640 acres, depending entry type. In Arizona, homesteads tend to date from the 1910s to the 1930s. Archive research is necessary for compiling the background data needed for understanding potential homesteads.

Industry

Industry in Arizona history includes a variety of pursuits, but for the purposes of this monitoring plan includes the activities predominantly associated with agriculture, ranching, and mining. Railroads are an important component in the success of these activities and are discussed in this section.

Agriculture

Agricultural activities in Arizona occurred in areas in close proximity to water sources, such as the Phoenix Basin along the Salt and Gila rivers and the Yuma area along the lower Colorado River. Within Phoenix and the Yuma area, agriculture became successful with the construction of main irrigation canals and associated distribution channels. Many of the historic canals constructed in the Phoenix Basin follow the alignment of prehistoric Hohokam canals. With the completion of the Arizona Canal and associated facilities in 1885, more than 240 miles of canals irrigated farmland around Phoenix (Janus Associates 1989). Features associated with agricultural activities include irrigation canals, barns, tractors, structures for field workers, and other farm equipment. Artifacts associated with agricultural activities include metal, wood, glass, and historic ceramics. With the ability to produce commercial quantities of agricultural produce, the Phoenix and Yuma areas increased in population. The transportation of agricultural produce to other parts of Arizona via railroad provided additional opportunities for growth.

Ranching

Unlike agricultural pursuits, there are few places in Arizona so arid as to restrict cattle grazing. As a result, ranching represents one of the most viable economic activities undertaken in the state since the arrival of Spanish missionaries in the 1690s. Due to generous land grants awarded by the Spanish Crown, former Spanish and Mexican period ranchos cover extensive acreage throughout southern Arizona, extending north from the international boundary with Mexico along the Santa Cruz and San Pedro River valleys, and even as far to the east as the Sulphur Springs Valley. Although the hacienda represents the ideal model of the Mexican rancho, ranches along the northern frontier only loosely adhered to this Mediterranean architectural form. In general, this form consists of

various structures (chapel, storehouses, corrals, and shacks) arranged like a miniature town, centered on the main house (*casa principal*) (Collins 2002).

The *casa principal* of the Spanish and Mexican periods, as well as other building types, reflected the local adobe tradition with modifications. Basic room design consisted of placing round or square beams (*vigas*) on the adobe wall overlain by saguaro ribs or ocotillo stalks to hold up a dirt roof. Urban building preferences of the period reflected the *zagan* plan, leaving a gate or corridor between two separate rooms (true urban designs would open to a courtyard or open patio). In addition to period-specific domestic and ranching-related cultural materials, hacienda features associated with this era may consist of adobe structural remains, corral remnants, and wells. Outlying ranching features may consist of stone and mortar boundary markers (Collins 2002).

The availability of adobe building materials and lack of wealth ensured that early American ranchers in southern Arizona followed the local building traditions of the region. However, the arrival of the transcontinental railroad in the 1880s significantly increased the availability of dimensioned lumber and brick, giving Anglo ranchers the means to ignore local traditions and construct American-styled buildings. Geographically and culturally distinct, ranch homes in northern Arizona do not reflect the Spanish-Mexican influence or even the local pueblo traditions. Instead Anglo ranchers in the region took advantage of the abundant forests, and constructed log structures. Typical of this northern Arizona vernacular style, the main house exhibits better construction than outlying structures with stronger notching on the various beams. Most structures exhibit dirt floors with no foundations; however, it is not uncommon for some ranch homes to have wooden floors supported by stone or vertical log foundations (Collins 2002). In addition to period-specific domestic and ranching-related cultural materials, ranching features associated with this period may include adobe and wooden structural remains, stone and concrete foundations; corrals; wooden and barbed fences; wells, windmills, hand and motorized pumps; earthen, concrete, and steel cattle tanks; wooden feeders and troughs; pipelines.

Mining

Arizona is known for copper mining, although other minerals were mined as well, including silver and gold. Mineral deposits stretch across Arizona diagonally from the southeast to northwestern part of the state (Keane and Rogge 1992). Mining involves two primary activities—exploration and extraction. Depending on the type of mineral resources, as well as on the location and chemical composition of the ore, exploration consists of surface collection or underground mining. Physical evidence of exploration activities that are associated with mining consists of rock cairns marking boundaries of claim areas, prospect holes, shafts, and adits. Often the cairns contain a tobacco tin or other container holding documentation of legal claim to the property. The extraction of minerals is a more intensive and permanent activity that is represented by several types of features, depending on the processing procedure. Features associated with mineral extraction include hoisting works, steam boilers, electric generators, arrastras (animal-driven ore crushing devices), administration buildings, blacksmith shops, smelters, stamp mills, tailings piles, and train tracks. Artifact assemblages at these exploration and extraction areas vary, but include glass, tin cans, historic ceramics, and metal fragments of tools.

Railroads

The transcontinental railroad opened Arizona to increased opportunities for the development of towns and the movement of people and goods across the state. By the 1880s, railroading was the predominant form of transportation (Janus Associates Incorporated 1989). Construction of the transcontinental railroads across Arizona (completed primarily by Chinese laborers) includes both the Atlantic Pacific and Southern Pacific railroads. The Atlantic-Pacific railroad extends across the northern half of Arizona, connecting Holbrook, Flagstaff, and Kingman; the Southern Pacific railroad crosses southern Arizona connecting Douglas, Benson, Tucson, Picacho, Maricopa, and Yuma. Numerous spur lines were constructed between 1878 and 1940. Some features associated with railroads include roadbeds, grades, tracks, bridges, tunnels, culverts, water storage facilities, coaling towers, oil tanks, ash pits, power plants, boilers, ice houses, roundhouses, engine houses, sidings, turntables, and depots.

Western's Electric Power Systems

Much of Western-DSW's energy infrastructure has been in operation for more than 50 years, resulting in a number of transmission lines and facilities that meet ASM site criteria. There are seven transmission power systems: Boulder Canyon, Central Arizona, Colorado River Front Work and Levee, Colorado River Storage, Colorado River Salinity Control, Intertie, and Parker-Davis. Power is generated by the Hoover, New Waddell, Senator Wash, Glen Canyon, Parker and Davis dams. The initial construction of these power systems were by the Bureau of Reclamation. Transfer of these transmission systems to Western occurred in 1977. Property types associated with these systems include, transmission line segments and substation, poles, line cables, insulators, and other hardware, and control houses, oil houses, communications buildings, storage rooms, workshops, switchyards, and transformers. Access roads and associated gates that connect major public roads and transmission infrastructure are not considered part of the transmission power system.

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Appendix C: Statewide Contact List

Table C-1. Statewide Contact List*

Agency	Point of Contact
Federal Government	
Barry Goldwater Air Force Range	David Doyel 56th Fighter Wing Public Affairs 14185 West Falcon Street Luke Air Force Base, Arizona 85309 (623) 856-5853
Bureau of Indian Affairs	Garry Cantley Western Region 2600 N. Central Ave, Ste 400 Phoenix, AZ 85004-3008 Garry.Cantley@bia.gov
Bureau of Land Management Hassayampa Field Office	Christopher McLaughlin 21605 N. 7th Avenue Phoenix, Arizona 85027 (623) 580-5674
Bureau of Land Management Kingman Field Office	Tim Watkins 2755 Mission Blvd. Kingman, Arizona 86401 (928) 718-3757
Bureau of Land Management Lake Havasu Field Office	Archaeologist 2610 Sweetwater Avenue Lake Havasu City, Arizona 86406 (928) 505-1255
Bureau of Land Management Lower Sonoran Field Office	Cheryl Blanchard 21605 N. 7th Avenue Phoenix, Arizona 85027 (623) 580-5676
Bureau of Land Management Safford Field Office	Dan McGrew 711 14th Avenue Safford, Arizona 85546 (928) 348-4466
Bureau of Land Management Tucson Field Office	Amy Sobiech 3201 E. University Way Tucson, Arizona 85756 (520) 258-7238
Bureau of Land Management Yuma Field Office	Tom Jones 2555 Gila Ridge Road Yuma, Arizona 85365 (928) 317-3239
Bureau of Reclamation Lower Colorado Regional Office	Patricia A. Hicks PO Box 61470 Boulder City, Nevada 89006 (702) 293-8359

Table C-1. Statewide Contact List*

Agency	Point of Contact
Coconino National Forest	Jeremy Haines 1824 S. Thompson Street Flagstaff, Arizona 86001 (602) 225-5200
Glen Canyon National Recreation Area	Environmental Manager PO Box 1507 Page, Arizona 86040 (928) 608-6200
Havasu National Wildlife Refuge	Environmental Manager 317 Mesquite Avenue Needles, California 92363 (760) 326-3853
Lake Mead National Recreation Area	Environmental Manager 601 Nevada Way Boulder City, Nevada 89005 (702) 293-8936
Prescott National Forest	Archaeologist 344 South Cortez Street Prescott, Arizona 86303 (928) 443-8000
Tonto National Forest	J. Scott Wood 2324 E. McDowell Road Phoenix, Arizona 85006 (602) 225-5200
Western Area Power Administration	Stephen Tromly Federal Preservation Officer and Tribal Liaison (A7400) Western Area Power Administration Corporate Services Office 12155 W. Alameda Pkwy P.O. Box 2812213 Lakewood, CO 80228-8213 (720) 962-7256
	Jill Jensen Regional Preservation Officer (G0440) Western Area Power Administration Desert Southwest Region P.O. Box 6457 Phoenix, AZ 85005-6457 (602) 605-2842 office (602) 290-3158 cell
Yuma Proving Ground	Meg McDonald Environmental Sciences Division ATTN: IMYM-PWE Yuma, Arizona 85365 (928) 328-2520 alison.m.mcdonald.civ@mail.mil

Table C-1. Statewide Contact List*	
Agency	Point of Contact
	YPG Garrison Manager Administrative Officer: Rhonda LaRose, 928-328-2734, rhonda.a.larose.civ@mail.mil
	YPG Base Police 928-328-2720
Tribal Historic Preservation Officers/Contacts	
Ak-Chin Indian Community	Caroline Antone, Cultural Resources Program Manager 42507 West Peters & Nall Road Maricopa, Arizona 85138 (520) 568-1372 Antone@ak-chin.nsn.us
Chemehuevi Indian Tribe	June Leivas, Director Cultural Resource Center PO Box 1976 Havasu Lake, CA 92363 (706) 858-1115 citculturecenter@yahoo.com
Cocopah Indian Tribe	Jill McCormick, Cultural Resources Manager 14515 S. Veterans Drive Somerton, Arizona 85350 (928) 627-4849 culturalres@cocopah.com
Colorado River Indian Tribes	Lisa Swick, Cultural Compliance Technician Museum 26600 Mohave Road Parker, AZ 85344 (928) 669-8970 crit.museum@yahoo.com
Fort McDowell Yavapai Nation	Karen Ray, Cultural Resources Manager PO Box 17779 Fountain Hills, AZ 85269-7779 (480) 789-7190 kray@ftmcdowell.org
Fort Mojave Indian Reservation	Linda Otero, Ahá Makav Cultural Society PO Box 5990 Mohave Valley, Arizona (928) 768-4475 lindaotero@fortmojave.com
Gila River Indian Community	Barnaby V. Lewis PO Box 2140 Sacaton, Arizona 85147 (520) 562-7162 Barnaby.Lewis@gric.nsn.us

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Agency	Point of Contact
Havasupai Tribe	Travis Hamidreek, Director Natural Resources PO Box 10 Supai, AZ 86435 (928) 448-2271 thamidreek@yahoo.com
Hopi Tribe	Leigh J. Kuwanwisiwma, Director Cultural Preservation Office PO Box 123 Kykotsmovi, AZ 86039 (928) 734-3611 Lkuwanwisiwma@hopi.nsn.us
Hualapai Tribe	Loretta Jackson-Kelly Director, THPO PO Box 310 Peach Springs, Arizona 86434 (928) 769-2223 lorjac@frontiernet.net
Kaibab Band of Paiutes	Charley Bullets, Cultural Resource Coordinator HC 65, Box 2 Fredonia, AZ 86022 (928) 643-6278 Cbullets@kaibabpaiute-nsn.gov
Las Vegas Paiute Tribe	Cultural Resources Director One Paiute Drive Las Vegas, NV 89106 (702) 386-3926
Moapa Band of Paiute Indian	Yvette Chevalier, Tribal Administrator PO Box 340 Moapa, NV 89025-0340 (702) 865-2787 ychevalier@mvdsl.com
Navajo Nation	Ron Maldonado PO Box 4950 Window Rock, Arizona 86515 (928) 871-7136 alan.downer06@gmail.com
Pascua Yaqui Tribe	Kelly Gomez, Director Land Department 7474 S. Camino De Oeste Tucson, AZ 85757 (520) 879-6350 kgomez@pascuayaqui-nsn.gov

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Agency	Point of Contact
Pueblo of Zuni	Kurt Dongoskee, Director and THPO Zuni Heritage & Historic Preservation PO Box 339 Zuni, NM 87327 (928) 289-9259 kdongoskee@cableone.net
Quechan Tribe	Arlene Kingery, Historic Preservation Officer PO Box 1899 Yuma, AZ 85366-1899 (760) 572-2423 j.bathke@quechantribe.com
Salt River Pima-Maricopa Indian Community	Kelly Washington, Director 10005 East. Osborn Road Scottsdale, AZ 85256 (480) 362-6325 Kelly.washington@srpmic-nsn.gov
San Carlos Apache Tribe	Vernelda Grant, Director, THPO, NAGPRA Rep Elder's Cultural Advisory Council PO Box 0 San Carlos, AZ 85550 (928) 475-5797 apachevern@yahoo.com
San Juan Band of Southern Paiute Tribe	Peter Hoskie, Tribal Administrator PO Box 882 Tonalea, AZ 86044 (928) 283-1066 phhoskie@yahoo.com
Tohono O'odham Nation	Peter Steere (THPO) PO Box 837 Sells, Arizona 85634 (520) 383-3622 (x133) Peter.steere@tonation-nsn.gov
Tonto Apache Tribe	Wally Davis, Jr., Director Cultural Resource Dept. Tonto Reservation #30 Payson, AZ 85541 (928) 474-5000 wdavis@tontoapache.org
White Mountain Apache Tribe	Ramon Riley, Director Cultural Resources (201 East Walnut Street) P.O. Box 700 Whiteriver, AZ 85941 (928) 338-4625 rxrapache@yahoo.com

Table C-1. Statewide Contact List*	
Agency	Point of Contact
Yavapai-Apache Nation	Gertrude Smith, Yavapai Culture Director 2400 W. Datsi Street Camp Verde, AZ 86322 (928) 649-6963
Yavapai-Prescott Indian Tribe	Linda Ogo, Director, 530 E. Merritt Street Prescott, AZ 86301-2038 (928) 445-8790 logo@ypit.com
State of Arizona	
Arizona Game and Fish Department	Archaeologist 5000 W. Carefree Highway Phoenix, Arizona 85086-5000 602-942-3000
Arizona State Land Department	Steve Ross Arizona State Parks 1300 W. Washington Street Phoenix, Arizona 85007 (602) 542-2767
* Table will be updated annually	

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Appendix D: NAGPRA Plan of Action

NAGPRA Plan of Action (POA)

This POA outlines the procedures for the treatment of human remains, associated funerary objects, sacred objects, or objects of cultural patrimony (hereinafter, remains) that may be encountered during routine operations, maintenance, or emergency activities on lands own by Western. This POA complies with the requirements of the Native American Graves Protection and Repatriation Act (NAGPRA) (25 United States Code 3001 to 2013) and implementing regulations as set forth in 43 CFR Part 10, §10.5.

1. **Location:** Western-DSW fee-owned lands throughout Arizona.
2. **Planned Actions:** Western-DSW's PA outlines the types of routine operations, maintenance and emergency activities that may occur within Western-operated transmission lines rights-of-way and facilities.
3. **Historic Properties:** Routine operations, maintenance activities, and emergency work may include ground-disturbing activities within the boundaries of sites eligible or potentially eligible for listing in the National Register of Historic Places (NRHP..
4. **NAGPRA Considerations:** Although it is unlikely that remains will be encountered on Western-owned lands, it is possible and therefore Western develops this POA to ensure a timely and appropriate response in the event of a NAGPRA related discovery during routine or emergency activities on Western-owned lands. In addition to human remains (cremations or inhumations), the kinds of objects covered by this POA as defined in *43 CFR Part 10.2(d)* include:
 - a. Funerary objects – those placed intentionally at the time of death or later with or near the human remains or within the burial pit. These items include, but are not limited to, stone tools, whole and broken pottery vessels, marine shell, and (with burials of historic age) Euro-American trade items such as metal or glass objects.
 - b. Sacred objects – specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional religions by their present-day adherents as defined in 43 CFR 10.2(d)(4). Consultation would occur to determine whether objects recovered during data recovery fall within this definition.
 - c. Objects of Cultural Patrimony– items having ongoing historical, traditional, or cultural importance central to a Native American community rather than property owned by an individual as defined in 43 CFR 10.2(d)(4). Consultation would occur to determine whether objects recovered during data recovery fall within this definition.
5. **Preponderance of Evidence:** The preponderance of geographical, archaeological, linguistic, folklore, oral tradition, and historical evidence for the determination of custody for these cultural items identifies a number of contemporary Native American tribes (claimants) who claim cultural affiliation with prehistoric cultures in various localities along Western's electrical system in Arizona:
 - Ak-Chin Indian Community
 - Cocopah Indian Tribe
 - Colorado River Indian Tribes

- Fort Mojave Indian Tribe
- Gila River Indian Community
- Hualapai Indian Tribe
- Navajo Nation
- Fort Yuma - Quechan Tribe
- Salt River Pima-Maricopa Indian Community
- Tohono O’odham Nation

However, consultation may be required with other Arizona tribes claiming ancestral ties to these areas: Fort McDowell Yavapai Nation, Havasupai Tribe, Hopi Tribe, Kaibab Band of the Paiute Indians, Pascua Yaqui Tribe, San Carlos Apache Tribe, San Juan Southern Paiute Tribe, Tonto Apache Tribe, White Mountain Apache Tribe, Yavapai-Apache Nation, and Yavapai-Prescott Indian Tribe. Similarly, consultation may be required with, but not limited to, tribes outside Arizona claiming ancestral affiliation, e.g., the Fort Sill Apache Tribe and Mescalero Apache Tribe, or the Pueblo of Zuni. Consultation pursuant to NAGPRA regulations will be used in determining the cultural affiliation of any protected items.

6. Discovery Notification Procedures and Cessation of Activities:

Pursuant to 43 CFR Part 10.4, any person who knows or has reason to know that he or she has discovered inadvertently human remains, funerary objects, sacred objects, or objects of cultural patrimony on Federal or tribal lands after November 16, 1990, must provide immediate telephone notification of the inadvertent discovery, with written confirmation [within 24 hours], to the responsible Federal agency official with respect to Federal lands, and, with respect to tribal lands, to the responsible Indian tribe official. The requirements of these regulations regarding inadvertent discoveries apply whether or not an inadvertent discovery is duly reported. If written confirmation is provided by certified mail, the return receipt constitutes evidence of the receipt of the written notification by the Federal agency official or Indian tribe official.

If the inadvertent discovery occurred in connection with an on-going activity on Federal or tribal lands, the person, in addition to providing the notice described above, must stop the activity in the area of the inadvertent discovery and make a reasonable effort to protect the human remains, funerary objects, sacred objects, or objects of cultural patrimony discovered inadvertently. Western requires that all activities within 30 meters (100 feet) of the discovery cease. Western-DSW’s RPO or FPO may authorize a qualified archaeologist to undertake limited examination (but not removal) to assess whether the materials are within the protected classes of remains covered by this POA.

As soon as possible, but no later than three (3) working days after receipt of the written confirmation of notification, Western must:

- A) Certify receipt of the notification;
- B) Take immediate steps, if necessary, to further secure and protect inadvertently discovered human remains, funerary objects, sacred objects, or objects of cultural patrimony, including, as appropriate, stabilization or covering;

- C) Notify by telephone, with written confirmation, the Indian tribes or Native Hawaiian organizations likely to be culturally affiliated with the inadvertently discovered human remains, funerary objects, sacred objects, or objects of cultural patrimony, the Indian tribe or Native Hawaiian organization which aboriginally occupied the area, and any other Indian tribe or Native Hawaiian organization that is reasonably known to have a cultural relationship to the human remains, funerary objects, sacred objects, or objects of cultural patrimony. This notification must include pertinent information as to kinds of human remains, funerary objects, sacred objects, or objects of cultural patrimony discovered inadvertently, their condition, and the circumstances of their inadvertent discovery. The written notification will propose a time and place for meetings and consultation. The purpose of consultation is to help Western determine which tribe is entitled to custody of the human remains and other protected items so that the disposition process can be completed, and to discuss Western's proposed treatment of the human remains and other cultural items pending disposition.
7. **Security of Remains:** In addition to the security measures stated above, ensuring the security of discovered remains and protected objects from vandalism or other disturbance could include the employment of security personnel, or using fencing or other appropriate actions as needed. These measures shall remain in place until the NAGPRA procedures are complete. The option of avoidance and in situ preservation will be among the potential treatment measures considered for any discovery of materials protected under NAGPRA.

No news releases, including photographs, written articles, or videotapes describing the remains, will be released to the media unless the remains have been secured and the lead agency has received concurrence from the tribes.

Also in accordance with 43 CFR Part 10.4, Western may resume activities 30 days after certification by Western of receipt of the written confirmation of notification of the discovery if the resumption of the activity is otherwise lawful. The activity may also resume, if otherwise lawful, at any time that a written, binding agreement is executed between Western and the affiliated Indian tribe that adopts a recovery plan for the excavation or removal of the protected remains or objects. If avoidance is the selected treatment option, Western may resume work in areas outside the defined avoidance zone.

If the remains will be removed, Western may authorize its archaeological consultant to transport the remains to a secure laboratory facility for safekeeping, pending the completion of a determination of cultural affiliation and a Notice of Intended Disposition. Western will notify the tribes by telephone and/or in writing prior to removal of any human remains. Every reasonable effort will be made to remove remains before weekends, holidays, or other days when Project personnel will not be onsite.

8. **Treatment of Remains:** Western will provide the tribes an opportunity to examine the remains prior to removal and to conduct traditional religious activities. All remains shall be treated with respect and dignity. The archaeological consultant will avoid any unnecessary disturbance of remains, any transport or storage of human remains in

locations separate from their associated funerary objects, or any physical modification of remains. If remains are removed, they may be packed in natural material, separate from their associated funerary objects, but the containers will be kept together at all times.

Treatment will proceed according to the following provisions:

- a. Representatives of the tribes shall have the opportunity to attend the reburial or the exposure and removal of remains. If agreed upon by the tribes, a specific tribe or tribes may be designated to take the lead in initially responding to discoveries.
 - b. If the remains are removed, they will be excavated in accordance with written recovery provisions approved by Western after taking into account tribal consultations.
 - c. No photographs of remains may be taken without the written permission of all claimants. No remains will be used in displays. Drawings of remains and the locations of associated funerary objects may be made but would not be available for public review.
 - d. No pollen or flotation samples may be removed from burial pit fill dirt or from cremation vessel fill without the written permission of the claimants.
 - e. Remains must be packed in natural materials; no plastics or synthetic packing materials will be used.
 - f. Burial vessels will not be reconstructed using tape or glue.
 - g. Transportation of remains will be minimized under all circumstances to avoid undue disturbance or damage.
 - h. The claimants shall be afforded the opportunity to view all artifact collections and records resulting from treatment of the remains to identify funerary objects, remains, or sacred objects. If such objects are identified, Western will be notified by the claimants and consultation will take place concerning their identification and their treatment and disposition.
9. **Custody and Disposition:** Should the recovery of remains be necessary, a determination of cultural affiliation and transfer of custody shall be made by Western in accordance with the provisions of NAGPRA and its implementing regulations. Transfer of custody to a specific affiliated tribe will take place no sooner than 30 calendar days after the agency publishes newspaper notices of the proposed disposition as required by 43 CFR 10.6(c).

Western will transfer custody of remains to the person(s) designated by the affiliated tribe to receive them. The agency shall contact the tribe's representative to arrange a time, place, and means of transferring the remains. The agency shall document the transfer and a description of the remains transferred in a letter that the tribal representative may sign.