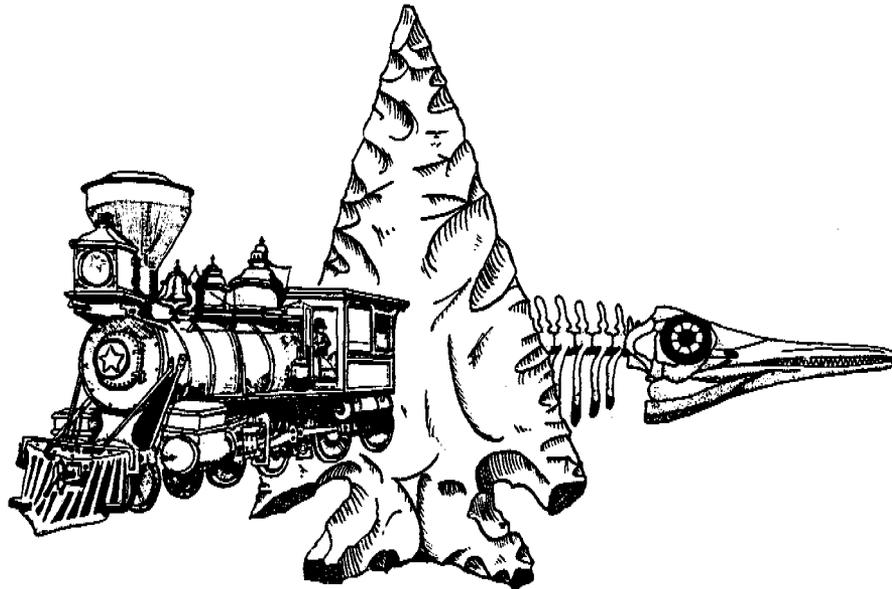


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BUREAU OF LAND MANAGEMENT
NEVADA

CONTRIBUTIONS TO THE STUDY OF CULTURAL RESOURCES



ARCHAEOLOGICAL SURVEY OF SPRINGS
TONOPAH RESOURCE AREA

TECHNICAL REPORT-NUMBER 2

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ARCHAEOLOGICAL SURVEY OF SPRINGS
IN THE
TONOPAH RESOURCE AREA

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ABSTRACT

A cultural resource survey of springs was made for input into an environmental impact statement on livestock grazing. Although based on a non-random sample of less than 1/10 of 1% of the total acreage involved, enough data was gathered to propose temporal phases and for some settlement patterns to begin to emerge for periods prior to ca. 3,000 B.C. Also, the impact of livestock on spring-related cultural resources was documented.

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CHAPTER I.

Introduction

In May through September, 1976, the Bureau of Land Management (BLM), Battle Mountain District, conducted an archaeological survey in the Tonopah Resource Area, 3,750,632 acres of BLM administered land in northern Nye County, Nevada (Figure 1). The purpose of this survey was to provide data for input into an environmental impact statement (EIS) on the Bureau's grazing program. The problem was to obtain data pertinent to the impacts of livestock grazing with a small field crew (3 people) and limited time (3½ months).

The original plan was to survey proposed range improvements such as spring developments, fences and seedings. In order to establish a research strategy to do this survey, probabilities of occurrence of archaeological sites were worked out using BLM data on vegetative types, degree of slope and the presence of springs and other permanent surface waters. The following probability categories were defined:

1. Very High--presence of surface water, any vegetative type or slope gradient.
2. High--near surface water, vegetative types of pinyon/juniper, sage spp. or grass and slope less than 30%.
3. Medium--not near surface water, vegetative types of pinyon/juniper, sage spp. or grass and slope less than 30%.
4. Low--other vegetative types not near surface water or slope over 30%.

Those developments in very high probability areas were to have been intensively surveyed; those in other probability areas were to have been extensively surveyed using a stratified random sampling design. The exact percentage of each development (fence, seeding, etc.) surveyed in high, medium and low probability areas would have been based on the total number of acres involved for these developments; these percentages had to be feasible given time and manpower.

Range improvement proposals are part of allotment management plans (AMPs) designed for each grazing allotment. When it became clear in April that the AMPs would not be written in time to begin a project-specific archaeological survey in May, an alternative research design was prepared. Given the restrictions of time and personnel, any random sampling design that could yield usable and significant data on such a large area was deemed unfeasible. Therefore, the

decision was made to do a non-random (100%) sample of all known springs on BLM land. This decision was based on:

1. These are the areas of highest impact by livestock grazing as well as the areas of highest probability of having archaeological sites. Therefore, for the purposes of an EIS on grazing, these areas are most important.
2. Any spring with decent flow would probably be proposed for development or redevelopment, and under the original research design 100% of the areas proposed for spring development would have been surveyed.
3. Such a survey was feasible for the Tonopah Resource Area since there are not very many springs on BLM land.
4. Other range improvements could be sampled after the AMPs were finished.

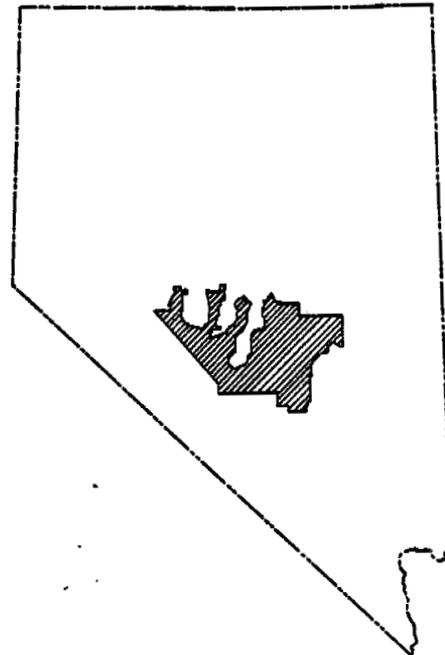


Figure 1. Location of the Tonopah Resource Area.

The AMPs were not finished until October, much too late for any survey to be done on proposed projects as the EIS team was already writing the first draft. Therefore, the inventory data is based on a non-random sample of very high probability areas.

The data collected includes the locations of sites vis a vis springs, temporally diagnostic artifacts, site condition and environmental data on vegetation, soil, etc. The decision to collect temporally diagnostic artifacts was made to salvage such data in light of the popularity of "arrow-head collecting" in the Tonopah Resource Area. During the survey, the frequent occurrence of evidence for illicit collecting in the form of foot prints, pot holes and discard piles reinforced this decision. Environmental data was collected in order to refine hypotheses about the occurrence of sites relative to such factors.

CHAPTER II.

Setting

Geographic

The Tonopah Resource Area lies within south central Nevada and exhibits typical Great Basin landscape. North-south trending mountain ranges alternate with deep alluvial valleys. The mountain streams have a high infiltration rate as they emerge onto the coarse sands and gravels of the alluvial fans. Waters which reach the valley plains terminate in salty playas or alkali flats.

Pinyon and juniper cover the mountain ranges above 6,500 feet and a sage, shrub and grass mixture is common below that elevation. Greasewood and saltbrush predominate in the lowest points of the valleys.

Precipitation is scant, varying according to elevation; the majority of moisture is derived from summer thunderstorms and winter snow. The climate is temperate, the average summer temperature being in the mid-90's and in the 30's during the winter months.

Fauna native to the area include deer, antelope, big horn sheep, cats, coyote, waterfowl, reptiles, rodents and birds.

Ethnographic Background

Those native Americans who lived in this region of the Great Basin, were for the most part, Shoshone. In the vicinity of Tonopah there was a mixing of the Paiute and Shoshone peoples. Evidence would indicate that they are the descendants of those who roamed the area in prehistoric times.

Economic Patterns

The original inhabitants were hunters and gatherers with a sparsely scattered population and a simple culture. The limited surplus-producing food resources was one of the variables affecting the pattern of their social structure. The primary subsistence group consisted of a nuclear family or minor extended family as a self-sufficient unit.

The men hunted the large game while the women foraged seeds, roots, and other plant foods. Both sexes were involved in the harvesting of pinyon nuts. The women prepared the foods, manufactured basketry, crude pottery and articles of clothing. Men hunted, made the tools and implements, built brush houses and shelters, and assisted the women in gathering firewood, hunting small rodents and transporting seeds. Several families and bands would cooperate in rabbit and antelope drives. Blinds, falls, corrals and net structures were built for these communal hunts. Deer were hunted by smaller groups or individually. Seeds and roots, however, were the most important food sources.

Trade was minimal; barter for tool making materials was practiced, but few other items were exchanged. Trading presupposes a surplus and there was little excess in their environment.

Social Structure - Kinship

The nuclear family was the most stable unit. Relationships were reckoned bilaterally and marriage with any known blood relative was forbidden. However, the preferred marriage was with a step-child of mother's brother or father's sister (pseudo cross-cousin marriage). Polygyny was practiced, usually sororal, and the levirate was also present. There was a strong tradition of brother-in-law joking.

Spouses were obtained from other groups, often from quite a distance. The parents of the couple agreed to the union, presents were exchanged and the marriage contracted. Initial residence was with the girl's family and then they moved to the vicinity of the boy's family. Sometimes, however, if the girl's parents did not agree to the union, forcible abduction was practiced. This accomplished the same purpose and was commonly accepted.

Social Structure - Political

The nuclear family was the basic political unit during the major part of the year. When larger groups gathered, the people were under the direction of a leader who supervised festivals, pinyon nut gathering trips, antelope and rabbit drives. The only true "specialist", an antelope shaman, always directed these communal hunts. Until post-Caucasian times the leader's influence was limited to these activities. Later, however, the chief concept grew out of the necessity of interacting with white settlers and miners. This chieftainship extended the leader's influence over a greater portion of the Shoshone lifestyle. In general, there was not a very high degree of political organization.

Railroad Valley had a larger, more stable population than other areas and abundant resources allowed for the existence of several permanent village sites persisting until historic times. The population density was high at approximately one person per nine square miles. (Steward 1938:49).

Religious - Ceremonial

Complicated ritual and mythology was lacking in most areas. The infrequent band gatherings included a round dance, which was thought to incidently bring rain, fertility and general harmony. The three major ceremonies concerned birth, girl's puberty (boys had no puberty rites) and death. These were celebrated by the nuclear family.

When antelope drives were held, the leadership of an antelope shaman was sought. His special talents were thought to insure a successful and plentiful drive. A festival was held in the fall after the pinyon nut harvest in connection with a rabbit drive.

Recreation

The majority of the time was usually concerned with obtaining sustenance, but during those brief periods when large groups would gather annually, dances were held. This was also an occasion to gamble, visit and acquire spouses. These festivals were generally held in the late summer or fall.

Cultural Items

The Shoshone built conical shelters of brush and willow called wickiups. These were small and impermanent. When available, they lived in dry caves and shelters.

A variety of fine basketry was manufactured by the women. The uses included cooking, storage, collecting, winnowing and transporting items.

Ceramics seem to appear late in the area and available specimens reveal a crude grey or brown utility ware. Corrugated ware occurs but is rare.

Clothing was sparse and simple. The rabbit skin blanket was the finest product. Little is known about ornamentation and adornments. In historic times trade beads were common and they adopted features of the white culture for adornment, such as buttons, coins and other items they could obtain. These often included cast-off clothing.

Tool manufacture during the contact period seems to have declined as the Shoshone adopted the iron and steel knives, axes, guns and other implements of the white culture.

European Exploration and Settlement

Few records remain of early European contact. Most well-documented expeditions bypassed the area. During the period 1776 to 1840 fur trappers probably entered the area, but left no documents. Jedidiah Smith passed through the area in 1826 but said little about the inhabitants. Between 1840 and 1860, immigrants on their way to California and Oregon passed through the fringes of the area, but not until the 1860's did actual settlement by miners and ranchers begin. John C. Fremont did pass through the Big Smoky Valley in 1845 on his way to California and stopped at Darrough Hot Springs. He wrote that the springs had long been used by the Indians. (Paier 1970:372)

In 1857 the Virginia City Comstock Lode discovery brought prospectors into remote parts of the central Nevada area and boom towns sprang up everywhere. Supply and stage networks served the camps and mining communities. Isolated stage stations were located along these routes.

The increasing number of settlers and their livestock decimated the majority of the native food source, so the Shoshone were forced to live near the white men's towns, and work at odd jobs to support themselves. The mining town of Tybo in the Hot Creek Range is a good example of this process. Founded in 1874 to work the rich silver deposits, the smelters required tremendous amounts of wood for charcoal, and both Shoshone and Chinese woodcutters were employed for this purpose. There are still numerous historic Shoshone camps in evidence.

This contact led to minor skirmishes in other areas of Nevada, but in general, the Shoshone of Central Nevada avoided open conflict. They either chose to retreat far into the canyons or to live in small colonies on the outskirts of the white man's settlements.

CHAPTER III

Summary of the Prehistory of Central Nevada

Past archaeological work in the Tonopah Resource Area is minimal. The Campbells worked in the Big Smoky Valley in the 1930's (Campbell and Campbell 1940), the Nevada State Museum did some survey in the 1960's, R.H. Brooks (1969) surveyed the Central Nevada Test Site, and more recently, Gary Noyes (personal communication) has recorded sites in the Ralston and Big Smoky Valleys. Prior to the initiation of BLM archaeology, there were only four locatable known sites on BLM administered land (Nevada State Museum site files); other sites had been recorded, but their locations were not described accurately enough to relocate them. In the period from 1974 to the beginning of the EIS survey in 1976, there were 54 archaeological sites recorded; two had non-aboriginal historic components. The Battle Mountain District Recreation Inventory System included 57 additional historic sites and two petroglyph sites. Two of the historic sites, the Tybo Charcoal Kilns and the James Wild Horse Trap are on the National Register of Historic Places. Recently, 28 sites recorded by Gary Noyes have been added to the inventory. (See Figure 2 for the cultural resource inventory status excluding the EIS survey.)

Because of the general lack of archaeological research in the Tonopah Resource Area, a tentative, and hypothetical, cultural chronology for the area must be constructed from data obtained elsewhere in the Great Basin.

The earliest human occupation in the Great Basin is somewhat nebulous; there are scattered reports of Levellois-like tools from numerous locations, but since most of these are surface finds, their age is unknown although they are usually presumed to be early. Fluted projectile points with Clovis affinities have also been found throughout the Great Basin; again they are primarily surface finds but are presumed to be contemporaneous with dated Clovis materials from elsewhere in the western United States. Fluted points have been reported from several sites in the Big Smoky and Ralston Valleys.

The earliest well documented cultural material in the Great Basin are artifacts associated with the "Western Pluvial Lakes Tradition," an adaptation usually associated with the lacustrine habitats of the shrinking pluvial lakes. Diagnostic artifacts associated with this cultural tradition are Silver Lake and Lake Mojave projectile points (called Lake Parman and Cougar Mountain in the northwestern Great Basin), Black Rock Concave Base projectile points and crescents (Great Basin Transverse projectile points).

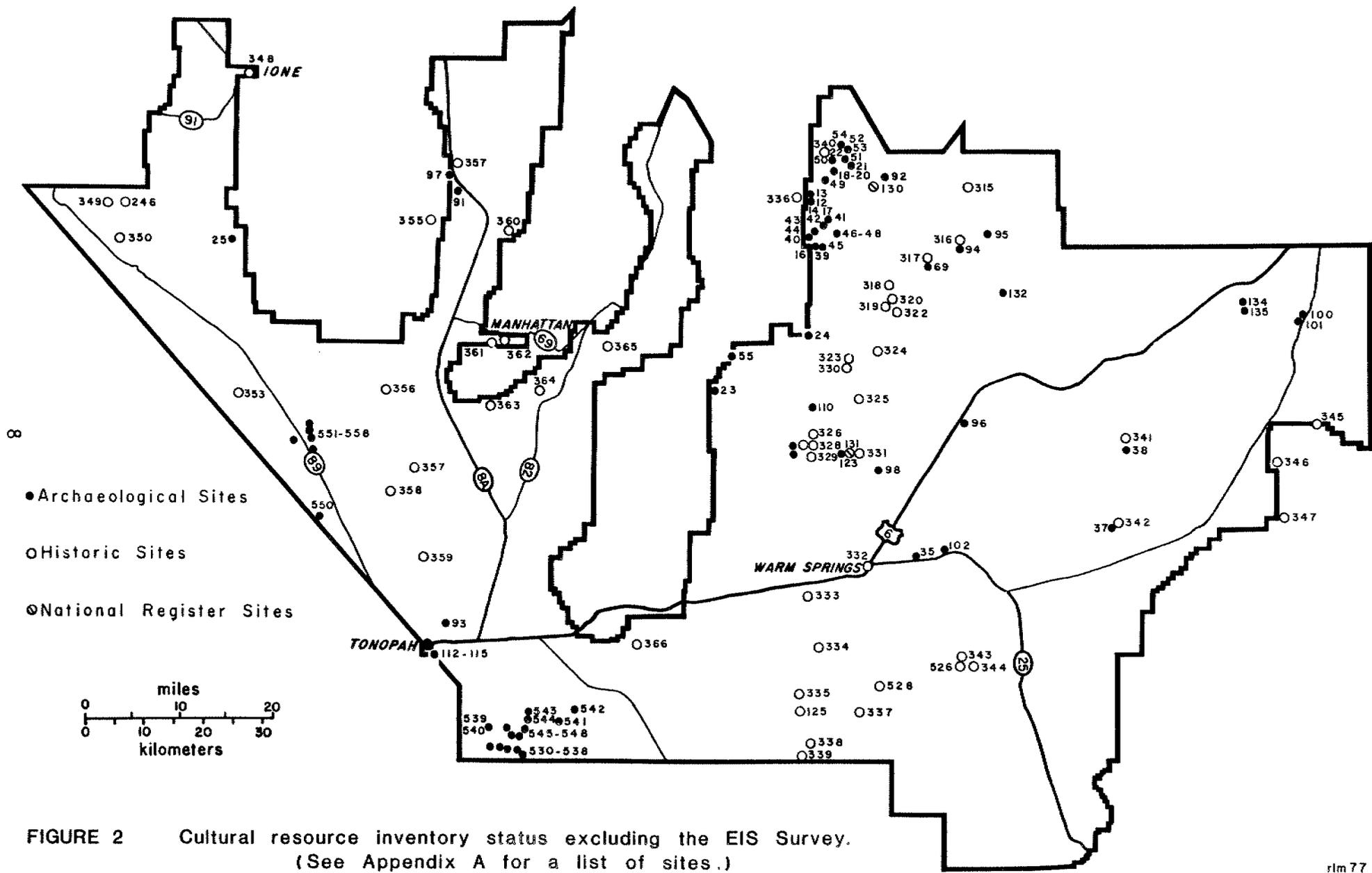


FIGURE 2 Cultural resource inventory status excluding the EIS Survey.
 (See Appendix A for a list of sites.)

As the pluvial lakes dried up, adaptation shifted to an increased dependence upon dry land resources. Elsewhere in the Great Basin there is a heavy dependence on the hunting of large mammals such as deer, antelope and mountain sheep. This hypothesized "Desert Hunting Tradition" (McGonagle 1974: 39,40) persisted about 5000 years. During this time the diagnostic artifacts change from Humboldt Concave Base projectile points to Pinto/Humboldt Basal Notch/Northern Side Notched projectile points to the Elko series projectile points. Milling stones become increasingly common through time and dependence upon large mammals appears to become less and less important.

By about 2300 years ago, a fairly dramatic cultural change takes place in parts of the Great Basin; settlement patterns change, particularly in the northwestern Nevada (McGonagle 1974), and smaller, lighter projectile points which may represent the introduction on the bow and arrow become the dominant types. However, these projectile points, the Eastgate/Rose Spring series, may more importantly represent a change in hunting patterns to procurement of small mammals rather than the simple introduction of a new weapon; complex changes in adaptive patterns cannot be explained by the addition of single technological items to the material culture.

With the Eastgate/Rose Spring period, the adaptation may be "Desert Culture"-like and based on a dependence on vegetal foods and small mammals. This adaptation continues through the protohistoric period. Diagnostic protohistoric artifacts are Desert Side Notched/Cottonwood series projectile points and pottery. The protohistoric peoples are undoubtedly the ancestors of the historic Western Shoshone.

The historic period begins with the incursion of Euro-Americans into the area. Jedediah Smith crossed the area in 1826, probably along a route that is approximated by U.S. Highway 6. John C. Fremont traveled through the Big Smoky Valley in 1845 on his second mapping expedition. However, these expeditions probably had no significant effect on the Shoshone. The discovery of gold and silver in the 1860s brought large numbers of whites into the area and probably marks the true beginning of aboriginal cultural change.

CHAPTER IV

Findings

During the EIS Survey, 168 springs were checked for cultural resources and a total of 167 archaeological and historic sites were recorded. Thirty-five springs (21%) had no associated cultural remains and eight of the sites recorded were not spring associated. Figure 3 shows the types of sites recorded and their locations.

Temporally diagnostic artifacts collected include all of the major projectile point types except for fluted points and crescents. Levellois flake tools were also collected from two sites.

Artifact Types

Projectile Points (See Figure 4 for relative ages of projectile point types.)

Silver Lake (Figure 5; a)

Large, triangular blades; square or sloping shoulders; tongue-shaped, generally edge ground stems; flaking irregular. (Wormington 1957: 270)

Lake Parman (Figure 5; b)

Large, triangular blades; square to sloping shoulders; square-shaped stems, rarely edge ground. This type corresponds to Layton's Lake Parman #2 (1970: 258).

Lake Mojave (Figure 5; c-e)

Lanceolate; prominent sloping shoulders; straight sided, contracting stems--heavily edge ground; base convex; flake scars large and forming a medial ridge. (Wormington 1957: 270) Only stems were found during the Tonopah EIS survey.

Black Rock Concave Base (Figure 5; f-h)

Lanceolate; base broad, slightly concave and edge ground. (Layton 1970: 272; Clewlow 1968) Those found during the Tonopah EIS survey tend to be asymmetrical.

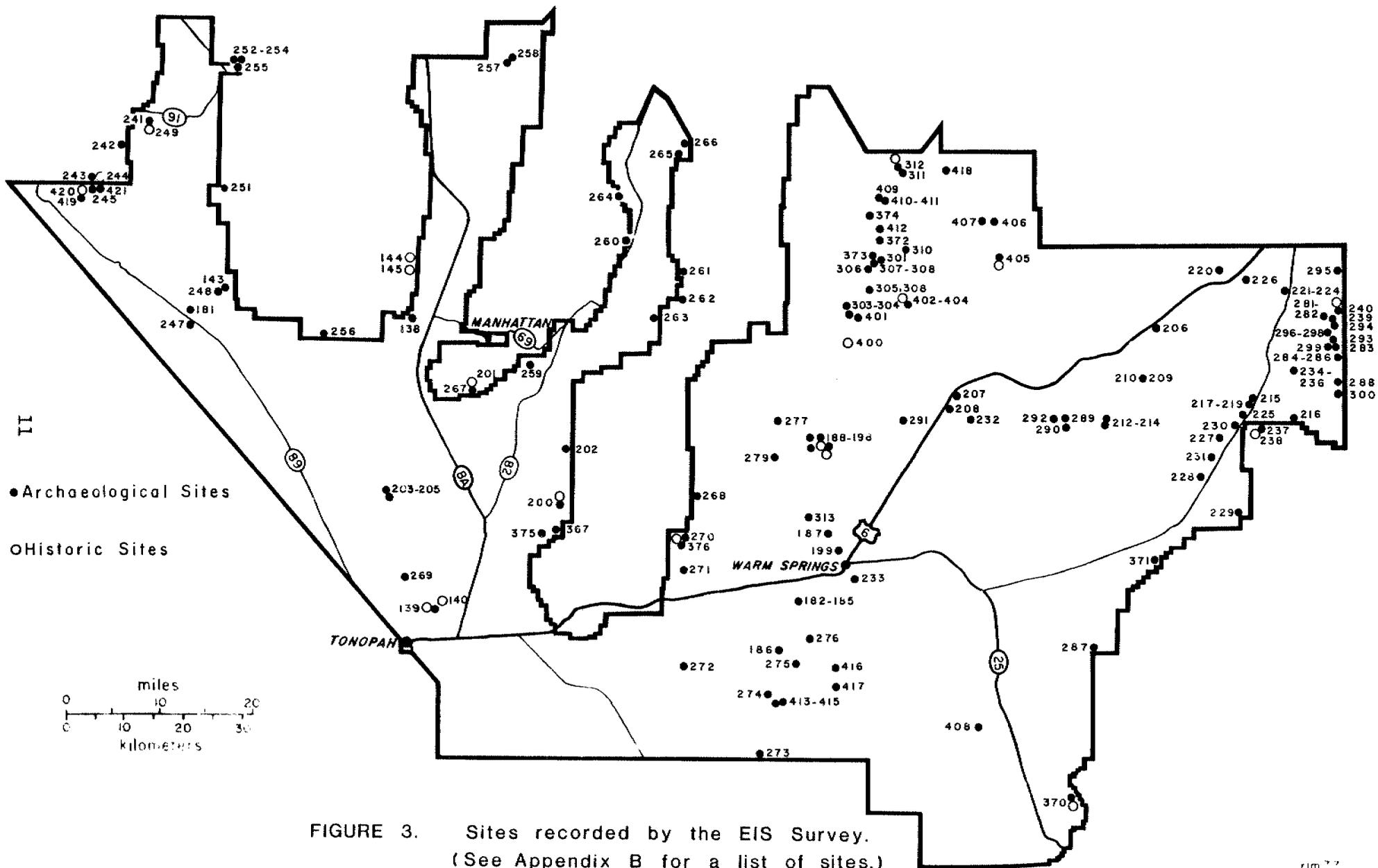


FIGURE 3. Sites recorded by the EIS Survey.
(See Appendix B for a list of sites.)

	CLIMATIC SEQUENCE	CULTURAL SEQUENCE	PROJECTILE POINTS	PROPOSED PHASES
1863	MEDITHERMAL	HISTORIC		TYBO
1000		DESERT CULTURE	Desert Side Notched Cottonwood	CLIFFORD
AD-BC			Eastgate Rose Spring	BLUE EAGLE
1000	ALTITHERMAL	DESERT HUNTING TRADITION	Elko Gypsum	LIBERTY
2000				
3000			Pinto Humboldt Basal Notched Northern Side Notched	GRANT
4000				
5000				
6000	ANATHERMAL	WESTERN PLUVIAL LAKES TRADITION	Humboldt Concave Base	MOREY
7000			Silver Lake Lake Mohave Black Rock Concave Base Crescents	NYALA
8000		EARLY MAN	Fluted Points	TONOPAH
9000			— ? — Levellois Flake Tools	— ? — BLACK SPRING

Figure 4. Chronology Chart.

Humboldt Concave Base (Figure 5; i-m)

Lanceolate; greatest width at or slightly above midpoint; base narrow, indented to notched; thick lenticular to diamond-shaped cross-section; flake scars are sometimes sub-parallel, down-to-the-right and converge along a medial ridge. (Hester and Heizer 1973: 16-17) These points correspond to Layton's Humboldt #1 (1970: 247).

Humboldt Basal Notch (Figure 5; n-q)

Lanceolate to sub-triangular; greatest width at or near the base; base concave and broad; flaking irregular; cross-section lenticular. (Hester and Heizer 1973: 16-17).

Humboldt Side Notched (Figure 6; a,b)

Lanceolate to sub-triangular; shallowly side notched; base straight or shallowly concave; flaking irregular. This type generally corresponds to Layton's Humboldt #4 (1970: 248).

Humboldt Single Shoulder (Figure 6; c)

Lanceolate; asymmetrical with one shoulder; base broad; flaking irregular.

Unnamed Type (Figure 6; d,e)

Lanceolate; small; blade serrated; stem contracting and straight sided; base concave. These points are of unknown age, but may be related to similar central California types dated about A.D. 500 (McGonagle 1966: 8). Thomas (1971: 90) places similar specimens in the Humboldt series.

Pinto (Figure 6; f-j)

Large triangular; shouldered to barbed; stem straight and bifurcated; thick, lenticular cross section; flaking irregular. (Hester and Heizer 1973: 3-5).

Northern Side Notched (Figure 6; k,e)

Large, triangular; side-notched; base broad and usually concave; corners generally squared; lenticular cross section; flaking irregular. (Layton 1970: 244-246; Gruhn 1961).

Gypsum (Figure 6; m-o)

Large, triangular; contracting stem; lenticular cross section; flaking irregular. (Hester and Heizer 1973; 26-27). This type is sometimes called "Elko Contracting Stem" (Thomas 1971: 93)

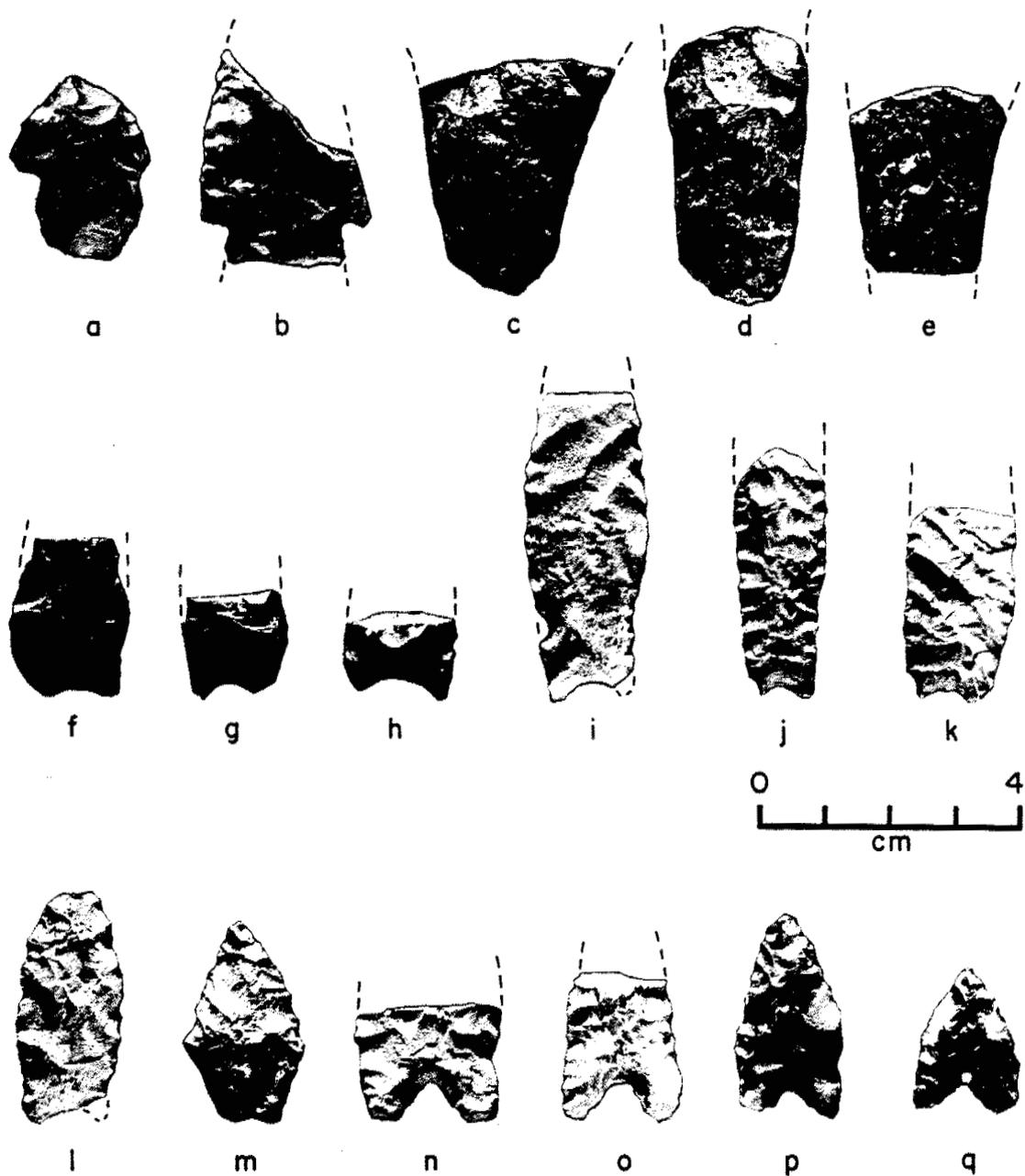


Figure 5. Projectile Points. a. Silver Lake; b. Lake Parman; c--e. Lake Mojave; f--h. Black Rock Concave Base; i--m. Humboldt Concave Base; n--q. Humboldt Basal Notch.

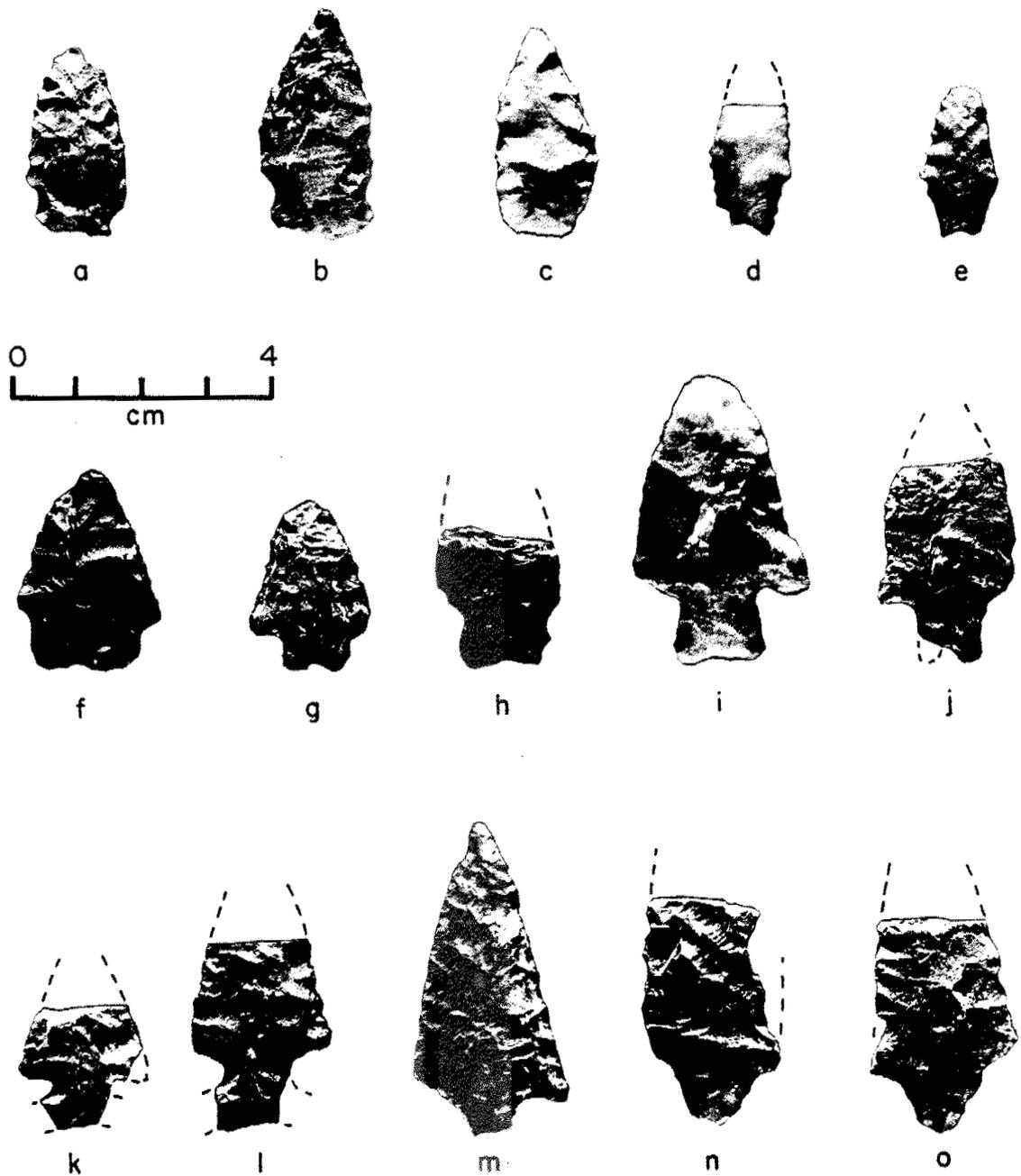


Figure 6. Projectile Points. a--b. Humboldt Side Notched; c. Humboldt Single Shoulder; d--e. Unnamed Type; f--j. Pinto; k--l. Northern Side Notched; m--o. Gypsum.

Elko Series

Elko Eared (Figure 7; a-d)

Large, triangular; corner notched producing prominent barbs; expanding stem; base deeply notched; lenticular cross section; flaking irregular. (Hester and Heizer 1973: 20-21; Heizer and Baumhoff 1961).

Elko Corner Notched (Figure 7; e-j)

Large, triangular; corner notched producing prominent barbs; expanding stem; base straight to slightly convex; lenticular cross section; flaking irregular. (Hester and Heizer 1973: 20-21; Heizer and Baumhoff 1961).

Eastgate (Figure 7; k-p)

Small, triangular; basally notched to produce square barbs; stem may be basally notched (Eastgate Split-stem) or not (Eastgate Expanding-stem). (Hester and Heizer 1973: 22-23; Heizer and Baumhoff 1961).

Rose Spring (Figure 8; a-e)

Small, triangular; corner notched; base convex; may be basally notched (Rose Spring Split-stem) or not (Rose Spring Corner Notched). (Hester and Heizer 1973: 22-23; Heizer and Baumhoff 1961).

Desert Side Notched (Figure 8; f-j)

Small, triangular; side notched; base straight, concave or notched. (Hester and Heizer 1973: 24-25; Baumhoff and Byrne 1959).

Cottonwood (Figure 8; k-n)

Small, triangular; no stem; sides straight, convex or concave; base straight, concave, notched or convex. (Hester and Heizer 1973: 22-23; Lanning 1963).

Bifaces

Type 1 (Figure 8; o-r)

Relatively small and thin; triangular; base square to subsquare; flaking irregular; fine pressure retouch on the edge. (Layton 1970: 275-277) This type may be contemporaneous with Elko or Eastgate/Rose Spring projectile points (McGonagle 1974: 98-90).

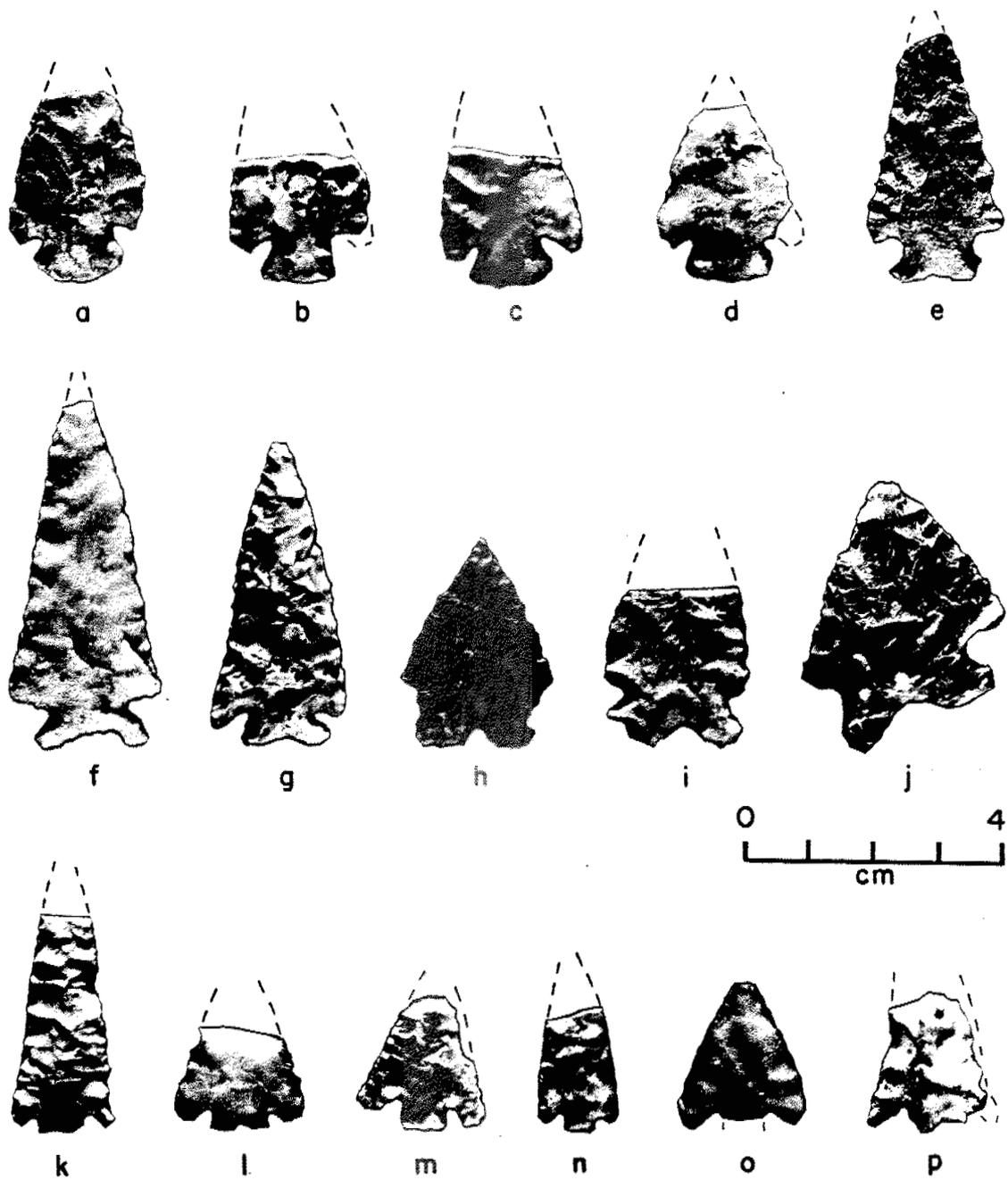


Figure 7. Projectile Points. a--d. Elko Corner Notched; e--j. Elko Eared/ k--p. Eastgate.

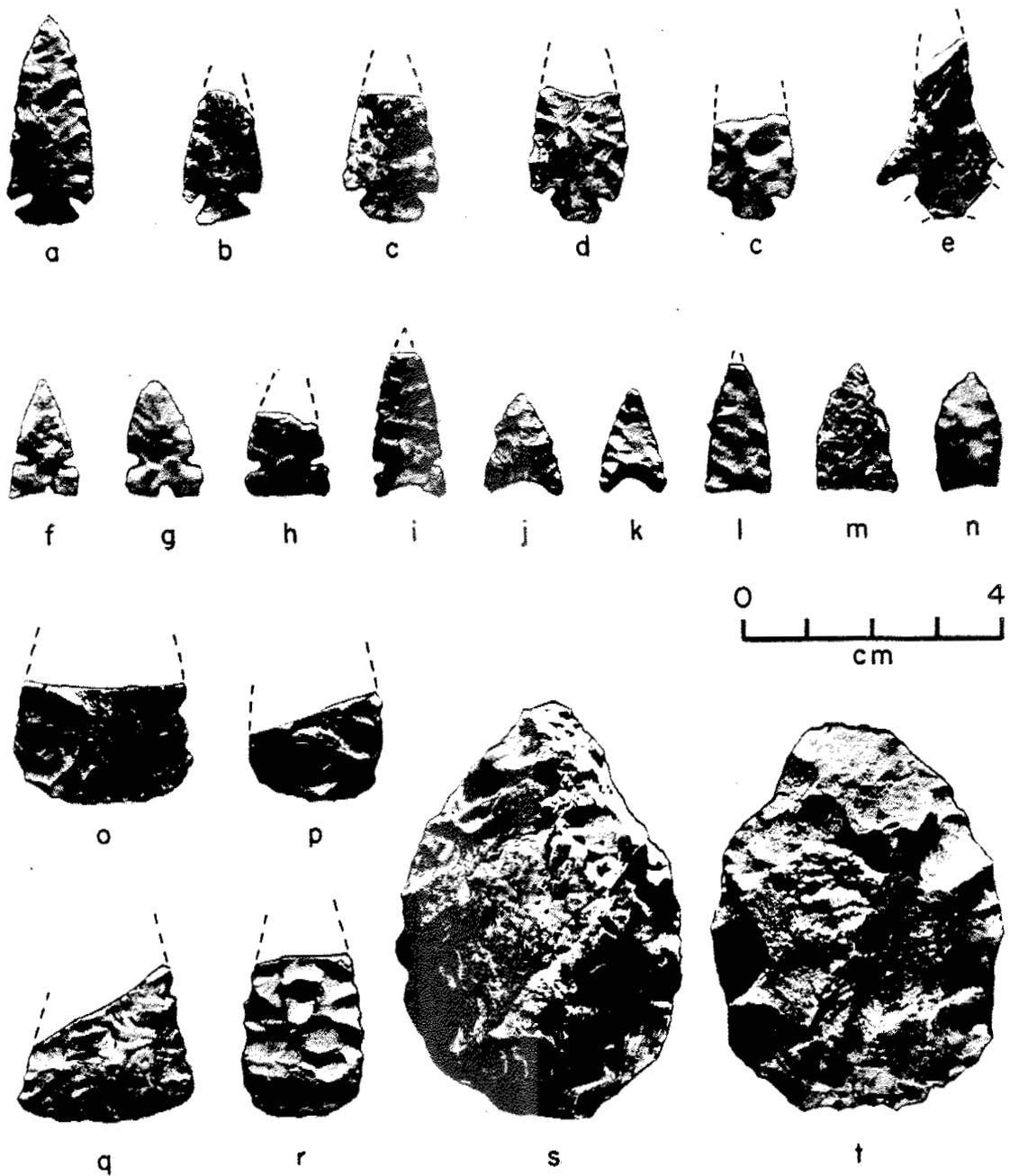


Figure 8. Projectile Points and Bifaces. a--e. Rose Spring; f--j. Desert Side Notched; k--n. Cottonwood; o-r. Biface Type 1; s--t. Biface Type 2.

Type 2 (Figure 8; s,t)
Leaf--shaped; thick, rounded base; broad in relation to length; large percussion flake scars. (Layton 1970: 275-277) May be the same age as Elko projectile points (McGonagle 1974: 89-90).

Type 3 (Figure 9, a,b)
Large, asymmetrical; relatively thick; fine pressure retouch on edges. This type probably corresponds to Layton's Knife Type 3 and may be contemporaneous with Pinto/Northern Side Notched/Humboldt Basal Notched projectile points (Layton 1970: 276-277).

Type 4 (Figure 9; c-h)
Triangular; square to sub-square or rounded base; larger and thicker than Type 1, but still relatively thin; fine pressure retouch on edges. May be the same age as Elko or Eastgate/Rose Spring projectile points (McGonagle 1974: 89-90).

Type 5 (Figure 9; i,j)
Small, triangular; slightly basal notched; relatively thin. May be the same age as Elko or Eastgate/Rose Spring projectile points (McGonagle 1974: 89-90).

Type 6 (Figure 10; a-d)
Triangular; square to sub-square base; thicker than Type 4 with larger, deeper percussion flake scars; lack of fine pressure retouch on edges. May be the same age as Pinto/Northern Side Notched/Humboldt Basal Notched projectile points (McGonagle 1974: 89-90).

Type 7 (Figure 10; e,f)
Ovoid, thick; large primary flake scars; steep working edge. Artifacts of this type were probably used as scrapers.

Drills

Six drills were collected during the survey; however, they do not fall into easily defined categories as each seems to be one of a kind. Three of these artifacts are illustrated in Figure 10; g-i.

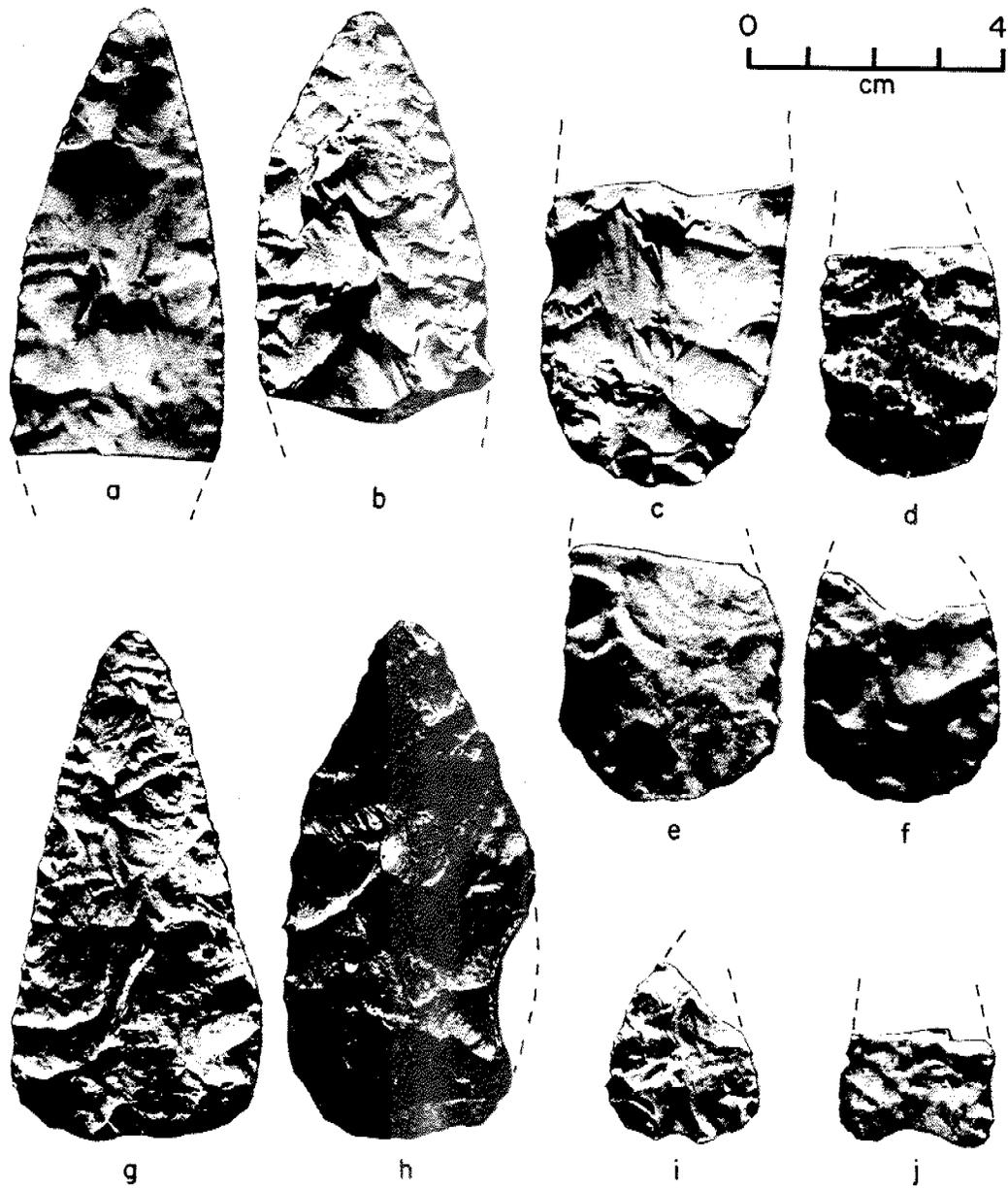


Figure 9. Bifaces. a--b. Type 3; c--h. Type 4; i--j. Type 5.

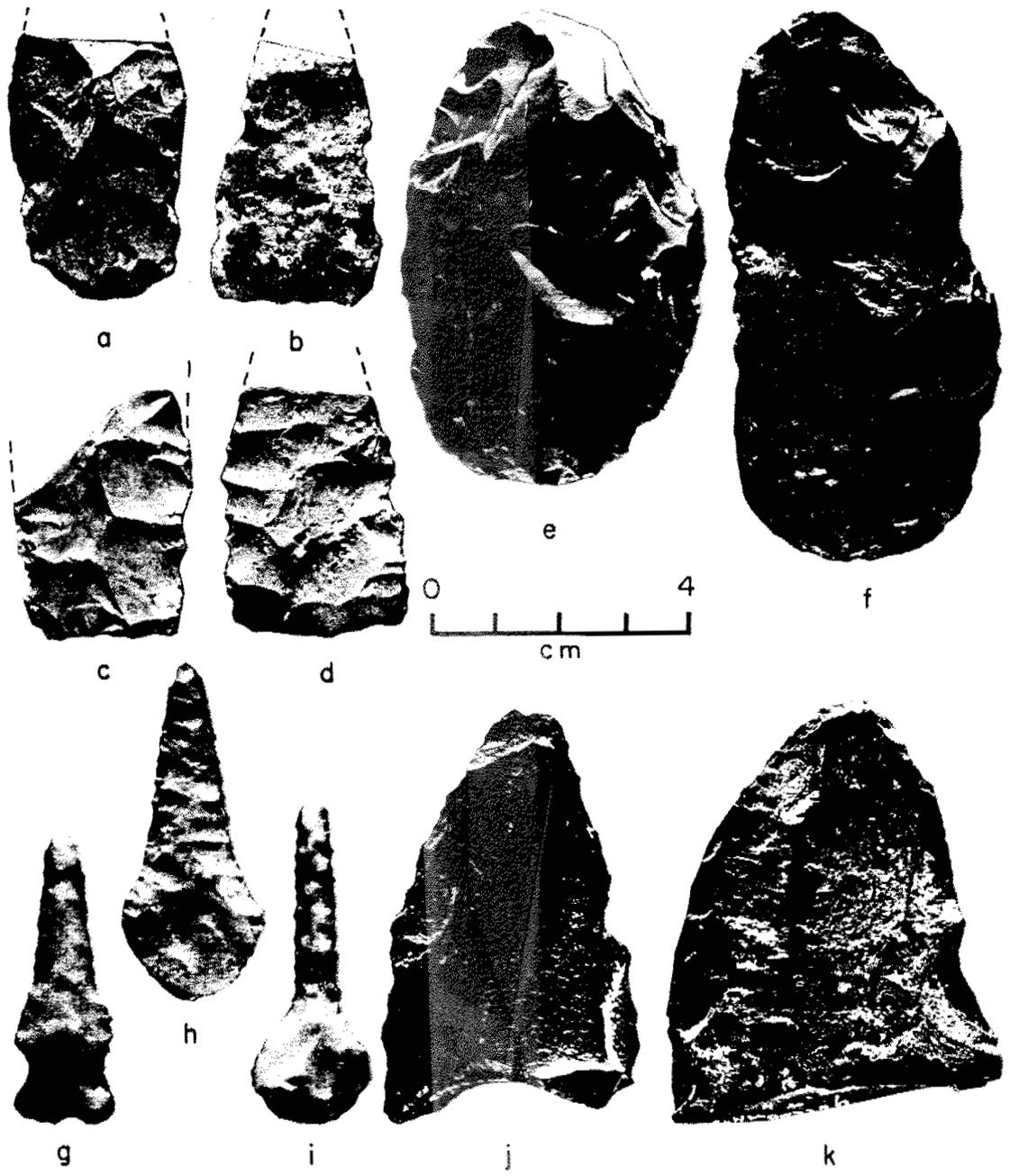


Figure 10. Bifaces and Miscellaneous Chipped Stone. a--d. Biface Type 6; e--f. Biface Type 7; g--i. Drills; j--k. Levallois Flakes.

Levellois Flakes

Four artifacts were collected (2 from CrNV-06-233 and 2 from CrNV-06-226) that appear to have been produced by Levellois techniques (Figure 10; j,k).

Pottery

Pottery is quite common in the Tonopah Resource Area and consists primarily of an undecorated utility ware commonly known as Shoshone Brown Ware. Corrugated ware occurs infrequently (Brooks 1969; 7). Figure 11 illustrates a sample of sherds:

- a. CrNV-06-184
Rim sherd; no visible temper; reducing atmosphere with secondary oxidation; light grey brown exterior, dark grey interior lens; surface finish shows striation--possible fibre rubbed; portion of coil on lip not removed; 60-90 mm thickness.
- b. CrNV-06-208
Rim sherd; 2% temper--quartz, mica, rhyolite granules; reducing atmosphere, medium grey; surface rubbed, not finished smooth; 45 mm thickness.
- c. CrNV-06-277
Temper shows 2% quartz, pyrite granules; reducing atmosphere; dark grey color; surface shows coils partially removed by rubbing; hole in vessel; 65 mm thickness.
- d. CrNV-06-209
Temper shows 5% quartzite granules and ash material; some vegetal material in temper; firing--interior surface reduced/smudged, exterior surface oxidized; interior grey/black, exterior red/brown; surface rubbed; hole in vessel; 60 mm thickness.
- e. CrNV-06-239
Temper shows 1% quartzite granules; reducing atmosphere; grey surface with medium brown core; surface exterior punctated; interior brushed; 50 mm thickness.

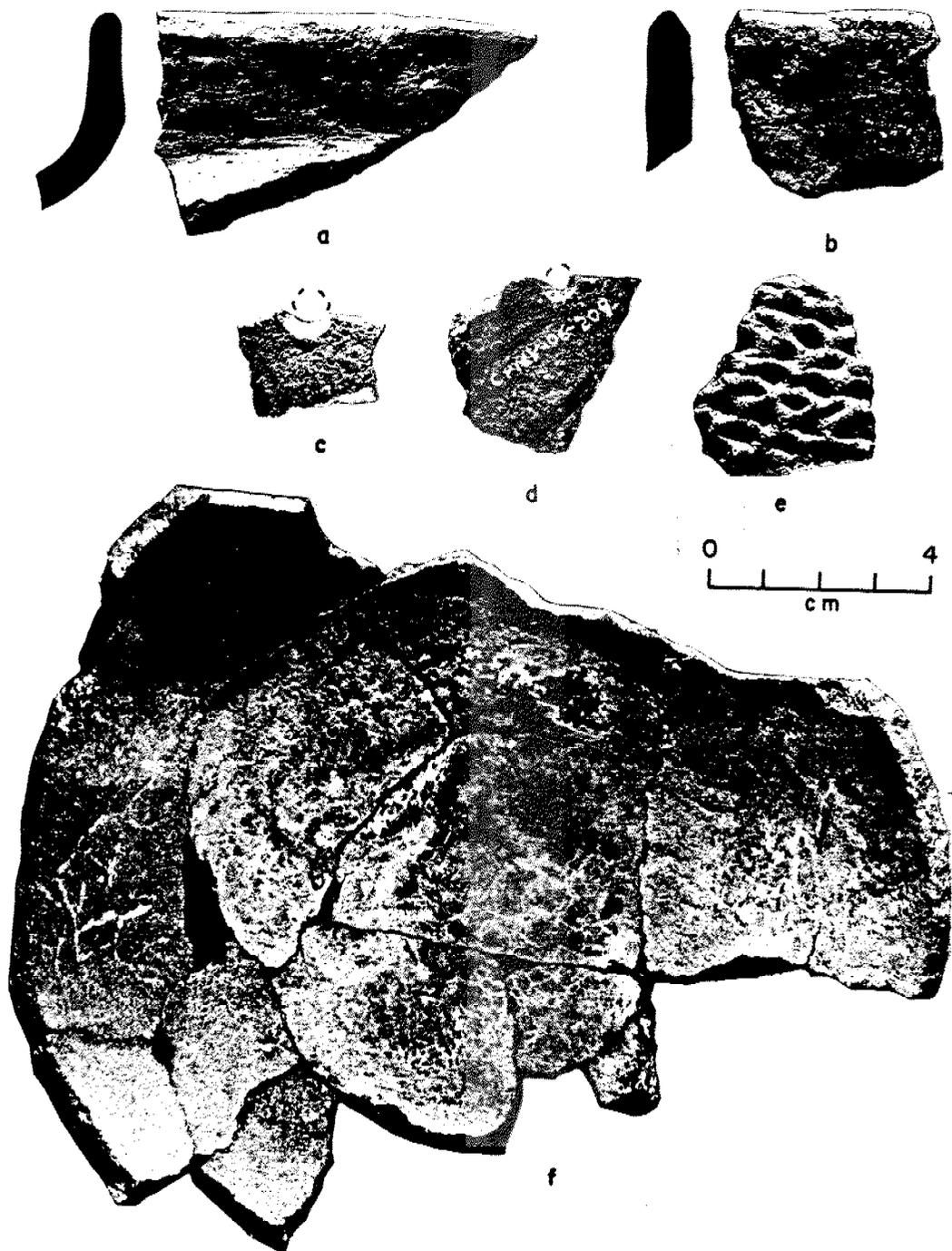


Figure 11. Pottery.

f. CrNV-06-222

Thick, round-bottomed pot; temper shows 3% quartzite, mica granules; reducing atmosphere; grey color; plain smoothed finish; 75 mm thickness.

Temporal Phases

From the occurrence of temporally diagnostic artifacts, nine temporal phases are postulated for the Tonopah Resource Area:

Black Spring Phase. (Late Pleistocene?) The occurrence of cultural material predating fluted points and other Early Man artifacts is postulated from the occurrence of Levellois flake tools from two sites, Black Spring (CrNV-06-233) and an unnamed site, CrNV-06-226. (Figures 10 and 12) In both cases, the artifacts were recovered from disturbed contexts that indicated they were from buried deposits. At Black Spring the tools were collected from earth removed from a back-hoe trench excavated during spring development. At CrNV-06-226, the tools were found in an old gravel pit dug into a Pleistocene beach terrace. Due to the lack of data, no adaptive pattern can be postulated as being associated with this tool tradition. Neither can any guess be made as to the age of the Levellois artifacts. It is hypothesized here that they predate the fluted points found at Pleistocene Lake Tonopah.

Tonopah Phase. (?--8,000 B.C.) The Tonopah Phase is hypothesized from the presence of fluted, Clovis-like points from the Big Smoky and Ralston valleys. Although no such artifacts were found during the survey, the documented occurrence of fluted points associated with Pleistocene Lake Tonopah is well known. (Campbell and Campbell 1940; Gary Noyes, personal communication) Whether or not these artifacts represent a big-game hunting adaptation characteristic of elsewhere is uncertain; however, their occurrence in a pluvial lake context perhaps indicates they do not. Hopefully, the research planned in the Big Smoky Valley by David H. Thomas of the American Museum of Natural History will answer these questions.

Nyala Phase. (c.a. 8,000--6,000 B.C.) The Nyala Phase is the postulated local manifestation of the Western Pluvial Lakes Tradition. The occurrence of artifacts assignable to this time period is sporadic, but they are all limited geographically to the eastern portion

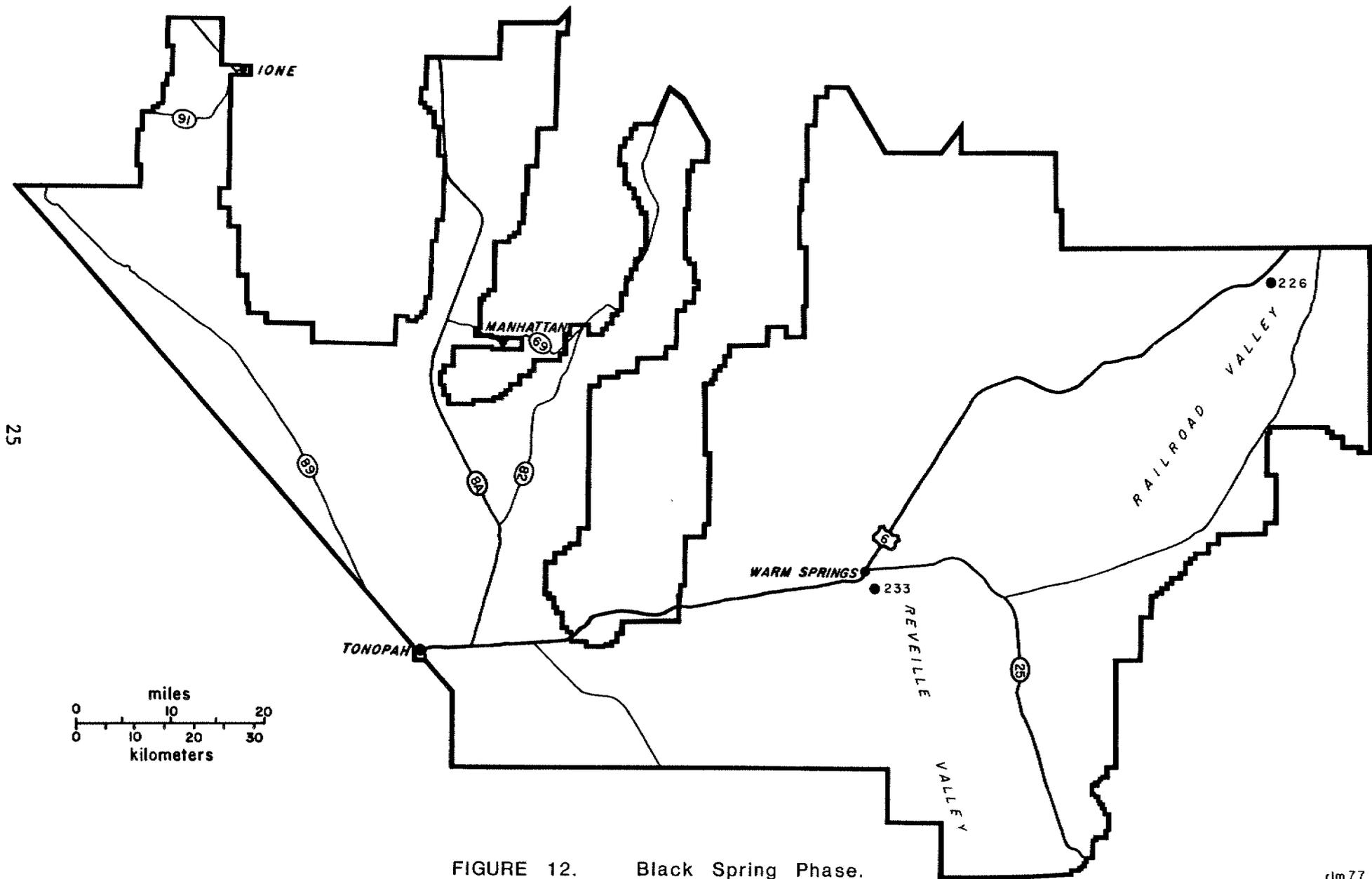


FIGURE 12. Black Spring Phase.

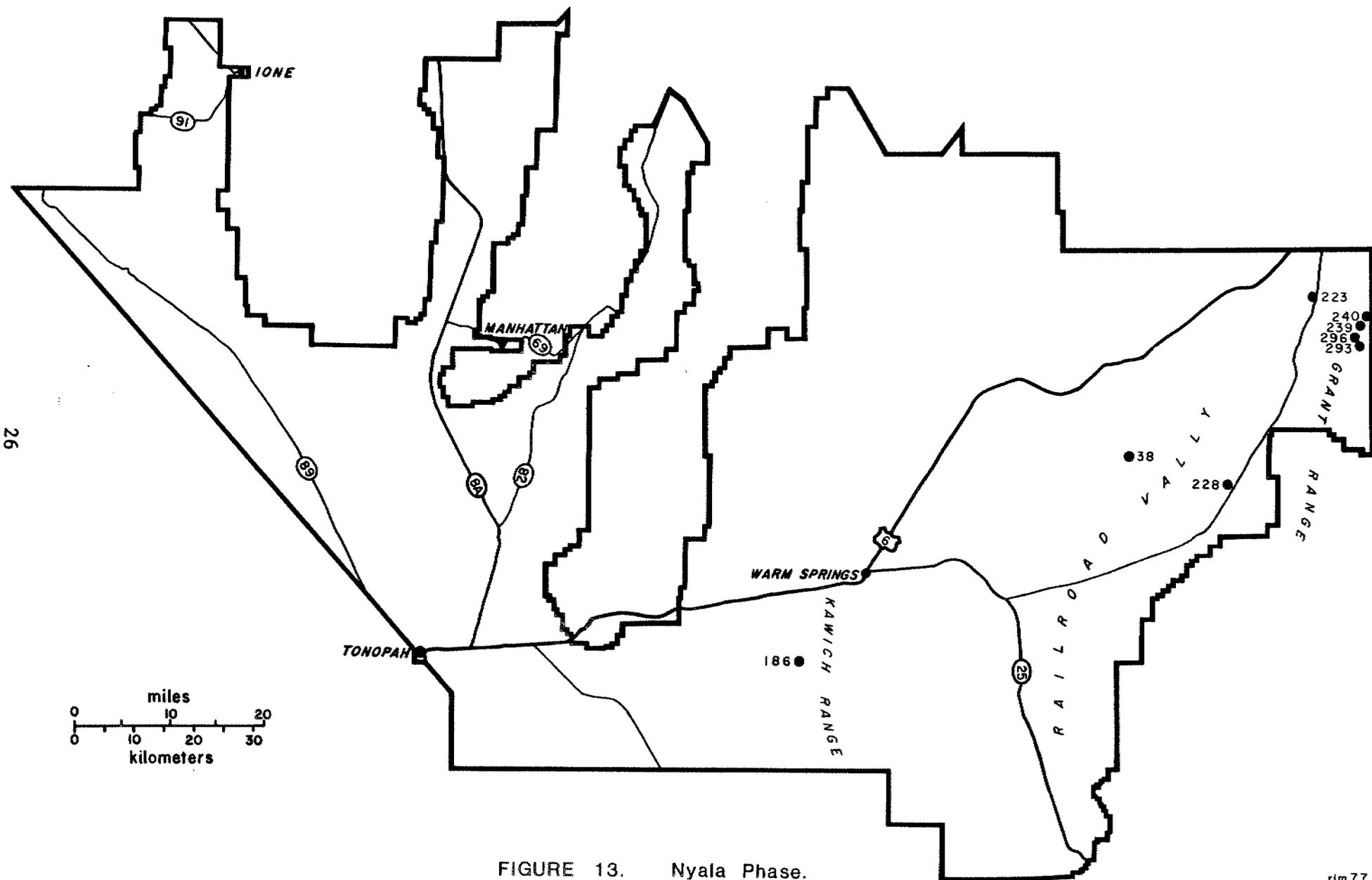


FIGURE 13. Nyala Phase.



Figure 14. General view of the dune area in which CrNV-06-221 through CrNV-06-224 are located.



Figure 15. General view of Andrew Spring.

of the Resource Area (Figure 13). With one exception, Tobe Spring (CrNV-06-186), all Nyala Phase artifacts come from the Grant Range and Railroad Valley. Included are one Silver Lake point from CrNV-06-296, one Parman point from CrNV-06-223, (Figure 14), 3 Lake Mojave points from Tobe Spring, Log Spring (CrNV-06-239) and Morgan Spring (CrNV-06-293), and 3 Black Rock Concave Base points from Abel Spring (Ar27-06-38), Blind Spring #1 (CrNV-06-228) and Andrew Spring (CrNV-06-240) (Figure 15).

An interesting note is that only 3 of the above 8 artifacts were found in a pluvial lake shore context; 5 were found at sites in mountainous terrain. The major concentration of sites of this age is in the Grant Range. Therefore, indications are that, at least in central Nevada, the concept of the Western Pluvial Lakes Tradition will need to be revised; however, few of the areas surveyed for this project were in a pluvial lake shore context. Gary Noyes (personal communication) reports Silver Lake and Lake Mojave points from Pleistocene Lake Tonopah.

Morey Phase. (c.a. 6,000--5,000 B.C.) The Morey Phase marks the beginning of the hypothesized Desert Hunting Tradition, an adaptation that continues for about 5,000 years. Humboldt Concave Based points (Figure 16) are considered the time marker for this phase. In northwest Nevada, these artifacts occur earlier in time than other Humboldt types (Layton 1970: 247-255; McGonagle 1974: 89-90). Whether or not this distinction will hold in central Nevada remains to be seen; however, the distribution of Humboldt Concave Based points is almost entirely different from postulated later Humboldt types (Figure 17), being confined primarily to the Hot Creek Range.

Morey Phase sites are Antelope Spring #1 (CrNV-06-200), Rattlesnake Spring (CrNV-06-207) (Figure 18), Black Spring (CrNV-06-233), an isolated find (CrNV-06-234), Trail Canyon (CrNV-06-264), Italian Spring (CrNV-06-277), North Sixmile Canyon Spring (CrNV-06-301) and Rawhide Spring (CrNV-06-314).

Grant Phase. (c.a. 5,000--3,000 B.C.) The 2nd phase of the Desert Hunting Tradition, the Grant Phase, is marked by a diversification of projectile points. Time markers for this phase are Humboldt Basal Notched,

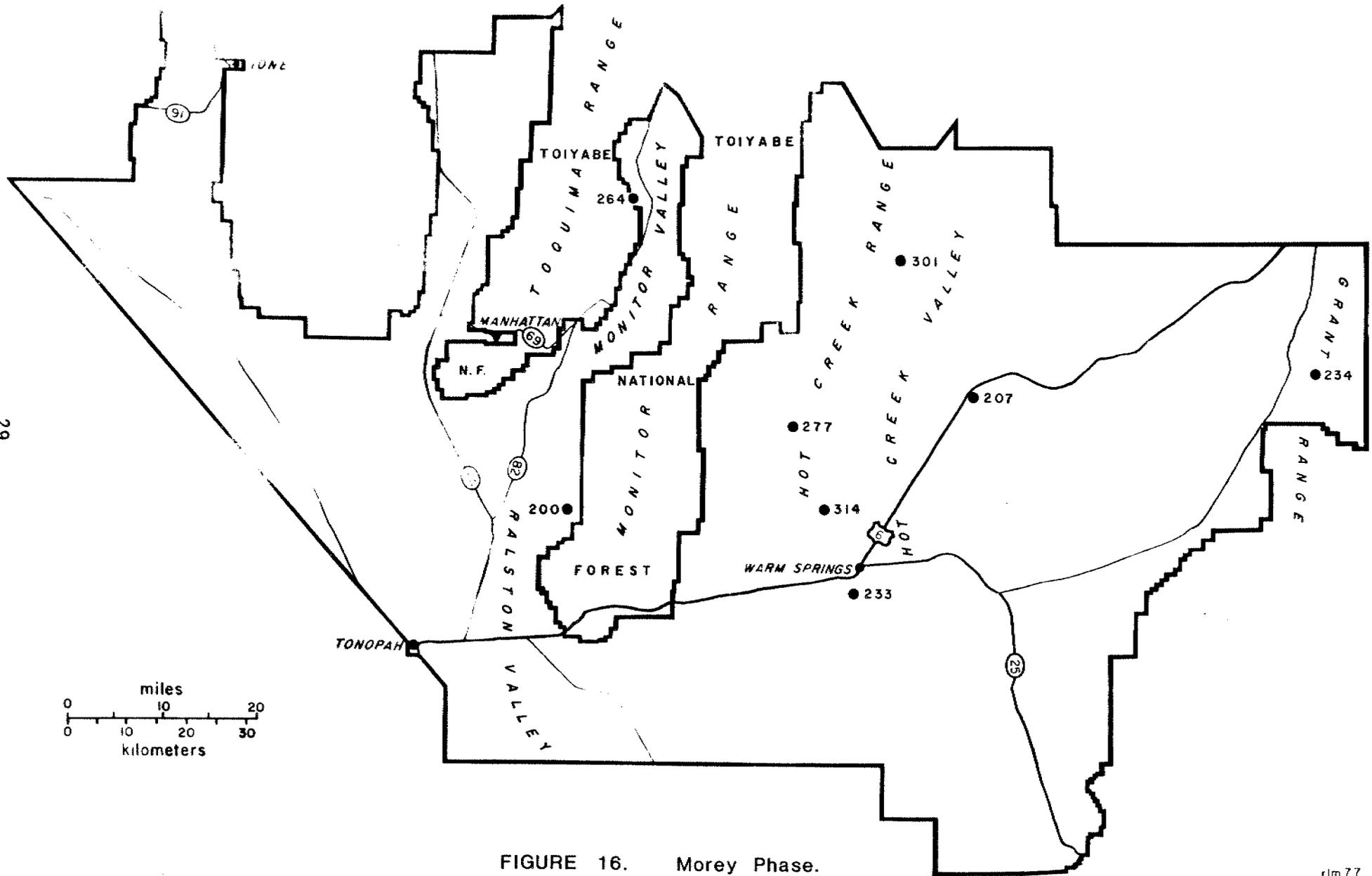


FIGURE 16. Morey Phase.

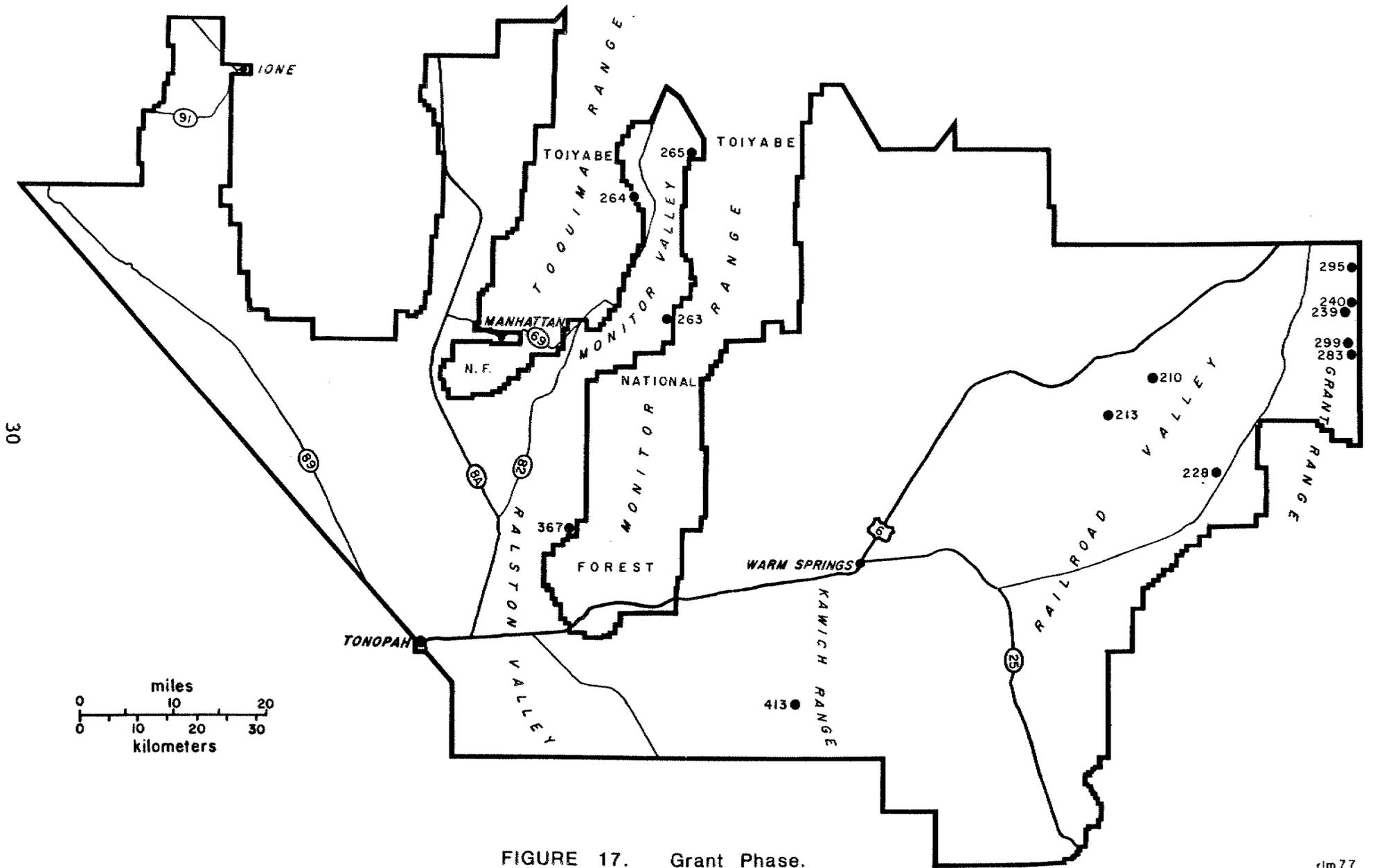


FIGURE 17. Grant Phase.



Figure 18. General view of Rattlesnake Spring, looking south-southeast.

Humboldt Side Notched, Humboldt Single Shoulder, Northern Side Notched and Pinto. The wide variety of points associated with this time period seems to indicate a very complex cultural situation. Whether or not these points are of different relative ages is hard to determine, but there is some indication the Northern Side Notched are the oldest, the Humboldt types next and the Pinto points the youngest (Hester and Heizer 1973: 31; McGonagle 1974: 89).

Grant Phase materials have two major areas of occurrence in the Tonopah Resource Area--the Ralston and Monitor Valleys in the west and Railroad Valley and the Grant Range in the east (Figure 17). Grant Phase sites are Warm Spring #1--II (CrNV-06-210), an isolated find (CrNV-06-213), Blind Spring #1 (CrNV-06-228), Log Spring (CrNV-06-239), Andrew Spring (CrNV-06-240), Elkhorn Canyon (CrNV-06-263), Trail Canyon (CrNV-06-264), CrNV-06-265, CrNV-06-283, Blind Spring #3 (CrNV-06-295), Beaty Spring II (CrNV-06-299), CrNV-06-367, and CrNV-06-413.

Liberty Phase. (c.a. 3,000--300 B.C.) The Liberty Phase is the final period of the hypothesized Desert Hunting Tradition. The primary time markers for this phase are Elko series points. Gypsum points are also considered as belonging to this time.

As elsewhere in the Great Basin, Elko points are the most widespread type of artifact in the Tonopah Resource Area (Figure 19). Whether or not hunting remains as important as during earlier times is a problem for future research. Milling stones may be more common, but the evidence is inconclusive since many of the sites with milling stones are multicomponent (Figure 20).

Liberty Phase sites are Abel Spring (CrNV-06-38), Coyote Hole Spring #2 (CrNV-06-138), Muleshoe Spring (CrNV-06-188), Antelope Spring (CrNV-06-200), Liberty Spring (CrNV-06-203), Upper Blind Spring #2 (CrNV-06-235), Blind Spring #2 (CrNV-06-236), Irwin Canyon (CrNV-06-237), Log Spring (CrNV-06-239), Andrew Spring (CrNV-06-240), Alum Spring (CrNV-06-242), an isolated find (CrNV-06-253), CrNV-06-257, Trail Canyon (CrNV-06-264), CrNV-06-270, Box Canyon Spring II (CrNV-06-282), Beaty Spring I (CrNV-06-283), CrNV-06-288, Morgan Spring (CrNV-06-293), Blind Spring #3 (CrNV-06-295), an isolated find (CrNV-06-309), Needles Spring (CrNV-06-405), Squaw Wells Spring (CrNV-06-406), Red Spring I (CrNV-06-409) and CrNV-06-417.

Blue Eagle Phase. (c.a. 300 B.C.--A.D. 1,300) The Blue Eagle Phase is postulated as marking the beginning of the Desert Culture adaptation in the Tonopah Resource Area. Diagnostic artifacts are the Eastgate and Rose Springs projectile points. Blue Eagle Phase material is fairly widespread (Figure 21), being almost as universal to the area as earlier Liberty Phase artifacts. Whether or not milling stones are important, is again inconclusive for the same reasons stated under the discussion of the Liberty Phase. However, it is hypothesized that during this phase, plant foods were more important than during earlier periods and that small mammals became the primary source of meat.

Blue Eagle Phase sites are (Ar27-06-109), Warm Springs #I--II (CrNV-06-210), Trap Spring (CrNV-06-220), (CrNV-06-224), Blind Spring #1 (CrNV-06-228), Ox Spring (CrNV-06-229), Log Spring (CrNV-06-239), Andrew Spring (CrNV-06-240), CrNV-06-257, CrNV-06-258, CrNV-06-262, Trail Canyon (CrNV-06-264), CrNV-06-266,

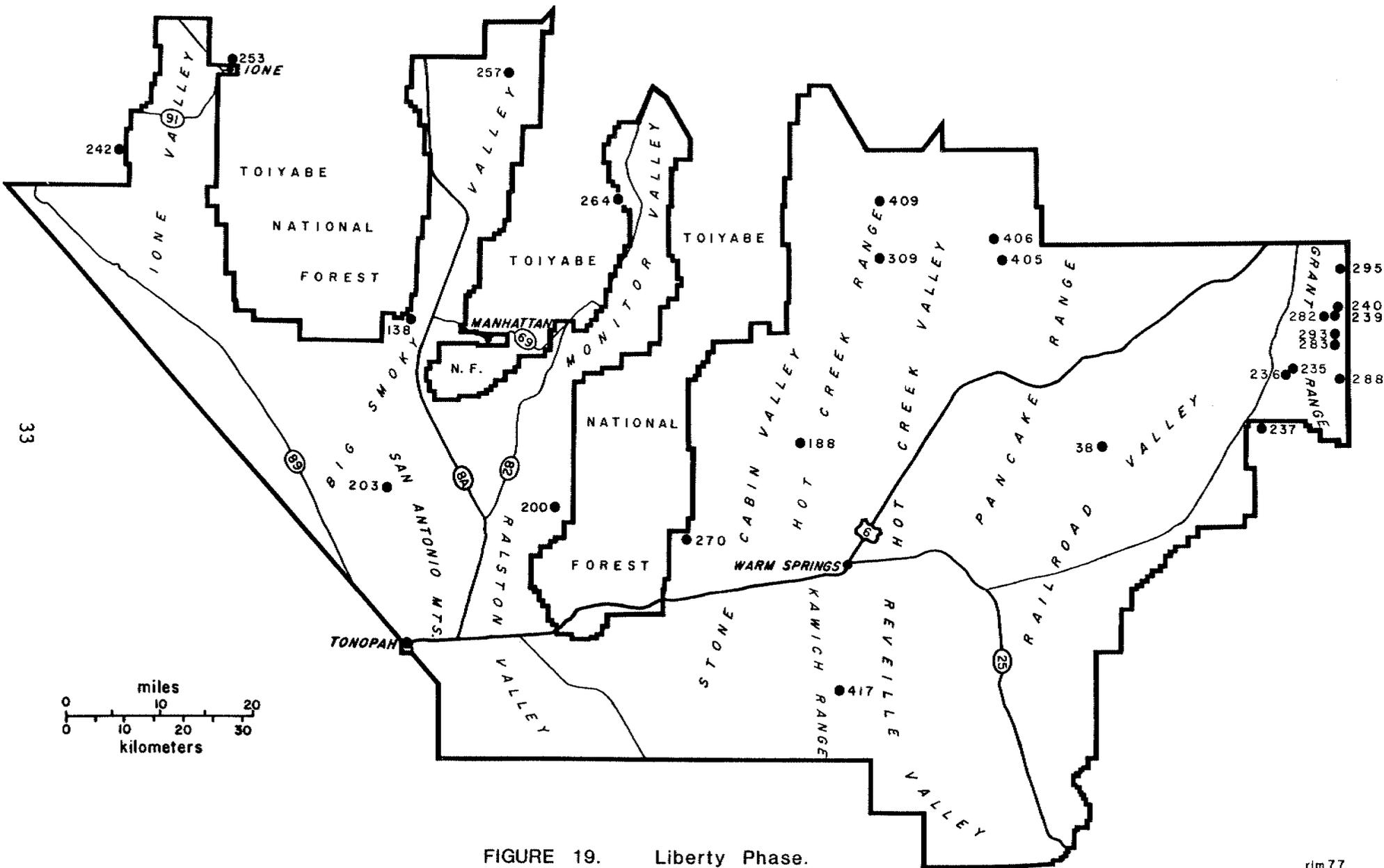


FIGURE 19. Liberty Phase.

Sidehill Spring (CrNV-06-271), Box Canyon Spring I (CrNV-06-281), CrNV-06-88, Morgan Spring (CrNV-06-293), North Sixmile Canyon Spring (CrNV-06-301), and Needles Spring (CrNV-06-405).

Clifford Phase. (c.a. A.D. 1,300--1,863) The protohistoric Clifford Phase begins with the arrival of the Shoshonian peoples in the Tonopah Resource Area (Figure 19). Adaptation is most likely "Desert Culture"--like Diagnostic artifacts are Desert Side Notched and Cottonwood points and pottery. The phase name comes from the sites at Clifford Spring (CrNV-06-183, 184 and 185), small rock shelters with stone features and pottery (Figures 23 and 24). Two other site complexes are almost identical, Point of Rock Spring (CrNV-06-268) (Figure 25) and McKinney Tanks on the National Forest (26 Ny 76, 77, 78, 79, and 87).

Clifford Phase sites are Abel Spring (Ar27-06-38), Ar27-06-108, Ar27-06-109, Ar27-06-123, Coyote Hole Spring #1 (CrNV-06-138), the Clifford Spring sites (CrNV-06-182, 183, 184, and 185), Tobe Spring (CrNV-06-186), Muleshoe Spring (CrNV-06-188), Willow Spring #2 (CrNV-06-189), Iceburg Spring (CrNV-06-208), Warm Spring #1--1 (CrNV-06-209), Coyote Hole Spring #2 (CrNV-06-212), Grant Canyon (CrNV-06-216), Trap Spring (CrNV-06-220), CrNV-06-222, Sandy Summit Spring (CrNV-06-232), Log Spring (CrNV-06-239), Andrew Spring (CrNV-06-240), Alum Spring (CrNV-06-242), CrNV-06-254, CrNV-06-266, Italian Spring (CrNV-06-277), CrNV-06-288, Morgan Spring (CrNV-06-293), Blind Spring #3 (CrNV-06-295), CrNV-06-401, Needles Spring (CrNV-06-405), Red Spring I (CrNV-06-409), CrNV-06-416, and CrNV-06-418.

	BLACK SPRING	TONOPAH	NYALA	MOREY	GRANT	LIBERTY	BLUE EAGLE	CLIFFORD	TYBO
Ar27-06-38			X			X		X	
Ar27-06-123								X	
CrNV-06-182								X	
CrNV-06-189								X	
CrNV-06-198									X
CrNV-06-200				X		X			
CrNV-06-207				X					
CrNV-06-208								X	
CrNV-06-216								X	
CrNV-06-239			X		X	X	X	X	
CrNV-06-240			X		X	X	X	X	
CrNV-06-257						X	X		
CrNV-06-258							X		
CrNV-06-271							X		
CrNV-06-277				X				X	
CrNV-06-282						X			
CrNV-06-293			X			X	X	X	
CrNV-06-295					X	X			
CrNV-06-417						X			

Figure 20. Occurrence of milling stones by phase.

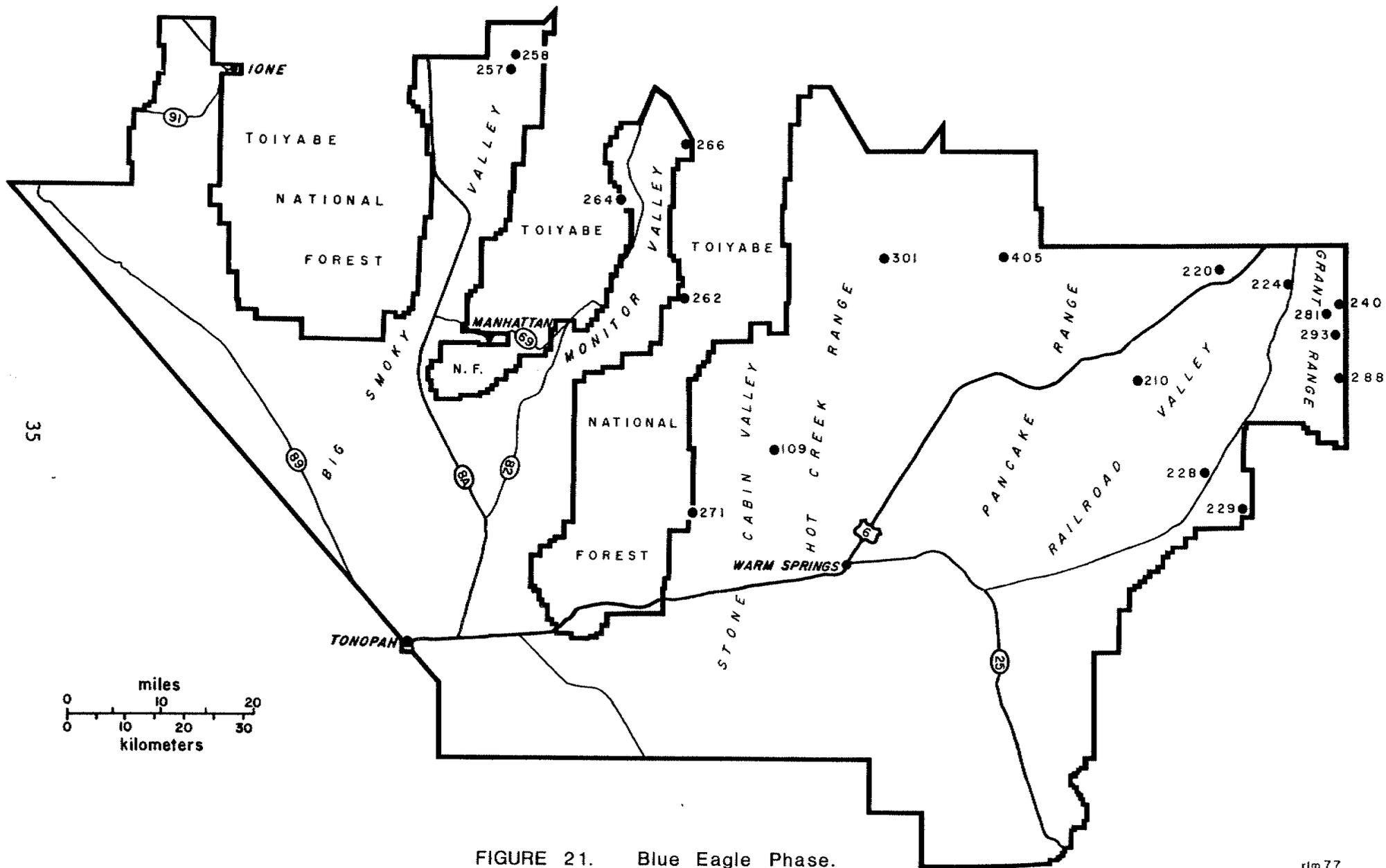
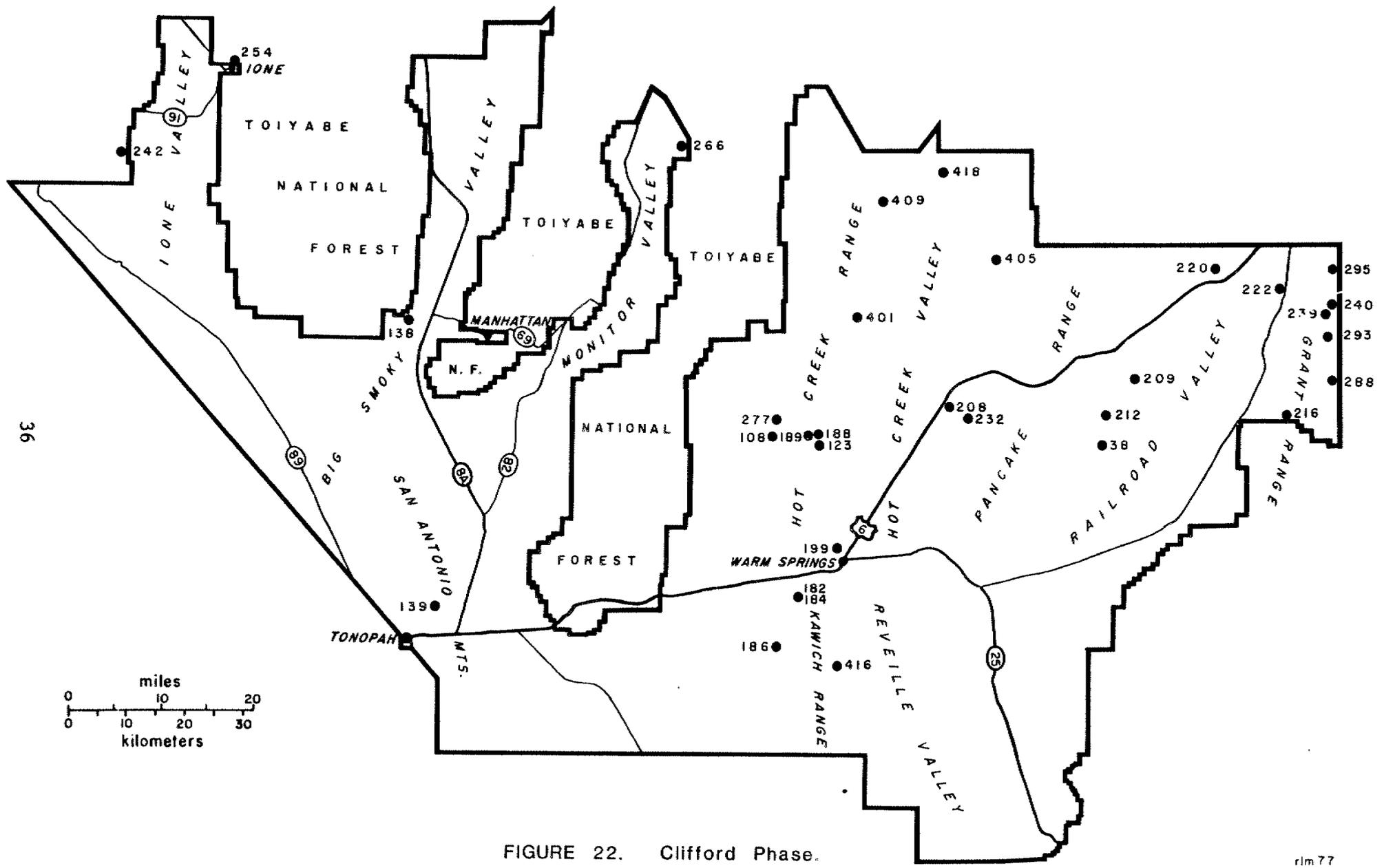


FIGURE 21. Blue Eagle Phase.



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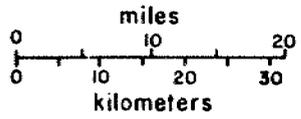


FIGURE 22. Clifford Phase.



Figure 23. Clifford Rock Shelters, view north.



Figure 24. Rock feature in CrNV-06-184.



Figure 25. Point of Rock Spring.

Tybo Phase. (ca. A.D. 1863--1915) The historic period was one of cultural disruption and change for the Shoshone. Tybo Phase sites are on the edges of Euro-American communities and show a mixture of aboriginal and historic traits.

The sites upon which this phase is described are associated with the mining town of Tybo in the Hot Creek Range. They were originally described to us by Victor J. Barndt of Tybo who took the senior author to see two that had yielded quantities of glass beads over the years. They are leveled areas about ten feet in diameter on the steep slopes above the white settlement. Four such sites (CrNV-06-194, 196, 197, and 198) were discovered above Gilmore Springs south of Tybo Canyon (Figures 26 and 27). Quantities of historic materials including clay pipe fragments, glass beads of various kinds and metal objects were observed on these sites. Two of the sites also had associated flake scatters and one had a granite metate.



Figure 26. CrNV-06-194.

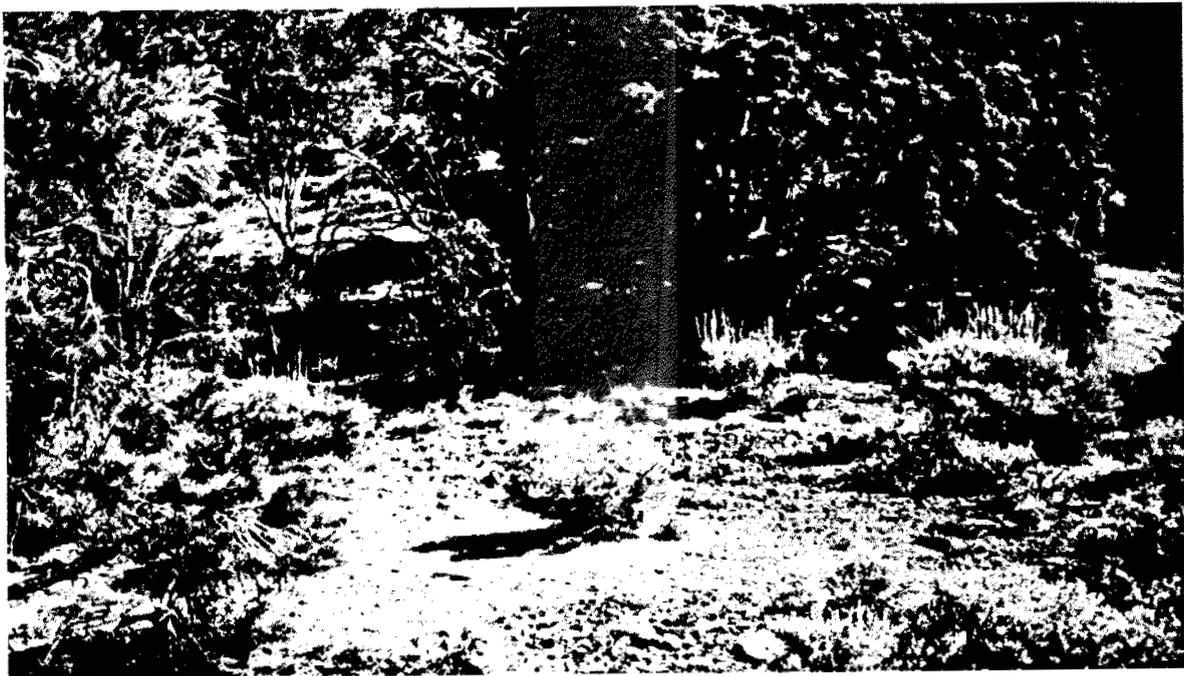


Figure 27. CrNV-06-196. View south.

Non-aboriginal Historic. There are numerous sites representative of the early mining and ranching activities. Those recorded on the RIS inventory (Figure 2) are for the most part well documented in historic records. However, during the EIS Survey abundant sites, particularly of mining activities, were recorded of non-aboriginal occupation.

The historic sites of the Tonopah Resource Area fall into four basic categories:

1. Mining towns and camps;
2. Isolated mining activity, usually rock cabins;
3. Ranches; and
4. Charcoal Kilns (Figure 28).

Considerable archival research is needed before any interpretation can be made of these sites. They are numerous and many will probably always remain obscure as to who occupied them, for what reason and exactly when.



Figure 28. Tybo Charcoal Kilns.

In summary, although the Tonopah EIS Survey sample is too small and non-random to yield any significant settlement pattern data, there is some indication that site distributions do change with time. Nyala Phase material is confined to the eastern portion of the Resource Area; Morey Phase sites occur primarily in the Hot Creek Range in the middle of the Resource Area; and Grant Phase material has two primary areas of occurrence, the Ralston and Monitor valleys in the west and the Grant Range in the east. However, Liberty Phase, Blue Eagle Phase and Clifford Phase sites all tend to be spread throughout the Resource Area. Tybo Phase material is associated with historic white communities. Most non-aboriginal historic sites recorded are probably associated with ore deposits.

Also, there appears to be no significant correlation between altitude and age. All phases tend to cover the full altitude range of site occurrence. Nor is there any correlation between vegetation types and site age; again the distribution is fairly evenly divided.

Of the springs checked with no cultural resources, two were prospect holes, four were wells, 11 were on mud lake beds (about half of these were probably seismic drill holes) and four were in very steep mountainous terrain. Of the rest, there were no obvious reasons why there were no cultural resources associated with the springs.

The impact of livestock grazing, and to a lesser extent mining, was also documented. All spring associated archaeological sites have been affected to some degree by livestock trampling, spring development and other related activities; 124 have been fairly heavily impacted. Twenty-nine sites have been partially destroyed by mining activities. However, in some of these cases, the mining activities themselves are over 50 years old and are thus cultural resources.

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Appendix A

Cultural Resource Inventory Prior to the EIS Survey

Ar27-06-12 (26 Ny 529)	T. 11 N., R. 49 E., Sec. 32	Danville Creek
Ar27-06-13 (26 Ny 530)	T. 11 N., R. 49 E., Sec. 29	
Ar27-06-14 (26 Ny 531)	T. 10 N., R. 49 E., Sec. 24	Clover Spring
Ar27-06-15	T. 10 N., R. 49 E., Sec. 10	
Ar27-06-16	T. 10 N., R. 49 E., Sec. 20 & 21	
Ar27-06-17	T. 10 N., R. 49 E., Sec. 10	
Ar27-06-18	T. 11 N., R. 49 E., Sec. 11	
Ar27-06-19	T. 11 N., R. 49 E., Sec. 11	
Ar27-06-20	T. 11 N., R. 49 E., Sec. 11	
Ar27-06-21	T. 11 N., R. 50 E., Sec. 7	
Ar27-06-22	T. 11 N., R. 49 E., Sec. 1	
Ar27-06-23 (26 Ny 532)	T. 7 N., R. 47 E., Sec. 11 & 14	McCann Spring
Ar27-06-24 (26 Ny 533)	T. 8 N., R. 49 E., Sec. 17,18,20	
Ar27-06-25 (26 Ny 258)	T. 10 N., R. 39 E., Sec. 32	Barren Spring
Ar27-06-35 (26 Ny 505)	T. 4 N., R. 51 E., Sec. 15 & 16	
Ar27-06-36 (26 Ny 287)	T. 5 N., R. 53 E., Sec. 21	
Ar27-06-37 (26 Ny 288)	T. 5 N., R. 54 E., Sec. 34	
	T. 4 N., R. 54 E., Sec. 3	

Ar27-06-38 (26 Ny 289)	T. 6 N., R. 54 E., Sec. 23	Abel Spring
Ar27-06-39	T. 10 N., R. 49 E., Sec. 20 & 21	
Ar27-06-40	T. 10 N., R. 49 E., Sec. 16 & 17	
Ar27-06-41	T. 10 N., R. 49 E., Sec. 2 & 3	
Ar27-06-42	T. 10 N., R. 49 E., Sec. 10	
Ar27-06-43	T. 10 N., R. 49 E., Sec. 16	
Ar27-06-44	T. 10 N., R. 49 E., Sec. 16	
Ar27-06-45	T. 10 N., R. 49 E., Sec. 21 & 22	
Ar27-06-46	T. 11 N., R. 49 E., Sec. 14	
Ar27-06-47	T. 11 N., R. 49 E., Sec. 13 & 14	
Ar27-06-48	T. 11 N., R. 49 E., Sec. 9,14,15,23	
Ar27-06-49	T. 11 N., R. 49 E., Sec. 14,15,16	
Ar27-06-50	T. 11 N., R. 49 E., Sec. 2,3,12	
Ar27-06-51	T. 11 N., R. 49 E., Sec. 1	
Ar27-06-52	T. 12 N., R. 50 E., Sec. 31	
	T. 12 N., R. 49 E., Sec. 36	
Ar27-06-53	T. 12 N., R. 49 E., Sec. 36	
Ar27-06-54	T. 12 N., R. 49 E., Sec. 26 & 36	
Ar27-06-55 (26 Ny 534)	T. 8 N., R. 47 E., Sec. 35	Wild Cat Spring
Ar27-06-69 (26 Ny 535)	T. 9 N., R. 51 E., Sec. 8	South Canyon Spring
Ar27-06-91	T. 11 N., R. 43 E., Sec. 32	
Ar27-06-92	T. 11 N., R. 51 E., Sec. 15	
Ar27-06-93	T. 3 N., R. 43 E., Sec. 19	
Ar27-06-94	T. 10 N., R. 51 E., Sec. 36	Moore's Sta- tion Petro- glyphs

Ar27-06-95	T. 10 N., R. 52 E., Sec. 29	Jumbled Rock Gulch Petroglyphs
Ar27-06-96	T. 7 N., R. 51 E., Sec. 36	Blue Jay Rockshelter
Ar27-06-97	T. 11 N., R. 43 E., Sec. 19	
Ar27-06-98	T. 5 N., R. 50 E., Sec. 20	
Ar27-06-100	T. 8 N., R. 57 E., Sec. 1 & 12	
Ar27-06-101	T. 8 N., R. 57 E., Sec. 12	
Ar27-06-102 (26 Ny 18)	T. 4 N., R. 51 E.	
Ar27-06-108 (26 Ny 259)	T. 6 N., R. 49 E., Sec. 17	
Ar27-06-109 (26 Ny 260)	T. 6 N., R. 49 E., Sec. 20	
Ar27-06-110 (26 Ny 261)	T. 7 N., R. 49 E., Sec. 27	
Ar27-06-112	T. 2 N., R. 42 E., Sec. 12	
Ar27-06-113	T. 2 N., R. 42 E., Sec. 12	
Ar27-06-114	T. 2 N., R. 42 E., Sec. 12	
Ar27-06-115	T. 2 N., R. 42 E., Sec. 12	
Ar27-06-123	T. 6 N., R. 49 E., Sec. 23	
CrNV-06-125	T. 1 N., R. 49 E., Sec. 4	Longstreets Ranch
CrNV-06-130*	T. 11 N., R. 50 E., Sec. 21	James Wild Horse Trap
CrNV-06-131*	T. 6 N., R. 49½ E., Sec. 23	Tybo Charcoal Kilns
CrNV-06-132	T. 9 N., R. 52 E., Sec. 27	
CrNV-06-134	T. 9 N., R. 56 E., Sec. 35	
CrNV-06-135	T. 8 N., R. 56 E., Sec. 2	

*National Register Sites

CrNV-06-246	T. 10 N., R. 37 E., Sec. 9	Golddyke
CrNV-06-315	T. 11 N., R. 52 E., Sec. 19	Pritchards Station
CrNV-06-316	T. 11 N., R. 51 E., Sec. 36	Moore's Station
CrNV-06-317	T. 9 N., R. 51 E., Sec. 5	Morey
CrNV-06-318	T. 9 N., R. 50 E., Sec. 27	Sixmile Can- yon Charcoal Kilns--upper set
CrNV-06-319	T. 9 N., R. 50 E., Sec. 34	Woodtick Canyon Char- coal Kilns
CrNV-06-320	T. 9 N., R. 50 E., Sec. 34	Sixmile Can- yon Charcoal Kilns--middle set
CrNV-06-321	T. 8 N., R. 50 E., Sec. 2	Sixmile Can- yon Charcoal Kilns--lower set
CrNV-06-322	T. 8 N., R. 50 E., Sec. 16	Fourmile Can- yon Charcoal Kilns
CrNV-06-323	T. 8 N., R. 49 E., Sec. 36	Arrastra
CrNV-06-324	T. 8 N., R. 50 E., Sec. 28	Hot Creek
CrNV-06-325	T. 7 N., R. 50 E., Sec. 19	Keystone
CrNV-06-326	T. 6 N., R. 49 E., Sec. 10	McIntyre Char- coal Kilns--N. set
CrNV-06-327	T. 86 N., R. 57 E., Sec. 11	Blue Eagle State Station
CrNV-06-328	T. 6 N., R. 49 E., Sec. 15	McIntyre Char- coal Kilns-- middle set
CrNV-06-320	T. 6 N., R. 49 E., Sec. 22	McIntyre Char- coal Kilns--S. set

CrNV-06-330	T. 8 N., R. 49 E., Sec. 36	Mountain View
CrNV-06-331	T. 6 N., R. 49½ E., Sec. 24	Tybo
CrNV-06-332	T. 4 N., R. 50 E., Sec. 20	Warm Springs
CrNV-06-333	T. 3 N., R. 49 E., Sec. 3	Clifford
CrNV-06-334	T. 3 N., R. 49 E., Sec. 35	Bellehelen
CrNV-06-335	T. 2 N., R. 49 E., Sec. 28	Golden Arrow
CrNV-06-336	T. 11 N., R. 49 E., Sec. 30	Danville
CrNV-06-337	T. 1 N., R. 50 E., Sec. 3 & 4	Eden Creek Ranch
CrNV-06-338	T. 1 N., R. 49 E., Sec. 22 & 23	Breen's Ranch
CrNV-06-339	T. 1 N., R. 49 E., Sec. 33 & 34	Silver Bow
CrNV-06-340	T. 11 N., R. 49 E., Sec. 3 & 4	Clear Creek Ranch
CrNV-06-341	T. 6 N., R. 54 E., Sec. 11	Stone Corral
CrNV-06-342	T. 5 N., R. 54 E., Sec. 34	Stone Corral
CrNV-06-343	T. 2 N., R. 51½ E., Sec. 1	Arrowhead
CrNV-06-344	T. 2 N., R. 52 E., Sec. 7	Old Reveille
CrNV-06-345	T. 6 N., R. 58 E., Sec. 6 & 7	Grant City
	T. 6 N., R. 57 E., Sec. 1	
CrNV-06-346	T. 6 N., R. 57 E., Sec. 28	Troy
CrNV-06-347	T. 5 N., R. 57 E., Sec. 27	Ox Spring
CrNV-06-348	T. 13 N., R. 39 E., Sec. 34	Ione
CrNV-06-349	T. 10 N., R. 37 E., Sec. 7	Atwood
CrNV-06-350	T. 10 N., R. 37 E., Sec. 36	Pactolus
CrNV-06-351	T. 11 N., R. 39 E., Sec. 3	Grantsville
CrNV-06-352	T. 8 N., R. 39 E., Sec. 13	Cloverdale

CrNV-06-353	T. 7 N., R. 39 E.,	Royston
CrNV-06-354	T. 11 N., R. 43 E., Sec. 17	Darrough's
CrNV-06-355	T. 10 N., R. 42 E., Sec. 14	Jett
CrNV-06-356	T. 7 N., R. 42 E., Sec. 18	San Antonio Stage Sta- tion
CrNV-06-357	T. 6 N., R. 42 E., Sec. 27 & 34	Cimmarron Mine
CrNV-06-358	T. 5 N., R. 42 E., Sec. 7 & 8	Liberty Mine
CrNV-06-359	T. 4 N., R. 42 E., Sec. 14	Ray's
CrNV-06-360	T. 10 N., R. 44 E., Sec. 20	Round Moun- tain
CrNV-06-361	T. 8 N., R. 43 E., Sec. 24	Central City
CrNV-06-362	T. 8 N., R. 44 E., Sec. 20	Manhattan
CrNV-06-363	T. 7 N., R. 43 E., Sec. 25	Baxter Spring
CrNV-06-364	T. 7 N., R. 44 E., Sec. 14	Spanish Spring
CrNV-06-365	T. 8 N., R. 45 E., Sec. 23	Monarch
CrNV-06-366	T. 3 N., R. 46 E.	Ellendale
CrNV-06-526	T. 2 N., R. 51½E., Sec. 1	New Reveille
CrNV-06-528	T. 2 N., R. 50 E., Sec. 23 & 24	Reveille Mill
CrNV-06-530	T. 1 N., R. 44 E., Sec. 28	
CrNV-06-532	T. 1 N., R. 44 E., Sec. 29	
CrNV-06-533	T. 1 N., R. 44 E., Sec. 29	
CrNV-06-534	T. 1 N., R. 44 E., Sec. 29	
CrNV-06-535	T. 1 N., R. 44 E., Sec. 29	
CrNV-06-536	T. 1 N., R. 44 E., Sec. 30	
CrNV-06-537	T. 1 N., R. 43 E., Sec. 25	

CrNV-06-538	T. 1 N., R. 44 E., Sec. 33
CrNV-06-539	T. 1 N., R. 43 E., Sec. 13
CrNV-06-540	T. 1 N., R. 43 E., Sec. 13
CrNV-06-541	T. 1 N., R. 45 E., Sec. 7 & 8
CrNV-06-542	T. 1 N., R. 45 E., Sec. 4
CrNV-06-543	T. 1 N., R. 44 E., Sec. 3
CrNV-06-544	T. 1 N., R. 44 E., Sec. 10
CrNV-06-545	T. 1 N., R. 44 E., Sec. 15
CrNV-06-546	T. 1 N., R. 44 E., Sec. 17
CrNV-06-547	T. 1 N., R. 44 E., Sec. 20
CrNV-06-548	T. 1 N., R. 44 E., Sec. 21
CrNV-06-550	T. 5 N., R. 40 E., Sec. 25
CrNV-06-551	T. 6 N., R. 40 E., Sec. 14
CrNV-06-552	T. 6 N., R. 40 E., Sec. 23
CrNV-06-553	T. 6 N., R. 40 E., Sec. 11
CrNV-06-554	T. 6 N., R. 40 E., Sec. 2
CrNV-06-555	T. 6 N., R. 40 E., Sec. 2
CrNV-06-556	T. 6 N., R. 40 E., Sec. 23
CrNV-06-557	T. 6 N., R. 40 E., Sec. 23
CrNV-06-558	T. 2 N., R. 43 E., Sec. 16

Appendix B

Tonopah EIS Survey Cultural Resource Sites

CrNV-06-138 (26 Ny 567)	T. 8 N., R. 42 E., Sec. 11	Coyote Hole Spring #1
CrNV-06-139 (26 Ny 568)	T. 3 N., R. 43 E., Sec. 17	Ice Plant Spring
CrNV-06-140 (26 Ny 569)	T. 3 N., R. 43 E., Sec. 9	Slaughter House Spring
CrNV-06-143 (26 Ny 602)	T. 9 N., R. 39 E., Sec. 33	Willow Spring #1
CrNV-06-144 (26 Ny 603)	T. 9 N., R. 42 E., Sec. 11	
CrNV-06-145 (26 Ny 604)	T. 9 N., R. 42 E., Sec. 14	
CrNV-06-181 (26 Ny 605)	T. 8 N., R. 38 E., Sec. 11 & 12	Warm Spring #2
CrNV-06-182 (26 Ny 606)	T. 3 N., R. 49 E., Sec. 11	Clifford Spring I
CrNV-06-183 (26 Ny 607)	T. 3 N., R. 49 E., Sec. 11	Clifford Spring II
CrNV-06-184 (26 Ny 608)	T. 3 N., R. 49 E., Sec. 11	Clifford Spring III
CrNV-06-185 (26 Ny 609)	T. 3 N., R. 49 E., Sec. 11	Clifford Spring IV
CrNV-06-186 (26 Ny 610)	T. 2 N., R. 49 E., Sec. 4	Tobe Spring
CrNV-06-187 (26 Ny 611)	T. 4 N., R. 49½ E., Unsurveyed	Milk Spring
CrNV-06-188 (26 Ny 612)	T. 6 N., R. 49 E., Sec. 14	Muleshoe Spring
CrNV-06-189 (26 Ny 613)	T. 6 N., R. 49 E., Sec. 15	Willow Spring #2
CrNV-06-190 (26 Ny 614)	T. 6 N., R. 49 E., Sec. 22	

CrNV-06-191 (26 Ny 615)	T. 6 N., R. 49 E., Sec. 23	
CrNV-06-192 (26 Ny 616)	T. 6 N., R. 49 E., Sec. 23	Cave Spring
CrNV-06-193 (26 Ny 617)	T. 6 N., R. 49 E., Sec. 24	
CrNV-06-194 (26 Ny 618)	T. 6 N., R. 49 E., Sec. 24	Gilmore Spring I
CrNV-06-195 (26 Ny 619)	T. 6 N., R. 49 E., Sec. 24	Gilmore Spring II
CrNV-06-196 (26 Ny 620)	T. 6 N., R. 49 E., Sec. 24	Gilmore Spring III
CrNV-06-197 (26 Ny 621)	T. 6 N., R. 49 E., Sec. 24	Gilmore Spring IV
CrNV-06-198 (26 Ny 622)	T. 6 N., R. 49 E., Sec. 24	Gilmore Spring V
CrNV-06-199 (26 Ny 623)	T. 4 N., R. 50 E., Sec. 18	
CrNV-06-200 (26 Ny 571)	T. 5 N., R. 45 E., Sec. 21	Antelope Spring #1
CrNV-06-201 (26 Ny 572)	T. 7 N., R. 43 E., Sec. 24	Mud Spring
CrNV-06-202 (26 Ny 573)	T. 6 N., R. 45 E., Sec. 22	
CrNV-06-203 (26 Ny 574)	T. 5 N., R. 42 E., Sec. 16	Liberty Spring
CrNV-06-204 (26 Ny 575)	T. 5 N., R. 42 E., Sec. 16	
CrNV-06-205 (26 Ny 576)	T. 5 N., R. 42 E., Sec. 16 & 21	
CrNV-06-206 (26 Ny 577)	T. 8 N., R. 55 E., Sec. 15	North Spring
CrNV-06-207 (26 Ny 578)	T. 7 N., R. 52 E., Sec. 19	Rattlesnake Spring
CrNV-06-208 (26 Ny 579)	T. 7 N., R. 52 E., Sec. 31	Iceburg Spring

CrNV-06-209 (26 Ny 580)	T. 7 N., R. 55 E., Sec. 17	Warm Spring #1--I
CrNV-06-210 (26 Ny 581)	T. 7 N., R. 55 E., Sec. 17	Warm Spring #1--II
CrNV-06-211 (26 Ny 582)	T. 6 N., R. 54 E., Sec. 2	Storm Spring
CrNV-06-212 (26 Ny 583)	T. 6 N., R. 54 E., Sec. 2	Coyote Hole Spring #2
CrNV-06-213 (26 Ny 584)	T. 6 N., R. 54 E., Sec. 3	
CrNV-06-214 (26 Ny 585)	T. 6 N., R. 54 E., Sec. 3	
CrNV-06-215 (26 Ny 586)	T. 7 N., R. 57 E., Sec. 28	Bullwhacker Spring #1
CrNV-06-216 (26 Ny 587)	T. 6 N., R. 58 E., Sec. 6 & 7	Grant Canyon
CrNV-06-217 (26 Ny 588)	T. 7 N., R. 57 E., Sec. 33	Thorn Spring I
CrNV-06-218 (26 Ny 589)	T. 7 N., R. 57 E., Sec. 32	Thorn Spring II
CrNV-06-219 (26 Ny 590)	T. 7 N., R. 57 E., Sec. 28	
CrNV-06-220 (26 Ny 624)	T. 9 N., R. 56 E., Sec. 14	Trap Spring
CrNV-06-221 (26 Ny 625)	T. 9 N., R. 57 E., Sec. 25	
CrNV-06-222 (26 Ny 626)	T. 9 N., R. 57 E., Sec. 25	
CrNV-06-223 (26 Ny 627)	T. 9 N., R. 57 E., Sec. 25	
CrNV-06-224 (26 Ny 628)	T. 9 N., R. 57 E., Sec. 25	
CrNV-06-225 (26 Ny 629)	T. 6 N., R. 57 E., Sec. 5	Willow Spring #3
CrNV-06-226 (26 Ny 630)	T. 9 N., R. 57 E., Sec. 20	

CrNV-06-227 (26 Ny 631)	T. 6 N., R. 56 E., Sec. 14	Christian Spring
CrNV-06-228 (26 Ny 632)	T. 5 N., R. 56 E., Sec. 4	Blind Spring #1
CrNV-06-229 (26 Ny 633)	T. 5 N., R. 57 E., Sec. 30	Ox Spring
CrNV-06-230 (26 Ny 634)	T. 6 N., R. 57 E., Sec. 7	
CrNV-06-231 (26 Ny 635)	T. 6 N., R. 65 E., Sec. 27	
CrNV-06-232 (26 Ny 636)	T. 6 N., R. 52 E., Sec. 4	Sandy Summit Spring
CrNV-06-233 (26 Ny 637)	T. 3½ N., R. 50 E., Sec. 4	Black Spring #1
CrNV-06-234 (26 Ny 638)	T. 7 N., R. 58 E., Sec. 7	
CrNV-06-235 (26 Ny 639)	T. 7 N., R. 58 E., Sec. 7	Upper Blind Spring #2
CrNV-06-236 (26 Ny 640)	T. 7 N., R. 58 E., Sec. 7	Blind Spring #2
CrNV-06-237 (26 Ny 641)	T. 6 N., R. 57 E., Sec. 9	Irwin Can- yon
CrNV-06-238 (26 Ny 642)	T. 6 N., R. 57 E., Sec. 9	Irwin Springs
CrNV-06-239 (26 Ny 643)	T. 8 N., R. 58 E., Sec. 11	Log Springs
CrNV-06-240 (26 Ny 644)	T. 8 N., R. 58 E., Sec. 1	Andrew Spring
CrNV-06-241 (26 Ny 645)	T. 12 N., R. 38 E., Sec. 31	Antelope Spring #2--I
CrNV-06-242 (26 Ny 646)	T. 11 N., R. 37 E., Sec. 14	Alum Spring
CrNV-06-243 (26 Ny 647)	T. 11 N., R. 37 E., Sec. 31	
CrNV-06-244 (26 Ny 648)	T. 11 N., R. 37 E., Sec. 32	Paradise Spring

CrNV-06-245 (26 Ny 649)	T. 10 N., R. 37 E., Sec. 6	Coyote Spring
CrNV-06-247 (26 Ny 651)	T. 8 N., R. 38 E., Sec. 13	Black Spring #2
CrNV-06-248 (26 Ny 652)	T. 9 N., R. 39 E., Sec. 33	
CrNV-06-249 (26 Ny 61)	T. 12 N., R. 38 E., Sec. 31	Antelope Spring #2-II
CrNV-06-251 (26 Ny 654)	T. 10 N., R. 39 E., Sec. 4	
CrNV-06-252 (26 Ny 655)	T. 13 N., R. 39 E., Sec. 27	
CrNV-06-253 (26 Ny 656)	T. 13 N., R. 39 E., Sec. 27	
CrNV-06-254 (26 Ny 657)	T. 13 N., R. 39 E., Sec. 27	
CrNV-06-255 (26 Ny 658)	T. 13 N., R. 39 E., Sec. 34	
CrNV-06-256 (26 Ny 659)	T. 8 N., R. 41 E., Sec. 20	
CrNV-06-257 (26 Ny 660)	T. 13 N., R. 44 E., Sec. 28	
CrNV-06-258 (26 Ny 661)	T. 13 N., R. 44 E., Sec. 28	
CrNV-06-259 (26 Ny 662)	T. 7 N., R. 44 E., Sec. 1	Stewart Spring
CrNV-06-260 (26 Ny 663)	T. 10 N., R. 46 E., Sec. 28	Corcoran Spring
CrNV-06-261 (26 Ny 664)	T. 9 N., R. 47 E., Sec. 9	
CrNV-06-262 (26 Ny 665)	T. 9 N., R. 47 E., Sec. 28	
CrNV-06-263 (26 Ny 666)	T. 8 N., R. 46 E., Sec. 1	
CrNV-06-264 (26 Ny 667)	T. 11 N., R. 46 E., Sec. 32	Trail Canyon

CrNV-06-265 (26 Ny 668)	T. 11 N., R. 47 E., Sec. 5	
CrNV-06-266 (26 Ny 669)	T. 12 N., R. 47 E., Sec. 33	
CrNV-06-267 (26 Ny 601)	T. 7 N., R. 43 E., Sec. 13	Mud Spring
CrNV-06-268 (26 Ny 670)	T. 5 N., R. 47 E., Sec. 13	Point of Rock Spring
CrNV-06-269 (26 Ny 671)	T. 4 N., R. 42 E., Sec. 35	Frazier's Well
CrNV-06-270 (26 Ny 672)	T. 4 N., R. 47 E., Sec. 2 & 11	
CrNV-06-271 (26 Ny 673)	T. 5 N., R. 47 E., Sec. 26	Sidehill Spring
CrNV-06-272 (26 Ny 674)	T. 2 N., R. 47 E., Sec. 14	
CrNV-06-273 (26 Ny 675)	T. 1 N., R. 49 E., Sec. 31	Stinking Spring
CrNV-06-274 (26 Ny 676)	T. 2 N., R. 49 E., Sec. 32	
CrNV-06-275 (26 Ny 677)	T. 2 N., R. 49 E., Sec. 11 & 14	Craig Canyon
CrNV-06-276 (26 Ny 678)	T. 3 N., R. 49 E., Sec. 36	Cap Henry Spring
	T. 3 N., R. 50 E., Sec. 31	
CrNV-06-277 (26 Ny 679)	T. 6 N., R. 49 E., Sec. 4 & 5	Italian Spring
CrNV-06-279 (26 Ny 680)	T. 6 N., R. 49 E., Sec. 29	
CrNV-06-281 (26 Ny 681)	T. 8 N., R. 58 E., Sec. 10	Box Canyon Spring I
CrNV-06-282 (26 Ny 682)	T. 8 N., R. 58 E., Sec. 10	Beaty Canyon Spring II
CrNV-06-283 (26 Ny 683)	T. 8 N., R. 58 E., Sec. 26	Beaty Spring I

CrNV-06-284 (26 Ny 684)	T. 8 N., R. 58 E., Sec. 36	
CrNV-06-285 (26 Ny 685)	T. 8 N., R. 58 E., Sec. 36	
CrNV-06-286 (26 Ny 686)	T. 8 N., R. 58 E., Sec. 36	Cold Spring
CrNV-06-287 (26 Ny 687)	T. 2 N., R. 54 E., Sec. 10	Red Bluff Spring
CrNV-06-288 (26 Ny 688)	T. 7 N., R. 58 E., Sec. 13	
CrNV-06-289 (26 Ny 689)	T. 6 N., R. 54 E., Sec. 6	
CrNV-06-290 (26 Ny 690)	T. 6 N., R. 54 E., Sec. 7	
CrNV-06-291 (26 Ny 691)	T. 6 N., R. 51 E., Sec. 5	Butte Spring
CrNV-06-292 (26 Ny 692)	T. 6 N., R. 53 E., Sec. 1	
CrNV-06-293 (26 Ny 693)	T. 8 N., R. 58 E., Sec. 23	
CrNV-06-294 (26 Ny 694)	T. 8 N., R. 58 E., Sec. 11 & 14	
CrNV-06-295 (26 Ny 695)	T. 9 N., R. 58 E., Sec. 13	Blind Spring #3
CrNV-06-296 (26 Ny 696)	T. 8 N., R. 58 E., Sec. 22	
CrNV-06-297 (26 Ny 697)	T. 8 N., R. 58 E., Sec. 22	Cazier Spring
CrNV-06-298 (26 Ny 698)	T. 8 N., R. 58 E., Sec. 22	
CrNV-06-299 (26 Ny 699)	T. 8 N., R. 58 E., Sec. 26	Beaty Spring II
CrNV-06-300 (26 Ny 700)	T. 7 N., R. 58 E., Sec. 24	
CrNV-06-301 (26 Ny 701)	T. 10 N., R. 50 E., Sec. 35 & 36	North Sixmile Canyon Spring

CrNV-06-302 (26 Ny 702)	T. 8 N., R. 50 E., Sec. 8	
CrNV-06-303 (26 Ny 703)	T. 8 N., R. 50 E., Sec. 5	
CrNV-06-304 (26 Ny 704)	T. 8 N., R. 50 E., Sec. 5	Bullwhacker Spring #2
CrNV-06-305 (26 Ny 705)	T. 9 N., R. 50 E., Sec. 27	
CrNV-06-306 (26 Ny 706)	T. 9 N., R. 50 E., Sec. 15	
CrNV-06-307 (26 Ny 707)	T. 9 N., R. 50 E., Sec. 11	Sixmile Summit
CrNV-06-308 (26 Ny 708)	T. 9 N., R. 50 E., Sec. 27	
CrNV--06-309 (26 Ny 709)	T. 9 N., R. 50 E., Sec. 11	
CrNV-06-310 (26 Ny 710)	T. 9 N., R. 51 E., Sec. 5	
CrNV-06-311 (26 Ny 711)	T. 11 N., R. 51 E., Sec. 17	
CrNV-06-312 (26 Ny 712)	T. 11 N., R. 51 E., Sec. 7,8,17	Limestone Spring
CrNV-06-313 (26 Ny 713)	T. 5 N., R. 49 E., Sec. 25	
CrNV-06-314 (26 Ny 714)	T. 5 N., R. 49 E., Sec. 24	Rawhide Spring
CrNV-06-367 (26 Ny 767)	T. 4 N., R. 45 E., Sec. 3 & 4	
CrNV-06-369	T. 1 N., R. 54 E., Sec. 6 & 7	
CrNV-06-370 (26 Ny 768)	T. 1 S., R. 54 E., Sec. 29	Ned's Cache Spring
CrNV-06-371 (26 Ny 769)	T. 4 N., R. 55 E., Sec. 23	Big Creek Canyon Spring
CrNV-06-372 (26 Ny 770)	T. 10 N., R. 50 E., Sec. 23	

CrNV-06-373 (26 Ny 771)	T. 9 N., R. 50 E., Sec. 10	Cold Springs
CrNV-06-374 (26 Ny 772)	T. 10 N., R. 50 E., Sec. 3 & 10	
CrNV-06-375 (26 Ny 773)	T. 4 N., R. 45 E., Sec. 6	
CrNV-06-376 (26 Ny 774)	T. 4 N., R. 47 E., Sec. 10 & 11	Fourmile Spring
CrNV-06-400 (26 Ny 715)	T. 8 N., R. 50 E., Sec. 29	
CrNV-06-401 (26 Ny 716)	T. 8 N., R. 50 E., Sec. 9	
CrNV-06-402 (26 Ny 717)	T. 9 N., R. 51 E., Sec. 32	
CrNV-06-403 (26 Ny 718)	T. 8 N., R. 51 E., Sec. 5	
CrNV-06-404 (26 Ny 719)	T. 8 N., R. 51 E., Sec. 5	
CrNV-06-405 (26 Ny 720)	T. 9 N., R. 52 E., Sec. 12	Needles Spring
CrNV-06-406 (26 Ny 721)	T. 10 N., R. 52 E., Sec. 23 & 24	Squaw Well Spring
CrNV-06-407 (26 Ny 722)	T. 10 N., R. 52 E., Sec. 22	
CrNV-06-408 (26 Ny 723)	T. 1 N., R. 52 E., Sec. 22	Fang Ridge
CrNV-06-409 (26 Ny 724)	T. 11 N., R. 50 E., Sec. 35 & 36	Red Spring I
CrNV-06-410 (26 Ny 725)	T. 11 N., R. 50 E., Sec. 36	Red Spring II
CrNV-06-411 (26 Ny 726)	T. 11 N., R. 50 E., Sec. 36	Red Spring III
CrNV-06-412 (26 Ny 727)	T. 10 N., R. 50 E., Sec. 14	
CrNV-06-413	T. 1 N., R. 49 E., Sec. 4	

CrNV-06-414 (26 Ny 776)	T. 1 N., R. 49 E., Sec. 4	
CrNV-06-415 (26 Ny 777)	T. 1 N., R. 49 E., Sec. 3	
CrNV-06-416 (26 Ny 778)	T. 2 N., R. 50 E., Sec. 16	
CrNV-06-417 (26 Ny 779)	T. 2 N., R. 50 E., Sec. 28	
CrNV-06-418 (26 Ny 780)	T. 11 N., R. 52 E., Sec. 18	
CrNV-06-419 (26 Ny 781)	T. 10 N., R. 36 E., Sec. 1	Derringer Spring
CrNV-06-420 (26 Ny 782)	T. 10 N., R. 36 E., Sec. 1	Arrastra
CrNV-06-421 (26 Ny 783)	T. 10 N., R. 37 E., Sec. 6	