

AN ABSTRACT OF THE THESIS OF

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Title : A Classification of Stone Features and an Examination of Their
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Abstract Approved:


Dr. David Brauner

The analysis of prehistoric stone features has suffered for two separate but related reasons. The first is the lack of stringency in defining the terms attributed to these structures and, second, the perception of a lack of formal attributes exhibited by them. These two factors have made it impossible to subject these structures to the kinds of rigorous analysis to which other components of archaeological excavations are routinely put.

This thesis has two purposes. First, it defines 22 types of stone features. Second, in order to circumvent the analytical limitations imposed by the narrow spectrum of formal attributes exhibited by stone features, it examines positional and selected ancillary attributes of those features in order to ascertain whether certain attributes might be used to assign functions to stone structures.

A CLASSIFICATION OF STONE FEATURES AND AN EXAMINATION OF THEIR
POSITIONAL ATTRIBUTES

BY

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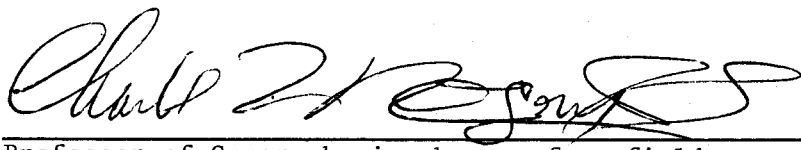
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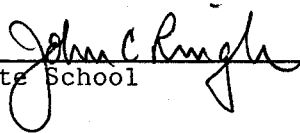
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I would like to express my gratitude to my mother, Florence Mary Ester Elliott Green for her understanding and unquestioning support. I owe her my life, my respect, and all the love that I can express. Without her support, both emotional and financial, this endeavor would have been utterly impossible. Thanks Mom.

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A CLASSIFICATION OF STONE FEATURES AND AN EXAMINATION OF THEIR POSITIONAL ATTRIBUTES

INTRODUCTION

Ascertaining the functions of stone features, unlike that of projectile points, has suffered for two reasons. The first is the perception by investigators of a lack of recognizable morphological attributes evident in these features. Second, the theoretical framework by which the different types of stone features have been defined or described has been inadequate for the task or simply missing altogether.

John White (1980) has addressed the problem of determining the functions of one group of stone features, namely clusters. Although he lists 12 specific variables that one might address in regards to clusters, he overlooks the most basic element in any analysis. He neglects to define what it is he is analyzing and therefore does not define what a cluster is. White should not be chided too harshly, however. This oversight is not his alone. There is a long history of this sort of omission in the literature. This omission has led to some serious consequences. The first and most widespread consequence is that throughout all of the federal lands presently being surveyed by Cultural Resource Personnel as a result of executive order 11593 and the National Historic Preservation Act of 1979 stone features in these areas are being described by a patchwork of different classification systems. Some of these systems are probably more than adequate for the

task; however, this thesis will show that this is an unsatisfactory situation. As good as any of the presently used systems is, the information obtained by their use is not comparable to similar information obtained elsewhere.

Joseph Chartkoff has stated, "...because of their paucity of formal attributes, rock features traditionally have posed interpretive problems for archaeologists." (Chartkoff 1983:745). The interpretive problem to which he refers is that of determining the functions associated with the various types of stone features illustrated in his paper. One major contributory factor of this problem is that no formalized, replicable set of definitions exists for stone features.

In his above Northwest California study, Chartkoff had a tremendous advantage over the vast majority of investigators because he had living informants from which to draw information. The stone features that he investigated were still in use and, consequently, he was able to report specific uses for specific features. Investigators who work in other areas, as a rule, work without the aid of informants and as a result, must look to other methods to determine the functions of stone features in their areas.

Generally, investigators have been forced to ascertain the functions of stone features through the use of ethnographic informants (eg. Chartkoff 1983), ethnographic analogy (eg. Winema National Forest Site Reports, various dates), or by the assignment of functions based upon the site's physical appearance and geographical setting (eg. West and Steinfeld 1983-4). Given the lack of replicable, quantifiable attributes reported for stone features, as well as the almost total lack of living

informants for direct ethnographic reference, one can appreciate the tenuousness of the majority of these assigned functions.

To illustrate this point, stone features with very similar morphologies (a generalized, unspecified pile of rocks) have been variously described as Hunting Blinds (Frison 1978, Butler 1978), Boundary Markers, Raw Material Markers (Harrington n.d.), Vision Quest Sites (Cressman 1956, West and Steinfeld 1983-4, Winema National Forest Site Report 1983), Trail Markers, Cache Locators, Windbreaks (Walker 1966) and National Guard Machine Gun Emplacements (Lyman et al. 1983, Follansbee and Francis 1980).

The reasoning behind the above functional descriptions is usually given, but more often than not, these descriptions are inadequate for any further investigation or analysis. Comparison of stone features in different areas is not possible due to each investigator's differing categories and/or terminologies. There exists no clearly definable method for determining the difference, for example, between a stone cairn, a stone pile, or a stone stack. The literature shows that the terms have been used interchangeably when, in fact, investigators have been describing three easily distinguishable stone features.

The purpose of this thesis is twofold. First, it will define categories of stone features and base those categories solely upon morphology. This will enable investigators everywhere to use the same criteria when describing stone features. As a result, stone features from different geographic areas will be able to be compared directly. Second, because of the wide range of reported functions attributed to a narrow range of morphologies, attributes other than morphology, such

as position, will be addressed when attempting to determine the function of a stone feature. This will reduce a great deal of ambiguity by allowing investigators to separate the shape and the function of stone features. Stone feature descriptions, as a result of separating form from function, will contain two parts. The first will describe a feature's shape while the second will describe its function if that function is either known or can be determined; for example, a stone cairn that functioned as a vision quest site or a stone wheel that functioned as an astronomical place. If no information allowing a determination of the function of a stone feature is available, then only its morphology can be described. This will eliminate many of the erroneous categorizations that are now so evident in the literature.

For the purposes of this thesis, only those functions that have been ascribed to stone features built prehistorically will be addressed. The one exception to this will be the functional category of "Machine Gun Emplacement." This category is addressed because investigators in the Redmond Training Area (Lyman et al. 1984) were unable to determine those stone features that may have been constructed prehistorically from those that may have been constructed by the National Guard during training exercises. The "Machine Gun Emplacement" category is introduced (page 3) to illustrate how similarly appearing stone features may have totally different functions associated with them. Once this category was mentioned, it seemed reasonable to include it with the other functional categories in the discussion about the uses of stone features.

There exists some ambiguity between the terms "feature" and "attribute." For the purpose of this thesis, the term "feature" will

never mean a quality or characteristic of a stone structure. For this meaning the term "attribute" will be used exclusively. "Feature" will refer only to an entire stone structure.

DEFINING THE CLASSES OF STONE FEATURES

In order to accomplish any analysis, it is first necessary to define one's terms as unambiguously as possible. This process is not without its pitfalls. A definition, in the strict semantic sense, is a statement of the meaning or significance of a word. This means that the subject of a definition is a word, not an object. This is inadequate for defining the different categories of stone features because the entire point of classification is to describe objects. This does not resolve the discussion because definitions can be non-semantically divided, based upon how the definition is accomplished. These two resultant types of definitions have been termed extensional and intensional (Dunnell 1971).

The extensional definition lists all the objects to which a term is applicable. In order to extensionally define all the stone cairns in Oregon, one would need to generate a list of each and every stone cairn in the state. This list would unambiguously define the group of stone features known as cairns. It is quite obvious that this method of definition is impractical and cumbersome. Extensional definitions fail to supply specific attributes necessary for membership in a group and therefore may lead to confusion when an investigator attempts to classify a type of stone feature with which he is unfamiliar.

In order to illustrate this ambiguity, does the term "cairn" imply a certain sized structure? Are two or three stones roughly piled upon one another a cairn or merely a pile? Is a pile of stones 50 meters across a cairn? Perhaps the term "mound" is more applicable. These

questions and more are unanswerable when extensional definitions are used. Because of the cumbersome nature of extensional definitions, as well as the assumptive orientation in regards to the resultant classes generated by them, it is clear that they are most inappropriate for defining the types of stone features.

The second type of definition is termed an intensional definition. This type specifies a set of attributes that an object must display or possess in order to be considered a referent for a term. Investigators unfamiliar with a stone feature would be able to classify it by comparing its displayed attributes with those set forth in an intensional definition. This type of definition allows the necessary precision for the replication of categories of stone features.

The choice of definitional framework is important because a preponderance of the stone features described in the literature have been defined extensionally. The resultant analytical impasse necessitates a stringency of definition.

Three reports utilizing extensional definitions are presented below as examples. The confusion and ambiguity created by their use of an extensionally defined classification are clear.

The reports of LaLande (1981), Silvermoon (1981), and Keith (1983) are no better or no worse than the vast majority of reports and descriptions of stone features encountered during the literature search for this thesis. They are included not to cast doubt on the competence of the authors but, rather, to illustrate the "state of the art" in describing stone features.

The first problem evident in the use of extensional definitions is that it allows the investigator to assign a functional classification on a group of stone features without any apparent justification for that classification. Secondary to this problem is the uncertainty as to what constitutes a given category of stone feature. The following is a direct quote from a cultural resource inventory site report that illustrates these two problems.

"Site 35KL1285 consists of "rock house rings", bedrock mortars, and lithic material located on a Ponderosa Pine covered knoll at a spring."
(LaLande 1981)

The above description states that the stone features at this site functioned as house rings yet gives no justification for this designation. Even if this description is accurate, it gives no clue as to what arrangement of stones constitutes a rock house ring.

The confusion caused by extensional definitions is not limited only to the reader. This type of definition may also confuse the investigator trying to characterize a stone feature. The following is an example:

"The site consists of five piled basalt rock cairns or vision quests. The cairns are 1 rock containing an(sic) heavy cover of lichen." (Keith 1983)

In the above report, the investigator cannot decide whether the stone features she is describing are cairns or vision quests, whatever those may be. If her intent was that rock cairns and vision quests are synonymous, then her description is at best naive. Apart from the confusion of extensionally defining the features, this report also contains another unresolved dilemma. It gives no clue as to how a person can pile a single stone.

The confusion caused by not having precisely defined categories of stone structures is illustrated in the following report:

"This site is composed of a scatter of at least 10 definite-to-probable rock cairns clustered into 3-4 groups and approx. 15 possible cairns. The rock cairns are located largely on barren rock outcrops which have unobstructed views.....to the east, southeast and/or south. The "cairns" are composed of low mounds or piles of subrounded native cobbles/boulders. The cairns average about 1.0 meters in diameter and .4 meters high. Many of them appear to have settled, collapsed or perhaps been disturbed by post-1900 visitors....(Silvermoon 1981)."

In the above report cairns apparently are synonymous with mounds and piles.. Also, no clue is given as to how the 1900 date was determined.

The information supplied by the above three reports is inadequate for any further analysis or for site to site comparisons. They are a mix of extensionally and/or functionally determined categories. Neither lends itself to replication or meaningful analysis. The extensionally defined terms convey little real information and the functionally defined features have an insidious effect. Once a site has been defined functionally, the tendency is to regard it as unequivocally a site that functioned in one and one way only. Other possibilities are overlooked and often ignored. Since a very narrow spectrum of morphologies of stone features may function in a wide variety of ways, categorizing those features functionally without supporting evidence is totally unjustified.

A method for classifying stone features is needed which will allow investigators to explicitly lay out the attributes required of a stone feature for inclusion in a named category. By defining categories

intensionally and by focusing solely upon morphology, a replicable classification could be produced. A classification produced in this manner would list all the attributes that minimally define each category of stone feature. It would not presuppose or assume any specific function to which a stone feature may have been put.

A classification based upon the criteria stated above follows:

A Classification of Stone Features

- 1.) Stone Feature - A non-random group of stones placed together in a recognizable pattern.
- 2.) Stone Pile - Two or more stones placed one atop the other (not stacked, see below) so that the resultant vertical height is less than the average horizontal diameter. In order to differentiate this feature from a stone wall, a pile's longest horizontal dimension should be less than four times its vertical height. (Fig. 1)
- 3.) Cairn - A multi-stone based stone pile whose vertical height is equal to or greater than its average horizontal diameter. (Fig. 2)
- 4.) Stone Stack - Two or more stones placed one atop the other with only one stone supporting the stone above it. Only the bottom stone may have contact with the ground surface. (Fig. 3)
- 5.) Cluster - A non-contiguous concentration of stones in a specific, defined area.
- 6.) Stone Pavement - A horizontally oriented contiguity of stones whose horizontal dimensions exceed its height or depth by at least five times. (Fig. 4)
- 7.) Pedestalled Feature - A stone feature (cairn, stack or pile) placed upon a platform composed of a much larger single stone or a platform of stacked stones. (Fig. 5)
- 8.) Stone Isolate - A single stone placed upon the ground surface or bedrock, whose location is the result of human activity. (Fig. 6)
- 9.) Standing Stone - A single, partially buried stone whose observable vertical dimension is at least twice its widest horizontal dimension. A standing stone would in all probability fall

over without the support of the sediments surrounding its base. Standing stones are generally much larger than stone isolates. (Fig. 7.)

- 10.) Stone Wall - A stone pile or cairn whose longitudinal magnitude exceeds its width by more than four times. Walls can be linear, curvilinear, or angular. (Fig. 8)
- 11.) Stone Pit - An excavated area, floored and walled with stones.
- 12.) Stone Chamber - A subterranean enclosure, walled and roofed with stones. (Fig. 9)
- 13.) Stone Ring (Type 1) - A circular or roughly circular arrangement of contiguous stones whose resultant diameter is less than ten meters. (Fig. 10)
- 14.) Stone Ring (Type 2) - A circular or roughly circular arrangement of non-contiguous stones whose resultant diameter is less than ten meters. (Fig 11)
- 15.) Stone Circle - Five or more non-contiguous stones, stone features or a combination of both situated equidistant from some central point, the resultant diameter of which is at least ten meters. (Fig 12)
- 16.) Stone Wheel - A circular or roughly circular arrangement of contiguous stones, whose resultant diameter is at least ten meters. Wheels may or may not incorporate radiants in their construction. (Fig. 13)
- 17.) Stone Radiant - Three or more alignments of contiguous stones that extend outward from a central common point. (Fig 14)
- 18.) Alignments - Linear arrangements of non-contiguous stones or stone features. (Fig. 15)
- 19.) Stone Enclosure (Type 1) - A low, roofless, semicircular wall of contiguous stones. Type 1 enclosures never exceed four meters in any horizontal dimension. (Fig. 16)
- 20.) Stone Enclosure (Type 2) - A space of any size enclosed by irregularly piling stones around its perimeter. The enclosure's perimeter may include natural stone outcroppings. (Fig. 17)
- 21.) Perched Stone - A large stone supported from underneath by one or more non-contiguous stones. (Fig. 18)
- 22.) Sculpted Stone - Stones that are three dimensionally modified into abstract or recognizable forms.

- 23.) Stone Effigy arrangement - An arrangement of stones, the resultant outline of which represents a human being or animal. (Fig. 19)
- 24.) Stone Feature Complex - A site which contains two or more stone features.

An additional category of "Mound" was considered. This category would have differed from that of "Stone Pile" only in the size or mass of the structure. However, the "Mound" category was omitted for two reasons. First, the term "Mound" carries a connotation of large earthen works similar to the ones found in the eastern United States. Second, no ethnographic records were found that functionally differentiate large stone piles from small stone piles.

The above distinction may seem to be at variance with the distinction between the categories of "Stone Ring" and "Stone Circle" which are differentiated on the basis of size. However, upon closer inspection, one finds that it is not. There is ample evidence that there were many functional differences between small circular arrangements of stones and large ones. Smaller circles were used as hearths, tipi weights, and in pit house construction. The larger circles were used for observing celestial events, for game drives and other uses. Therefore, it seems justified to make this distinction even though it might be construed as a functional influence on the above morphological classification.

The classification set forth above imposes some stringency of definition on the various types of stone features but it still brings one no closer to assigning functions to those features. The classification merely allows investigators to speak the same language and to replicate their results.

What can be done in regards to inferring the functions of stone features? Basing functional inferences on morphological criteria alone is dangerous. This practice is also totally reliant on a well defined, replicable typology and this sort of precision has not been attained in describing stone features. Even now the precision of the stone feature classification presented in this thesis is in question until its utility can be established in the field.

Lithic tool functions can be inferred on the basis of wear patterns observable on the artifacts. After a typology has been established, it is then valid to assume that if a particular artifact shows no wear, but exhibits the same morphology as other worn specimens, it may be included in that category. While this method of inferring tool functions is not a hard and fast rule, it is an appropriate way to proceed when dealing with stone features. If no functional typology exists for stone features, then it is impossible to assign functions to stone features based solely upon similar shapes. With lithic tools there is a relationship between function and shape. As Salmon has stated, "The more severe the limitation on the form of an object that a function imposes, the more reliable is the ascription of that function." (Salmon 1982:59). The relationship between a stone feature's form and function is much less apparent than that of stone tools.

The uses to which stone features have traditionally been put do not induce wear marks on those features or with the constituents of the features (with the exception of stones cracking due to intense heat in ovens and hearths). Stone features tend to be functionally passive rather than active. For example, a hunting blind is used to hide behind.

When an animal passes by, the hidden hunter does not throw the entire hunting blind at the fleeing animal. He either shoots an arrow or throws a spear or rock at it. Boundary markers between antagonistic peoples do not wear away in characteristic patterns because of the friction between the two groups. In short, the functions to which stone features were put imposed little restriction in form upon them.

Certainly the functions to which stone features were put played some role in their form. A hunting blind had to be large enough to conceal a person and a stone stack would make a terrible hearth. However, the passive nature of stone features produces a large degree of ambiguity in their morphology. It is possible and even probable that a single feature could function equally well as a hunting blind, a trail marker, a vision quest site, a raw material marker, a stone disposal site, a spatial marker, or a component of either a game run or an astronomical alignment.

With such a narrow spectrum of shapes functioning in such a wide variety of ways, it seems prudent to avoid morphology as the primary criteria when attempting to ascertain the functions of stone features. Rather than focusing on a feature's morphology, perhaps investigators should address the geographical location occupied by that feature. Surely, the function of a stone feature plays at least some causal role in its placement in the environment. Builders placed them in certain locations in order to take advantage of some phenomenon which was more likely to occur there than elsewhere.

Finally, I am not suggesting that stone features were not put to the uses suggested in the literature heretofore, but that there has

generally been little rationale for inferring the functions of such features. By concentrating primarily on the positional attributes of stone features and augmenting those attributes with applicable ancillary attributes such as those of morphology, it may be possible not only to put descriptive classifications on a quantifiable, replicable basis, but also to differentiate between similarly appearing stone features that have been subsumed into a hackneyed category such as "Vision Quest Site."

Morphological attributes alone are useful only for classifying stone features descriptively, not functionally. Those attributes that have a direct causal relationship with the functions of stone features need to be addressed. The more important category of attributes to address seems to be that of position. Morphological attributes should play only an ancillary role in any functional description.

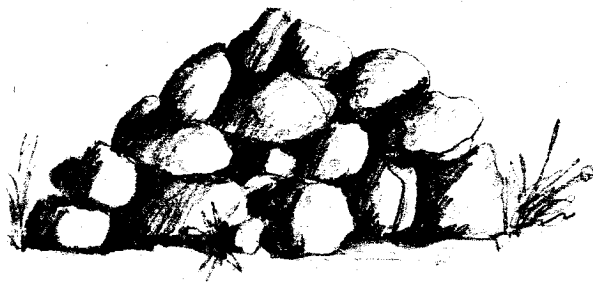


Figure 1. Stone Pile - Two or more stones placed one atop the other (not stacked) so that the resultant vertical height is less than the average horizontal diameter.

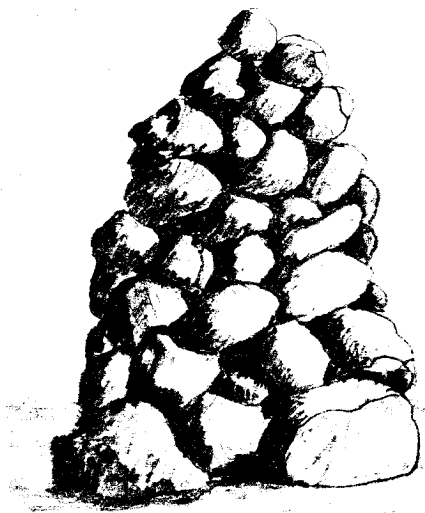


Figure 2. Cairn - A multi-stone based pile whose vertical height is equal to or greater than its average horizontal diameter.

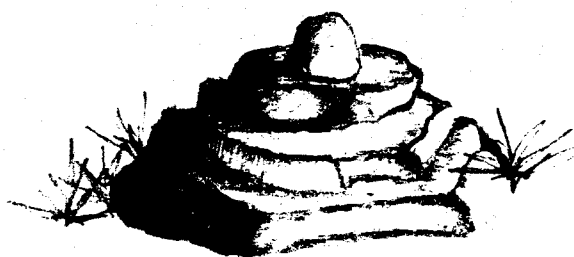


Figure 3. Stack - Two or more stones placed one atop the other with only one stone supporting the stone above it.



Figure 4. Stone Pavement - A horizontally oriented contiguity of stones whose horizontal dimensions exceed its height or depth by at least five times.

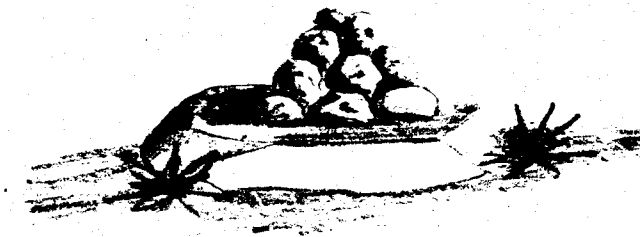


Figure 5. Pedestalled Feature - A stone feature (cairn, stack, pile, etc.) placed upon a platform composed of a much larger single stone or a platform of stacked stones.

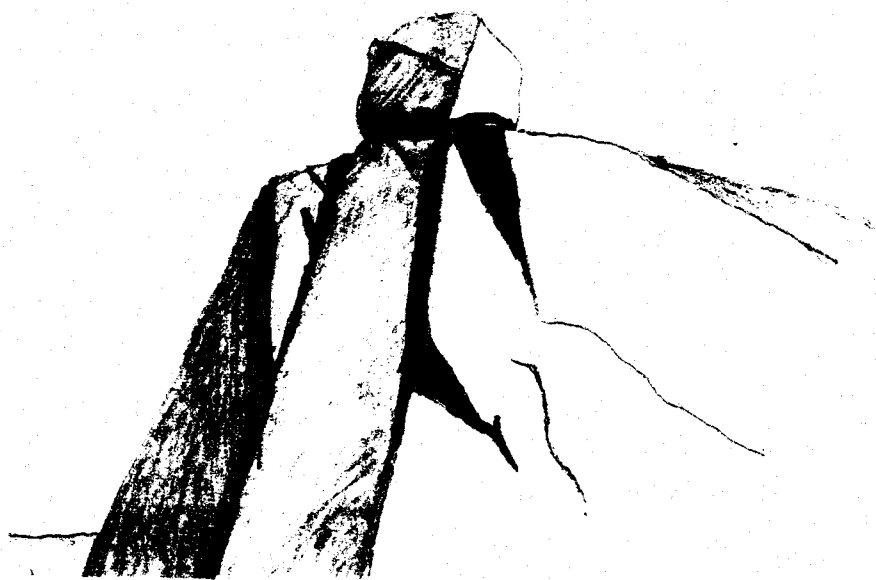


Figure 6. Isolate - A single stone placed upon the ground surface or bedrock, whose location is the result of human activity.



Figure 7. Standing Stone - A single, partially buried stone whose observable vertical dimension is at least twice its widest horizontal dimension.



Figure 8. Stone Wall - A stone pile or cairn whose longitudinal magnitude exceeds its width by more than four times. Walls may be linear, curvilinear, or angular.

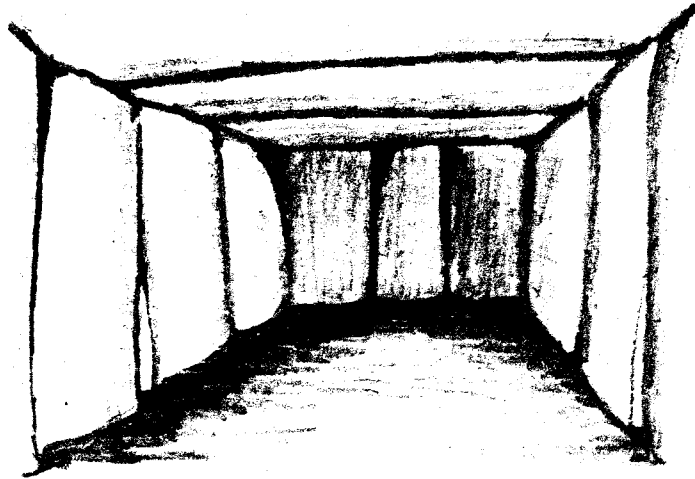


Figure 9. Stone Chamber - A subterranean enclosure, walled and roofed with stones.



Figure 10. Stone Ring (Type 1) - A circular or roughly circular arrangement of contiguous stones whose resultant diameter is less than ten meters.

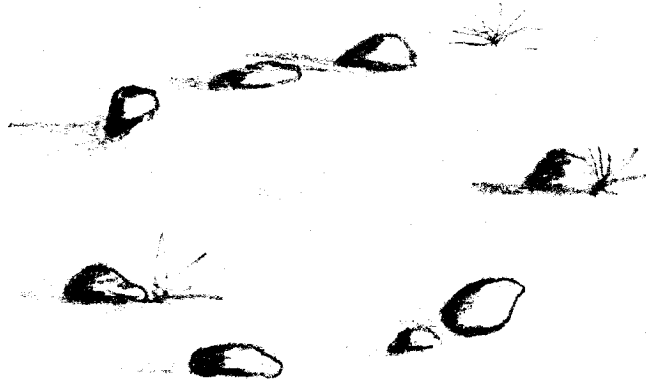


Figure 11. Stone Ring (Type 2) - A circular or roughly circular arrangement of non-contiguous stones whose resultant diameter is less than ten meters.



Figure 12. Stone Circle - Five or more non-contiguous stones, stone features, or a combination of both, situated equidistant from some central point, the resultant diameter of which is at least ten meters.

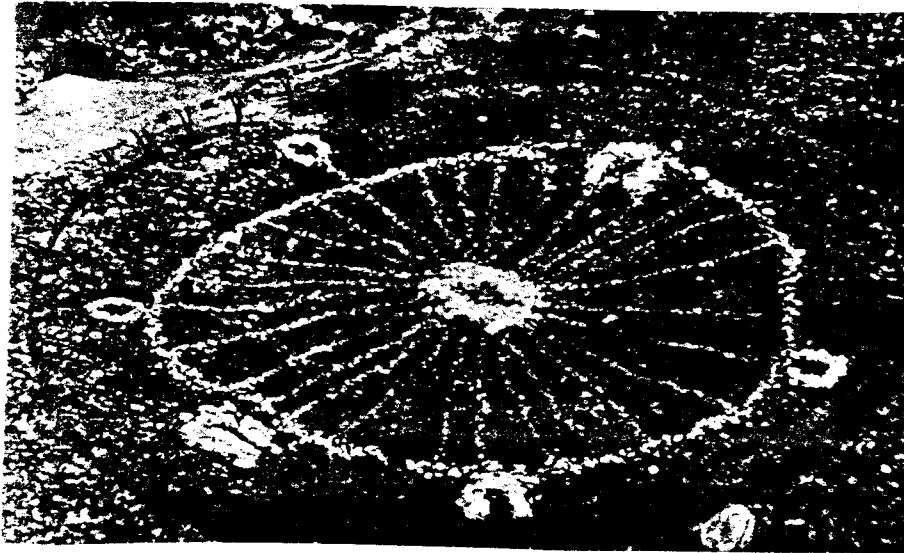


Figure 13. Stone Wheel - A circular or roughly circular arrangement of contiguous stones, whose resultant diameter is at least ten meters. Wheels may incorporate radiants in their construction.

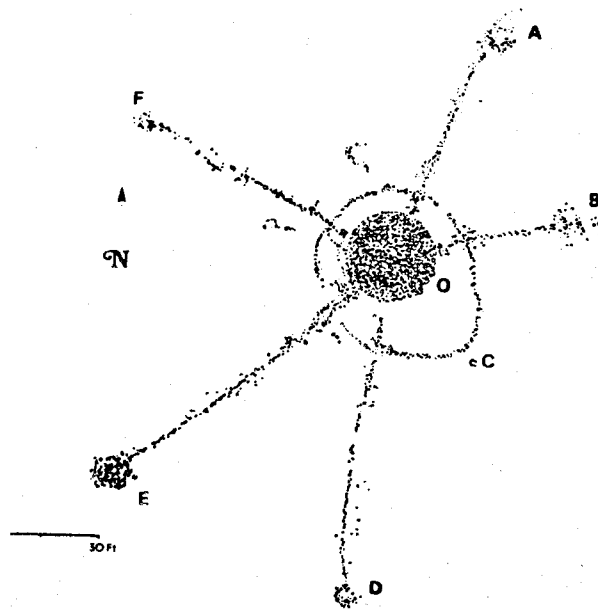


Figure 14. Stone Radiant - Three or more alignments of contiguous stones that extend outward from a central point.

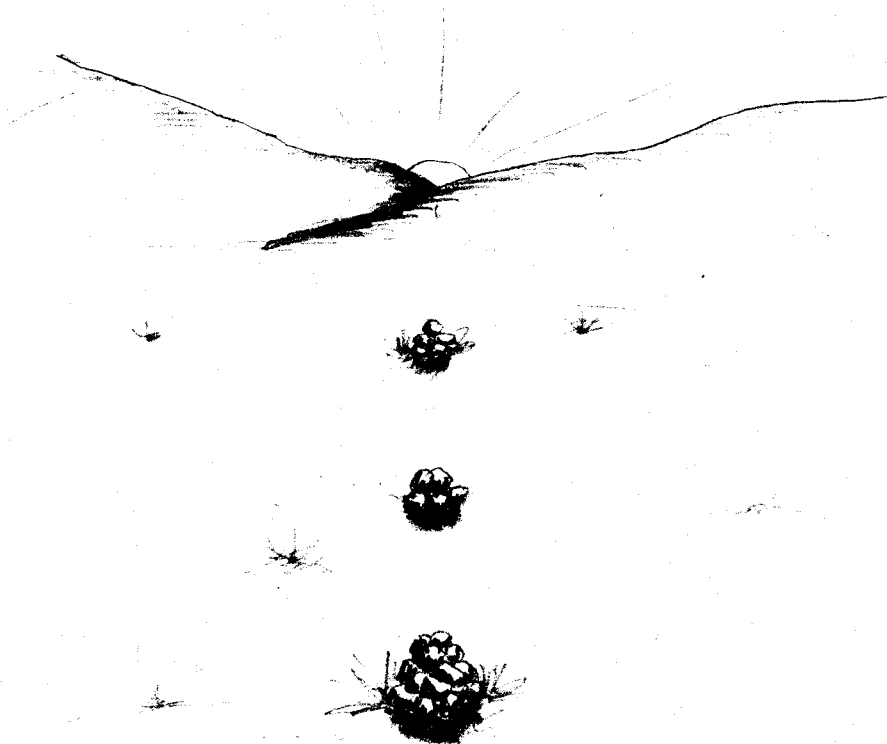


Figure 15. Alignments - Linear arrangements of non-contiguous stones or stone features.

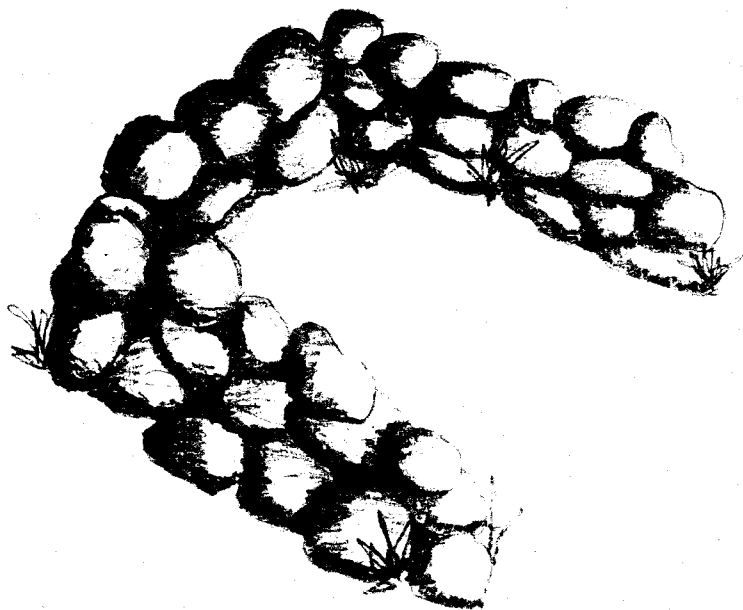


Figure 16. Stone Enclosure (Type 1) - A low, roofless, semicircular wall of contiguous stones. Enclosures never exceed four meters in any horizontal dimension.

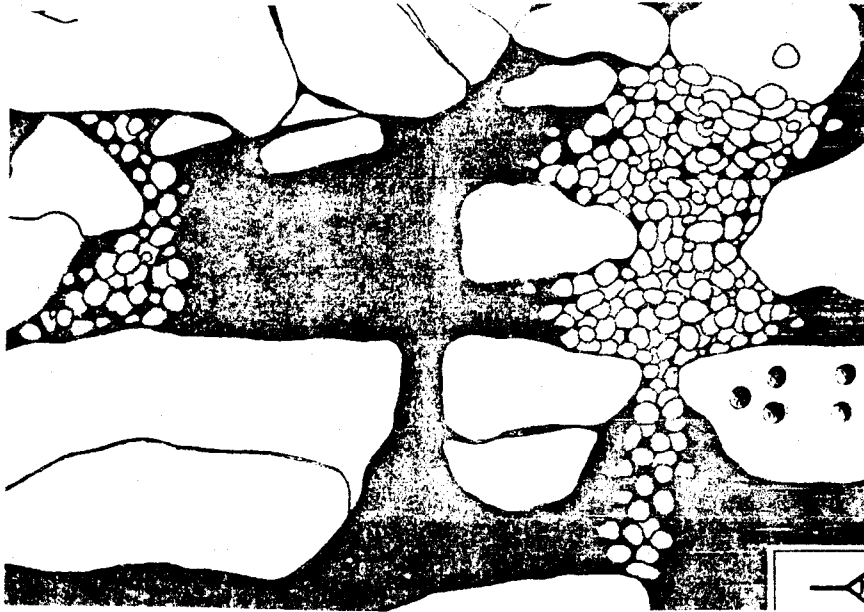


Figure 17. Stone Enclosure (Type 2) - A space of any size enclosed by irregularly piling stones around a perimeter. The perimeter may include natural stone outcroppings.



Figure 18. Perched Stone. - A large stone supported from underneath by one or more non-contiguous stones.



Figure 19. Stone Effigy Arrangement - An arrangement of stones, the resultant outline of which represents a human being or animal.

AN INVESTIGATION OF POSITIONAL ATTRIBUTES

If the statement, "The more severe the limitation on the form of an object that a function imposes, the more reliable is the ascription of that function." (Salmon 1982) is true, then it should logically follow that, the more severe the limitation on the position of an object that a function imposes, the more reliable is the ascription of that function.

The generally passive nature of stone features and their lack of use wear patterns, as well as the fact that similarly shaped stone features perform different functions equally well, forces the investigator to address attributes other than those of shape in order to differentiate between the functions of different stone features. Positional attributes, or those attributes that deal with where a stone feature is placed in the environment, seem ideal to address for two reasons.

1. It may be reasonably assumed that the positions of stone features, if still intact, have not changed through time
2. Positional data can be recorded discretely thus eliminating the difficulties of having two people measuring the same object in differing manners.

Recording positional data involves the critical question of selecting the appropriate attributes to address and which to ignore. The work of Merrilee Salmon (1982) suggests that only those particular

positional attributes which impose a limitation on the placement of a stone feature need be addressed.

With any single stone feature, the investigator must remain neutral until the function of a stone feature is revealed through an analysis of its attributes. Therefore, he must not prejudice himself against or in favor of one function or another. He must address every positional attribute that has a causal relationship with every function ever reported to be associated with a stone feature. Although all the actual functions to which stone features have been put may never be known, a list, such as the one proposed, would be useful if it were extensive enough.

The following is a list of the functions that have been ascribed to stone features. It is by no means exhaustive but it represents a large enough segment of all the stone feature uses found in the literature to provide a basis for this study.

USES OF STONE FEATURES

1. Vision Quest Site (West, Steinfeld 1983-4, Cressman 1956)
2. Hunting Blind (Frison 1978, Butler 1978, Silvermoon 1985)
3. Raw Material Locator (Harrington n.d.)
4. Wind Break (Walker 1966)
5. Machine Gun Emplacement (Follansbee and Francis 1980, Lyman et al. 1983)
6. Storage Pit, Cache (Walker 1966)
7. Tipi Weights
8. Hearth (Chartkoff 1983)
9. Camas Oven (White 1980)
10. Sweat House Floor
11. Trail Marker (Walker 1966, Chartkoff 1983)
12. Boundary Marker (Harrington n.d.)
13. Prayer Seat (Chartkoff 1983)
14. Astronomical Place
15. House Pit Pole Footing
16. Burial Markers (Campbell 1984)

17. Stone Disposal Site (Campbell 1984)
18. Dam (Clark 1885)
19. Game Runs, Traps (Frison 1978)
20. Fish Traps
21. Spatial Marker (Campbell 1984)
22. Ceremonial Place (Oxendine 1981)

After producing this list, the next step is to list all of the positional attributes that are imposed by each of these functional categories. Obviously, there are other non-positional attributes associated with these functions but for the present they will be ignored.

POSITIONAL ATTRIBUTES ASSOCIATED WITH SPECIFIC FUNCTIONS

1. Vision Quest Site - a. A panorama with a large angular extent b. High elevation relative to the surrounding area c. located next to a bluff or cliff edge.
2. Hunting Blind - a. Topography funnels animal(s) toward site b. presence of game trails next to site.
3. Raw Material Locator - a. Lithic material source in immediate area b. Pigment source in immediate area.
4. Wind Break - Structure protects from prominent wind direction.
5. Machine Gun Emplacement - a. Located on high ground b. Wide field of fire within range of gun (not necessarily a panoramic view)
6. Storage Pit - Location offers good drainage.
7. Tipi Weights - a. Slope of land is not severe enough to make an uncomfortable living surface.
8. Hearth - No positional attributes
9. Camas Oven - a. Good drainage b. Cobble or heating element source nearby.
10. Sweat House Floor - No positional attributes.

11. Trail Marker - Area has no or is out of sight of any landmarks
12. Boundary Marker - Located along or on a definite or easily distinguishable geographic feature (river, ridge, etc.)
13. Prayer Seat - Same as a vision quest site.
14. Astronomical Place - Horizon visible where certain astronomical events can be observed (solstice, equinox, heliacal risings, etc.).
15. House Pit Pole Footings - Located within a recognizeable house pit.
16. Burial Markers - No positional attributes that are archaeologically recognizable without ethnographic references.
17. Stone Disposal Site- Located next to farm land.
18. Dam - Located within a water channel either ancient or existing.
19. Fish Trap - Same as dam.
20. Game Run - No positional attributes
21. Spatial Marking - No positional attributes.
22. Ceremonial Place - No positional attributes that are archaeologically recognizable without ethnographic references.

One can readily see from the above list that some of the functions associated with stone features do not impose any archaeologically identifiable positional attributes on those features. Also, some of the positional attributes are identical for more than one functional category. Therefore, addressing positional attributes alone can only narrow down the range of possible functions that can be associated with a given stone feature. Other attributes must, therefore, be addressed

in conjunction with positional attributes in order to more fully delineate specific stone feature categories. While these other ancillary attributes are not positional in nature, they are also imposed by the functions associated with stone features.

A list of these ancillary attributes, along with the positional attributes, would constitute a useful attribute checklist that might be used at a stone feature site to record not only the attributes a certain stone feature might possess, but also which attributes it does not exhibit. By addressing both the positional and the ancillary attribute imposed by the functions associated with stone features, it should be possible to replicably determine the functions of stone features.

The above list of positional attributes fails to supply specific attributes necessary to differentiate nine functional categories. These are Hearth, Sweat House Floor, Prayer Seat, Vision Quest Site, Burial Marker, Fish Trap, Dam, Spatial Marker, and Ceremonial Place. By examining each of these categories separately, ancillary attributes may be discovered that can be used in identifying these functional categories archaeologically. It is these ancillary attributes that are added to the list of positional attributes that will comprise the attribute checklist mentioned above.

ANCILLARY ATTRIBUTES WHICH DIFFERENTIATE FUNCTIONAL CATEGORIES

1. Hearth - a. Carbon b. Fire hardened earth c. Fire cracked rock.
2. Sweat House Floor - a. If paved at all, sweat house floors were paved with cobbles presumably cobbles that were easily walked and sat upon.
b. No massive amounts of carbon would be expected

because stones were heated outside the sweat house and brought into it.

3. Prayer Seat - Prayer seats have specific shapes which can either be type 1 enclosures or rarely stone pits.
4. Vision Quest Site - The absence of a Type 1 enclosure or a stone pit differentiates this category by default.
5. Burial Marker - a. Bones b. Grave goods.
6. Fish Trap - Completely enclosed by water channel
7. Dam - Limits of feature extend beyond the limit of the water channel.
8. Spatial Marking - A very definite area is enclosed by either walls or a Type 2 Enclosure.
9. Ceremonial Place - No ancillary attributes that can be archaeologically recognized without ethnographic references.

One can readily see that all 22 functional categories can be differentiated by the combined use of positional and ancillary attributes except that of Ceremonial Place. This is of little concern because Ceremonial Place is quite a nebulous category. It is included in this list only because of its occurrence in the literature. It is doubtful that a generalized Ceremonial Place could be recognized archaeologically without the assistance of ethnographic records or living informants.

METHODOLOGY

The Chiloquin Ranger District of the Winema National Forest in southern Oregon was chosen as the study area. This was done for a variety of reasons. First, the area had been extensively surveyed in conjunction with timber harvesting activities; second, an extensive file of recorded archaeological sites was available.

The study area is bounded on the north by Klamath Marsh, on the northeast by the Williamson River, on the east by the Sycan River and the Sprague River, on the south by a line four miles north and running parallel with the northern boundary of Township 38 S., and on the west by Highway 97 from Modoc Point in the south to its intersection with latitude $42^{\circ}45'$ N. (Fig. 20).

The site reports on file at the Winema National Forest Office for the Chiloquin Ranger District were reviewed and all sites that were reported as stone feature sites were plotted on their respective 15' maps. In all, 104 stone feature sites were plotted.

These 104 sites were randomly assigned numbers by placing all the numbers between 001 and 104 inclusive into a hat and drawing out one number, without replacement, for each of the plotted sites.

It was decided to select a 30% sample of these sites. In order to choose a representative, statistically valid sample of these sites, 32 numbers ranging between 001 and 104 were produced by means of a random number table. These numbers are:

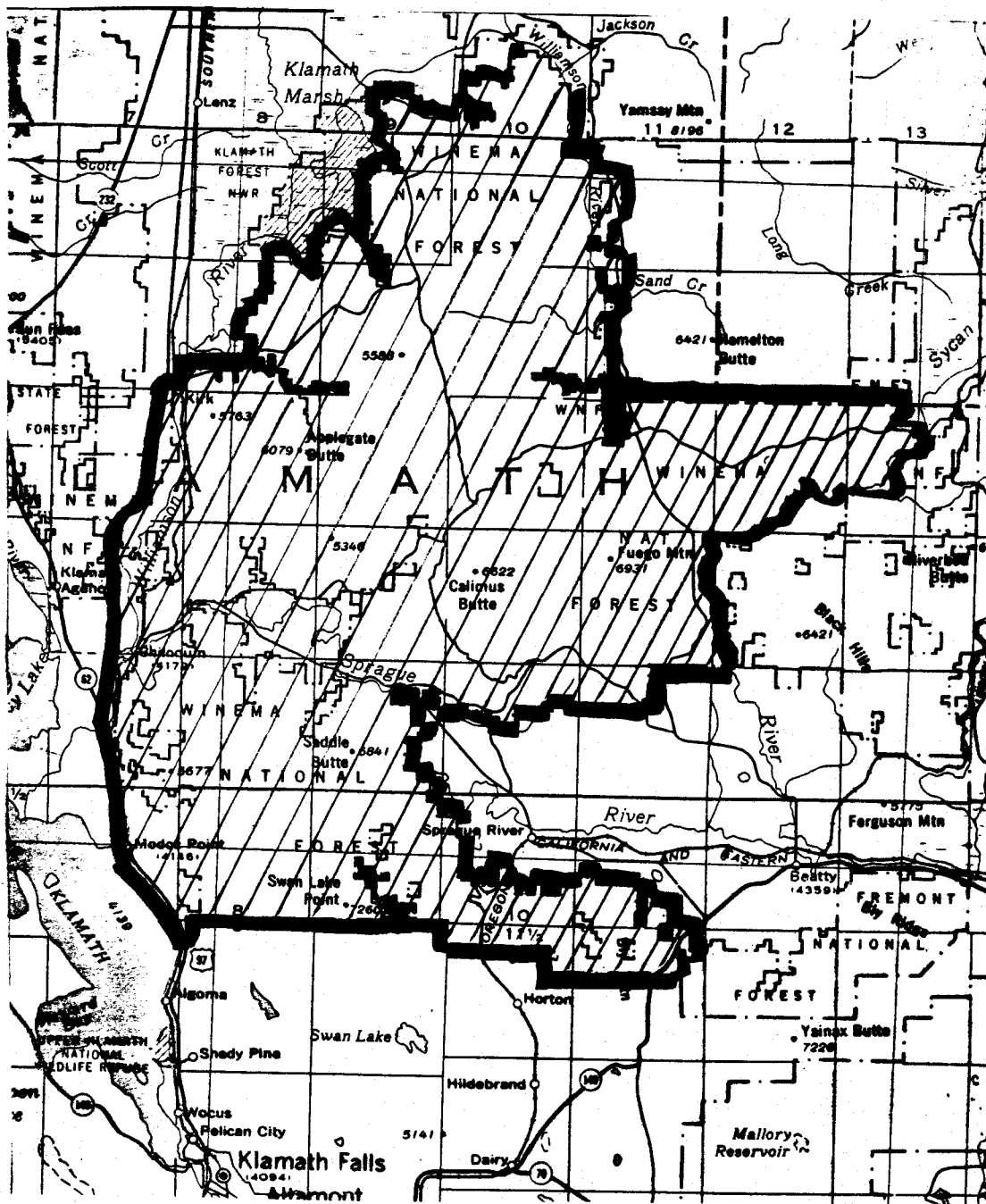


Figure 20. Map of Study Area. Winema National Forest, Chiloquin Ranger District, Oregon.

1. 010	11. 065	21. 083
2. 063	12. 028	22. 023
3. 018	13. 086	23. 043
4. 080	14. 003	24. 055
5. 084	15. 004	25. 087
6. 061	16. 075	26. 085
7. 009	17. 092	27. 002
8. 050	18. 068	28. 026
9. 044	19. 095	29. 073
10. 071	20. 103	30. 036
		31. 040
		32. 056

The above 32 sites selected were to be visited and the stone features contained therein described according to the classification set forth by this researcher. Later in this chapter the reasons for a modification of this strategy will be discussed.

A Data Collection Sheet was produced that contained both positional and ancillary attributes to be recorded at all sites. An example of the Data Collection Sheet is provided in Appendix A.

A major problem was encountered immediately upon arrival in the field. It was quickly evident, after visiting five of the randomly selected sites that the validity of the site reports indicating these sites as stone feature sites was highly suspect. The first five sites that were visited contained either highly suspect "stone features" or no stone features at all (Sites 028, 080, 018, 084, and 085). This situation demanded an immediate change in strategy. Time and financial constraints dictated that field research be accomplished in July of 1986.

The problems to be addressed in the field were as follows. First, if the first five reported sites were, in fact, not stone feature sites how many stone feature sites actually existed in the study area? Second, if 104 was not the actual number of stone feature sites located in the study area, then a 30% sample of the actual number of sites would consist of a proportionately lower number of sites than the originally

selected 32. Third, if there were less than 104 actual stone feature sites, then the randomly selected sites that were to be visited would not be a true random sample of the actual number of sites in the study area.

These problems could not be resolved in the field. The inexplicable overrepresentation of the number of stone feature sites in the study area had reduced the sampling procedure for this investigation to a nearly useless statistical exercise.

In order to make the most of the time remaining, it was decided to collect as large a sample as possible by visiting as many reported sites as possible. From this collected sample, an estimate of the actual number of stone feature sites could be roughly calculated and, hopefully, the number of sites visited would reflect as closely as possible, a 30% sample.

The original sampling strategy called for the description of 32 sites in order to obtain a 30% sample of 104 sites. Because of the inaccuracy of that total, a 30% sample would consist of less than 32 sites. How many sites were needed for a 30% sample of the actual number of stone feature sites was not known beforehand because there was no way to calculate how many actual sites there were.

In all, 29 reported sites out of the originally reported 104 were visited. Of these 29, 15 were either non-existent or had been reported as individual sites when they were actually part of a larger site. These 15 non-sites constitute 52% of the visited sites. Interpolating this number into an estimate of the number of actual sites in the study area yields a total of 50 actual sites out of a reported 104. The sites

that were visited and found to actually contain stone features represent a 28% sample of the calculated number of actual stone feature sites in the area. This figure was deemed reasonably close to the desired 30% sample and sufficient for this study.

The following is a list of the recorded sites along with photographs of each and attributes exhibited at each individual location. Each attribute addressed at a visited site was given an individual number. The attributes exhibited at each site were recorded by means of these numbers and are reflected below the brief description of each site. The meaning of each number may be found by referring to either the example of the Data Collection Sheet (Appendix 1) or the final Data Sheet (pages 61-63).

Site 028



Figure 21. Although this site seems to be a natural formation, there is a remote chance that it was humanly constructed due to abundant obsidian debitage in the area. Because of the doubt over this site's validity, it was not included in the data sheet, although its characteristics were recorded here.

Attributes - 021A, 023, 041, 046, 052, (deer, elk), 054, 063, 071, 085, 086, 101, 106, 108, 115, 119, 121.



Figure 22. Site 028.

Site 019



Figure 23. Site 019 Type 1 Enclosure and a stone pile in foreground.

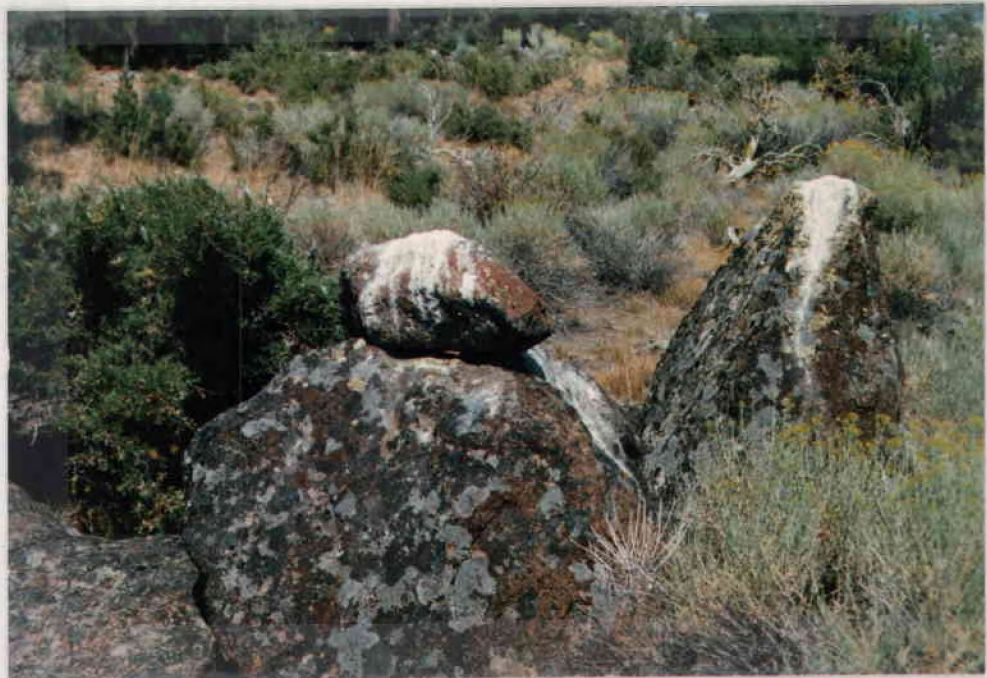


Figure 24. Site 019 Isolate used as a perch by turkey buzzards.

Site 019 consists of a Type 1 Enclosure, one isolate and a pile. Vegetation in the area is bitterbrush, Ponderosa Pine, rabbit brush and some very sparse fescue. It is located on a ridge overlooking Klamath Marsh. Lichen growth is heavy on all stones in the area. Below the ridge is a small rock shelter which showed no signs of human habitation. Pictographs were reported at this site but none was found. It is possible that previous investigators mistook the bright orange lichen as paint.

Attributes - 021A, 022, 028, 034, 041, 048, 052 (deer, elk), 056, 061, 069, 071, 085, 086, 106, 108, 114, 121.

Site 064



Figure 25. Site 064 consists of a single stone pile constructed of fairly large stones and a single isolate approximately two meters away. It is located on a ridge overlooking Klamath Marsh. Lichen growth in the area was moderate.

Attributes - 021A, 022, 026, 034, 042, 048, 052 (deer, elk), 056, 062, 063, 064, 085, 106, 108, 114, 121.

Site 051



Figure 26. Site 051 Isolates.



Figure 27. Site 051 Two stacks and one isolate.

Site 051 consists of two stacks and three isolates. They are all constructed of readily available material. Lichen growth is light to moderate in the area. The site overlooks Klamath Marsh.

Attributes - 021A, 022, 024, 035, 042, 048, 052 (deer, elk), 056, 062, 063, 064, 069, 071, 085, 086, 106, 108, 114, 120.

Site 099



Figure 28. Site 099 consists of two stacks constructed from readily available granite. Vegetation is rabbitbrush, bitterbrush, manzanita, and Ponderosa Pine.

Attributes - 021A, 022, 026, 035, 041, 048, 052 (deer, elk), 056, 062, 063, 064, 069, 071, 085, 086, 106, 108, 115, 121.

Site 066



Figure 29. Site 066 is a small rock pile of at least nine medium sized cobbles located on an outcropping of rock overlooking Wocus Bay. Manzanita grows on the top of this outcropping and so the pile is located back and away from the slope of the cliff.

Attributes - 002, 026, 034, 041, 048, 052 (deer, elk), 056, 062, 063, 064, 069, 071, 085, 086, 106, 114, 121.

Site 089



Figure 30. Site 089 Stone Pile.



Figure 31. Site 089 Isolate

Elements of Site 089 are strewn across approximately 100 meters. The site consists of a single rock stack and numerous isolates. All elements of this site are located along a ridge overlooking Wocus Bay.

Attributes - 021A, 022, 026, 035, 042, 048, 052 (deer, elk), 056, 062, 063, 069, 071, 085, 086, 106, 108, 115, 121.

Site 024



Figure 32. Site 024 consists of a series of stone isolates and a single stack which marks the northernmost feature in this complex. The site has been completely logged around and it is quite amazing that this single stack still exists. It is impossible to estimate how many elements of this complex were either destroyed or damaged by this logging activity.

Attributes - 021A, 026, 034, 042, 048, 052 (deer, elk), 056, 062, 063, 064, 069, 071, 085, 086, 106, 108, 114, 120.

Site 012



Figure 33. Site 012 consists of a single stack composed of two stones. The entire area surrounding this site has been logged and one tree has been felled within 30 cm. of the stack.

Attributes - 003, 026, 035, 041, 048, 052 (deer, elk), 054, 062, 063, 064, 069, 071, 085, 086, 106, 114, 122.

Site 057



Figure 34. Site 057 Stone Pile.



Figure 35. Site 057 Stone Isolates.

Site 057 consists of one stone pile and at least six isolates. They are all located on a bedrock outcropping on top of a ridge. There is a good field of view from this entire area.

Attributes - 021A, 022, 027, 034, 041, 048, 052 (deer, elk), 056, 062, 063, 064, 069, 071, 085, 086, 106, 108, 115, 121.

Site 001



Figure 36. Site 001 consists of a single stone pile. It is unusual in that it is placed on a ridge with an eastern orientation.

Attributes - 002, 025, 031, 041, 048, 052 (deer, elk), 056, 064, 071, 085, 086, 106, 112, 121.

Site 104



Figure 37. Site 104 looking to the southwest along the ridge.



Figure 38. Site 104 looking from the middle of the site towards the northwest.

Site 104



Figure 39. Site 104 from behind the site looking down the drainage toward the southwest.

Site 104 is located on a bedrock outcrop that takes in approximately 180° of arc in a roughly semicircular pattern. This arc is approximately 75 meters long. It overlooks a small drainage but is not positioned a great height above the floor of the drainage. It is only ten meters above the drainage floor.

Attributes - 021A, 027, 034, 041, 048, 052 (deer, elk), 056, 062, 063, 064, 069, 071, 085, 086, 106, 108, 116, 121.

Site 030



Figure 40. Site 030 has been almost totally destroyed by logging activities (Hallet cutting units 9 and 10). All stone features except one have been obliterated. The only feature to survive was on top of a large bedrock outcrop at the highest point of the ridge. Even this remaining isolate shows evidence of having been recently pushed over. This site is so destroyed that its data is suspect. Therefore, it is not included on the data sheet although its attributes are recorded here.

Attributes - 021A, 022, 028, 035, 042, 048, 052 (deer, elk), 056, 062, 063, 064, 069, 071, 085, 086, 102, 106, 108, 115, 121.

Site 060



Figure 41. Site 060 Large Stone Pile in northern portion of the site.



Figure 42. Site 060 Small Stone Pile in northern portion of the site.

Site 060



Figure 43. Site 060 Isolates in mid portion of the site.



Figure 44. Site 060 Stacks, piles, and isolates in mid portion of the site.

Site 060



Figure 45. Site 060 Stone Stack.



Figure 46. Site 060 various isolates and piles in mid portion of the site.

Site 060



Figure 47. Site 060 Various piles and stacks in mid portion of the site.

Site 060 is composed of two parts separated by approximately 40 meters. The southern portion consists of a single stone pile and one isolate. This portion has been logged over and it is impossible to tell if any other features have been destroyed. The northern portion of this site is quite complex with at least five isolates, one pile, a stack and at least one fallen stack. The southern half of this site lies a small distance away from and to the east of the ridge while the northern half is positioned right on the ridge itself.

Attributes - 021A, 025, 034, 042, 048, 052 (deer, elk), 054, 062, 063, 071, 085, 086, 106, 108, 114, 122.

Site 009



Figure 48. Site 009. Rock Stack. In addition to this stack, there is also a fallen stack and one isolate. Both were located in very heavy manzanita and were not photographable.

Attributes - 021A, 022, 027, 033, 042, 048, 052 (deer, elk), 056, 062, 063, 071, 085, 056, 106, 108, 113, 121.

Site 015



Figure 49. Site 015 Rock Stack.



Figure 50. Site 015 Rock Stack (to right of tree) and a rock pile (top left).

Site 015 is located on the top of a very steep slope. It consists of a stone pile and two stone stacks. There are many large trees in the area and therefore there was little if any panoramic view from the site.

Attributes - 021A, 022, 023, 035, 042, 048, 052 (deer, elk), 056, 062, 063, 071, 082, 085, 086, 106, 108, 115, 122.

Displaying all of the previous data graphically produces the following matrices:

Table 3. Attributes 64-94.

DATA SHEET
(Attributes Associated with Specific Functions)

[illegible]

DISCUSSION

When viewing the Data Sheet on pages 62-65, it, at first, seems that the classification of stone features based on morphology presented in the first portion of this thesis and reflected in attributes 1-21 on the Data Sheet, is of little use. Only three sites (066, 012, and 001) were classified according to that classification. A closer inspection will show that this is not the case. All but three of the recorded sites contained multiple stone features and therefore were classified as "other" (attribute 21A). All sites recorded as possessing attribute 21A were, instead, classified as exhibiting attribute 108 (multiple features). All individual stone features found at these multiple stone feature sites were easily described according to the morphological classification presented in this thesis.

All sites visited were located on either a bluff or butte (attribute 48) and therefore their locations offered a panoramic view of at least 45°. 12 of the sites offered panoramas of over 90°. The terrain of the study area was very hilly and/or mountainous, therefore, the fact that all of the sites were located between 4,000 ft. and 6,000 ft. is due more to the topography of the area than to any conscious placement of the sites between those elevations. Well over 60% of the study area lies between those marks.

Deer and elk were available in all areas visited and game trails were abundant. However, none of these trails was close to any of the

described sites. This fact led to the conclusion that none of the sites were used as hunting blinds, at least in recent times. Game trails are transitory features at best and to use their absence in the vicinity of the stone features examined in this study as the sole criteria for eliminating the possibility that some of these features were used as hunting blinds is invalid. Therefore other factors were addressed in order to arrive at this conclusion (see conclusion).

Lichen growth on the surface of the stone features was recorded as to whether it was absent, light, medium or heavy (attributes 120-123). This was done to supply a rough determination of the age of the sites. It, by no means, was recorded to attempt to date any of the features. Heavy lichen growth might be used to imply that a stone feature in the study area was constructed prehistorically, but without any detailed knowledge of the microenvironments to be found and their effect on the growth rate of lichens, it is impossible to estimate, even roughly, the date of their construction.

The remainder of the data shown on the Data Sheet are self explanatory and need no further elaboration.

CONCLUSION

Examination of the sites found in the study area leads to the conclusion that 15 of the 22 possible functional categories of stone features may be eliminated by factors of size, structure, and/or position.

The first group of functions can be eliminated on the basis of their size. That is, the stone feature's physical size makes it impossible to have functioned in the following manner:

Spatial Marker - Spatial markers distinctly divide a geographic area into at least two areas, one inside the spatial markers and one outside. None of the sites recorded enclosed an area. They were merely placed along a ridge or cliff face.

Game Run - Features associated with game runs are generally extremely large, sometimes covering many acres. None of the sites investigated even approached that size. Also, none of the sites could have conceivably channelled animals into a restricted area where they might be more easily killed. Despite the fact that deer and elk were available in the vicinity of all sites visited, there were no well defined game trails in the immediate area.

Hunting Blind - Without reiterating the appropriate observations listed under the game run functional category, the chief reason for the exclusion of the hunting blind category is that none of the features was large enough to hide a man.

Wind Breaks - For the same reason that the stone features were too small to hide a man, they are also too small to protect a man from the wind.

Stone Disposal Site - Disposal sites are connected with agricultural practices. Field clearing produced large piles of stones that individually contained hundreds of stones. None of the sites described approached this number of stones.

Machine Gun Emplacement - All the described features were too small either to hide a man or to protect him from return fire.

The second group of functional categories can be eliminated on the basis of structure. In other words, the structure of the stone feature makes it impossible for that feature to have functioned in the following manner:

Sweathouse Floor - Sweathouse floors were generally made by paving an area (if it was paved at all) with contiguous stones. No pavements were found.

Camas Oven - The first step in the construction of a camas oven is to lay down a thick pavement of cobbles on well drained soil. No pavements were found and no sites were located on well drained soil.

Hearth - None of the features investigated protects from the wind. Also no carbon was found at any of the sites.

Storage Pit - The word pit implies that a feature has been excavated into the ground. All features investigated were located above ground.

House Pit Pole Footings - There was no evidence at any of the sites that the features that they contained had anything to do with habitation sites. Site 028 had extensive lithics but because of the questionable nature of its "stone features" it was not included with the others on the data sheet.

Tipi Weights - Tipi rings of the plains area are described as Type 1 stone rings. No features of this type were found.

Three further functional categories may be eliminated on the basis of their positional attributes. Where they are located makes it impossible for them to have functioned as follows:

Fishtrap - No sites were located in water channels.

Dam - No sites were located in water channels.

Raw Material Location Marker - No lithic or pigment sources were found in the immediate vicinity of any of the sites.

With all the above functional categories eliminated, the range of possible functions to which the investigated stone feature sites could have been put is narrowed down to six. These categories are:

Astronomical Place, Boundary Marker, Vision Quest Site, Prayer Seat, Burial Site, and Trail Marker.

The functional category of Astronomical Place may also be eliminated since the majority of the sites are oriented towards the west and southwest. Astronomically aligned features are usually oriented towards rising celestial events such as solstice sunrises, equinox sunrises, and the heliacal rising of certain stars. These rising events are observable towards the northeast to the southeast. Only one site, Site 001, had an orientation towards the east. However, neither the natural horizon nor any prominent horizon feature was visible from its location.

It is possible to observe both equinox and solstice sunsets if a site were oriented towards the west. However, one would expect the stone features at such a site to be aligned in such a way as to indicate a point on the horizon where those events take place. This was not the case at any of the sites investigated.

In order for any of the sites to have functioned as a burial site, one would expect to find either one or a combination of three things: bones, ashes, and grave goods. Without ethnographic references and/or native informants, it would be impossible to recognize a burial site archaeologically without these. All sites investigated sat upon bedrock so there was no need to excavate below the surface. No bone

ashes or grave goods were found, therefore, it seems safe to assume that none of the sites functioned in this manner.

The functional categories of Prayer Seat and Vision Quest Site are necessarily very similar. Both deal with Native American belief systems and were used in order to receive spirit power during isolated retreats from everyday life. However, prayer seats were used by shamen on a continuing basis while vision quest sites were used by all young initiates, usually on a one time basis (Wylie 1976). Regardless of how many times a site was used, they would be impossible to differentiate from one another archaeologically if it were not for one fact. Prayer seats were constructed in very specific ways. By far, the most common way corresponds to a Type 1 Enclosure (Chartkoff 1983). The other would be a Stone Pit (Wylie 1976). Therefore, if a stone feature exhibits all the attributes necessary for a vision quest site and also contains a Type 1 Enclosure or Stone Pit, one could infer it was a Prayer Seat. Only one Type 1 Enclosure was found (Site 019). This site exhibited all the attributes of a vision quest site so, in view of this, it seems likely that this site can be considered a Prayer Seat.

The remaining stone features in the study area, then, should fall under the functional categories of either Boundary Markers, Trail Markers, or Vision Quest Sites. During a vision quest the initiate would pile stones. This would accomplish at least two things. First, it would aid in the initiate's exhaustion, thus more rapidly producing a physical state conducive to hallucination, and second, allow the elders of the group to have physical proof that the initiate had remained in the designated area a sufficient amount of time. One would expect that the

stone piles associated with vision quest sites would be more elaborate or at least to contain more rocks than stone piles associated with trail markers or boundary markers. After all, placing one or two rocks in a rough pile is hardly an exhausting task. Trail markers and boundary markers could consist of very minimal structures such as stone isolates, piles, and stacks as long as they were placed conspicuously in the environment.

Trail markers, while being composed of the same minimal structures as boundary markers, would need to be placed in geographical areas that offered no landmarks or clues to help guide a person towards the right direction. For example, no trail marker would be needed if a distant mountain peak or a lake were visible to keep a traveller oriented. Similarly, a ridge that slopes away on both sides may keep a traveller moving in the right direction as long as he continues to walk uphill.

Boundary markers, on the other hand, would be placed in conspicuous spots that would be easily observed by anyone passing the area. They could be placed in areas that offered abundant landmarks and other directional aids.

If these assumptions and observations are true, then an examination of the data collected for each of the described sites should reveal whether it is a vision quest site, a boundary marker, or a trail marker. The following is an examination of each of the sites described for this thesis:

Site 019 - The characterizing attribute of this site is the Type 1 Enclosure. Although there were two other features at this site (one

isolate and one pile) they were minimal. This site also has a spectacular panoramic view (over 270°). This site's position exhibits all the necessary attributes for a vision quest site without containing numerous stone features. It is located at the end of a ridge, therefore, it is unlikely to have functioned as a trail marker. The only place to go after visiting this site is to along the same trail one used to get there. This site, then, is classified as a Prayer Seat.

Sites 064, 051, 099, 066, 089, 024, 057, 001, 104, 030, 060, and 015 all may be classified as boundary markers. The most important attributes addressed in this classification, besides those used to originally narrow down the possible functional categories, were those between numbers 81 and 85. Of all the above sites, only one was located such that no geographic landmark was visible. However, this site (Site 015) was located on the top of a very steep slope making it very unlikely that any trail marker was necessary in this area. All of the stone features in these sites have been placed conspicuously in areas that offer ample geographic landmarks and other directional cues. Their constructions are all simple, consisting of isolates, small piles, and stacks of no more than three stones. Although these sites have been classified as boundary markers, there is no way to determine who placed them there. One would assume that Native Americans were responsible for it seems unlikely that European inhabitants near the area would need to set up boundaries in this manner.

Site 009, while giving all the outward signs of being a boundary

marker, will not be classified here. Because of the extremely heavy overgrowth of manzanita, it is uncertain whether or not the site has been adequately described.

Site 012 will not be classified here either. Logging activities in the area have been extensive and it is not certain that the description of the site is adequate enough to truly represent the site. It is highly likely that portions of this site have been obliterated.

No attempt was made to date any of the above sites. The only indication of their antiquity was the amount of lichen growth on their surface. It can be safely assumed that a heavy covering of lichen would indicate an earlier date of construction, however, without detailed knowledge of microenvironmental effects on lichen growth, it is impossible to judge the relative antiquities of different stone features at different geographical locations. If lichen growth is observed on stone surfaces in the interior of stone features and not on outside surfaces, this may be taken as an indication that a stone feature has recently been constructed using stones that have been exposed to the elements in a different orientation than they are now. This "jumbled" construction may enable an investigator to separate historically constructed structures from those built prehistorically. However, once again, without detailed knowledge about lichen growth, this should be considered only the crudest of dating techniques.

In conclusion, it has been shown that the stone feature sites in the Chiloquin District of the Winema National Forest show a marked

similarity to one another. It has also been shown, through the use of a data collection sheet that addresses each site in an identical manner, that they are far from identical. The data recovered here has allowed the investigator to objectively assess each of several attributes exhibited by these stone features and to judge whether or not an individual attribute has any relevance to the function to which a stone feature was put.

While being far from an all-encompassing method for dealing with the problem of ascertaining the functions of stone features, this thesis has dealt with this problem in a way that can be replicated by other investigators in order to verify its accuracy.

A logical extension of this thesis would be to address verifiably historical stone features such as survey markers, mineral claim markers, or grazing area markers. A study of this sort would have the advantage of working with features with known functions and would provide a verifiable check on its validity.

Regardless of whether a stone feature was constructed prehistorically or historically, the morphological classification presented in the first portion of this thesis will be useful in its description. The classification can be used to describe stone features regardless of the time of their construction (eg. a stone cairn used as a surveyor's marker or a pile used as a miners claim marker). While the list of functional categories may grow at a rapid rate, the list of morphological categories will not. It is hoped that future investigators adding to the functional list will include those attributes (positional, morphological, etc.) that are implied and necessitated by the stone feature's function. Only in

that way will it be possible to create a set of useful and replicable data that can be used to ascertain the functions of stone features.

The combination of the classification of stone features, along with the technique delineated here represent a first attempt at this problem and it is hoped that it has not only illuminated some of the problems involved in the study of stone features, but also provided some insights into the solution of those problems.

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APPENDIX

Appendix 1

DATA COLLECTION SHEET

TYPE OF FEATURE

- 001 ☐ Cairn
 002 ☐ Pile
 003 ☐ Stack
 004 ☐ Pedestalled (Specify) _____
 005 ☐ Wall
 006 ☐ Type 1 Ring
 007 ☐ Type 2 Ring
 008 ☐ Circle
 009 ☐ Wheel
 010 ☐ Radiant
 011 ☐ Type 1 Enclosure
 012 ☐ Type 2 Enclosure
 013 ☐ Perched Stone
 014 ☐ Isolate
 015 ☐ Standing Stone
 016 ☐ Pavement
 017 ☐ Pit
 018 ☐ Chamber
 019 ☐ Sculpted Stone
 020 ☐ Effigy Arrangement
 021 ☐ Other (Describe) _____
 021A ☐ Complex _____

PANORAMA

- 022 ☐ Present, Visible
 023 ☐ Less than 45°
 024 ☐ 45° - 90°
 025 ☐ 91° - 135°
 026 ☐ 136° - 180°
 027 ☐ 181° - 270°
 028 ☐ 271° - 360°

CENTER OF PANORAMA

- 029 ☐ N
 030 ☐ NE
 031 ☐ E
 032 ☐ SE
 033 ☐ S
 034 ☐ SW
 035 ☐ W
 036 ☐ NW

ELEVATION

- 037 ☐ 0-1000 ft.
 038 ☐ 1001-2000 ft.
 039 ☐ 2001-3000 ft.
 040 ☐ 3001-4000 ft.
 041 ☐ 4001-5000 ft.
 042 ☐ 5001-6000 ft.
 043 ☐ Greater than 6000 ft.

GEOGRAPHIC LOCATION

- 044 ☐ Bedrock
 045 ☐ Talus Slope
 046 ☐ River Terrace
 047 ☐ Valley Slope
 048 ☐ Bluff or Butte
 049 ☐ Saddle or depression between two hills or mountains
 050 ☐ Basin
 051 ☐ Other (Specify) _____

FAUNA

- 052 ☐ Yes Are any of the following animals available in this area?
 053 ☐ No ☐ Elk
 ☐ Deer
 ☐ Antelope
 ☐ Sheep (wild)
 ☐ Jackrabbits (not cottontails)

SEASONAL ACCESS

- 054 ☐ Year round
 055 ☐ Summer only
 056 ☐ Late Spring, Summer, and early Fall
 057 ☐ Unknown

RAW MATERIALS

- 058 ☐ Lithic source in area?
 059 ☐ Pigment source in area?
 060 ☐ Other (Specify) _____

WIND

- 061 ☐ Structure protects from prominent wind direction
 062 ☐ structure does not protect from prominent wind direction
 063 ☐ size of feature precludes use as wind break

MACHINE GUN EMPLACEMENT

- 064 _____ Wide field of fire within range of a 50 calibre machine gun.
 065 _____ structure big enough to hide two people and a machine gun.

STORAGE PIT/ CACHE

- 066 _____ Good drainage
 067 _____ located near winter habitation site
 068 _____ internal framework.
 069 _____ Feature too small to function as a dwelling.

TIPI WEIGHTS

- 070 _____ Feature located within habitation site
 071 _____ Stones large enough to act as weights

HEARTH

- 072 _____ Charcoal present
 073 _____ Fire hardened earth present
 074 _____ Fire cracked rock present
 075 _____ Charred organic matter present (Other than charcoal)
 076 _____ Evidence of an oxidizing environment (reddened rocks, etc)

CAMAS OVEN

- 077 _____ Contiguous pavement of fire cracked rocks
 078 _____ Evidence of reducing environment (blackened rocks etc)

SWEAT HOUSE FLOOR

- 079 _____ Smooth contiguous stones
 080 _____ Fire cracked rocks in one area only

TRAIL MARKER

- 081 _____ Located along trailway
 082 _____ No easily recognizable landmark visible.
 083 _____ Not located along a ridge or cliff

BOUNDARY MARKER

- 084 _____ Located between two distinct ethnographic groups
 085 _____ Located on a distinct geographic dividing point (ridge, river, etc.)

PRAYER SEAT

- 086 _____ Located next to a cliff or bluff.

ASTRONOMICAL PLACE

Alignments of stones correspond to:

- 087 ☐ Summer solstice
 088 ☐ Winter solstice
 089 ☐ Equinox
 090 ☐ Lunar maximum
 091 ☐ Lunar minimum
 092 ☐ Pleides heliacal rising
 093 ☐ Sirius heliacal rising
 094 ☐ Other (specify) _____

HOUSE PIT POLE FOOTINGS

- 095 ☐ Located in a house pit

BURIAL MARKER

- 096 ☐ Skeletal material present
 097 ☐ Grave goods present
 098 ☐ Located within ethnographically verified burial area.

STONE DISPOSAL SITE

- 099 ☐ Farming area nearby
 100 ☐ Adjacent area relatively freer of stones than other areas in area.

DAM

- 101 ☐ Located across a water channel

GAME RUN

- 102 ☐ Feature covers a very large geographical area
 103 ☐ People in area ethnographically hunted by driving animals

FISH TRAP

- 104 ☐ Located completely within water channel
 105 ☐ Oriented to catch fish moving upstream

AVAILABILITY OF BUILDING MATERIAL

- 106 ☐ Native
 107 ☐ Exotic
 108 ☐ Are there more than one feature at this site?

WIND DIRECTION

109 ☐ N
110 ☐ NE
111 ☐ E
112 ☐ SE
113 ☐ S
114 ☐ SW
115 ☐ W
116 ☐ NW

PICTOGRAPHS

117 ☐ Present

PETROGLYPHS

118 ☐ Present

ARTIFACTS AND/OR LITHIC DEBITAGE PRESENT?

119 ☐ Yes (Describe) _____

LICHEN GROWTH

120 ☐ Heavy
121 ☐ Medium
122 ☐ Light
123 ☐ Absent