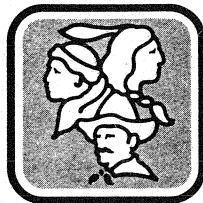
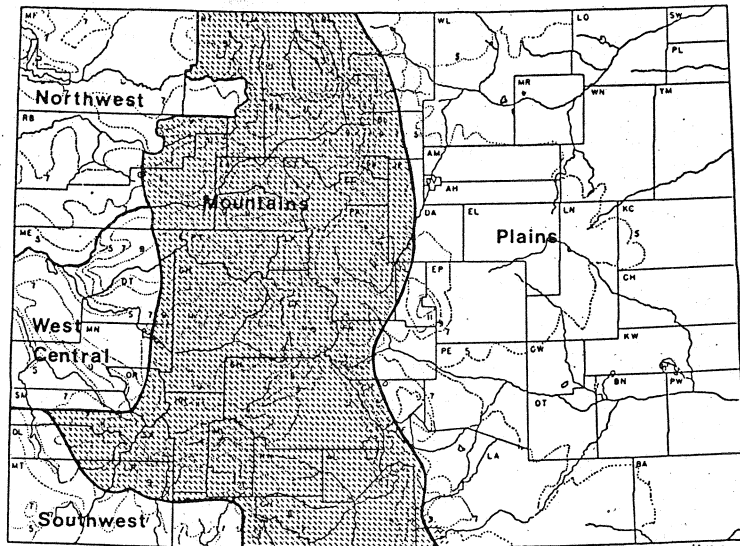


COLORADO MOUNTAINS PREHISTORIC CONTEXT

by

Mark R. Guthrie
Powys Gadd
Renee Johnson
Joseph J. Lischka



COLORADO
HISTORICAL
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Colorado Historical Society
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TABLE OF CONTENTS

ACKNOWLEDGMENTS	i
INTRODUCTION	1
1.0 REGIONAL FRAMEWORK	4
1.1 Boundaries of the Mountains Study Region	4
1.2 Internal Features of the Mountains Study Region	5
1.3 Major Cultural Units	7
1.3.1 Paleo-Indian Tradition	7
1.3.2 Archaic Stage	7
1.3.3 Formative Stage	7
1.3.4 Protohistoric/Historic Period	7
2.0 SPATIAL AND MATERIAL CULTURE DEFINITIONS	8
2.1 Spatial Units	8
2.1.1 Isolated Find	8
2.1.2 Site	8
2.1.3 Locality	8
2.1.4 Region	8
2.1.5 Area	8
2.2 Site Typology	8
2.2.1 Social Space	9
2.2.2 Material Culture	9
2.2.3 Material Culture (structures)	9
2.3 Synthetic Units	10
2.3.1 Component	10
2.3.2 Phase	10
2.3.3 Horizon	11
2.3.4 Tradition	11
2.3.5 Complex	11
2.3.6 Period	11
2.3.7 Stage	11
2.4 Lifeway Descriptions	11
2.4.1 Settlement/Subsistence Patterns	11
2.4.2 Technology	12
2.4.3 Demography	12
2.4.4 Social Organization	12
2.4.5 Foreign Relations	12
3.0 PALEO-INDIAN	12
3.1 Paleo-Indian Stage Unit Definition	12
3.1.1 Pre-Clovis Period	13
3.1.2 Clovis Period	13
3.1.3 Folsom Period	13
3.1.4 Plano Period	14

3.2 Paleo-Indian Culture History	15
3.2.1 Clovis Period	15
3.2.2 Folsom Period	15
3.2.3 Plano Period	16
3.3 Paleo-Indian Lifeways	18
3.4 Paleo-Indian Stage Cultural Processes	19
3.5 Paleo-Indian Stage--Quantity and Quality of Existing Data	20
3.5.1 Evaluation of the Data Base	20
3.5.2 Data Gaps	20
3.5.3 Future Needs	20
3.5.4 Quantity and Physical Condition	21
3.5.5 Important Resources	21
3.6 Paleo-Indian Stage--Research Domains	21
4.0 ARCHAIC	22
4.1 Archaic Stage Unit Definition	22
4.1.1 Early Archaic Period	23
4.1.2 Middle Archaic Period	23
4.1.3 Late Archaic Period	23
4.2 Archaic Stage Culture History	24
4.2.1 Early Archaic Period	24
4.2.2 Middle Archaic Period	28
4.2.3 Late Archaic Period	32
4.3 Archaic Stage Lifeways	34
4.4 Archaic Stage Cultural Processes	35
4.5 Archaic Stage--Quantity and Quality of Existing Data	36
4.5.1 Evaluation of the Data Base	36
4.5.2 Data Gaps	37
4.5.3 Future Needs	37
4.5.4 Quantity and Physical Condition	37
4.5.5 Important Resources	37
4.6 Archaic Stage--Research Domains	37
5.0 FORMATIVE	38
5.1 Formative Stage Unit Definition	38
5.1.1 Anasazi Influence	39
5.1.2 Fremont Influence	39
5.1.3 Woodland Influence	39
5.2 Formative Stage Cultural History for the Mountains Study Region	40
5.3 Formative Stage Lifeways	43
5.4 Formative Stage Cultural Processes	44
5.5 Formative Stage--Quantity and Quality of Existing Data	44
5.5.1 Evaluation of the Data Base	44
5.5.2 Data Gaps	44
5.5.3 Future Needs	44
5.5.4 Quantity and Physical Condition	44
5.5.5 Important Resources	45

5.6 Formative Stage--Research Domains	45
6.0 PROTOHISTORIC/HISTORIC	45
6.1 Protohistoric/Historic Stage Unit Definition	45
6.1.1 Late Prehistoric Period	46
6.1.2 Ute/Shoshone Period	46
6.2 Protohistoric/Historic Stage Culture History	46
6.2.1 Late Prehistoric Period	46
6.2.2 Ute/Shoshone Period	48
6.3 Protohistoric/Historic Stage Lifeways	49
6.4 Protohistoric/Historic Stage Cultural Processes	50
6.5 Protohistoric/Historic Stage--Quantity and Quality of Existing Data	50
6.5.1 Evaluation of the Data Base	50
6.5.2 Data Gaps	51
6.5.3 Future Needs	51
6.5.4 Quantity and Physical Condition	51
6.5.5 Important Resources	51
6.6 Protohistoric/Historic Stage--Research Domains	51
7.0 ENVIRONMENTAL RECONSTRUCTION	52
8.0 GENERAL RESEARCH PROBLEMS	53
8.1 Chronology	53
8.2 Impact of Surface Collecting and Vegetation Cover on the Data Base	54
8.3 "Diversity of Cultural Types" vs. "Indigenous Mountains-oriented Culture"	54
8.4 Resource Exploitation in the Mountains Study Region	54
8.5 Variables Affecting Site Location	55
8.6 Other Research Domains	55
9.0 NUMBER AND CONDITION OF SITE TYPES	55
10.0 EVALUATION STANDARDS	58
11.0 SUMMARY AND CONCLUSIONS	58
REFERENCES CITED	64
APPENDIX A: OUTLINE OF RESEARCH QUESTIONS DEVELOPED BY BRIAN ALVAZIAN	75
APPENDIX B: ADDITIONAL BIBLIOGRAPHY	79
APPENDIX C: ADDENDUM	110

FIGURES

Figure 1: Boundary of Mountains Study Region on County Map	2
Figure 2: Boundary of Mountains Study Region on Physiographic Map	3
Figure 3: Geographic Locations Discussed in Text	6

TABLE

Table 1: Site Types Recorded for the Mountains Study Region	56
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ACKNOWLEDGMENTS

The ideas presented in this report are a result of many individuals who participated in the Regional Research Design Project. We, however, take full responsibility for any misconceptions or errors in presenting these ideas. We are grateful for the contributions of the concerned archaeologists and members of the Regional Research Design committee.

We would specifically like to thank Steve Cassells, Kevin Black, Reid Farmer, Chuck Wheeler, Brian O'Neal, Steve Sigstad, H. Peter Wingle, Linda Gregonis, Jonathan Haas, and Judy Halasi. These people contributed ideas and/or constructive criticism. Brooke Plastino conducted the site file search and performed the computations for the site type data. The report was edited by Shelia Pozorski, and typed by Mary Vaught.

PREFACE

The Office of Archaeology and Historic Preservation of the Colorado Historical Society has produced this set of reports summarizing and evaluating the known prehistory in the State of Colorado.

These reports present the varied cultural histories of the five distinctive physiographic regions in the State: the Plains, the Mountains, the Northwest, the West Central, and the Southwest regions, and these reports span each region's known cultural history from the earliest prehistoric period up to the historic Native American populations.

Each volume presents an introduction to a region, its geographical and environmental setting, as well as a definition of the report organization, site types, and cultural terms. The focus of each region's report is the major cultural groups which includes their cultural history, lifeways, and cultural processes. The nature of the archaeological evidence in each region is also carefully evaluated.

The overall purpose of these reports is to provide a background for the current archaeological knowledge in Colorado, and to give research direction towards the protection and preservation of archaeological resources in Colorado. These reports can provide guidance for state and federally mandated cultural resource management, as well as direction for pure research.

The development of these reports is a direct outcome of the "RP-3" (Resource Protection Planning Process) effort led by OAHP archaeologist Judi Halasi, to whom we are indebted for her two years of hard work. The Colorado Council of Professional Archaeologists, Paul Nickens, President, also strongly supported this project and shared with each author the results of CCPA's Regional Research Design efforts of 1979-1981. This in turn had roots in both State Archaeologist Bruce RippetEAU's 1977 Statewide Prehistoric Overview and Colorado State University archaeologist Elizabeth Morris's 1978 Plains Conference Symposium on Colorado Archaeology.

The editorial content of this publication was supported by a grant-in-aid through the funding provisions of the National Historic Preservation Act of 1966, as amended, which is administered by the National Park Service, Department of the Interior. The content and opinions do not necessarily reflect the views or policies of the Department of the Interior nor does mention of trade names or referenced publications constitute endorsement or recommendation by the Department of the Interior.

We hope that these volumes will stimulate an awareness of, and appreciation for, the fragile archaeological resources of Colorado, and for the tedious and difficult science required to investigate, evaluate, and interpret the evidences of our past Coloradans and their worlds.



Barbara Sudler
President
State Historic Preservation Officer

INTRODUCTION

This report is for the Mountains Prehistoric Context research design project. It was prepared under contract (No. 83-044-00-AR) between the State Historical Society and Mark R. Guthrie.

Archaeological field work conducted to date for the Mountains Study Region (Figures 1 and 2) of the State of Colorado is summarized. In preparing this report, information was collected from as many studies conducted within the Study Region as time and money would allow (cf. References Cited).

It should be stressed that not all archaeological studies conducted within the Mountains Study Region were used for this report. A vast number of archaeological reports exist for the area, but time and money did not allow a complete review of all reports. Specific literature from selected areas was examined to see if possible trends in the Mountains Study Region could be identified.

The information which forms the basis for unit definitions, culture history, lifeways, cultural processes, data gaps, future needs and research domains within this report was extracted from those selected reports used in the study. Unit definitions, for the most part, are general and are based on the archaeological studies outside the mountains region. Specific archaeological data for the mountains region are discussed within the Culture History section. In this section, the archaeology is discussed in terms of the location (e.g. front range, drainages, parks, passes, forests) for each culture unit. A summary and conclusion based on the analysis of those reports examined is presented at the end of this report.

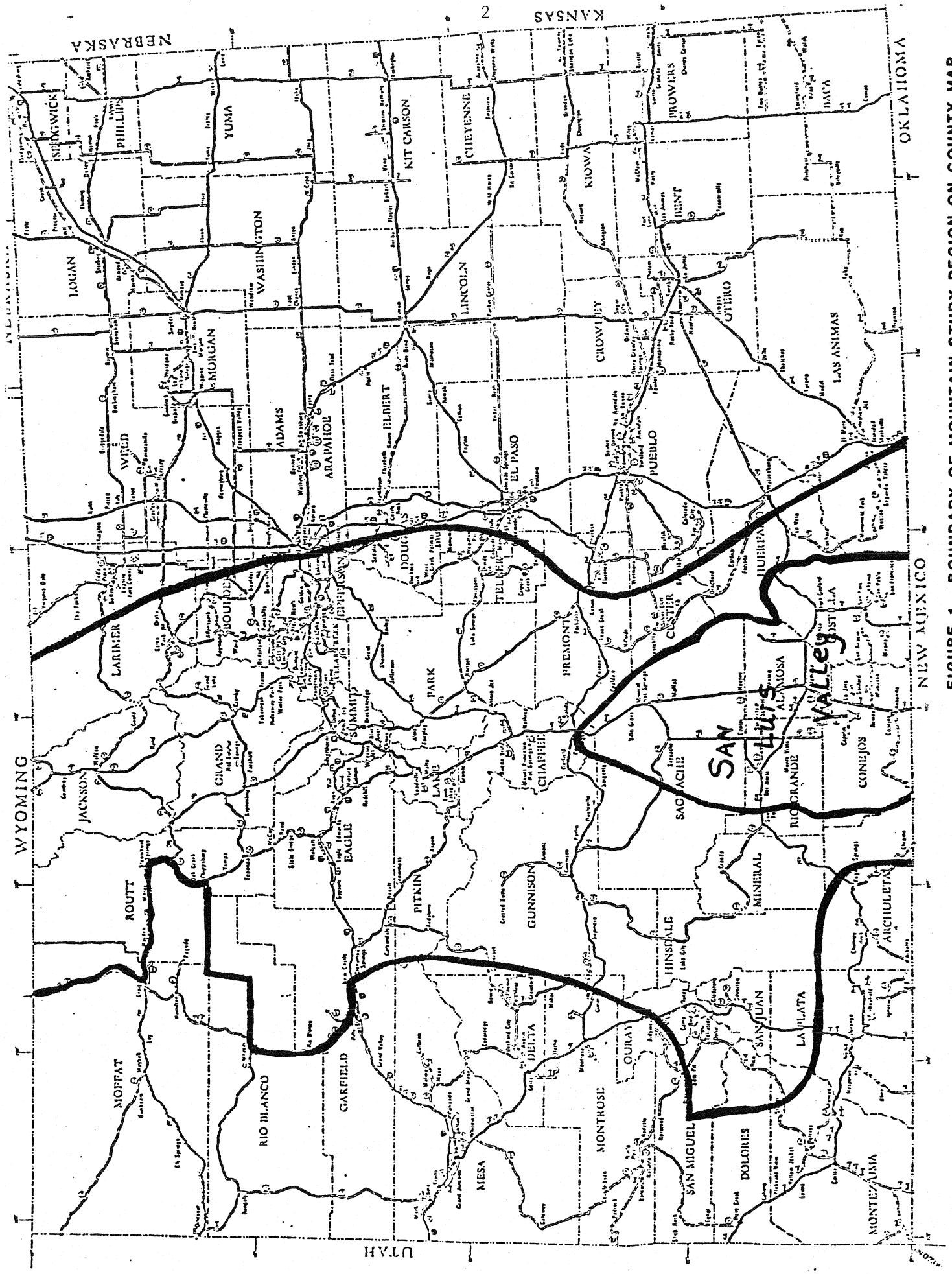


FIGURE 1. BOUNDARY OF MOUNTAIN STUDY REGION ON COUNTY MAP

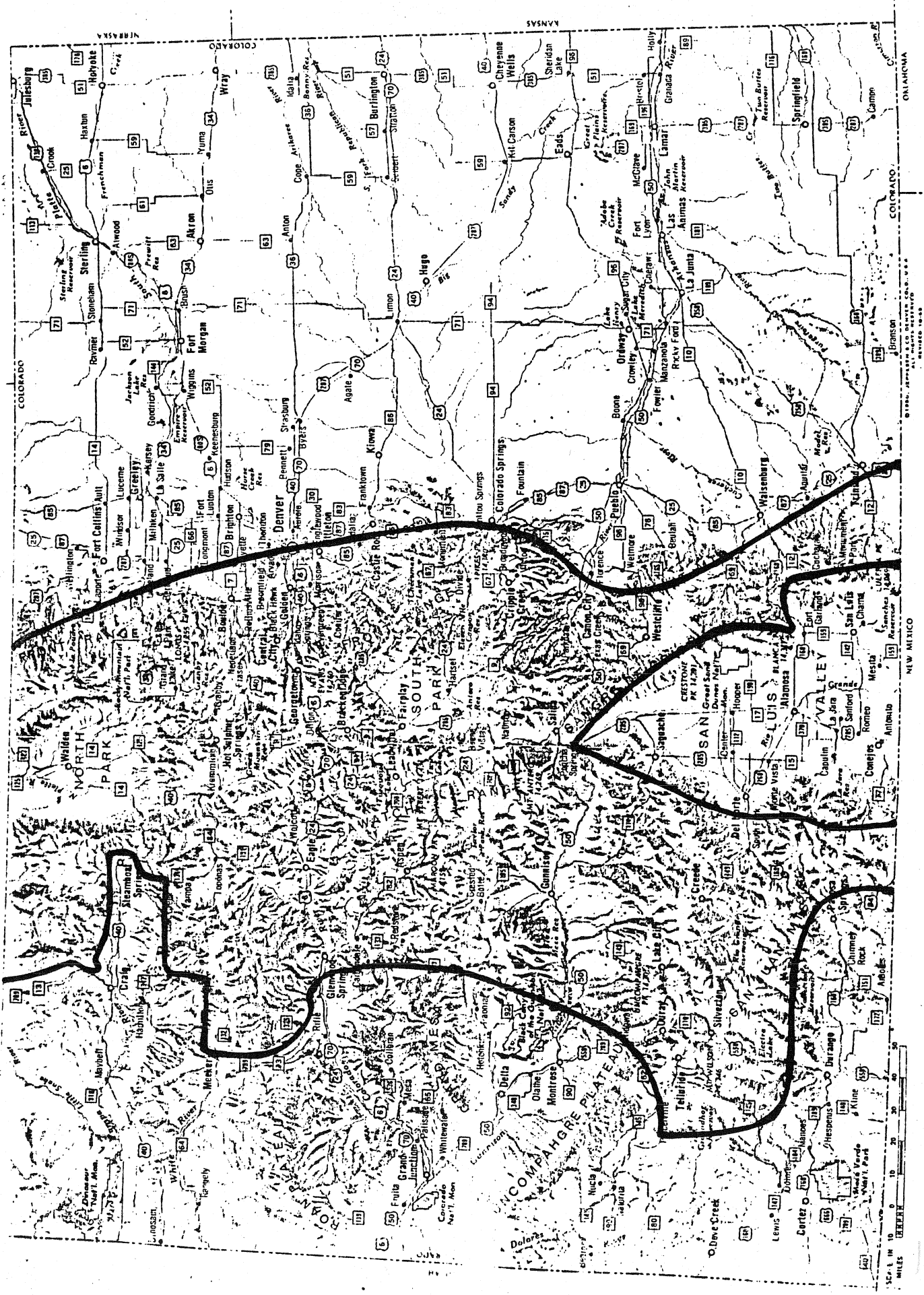


FIGURE 2. BOUNDARY OF MOUNTAIN STUDY REGION ON PHYSIOGRAPHIC MAP

U.S. GEOLOGICAL SURVEY, WASHINGTON, D.C. REVISED 1958

1.0 REGIONAL FRAMEWORK

This section describes the boundaries and physical characteristics of the Mountains Study Region, (Figures 1 and 2) and provides a brief introduction to the larger cultural units discussed in this report. The boundary for the Mountains Study Region was decided upon at a workshop meeting held November 1, 1982 at the Colorado Preservation Office.

1.1 Boundaries of the Mountains Study Region

The eastern boundary of the Mountains Study Region is defined by the edge of two great physiographic provinces: the Plains and the Mountains. This Colorado Foothills zone has always been extremely important in the understanding of Colorado prehistory.

The northwest boundary of the Mountains Study Region is a combination of man-made and physiographic features. Moving from south to north it is delimited as follows: 1) Starting at the Colorado River at Rifle, Colorado the boundary is Colorado Highway 13 and 789 to Meeker, Colorado; 2) The boundary then extends along the White River to Buford, Colorado; 3) From Buford, Colorado it turns north to the White River National Forest boundary; 4) It then follows a line first west then north along the forest boundary until the Rio Blanco-Moffat county line is reached; 5) The boundary follows the Rio Blanco county line due east until it turns south; 6) Where the Rio Blanco county line turns south, an imaginary line is projected eastward using the east-west Rio Blanco county line as a baseline until Colorado Highway 131 is reached at a point just south of Phippsburg, Colorado; 7) Highway 131, northbound, becomes the western boundary until U.S. Highway 40 is reached; 8) U.S. Highway 40 becomes the western boundary through the town of Steamboat Springs, Colorado and westward until U.S. Highway 40 crosses the Moffat-Routt county line; 9) The boundary then proceeds north along the county line to the Colorado Wyoming State line.

The West Central boundary is physiographic and extends to the eastern edge of the Colorado Plateau physiographic province. This is the interface where the Colorado Plateau meets the Southern Rocky Mountain physiographic province.

The Southwest boundary includes the Southern Rocky Mountain Province, specifically the San Juan Mountains.

The North boundary is formed by the Colorado-Wyoming State line, and the South boundary is the Colorado-New Mexico State line.

1.2. Internal Features of the Mountains Study Region

The Mountains Study Region includes the Southern Rocky Mountains province which forms a broad north-south band running through the center of the state. This band consists of two parallel ranges separated by a number of valleys and parks. The eastern belt consists of the Front Range from the Wyoming State line to the Arkansas River. This includes the Wet Mountains and the northern part of the Sangre de Cristo Mountains. From north to south the western belt includes the Park Range, Gore Range, Swatch Range and the San Juan Mountains (Halasi, Kane and Winter 1981:16).

The Rocky Mountains are characterized by rugged peaks, some over 14,000 feet high. Between these peaks are grass covered valleys and parks. Three major parks are within the Mountains Study Region: North, Middle and South Parks. There is one major valley, the San Luis Valley. The high peaks and valleys which characterize the Rocky Mountains form a vast and complex drainage system, and water is plentiful throughout the area. The major drainages from north to south include the North Platte, White, Colorado, Gunnison, Upper Arkansas, South Platte, and the Rio Grande Rivers. In an attempt to better understand the cultural history of the Mountains Study Region, the area was divided into drainage units, parks, and mountain passes. An effort was made to determine if adaptive strategies varied between these areas. Available literature was examined for each of these units, and the results of this research is included in this report.

The drainage systems include the Colorado, Gunnison, Upper Arkansas, North Platte, South Platte and Rio Grande. Mountain parks and valleys assessed include North, Middle, and South Parks, and the San Luis Valley. No archaeological data were available for Wet Mountain Park.

Although there are many mountain passes within the Mountains Study Region and most of these were undoubtedly important routes between drainages, parks and valleys, only a few mountain passes are discussed in this report. This is a result of both the lack of archaeological investigation of most passes and time constraints. The passes discussed in this report include Vail, Cottonwood, Wolf Creek, La Veta, and Piedra. Rabbit Ears Pass was included within Routt National Forest. A selection of National Forests were included due to the large number of small archaeological (CRM) studies conducted in these areas. The National Forests include Routt, Rio Grande, Pike, and San Isabel. The Front Range as well as the San Juan Mountains were examined individually. Figure 3 shows the drainages, parks, and passes, but not the National Forests. Routt National Forest is located in the north part of the region, and Pike and San Isabel occupy the central part of the study unit.

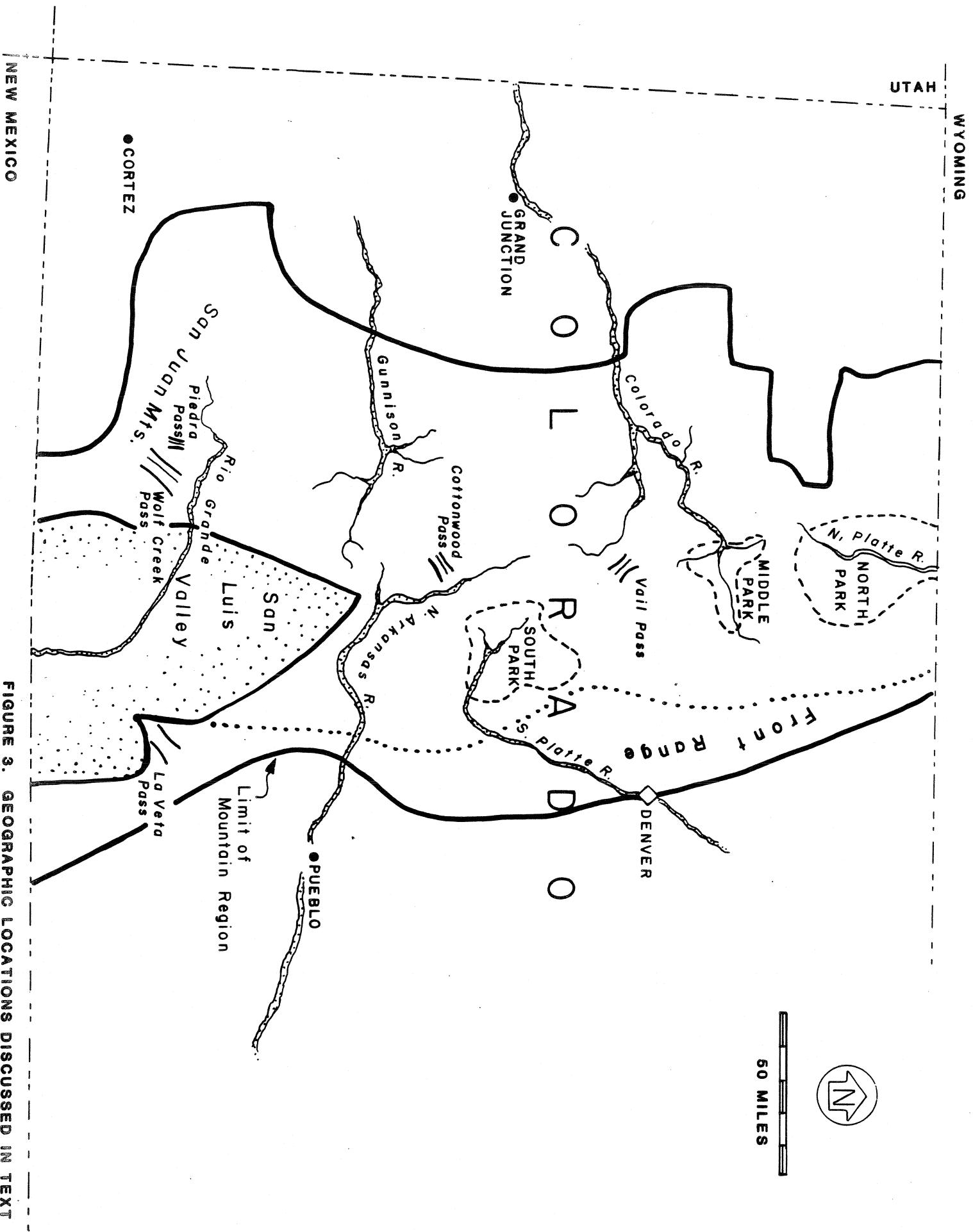


FIGURE 3. GEOGRAPHIC LOCATIONS DISCUSSED IN TEXT

1.3 Major Cultural Units

1.3.1 Paleo-Indian Tradition. Although there is increasing evidence for a "Pre-Clovis" period in Colorado (Humphrey and Stanford 1979), this topic is still controversial, and this period is not as yet represented by archaeological evidence from the Mountains Study Region. The Paleo-Indian Stage dates from 10,000 to 5500 B.C. and is characterized by the hunting of now-extinct megafauna. Although evidence of Paleo-Indian occupation in the mountains area is limited, a good quantity of isolated points and tools are known to exist in the region.

1.3.2 Archaic Stage. The Archaic Stage dates between 5500 B.C. and A.D. 500 and coincides with the terminal Pleistocene environmental change which resulted in an environment similar to what exists today. This period is characterized by the exploitation of small game animals and an increased reliance on the gathering of wild plants. The Archaic Stage is well represented throughout the Mountains Study Region.

1.3.3 Formative Stage. It is unclear at this time whether cultural development within the Mountain Study Region has a Formative Stage. As defined by Willey and Phillips (1958:146), the Formative Stage is characterized by the "...presence of agriculture, or any other subsistence economy of comparable effectiveness, and by the successful integration of such an economy into well-established, sedentary village life." Based on this definition, it is doubtful that there was a widespread "Formative lifestyle" within the Mountain region. Instead, the region maintained an "Archaic lifestyle" throughout prehistoric time.

There are some indications that "Formative Stage" people periodically occupied certain areas within the Mountains Study Region. These include the Parker and Franktown foci and the Woodland occupation located at the LoDaisKa and Magic Mountain sites in the foothills/plains transition zone, the Anasazi Tradition of the Southwest, and the Fremont of the Northwest. However, their lifestyles reflected the seasonal hunting and gathering phase of an economy based on transhumance.

1.3.4 Protohistoric/Historic Stage. This period is defined as a "Post-Formative Archaic Stage." The Protohistoric/Historic Period for the Mountains Study Region dates from about A.D. 500 to 1800. This period includes parts of Frison's (1978) Late Prehistoric Period, excluding the Woodland and the Upper Republican units which for the Mountains Study Region have been included as a part of the Formative Stage.

2.0 SPATIAL AND MATERIAL CULTURE DEFINITIONS

2.1 Spatial Units

2.1.1 Isolated Find (IF). The definition for an Isolated Find is variable depending on the project, researcher, and location. It is generally defined as a single artifact or only a few artifacts that do not represent a locus of patterned human activity. Archaeologists must be especially careful in the mountains that isolated finds are not early signs of a buried site.

2.1.2 Site. The term site designates a single settlement, the minimum operational unit of geographical space (Willey and Phillips 1958:18). This is a locus of patterned human behavior.

2.1.3 Locality. A locality is defined as "a geographical space small enough to permit the working assumption of complete cultural homogeneity at any given time" (Willey and Phillips 1958:18). This should not be used to refer to something smaller than a site but larger than an isolated find.

2.1.4 Region. Definition of a region is based on the environment. It is a geographical space in which, at a given time, a high degree of cultural homogeneity may be expected but not counted on (Willey and Phillips 1958:19-20).

2.1.5 Area. A major physiographic division which is "considerably larger than a region" is called an area (Willey and Phillips 1958:20).

2.2 Site Typology

Based on the literature on the Mountains area, descriptive site types from the study region range from small lithic scatters to multicomponent, multifunctional lithic scatters. Functional site types range from habitation and campsites to kill sites and eagle pits. Table 1 lists both descriptive and functional site types, as well as associated features and structures. This information was collected during a site file search at the Colorado Preservation Office.

How each archaeologist defined site types, sites, and isolated finds varied significantly within the Mountains Study Region. For example, the presence of three flakes within four square meters may be defined by one archaeologist as a lithic scatter, while another refers to it as a lithic concentration and another defines it as an isolated find. The same is true for site types; the same kind of site may be defined as either a habitation site, a campsite or a rock shelter. There is also a confusion of descriptive

and functional types when site types are defined.

Thus, for consistency in synthesis and analysis, the cultural material definitions should be standardized. It is suggested that the definition for site types and features established by the Colorado Preservation Office be used. This would promote consistency when data from site file searches are used for site and type comparisons.

Although definitions for sites, isolated finds, site types, features, structures, etc. may vary somewhat depending on the research design and area under consideration, attempts should be made to standardize these terms. Minimally, the report should contain a definition of each cultural material term (e.g., site types), and site types should be discussed both in descriptive and functional terms. Descriptive types should detail the observable attributes at the sites without inferences about the function of the site. This allows other researchers to use the data to formulate their own functional types. Creation of functional type uses the attributes at each site to infer functions or activities that took place at the site.

The terms used in formulating descriptive and functional site types for this report are defined below. These range from the activity area, which is an aspect of social space, through manifestations of the material culture in the form of artifacts and structures.

2.2.1 Social Space

2.2.1.1 Activity Area. Activity areas occur within sites and represent zones where a specific definable activity took place.

2.2.2 Material culture

2.2.2.1 Artifact. An artifact is an item that has been modified by human means, either in manufacture or in use.

2.2.2.2 In Situ Artifacts. These are artifacts that are found in their original context.

2.2.2.3 Assemblage. An assemblage consists of artifacts associated with a specific cultural unit at a site.

2.2.3 Material Culture (structures). In general, structures are uncommon in the Mountains Study Region.

2.2.3.1 Stone Circles. Stone circles consist of an associated group of spaced stones which are usually arranged in a circle. They are the most common structure

type within the Mountains Study Region. Stone circles are often referred to as "tipi rings."

2.2.3.2 Stone Enclosures. Stone enclosures are defined as arrangements of stones which are usually contiguous, and that form a certain pattern. The height of these is quite low; they formerly provided support for a horizontal pole roof.

2.2.3.3 Stone Alignments. Stone alignments are stones placed in a recognizable alignment.

2.2.3.4 Drivelane. Drivelanes are avenues of game drives that might consist of a number of stone alignments in conjunction with natural features such as boulders.

2.2.3.5 Cairn. A cairn is a pile of stones that may mark a particular location or boundary. These can sometimes be very tall.

2.2.3.6 Wickiups. Wickiups are brush habitational structures. The size and shape is variable, but known examples are approximately two meters in diameter and up to two meters high.

2.2.3.7 Check Dam. Check dams consist of a row of stones several courses high positioned across a drainage. They served to slow or impound water flow, and soil which gradually collected behind the obstruction could be used as a small agricultural field.

2.2.3.8 Pictograph. A pictograph is an example of rock art that is painted.

2.2.3.9 Petroglyph. A petroglyph is rock art that is either pecked or incised.

2.3 Synthetic Units

It is necessary to move beyond the specific level of the isolated find or single site toward a more general level at which it is possible to discuss behavioral patterns and cultural processes. This is facilitated through the formulation of synthetic units. The synthetic units which are applicable to the Mountain Study Unit are described below.

2.3.1 Component. "The manifestation of a given archaeological 'focus' at a specific site" is a component. A whole site or a level within a site may constitute a component (Willey and Phillips 1958:21).

2.3.2 Phase. A phase is "an archaeological unit possessing traits sufficiently characteristic to distinguish it from all other units similarly conceived, whether of the

same or other cultures or civilizations. (It is) spatially limited to the order of magnitude of a locality or region and chronologically limited to a relatively brief interval of time" (Willey and Phillips 1958:22).

2.3.3 Horizon. Horizon is defined as "a primarily spatial continuity represented by cultural traits and assemblages whose nature and mode of occurrence permit the assumption of a broad and rapid spread" (Willey and Phillips 1958:37).

2.3.4 Tradition. "A temporal continuity represented by persistent configurations in a single technology or in other systems of related forms" is a tradition (Willey and Phillips 1958:37).

2.3.5 Complex. A complex consists of "a group of related traits or characteristics which combine to form a complete activity, process, or cultural unit" (Wormington 1957:168).

2.3.6 Period. The term period has been defined by Nickens et al. (1982:152) as "a series of definite cultural concepts which emphasize a generalized cultural picture over a large geographic area." It has been common to substitute the term "stage" for period, but in their discussion "stage" refers to the broad generalized continent-wide cultural developments i.e., Lithic, Archaic, and Formative Stages) (Nickens et al. 1982:152). Krieger discusses stage as being a segment of history, the economic life, and social structure whereas period is considered more dependent on chronology, (Cited in Willey and Phillips 1958:68).

2.3.7 Stage. For the purpose of this report a stage is defined as similarity in cultural content over a broad area. Many local and regional sequences may be incorporated within a single stage.

2.4 Lifeway Descriptions

Taking into account data at the artifact and site level as they relate to the previously defined synthetic units, it is possible to begin to reconstruct major facets of the culture history within a region. Reconstructed lifeways within the Mountains Study Region are described in terms of settlement/subsistence patterns, technology, demography, social organization, and foreign relations.

2.4.1 Settlement/Subsistence Patterns. Settlement/subsistence patterns relate to social organization, technology or other systems pertaining to a culture. They are often very complex. Subsistence and settlement patterns are closely interrelated within the Mountain Study Region where site location is generally a function of environmental

variables--predicated on proximity to economically important resources.

2.4.2 Technology. Technology relates to the way a culture, through learned behavior, produces and/or uses its material culture. Material culture refers to the physical residues which the archaeologist deals with in his efforts to reconstruct aspects such as social organization and settlement/ subsistence systems.

2.4.3 Demography. Demography refers to human populations in terms of their numbers, location, distribution, and composition.

2.4.4 Social Organization. This encompasses the social, economic, political, religious or ideological manifestations of a culture. Within the Mountain Study Region the reconstruction of social organization for prehistoric cultures is severely hampered by the paucity of physical remains.

2.4.5 Foreign Relations. This refers to the relationships of groups within the study area to other cultures outside the Mountains Study Region. This may range from direct contact with groups coming into the area seasonally to exploit specific resources to the diffusion of material items and ideas from a nonindigenous group. Foreign relations is an extremely important topic for investigation within the Mountains Study Region.

3.0 PALEO-INDIAN

3.1 Paleo-Indian Stage Unit Definition

The Paleo-Indian Stage (ca. 10,000-5500 B.C.) is recognized archaeologically in North America by the presence of various types of lanceolate points. These points, some found in association with faunal remains, were used to hunt now-extinct Pleistocene megafauna during early prehistoric times. These animals included the mammoth, bison, giant bear, dire wolf, horse and camel as well as smaller game such as elk and deer. Finely flaked scrapers and knives are also diagnostic of the Paleo-Indian Big Game Hunters (Irwin and Wormington 1970). While big game hunting was a major pursuit of the Paleo-Indian, smaller animals and plants cannot be disregarded because of their value as supplemental, or possibly at times major, components of the Paleo-Indian resource base and subsistence pattern.

The Paleo-Indian Stage is divided into three cultural periods: the Llano or Clovis, the Folsom, and the Plano. An earlier, Pre-Clovis Period has been postulated (Stanford 1979), but there is as yet no evidence of the occupation in the Mountains Study Region during this period. Each of the

well defined periods is distinguished by different point styles and manufacturing techniques and by particular faunal associations. These distinct tool assemblages and subsistence patterns represent the Paleo-Indian peoples' adaptation to the plains and mountain tundra environment of the Late Pleistocene. Tools diagnostic of this big game exploitation are present throughout the Southern Rocky Mountains.

3.1.1 Pre-Clovis Period. Little is known about the aboriginal occupation of North America prior to the Clovis Period. Krieger (1964) has proposed the existence of a Pre-Projectile Period in North America that is represented by a generalized tool inventory of choppers, utilized flakes, scrapers, and bone tools. Most of this material, however, comes from surface sites, and claims for pre-projectile sites in undisturbed contexts are not generally accepted. Stanford (1979), using information from several sites in Colorado, argues for a pre-Clovis emphasis on bone tool technology. He cites evidence for bone tool manufacture from the Dutton and Selby sites as early as 27,000 B.C. (Stanford 1979) and evidence of human occupation at the Lamb Spring site early as 13,140 B.C. (Stanford, Wedel and Scott 1981). Others, however, argue that the spiral bone fractures and bone flaking cited by Stanford could have been produced by nonhuman agents.

3.1.2 Clovis Period. The Clovis Period (ca. 10,000-9000 B.C.) is the earliest generally accepted Paleo-Indian period in the United States. It is characterized by large lanceolate points averaging 7 to 15 cm in length with bilateral thinning flakes, or flutes, covering one-quarter to one-half of the point from the base. These Clovis points have been found in association with mammoth remains at kill and butchering sites. The site locations and butchering patterns suggest that Clovis hunters trapped single animals in bogs, marshes, or arroyos, then killed their prey with thrusting spears and atlatl-thrown darts (Jennings 1983:63; Frison 1978:109,112). Although kill sites have not been found in the Colorado Rocky Mountains, isolated surface finds of Clovis points suggest a Clovis presence in the Mountains region.

3.1.3 Folsom Period. The Folsom Period (ca. 9000-8000 B.C.) follows the Clovis and is also characterized by an orientation toward big game hunting. The period is recognized by the presence of Folsom points, the characteristic lanceolate point which is often fully fluted and exhibits fine marginal flaking. The Folsom point is shorter in length than the elongate Clovis and is widest at its midline, with a deeply concave base producing "ears."

With the disappearance of the mammoth, the Folsom people hunted Bison antiquus. This shift in subsistence patterns is indicated by Folsom tool kits which contain both

large and small lanceolate points along with distinctive sharp gravers and borers and laterally retouched percussion flake tools (Frison 1978:77). Variation in point size may suggest an expansion of the Folsom resource base to include the exploitation of smaller mammals such as antelope and horse (Grant 1980:6). Hunting techniques may have also been different during the Clovis Period. Jesse Jennings argues that there was a "new and efficient hunting technique, the surround kill, as exemplified at Folsom itself" (Jennings 1974:109). In the Mountains Study Region, the Folsom Period is represented primarily by sites within the San Luis Valley and isolated surface finds of Folsom points in the remainder of the region.

As the climate continued to warm during the Initial Holocene Epoch, the Paleo-Indian population was forced to adapt to a changing environment. One of these changes was the extinction of the megafauna. Reasons proposed for the game extinction include climatic change, overexploitation of game by Paleo-Indians, or a combination of these and other factors.

3.1.4 Plano Period The Plano Period (ca. 8000-5000 B.C.) is characterized by a variety of distinct lanceolate points which continue to display fine collateral flaking, though they lack the fluting characteristic of both Clovis and Folsom Period points. Among the many diagnostic types are Agate Basin, Alberta, Angostura, Eden, Frederick, Hell Gap, Jimmy Allen, Lovell Constricted, Lusk, Meserve, Midland, Milnesand, Plainview, Pryor Stemmed and Scottsbluff points. Most of the type sites for these point styles are located in the Northwestern Plains. A number of these point styles in combination with available radiocarbon dates have been used to define a series of complexes within the Plano Period. Whether or not these truly represent multiple complexes or are just projectile points and site variants of a single complex is not known, and more research is needed on this problem. The Plano assemblage also contains tools such as butchering knives (e.g., Cody), spurred endscrapers, and evidence of burination (Frison 1978:78).

Hunting during the Plano Period became more sophisticated, incorporating planned strategies such as game drive systems, jumps, and other methods to procure animal resources (Frison 1978:179; Jennings 1974:119,123). Archaeological evidence indicates the Plano peoples hunted now-extinct bison of a more modern species than Bison antiquus. There is also tentative evidence for greater floral exploitation during the Plano Period (Jones 1982).

Evidence for Plano occupation of the Mountains Study Region is provided by Plano-type points in isolated surficial contexts. In situ remains that are reminiscent of the terminal Paleo-Indian Stage may be present at the Gordon

Creek Burial Site (Anderson 1966). There is also increasing evidence for wickiup-like structures characterizing the Late Paleo-Indian/Early Archaic Period in the Mountains Study Region (Stiger 1981:109; Wheeler and Martin 1983).

3.2 Paleo-Indian Culture History

The presence of Paleo-Indian peoples in the Rocky Mountains of Colorado has been documented to date by isolated surface finds of diagnostic projectile points, artifacts from distinctive tool assemblages, and a limited amount of other items. Folsom sites are located in the San Luis Valley. The Paleo-Indian Stage for the Mountains Study Region is divided into three cultural units, or periods, which often demonstrate overlap or possible transitions between their respective period designations.

3.2.1 Clovis Period. Clovis points have been reported in Rocky Mountain National Park along Trail Ridge Road at an elevation of 11,000-11,500 feet (Husted 1965:496). Near Curecanti, in the Gunnison River drainage, Clovis points are found in association with more recent points from a surface scatter and as isolated finds (Carpenter, Donaldson, and Williams 1976; Burgess et al. 1980:26; Jones 1982:6). An excavated hearth at Curecanti has also yielded a date of 10,094 \pm 830 RCY (8144 B.C.) (Stiger 1981:109) Jones 1982:12). The Mount Emmons Project, also in the Gunnison Basin, has produced a possible Clovis/Folsom "fluted" mid-section (Baker et al. 1980:120). Hurst has reported the presence of extinct mammoth and bison remains from the Gunnison Valley, but no cultural materials are associated (Hurst 1943:251). Late Pleistocene fauna have also been excavated from a cave site in Curecanti, though cultural associations are dubious (Euler 1979; Euler and Stiger 1981).

Diagnostic points have been reported in collections from the Rio Grande National Forest along with the Sandia point type (Burns 1981). One Clovis point has been recovered from the Middle Park Planning Unit, thereby defining a Paleo-Indian component in the Craig BLM District (Fitting 1978). Within the San Luis Valley, Clovis points form part of private collections, but the only well documented point is an isolated find recorded by Button (personal communication) during a survey of the Closed Basin.

3.2.2 Folsom Period. The distinction between the Clovis and Folsom Periods is based on both morphological differences between the respective diagnostic points and the association of Folsom points with Bison antiquus remains. Folsom Period dates range from ca. 9000 to 8000 B.C. There are abundant Folsom remains in the San Luis Valley and a more limited distribution in other areas within the Mountains Study Region.

A tenuous Folsom-like base was found in the Eagle area (Lutz et al. 1979), and surface finds of Folsom points by amateurs have been reported in the Kremmling vicinity near North Park (Lischka 1976:9). Several finds of Folsom points lacking the flute have also been reported by local residents in North Park (Lischka et al. 1980:123,170). A possible Folsom point was collected near the Azure Project Area (Kranzush, Viola and Firebaugh 1982), and Folsom occupation is also indicated by isolated projectile points in the Cimmaron vicinity (Wormington 1955:120). A Folsom point was found near Turquoise Lake west of Leadville (Guthrie 1981:4), and Folsom points are contained in collections from the Rio Grande National Forest District (Burns 1981). In the Curecanti report, Bruce Jones hypothesized that the increasing incidence of ground stone in the Folsom and Plano Periods indicated the growing utilization of vegetal resources (Jones 1982).

Within the San Luis Valley, Folsom points have been observed in private collections, and Folsom levels occur at the Linger, Zapata, Cattleguard, and Reddin sites in the Closed Basin near Medano Springs Ranch in northeast Alamosa County (Dawson and Stanford 1975; Calabrese 1979; Emery and Stanford 1982; Stanford, personal communication). Work on Folsom remains in the valley dates to the 1930's when Renaud discovered Folsom material in association with mastodon bone while surveying near Medano Springs Ranch in Alamosa County (Calabrese 1979:3).

The significance of the Linger site was realized in 1937 when the site produced numerous Folsom points and other tools in association with Bison taylori remains (Hurst 1941-1944). Subsequent more recent work at the site has resulted in the excavation of more Folsom artifacts which were found to segregate into activity areas (Dawson and Stanford 1975). The Cattleguard Site was also recently reopened, and excavations there have yielded 183 varied artifacts comprising a basic Folsom tool kit in association with bison remains (Emery and Stanford 1982).

3.2.3 Plano Period. The Olsen-Chubbock site, located on the plains of eastern Colorado, is the best reported Plano site in Colorado and has provided information on Plano hunting and butchering patterns, diagnostic tools, and chronology (Wheat 1972). Point types which regionally characterize the Plano Period include Plainview, Midland, Milnesand, and Meserve, which resemble Clovis and Folsom types; and Agate Basin, Cody, Hell Gap, Scottsbluff, Eden, Jimmy Allen, Frederick, and Lusk points, which are long and narrow, exhibiting parallel flaking (Conners and Langdon 1981:10).

Examples of Plano points found in the Mountains Study Region include Eden, Meserve, Cody, Agate Basin and Jimmy

Allen along the Front Range and in the vicinity of Rocky Mountain National Park (Husted 1965:494). A Jimmy Allen point was recovered during the excavation of the Iola Site in the Gunnison basin at Curecanti and other diagnostic Plano surface finds have also been recovered there (Stiger 1981:62; Jones 1982). Charcoal from a possible postmold at Curecanti has been dated to 7272 ± 110 RCY (5322 B.C.), indicating Late Paleo-Indian/Early Archaic occupation. To the west of Cimarron, also in the Gunnison River Basin, structural remains associated with abundant evidence for a well-developed stone tool industry date to 6300 B.C.

During the Mount Emmons Project survey, included in the Gunnison River Basin, Hell Gap-like base fragments were recovered from both the Alkali and Antelope Creek areas. A Jimmy Allen-like basal fragment and a point fragment with Plano flaking were collected during Alkali Creek survey and testing (Baker et al. 1980:146). A number of Plano points have been reported from the Upper Arkansas River Valley, including Meserve/Dalton, Eden, Scottsbluff, Agate Basin, and Angostura-like types (Buckles 1978:187-182; Guthrie 1981:49). A jasper scraper exhibiting fine Paleo-Indian workmanship and a possibly distinctive "spur" has been reported from Routt National Forest (Guthrie 1980:25). Angostura and Hell Gap projectile points are present in collections from Rio Grande National Forest (Nickens 1979; Burns 1981).

Sites along the Front Range yielded some Paleo-Indian evidence. The Fourth of July Valley Site of the Mount Albion Complex yielded points resembling the Jimmy Allen type. Benedict interprets these as ancestral to the McKean points (Benedict 1981:89). Site 5BL70 has a date of 7650 ± 190 RCY (5700 B.C.) which may be interpreted as Paleo-Indian, though no cultural materials are associated, and the date may be from natural charcoal (Benedict and Olson 1978:87).

Judy Shafer (1978) identified an Eden point on a site during a survey of the Wolf Creek Pass area, while at Cottonwood Pass, possible Plano artifacts include a heat-treated point midsection and a hafted knife (Black 1982:94-95).

The North Park area of the Mountains Study Region yielded some Late Paleo-Indian materials including seventeen points and point fragments (Lischka et al. 1980). Other general Paleo-Indian points have been found in the Middle Park vicinity (Husted 1962; Foster 1976). Agate Basin, Alberta, Cody, Eden, Hell Gap, Meserve, Midland, and Plainview projectile points have been identified within private collections from the San Luis Valley and have occasionally been reported as isolated finds (Conners et al. 1980; Stanford, personal communication). Wheat and Elsacker report

Firstview and Eden points from a surface survey near Mineral Hot Springs in the Closed Basin of the San Luis Valley (Conners et. al 1980:25).

In summary, there is increasing evidence that the mountain areas of Colorado were actually utilized by Paleo-Indian populations and that the isolated points found on the surface are too numerous to represent reutilization of these points by later Archaic populations. The general scarcity of Paleo-Indian sites (e.g., kill sites), outside the San Luis Valley may suggest a very low population density, an indication that the people were extremely mobile and did not occupy a single location for very long. On the other hand, the lack of Paleo-Indian sites may be a result of geomorphological factors of deposition or erosion. The available evidence suggests that there was either an increase in population density or a greater utilization of the Colorado mountains from the Clovis to the Plano Period. There is some evidence (i.e., at Curecanti) for possible wickiup-like structures during the Plano Period.

3.3 Paleo-Indian Lifeways

Paleo-Indian subsistence patterns appear to have been based on the exploitation of large game. Complimenting this Big Game Hunting Tradition, there was undoubtedly a reliance on small game and plant resources to supplement the diet. There is an increase in the number of point types and styles during the Plano Period. This increase in point styles may be indicative of a more diverse subsistence pattern--the exploitation of a wider variety of animals.

Technology within the Paleo-Indian Stage is represented by the diagnostic finely-flaked projectile points of the Clovis, Folsom, and Plano Periods. These points exhibit well controlled parallel flaking, fine retouch and, in the Clovis and Folsom points, distinctive flutes. Other tools within the Paleo-Indian assemblages also show well-crafted workmanship.

It is difficult to say anything substantive about Paleo-Indian demography, social organization or external relationships in the Mountains region because of the scarcity and isolated nature of most of the remains. It is suggested that Paleo-Indian people lived and traveled in small nomadic bands, possibly comprised of extended families, following the fauna they exploited. Sites generally consisted of camps and kills, and most evidence for these comes from the San Luis Valley and the Curecanti areas. These include the habitations or campsites at Curecanti (Stiger 1981; Jones 1982) and the Cattleguard Site in the San Luis Valley (Emery and Stanford 1982). A population increase is suggested by the increase in points in the Plano Period.

Paleo-Indian affiliations with groups outside the Mountains Study Region are difficult to define. It appears that later Paleo-Indian point styles are associated with definitive sites in the Northwestern Plains. For instance, Hell Gap materials such as the isolated points from Mount Emmons were first typed at the Hell Gap bison kill in Wyoming. Most of the Late Paleo-Indian projectile point types found in the Mountains region (e.g., Jimmy Allen, Scottsbluff, Eden, etc.) were first defined at more substantial Paleo-Indian sites in Wyoming, Montana and western Nebraska. Source materials for Folsom points from sites in the San Luis Valley have been identified as coming from New Mexico and Texas as well as further north in Colorado. This led Dawson and Stanford (1975:13) to hypothesize that Paleo-Indian groups were migratory or involved in trade.

3.4 Paleo-Indian Stage Cultural Processes

The main cultural process which characterizes the Paleo-Indian Stage is a continuous alteration in adaptation to an environment which is changing through time. These changes culminated in a warmer, drier climate and the extinction of megafauna. A number of causal factors probably contributed to the extinction of these animals, including climatic fluctuations and the possible overexploitation of these large mammals by the Paleo-Indians. In addition as the game became extinct, local plant species were probably also changing. In response to these fluctuations, the Paleo-Indians changed their adaptive strategies. This is manifested in the archaeological record by the different animals exploited (i.e., mammoth and bison), by kill techniques (i.e., ambush and game drives), and by technological changes in point types (i.e., between Clovis, Folsom and Plano points).

In the Mountains Study Region outside of the San Luis Valley, it is difficult to assess these culture changes. Data are so scarce for the Clovis and Folsom periods that the only change that is evident in most of the Mountains region is reflected in point styles.

Within the San Luis Valley, the Folsom Period is significantly represented by several sites. These sites, which include Linger, Zapata, and Cattleguard, seem to cluster in the Closed Basin along the western edge of a long, narrow meadow. A pattern emerges whereby location of camps and processing centers was predicated on proximity to grassy areas with a Pleistocene water course and bison migration routes. Kill sites reflect the ambush of small numbers of animals which entered the area (Jones 1977). Consistencies with Folsom settlement data from New Mexico and the Lindenmeier site all suggest a pattern of Folsom resource utilization (Dawson and Stanford 1975:12). However, until more is known about the other Paleo-Indian Periods, the Folsom data

are difficult to assess in terms of cultural processes for the stage as a whole.

It should be noted that the Paleo-Indian Stage as a whole exhibited cultural continuity when compared to the transition from the Paleo-Indian to the Early Archaic Period. Sometime around 6000 B.C. there was a major adaptational change. Although we do not understand all the mechanisms involved in this transition, the changing environment was undoubtedly a major factor.

3.5 Paleo-Indian Stage--Quantity and Quality of Existing Data

3.5.1 Evaluation of the Data Base. There has been little research conducted outside the San Luis Valley for the Paleo-Indian Stage within the Mountains Study Region. From the San Luis Valley, the most complete data come from recent reexcavation of Folsom sites sponsored by the Smithsonian Institution (Dawson and Stanford 1975; Emery and Stanford 1982). Most of the available information for the remainder of the Mountains Study Region consists of surface finds of Paleo-Indian projectile points reported by a number of Cultural Resource Management surveys. Other information comes from private collections. Some of the earlier surveys and the information provided by private collectors lack detail in terms of locational control.

More recent Cultural Resource Management studies have resulted in an increased understanding of the Paleo-Indian Stage. The quality of these studies is very good. They include investigations at Curecanti National Recreation Area (Euler and Stiger 1981; Stiger 1981), the Mount Emmons Project (Baker et al. 1980), both in the Gunnison River Basin, the Windy Gap Project near Granby (Wheeler and Martin 1983) and in North Park (Lischka et al. 1980).

3.5.2 Data Gaps. Due to the lack of Paleo-Indian information in most of the Mountains Study Region, data gaps are numerous. This includes everything from a chronological sequence for the stage to understanding the subsistence base. Specifically, however, there is a limited understanding of the extent of utilization of the Mountains area by the Paleo-Indians.

3.5.3 Future Needs. It is important to conduct geomorphological surveys/studies to determine the potential preservation conditions for Paleo-Indian sites in the Mountains Study Region. Priorities for future surveys should be based on potential locations of Paleo-Indian sites as a result of such investigations as geomorphological studies. This information needs to be obtained before we can begin to understand the extent of Paleo-Indian occupation in the Mountain Region. Future Needs should concentrate on

potential site areas that are being threatened by vandalism and/or development.

3.5.4 Quantity and Physical Condition. Though sites are limited in number in the San Luis Valley, they are in good physical condition. There may be more buried Paleo-Indian sites in the area (Dawson and Stanford 1975:12). Outside the San Luis Valley, Paleo-Indian sites or components at sites are also extremely limited in the Mountains Study Region. Until Paleo-Indian remains are identified as parts of sites instead of isolated finds, it is impossible to assess the physical condition of sites of this time period. However, the paucity of well-associated remains may be taken as an indication that Paleo-Indian sites may be poorly preserved and therefore hard to recognize.

3.5.5 Important Resources. Since there are very few Paleo-Indian sites or components at sites within the Mountains Study Region all potential Paleo-Indian sites should be considered as very important resources.

3.6 Paleo-Indian Stage Research Domains.

The lack of Paleo-Indian data in most of the Mountains Study Region precludes the possibility of addressing in any detail problem-oriented questions concerning social organization, exchange systems, group interaction etc. Folsom sites in the San Luis Valley have produced functional data at both the site and intrasite level which can be used to respond to these questions in a restricted manner. However, the major research domain for the Paleo-Indian Stage as a whole involves the determination of the nature and extent of Paleo-Indian utilization of the Mountains area and the definition of a chronological sequence for the stage. It is suggested that work on paleoenvironmental reconstruction be intensified in order to gain a better understanding of this important factor in cultural change. One goal is to determine if geomorphological conditions were favorable for the preservation of Paleo-Indian sites in the Mountains region.

There is increasing evidence, as shown by the number of Paleo-Indian artifacts recovered from the Mountains area, that these artifacts do not just represent reutilization by later Archaic Indians. If this is correct, then the exact extent of utilization of the Mountains area by the Paleo-Indians needs to be determined. Was occupation affected by local glaciation? Does the number of Paleo-Indian artifacts found on mountain passes indicate migration of these people through the mountains to other environments (i.e., the Plains, Southwest, Northwestern Plains)? Significant influence from the Northwestern Plains is suggested by preliminary research done in the Mountains Study Region. Do the Paleo-Indian artifacts from the Mountains area represent a

specific adaptation to the environment by these early hunters of the Northwestern Plains?

Another important research domain involves the adaptational change from the Paleo-Indian Stage to the Archaic Stage. All possible causal factors need to be examined. Answering this question may help us to understand the mechanisms of a successful, or at least continual, adaptation by later Archaic peoples.

4.0 ARCHAIC

4.1 Archaic Stage Unit Definition

The time span between 5500 B.C. and A.D. 500 is termed the Archaic Stage. This time period is characterized by a changing environment that resulted in an adaptation that differed markedly from the earlier Paleo-Indian Stage. By the Archaic Stage, Pleistocene fauna had been replaced by modern Holocene species and, while aboriginal people continued to take advantage of game hunting situations, it appears that they also broadened their resource base by exploiting smaller animals and more plant resources. The Archaic Stage, then, is generally characterized by a shift to a more diversified subsistence pattern that is manifested in the archaeological record by the increasing occurrence of ground stone, a greater variety of projectile point styles, and a wide array of other tools within Archaic assemblages. Other features in the Archaic record include stone boiling pits, possible hunting blinds, structures defined by patterned postmolds, and stone circles or "tipi rings." This Archaic adaptation originated in the Desert West, and more precisely within the Great Basin.

The socio-economic adaptation of the Archaic people to their environment resulted in a tool technology geared toward both the exploitation of smaller game animals and the increased utilization of wild plant resources. The transition from large lanceolate points to smaller stemmed, corner-notched, and side-notched projectile points reflects this change in hunting patterns. Archaic projectile points generally lack the delicate flaking that characterizes the Paleo-Indian lanceolates, and are therefore seen as "cruder" as well as smaller. Some point styles are diagnostic of an early, middle and late temporal sequence within the Archaic Stage, whereas many nondistinctive types may range in age from archaic to historic times, possibly indicating a consistent "Archaic" adaptation through time. However, this may also reflect one problem that can result from not having a precise local chronology.

The Archaic Stage (5500 B.C. - A.D. 500) is divided into three cultural periods: the Early (5500-3000 B.C.), the Middle (3000-1000 B.C.) and the Late (1000 B.C. - A.D.

500). This division is based on changes in projectile point morphology and correlated radiocarbon dates.

4.1.1 Early Archaic Period. The Early Archaic period spans the time between 5500 and 3000 B.C. Early Archaic presence in the Mountains region is represented primarily by diagnostic projectile points, including Blackwater, Pahaska, and Southsider Side-Notched points, Hawken, Bitterroot, and Oxbow point types, and some Mummy Cave points.

One controversial topic relating to the Early Archaic concerns the Altithermal and its effects on Early Archaic populations. According to Antevs (1955), climatic conditions in western North America were markedly drier and hotter during the period from about 5000 to 3000 B.C. (referred to by Antevs as the Altithermal period) than they are now. Some archaeologists feel that more recent evidence does not support the concept of the Altithermal (cf. Jennings 1974:69). Benedict, however, proposes that an analysis of the distribution of Early Archaic radiocarbon dated sites in western North America shows large-scale abandonment of those areas that would be most affected by a warmer climate and drought. He further proposes that these populations retreated to cooler and wetter refuges. The southern Rocky Mountains is one of these more hospitable zones (Benedict 1979; Benedict and Olson 1978). These patterns have led Benedict to conclude that the Mount Albion Complex along the Front Range is a mountain-based culture that represents one such population migration to the mountain valleys of the Front Range. Other sites along the Colorado Front Range such as Magic Mountain (Irwin-Williams and Irwin 1966) and LoDaisKa (Irwin and Irwin-Williams 1959) display similarities to the Early Archaic occupations defined in the Mount Albion Complex (e.g., MM3 and MM4, Benedict and Olson 1978:128). This led Benedict to hypothesize that at least part of the Magic Mountain occupation included visits from a mountain-adapted culture (Benedict 1979:128).

4.1.2 Middle Archaic Period. The Middle Archaic Period (3000-1000 B.C.) is characterized by the presence of the McKean-Duncan-Hanna projectile point series. Middle Archaic diagnostics also include Mallory, Yonkee, and Oshara styles, the Elko series, and Northern, Hawken, and Sudden Side-Notched points. The last three types also occur in the Early Archaic Period. End and side scrapers appear frequently in tool kits, ground stone is abundant, and the true mano and metate grinding slab appear. Roasting pits and hearth and/or boiling pits are definitive features.

4.1.3 Late Archaic Period. The Late Archaic Period (1000 B.C.-A.D. 500) exhibits a continuing trend of increasing ground stone frequencies and decreasing projectile point size. Among Late Archaic styles are Pelican Lake points,

the Magic Mountain Apex Complex types, complexes at LoDaisKa, and some Besant and En Medio points.

4.2 Archaic Stage Culture History

The following section discusses the Archaic Stage in terms of material culture and archaeological interpretation for the Mountains Study Region. Some of the data tend to overlap into more than one period.

4.2.1 Early Archaic Period. Dates for the Early Archaic Period range from 5500 to 3000 B.C. An Archaic complex which contains Early Archaic components has been defined in the Colorado Front Range by Benedict and Olson (1978; Benedict 1981). They postulate the existence of a distinct mountain-oriented culture, and suggest that Mount Albion points are a distinctive type unique to the southern Rocky Mountains (Benedict and Olson 1978:147). The Hungry Whistler Site, an ambush game drive system above timberline, has been dated to 5800 \pm 125 RCY (3850 B.C.), the earliest date known for such a system (Benedict and Olson 1978:70). A Mount Albion point base and lithic flakes are associated with this date (Benedict and Olson 1978:26). The Ptarmigan Site, a multi-component camp, has yielded dates ranging from 6450 \pm 110 RCY (4500 B.C.) to 4700 \pm 95 RCY (2750 B.C.), which may be associated with the Bitterroot Side-Notched points or Logan Creek Early Archaic points found there (Benedict and Olson 1978:126). A milling slab fragment and cobble handstone were also recovered in association with endscrapers, bifaces, and microtools reminiscent of Early Archaic Magic Mountain Zones D-F. However, this assemblage lacks prismatic flake technology, which is considered the main tool industry at Magic Mountain, located along the Front Range (Benedict and Olson 1978:50, 63, 127). The excavated Fourth of July Valley Site appears to be an Early Archaic campsite (5960 \pm 80 RCY or 4010 B.C.), which has been interpreted by Benedict as representing a developmental stage of the McKean Complex (Benedict 1981:92). Tools at the site included eighteen projectile points, bifaces, perforators, flakes, and one chopper; though no grinding implements were present. Other finds in the Fourth of July Valley include two Mount Albion Corner-Notched points. Site 5BL70 exhibits Mount Albion complex materials such as points, flakes and ground stone; however, this site may be Late Prehistoric (Benedict and Olson 1978:99).

The Early Archaic Period at Magic Mountain, Zones F-D, and the Magic Mountain Complex, contain a large number of finely made scraping tools, perforators, and a number of grinding slabs specific to the Magic Mountain Complex (Irwin-Williams and Irwin 1966:179). According to Benedict, certain affinities between LoDaisKa (Type D,F,H,I points), Cherry Gulch, Helmer Ranch, Wilbur Thomas Shelter, and Mount Albion points indicate a local mountain-oriented

manifestation with a limited geographical range between the Front Range foothills and the Continental Divide (Benedict and Olson 1978:133-134). Draper Cave in northeastern Custer County also contains Early to Middle Archaic materials, with McKean points, Mountain Complex points, some types similar to those found at Wilbur Thomas Shelter, and one stemmed Bulverde Complex point (Hagar 1976).

Also along the Front Range foothills/plains transition zone, the Two Forks District has yielded a number of points similar to the Magic Mountain Complex, and four sites have been designated as early Archaic (Windmiller and Eddy 1975). Further north in the plains/foothills transition area, Elizabeth Morris has reported two sites with diagnostic Mount Albion points in the Lykins Valley (Morris et al. 1979:23).

In the Upper Colorado River area, one possible Early Archaic basal point fragment was found during a survey for the Azure Project (Kranzush, Viola and Firebaugh 1982).

All three major parks contain evidence of Archaic occupation. In North Park, the Early Archaic Period is represented by thirteen multiple component sites and three single component sites. Associated assemblages include fifteen projectile points, two of them bases which resemble Hawken, Helen Lookingbill, and Danger Cave types. Lischka suggests that the selective pressure of environmental variables fostered an emphasis on small game subsistence during the Early Archaic Period that may correlate with Altithermal climatic fluctuations and the reduction of big game (Lischka et al. 1980:239). It is hypothesized that many of the Archaic sites within North Park are base camps which were located in areas of high density comestible vegetal resources. Sites with evidence of more limited activities tend to be located in areas of low density edible plant resources (Lischka et al. 1980:230). It is also significant that the incidence of ground stone in the North Park survey decreases through time (Lischka et al. 1980:229).

From Middle Park ten miles south of Kremmling, a large corner-notched Early Archaic point and one Early Archaic ovoid core chopper similar to MM67 at the Magic Mountain sites were reported by Fitting (1978).

For the Windy Gap project located in the Granby Area, Wheeler and Martin (1983) reported cultural features from excavated sites that yielded Early Archaic dates. These dates may suggest that Early Archaic sites are generally buried. The Windy Gap sites and features consist of stick and post impressions in daub matrix and large amounts of charred wood and charcoal--presumably post remains from structures. At the Granby and Hill-Horn sites, these possible habitation structures are located atop ridges in

exposed, sage-covered terrain. The variety of pits may suggest different functions for different features, and exposure to high winds possibly suggests utilization of the wind to dry meats or vegetal resources (Wheeler and Martin 1983:318). Other radiocarbon dates from the Windy Gap Project Area extend the time span from 5770 B.C. to A.D. 1550 for the occupation of Middle Park, but the major features date from the Early Archaic through the Middle Archaic Periods (Wheeler and Martin 1983:vii).

South Park yielded two possible Early Archaic projectile points found in the vicinity of Fairplay, Colorado which are similar to MM4 points from the Magic Mountain site (Metcalf 1979).

Early Archaic remains are common within the San Luis Valley, especially in close proximity to the Rio Grande River. Pioneering work in the zone by Renaud led to the definition of the Rio Grande Culture which was characterized by a tool kit including Rio Grande projectile points, scraping and cutting tools, and ground stone. In addition to lithic scatters, Renaud identified more complex site types such as campsites, workshops, lookouts, and rockshelters (Renaud 1942; 1946). Although Renaud argued for the existence of a discrete Upper Rio Grande Culture, more recent work indicates that what he defined is actually part of the general Early Archaic occupation of the Mountains Study Region. In fact, the main characteristic which distinguishes the Rio Grande collections is the use of local basalt. Rio Grande point types have been compared with lithic material from the early phase of the Oshara Tradition such as Jay and Bajada points (Irwin-Williams 1973; Farmer 1978:4; Conners et al. 1980; Haas 1980; Dykeman 1982:12). The San Luis Valley Archaeological Project collections include six Bajada-like projectile points (Billman, personal communication) as well as examples resembling Pinto Basin point types from California. Additional Pinto Basin points were collected in the Closed Basin by Van Button. Magic Mountain Apex Complex Early Archaic projectile point types were recorded as isolated finds by the Grand River Institute survey (Conners et al. 1980:27). Radiocarbon dates taken from hearths located at Vail Pass Camp indicate Plains Archaic-late Prehistoric use of the mountains and may suggest seasonal use of the valley by Plains groups between 5370 and 4800 B.C. (Gooding 1981; Conners et al. 1980:27).

In the pass areas, Early Archaic occupations are present, but Middle Archaic Period materials depict a more intense utilization (Black 1982:163). At Cottonwood Pass, the Early Archaic component is recognized as a short-term hunting camp with a full range of lithic materials. Distinctive tools include a heat-treated, side-notched chert point and a hafted knife (Black 1982:94-95). Forty-four percent of the lithic materials collected (especially yellow chert) were heat-treated. Heat treatment of lithic

materials appears to be a common phenomenon and may be a useful diagnostic trait of the Early Archaic Period (Black 1982:143). A brief Early Archaic occupation was also discovered at Vail Pass Camp, a large multi-component high altitude campsite with nine clusters of occupation. However, intensive utilization of the mountain environment at Vail Pass did not begin until the Late Archaic Period (Gooding 1981). The Early Archaic projectile points found at Vail Pass, which Gooding groups as Altithermal Side-Notched, are associated with Hawken Side-Notched points, the Magic Mountain Complex, Mountain Complex, Mount Albion Complex, points at Zone F at Magic Mountain, and points at the Wilbur Thomas Shelter. Three knife fragments were also assigned Early to Middle Archaic affiliations based on the haft element remnants. Vail Pass collections also contained 41 manos and 11 metates, abundant evidence for vegetal and animal processing; however, assigning them to a temporal period is difficult (Gooding 1981).

An abundance of black lithic materials (e.g., basalt, black chert, obsidian) and a high occurrence of Jay and Rio Grande projectile points represents a distinctive Archaic Tradition at Piedra Pass (Reed 1981). Reed questions whether the Continental Divide may be the northern and western boundary for the Rio Grande Complex (Reed 1981:14). However, a Rio Grande point was found above Antelope Creek, which is north and west of the Continental Divide, during the Mount Emmons Project (Baker et al. 1980:120-121). Archaeological studies in Rio Grande National Forest report a lack of Early Archaic materials, however, about 5000 B.C., "Rio Grande" points appear (Burns 1981).

Work in the Curecanti National Recreation Area of the Gunnison River Valley has yielded a tremendous amount of data within the Mountains Study Region. Stiger noted in his study of the area that Curecanti radiocarbon dates were prior to 4000 B.C. with the exception of one contaminated date (Stiger 1981). He suggests that this evidence indicates the Indians were exploiting specific environmental components which were absent from the region after 4000 B.C., causing the aboriginal inhabitants to abandon the area. This is supported in part by the presence of pinyon pine charcoal and one carbonized hedgehog cactus seed; neither of these floral components are present today (Stiger 1981:106). Stiger also uses this evidence to hypothesize the existence of a Prehistoric/Early Archaic pine forest as well as the possibility of a changing, fluctuating climate. The adaptation which Stiger postulates contrasts with Jennings' (1964) theory of a generalized, stable Desert Archaic Culture (Stiger 1981). However, later Curecanti investigations have yielded dates ranging from 1050 B.C. to 2747 B.C. (Jones 1982), refuting Stiger's abandonment theory. Linda Scott, who conducted the palynological analysis for the project (Stiger 1981:Appendix B), disagrees with Stiger's

conclusions and argues for a stable environment dominated by sagebrush after 3050 B.C.

Evidence suggests that at certain locations i.e., Curecanti and Middle Park), occupations during the Early Archaic Period were semi-sedentary base camps (Black 1982:17). Sites at Curecanti are usually located near ridges or in lowlands. Structures, adobe, and slab-lined and unlined hearths were recorded at Curecanti. Exposed in excavation, the structures appear as patterns of postmolds, charred wood, or small charcoal-filled depressions that also contain concentrations of pole-impressed burnt clay and are interpreted as evidence of possible wickiup-like structures (Jones 1982). Dates from these sites are 2747, 2488, 2294, 2469, and 1974 B.C. (Jones 1982:13). The sites display an increase in ground stone, and, as all the structures are located on ridges, the sites were probably used for habitation and plant and animal resource processing and consumption. It is possible that trash dumps containing bone, lithics, charcoal and fire-cracked rock are located below these ridge sites (Stiger 1981).

The Curecanti lowland sites exhibited a higher density of flaked stone artifacts, cores and debitage, but produced a lower ground stone ratio. This may indicate more stone tool manufacture, less plant food preparation, and short-term occupation, though fire hearths also occur here. One hearth date of $10,094 \pm 830$ RCY (8144 B.C.) and one of 7272 ± 110 RCY (5322 B.C.) from postmold charcoal have also been used to establish a chronology (Jones 1982:12).

Further upstream in the Gunnison River Valley, the Mount Emmons Project uncovered intensive Archaic utilization in the direct impact survey area. Fifty-two percent of the diagnostic points found are Archaic, including a high proportion of Early and Middle Period points (Baker et al. 1980:81-85). Projectile points found at Mount Emmons are similar to the Magic Mountain Complex types MM3 and MM4, while some points are almost duplicates of the Desert Culture Uncompahgre Complex variants (Baker et al. 1980:199). An Early to Middle Archaic habitation, located at the edge of a former lake basin in the Alkali Creek Study area, manifests a wide assortment of lithic tools and abundant debitage, and contains obsidian which is rare at other sites in the region. It is dated at 5455 ± 120 RCY (3505 B.C.). A Rio Grande point was also found at Antelope Creek (Baker et al. 1980:120). No habitation sites were located in the indirect impact survey areas, and no specific Early Archaic designations have been made. However, one tool kit site is temporally assigned to the Early/Middle Archaic Period by point comparison and typology (Baker et al. 1981:29).

4.2.2 Middle Archaic Period. The presence of McKean projectile points is a distinguishing factor in the

designation of a Middle Archaic component. Though there are several other diagnostic points of the Middle Archaic Period, McKean Complex points are present through the entire Colorado Southern Rocky Mountains region. Middle Archaic Period dates range from 3000 to 1000 B.C.

Along the Front Range, a McKean point was found at the Hungry Whistler Site of the Mount Albion Complex which has a date of 4010 ± 90 RCY (2060 B.C.). Benedict theorized that the McKean Complex was derived from a relocated Altithermal group (Benedict 1981:87). He sees a transition from Jimmy Allen points to McKean lanceolate points and from Pryor Stemmed points to Duncan points (Benedict 1981:88). A Duncan point has also been located at the Hungry Whistler Site associated with a date of 5300 ± 130 RCY (3350 B.C.). Duncan and Mallory points have been reported from the Two Forks District, along the Front Range, where 10 sites are attributable to the Middle Archaic Period (Windmiller and Eddy 1975:330). A Mallory point fragment and a Duncan point base have been documented in the Lykins Valley in north-central Colorado (Morris et al. 1979:23,62).

In the Upper Colorado River Basin, one point located on a lithic scatter is suggestive of the Middle Archaic Period (Hartley 1981:36). It is significant that no Middle Archaic projectile points were found during the Azure Project survey. Further downstream, the Glenwood Springs Resource Area contains plentiful Archaic site evidence (Burgess et al. 1980). Projectile points and large corner-notched and side-notched artifacts recovered from the Glenwood Springs survey are generally reminiscent of Middle to Late Archaic diagnostic points, particularly McKean points and points found at Spring Gulch and Deluge Shelter. The artifacts all conform to collections from west-central Colorado, and the tool types suggest hunting activities as well as vegetal processing (Burgess et al. 1980:29-31,60). Four stemmed stone points which have been given Desert Archaic associations and ranging in data from 1300 to 325 B.C., span the Middle to Late Archaic periods.

In examining the Mountain Parks, Lischka reports thirty-four Middle Archaic sites with thirty-three points in Middle Park. Several of these projectile points resemble the Mallory types, and one shows similarities to an Oxbow or McKean point. Similarities with Vail Pass collections were also noted (Lischka et al. 1980:182, 184).

Evidence for Middle Archaic occupation from Middle Park has been documented by Lischka and Black (1979) in the Windy Gap-Gore Pass Area. Three sites and one isolated find yielding points indicate a long utilization of the Park from Middle Archaic through late Prehistoric/Protohistoric. Stone circles and stone alignments were also assigned to the time range of Middle Archaic to Late

Prehistoric/Protohistoric (Lischka and Black 1979:61,80). Most sites, including chipping stations, quarries and long-term habitations, were located on creek terraces, near springs, or on ridges. Artifacts at these sites display use-wear patterns indicating chopping, scraping, cutting and drilling activities. A majority of the sites are chipping stations, and, though there is a lack of finished artifacts, lithic materials of jasper and quartzite appear to have been quarried locally. McKean, Duncan, Hanna (McKean Complex points) and Mallory points have been reported previously in the Middle Park area, with a Duncan point near Muddy Creek and two Middle Archaic points near Hot Sulpher Springs (Huse 1977). Projectile point types associated with the Middle Archaic Period in the Middle Park area suggest cultural ties to the north and east of the Rocky Mountains (Kranzush, Viola and Firebaugh 1982:19).

A number of sites located at vantage points with unrestricted views on saddles and benches of the east slopes have been reported from South Park (Metcalf 1979). Three projectile points, a Hanna point base and fragments, and two points similar to Dipper Gap from a large multi-component lithic scatter on Reinecker Ridge appear to be Middle to Late Archaic points (Metcalf 1979).

Middle Archaic point types and radiocarbon dates document continued occupation of the San Luis Valley during the Middle Archaic. San Luis Valley Rio Grande points of this period are similar to San Jose points of the Oshara Tradition (Jones 1977:40; Dykeman 1982:12), and two San Jose points were collected by the San Luis Archaeological Project (Billman, personal communication). Projectile points recovered during a Grand River Institute survey from two sites and two isolated finds in Saguache County are similar to points from west-central Colorado, Apex Phase points from the Magic Mountain Site, McKean points from Wyoming, and Great Basin/Uncompahgre Plateau Elko points (Conners et al. 1980:95). Hearths sampled from Vail Pass Camp, located in west-central Colorado, yielded dates between 2740 and 1470 B.C. (Gooding 1981). These dates, along with data from the Institute survey suggest a Middle Archaic occupation of the valley by Plains groups who brought with them a McKean tool complex of Duncan, Hanna, Mallory side-notched, and McKean lanceolate points (Conners et al. 1980:27). Greiser (cited in Grant 1980:4-5) feels there is evidence for use of the northern part of the San Luis Valley by both Plains Archaic and Archaic Pico groups.

In Rocky Mountain National Park, no Middle Archaic points were located during Husted's Rocky Mountain National Park survey (Husted 1962). In Routt National Forest few points are suggestive of a Middle Archaic occupation. Guthrie reports a probable Archaic point resembling a "Park" point, similar to types found in South Park and at LoDaisKa (Guthrie 1980:25).

The Middle Archaic Period is represented in the mountain passes. A stemmed dart point found on Cottonwood Pass (Black 1982:62) along with Duncan and Hanna points and fragments from Wolf Creek Pass (one isolated find and one site component) (Shafer 1978) represent the Middle Archaic Period. Scrapers similar to examples from Magic Mountain and Vail Pass were reported from Wolf Creek Pass, along with one metate and three manos, suggesting a general hunter-gatherer exploitation system. Eight side scraper fragments and adze-like end scrapers found at Vail Pass suggest heavy scraping and cutting activities. The campsite at Vail Pass displays various point types including three McKean lanceolates, one fragmented Mallory Side-Notched point, two Duncan points and two point fragments, eight Hanna points, and two Uncompahgre scrapers (Gooding 1981). One complete Gypsum point and three fragments were also found, constituting the first published high altitude evidence of the point type (Gooding 1981).

Radiocarbon dates of 3460 B.C. \pm 210 and 3720 \pm 170 B.C. from Concentration C at Campsite 5ML45 atop Piedra Pass along with the presence of Gypsum points, Elko-Eared points, and large corner-notched points indicate an Early Archaic to Middle Archaic occupation (Reed 1981). Ground stone fragments from a slab metate were also present at Concentration C. Charcoal from Site 5ML45 yielded a date of 1820 B.C. \pm 220, which probably makes it the most recent site at Piedra Pass.

In the Rio Grande National Forest, Middle Archaic evidence is abundant and usually characterized by the presence of McKean Complex points (Burns 1981). From Ignacio Canyon within the San Juan National Forest, Baker reports an isolated find resembling a San Jose projectile point (3000-1800 B.C.) and another large Archaic age point (Baker 1981:27). Alan Reed reports an Archaic lithic scatter at Beaver Creek containing a diagnostic point dating between 5000 and 1000 B.C. (Reed 1981:12).

The Middle Archaic Period is represented in the Mount Emmons Project area of the Upper Gunnison Basin (Baker et al. 1981). A variety of projectile point styles such as the McKean complex styles, Hanna, Sudden Side-Notched, Hell Gap, and Mallory points have been identified in the primary impact area at twelve Middle Archaic sites and eight isolated finds.

Indirect impact areas at Mount Emmons yielded Middle Archaic sites including two short-term camps with a number of tools and a slab-lined cist or hearth, an isolated find, and an Early to Middle Archaic tool kit site (Baker et al. 1981). The Alkali Creek test excavations uncovered abundant Middle Archaic artifacts and features. A possible wickiup or windbreak structure consisting of five postmolds dating

to 4065 \pm 380 RCY (3015 B.C.) also yielded a distantly associated Mallory Side-Notched projectile point. Another possible habitation site where a burned clay feature was found yielded a date of 5455 \pm 120 RCY (3510 B.C.) (Baker, Black and Horvath 1981).

4.2.3 Late Archaic Period. Along the Front Range in the Lykins Valley, a transition area between the foothills and plains, the Late Archaic Period is represented by eight sites (Morris et al. 1979:103). Further south, Anderson and Lischka (1977) found Late Archaic occupation in the foothills near Pueblo.

Three, possibly four, Late Archaic projectile points have been collected from the Azure Project Area of the Upper Colorado River (Kranzush, Viola and Firebaugh 1982).

In the Mountain Parks, Late Archaic occupation has been documented at sites in North Park which yielded sixty-one diagnostic artifacts (Lischka et al. 1980:51,170). However, due to problems in classification, these Late Archaic artifacts are difficult to assess (Lischka et al. 1980:186). Late Archaic evidence is rather sparse in the Middle Park region, although there are indications that it is more common than remains of the Paleo-Indian and Early Archaic periods. Some points similar to Late Archaic points have been found in the Windy Gap-Gore Canyon Project Area (Lischka and Black 1979). Fitting (1978) also located Late Archaic points in Middle Park, including points associated with the Apex Complex from Magic Mountain and with Buckles' Roubideau Phase of the Uncompahgre Complex. In South Park, the Late Archaic Period is represented by one projectile point comparable to those of the Late Archaic Apex Complex and additional points with Middle to Late Archaic affiliations (Metcalf 1979).

Late Archaic occupation of the San Luis Valley is very poorly documented. Projectile points recovered from two sites within the Blanca Wildlife Refuge bear some resemblance to two points from Zone B of the Magic Mountain Site and to points belonging to the late period of the Pico Culture (Jones 1977:40). Late Archaic points recovered from a survey of the valley by the Grand River Institute resemble Ironstone Phase points from the Uncompahgre Plateau (Conners et al. 1980:95).

In Routt National Forest, the Late Archaic Period is represented by Great Basin projectile points such as the Elko-Eared type (Ward-Williams and Foster 1977:86).

At the Mountain Passes, evidence for Late Archaic Period utilization is found on Cottonwood Pass. This includes a lithic scatter/long-term habitation (Black 1982:52) and a probable tool kit site with evidence

suggesting the processing and cooking of faunal resources (Black 1982:74). Four site components with Late Archaic points resembling Frison's Corner-Notched Complex and one possible En Medio Oshara projectile point are present at Wolf Creek Pass (Shafer 1978).

Two Late Archaic components are present at Vail Pass. One component appears to represent intense utilization, whereas the other depicts a terminal, transitory occupation associated with late assemblages (Gooding 1981). Gooding's projectile point typology includes six fragments of his Diagonal Basal-Notched, one point and one fragment of the Pelican Lake type, and six complete and eleven fragmented Large Corner-Notched points which overlap the Late Archaic and Early Woodland Periods. Gooding suggests that his Diagonal Basal-Notched specimens may prove to be a horizon marker for the Late Archaic in the Southern Rockies Region (Gooding 1981). Points similar to the En Medio types of Irwin-Williams' Oshara Tradition (Irwin-Williams 1973) represent possible Late Archaic occupation on Piedra Pass (Reed 1981).

Late Archaic occupation within the Rio Grande National Forest is suggested by the presence of generalized large corner-notched point types (Burns 1981).

The Mount Emmons Project in the Gunnison River Valley located five Late Archaic sites and eight isolated finds (Baker et al. 1980). One diagnostic Tabeguache point at Antelope Creek and two Late Archaic side-notched darts were represented (Baker et al. 1980:122). Archaic isolated finds and sites are reported from the indirect impact zone at Mount Emmons. Test excavations at Alkali Creek for the Mount Emmons Project also revealed a multi-component site with Late Archaic projectile points.

Archaic components occupied during overlapping time periods are included at sites near La Veta Pass (Buckles 1983:14). Here rock-filled hearths and grinding stones are present, suggesting utilization of plant resources (Buckles 1983:19). Testing at two large multi-component lithic scatters on the Basalt-Malta transmission line near Leadville revealed possible evidence of camping activities, tool manufacture, and food processing of both plant and animal resources (Guthrie 1981). Site 5LK385 is a multiple activity site which may represent a base camp with specific activity "satellite" areas. A stone circle was also located at Site 5LK385. Projectile points, most of them from 5LK385, generally resemble points of the late Paleo-Indian/Early Archaic to the Woodland periods (Guthrie 1981:49). Ground stone and bone fragments were also found, and lithic materials range from cores to finished tools, indicating the full range of lithic manufacture.

4.3 Archaic Stage Lifeways

Archaic subsistence patterns in the Mountain region appear to be basically similar to those seen elsewhere. These patterns include a trend toward both greater exploitation of small game animals and more intensive use of wild plant resources in comparison to the Paleo-Indian stage. Specifically, pollen analysis and macrofloral studies indicate the possible exploitation of pinyon nuts, wild grasses, cactus and sagebrush leaves (Stiger 1981; Euler and Stiger 1981; Baker, Black and Horvath 1981). Diversification of the resource base is also indicated by a greater range of site types and locations, though comparison is hampered by a general lack of information on Paleo-Indian settlement patterns.

Archaic lithic artifacts generally lack the finished quality exhibited by Paleo-Indian materials. Projectile points are usually large to medium-large and are either notched or stemmed. They are usually corner-notched, but side notches also occur: e.g. Mallory Side-Notched, Northern Side-Notched, and Hawken Side-Notched. Scrapers are common components of Archaic assemblages, and use-wear analysis of particular artifacts reveals heavy use geared toward both plant and animal processing (Kvamme 1980). In the Curecanti region, plant resources appear to have been particularly emphasized (Stiger 1981; Jones 1982). Greater utilization of plant resources by Archaic populations is indicated by the increasing occurrence of ground stone through time. It has been argued, however, that the mere presence of ground stone does not necessarily indicate plant processing, since meats have also been prepared with ground stone implements (Smith 1974). Other evidence, however, indicates that Archaic people were exploiting a variety of plant resources. Evidence of habitational structures, such as the examples at Curecanti and Windy Gap, indicate the possibility of some degree of permanency.

There is an increase in the number of Archaic sites compared to the number of Paleo-Indian sites, and this trend continues from early to later periods. However, evidence for a massive migration to the mountain regions during the Altithermal is not supported by site numbers. This interpretation may be based on a skewed sample due to obscuring ground cover or a variety of other factors. Though Early Archaic utilization is documented throughout the Mountains Study Region, the evidence is far less abundant than that for the later periods. What is observed is a general increase in the evidence of occupation (i.e., sites and number of diagnostic artifacts) from the Paleo-Indian through the Historic periods, suggesting a population increase through time. The primary factors determining settlement locations include proximity to water, good vantage points, and rich faunal and floral resources. There are

other variables that appear to be important in site selection as well, and some of these may reflect localized adaptations.

Social organization of the Archaic Stage was probably at the band level, though no direct or conclusive evidence is found in the mountains. It has been suggested that the Indians lived in groups of less than twenty-five people while nomadically roaming the mountain valleys and tundra, hunting and gathering as they went (Black 1982:20; Reed and Scott 1982).

The Archaic Stage archaeological remains exhibit affiliations with several cultural regions: the Northwestern Plains, the Central Plains, the Great Basin, and the Southwest. These associations are based on projectile point typologies. In general, there appears to be a trend of increasing influence from the closest areas. For example, most sites with Southwestern characteristics are located in the San Luis Valley, the southwestern San Juan and Rio Grande National Forests and near southwestern pass areas such as Piedra and Wolf Creek Passes (Reed 1981; Shafer 1978), whereas sites on the Front Range yield styles similar to the Northwestern and Central Plains (Nelson 1971; Windmiller and Eddy 1975; Benedict and Olson 1978; Morris et al. 1979; Benedict 1981). However, some more far reaching influences, such as the McKean-Duncan-Hanna variants from the Northwestern Plains, are present throughout the entire mountain region. Such components may indicate either a widespread culture of the Middle Archaic Period or simply another interpretive problem regarding point typology. At any rate, the variety of influences displayed at most sites would indicate interaction due to the exploitation of mountain resources by those various surrounding cultures. For instance, it is suggested that the Curecanti ridge top sites represent an adaptation similar to that of groups on the Uncompahgre Plateau, as evidenced by pinyon nut exploitation (Stiger 1981:109).

The utilization of the mountains' rich biotic and abiotic resources coupled with small-band mobility served the population well and promoted a continuation of Archaic lifestyles until contact periods. The excellent synthesis of Hunter-Gatherer Adaptive Strategies by Kevin Black (1982:165-168) should be consulted for a detailed description of Archaic lifeway adaptive strategies for Central Colorado because it may be applicable throughout the Mountains Study Region.

4.4 Archaic Stage Cultural Processes

The Archaic Stage is characterized by long-term stability and continuity in adaptive strategies relating to the environment. This represents a basic hunting and gathering

strategy used by nomadic groups traveling throughout the mountain drainage areas and passes. Despite differences in regional point types and evidence for a general increase in the use of plant resources through time, the overall data suggest a very stable adaptation to the environment. Although there were probably local fluctuations in climate and resources (e.g., the Altithermal), overall hunting and gathering strategies did not appear to change significantly.

The changes that did occur include a reduction in point size throughout time and an increase in the use of ground stone. Smaller projectile points are probably correlated with the hunting of smaller game animals and changes in tool technology. The increasing incidence of ground stone suggests the importance of plant resources and is indicative of an overall Archaic adaptive strategy of exploiting a wider spectrum of resources.

4.5 Archaic Stage--Quantity and Quality of Existing Data

4.5.1 Evaluation of the Data Base. A wealth of information has been collected on the Archaic Stage from a variety of CRM surveys and excavations and a few research projects. Research studies include excavations at the Magic Mountain (Irwin-Williams and Irwin 1966) and LoDaisKa (Irwin and Irwin-Williams 1959) sites along the Front Range. Also along the front range, excavations at sites in the Indian Peaks area provided a great deal of information on the early Archaic (Benedict 1979; 1981; Benedict and Olson 1978). Data from the San Luis Valley were provided mainly by the San Luis Archaeological Project and the Grand River Institute (Conners et al. 1980). These are quality studies which provide a good data base for surrounding areas.

Cultural Resource Management projects conducted throughout the years in the Mountains Study Region have resulted in a great deal of Archaic Stage information. Although some of the earlier studies lack the sophistication of later work, some excellent research has been done in recent years. For example, the North Park study (Lischka et al. 1980) and the Vail Pass excavation (Gooding 1981) have produced much information on the Archaic. Though Vail Pass lacks absolute dates associated with cultural units, it has provided a wealth of data on a high altitude pass site. The Mount Emmons (Baker et al. 1980), the Curecanti (Stiger 1981; Jones 1982), and the Windy Gap (Wheeler and Martin 1983) projects have also resulted in very good reports. The Curecanti and Windy Gap studies have excellent information on early structures for the Archaic Stage.

Numerous other smaller scale studies in the Mountains Study Region resulted in good quality reports which added significantly to the Archaic Stage data base.

4.5.2 Data Gaps. There is much more information available regarding the Archaic Stage than the earlier Paleo-Indian Stage. However, there are still a number of data gaps. Probably the most important is the lack of understanding we have on chronology and cultural affiliation. The question still remains regarding which specific cultural groups occupied the Mountains Region. Other data gaps include the limited understanding of the influence environmental factors, such as the Altithermal period or seasonal utilization of the mountains, had on Archaic populations.

4.5.3 Future Needs. Concentration should be directed toward sites that have potential for establishing local chronologies. This will include both stratified and single component sites. Future surveys should orient effort towards specific data through the use of predictive modeling based on an explicit research design. A few research domains are suggested below. Surveys should concentrate on the class of data being most threatened by vandalism and/or development.

4.5.4 Quantity and Physical Condition. Archaic sites constitute a high percentage of total sites in the Mountains Study Region. However, many "lithic scatters" without associated dates have been placed in this Stage, and consequently this may bias the results.

The physical condition of Archaic sites varies from area to area and appears to be location specific. Studies that reported the physical condition of sites usually documented moderate to high destruction. Much of the destruction to the sites was a result of surface collections by the unaware public.

4.5.5 Important Resources. Although the importance of archaeological resources is dependent on research designs and is project and locational specific, Archaic Stage sites that can be securely dated are extremely important. Stratified sites with structures and associated absolute dates are also critical. Since the problem of soil mixing especially affects stratified sites, single component sites that can be dated are also significant resources. Thus any site which has the potential for associated absolute dates constitutes an exceptionally valuable resource.

4.6 Archaic Stage Research Domains

One of the most perplexing questions regarding the Mountains Study Region is whether or not there exists an indigenous mountain-oriented culture (e.g. Mount Albion), and/or whether the area was occupied seasonally by groups from other areas (e.g. the Plains, Great Basin, Southwest). Before this question can be addressed, as well as other problem areas such as exchange systems, social organization,

and group interaction, a reliable local chronology needs to be established. Absolute dates in association with projectile point styles are essential for establishing relationships between the Mountains region and other areas.

One of the major problems along these lines has to do with shallow sites and the mixing effects of solifluction, frost-heaving, and bioturbation (Gooding 1981:98; Benedict and Olson 1978). Even when rare stratified sites are located (e.g. Vail Pass), it is very difficult, due to soil movement, to isolate absolute date associated with levels or point types. A better approach may be to locate single component sites for dating. A number of well dated single component sites could serve as the basis for a local chronology for the Mountains Study Region.

Other problem domains include the effects, if any, the Altithermal Period might have had on populations in the Mountains region. Was there an influx of peoples from different areas of western North America into the Mountains? The preliminary research does not totally support this hypothesis, but there may be localized areas exhibiting migrations. Further work is needed on this topic. Variables relating to the strategies employed by the people in the Mountains region which resulted in such a stable and consistent adaptation should also be examined. How does this consistent Archaic adaptive strategy compare to earlier and later periods?

Problems involving seasonal occupation of the mountains need to be examined. For example, Black (Cited in Baker et al. 1980:197) believes there is no direct evidence for seasonal site use in the Mountains region, whereas Lischka (et al. 1980) has indirect evidence for possible winter occupation in North Park. Further work is needed on this problem as well.

5.0 FORMATIVE

5.1 Formative Stage Unit Definition

Willey and Phillips' (1958:146) Formative Stage is defined by the "presence of agriculture, or any other subsistence economy of comparable effectiveness, and by the successful integration of such an economy into well-established, sedentary village life." According to this definition, it is doubtful that the Mountains Study Region exhibits a Formative lifestyle, although aboriginal Formative populations may have utilized particular regions in the mountains. The proximity of the Colorado Southern Rocky Mountains to a variety of cultural areas is represented by the number of influences exhibited in the mountains by external Formative groups. These groups include the Anasazi to the southwest, the Fremont to the northwest and west, and

the Woodland and Upper Republican to the east.

5.1.1 Anasazi Influence. Anasazi Culture (A.D. 1-1300) from the Southwest is represented sparsely in the Mountains Study Region. There is evidence of the Anasazi contact in the Rio Grande National Forest, but most comes from the San Luis Valley. The presence of Southwestern pottery and some definitive point styles may suggest trade with or utilization of the mountains. Chris Zier suggests possible hunting forays into the mountains north of Dolores by the Anasazi (Zier 1977). However, no evidence for horticulture has been recovered from the mountains.

5.1.2 Fremont Influence. The Fremont Tradition from Utah and the Great Basin (A.D. 350-1450) is characterized by a semi-agricultural lifestyle with pithouses and masonry structures, storage features, ceramics and rock art. It has been suggested that the Fremont culture grew out of the indigenous Desert Culture (Leach 1970). Although evidence in the Mountains Study Region for Fremont occupation is scarce, there is some evidence (i.e., point styles) for Fremont occupation in Routt National Forest (Ward-Williams and Foster 1977) and in Middle Park (Lischka and Black 1979).

5.1.3 Woodland Influence. Evidence for Woodland occupation of the Mountains Study Region comes from the Front Range at the foothills/plains transition and the San Luis Valley. The Woodland Tradition, characterized by sedentary village horticulturalists further to the east, is represented in the mountains only by pottery sherds and projectile points. LoDaisKa and Magic Mountain contain the most definitive evidence of Front Range Woodland occupation, and smaller, possible satellite sites occur along the northern length of the foothills/plains transition. Some of the investigations at these sites have attempted to define the Parker and Franktown Foci and the Hogback Phases. However, Benedict believes the Hogback Phase to be a mountain-adapted culture based on seasonal occupation, and hypothesizes that the Woodland ceramics present at the Lindsay Ranch Site were acquired by trade (Benedict 1975:172). Others believe the Hogback Phase to be a part of the Parker Focus, which is distinguished by cordmarked pottery vessels with conoidal bases and straight or incurving rims and Woodland-type projectile points. Parker Focus sites closely resemble Upper Republican sites, as do materials from the Franktown Focus. Franktown pottery is also conoidal with incurving rims and usually wide-mouthed cordmarked jars. The evidence suggests that there is some question as to whether the Parker and Franktown Foci and the Hogback Phase actually represent true foci and phases. Rather, they probably represent a local manifestation of a general Plains Woodland Culture and may be better referred to as complexes. Evidence for Woodland and Upper Republican influence decreases as the movement to

the west of the Front Range increases (Black 1982:163)

The presence of Woodland materials in the Mountains Study Region does not necessarily suggest the presence of a Formative Stage. No village sites have been located, and horticultural practices are not evident in the archaeological record. Instead, it appears that Formative peoples probably utilized the mountains in a seasonally transhumant hunting and gathering pattern, taking advantage of the diverse biotic zones and resources present within the area. Therefore, the Indian groups of the Mountains region maintained an "Archaic" lifestyle throughout prehistoric time.

5.2 Formative Stage Culture History for the Mountains Study Region

Formative Stage evidence in the mountains is sketchy; it is difficult to distinguish between "residency" and "influences" in material remains. The Formative period for the Mountains Study Region dates from about A.D. 500 to 1300. In the Mount Emmons Area of the Gunnison basin, three McElmo Black-on-White pottery sherds of Pueblo III Anasazi period were recovered in an isolated context (Baker et al. 1980). Mount Emmons points depict similarities to the Magic Mountain MM35 Woodland Complex type (A.D. 700) (Baker et al. 1980:198-199), while other points almost duplicate Uncompahgre Complex types of Desert Culture/Fremont associations.

Evidence of Woodland occupation is abundant along the Front Range foothills/plains transition zone. Two Woodland stone enclosures north of Golden on the George Lindsay Ranch were defined as "Hogback" by a series of traits, including small corner-notched points with a high level of serration and cordmarked Woodland pottery (Nelson 1971). Nelson suggests the "Hogback Phase" represents a seasonal wintering situation for nomadic Indians exploiting both the plains and the mountains whereas Benedict (1975) refers to the Hogback Phase as occupation by a mountain-adapted people. Benedict and Olson recognize three to four "Hogback" points at the high altitude Site 5BL70 which is part of the Mount Albion Complex (Benedict and Olson 1978:99). Other representative sites, according to Nelson, include LoDaisKa, Magic Mountain, Hall-Woodland Cave, Willowbrook, Van Bibber Creek, and the Rainbow Creek Site (Nelson 1971:13-14). Hogback or Woodland projectile points were also found during the Boxelder Creek Project (Morris et al. 1979), and Woodland pottery has been found in sites at Owl Canyon Rock Shelter (Burgess 1975).

In the Two Forks Area along the Front Range, the possible Formative Stage utilization is represented by fifteen Woodland sites and two Upper Republican/Shoshonean sites (Windmiller and Eddy 1975:330). Points are similar to Magic Mountain Woodland types MM19, MM20, MM32, MM33, MM34, and

MM35, and side-notched broad spur, and triangular unnotched Upper Republican point styles. Twenty Woodland sherds were also present.

In the Mountain Park areas, Lischka's investigations in North Park have revealed sherds with Woodland affiliations from two sites; seventy-nine are surface sherds, and forty-six resulted from testing (Lischka et al. 1980:189). Other sherds in collections from North Park are Shoshonean wares and Pueblo II Anasazi sherds.

The Formative Stage is represented in Middle Park by projectile points similar to the Cub Creek Phase of the Fremont culture, the Uncompahgre Complex, Deer Lodge Midden points and LoDaiska Complexes B and C. Woodland pottery sherds are also present (Fitting 1978). The Windy Gap-Gore Pass area of Middle Park exhibits Formative materials such as one Hogback Phase Point (A.D. 600-1000) and a point diagnostic of Upper Republican. These are similar to those at Hall-Woodland Cave or to the Franktown Focus of the Front Range (Burney et al. 1979). A clay textile impression of a folded piece of single-ply handwoven material was found in Middle Park near Granby Reservoir (Gordon and Kranzush 1977:10) and, though it cannot be assigned a cultural or temporal association, it is a unique phenomenon in the archaeological record for the mountain parks.

Within the San Luis Valley, Pueblo I-IV wares have been found in sites reported by Renaud along the Rio Grande and San Antonio Rivers (Meyers 1950:58-66). Within collections from the University of Denver, there are 12 sites with Northern Rio Grande ceramics all from the southern part of the San Luis Valley; and there are additional reports by Renaud of Pueblo ceramics in the Great Sand Dunes and Dry Lakes region (Jones 1977:25). Swancara (1955:56) has reported Pueblo ceramics dating between A.D. 700 and 1400 within the Great Sand Dunes area. Private collections from the valley contain Classic Mesa Verde ware from as far north as Saguache as well as Pueblo IV unprovenienced utilitarian wares (Meyers 1950:68). Six to eight sites recorded from the southern half of the San Luis Valley by the San Luis Archaeological Project contained Pueblo wares of undetermined age. None of the sherds could be identified as Northern Rio Grande wares (Haas 1980; 1982).

The San Luis Archaeological Project recorded Plains Woodland ceramics within sites throughout the northern, central, and southwestern portions of the valley (Haas 1980; 1982). Woodland and Woodland-like projectile points have also been reported from the San Luis Valley. Farmer (1978:23) reported Plains Woodland-like points from two sites in the Blanca Wildlife Refuge. Points from one of these sites are nearly identical to the MM34-35-36 types of the Magic Mountain series (Irwin-Williams and Irwin

1966:91-93). Five additional corner-notched points from a third site in the Wildlife Refuge also appear to belong to the Woodland Tradition (Irwin-Williams and Irwin 1966:50-51). An analysis by Kyle (1981:5) of 12 points recovered from a survey in the Baca Grande area of northeast Saguache County revealed that nine were Woodland types dating between 500 B.C. and 1000 A.D.

Additional evidence of the occupation of the San Luis Valley by Formative groups is provided by remains of corn in two rockshelters. In the late 1930's, Hurst found some shreds of cornstalks during excavations in a Saguache County rockshelter (Hurst 1939:61). A complete cob was discovered in a rockshelter located in the foothills of Mt. Blanca by the San Luis Valley Archaeological Project (Haas, personal communication).

One point resembling Late Woodland projectile point types was recovered in Rocky Mountain National Park (Hartley 1981). Ward-Williams and Foster found three late Fremont point types (A.D. 1300-1850) and Plains Woodlands projectile points and pottery in Routt National forest. The presence of these materials might be explained by the utilization of the Yampa Valley as a major thoroughfare connecting the Great Basin with the Great Plains (Ward-Williams and Foster 1977:88).

For the mountain passes, Vail Pass has what Gooding (1981) terms Formative projectile point types. These include two Summit Stemmed projectile point fragments (A.D. 220) of Woodlands affiliation, previously unreported from the Southern Rockies, and large, corner-notched point types overlapping the Late Archaic and Early Woodland Periods. Some researchers, however, feel that this interpretation is controversial (Kevin Black, personal communication). Five Upper Republican point types corresponding with dates around A.D. 1000, and five Plains Side-Notched points (A.D. 1590-1750) were also found at Vail Pass (Gooding 1981). Occupations at Vail Pass Campsite include the Early Woodland, the "Parker Phase" Period and The Franktown Phase Period (Gooding 1981:15-16). Gooding defined the Parker Phase as an occupation along the South Platte drainage which exhibits cordmarked pottery unlike Plains Woodlands ceramics. The Franktown Phase occupation exhibits Upper Republican points, but lacks Upper Republican pottery. There is one possible piece of trade ceramics from the Plains which has regularly spaced narrow coils, but the distinct absence of Woodland ceramics leaves open the possibility of actual Woodland occupation of the interior Rockies (Gooding 1981:99,136).

Wolf Creek Pass contains one Woodland site and one Basketmaker II Anasazi site. These sites yielded two Woodland Tradition projectile points (A.D. 500-1100), two Upper Republican type points (A.D. 1210-1334) and one Basketmaker

II point style (Shafer 1978).

The Southwestern District of the Mountains Study Region contains, expectedly, a majority of the Formative materials recorded within the research region. Anasazi pithouses and rockshelters are present in San Juan National Forest, however the specific site localities are outside of the Mountains Study Region boundary north of Durango in the Falls Creek-Animas Valley (York 1980:3). Ignacio Canyon in the San Juan National Forest exhibits lithic scatters, ceramics, and ground stone and, while no evidence of Anasazi structures is present, Basketmaker III Greyware, Pueblo I Black-on-White sherds, and Pueblo II ceramics were found (Baker 1981:27-28). Two Pueblo I sites (A.D. 700-950), three Pueblo II sites (A.D. 950-1150), and two sites and one isolated find of general Pueblo affiliation are also documented (Baker et al. 1981:29). The incidence of ground stone is high. Most sites appear to be small temporary camps with a limited number of activities. Four sites were designated as habitations because of unusually dense scatters of both ceramics and ground stone. Baker concludes that Ignacio Canyon might have served as a resource procurement zone for people with permanent residences elsewhere (Baker 1981:40).

One site in the Morrison Creek Timber Sale, San Juan National Forest, yielded four greyware Anasazi sherds (Reed 1982:12). It is apparent that collectors have been active in the region, as diagnostic materials are scant. Most sites located in the project area were to the north where open parks or meadows are located and through which a possible route of travel between the Dolores and West Dolores River Valleys has been hypothesized (Reed 1982:30). There is evidence of Pueblo contact resulting from work done from 1975 to 1979 in Rio Grande National Forest (Burns 1981).

5.3 Formative Stage Lifeways

The Formative Stage is generally defined by Willey and Phillips (1958) as the presence of horticulture in sedentary situations. Thus, by definition, there is no true Formative Stage for the Mountains Study Region. It seems plausible, however, that Formative people utilized the region specifically for the diverse game and floral resources, leading a hunting and gathering lifestyle. For example, Zier (1977) suggests hunting forays of Anasazi into the southernmost Colorado Rockies. The corn remains found in the San Luis Valley were undoubtedly brought into the area by these Formative groups, because corn cultivation is not possible in the high valley.

The presence of Formative cultures in the Mountains Study Region is evidenced by ceramic types and by culturally definitive projectile points. Most of the evidence for these occupations, however, suggests limited utilization of

the area or possibly even trade with indigenous populations rather than the long-term presence of Formative peoples. Evidence often consists of isolated artifacts in no context, and no evidence of permanent villages or of a sedentary horticultural lifestyle has been found in the Mountains region.

5.4 Formative Stage Cultural Processes

Little can be said about cultural processes for the Formative Stage due to the fact that all evidence points to a continuation of an Archaic lifestyle through to historic times. Though the Mountains region was probably visited by, or at least exhibits evidence of trade with, Formative groups surrounding the area, Formative peoples only hunted and gathered in an Archaic adaptive strategy when entering the mountain environment. This reflects their adjustment to an environment where cultivation of their staple species, such as maize, was probably not possible due to both altitude and shortness of the growing season. The absence of a sedentary Formative lifestyle within the Mountains Study Region may be correlated with the general unsuitability of the zone for the types of cultivation and species favored during that stage.

5.5 Formative Stage--Quantity and Quality of Existing Data

5.5.1 Evaluation of the Data Base. Studies conducted on possible Formative Stage utilization of the Mountains Study Region are limited. The best data have been provided by research conducted at the George Lindsey Ranch near Golden (Nelson 1971) and at the Magic Mountain (Irwin-Williams and Irwin 1966) and LoDaisKa (Irwin and Irwin-Williams 1959) sites along the Front Range. All of these reports are of good quality. CRM studies have produced limited evidence of Formative occupations of the Mountains Study Region. These include discussions of point styles or ceramic types as characteristic of Formative groups outside the area.

5.5.2 Data Gaps. Information lacking for the Formative Period involves determining if the Mountains Region was utilized by Formative groups. If occupation of the mountains did occur by Formative groups, then the extent and duration of the occupation needs to be understood.

5.5.3 Future Needs. Investigations should concentrate on data that will provide information on Formative groups lifeway and subsistence. Effort should be directed toward classes of data that will address research questions. Below are a couple of suggested research domains. Future surveys should be conducted on areas where the data are being threatened by vandalism and/or development.

5.5.4 Quantity and Physical Condition. To date there is very little evidence of Formative Stage (by definition)

sites in the Mountains Study Region. Thus, there is a lack of information available on the physical condition of the typical Formative site type. It is possible to determine, however, that the absence of evidence of a true Formative Stage in the Mountains Study Region is not a factor of poor preservation. For the Formative time span, sites with evidence of external contact are present and were subject to the same preservation factors as earlier sites.

5.5.5 Important Resources. In view of the limited information available on the utilization of the Mountains Study Region by Formative Stage groups, any site with possible evidence of Formative occupation is an important resource.

5.6 Formative Stage Research Domains

The major research domain for the Formative Stage involves the determination of whether or not Formative groups (e.g., Woodland and Anasazi) actually utilized the Mountains area or whether the artifacts determined to represent Formative groups are a result of trade or other factors (e.g., projectile point typology problems). This is directly related to the problem of whether the Indians who occupied the Mountains area represent diffusion from outside regions or whether there were indigenous "mountain-oriented" cultures, or both. A majority of the present data suggest utilization of the mountains by peoples from other areas. If this is true for the Formative groups, then the extent and duration of their occupation needs to be determined.

A second research problem is related to the first. That is, if there were occupation of the Mountains area by Formative stage groups, they had a hunting and gathering subsistence strategy. It is probable that the mountain environment was not suitable for horticulture and the Indians were utilizing the area only for hunting excursions and complementary collecting of specific types of plant resources. This is suggested by evidence in other areas. For example, in Southwestern Colorado certain faunal species which are not present today in the area may indicate Anasazi hunting forays (Nickens et al. 1982:238). The main thrust is that if the area were occupied by or in close contact with Formative people, what were the causal variables related to the continuation of an Archaic lifestyle?

6.0 PROTOHISTORIC/HISTORIC

6.1 Protohistoric/Historic Stage Unit Definition

The Protohistoric/Historic Stage is defined here, for the Mountains Study Region, as a "Post Formative Archaic Stage." It also includes part of the Late Prehistoric Period as defined by Frison (1978), but the Woodlands and Upper

Republican Traditions are excluded for the Mountains Area definitions. The Protohistoric/Historic Period within the Mountains Study Region dates from ca. A.D. 1300 to 1800. However, because of problems with cultural affiliation identification and point typologies there is overlap into earlier periods.

6.1.1 Late Prehistoric Period.

The Late Prehistoric Period (ca A.D. 1300 to A.D. 1600) is associated with points indicative of the introduction of the bow and arrow; small side-notched points, some corner-notched points and serrated blade edges. The appearance of pottery is also definitive of the Late Prehistoric Period.

In the Northwestern Plains, Frison notes that communal bison procurement reached its greatest expression in terms of the number of animals killed during the Late Prehistoric Period (1978:223).

Late Prehistoric sites include the ever-present lithic scatter, stone circles or "tipi rings," and hearth features. However, it is difficult to assign precise cultural or temporal affiliations because of the broad range of dates posed by point typologies and the lack of absolute chronological dates.

6.1.2 Ute/Shoshone Period. This period is marked by the Ute/Shoshone entrance into Colorado. It is not known for certain when they actually entered Colorado, but it may have been as early as the 16th century. Linguistic and archaeological evidence suggest the Utes migrated from their southwestern Great Basin homeland (Jennings 1978). This period extends into the 1800's and includes occupation by the Historic tribes. These two periods are combined because it is extremely difficult to differentiate them archaeologically. The presence of Protohistoric Indians is often indicated by metal projectile points, European weaponry and trade goods, and the use of horses. Ethnographic information (e.g. Fremont 1850; Toll 1913; Shimkin 1947; Jackson and Spence 1970; Athearn 1977) on this latter group is the main source of information for the Historic tribes.

6.2 Protohistoric/Historic Stage Culture History

6.2.1 Late Prehistoric Period. Along the Front Range, five Late Prehistoric sites and two Late Prehistoric points were found in the Boxelder Creek Project Area (Morris et al. 1979:25,103). Another site with a Late Prehistoric component is the Lightning Hill Site (Morris and Marcotte 1977).

In the Azure Project Area of the Upper Colorado River, there is evidence of extensive occupation during the Late

Prehistoric Period. Small side-notched points found there are directly comparable to points common after A.D. 1400. Features include hearths and rock rings. One C-14 sample yielded an initial Late Prehistoric date and is associated with a Late Archaic/Early Late Prehistoric projectile point (Kranzush, Viola and Firebaugh 1982:106).

Further downstream in the Glenwood Springs area of the Colorado River, side-notched points widely known from the Late Prehistoric Period and some triangular projectile points appear to have post-Fremont associations, and probably date to approximately A.D. 1100-1500 (Burgess et al. 1980).

In the Mount Emmons Project Area in the Upper Gunnison River Valley, the greatest number of diagnostic artifacts fall within the Late Prehistoric Period (Baker et al. 1980:191). Late Prehistoric projectile points are also present in Routt National Forest (Ward-Williams and Foster 1977:87).

Thirty-nine multi-component sites and twenty-four single component sites help to identify Late Prehistoric occupation in North Park (Lischka et al. 1980). Prior investigations revealed small side-notched points (ca. A.D. 500-1800), and one piece of pottery may be indicative of Late Prehistoric Period occupation.

Middle Park has abundant evidence of utilization by Late Prehistoric peoples. Fitting (1978) reports Late Prehistoric occupation to be the most frequent and documents three diagnostic points. Lischka and Black (1979) also found a number of projectile points and a few sherds which represent Late Prehistoric occupations near Williams Fork and Granby Reservoir. Use of stone alignments and circles there may also range from the Late Archaic into the Late Prehistoric.

In the San Luis Valley sites with Late Prehistoric point styles have been found (Conners et al. 1980).

Obsidian hydration dates have been done on points from five seasons of collection in Rio Grande National Forest. During the Late Prehistoric Period this area saw heavier use than at any other time except possibly during the Late Archaic.

The Late Prehistoric Period is represented at Vail Pass Camp by five complete and two fragmented Unnotched points, three Avonlea point fragments, and Billings Double Spur points. Two ceramic vessels from the sites resemble Shoshonean ceramics, which suggests "...an intermontane tradition with close affinities to the Northwest Plains" (Gooding 1981:99).

Late Prehistoric materials have been identified in the Pagosa District of the San Juan National Forest. Surface points found in lithic scatters are suggestive of the Late Prehistoric Period (Cassells 1981), and associated scrapers and flakes suggest knapping and hunting activities. Projectile points of possible Late Prehistoric affiliation have been reported from San Juan's Ignacio Canyon and the Morrison Creek area (Baker 1981:30; Reed 1982:26).

6.2.2 Ute/Shoshone Period. It is extremely difficult to identify Ute/Shoshone sites archaeologically. In fact, until this is possible, we will not be able to reliably assign cultural or temporal affiliations for this time period. Ethnographic accounts indicate occupations by groups such as the Ute, Shoshone, Arapaho, Comanche, Cheyenne, and Apache in the Mountains Study Region. However, these later groups only periodically occupied or utilized portions of the Mountains region.

Two Dismal River ceramic sherds and a Shoshone pottery sherd found in the Two Forks District represent the Late Prehistoric/Protohistoric Period (Windmiller and Eddy 1975).

The Parks were inhabited by Protohistoric/Historic Indians. For example, the Utes seem to have been the principle inhabitants of Middle Park at least during the Protohistoric Period. The Woodland Park area of South Park was historically inhabited by Utes, and a known bison migration route passes from the plains and foothills to South Park (Conners and Langdon 1981:14). However, no diagnostic artifacts were found during the inventory.

Within the San Luis Valley, Hurst (1939) described a Ute shelter in Saguache County which was associated with Pueblo V conquest materials. Three other sites in the same county have yielded projectile points similar to Uncompahgre Plateau, Woodland, Protohistoric Ute, and Anasazi styles; and Late Prehistoric to Protohistoric ceramics have been found in the same area (Conners et al. 1980:95-96). Vail Pass Camp radiocarbon dates of A.D. 1520 to 1760 from hearths with associated artifacts suggest that Plains cultures in the intermountain area may have also used the San Luis Valley seasonally during that time (Gooding 1981; Conners et al. 1980:27).

Three Ute site components have been identified at Cottonwood Pass. Points at these sites include a tri-notched orange chert point and a minute side-notched point associated with seven other chert artifacts and seven sherds of Uncompahgre Brown-Ware similar to Ute pottery made after A.D. 1500 (Black 1982). Evidence of Ute or Numic-speaking peoples is inferred by the point styles (Black 1982:67) and by the ceramics. Ute bands such as the Tabeguache (Gunnison), the Mouache (Front Range), and the Capote (San Luis Valley) were present in the Mountains Study Region at

the time of white contact (Black 1982:20).

Occupations with Protohistoric/Historic ties at the Vail Pass campsites include a possible Apache-affiliated component and a Ute component defined on the basis of projectile points (Gooding 1981).

For Rio Grande National Forest, Burns (1981) suggests that wickiup structures indicate the presence of Ute bands and possibly the presence of nomads from the plains further east. However, this would be extremely difficult to verify archaeologically. Protohistoric/Historic evidence from Rocky Mountains National Park includes one diagnostic chalcidony side-notched point and one possible Ute or Arapaho tipi ring (Hartley 1981).

In the Gunnison River Basin, an aspen pole wickiup of probable Ute affiliation has been reported from the Mount Emmons primary impact area; however, no associated artifacts were recovered from the sites (Baker et al. 1980:191). Baker has also recorded a 17th century Pueblo Navajo site in the Ignacio Canyon area with affiliations in the Gobernado District of the Rio Grande Valley (Baker 1981:30).

6.3 Protohistoric/Historic Stage Lifeways

The Late Prehistoric Period continued a hunting and gathering adaptation to the mountain environmental zones. Late Prehistoric peoples hunted a variety of game, including rabbit, deer, elk, and antelope; and also exploited plant resources.

The Late Prehistoric Period shows the most extensive occupation in many areas of the Mountains Region. Again, whether this evidence is a result of an aboriginal population increase or a result of problems of classification is a question to be answered. The distribution of sites seems to be dictated by primarily horizontal and vertical distance to water and by advantageous game views. Multiple-activity base camps appear to be located at lower elevations and nearer to water than peripheral special or limited activity sites (Baker et al. 1980:191).

As the hunting and gathering system remained stable, it is suggested that so did the family band social organization. However, evidence is still too sparse to develop a definitive model for the Mountains.

Influences from other areas during the Late Prehistoric are difficult to identify, though the Besant and Avonlea points present in some assemblages suggest Northwestern Plains affiliations.

The Ute/Shoshonean Indians were primarily small game

hunters and gatherers, collecting pinon nuts, roots, seeds, grass, etc., utilizing many species of wild plant life. Much of their game included the smaller animals such as rabbit, antelope, deer, mud hens, fish, etc. They also lived off other life forms such as lizards, snakes, insects, ant eggs, etc. (Steward 1976:243).

The socio-economic unit was probably the family for the Ute/Shoshone with sometimes organizing into larger bands. Thus this isolated family unit better economically adapted to a meager environment, and was better able to carry out most of the necessary subsistence activities for existence (Steward 1938; Thomas 1974). However, Service (1971:83-88) argues that prior to contact, the Shoshone were characterized by a patrilocal band form of organization.

The Shoshoneans did form bands for collective hunting. This of course depended upon whether sufficient game was available. The most common of these collective hunts were the rabbit drives.

In the early 1800's, the Ute/Shoshonean sociocultural and socio-economic lifestyle changed with the introduction of the horse. Though this new way of life was short-lived from the early 1800's to about 1870 when the United States forces defeated them, the horse markedly changed the people's lives (Steward 1967:252). Before Euroamerican contact, the Shoshonean people did not have systematic warfare. After the introduction of the horse and white settlement, however, collective warfare developed. The horse also enabled the Shoshone to formulate predatory bands (Steward 1967:252) for raiding white settlements and hunting bison.

6.4 Protohistoric/Historic Stage Cultural Processes

As with the Formative Stage, the Protohistoric/Historic Stage is marked by the continuation of an Archaic lifestyle. Projectile points are smaller than earlier period points, probably a direct result of the acquisition of the bow and arrow.

Cultural change did occur with the introduction of the horse. The Archaic lifestyle continued, but exhibited much greater mobility. With the first white contact, the Indian lifestyle began to change, ultimately leading to their removal from the Mountain Region.

6.5 Protohistoric/Historic Stage--Quantity and Quality of Existing Data

6.5.1 Evaluation of the Data Base. As with the latter part of the Archaic Period, the Late Prehistoric Period is well documented in the Mountains Study Region. However, many lithic scatters otherwise without definite cultural

affiliations, but having small corner-notched points, are labeled as Late Prehistoric sites. Although much of the literature examined for this study listed sites for this period, it is very difficult to specifically date Protohistoric/Historic sites, since many reports only date these sites in a very general way (e.g., ca. A.D. 500-1800).

6.5.2 Data Gaps. There is very limited information for the Protohistoric/Historic Stage regarding a chronological sequence for this period. At this point, it is even extremely difficult to identify Protohistoric/Historic sites and to know what cultural affiliation the site represents.

6.5.3 Future Needs. Concentration should be directed toward sites that have potential for establishing a chronological sequence. Future surveys should orient effort towards classes of data based on specific research questions. Suggested research domains are presented below. Priority surveys should be done on areas where those classes of data are being threatened by vandalism and/or development.

6.5.4 Quantity and Physical Condition. Though there are many sites in the Mountains Study Region designated as late Prehistoric, there are relatively few specific Protohistoric/Historic (e.g., Ute sites) sites. The physical condition of these sites varies depending on location and site type, but conditions reported in the literature reflect moderate to heavy destruction.

6.5.5 Important Resources. Any site for which absolute dates can be obtained would be very important to the efforts at delimiting the Protohistoric/Historic Period. Because of the lack of definitive Ute sites, all potential Ute sites are important resources. Also sites with structures, such as wickiups which might represent Ute sites, (only five reported in the CPO files), are important resources because they are particularly subject to natural and human destruction.

6.6 Protohistoric/Historic Stage--Research Domains

One critical problem is whether known cultural groups of the Protohistoric/Historic Period can be identified archaeologically. For example, is it possible to distinguish early period Late Prehistoric sites from later Ute sites? Also, can groups such as the Arapaho, Shoshone, and Cheyenne, which at least passed through the Mountains area, be identified archaeologically?

Another research domain involves the large number of sites, or site components, characterized by small corner-notched points that have been designated as Late Prehistoric. Are these truly Late Prehistoric sites, and does

this represent a significant indigenous population increase or an increase in temporary occupations of the Mountains area during this time period by groups from other regions?

A third research domain is the contact period between Whites and Indians. It is possible to identify contact sites archaeologically? The association of trade items such as metal projectile points with Indian pottery at the same sites provide an example of how contact sites may be identified. If it is possible to identify contact sites, what change in technology occurred, and how did this contact affect the overall social organization of the Indians?

7.0 ENVIRONMENTAL RECONSTRUCTION

Paleoenvironmental reconstruction for the Mountains Study Region is incomplete. The data needed to determine precise temporal and locational sequences for climatic fluctuations in prehistoric time are lacking. At best, one can hypothesize generally that glacial activities, temperature trends, and precipitation were localized in nature (La Marche and Mooney 1967; La Mache 1973; Benedict 1979). This is supported by evidence from the mountains which presents conflicting reconstructions of the paleoenvironment from the same region. It is possible that all reports are reliable and that climatic fluctuations are not all-encompassing, but rather extremely localized. However, conflicting interpretations for particular sites are also detrimental to the reliability of reconstructions and emphasize the need for more accurate information (e.g., the differing environmental reconstructions by Stiger and Scott for the Curecanti area).

Certainly the proposed effect of the Altithermal is a most imposing issue in Colorado Mountains prehistory. The Altithermal began to affect the climate about 5000 B.C. and is defined as a warming trend, generally accompanied by droughts. It has been suggested that this warmer, dryer period induced a movement of humans to moister, cooler regions, namely the mountains, as the game also left the deteriorating lowland regions in search of food and refuge. According to Benedict, the Front Range Mount Albion Complex was such an Early Archaic/Altithermal occupation.

The "Little Ice Age" represents a model of environmental change which correlates fluctuating elevational limits of lifezones and the movement of timberline ecozones with localized dry and wet periods (Matthes 1945; Antevs 1948). Other researchers suggest previously flourishing dense pine forests in place of present sagebrush hills on the basis of pinyon pine charcoal (Stiger 1981). The presence of remnants of a lake which held water between 12,050 B.C. and 4050 B.C. at Mount Emmons along with pollen analysis suggest a wetland environment for that particular area prior to the later date (Baker et al. 1981).

Because the Mountains Study Region is environmentally diverse, generalized environmental reconstructions are not as directly applicable as they are in regions with more homogeneous environments. Also, climatic connections between areas, particularly across the continental divide, cannot be made with much confidence. Consequently, the need for localized paleoenvironmental information is particularly important in the Mountains region.

8.0 GENERAL RESEARCH PROBLEMS

Research domains have been previously presented at the end of each cultural unit discussed in this text. These research questions are based on the information collected for this study and should not be considered exhaustive or final. The more recent studies conducted in the Mountains Region are of generally good quality and have generated a number of research questions. In addition, as each new project is undertaken, each of these should develop problem-oriented questions specific for the area and the project under consideration.

There are a few general research questions which are applicable to all or most of the cultural units discussed in this text. These are presented below.

8.1 Chronology

As mentioned earlier, one of the major problems with the temporal sequences for the Mountains Region is the lack of absolute dates. Most of the studies base their chronologies on projectile point typologies, which can result in number of interpretational problems. One of these is the problem of which region (e.g., North, West, Plains) a researcher selects with which to conduct the point type comparison. Comparisons with only one area may result in biases toward closer connections with that area than are necessarily the case. Also, a point type may be called a certain type in one region and referred to as a different type in another region.

Thus, it is important to develop a chronology local to the Mountains Region. This chronology may, and probably will, change depending on where in the Mountains area (i.e., Northwest vs. Southwest) the chronology is developed. Most studies conducted in the Mountains Region lack a good data base of absolute dates to begin building a local chronology. There are some exceptions to this (e.g., Curecanti, Mount Emmons Project), but for the most part absolute dates such as radiocarbon dates are limited. Attempts should be made to work more extensively on well-defined stratified sites or single component sites that have potential for producing absolute dates and thus begin to build a chronology.

8.2 Impact of Surface Collecting and Vegetation Cover on the Data Base

Especially in more populated zones and at sites near major access routes, sites are likely to have been frequently and heavily collected by amateurs. Without diagnostics, the sites cannot be placed chronologically. Lightfoot and Francis (1978:83-130) have shown that this variable can be assessed, and its effects certainly should be taken into account. Extensive contact with local collectors is essential to efforts to control or compensate for this variable.

The amount and type of ground cover in an area directly affects the archaeologist's ability to discover and adequately assess sites. Survey is much easier in dry and barren or heavily grazed areas than in zones with tall grass or otherwise thick plant growth. This variable should be explored when different ecological zones are compared with respect to site density.

8.3 "Diversity of Cultural Types" vs. "Indigenous Mountains-oriented Culture"

This research domain pertains to the problem of which groups were in the Mountains Region and the nature of their cultural affiliations. Does the archaeological record of the Mountains area reflect a diversity of cultural types suggesting several different cultural groups (e.g., Plains, Southwest, Great Basin) or do the regional data represent a homogeneity of cultural traits reflecting an indigenous mountain-oriented culture (e.g., Mount Albion)? This question is relevant to all time periods. A refinement of chronologies through more meticulous point typology assessments and through an emphasis on sites with a potential for absolute dating is essential before this issue can be resolved. A conscious effort should be made to identify and "factor out" archaeological evidence of cultures which clearly represent foreign intrusions, thereby isolating elements unique to the Mountains Study Region. This aspect is most evident in terms of Formative Stage groups which entered the area, but the approach is potentially relevant to other stages as well.

8.4 Resource Exploitation in the Mountains Study Region

This issue has direct bearing on the question of seasonal or permanent occupation of the zone. Furthermore, whereas it may be possible to discern both indigenous and "foreign" groups within the area, an understanding of how the mountain zone was exploited is the key to answering questions related to seasonal transhumance or permanence of residence. Direct clues may come from archaeological or geological data such as pollen or other preserved plant parts which provide evidence of species used. Age and sex

data from faunal remains can also provide evidence of the seasonal use of kill sites--especially when large numbers of animals are unselectively slaughtered. Working back from generalized paleoenvironmental data, it might be possible to postulate why people might have clustered in an area at certain times (i.e., for pinyon nut harvest). Using the same type of data, it might also be possible to ascertain that high-altitude lithic sources are snow-covered and therefore could not be exploited for much of the year. Related to this is an assessment of the potential carrying capacity of different environmental zones at different times of the year. Were there loci where people--even in small groups--could have maintained themselves for an entire year? Is agriculture--specifically corn-bean-squash cultivation--even possible within the Mountains Study Region? If not, maybe sedentism was not necessarily a viable option. Supplemental historic sources describing contact period mountain groups and their subsistence systems might yield hypotheses suitable for testing.

8.5 Variables Affecting Site Location

Proximity to water and availability of good vantage points seem particularly important in this respect. But what about substantial settlements such as examples in the San Luis Valley which are over four miles from water? Conversely, one might ask, what are the variables affecting the absence of sites? This would bring up issues on a broader level such as, why one pass would be used to the exclusion of another or why there are "blank" areas which complement nearby zones of more abundant resources.

8.6 Other Research Domains

There are a number of other research domains that have been developed as a result of the Regional Research Design Seminar for the Mountains Region. These include exchange systems, social organization, group interactions, movement of peoples, paleoenvironmental reconstruction, and technology. Specific questions for each of these research domains are presented in Appendix A under "Research Design for the Intermontane Region of Colorado."

9.0 NUMBER AND CONDITION OF SITE TYPES

Table 1 presents the number of site types currently known to exist in the Mountain Study Region. These data were obtained from the files located at the Colorado Preservation Office. Lithic scatters are by far the largest category (41%) of site type in the region. This is followed by isolated finds, campsites, and rock shelters. There are a variety of other site types in the area, but they represent about 1% or less of the total known sites. The condition of these site types varies by location, but lithic

scatters appear to be in the best state of preservation whereas sites with structures appear to be in the worst state of preservation.

Caution is advisable when examining these numbers for a variety of reasons. Most important is the problem of how different researchers classify sites. Many site types which are the same may be classified differently by different researchers.

Table 1

Site Types Recorded for the Mountains Study Region

Site Type	Number of Sites	Percent of Sites.
01.*Lithic Scatter	2390	41.66.
02. Isolated Find	1717	29.93.
03. Campsite	849	14.80.
04. Rock Shelter	123	2.14.
05. Lithic Concentration	74	1.29.
06. Quarry	73	1.27.
07. Habitation	63	1.10.
08. Ceramic-Lithic Scatter	59	1.03.
09. Cairn	51	0.89.
10. Tipi Rings	50	0.87.
11. Stone Enclosure	48	0.83.
12. Stone Alignment	46	0.80.
13. Burial	30	0.52.
14. Rockart	22	0.38.
15. Drivelane-Game Drive	15	0.26.
16. Killsite	11	0.19.
17. Ceramic Scatter	8	0.14.
18. Burned Rock	6	0.10.
19. Cambium Tree	6	0.10.
20. Wickiup	5	0.09.
21. Lithic Scatter & Tipi Rings	5	0.09.
22. Lithic Scatter & Burned Rock	5	0.09.
23. Quarry & Lithic Scatter	5	0.09.
24. Campsite & Lithic Scatter	5	0.09.
25. Campsite & Burial	5	0.09.
26. Campsite & Quarry	4	0.07.
27. Check Dam	4	0.07.
28. Rock Shelter & Lithic Scatter	3	0.05.
29. Other	3	0.05.
30. Rock Shelter & Campsite	3	0.05.
31. Midden	3	0.05.
32. Earthen Ring	2	0.03.
33. Eagle Pit	2	0.03.
34. Lithic Scatter & Cairn	2	0.03.
35. Lithic Scatter & Habitation	2	0.03.
36. Trail	2	0.03.
37. Lithic Scatter & Water Control	2	0.03.

38. Lithic Scatter & Stone Alignment.	2	0.03.
39. Lithic Scatter & Trash	2	0.03.
40. Stone Enclosure & Campsite	2	0.03.
41. Burial & Lithic Scatter	2	0.03.
42. Lithic Scatter & Midden & Farming Terrace.	1	0.02.
43. Lithic Concentration & Lithic Scatter & Campsite.	1	0.02.
44. Lithic Scatter & Depression	1	0.02.
45. Cairn & Stone Alignment	1	0.02.
46. Brush Enclosure & Stone Enclosure.	1	0.02.
47. Fortification	1	0.02.
48. Granary	1	0.02.
49. Quarry & Campsite & Stone Alignment.	1	0.02.
50. Upright Slabs	1	0.02.
51. Stone Alignment & Stone Enclosure.	1	0.02.
52. Trash	1	0.02.
53. Ceramic-Lithic Scatter & Habitation.	1	0.02.
54. Rubble	1	0.02.
55. Rockshelter & Drywall	1	0.02.
56. Quarry & Cairn	1	0.02.
57. Ceramic Lithic Scatter & Burned Rock.	1	0.02.
58. Campsite & Habitation	1	0.02.
59. Depression & Stone Alignment	1	0.02.
60. Depression & Pithouse	1	0.02.
61. Lithic Scatter & Paleontological.	1	0.02.
62. Lithic Scatter & Upright Slabs.	1	0.02.
63. Stone Enclosure & Lithic Scatter.	1	0.02.
64. Campsite & Trash	1	0.02.
65. Quarry	1	0.02.
66. Rockart & Campsite	1	0.02.
67. Room Block	1	0.02.
TOTAL	5737	100.00.
* Includes Lithic Scatter, Other.		

Another problem involves errors created while inputting the site types into the computer. There were a number of discrepancies between what the site form stated and what the CPO file had printed out. Other factors such as deposition and erosional rates and ground cover affect the number of sites located and how each site is assessed.

10.0 EVALUATION STANDARDS

Site significance is based on the potential of each site to scientifically address specific research questions. For example in a regional study of settlement patterns, why people choose certain areas to occupy is important. Thus, small lithic scatters and even isolated finds would have research potential.

Overall, important sites from the Mountains Study Region are those sites which can help develop local chronologies. This is a critical problem for the Mountains Study Region. Therefore, sites with hearths, charcoal lenses or other potentially datable material (e.g., obsidian) are especially important. Sites containing information necessary to address other more specific research questions (see General Research Problems and Appendix A) are also important. These may include sites which contain 1) potential paleoenvironmental data--such as pollen, coprolites, and macro and micro floral and faunal specimens; 2) evidence of diachronic and synchronic changes--such as well-preserved stratified and single component sites; and 3) remains of subsistence and technology--such as floral and faunal specimens or tool kits. These are only examples, for there are many more. The sites should be relatively undisturbed and in good physical condition to allow the extraction of reliable information which can be applied to the research questions.

11.0 SUMMARY AND CONCLUSIONS

This report is a summary of the substantive archaeological research that has been conducted to date in the Mountains Study Region of the State of Colorado. An attempt has also been made to identify the major research problems that need to be addressed in future research and to describe the kinds of information that are needed to address those problems. This was accomplished by reviewing as many of the studies conducted in the Mountains Study Region as time and money would allow (cf. References Cited). Specific types of information reviewed in assessing each report include projectile point types (as indicators of diffusion, migration, trade, or influence from other areas), site types, site density, site location, subsistence, lithic tools, chronology, and paleoenvironmental reconstructions. After the information from the literature review was analyzed, the Mountains Study Region was divided into drainage areas, parks, and

passes.

Drainage systems were examined to see if adaptive strategies varied between drainages. Brian O'Neal has noted that water networks might be a critical variable throughout Colorado:

Our common link from the present with the past is the recognition of Colorado's critical resource...water. Therefore, as people with a common problem, looking at a natural system adapted to at different technological levels through time, the one constant we share is in the spatial dimension of water networks as seen in the drainage systems of the state (O'Neal 1983:2).

The drainage systems defined within the Mountains Study Region include the Colorado, the Gunnison, the Upper Arkansas, the North Platte, the South Platte and the Rio Grande. Mountain parks include North, Middle, and South parks. No archaeological data could be found for Wet Mountain Park. These parks, along with the San Luis Valley, could alternatively be defined as drainages. North Park, for example, is coincident with the headwater drainage of the North Platte. Mountain passes have archaeological importance as routes of movement between parks and drainages. Major passes include Vail, Cottonwood, Wolf Creek, La Veta, and Piedra. Rabbit Ears Pass was administratively included within the Routt National Forest area. Archaeological information from the following administratively defined units was also analyzed: Routt, Pike, Rio Grande and San Isabel National Forests, the San Juan Mountains and Front Range areas.

It should be stressed that the archaeological reports consulted during this study do not constitute a valid statistical sample. Instead, reports from selected areas were examined to see if possible trends in the Mountains Study Region could be identified and used to address research topics. A more comprehensive analysis of a larger, statistically valid sample of existing reports may modify or even negate the conclusions drawn here.

It is significant that no major differences could be seen between drainages, parks or passes with respect to the variables analyzed in this study. Differences should exist at least in the exploitation of different ecological niches, but a more detailed study is needed to discover them. One would expect, for example, that passes were used primarily as migration routes and not as bases from which the surrounding environment was exploited. One would also expect that adaptive strategies in parks were different than those in forested zones. Preliminary evidence from North Park, for example, shows a correlation between different site types and resource zones and there is an indication that parks may

have been favored areas for winter occupation (Lischka et al. 1980). There also appears to be a general tendency for larger habitation sites to be located along major drainages and in mountain park settings (e.g., Mount Emmons, Curecanti, North Park).

Occurrences of projectile point styles in specific areas were used to make a preliminary assessment of the cultural affiliations of prehistoric occupation in these areas. Conclusions concerning projectile point styles and suggested cultural affiliations were taken directly from the reports analyzed, and no attempt was made to classify the points independently. Since the same point style may be given different names by different investigators, the preliminary conclusions drawn here should be read with a degree of caution. Because of the potential confusion inherent in constructing projectile point typologies, the necessity for good illustrations of diagnostic projectile points in reports is emphasized. The results of this study support the commonly held idea that the mountains were occupied, at least on a seasonal basis, by groups from different areas (e.g., Plains, Southwest, Great Basin), who came to hunt and gather specific resources. The question that remains is whether there are projectile point styles representative of peoples who were indigenous to the mountain area, as Benedict maintains was the case at least during the Early Archaic (Benedict and Olson 1978).

There does appear to be a slight correlation between point styles and regional location. Projectile points in the northeastern portion of the Mountains Study Region, particularly North Park, tend to be similar to point styles defined in the Northwestern Plains. The same can be said for the Front Range as related to the Eastern Plains, the northwestern Colorado mountains to the Great Basin, and the San Juan Mountains and San Luis Valley to the Southwest. This pattern, however, may be due in part to biases on the part of the researcher who might have tended to select comparative point collections in close proximity to a particular study area.

It is significant that Woodland pottery representing the Formative stage is found almost throughout the Mountains area. Woodland point styles, though they are poorly defined, tend to corroborate this pattern. Anasazi pottery and points, on the other hand, appear to be more restricted to the southwestern portion of the Colorado Rocky Mountains. This pattern may reflect differences in mobility between different Formative groups. It is possible that the basic Woodland pattern of subsistence necessitated or facilitated a greater degree of mobility than did the Anasazi pattern. Robert York (1980) suggests that the Anasazi were not utilizing the rich mountain resources as much as they could have. If the Anasazi had a more sedentary lifestyle in

Colorado, for whatever reason, then it is possible that they would not or could not take advantage of resources requiring a greater degree of mobility.

Binford has suggested that a greater degree of mobility in hunting and gathering cultures correlates with a longer growing season and a more homogenous distribution of critical resources (Binford 1980). For the mountain summers this works very well. For the most part, at any given location in the mountain environment, plant and animal diversity is high, and there is a homogenous distribution of critical resources. In the winter, however, there is an opposite effect. Plant and animal diversity is low, and there is a heterogeneous distribution of the critical resources. Thus, during the summer months we would expect greater mobility and in the winter lesser mobility. Binford (1980:18) notes, "...in some environments we might see high residential mobility in the summer or during the growing season and reduced mobility during the winter..." Thus, the Indians occupying the Mountains Study Region during the winter months were probably less mobile and had winter residential areas in such places as North Park (see Lischka et al. 1980).

Site types in the Mountains region range from small lithic scatters to multicomponent, multifunctional lithic concentrations. Evidence of structural elements is found throughout the Mountains region and includes stone circles, stone alignments, and the more obvious rock shelters. Certain areas (e.g., the Curecanti and Granby areas), contain unique structural remains such as burnt clay and postmold impressions that may represent wickiup-like structures. Lischka has suggested that some structural evidence, such as the stone rings found on sites in North Park, may represent winter occupation (Lischka et al. 1980).

There was insufficient data to compare site density between the various areas. However, site densities computed from the data collected range from less than one site per square mile to over twenty sites per square mile. Site densities in limited areas are considerably higher; the Windy Gap area is an example.

Some difficulty was encountered in comparing the settlement patterns of different areas because each investigator tends to emphasize and define different variables. Variables that appear to be important throughout the Mountains region include distance to and above water, ridge locations and vantage points, gentle slopes, passes and saddles, and certain types of resources (e.g., pinyon-juniper, large game). Although water is available year round in most areas of the Mountains, proximity to water appears to have been a critical variable in determining site location. In North Park, for example, sites classified as summer

habitation sites were significantly closer to permanent water sources than other sites (Lischka et al. 1980). It should be stressed that settlement pattern reconstructions may be biased due to heavy ground cover. Many areas within the Mountains region have a heavy, obscuring understory, and thus it is difficult to assess site density for these areas. It might be helpful to conduct rake or shovel testing while surveying, although the usefulness of such testing is questionable (Black 1982:164).

Subsistence strategies did not show any significant differences between drainages or parks. Discussions of subsistence strategies in reports were usually limited to general topics such as hunting and gathering adaptations, animal and plant processing, and tool manufacturing and maintenance. It is suggested that more specific subsistence differences will be discovered through more detailed analysis and comparison of drainage, park and pass areas. Benedict, for example, describes stone alignments and pit arrangements found above timberline in the Indian Peaks area that he suggests were used to hunt bighorn sheep or other large game (Benedict and Olson 1978). Such a hunting technique would be more effective in treeless than in forested areas.

All areas in the Mountains region contained a variety of tool types with little significant variation between areas. Again, differences between areas will undoubtedly become apparent with more detailed analyses. Lithic material type is somewhat dependent on location. For example, a great quantity of the tools found in Routt National Forest are of quartzite, while lithic artifacts in the La Veta Pass area are made primarily of basalt. This probably reflects the utilization of locally available stone. Other predominant material types in the Mountains region include chert and chalcedony.

In examining temporal sequences for the Mountains Study Region, it is important to stress that most studies base their chronologies on projectile point typologies and not on absolute dates. Some studies (e.g., Curecanti) have a good base of radiocarbon dates, but this is more the exception than the rule. Chronologies in the Mountains region will remain largely inferential and speculative until a greater number of sites with well-defined stratigraphy and adequate numbers of radiocarbon dates are excavated. All of the time periods defined here--Paleo-Indian through Historic--are represented by materials from survey, testing and/or private collections in most of the Mountains areas. More data are needed, specifically from buried levels. However, assuming that all periods are equally represented, there is a trend--represented by artifacts, components or sites--for an increase in occupation of the Mountains region through time. In other words, there appears to be a general increase in

site density from the Paleo-Indian Stage through the Protohistoric/Historic Period. This may reflect simple population increase, increased migration into the mountains, or a geomorphological problem of deposition and erosion.

Adequate paleoenvironmental studies have been late in coming, but recognition of their importance for an understanding of prehistory is increasing. One problem in the Mountains region is the difficulty of establishing climatic connections between areas. Thus the areal extent of application of any particular paleoenvironmental study is relatively limited compared to similar studies conducted in more homogeneous environments.

REFERENCES CITED

- Anderson, Duane C.
1966 The Gordon Creek Burial. Southwestern Lore 32(1):1-9.
- Anderson, Jane L. and Joseph J. Lischka
1977 A Cultural Resource Inventory of Several Areas on West Douglas, West and Missouri Creeks in Southwestern Rio Blanco and Northwestern Garfield Counties, Colorado.
- Antevs, Ernst
1948 Climatic Change and Pre-White Man. Bulletin of the University of Utah 38(20):168-191.
1955 Geological-Climatic Dating in the West. American Antiquity 10(4):317-335.
- Athearn, Frederic J.
1977 An Isolated Empire: A History of Northwest Colorado. Bureau of Land Management, Colorado, Cultural Resource Series, Number 2, Second Edition.
- Baker, Steven G.
1981 The Ignacio Canyon Cultural Resource Survey in the Pine Ranger District of the San Juan National Forest, Archuleta County, Colorado.
- Baker, Steven G., Kevin D. Black, Steven M. Horvath, Kenneth L. Kvamme, William N. Mode, Alan Schroedl and Martha Sullenberger.
1980 Baseline Cultural Resource Surveys and Evaluations in Primary Impact Areas of the Mount Emmons Project of Amax, Inc., Gunnison County, Colorado. Volume I, S. Baker, Editor. Manuscript on file, Centuries Research, Montrose.
- Baker, Steven G., Kevin D. Black and Steven M. Horvath
1981 The 1979 Test Excavation Program in the Alkali Creek Study Area. Report prepared for Amax, Inc. Manuscript on file, Centuries Research, Montrose.
- Baker, Steven G., Steven M. Horvath, Kevin D. Black and Martha Sullenberger
1981 A Stratified Random Sample Survey for Prehistoric Sites in the Indirect Impact Areas of the Mount Emmons Project. Report prepared for Amax, Inc. Manuscript on file, Centuries Research, Montrose, Colorado.
- Benedict, James B.
1975 Prehistoric Man and Climate: The View from Timberline. Quaternary Studies The Royal Society of New Zealand, Wellington

- 1979 Getting Away From It All: A Study of Man, Mountains, and the Two-Drought Altithermal. Southwestern Lore 45(3):1-12.
- 1981 The Fourth of July Valley. Center for Mountains Archaeology Research Report Number 2. Ward, Colorado.
- Benedict, James B. and Byron L. Olson
 1978 The Mount Albion Complex: A Study of Prehistoric Man and the Altithermal. Center for Mountain Archaeology Research Report Number 1. Ward, Colorado.
- Binford, Lewis R.
 1980 Willow Smoke and Dog's Tails: Hunter-Gatherer Settlement Systems and Archaeological Site Formation. American Antiquity 45:4-20.
- Black, Kevin D.
 1982 Final Report of Archaeological Investigations Along Colorado Forest Highway 59 in the Cottonwood Pass Area, Chaffee and Gunnison Counties, Colorado. Manuscript on file, Metcalf-Zier Archaeologists, Inc. Eagle, Colorado.
- Buckles, William G.
 1978 Anthropological Investigations Near the Crest of the Continent. Bureau of Reclamation. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.
- 1983 Cultural Resource Inventory of the Walsenburg-La Veta 115 KV Transmission Line and Substation for San Isabel Electric Association, Inc. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.
- Burgess, Robert J.
 1975 Preliminary Report on the Owl Canyon Rock Shelter 5LR104. Southwestern Lore 41(1):45-46.
- Burgess, Robert J., Kenneth Kvamme, Paul Nickens, Alan Reed and Gordon Tucker, Jr.
 1980 Class II Cultural Resource Inventory of the Glenwood Springs Resource Area, Grand Junction District, Colorado. Manuscript on file, Nickens and Associates, Montrose, Colorado.
- Burney, Michael S., Carol Coe, Collette Colle and Thomas Lennon
 1979 Final Report: An Archaeological Study of Aboriginal

Sites Within the Windy Gap Dam, Reservoir and Pipeline Project Near Granby, Grand County, Colorado, Volumes 1 and 2. Western Cultural Resources Management, Boulder, Colorado.

Burns, George R.

1981 Obsidian Hydration Analysis on Artifacts from the Rio Grande National Forest. M.A. thesis, Department of Anthropology, Colorado State University, Fort Collins.

Calabrese, Frank A.

1979 Rocky Mountain Region Inventory of Archaeological Sites Program. Midwest Archaeological Center, National Park Service. Lincoln, Nebraska.

Carpenter, Scott L., Marcia L. Donaldson and Paul R. Williams

1976 Archaeological Inventory of the Fruitland Mesa Project. Department of Anthropology, University of Colorado, Boulder.

Cassells, E. Steve

1981 Cultural Resource Survey of Pagosa Seismic Lines. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.

Conners, Carl E. and Diana L. Langdon

1981 Cultural Resources Inventory of Four Land Parcels (Totaling 680 Acres) Selected for Exchange to Private Ownership. Manuscript on file, Pike and San Isabel National Forest, Pikes Peak Ranger District.

Conners, Carl E., D. L. Landgon, Richard Wolf, Paul K. Roebuck and Thomas F. Rome

1980 Poncha-San Luis Valley 230KV Transmission Line Cultural Resource Inventory. Ute Electric Association, Inc., Grand River Institute.

Dawson, Jerry and Dennis Stanford

1975 The Linger Site: A Re-Investigation. Southwestern Lore 41(4):11-16.

Dykeman, Douglas A.

1982 Draco Mines Crystal Hill Site 5SH854 Mitigation, Saguache County, Colorado.

Emery, Sloan and Dennis Stanford

1982 Preliminary Report on Archaeological Investigations At the Cattleguard Site, Alamosa County, Colorado. Southwestern Lore 48(1):10-20.

Euler, Robert Thomas

1979 Archaeological Investigations at Curecanti National

Recreation Area: Intermountains Colorado.
 Manuscript on file, Mesa Verde Regional Research
 Center, Dove Creek, Colorado.

Euler, Robert T. and Mark Stiger

1981 1979 Test Excavations at Five Archaeological Sites
 in Curecanti National Recreation Area: Intermoun-
 tains Colorado. Manuscript on file, Midwest
 Archaeological Center, Lincoln, Nebraska.

Farmer, Reid T.

1978 Excavations of Sites 5AL78 and 5AL83 in the Blanca
 Wildlife Refuge. University of North Dakota.

Fitting, James E.

1978 A Class II Cultural Resources Inventory of the Mid-
 dle Park Planning Unit, Craig District, Colorado.
 Commonwealth Associates, Inc., Report No. R-1879.
 Manuscript on file, Office of the State Archaeolo-
 gist, Denver, Colorado.

Foster, Michael

1976 Cultural Resources Inventory Report for the Hot Sul-
 pher Ranger District, Poudre Ranger District, Red
 Feather Lakes Ranger District. In the Final Report
 of Cultural Resources Inventories, Arapaho-Roosevelt
 National Forest, Fort Collins, Colorado, Fiscal
 Years 1975-1976. Manuscript on file, Office of the
 State Archaeologist, Denver, Colorado.

Fremont, J. C.

1850 The Exploring Expeditions to the Rocky Mountains,
 Oregon, and California, George H. Derby and Co.,
 Buffalo.

Frison, George C.

1978 Prehistoric Hunters of the High Plains, Academic
 Press, New York.

Gooding, John

1981 The Archaeology of Vail Pass Camp: A Multi-
 Component Base Camp Below Treeline in the Southern
 Rockies. Colorado Department of Highways Cultural
 Resources Report Number 35. Denver, Colorado.

Gordon, E. Kinzie and Kris J. Kranzush

1977 Cultural Resource Inventory Report Neighborhood
 Treatment Plant Site "E," Neighborhood Treatment
 Plant Site "M," Lagoon Site, Sewage Interceptor
 Route, Three Lakes Water and Sanitation District.
 Gordon and Kranzush-Archaeological Consultants.
 Boulder, Colorado.

Grant, Marcus

- 1980 Cultural Resource Inventory of Five Proposed Seismic Transects in the Northern San Luis Valley, Saguache County, Colorado. Western Cultural Resources Management, Inc. Boulder, Colorado.

Guthrie, Mark R.

- 1980 Cultural Resource Inventory for the Muddy Creek Timber Sale, Routt National Forest, Colorado. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.

- 1981 Testing of Archaeological Sites on the Basalt-Malta Transmission Line, Lake County, Colorado. Cultural Resource Consultants for the Public Service Company of Colorado. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.

Haas, Jonathan

- 1980 San Luis Archaeological Project-Phase I. Unpublished manuscript, Department of Anthropology, University of Denver, Denver, Colorado.

- 1982 The San Luis Archaeological Project-Phase II Interim Report. Unpublished manuscript, Department of Anthropology, University of Denver, Denver, Colorado.

Hagar, Ivor K.

- 1976 5CR1--Draper Cave Excavation and Research Report. Southwestern Lore 42(3):1-13.

Halasi, Judith A., James S. Kane and Nore V. Winter

- 1981 The RP3 Addendum to the RP3 Report: The Resources Protection Planning Process in Colorado. Manuscript on file, Colorado Preservation Office, Denver, Colorado.

Hartley, Ralph J.

- 1981 Archaeological Inventory Survey, Rocky Mountain National Park, 1979-1980. Manuscript on file, Midwest Archaeological Center, Lincoln, Nebraska.

Humphrey, Rogert L. and Dennis Stanford (eds.)

- 1979 Pre-Llano Cultures of the Americas: Paradoxes and Possibilities. The Anthropological Society of Washington.

Hurst, C. T.

- 1939 A Ute Shelter in Saguache County Colorado. Southwestern Lore 5(3):57-64.

- 1941-1944 A Folsom Location in the San Luis Valley, Colorado. Southwestern Lore 7(2):31-33.

1943 A Folsom Site in a Mountain Valley of Colorado. American Antiquity 8:250-253.

Huse, Hannah

1977 Cultural Resources Inventory Report for the Proposed Windy Gap Dam, Reservoir, and Pipeline Project Near Granby, Grand County, Colorado. Report requested by Northern Colorado Water Conservancy District. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.

Husted, Wilfred Marston

1962 A Proposed Archaeological Chronology for the Rocky Mountain National Park Based on Projectile Points and Pottery. M.A. thesis, Department of Anthropology, University of Colorado, Boulder.

1965 Early Occupation of the Colorado Front Range. American Antiquity 30(4):494-498.

Irwin, Henry J. and Cynthia C. Irwin-Williams

1959 Excavations at the LoDaisKa Site in the Denver, Colorado Area. Denver Museum of Natural History Proceedings No. 8.

Irwin, Henry J. and Hannah M. Wormington

1970 Paleo-Indian Tool Types in the Great Plains. American Antiquity 35(1):24-35.

Irwin-Williams, Cynthia C.

1973 The Oshara Tradition: Origins of Anasazi Culture. Eastern New Mexico University Contributions in Anthropology Volume 5, Number 1.

Irwin-Williams, Cynthia C. and Henry J. Irwin

1966 Excavations at Magic Mountain: A Diachronic Study of Plains-Southwest Relations. Denver Museum of Natural History Proceedings Number 12.

Jackson, Donald and Mary Lee Spence

1970 The Expeditions of John Charles Fremont, Vol. 1: Travels from 1838-1844. University of Illinois Press, Urbana.

Jennings, Jesse D.

1964 Prehistoric Man in the New World. University of Chicago Press, Chicago.

1974 Prehistory of North America. McGraw-Hill, New York.

1983 Ancient North Americans. W. H. Freeman and Company, San Francisco.

Jones, Bruce A.

- 1982 The Curecanti Archaeological Project: 1980 Investigations in Curecanti National Recreation Area, Colorado. Midwest Archaeological Center Occasional Studies in Anthropology Number 8. Lincoln, Nebraska.
- Jones, Kevin T.
 1977 Archaeological Test Excavations at the Blanca Wildlife Refuge in the San Luis Valley, Colorado. Reports of the Laboratory of Public Archaeology. Number 12. Colorado State University, Ft. Collins, Colorado.
- Kranzush, Kris J., Laura M. Viola and Gail S. Firebaugh
 1982 Final Report: Cultural Resources Inventory Report, Azure Hydroelectric Project (Azure Reservoir-Low Dam Alternative). Report prepared for Northern Colorado Water Conservancy District. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.
- Kreiger, Alex D.
 1964 Early man in the New World. In Prehistoric Man in the New World, Jesse D. Jennings and Edward Norbeck, editors. PP. 23-81. University of Chicago Press, Chicago.
- Kvamme, Kenneth
 1980 An Analysis of Aboriginal Lithic Artifacts from the Mount Emmons Project 1977 through 1979. In Baseline Cultural Resource Surveys and Evaluations in Primary Impact Areas of the Mount Emmons Project: 1978 and 1979 Field Seasons, by Steven G. Baker et al. Manuscript on file, Centuries Research, Montrose, Colorado.
- Kyle, Sharon
 1981 Archaeological Investigations and Assessments on the Badger Burrows Consolidated Area of Chalets Unit One: A Portion of the Baca Grant Number 4. Summit Engineering, Alamosa, Colorado.
- La Marche, Valmore C.
 1973 Holocene Climatic Variations Inferred from Treeline Fluctuations in the White Mountains, California. Journal of Quaternary Research 3:632-660.
- La Marche, Valmore C. and Harold A. Mooney
 1967 Altithermal Timberline Advance in the Western United States. Nature 213:980-982.
- Leach, Larry L.
 1970 Archaeological Investigations at Deluge Shelter. Ph.D. dissertation, Department of Anthropology, University of Colorado, Boulder.

- Lightfoot, Kent G. and Julie E. Francis
 1978 The Effects of Casual Surface Collection On Behavioral Interpretations of Archaeological Data. In Fred Plog, ed. An Analytical Approach to Cultural Resource Management: The Little Colorado Planning Unit. Arizona State University Anthropological Research Paper Number 13. Arizona State University.
- Lischka, Joseph J.
 1976 Cultural Resource Inventory and Evaluation of the Windy Gap Project Water Pipeline Route. Report prepared for Dames Morre. Manuscript on file, Office of the State Archeologist, Denver, Colorado.
- Lischka, Joseph J. and Kevin D. Black
 1979 Final Report on a Cultural Resource Inventory and Testing Program of Archaeological Sites in the Right-of-Way of the Gore Pass-Windy Gap Transmission Line. Manuscript on file, Bureau of Anthropological Research, University of Colorado, Boulder.
- Lischka, Joseph J., Mark E. Miller, R. Branson Reynolds, Dennis Dahms and Kathie Joyner-McGuire
 1980 Final Report of a Class III Cultural Resources Inventory of Potential Coal Production Areas in North Park, Jackson County, Colorado. Manuscript on file, Midwest Archaeological Center, Lincoln, Nebraska.
- Lutz, Bruce J., William Hunt, Jr., and Cheryl Muceus
 1979 A Cultural Resource Management Survey Within the Eagle Planning Unit, Colorado. Report submitted to the Bureau of Land Management, Grand Junction District, Colorado. Manuscript on file, Office of Public and Contract Archaeology, 1(1).
- Matthes, F. E.
 1945 Post-Pleistocene Deglaciation and Reglaciation. Geological Society of America Bulletin 56:1181.
- Metcalf, Michael
 1979 Archaeological Investigation of Amoco Seismic Lines in South Park. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.
- Meyers, Harry C. Jr.
 1950 The Archaeology of the San Luis Valley. Masters Thesis. Department of Anthropology, University of Denver.
- Morris, Elizabeth Ann and James R. Marcotte
 1977 Excavations at the Lightning Hill Site (5LR284) in the Foothills of North-Central Colorado. Paper

presented at the 35th Plains Conference, Lincoln, Nebraska.

Morris, Elizabeth Ann, Kenneth L. Kvamme, N. Ted Ohr, Michael D. Metcalf, Howard M. Davidson, Ronald E. Kainer and Robert J. Burgess

1979 The Archaeology of the Boxelder Project: A Water Control Project in Larimer County, North-Central Colorado, 1972-1979. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.

Nelson, Charles E. 1971 The George W. Lindsay Ranch Site, 1971 5JF11. Southwestern Lore 37(1):1-13.

Nickens, Paul R.

1979a Prehistoric Cultural Resources of Rio Grande National Forest, South-Central Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

Nickens, Paul R., Deborah Hall, Alan Reed, Douglas Scott, Peter Gleichman and Susan Eininger

1982 Archaeological Resources in Southwestern Colorado, Colorado State Office, Bureau of Land Management, Cultural Resource Series Number 13. Denver, Colorado.

O'Neal, Brian

1983 Letter to Judith Halasi, RP-3 Coordinator, Colorado Preservation Office, 1300 Broadway, Denver, Colorado.

Reed, Alan D.

1981 Archaeological Investigations of Two Archaic Campsites Located on the Continental Divide, Mineral County, Colorado. Manuscript on file, Nickens and Associates, Montrose, Colorado.

1982 Cultural Resource Inventory of the Morrison Creek Timber Sale, Dolores County, Colorado. Manuscript on file, Nickens and Associates, Montrose, Colorado.

Reed, Alan D. and Douglas D. Scott

1982 The Archaeological Resources of the Uncompahgre and Gunnison Resource Areas, West Central, Colorado. In Archaeological Resources in Southwestern Colorado. Pp. 307-427. Bureau of Land Management--Colorado, Cultural Resources Series Number 13.

Renaud, Etienne B.

1942 Reconnaissance Work in the Upper Rio Grande Valley, Colorado and New Mexico. University of Denver Archaeological Series Number 3. Department of Anthropology, University of Denver, Denver, Colorado.

- 1946 Archaeology of the Upper Rio Grande Basin in Southern Colorado and Northern New Mexico. Archaeological Series, Sixth Paper. Department of Anthropology, University of Denver.
- Shafer, Judy Ann
1978 An Archaeological Survey of Wolf Creek Pass East. Colorado Department of Highways Salvage Report Number 26. Denver, Colorado.
- Shimkin, D. B.
1947 Wind River Shoshone Ethnogeography. University of California Anthropological Record 5(4):245-288, University of California, Berkeley.
- Smith, Ann M.
1974 Ethnography of the Northern Utes. Papers in Anthropology 17. Museum of New Mexico Press.
- Spencer, Frank C.
1979 The Story of the San Luis Valley. The San Luis Valley Historical Society. Alamosa, Colorado.
- Stanford, Dennis
1979 The Selby and Dutton Sites: Evidence for Possible Pre-Clovis Occupation of the High Plains. Pre-Llano Cultures of the Americas: Paradoxes and Possibilities, Robert L. Humphrey and Dennis Stanford, editors. Anthropological Society of Washington D.C.
- Stanford, Dennis, Waldo R. Wedel, and Glenn Scott
1981 Archaeological Investigations of the Lamb Springs Site. Southwestern Lore 47(1):14-27.
- Stiger, Mark A.
1981 1979 Investigations at Seven Archaeological Sites in the Curecanti National Recreation Area. Manuscript on file, Midwest Archaeological Center, Lincoln, Nebraska.
- Toll, Oliver
1913 Indian Trip in Estes Park. Unpublished manuscript on Microfilm, University of Colorado Library, Boulder.
- Upton, J. E.
1971 Physiographic Subdivisions of the San Luis Valley, Southern Colorado. In James, ed. Guidebook of the San Luis Basin, Colorado. New Mexico Geological Society, Twenty-second Field Conference.
- Ward-Williams, Linda and Michael Foster
1977 Final Report of Cultural Resource Inventories, Routt National Forest, Steamboat Springs, Colorado, Fiscal

Years 1975 and 1976. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.

Wheat, Joe Ben

1972 The Olsen-Chubbuck Site: A Paleo-Indian Bison Kill. Memoirs of the Society for American Archaeology, Number 26.

Wheeler, Charles W. and Gary L. Martin

1983 Windy Gap: Aboriginal Adaptation to Middle Park, Grand County, Colorado. Report prepared for the Northern Colorado Water Conservancy District. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.

Willey, Gordon R. and Philip Phillips

1958 Method and Theory in American Archaeology. University of Chicago Press, Chicago.

Windmiller, Ric and Frank W. Eddy

1975 Two Forks: An Archaeological Study of Aboriginal Settlements and Land Use in the Colorado foothills. Report prepared for the National Park Service. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.

Wormington, Hannah Marie

1955 A Reappraisal of the Fremont Culture: With a Summary of the Archaeology of the Northern Periphery. Denver Museum of Natural History Proceedings Number 1.

1957 Ancient Man in North America. Denver Museum of Natural History Popular Series. Number 4. Denver, Colorado.

York, Robert

1980 Draft. San Juan National Forest Cultural Resource Overview: Cultural Resources Assessment.

Zier, Christian

1977 Prehistoric Utilization of the House Creek Drainage, San Juan National Forest, Colorado. Southwestern Lore 43(2):1-10.

ADDENDUM TO REFERENCES CITED AND BIBLIOGRAPHY

- Gleichman, Peter J., Susan Eininger and Douglas D. Scott
 1982 The Archaeology of the West End (San Miguel Resource Area) in Archaeological Resources in Southwestern Colorado, Bureau of Land Management. Cultural Resource Series Number 13.
- Jennings, Jesse D.
 1978 Prehistory of Utah and the Eastern Great Basin. University of Utah Anthropological Paper, Number 98. Salt Lake City, Utah.
- Service, Elman R.
 1971 Primitive Social Organization, 2nd ed. Random House, New York.
- Steward, Julian H.
 1938 Basin Plateau Aboriginal Socio-political Groups. Bureau of American Ethnology. Bulletin 120.
 1967 The Great Basin Shoshonean Indians. The North American Indians. Roger C. Owen et al.
- Swancara, Frank
 1955 The Archaeology of the Great Sand Dunes National Monument, A Preliminary Survey. Denver, Colorado.
- Thomas, David H.
 1972 A Computer Simulation Model of Great Basin Shoshonean Subsistence and Settlement Patterns. Models in Archaeology. David L. Clarke, ed. pp. 671-704. Methuen, London.

APPENDIX A: OUTLINE OF RESEARCH QUESTIONS

DEVELOPED BY BRYAN AIVAZIAN

Research Questions for All or Most of the Cultural Units

The following outline was developed by Bryan Aivazian as a result of the Regional Research Design Seminar for the Mountains area. The following people participated in the seminar: Bryan Aivazian (Chairman), Kevin Black, Rick Fleming, Mark Guthrie, Jonathan Haas, Kris Kranzush, Tom Lincoln, Emerson Pearson, Lane Shields, Chuck Wheeler and Cindy Wood.

An Outline for a
RESEARCH DESIGN FOR THE INTERMONTANE REGION OF COLORADO
by
Bryan L. Aivazian

- I. INTRODUCTION
 - A. Definition of the Study Area
 - B. Distinctive Characteristics of the Region
 - C. Structure and Function of the Research Design
- II. CULTURAL RESOURCE BACKGROUND
 - A. BRIEF review of the cultural overview of the area
(extracted from the RP3 Addendum)
 - B. Summary of the relevant archaeological and historic studies conducted in the study area
- III. CURRENT AND FUTURE DIRECTIONS
 - A. Present focus of current archaeological investigations
 - B. Immediate and long range objectives for future archaeological investigations
- IV. PROBLEM DOMAINS AND RESEARCH PROCEDURES
 - A. Why Were Human Groups in Various Areas?
 - 1. Was the presence based on the utilization of specific or general resources?
 - 2. Could this area have been considered an attractive or a marginal environment?
 - 3. Was the use of this area voluntary or was it imposed by social or environmental pressures?
 - 4. If an area is not considered to have been used year-round, then what other location(s) made up the home range?
 - B. Group Identification or Ethnicity.
 - 1. Based upon historic documentation, are the various ethnohistorical groups identified distinguishable by their archaeological manifestations?
 - 2. Does the Intermontane Region reflect a diversity of cultural "types" indicative of several different groups, or is there a homogeneity of cultural traits that might better indicate a "mountain adaptation" which supercedes any other emicly defined cultural identification?
 - C. Chronology
 - 1. What is the earliest evidence of human utilization of the Intermontane Region?
 - 2. Was the region used continuously through time, or were there fluctuations in the intensity of use?
 - 3. Distinctive artifact types are most often used to date assemblages. When independent dates can be derived for "typed" artifacts, are they comparable

to the dates found for similar types found outside of the Intermontane Region?

D. Exchange Systems

1. Can nonlocal manifestations such as materials, tools, assemblages, or ideas be identified in this region?
2. If intrusive elements are found in this region, are they the product of direct acquisition or transport, or products of sequential down-the-line trade?

E. Resource Utilization and Seasonality

1. What were the primary and secondary food resources available and actually utilized in the surrounding environment of a site?
2. What were the nonfood resources of the areas where human activities have taken place?
3. To what degree was the access to the above resources limited; and if so, what were the realistic potential durations of availability?

F. Social Organization

1. What was the carrying capacity of a given area (in terms of human numbers)?
2. Is there a relationship between site size and group size?
3. Are there correlations between site size and activity types, seasonal occupation, specific resource use, etc.?
4. Can band versus tribal organization be identified?
5. Can a diversification of roles such as activity specialists (eg. shamans, potters) and individual status differentiation be recognized?

G. Group Interactions

1. Trade
2. Warfare
3. Religion
4. Contact and acculturation of local peoples by both Anglo and other native American cultures.
5. Trans-Rocky Mountain (east-west) communication.

H. Seasonality

1. Did the effective seasons change through time?
2. How are effective seasons affected by zonal changes in elevation?
3. What were the periods of availability for various plant and animal resources?
4. Reliance on both ethnobotany and ethnographic analogy to achieve such goals.

I. Paleo-Environmental Reconstruction

1. Correlation of cultural manifestations with the

local permitting environments.

2. Need to establish a more detailed local glacial chronology.
3. Assess the role of small micro-environments in regional adaptations.

J. Technology

1. Examine the technological correlates of seasonality.
2. Are certain technologies specific to various groups, raw materials use, or modes of adaptation?
3. Distinguish between stylistic and adaptive changes?
4. Distinguish between convergent evolution or diffusion?
5. Examine varying patterns of techno-complexity.
6. Do Plains and Mountain Park patterns of buffalo hunting differ, and if so, how?
7. Temporal and spatial distribution, and formal attributes, of dwelling and/or storage structures.

V. SUMMARY AND CONCLUSIONS

APPENDIX B
 ADDITIONAL BIBLIOGRAPHY

- Adams, E. Charles
 1974 Location Strategy Employed by Prehistoric Inhabitants of the Piedra District, Colorado. Southwestern Lore 40(1):13-26.
- Agogino, George A.
 1960 The San Jose Sites: A Cochise-Like Manifestation in the Middle Rio Grande. Southwestern Lore 26:43-48.
- Anderson, Jane L.
 1980 A Cultural Resource Inventory of the Basalt-Malta Transmission Line, Lake, Pitkin, and Eagle Counties, Colorado. Prepared for the Public Service Company of Colorado. Research Reports of Pioneer Archaeological Consultants, Number 3.
- Anderson, Morris
 1976 5GA106: The Jim Creek Site. In Final Report of Cultural Resource Inventories; Arapahoe-Roosevelt National Forests, compiled by Michael Foster. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.
- Andrews, J.T., P.E. Carrara, F.B. King and R. Stuckenrath
 1975 Holocene Environmental Changes in the Alpine Zone, Northern San Juan Mountains, Colorado: Evidence from Bog Stratigraphy and Palynology. Quaternary Research 5:173-197.
- Applegarth, Susan
 1975 Blue Mesa/Lake City Transmission Line Archaeological/Historical Survey, October 13, 1975-October 23, 1975. Department of Anthropology, Fort Lewis College, Durango, Colorado.
- Armagast, Marilyn, and Vincent Spero
 1977 Rio Grande National Forest Cultural Resource Inventory Report 1975-1976, Report No. 1. Manuscript on file, U.S.D.A. Forest Service, Rio Grande National Forest, Monte Vista.
- Arthur, Christopher S.
 1977 Archaeological Reconnaissance of Proposed Coal Lease Area in Moffat, Rio Blanco, and Routt Counties, Colorado. Report of the Laboratory of Public Archaeology Number 1. Colorado State University, Fort Collins.
- 1981 Final Report on the Archaeological Testing of Two Prehistoric Sites in the Bartlett Mountain Land

Exchange. Susan M. Collins, editor. Reports of the Laboratory of Public Archaeology Number 60. Fort Collins, Colorado.

Arthur, Christopher, et al.

1979 Archaeological Reconnaissance of West-East Natural Gas Pipeline, Rio Blanco, Moffat, Routt, Grand and Summit Counties, Colorado. Prepared for the Western Slope Gas Company. Report of the Laboratory of Public Archaeology Number 27. Colorado State University, Fort Collins.

Athearn, Frederic J.

1979 Field Report, Upper Colorado River, Survey Conducted on 5-4-79 to 5-6-79. Manuscript on file, Bureau of Land Management, Kremmling Resource Area, Kremmling, Colorado.

Atwood, W.A, and K.F. Mather

1932 Physiography and Quaternary Geology of the San Juan Mountains, Colorado. United States Geological Survey Professional Paper Number 166.

Baars, Donald L.

1972 Red Rock Country. Doubleday/Natural History Press, New York.

Baker, Steven G.

1976 Preliminary Cultural Resource Inventory, Power Line Small Sales, Gunnison National Forest. Manuscript on file, Centuries Research, Montrose, Colorado.

1977a Archaeological Evaluation of Three Prehistoric Sites in the Pitch Uranium Project Area of Homestake Mining Company. Saguache County, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

1977b A Cultural Resource Inventory of the Keystone Mine, Mount Emmons Project, Amax Inc., Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose Colorado.

1977c A Cultural Resource Survey for the Orchard Valley Mine, Colorado Westmoreland, Inc., Paonia, Delta County, Colorado. Thorne Ecological Institute, Boulder.

1977d The Historical and Archaeological Site Survey of Ouray County: A Project Brief for 1976-1977. Board of County Commissioners, Ouray.

1977e A Cultural Resource Inventory of the Keystone Mine, Mount Emmons Project, Amax, Inc., Crested

Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

1978 A Cultural Resource Inventory of Core Drill Site 17, Alkali Creek Tailings Dam, Mount Emmons Project, Amax, Inc., Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

1979 A Cultural Resource Inventory of the Keystone Mine Portal Development Area, Mount Emmons Project, Amax, Inc., Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

Baker, Steven G., and Nancy E. Wood

1978a A Cultural Resource Survey of the Ruby-Irwin Drill Site of Climax Exploration, Inc., Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

1978b Cultural Resource Survey of the Mount Axtell Drill Sites No. 1 and 4a, Mount Emmons Project, Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

1978c A Cultural Resource Inventory of the Proposed Alkali Creek Mill Site. Manuscript on file, Centuries Research, Montrose, Colorado.

1978d A Cultural Resource Inventory of the Proposed Mount Axtell Drill Sites No. 2, 3, and 3A, Mount Emmons Project, Amax, Inc., Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

1978e Cultural Resource Inventory of the Proposed Ruby-Anthracite Tailing Dam: Drill Sites No. 1, 2, 2A, 3, and 4, Mount Emmons Project, Amax, Inc., Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

1978f A Cultural Resource Inventory of the Proposed Alkali Creek Tailing Dam: Drill Site No. 1, Mount Emmons Project, Amax, Inc., Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

1978g A Cultural Resource Inventory of Four Meteorological Monitoring Sites, Mount Emmons Project, Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

Barclay, G.S. Venable

1968 Geology of the Gore Canyon-Kremmling Area, Grand County, Colorado. M.S. thesis, Department of

Geology, University of Arizona, Tucson.

Bean, Luther E.

1975 Land of the Blue Sky People. Ye Olde Print Shoppe, Alamosa, Colorado.

Beardsley, John W.

1976 Report on the Archaeology of the Rio Grande National Forest, 1975. Manuscript on file, U.S.D.A. Forest Service, Monte Vista, Colorado.

Beauvais, Lester

1954 Primitive People of the Gunnison Basin. Southwestern Lore 21(3):29-34.

Benedict, James B.

1967 Recent Glacial History of an Alpine Area in the Colorado Front Range, U.S.A., I. Establishing a Lichen-Growth Curve. Journal of Glaciology 6:817-832.

1968 Recent Glacial History of an Alpine Area in the Colorado Front Range, U.S.A., II. Dating the Glacial Deposits. Journal of Glaciology 7:77-87.

1969 Aerial Photography and Mapping of the Rollins Pass Site, Colorado. Year Book of the American Philo-sophical Society, pp. 504-506.

1970a Altithermal Occupation of the Front Range Alpine Region. First Meeting of the American Quaternary Association Abstracts p. 8.

1970b Downslope Soil Movement in a Colorado Alpine Region: Rates, Processes, and Climatic Significance. Arctic and Alpine Research 2:165-226.

1973 Prehistoric Man and Climate: The View from Timberline. International Association for Quaternary Research, Ninth Congress Abstracts. Christ Church.

1974a Prehistoric Man and Environment in the Colorado Front Range: Field Work During the Summer of 1974. Manuscript on file, U.S.D.A. Forest Service, Roosevelt National Forest, Boulder, Colorado.

1974b The Early Occupation of the Caribou Lake Site, Colorado Front Range. Plains Anthropologist 19(66):1-4.

1975a The Murray Site: A Late Prehistoric Game Drive System in the Colorado Rocky Mountains. Plains Anthropologist 20(69):161-174.

- 1975b Scratching Deer: A Late Prehistoric Campsite in the Green Lakes Valley, Colorado. Plains Anthropologist 20(70):267-280.
- 1975c The Albion Boardinghouse Site: Archaic Occupation of a High Mountain Valley. Southwestern Lore 41(3):1-12.
- 1976 Frost Creep and Gelifluction Features: A Review. Quaternary Research 6(1).
- Benedict, James B. and Byron L. Olson
 1973 Origin of the McKean Complex: Evidence from Timberline. Plains Anthropologist 18-62(1/2):323-327.
- Bergendahl, M. H.
 1969 Geologic Map and Section of the Southwest Quarter of the Dillon Quadrangle, Eagle and Summit Counties, Colorado. United States Geological Survey, Miscellaneous Geologic Investigations, Map 1-563.
- Biggs, R. W.
 1975 An Archaeological Survey and Test Excavations of Sites on Vail Pass, Colorado. Colorado State Highway Department, Highway Salvage Report Number 11. Project #170-2(19).
- Billman, Brian
 1983 The Archaic Period in the San Luis Valley. Unpublished manuscript. Department of Anthropology, University of Denver.
- Black, Kevin D.
 1981 Archaeological Clearance Survey of Proposed Uranium Core Hole Locations for Sumedco's Rabbit Ears Prospect, Grand County, Colorado. Manuscript on file, Colorado Preservation Office, Denver, Colorado.
- 1982a Final Report of a Cultural Resources Inventory of the Arapahoe Basin Ski Area, Summit County, Colorado. Manuscript on file, U.S. Forest Service-Dillon Ranger District Office, Frisco, Colorado.
- 1982b Final report of Archaeological Investigations: Peak 8 and Peak 9 Inventory and 5ST161 Test Excavations, Breckenridge Ski Area, Summit County, Colorado. Manuscript on file, Metcalf-Zier Archaeologists, Inc., Eagle, Colorado.
- 1983a Prehistoric Hunter-Gatherer High Altitude Adaptations in Central Colorado. Paper presented at the General Session "Archaeological Research in Colorado and Arizona" of the 48th Annual Meeting of the Society for American Archaeology, Pittsburgh,

Pennsylvania, April 28, 1983.

1983b An Archaeological Inventory of Eight Fletcher Associates Place Claims North of Buena Vista, Chaffee County, Colorado. Manuscript on file, U.S. Forest Service--Leadville Range District Office, Leadville, Colorado.

n.d.a Shelter and Subsistence at 5GN344, a High Altitude Short-Term Camp Near Almont, Colorado. Manuscript on file, Metcalf-Zier Archaeologists, Inc., Eagle, Colorado.

n.d.b Excavations at the Carter Gulch Site, Summit County, Colorado. Manuscript on file, Metcalf-Zier Archaeologists, Inc., Eagle, Colorado.

Boyd, Henrietta H.

1940 Saguache Antelope Traps. Southwestern Lore 6(2):28-34.

Breternitz, David A.

1967 Review of Excavations at Magic Mountain. Southwestern Lore 33(1):33-34.

1970 Archaeological Excavations in Dinosaur National Monument Colorado-Utah, 1964-1965. University of Colorado Study Series in Anthropology . Number 17. University of Colorado Press, Boulder.

1971 Archaeological Investigations at the Wilbur Thomas Shelter, Carr, Colorado. Southwestern Lore 36(4):53-99.

1973a Report of Investigations of the "Ute Fort" near Granby, Colorado. Manuscript on file, University of Colorado Museum, Boulder.

1973b Archaeological Reconnaissance and Evaluation, Ridge-way Dam and Reservoir, Ouray County, Colorado. Manuscript on file, Department of Anthropology, University of Colorado, Boulder.

1974 Report of Archaeological Reconnaissance, Crystal Dam and Reservoir, Montrose County, Colorado. Manuscript on file, Midwest Archaeological Center, Lincoln, Nebraska.

Breternitz, David A., Scott L. Carpenter, William G. Gillespie, and Mark A. Stiger

1974 Inventory of Archaeological Resources, Black Canyon of the Gunnison National Monument, Colorado Department of Anthropology, University of Colorado, Boulder.

- Bryan, Kirk and Joseph H. Toulouse Jr.
 1943 The San Jose Non-Ceramic Culture and Its Relation to a Puebloan Culture in New Mexico. American Antiquity 8:269-280.
- Buckles, William G.
 1964 Archaeological Survey of the Morrow Point Dam Area, Montrose and Gunnison Counties, Colorado. Department of Anthropology, University of Colorado, Boulder. Manuscript on file, Midwest Archaeological Center, Lincoln, Nebraska.
- 1968 Archaeology in Colorado: Historical Tribes. Southwestern Lore 34(3):53-67.
- 1971a The Uncompahgre Complex: Historical Ute Archaeology and Prehistoric Archaeology on the Uncompahgre Plateau in West-Central Colorado. Ph.D. dissertation, Department of Anthropology, University of Colorado, Boulder.
- 1971b An Archaeological Survey of Emergency Flood Control Features in the Vicinity of San Luis, Costilla County, Colorado.
- 1973 Archaeological Salvage for the Fryingpan-Arkansas Project in Lake, Chaffee, and Pitkin Counties, Colorado in 1972. Manuscript on file, Department of Anthropology, Southern Colorado State University, Pueblo, Colorado.
- 1979a 5LK221, The Campion Hotel Prehistoric Site: A Hogback Phase Occupation in a Mountain Valley. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.
- 1979b An Archaeological Survey of Emergency Flood Control Features in the vicinity of San Luis, Costilla County, Colorado.
- Buckles, William G., George H. Ewing, Nancy Buckles, George J. Armelagos, John J. Wood, James D. Haug and John H. McCulloch
 1963 The Excavations of the Hazeltine Heights Site. Southwestern Lore 29(1):1-33.
- Bureau of Reclamation
 1982 Deposits of Prehistoric Archaeological Artifacts Located Within the Impact Area of the U.S. Bureau of Reclamation's San Luis Valley Project Closed Basin Division, Stage 1-2. Bureau of Reclamation, Alamosa, Colorado.

Burgess, Robert J.

- n.d. Cultural Ecological Investigations within the Owl Canyon Rock Shelter, (5LR104), Larimer County, Colorado. M.A. thesis, Colorado State University, Fort Collins.

Burgh, Robert F.

- 1947 Preliminary Report on Archaeological and Paleontological Remains in Reservoir Areas of Colorado Big Thompson Project. Manuscript on file, University of Colorado Museum, Boulder.
- 1948 Final Appraisal of the Archaeological and Paleontological Resources of Granby Reservoir, Grand County, Colorado. Manuscript on file, University of Colorado Museum, Boulder.

Burns, George R. and Vincent Spero

- 1979 Cultural Resource Inventory of the Rio Grande National Forest, 1978. Report No. 3, U.S.D.A. Forest Service. Rio Grande National Forest, Colorado. Manuscript on file, Rio Grande National Forest, Monte Vista, Colorado.

Button, Van Tries

- 1980 Archaeological Investigations in the Closed Basin of Colorado's San Luis Valley. Manuscript on file, Southwest Regional Office of the Water and Power Resources Service (Bureau of Reclamation), Department of the Interior, Amarillo, Texas.
- 1982a Archaeological Investigations in the Closed Basin of Colorado's San Luis Valley: 1979 Fieldwork. Bureau of Reclamation, Closed Basin Division-San Luis Valley Project.
- 1982b Deposits of Prehistoric Archaeological Artifacts Located Within the Impact Area of the U.S. Bureau of Reclamation's San Luis Valley Project-Closed Basin Division, Stage 1-2. Alamosa, Colorado.
- 1982c Research Framework for Closed Basin Archaeological Investigations. U.S. Bureau of Reclamation, Alamosa, Colorado.

Carpenter, Scott L. and Mark A. Stiger

- 1975 Archaeological Inventory of Soap Creek Reservoir, Black Mesa Conduit and Two Spoil Sites, Fruitland Mesa Project. Department of Anthropology, University of Colorado, Boulder.

Carrara, P. E. and W. N. Mode

- 1979 Extensive Deglaciation in the San Juan Mountains, Colorado, Prior to 14,000 Years B.P. Geological Society of America Abstracts with Programs

11(7):399.

Cassells, E. Steve

1978a Cultural Resource Survey, Divide Timber Sale, Cebolla District, Gunnison National Forest, Saguache County, Colorado. Manuscript on file, U.S.D.A. Forest Service, Delta, Colorado.

1978b Cultural Resource Survey, Divide Timber Sale, Grand Mesa, Uncompahgre, and Gunnison National Forests. Manuscript on file, U.S.D.A. Forest Service, Delta, Colorado.

1978c Cultural Resource Survey, Jay Creek Timber Sale, Cebolla District, Gunnison National Forest, Saguache County, Colorado. Manuscript on file, U.S.D.A. Forest Service, Gunnison, Colorado.

1978d Cultural Resource Survey, Greathouse Timber Sale, Cebolla District, Gunnison National Forest, Gunnison County, Colorado. Manuscript on file, U.S.D.A. Forest Service, Gunnison, Colorado.

1978e Five Archaeological Surface Sites in the Archuleta Creek Drainage, Cebolla District, Gunnison National Forest, Saguache County, Colorado. U.S.D.A. Forest Service, Gunnison, Colorado.

Clarke, David L. (ed.)

1972 Models in Archaeology. Methuen and Co. Ltd., London.

Coe, Carol, Dena Markoff, and Charles W. Wheeler

1980 An Assessment of Cultural Resources in the Vicinity of Chance Gulch, Colorado. Manuscript on file, Western Cultural Resources Management, Inc., Boulder.

Colle, Collette

1978 Archaeological Test of Two Quarry Sites in the Arkansas Canyon. Colorado Division of Highways Salvage Report Number 23.

Dangler, Terry, Marilyn Armagast and Vince Spero

1977 Cultural Resource Inventory 1975-1976. Report No. 1. Manuscript on file, U.S.D.A. Forest Service, Monte Vista, Colorado.

Dangler, Terry, George Burns, Sharon Kyle, Wayne Williams, Michael Wanner, Marilyn Armagast, and Vincent Spero

1978 Cultural Resource Inventory of the Rio Grande National Forest, 1977. Report No. 2. Manuscript on file, U.S.D.A. Forest Service, Monte Vista, Colorado.

Daniels, Donna C.

- 1980 A Cultural Resource Inventory of 20 Auger Holes and 10 Core Holes for the Azure Project in Grand County, Colorado. Manuscript on file, Western Cultural Resources Management, Inc., Boulder.

Daniels, Donna C. and Richard D. Spencer

- 1982 Evaluation and Testing of Eight Sites in Pitkin County, Colorado. Manuscript on file, Cultural Resource Consultants, Inc., Denver, Colorado.

Davis, Hester A. (ed.)

- 1980 A State Plan: For the Conservation of Archaeological Resources in Arkansas. Vol. 1. National Park Service.

- 1981 A State Plan: For the Conservation of Archaeological Resources in Arkansas. Vol. 1. National Park Service.

Davis, P. T.

- Indicator of Late Holocene Climate Fluctuation, Arapahoe Cirque, Colorado Front Range. Geological Society of America Abstracts with Programs 11(7):410.

Dick, Herbert

- 1975 A Surface Survey of Indian Camps on the Blanca Wildlife Refuge, San Luis Valley, Colorado. Manuscript on file, Department of Anthropology, Adams State College, Colorado.

- 1976 Archaeological Clearance of a Road Cut, Rio Grande National Forest, Mineral County, Colorado.

Dixon, Hobart N.

- 1971 Flora of the San Luis Valley. in James ed. Guidebook of the San Luis Basin, Colorado. New Mexico Geological Society. Twenty-second Field Conference.

Dutton, Bertha P.

- 1976 The Rancheria, Ute, and Southern Paiute Peoples. Prentice-Hall, Englewood Cliffs, New Jersey.

Eddy, Frank W.

- 1974 Archaeological Salvage: Site Survey Investigations at the Two Forks Dam and Reservoir Site Located Southwest of Denver. Proposal to the U.S. Department of the Interior.

- Euler, Robert Thomas
 1977 Archaeological Inventory of the "Thomas Exchange" Project. Department of Anthropology, University of Colorado, Boulder.
- Farmer, Reid T.
 1979 A Cultural Resource Inventory in the Routt National Forest, Colorado. Prepared under contract to the U.S.D.A. Forest Service by Commonwealth and Associates.
 1981 Excavations at Two Sites in the San Luis Valley, Colorado. Paper presented at the Thirty-ninth Plains Conference, Bismark, North Dakota.
- Finnegan, Michael
 1978 Human Skeletal Remains from Bradford House III, Site 5JF52, Jefferson County, Colorado. Plains Anthropologist 23(81):221-235.
- Fitzwater, Larry
 1981 Dunton Timber Sale. Manuscript on file, San Juan National Forest, Durango, Colorado.
- Fleming, Stuart
 1976 Dating in Archaeology. St. Martins Press, New York.
- Flowers, Seville, Heber H. Hall, and Robert Reynolds
 1962 Plants Found in Curecanti Reservoir Basins, 1961. In Geological Studies of the Flora and Fauna of the Curecanti Reservoir Basins, Western Colorado, Angus M. Woodbury, editor. University of Utah Anthropological Paper 59.
- Foster, Michael S.
 1976 Cultural Resource Inventory Report for Blanco Ranger District, Eagle Ranger District, Holy Cross Ranger District, Sopris Ranger District. In the Final Report of Cultural Resource Inventories White River National Forest, Glenwood Springs, Colorado. Fiscal Years 1975-1976.
- Fryxell, F. M.
 1928 The Former Range of the Bison in the Rocky Mountains. Journal of Mammalogy 9:129-133.
- Gooding, John
 1977 The Archaeological Survey of the Proposed Powers Boulevard Corridor in Colorado Springs. Colorado Department of Highways Salvage Report Number 18. Denver, Colorado.
 1978a The Vail Pass Site Carbon 14 Chert. Appendix to paper presented at the Plains Conference, Denver.

- Manuscript on file, Cultural Resource Consultants, Denver, Colorado.
- 1978b Testing at 5GN52, Curecanti National Recreation Area. Memo on file, Midwest Archaeological Center, Lincoln, Nebraska.
- 1979 Cerro Summit: An Archaeological Survey of Squaw Creek. Colorado Department of Highways Salvage Report Number 33. Boulder, Colorado.
- Gooding, John D. and Susan Kreuser
1980 An Archaeological Survey of Forest Highway 7. Colorado Department of Highways Project No. RS0149(5). Highway Salvage Report Number 31.
- Gooding, John D., Priscilla Ellwood and Allen Kihm
n.d.a. Archaeological Investigations at Bayou Gulch, 5DA265. Manuscript in progress.
- Gooding, John D., W. L. Shields and Allen Kihm
n.d.b The Archaeology of Sisyphus Shelter. Manuscript in progress.
- Gordon, E. Kinzie and Kris J. Kranzush
1977 Cultural Resource Inventory for Boxelder Creek Watershed Project, Structure B-2. Manuscript on file, Soil Conservation Service.
- 1978 Cultural Resource Inventory Report, Upland Industries Land Exchange, Red Feather District, Roosevelt National Forest. Gordon and Kranzush, Inc., Boulder, Colorado.
- Grieser, Sally Thompson
1975 Archaeological Resources on Natural Resource Land in the San Luis Valley. Unpublished Manuscript.
- Grieser, Sally T. and T. Weber Grieser
1976 Pitch Uranium Project Archaeological Survey. Homestake Mining Company, Gunnison. Manuscript on file, Grand Mesa-Uncompahgre-Gunnison National Forests, Supervisors Office, Delta, Colorado.
- 1977 Archaeological Reconnaissance in the Marshall Pass Area, Colorado. Southwestern Lore 43(4):22-31.
- Gumerman, George J. (ed.)
1971 The distribution of Prehistoric Population Aggregates. Prescott College Anthropological Reports. Number 1. Prescott College Press.
- Guthrie, Mark R.
1978 Cultural Resource Inventory of Specified Areas

Within Shadow Mountain Recreation Area, Colorado.
Midwest Archaeological Center, Lincoln, Nebraska.

1980a Mt. Massive Complex--Testing of Sites on the
Malta-Basalt Transmission Line, Lake County,
Colorado. Prepared for the Public Service Company
of Colorado. Cultural Resource Consultants.

1980b Cultural Resource Inventory for the Hidden Lakes
Timber Sale, Routt National Forest, Colorado.
Prepared for U.S.D.A. Forest Service. Cultural
Resource Consultants.

1980c Cultural Resource Inventory for the Independence
Timber Sale, Routt National Forest, Colorado.
Prepared for the U.S.D.A. Forest Service. Cultural
Resource Consultants.

1980d Cultural Resource Inventory for the Sandpoint
Timber Sale, Routt National Forest, Colorado.
Prepared for the U.S.D.A. Forest Service. Cultural
Resource Consultants.

1980e Cultural Resource Inventory for the Little Green
Timber Sale (6A), Routt National Forest, Colorado.
Prepared for the U.S.D.A. Forest Service. Cultural
Resource Consultants.

Burgh, Robert F.

1947 Preliminary Report on Archaeological and Paleonto-
logical Remains in Reservoir Areas of Colorado Big
Thompson Project.

Hammer, Polly

1979 Cultural Resource Reports: An Outline. Manuscript
on file, U.S.D.A. Forest Service, Delta, Colorado.

Hand, O. D. and John Gooding

1980 Excavations at Dotsero, 5EA128. Southwestern Lore
46(1 and 2):25-35.

Hand, O.D. and Brian R. Waitkus

1979 Preliminary Report of Archaeological Investigations
of Amoco Seismic Lines in South Park, Colorado.
Manuscript on file, Powers Elevation Co., Denver,
Colorado.

Harmon, E. M.

1945 The Story of the Indian Fort Near Granby, Colorado.
Colorado Magazine Number 4, July, 1945.

Harris, Marvin

1968 The Rise of Anthropological Theory. Thomas Y.
Crowell Company, Inc., New York.

Hibbets, Barry N.

1976 An Archaeological Survey of the Kenny Flats Reforestation Project. Manuscript on file, U.S.D.A. Forest Service, Durango, Colorado.

1977 An Archaeological Survey of the Sauls Creek Timber Sale and Adjacent Portions of the Pagosa-Bayfield Transmisson Line (Cultural Resources Report Number 13-22). Manuscript on file, San Juan National Forest, Durango, Colorado.

Hoffman, George R. and Robert Alexander

1980 Forest Vegetation of the Routt National Forest in Northwestern Colorado: A Habitat Type Classification. U.S.D.A. Forest Service Research Paper RM-221.

Honea, Kenneth

1965 A Morphology of Scrapers and Their Methods of Production. Southwestern Lore 31(2):25-40.

Honea, Kenneth

1969 The Rio Grande Complex and the Northern Plains. Plains Anthropologist 14(43):57-70.

Huston, Grant (Publisher)

1978 Archaeology in Lake City Resurrection of the Corner. The San Cristobal Quarterly 1(3):10-17.

Hurst, Clarence T.

1940 Preliminary Work in Tabeguache Cave--1939. Southwestern Lore 6(1):4-18.

1941 The Second Season of Work in Tabeguache Cave. Southwestern Lore 7(1):4-19.

1942 Completion of Work in Tabeguache Cave. Southwestern Lore 8(1):7-19.

1944 1943 Excavation in Cave II, Tabegauche Canyon, Montrose County, Colorado. Southwestern Lore 10(1):2-14.

1946 Colorado's Last Nomadic Hunters. Southwestern Lore 12(2):19-26.

Hurst, Clarence T. and Lawrence J. Hendricks

1952 Some Unusual Petroglyphs Near Sapinero, Colorado. Southwestern Lore 18(1):14-18.

Hurt, W. R.

1966 The Altithermal and the Prehistory of the Northern Plains. Quaternaria 8:101-114.

Husted, Wilfred Marston

1964 Prehistoric Occupation of the Alpine Zone in the Rocky Mountains. In Arctic and Alpine Environments, Jack D. Ives and Roger G. Barry, editors. Methuen, London.

1970 Altithermal Occupations of the Northern Rocky Mountains by Early Plains Hunting People. Abstracts, First Meeting American Quaternary Association Number 59. Bozeman, Montana.

n.d.a A Rock Alignment in the Colorado Front Range. Manuscript on file, Midwest Archaeological Center, Lincoln, Nebraska.

n.d.b Pueblo Pottery from Northern Colorado. Manuscript on file, Midwest Archaeological Center, Lincoln Nebraska.

Indeck, Jeff and Allen J. Kihm

1982 Zephyr: A Site for Sore Eyes. Excavations at 5MN1068. Colorado Department of Highways Salvage Report Number 38. Boulder, Colorado.

Ingersoll, Ernest

1885 The Crest of the Continent. R.R. Donnelley and Sons, Chicago.

Irwin, Cynthia C. and Henry J. Irwin

1961 Radiocarbon Dates from the LoDaisKa Site, Colorado. American Antiquity 27(1):114-115.

Ives, Ronald L.

1941 A Cultural Hiatus in the Rocky Mountain Region. Southwestern Lore 7(3):42-46.

1942 Early Human Occupation of the Colorado Headwaters Region: An Archaeological Reconnaissance. Geographical Review 32:448-462.

Jennings, Calvin H.

1968 The Paleo-Indian and Archaic Stages in Western Colorado. Southwestern Lore 34(1):11-20.

1973 The Archaeological Impact of Four Minor Construction Projects in Rocky Mountain National Park and Shadow Mountain National Recreation Area, Colorado. Department of Anthropology, Colorado State University, Fort Collins. Manuscript on file, Western Cultural Resources Management, Inc., Boulder.

Jennings, Calvin H. and Richard P. Taylor

n.d. Archaeological Reconnaissance of Natural Resource Lands in North Park, Middle Park, and the Yampa

River Basin. Laboratory of Public Archaeology, Colorado State University, Fort Collins. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.

Johnson, Ann M.

1977 Preliminary Cultural Resource Survey: #1 Sawmill, North Park District, Routt National Forest. Manuscript prepared under Cooperative Agreement between the Colorado State Historical Society and the U.S. Forest Service, on file at the Office of the State Archaeologist, Denver, Colorado.

Johnson, C. Ralph

1972 A Study of North Park Tipis. Southwestern Lore 37(4):93-101.

Johnson, D.D., D.R. Muhs, and M.L. Barnhardt

1977 The Effects of Frost-Heaving on Object in Soils, II: Laboratory Experiments. Plains Anthropologist 22(76), Part 1:133-147.

Johnson, D.L. and K.L. Hansen

1974 The Effects of Frost-Heaving on Objects in Soils. Plains Anthropologist 19(64):81-98.

Johnson, I. Harlan

1944 Paleozoic Stratigraphy of the Sawatch Range, Colorado. Geological Society of America Bulletin 55:303-378.

Judge, James W.

1973 Paleo-Indian Occupation: Of the Central Rio Grande Valley in New Mexico. University of New Mexico Press, Albuquerque.

Kainer, Ronald E.

1976 Archaeological Investigations at the Spring Gulch Sites (5LR252). Unpublished M.A. thesis, Department of Anthropology, Colorado State University, Fort Collins.

Kane, A. E.

1973 Report of the 1973 Inventory of Archaeological Remains on Naval Oil Shale Reserve Lands in Garfield County, Colorado. Report submitted to the Bureau of Land Management, Colorado State Office, Denver. Department of Anthropology, University of Colorado, Boulder.

Karlson, Jamie

1980 Survey of Cultural Resources For the Proposed Alamosa/Monte Vista National Wildlife Refuge Expansion Project, Rio Grande County, Colorado.

Klesert, Anthony L.

1981 Survey and Excavation in the Mountains of North-Central Colorado. Paper presented at the 46th Annual Meeting of the Society for American Archaeology, San Diego, California, May 2, 1981.

1983 A Predictive Model of Site Potential in the Rio Grande National Forest, Colorado. Paper presented at the 48th Annual Meeting of the Society for American Archaeology, Pittsburgh, Pennsylvania, April 30, 1983.

Klesert, Anthony L. and Deborah T. Seward

n.d. Models of Prehistoric High-Altitude Exploitation: A Test Case from Northern Colorado. Centuries Research, Inc., Montrose, Colorado.

Kranzush, Kris J.

1976 Cultural Resource Inventory Report Wastewater Treatment System Alternate Plant Site No. 3 Alternate No. 5. Granby Sanitation District, Granby, Colorado. Gordon and Kranzush-Archaeological Consultants, Boulder, Colorado.

Kreibich, Volker Herbert

1966 Precipitation Climatology of the Front Range in Colorado. M.A. thesis, Department of Geography, University of Colorado, Boulder.

Kvamme, Kenneth L.

1980 Predictive Model of Archaeological Site Location in the Glenwood Springs Resource Area. In Class II Cultural Resource Inventory of the Glenwood Springs Resource Area, Grand Junction District, Colorado (Part II). P.J. Burgess et al., ed. Nickens & Associates, Montrose, Colorado. Report submitted to the Bureau of Land Management, Grand Junction District, Colorado.

Kvamme, Kenneth L., and Kevin D. Black

1980 Final report on Mount Emmons Lithics. Manuscript on file, Centuries Research, Inc., Montrose, Colorado.

Langenheim, J.H.

1962 Vegetation and Environmental Patterns in the Crested Butte Area, Gunnison County, Colorado. Ecological Monographs 32(3):249-285.

Lawson, Clarence A.

1907 Letters and Field Notes Concerning the Survey of the Hartman Reservoir and Tunnel. Filed on behalf of the East Argentine Tunnel, Mining, Milling, Power and Transportation Company. Manuscripts on file, Bureau of Land Management, Kremmling Resource Area

Office, Kremmling, Colorado.

Leach, Larry L.

- 1966 Excavations at Willowbrook: A Stratified Site Near Morrison. Southwestern Lore 32(2):25-46.

Lennon, Thomas J., and Mark E. Sullivan

- 1978 Technical Proposal Cultural Resource Inventory and Evaluation of the Windy Gap Dam and Pipeline. Submitted to the Northern Colorado Water Conservancy District, the Bureau of Land Management, and the Bureau of Reclamation.

Lennon, Thomas J., Carol Coe, Barbara Downing, James Grady, Daniel Hall and Charles Wheeler

- 1980 A Predictive Sample Survey of Cultural Resources Within Potential Transmission Corridors for the Mount Emmons Project, Gunnison County, Colorado. Volume I. Manuscript on file, Western Cultural Resources Management, Boulder, Colorado.

Leudtke, Barbara

- 1979 The Identification of Sources of Chert Artifacts. American Antiquity 44(4):744-756.

Lincoln, Thomas R.

- 1978 Archaeological Reconnaissance, Rocky Mountains National Park. Manuscript on file, Midwest Archaeological Center, Lincoln, Nebraska.

Lipman, P. W., T.A. Stevens, R.G. Luedtke and W.S. Burbank

- 1973 Revised Volcanic History of the San Juan, Uncompahgre, Silverton and Lake City Calderas in the Western San Juan Mountains, Colorado. United Geologic Survey Journal of Research 1(6):627-642.

Lischka, Joseph J.

- 1978a Preliminary Report on a Cultural Resource Inventory and Testing Program of Archaeological Sites in the Right-of-Way Gore Pass-Windy Gap Transmission Line. Prepared by Bureau of Anthropological Research, Department of Anthropology, University of Colorado, Boulder.

- 1978b Preliminary Report of a Class III Cultural Resources Inventory of Bureau of Land Management Coal Lease Tracts in North Park, Jackson County, Colorado. Manuscript on file, Bureau of Land Management, Craig District Office, Craig, Colorado.

Lister, Robert H.

- 1953 The Stemmed Indented Base Point, A Possible Horizon Marker. American Antiquity 18(3):264-265.

- 1962a Archaeological Survey of the Blue Mesa Reservoir, Colorado. Department of Anthropology, University of Colorado, Boulder.
- 1962b Archaeological Survey of the Blue Mesa Reservoir, Colorado. Southwestern Lore 28(3):41-45.
- Madole, Richard F.
- 1969 Pinedale and Bull Lake Glaciation in Upper St. Vrain Drainage Basin, Boulder County, Colorado. Arctic and Alpine Research 1(4):279-287.
- 1976 Glacial Geology of the Front Range, Colorado. In Quaternary Stratigraphy of North America, edited by W.C. Mahaney, pp. 297-318. Dowden, Hutchinson, and Ross, Stroudsburg, Pennsylvania.
- 1980 Time of Pinedale Deglaciation in North-Central Colorado: Further Considerations. Geology 8:118-122.
- Maher, Louis J., Jr.
- 1961 Pollen Analysis and Postglacial Vegetation History in the Animas Valley Region, Southern San Juan Mountains, Colorado. Unpublished Ph.D. dissertation, University of Minnesota. University Microfilms, Ann Arbor, Michigan.
- 1963 Pollen Studies of Surface Materials from the Southern San Juan Mountains, Colorado. Geological Society of America Bulletin 74:1485-1504.
- 1972 Absolute Pollen Diagram of Redrock Lake, Boulder County, Colorado. Quaternary Research 2:531-553.
- 1973 Pollen Evidence Suggests that Climatic Changes in the Colorado Rockies During the Last 5000 Years Were Out of Phase with Those in the Northeastern United States. Abstracts of the IXth International Quaternary Association Congress Meetings, pp. 227-228. Christchurch, New Zealand.
- Malan, Roger C.
- 1957 Geology of Uranium Occurrences in North and Middle Parks, Colorado. In Guidebook to the Geology of North and Middle Park Basin, Colorado. Rocky Mountain Association of Geologists.
- Markgraf, Vera and Louis Scott
- 1981 Lower Timberline in Central Colorado During the Past 15,000 Years. Ecology 9:321-324.
- Marr, John W.
- 1967a Ecosystems of the East Slope of the Front Range in

Colorado. Colorado Associated University Press.

- 1967b Data on Mountain Environments. University of Colorado Studies Series in Biology Number 27. Boulder, Colorado.
- 1972 Ecological Investigations. In Vail Pass Environmental Study. Prepared by Barton, Stoddard, Milhollin and Higgins for the Colorado Division of Highways.
- Marr, J. W. and R. E. Marr
 1973 Environment and Phenology in the Forest-Tundra Ecotone, Front Range, Colorado (Summary). Arctic and Alpine Research 5(3), Part 2:A65-66.
- Martin, Curtis W.
 1975 Archaeological Salvage of Highway 24 from Buena Vista to Granite. Colorado Division of Highways Salvage Report Number 13. Boulder, Colorado.
- Martin, Curtis W. and Patti Bell
 1976 The Archaeological Survey of Selected Bypass routes through Alamosa. Colorado State Highway Department Project No. U160-2(14), Report Number 15. Manuscript on file, Colorado Department of Highways, Boulder, Colorado.
- Martin, Curtis W., Carl E. Conners, Lester A. Wheeler, Linda Scott, and Harley Armstrong
 1980 The Archaeological Excavations at Jerry Creek Reservoir #2, Mesa County, Colorado. Manuscript on file, Grand River Institute, Grand Junction, Colorado.
- Martorano, Marilyn A.
 1981 Scarred Ponderosa Pine Trees Reflecting Cultural Utilization of Bark. Unpublished M.A. thesis, Department of Anthropology, Colorado State University, Fort Collins.
- May, D.E.
 1976 The Response of Alpine Tundra Vegetation in Colorado to Environmental Variation. Ph.D. dissertation, University of Colorado, Boulder.
- McGimesy, Charles R.
 1972 Public Archaeology. Seminar Press, Inc., New York.
- Medina, Douglas M., Susan Horner, Charles Horner and Charles Richardson
 1974 Excavations at Ken Caryl Ranch, 1973 and 1974. Southwestern Lore 40(3-4):46-49.
- Metcalf, Michael
 1974 Archaeology at Dipper Gap: An Archaic Campsite,

- Logan County, Colorado. M.A. thesis, Department of Anthropology, Colorado State University, Fort Collins.
- 1979 Archaeological Investigation of Amoco Seismic Lines in South Park. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.
- Metcalf, Michael D., Kathleen L. Heicher and William E. Davis
- 1981 Cultural Resource Survey and Test Excavations at the Proposed Adam's Rib Recreational Area, Eagle County, Colorado. Manuscript on file, Metcalf-Zier Archaeologists, Inc., Eagle, Colorado.
- Millington, Andrew Claverly
- 1977 Late Quaternary Paleoenvironmental History of the Mary Jane Creek Valley, Grand County, Colorado. M.A. thesis, Department of Geography, University of Colorado, Boulder.
- Moomaw, Jack C.
- 1954 Ancient Stone 'Walls' in the Colorado Rockies. Southwestern Lore 20(1):5-6.
- 1957 Aborigines of the Colorado Highlands. Southwestern Lore 23(3):35-37.
- 1960 The 'Ring Makers.' Southwestern Lore 25(4):5-9.
- Morris, Earl H. and Robert F. Burgh
- 1954 Basketmaker II Sites Near Durango, Colorado. Carnegie Institute of Washington Publication Number 604.
- Morris, Elizabeth Ann
- 1978 Abstract of Comments on Five High Altitude Paleo-Indian Sites in North-Central Colorado. Abstracts of the Fifth Biannual Meeting, p. 224. American Quaternary Association. Edmonton, Alberta.
- n.d. Excavations at 5LR288: The Lunch Cave Site, Larimer County, Colorado.
- Morris, Elizabeth A., Michael D. Metcalf and Howard M. Davidson
- 1974 Final Report of the 1972-1973 Archaeological Reconnaissance of the Proposed Reservoir Areas in the Boxelder Creek Watershed, Larimer County, Colorado. National Park Service, Midwest Region, U.S. Department of the Interior, Lincoln, Nebraska.
- Mueller, James W. and Mark A. Stiger
- 1980 High Altitude Hunters-Gatherers: An Interim Summary of Archaeology in Curecanti National Recreation

Area. Paper presented at the Southwestern High Altitude Seminar, School of American Research, Santa Fe, New Mexico.

National Park Service

- 1976 Environmental Assessment of Pine Creek Trail, Curecanti National Recreation Area. Manuscript on file, Midwest Archaeological Center, National Park Service, Lincoln, Nebraska.
- Nelson, A. R., A. C. Millington, J. T. Andrews and H. Nichols
 1979 Radiocarbon-dated Upper Pleistocene Glacial Sequence, Fraser Valley, Colorado Front Range. Geology 7:410-414.
- Nelson, Charles E.
 1967 The Archaeology of Hall-Woodland Cave. Southwestern Lore 33(1):1-13.
 1969 Salvage Archaeology on Van Bibber Creek, Site 5JF10. Southwestern Lore 34(4):85-106.
 1970 Chamber Cave. Southwestern Lore 36(1):1-11.
 1981 Cherry Gulch Site (5JF63): A Projectile Point Study. Southwestern Lore 47(2):1-27.
- Nelson, Charles E. and Jesse M. Graeber
 1966 Excavations of Graeber Cave, North Turkey Creek. Southwestern Lore 32(2):47-54.
- Nelson, Sarah M. and Helen Pustmueller
 1974 Research Proposal: Laboratory Analysis of Archaeological Materials from Franktown Cave, Colorado.
- Nickens, Paul R.
 1971b An Evaluation of the Impacts to Archaeological Resources and a Recommended Program of Mitigation. Prepared as a supplement to Moon Lake Project Report 79-5. Manuscript on file, Centuries Research, Inc., Montrose, Colorado.
- Nickens, Paul R., ed.
 1983 Initial Report Southwest Prehistoric Context. Unpublished Manuscript.
- Nickens, Paul R. et al.
 1973 Archaeological Reconnaissance of a Proposed Construction Area, Blanca Wildlife Refuge, Alamosa County, Colorado Department of Anthropology, University of Colorado, Boulder.
- Nickens, Paul R., Deborah Hall, Alan Reed, Douglas Scott,

- Peter Gleichman and Susan Eininger
 1982 Archaeological Resources in Southwestern Colorado, Colorado State Office, Bureau of Land Management, Cultural Resource Series Number 13. Denver, Colorado.
- Nowak, Michael
 1975 Cultural Resource Inventory Report, Trinchera Watershed Project Soil Conservation Service.
- Ohr, N. Ted, Kenneth L. Kvamme, and Elizabeth A. Morris
 1979 The Lykins Valley Site (5LR263): A Stratified Locality on Boxelder Creek, Larimer County, Colorado. Final report to Interagency Archaeological Service, Denver.
- Olson, Byron L.
 1969 An Archaic Site in the Colorado Front Range. Abstracts, Journal of the Colorado-Wyoming Academy of Science 6:2:43.
- Opler, Marvin K.
 1940 The Southern Ute of Colorado. In Acculturation in Seven American Indian Tribes, edited by Ralph Linton. D. Appleton Century Company, New York.
- Outcalt, Samuel I., and Donald D. MacPhail
 1965 A Survey of Neoglaciation in the Front Range of Colorado University of Colorado Studies, Series in Earth Sciences Number 4, University of Colorado Press, Boulder, Colorado.
- Pearsall, Al
 1939 Evidences of Pueblo Culture in the San Luis Valley. Southwestern Lore 5(1):7-9.
- Petersen, Kenneth L.
 1976 Proposal for a Cultural Resources Inventory for Indian Trail Ridge and Cumberland Basin, La Plata Mountains, La Plata and Montezuma Counties, Colorado. Manuscript on file, U.S.D.A. Forest Service, District Rangers Headquarters, Mancos, Colorado.
- 1977 Tabogauche and Elk Mountain Utes: A Historical Test of an Ecological Model. Southwestern Lore 43(4):5-21.
- 1981 10,000 Years of Climatic Change Reconstructed from Fossil Pollen, La Plata Mountains, Southwestern Colorado. Ph.D. dissertation, Department of Anthropology, Washington State University, Pullman.
- Petersen, Kenneth L., and P.J. Mehringer, Jr.

- 1976 Postglacial Timberline Fluctuations, La Plata Mountains, Southwestern Colorado. Arctic and Alpine Research 8:275-288.
- Redman, Charles L. (ed.)
1973 Research and Theory in Current Archaeology. John Willey and Sons, Inc., New York.
- Redman, Charles L., M. J. Berman, E. V. Curtin, W. T. Langhorne, Jr., N. M. Versaggi, and J. C. Wanser
1978 Social Archaeology: Beyond Subsistence and Dating. Academic Press, Inc., New York.
- Reed, Alan D.
1979a Morphological Characteristics of the Rio Grande Projectile Points. In Prehistoric Cultural Resources of Rio Grande National Forest, by Paul R. Nickens. Manuscript on file, U.S.D.A. Forest Service, Denver, Colorado.
- 1979b An Archaeological Evaluation of Six Prehistoric Sites in Hale Gulch in the Pitch Uranium Project Area of Homestake Mining Company, Saguache County, Colorado. Manuscript on file, Centuries Research, Inc., Montrose, Colorado.
- 1981 Archaeological Test of Archaeological Property 5LP298 (SJNF Number: 08-74). Cultural Resources Report Number 13-193/2. Manuscript on file, San Juan National Forest, Durango, Colorado.
- Reed, Alan D., and Ronald E. Kainer
1978 The Tamarron Site: A Basketmaker II Site in Southwestern Colorado. Southwestern Lore 44(1-2):1-47.
- Reed, William G.
1979a An Archaeological Survey of the Kenny Flats Timber Sale. Manuscript on file, U.S.D.A. Forest Service, Durango, Colorado.
- 1979b An Archaeological Survey of the Lefthand Canyon Timber Sale and Watershed Project. Manuscript on file, U.S.D.A. Forest Service, Durango, Colorado.
- Renaud, Etienne Bernardeau
1925 The Indians of Colorado. University of Colorado Studies. Boulder, Colorado.
- 1935 Archaeological Survey of Colorado: Seasons 1933 and 1934. Archaeological Series, fourth Report. Department of Anthropology, University of Denver.
- 1936 The Archaeological Survey of the High Western

Plains: Pictographs and Petroglyphs of the high Western Plains. Archaeological Series, Eighth Report. Department of Anthropology, University of Denver.

1937 The Archaeological Survey of the High Western Plains: Northeastern New Mexico, Archaeological Series Ninth Report. Department of Anthropology, University of Denver.

1942 Indian Stone Enclosures of Colorado and New Mexico. Archaeological Series, Second Paper. Department of Anthropology, University of Denver.

1944 The Upper Rio Grande Culture. Southwestern Lore 8:33-36.

1947 Archaeology of the High Western Plains: Seventeen Years of Archaeological Research. Archaeological Series. Department of Anthropology, University of Denver.

Richmond, Gerald M.

1954 Modification of the Glacial Chronology of the San Juan Mountains, Colorado. Science 119:614-615.

1960 Glaciation of the East Slope of Rocky Mountain National Park, Colorado. Geological Society of America, Bulletin 71:1371-1382.

1965a Glaciation of the Rocky Mountains. In The Quaternary of the United States, H.E. Wright, Jr. and David G. Frey, editors. Princeton University Press, Princeton, New Jersey.

1965b Quaternary Stratigraphy of the Durango Area, San Juan Mountains, Colorado.

Rick, John W.

1976 Downslope Movement and Archaeological Intrasite Spatial Analysis. American Antiquity 41(2):133-144.

Roebuck, Paul

1977 Archaeological Survey of Gunnison Gorge. Department of Anthropology, University of Colorado, Boulder.

Schaafsma, Curtis and John D. Gooding

1974 Archaeological Survey of U.S. Highway 24 from Buena Vista To Granite. Colorado State Highway Department Salvage Report Number 9. Project No. RF 024-(10).

Schroeder, Albert H.

1953 Statement on the Early History and Archaeology of the Gunnison River Basin. Southwestern Lore

19(3):1-16.

1965 A Brief History of the Southern Utes. Southwestern Lore 30(4):53-78.

Scott, Douglas D.

1981 Rock Art in the Gunnison Valley. Southwestern Lore 47(3):1-6.

Scott, Glenn R.

1965 Nonglacial Quaternary Geology of the Southern and Middle Rocky Mountains. In The Quaternary of the United States, H.E. Wright, Jr. and David G. Frey, editors. Princeton University Press, Princeton, New Jersey.

Scott, Linda J.

1976 Analysis of Pollen from the Skull Creek Basin--A Feasibility Study. Manuscript on file, Bureau of Land Management, Craig District Office, Colorado.

1978 Palynological Investigations of Four Sites at Curecanti National Recreation Area, Colorado. Appendix B in 1978 Test Excavations at Five Archaeological sites in Curecanti National Recreation Area, Intermountain Colorado, by R. Thomas Euler and Mark A. Stiger. Manuscript on file, Palynological Analysts, Montrose, Colorado.

1980a Palynological Investigations at Five Sites in the Colowyo Railroad Mitigation Project. Manuscript on file, Laboratory of Public Archaeology, Colorado State University, Fort Collins.

1980b Palynological Investigations in the Curecanti Basin, Colorado. Manuscript on file, National Park Service, Midwest Region, Lincoln, Nebraska.

1980c Pollen Analysis in the Alkali Creek Valley, Gunnison County, Colorado. Appendix 1 in the 1979 Test Excavation Program in the Alkali Creek Study Area (1981), by K. D. Black, S.M. Horvath, and S.G. Baker, Vol. 4. Manuscript on file, Centuries Research, Inc., Montrose, Colorado.

1981a Palynological Record of Tree Line Movement at 5PA153, Park County, Colorado. Manuscript on file,

Laboratory of Public Archaeology, Colorado State University, Fort Collins.

1981b Pollen Analysis at Two High Altitude Sites (5LK372 and 5ST114) Near Climax, Colorado. Manuscript on file, Laboratory of Public Archaeology, Colorado State University, Fort Collins.

Seward, Deborah Truell

1981 A Macrofossil Test of a High Country Adaptation Model in Routt National Forest. Manuscript on file, Centuries Research, Inc. and Palynological Analysts, Montrose, Colorado.

Schiffer, Michael and George Gumerman (eds.)

1977 Conservation Archaeology. Academic Press, Inc., New York.

Short, Susan

n.d. Vail Pass Pollen Report. Report prepared for the Colorado Department of Highways. Manuscript on file, Archaeology Laboratory, Boulder, Colorado.

Short, Susan K., and Loreen K. Stravers

n.d. Pollen Analyses, Parker, Colorado: Modern Pollen Deposition and Archaeological Soil Samples. Manuscript for Vail Pass report.

Sigstad, J. S.

1977 Lecture on Mountain Plains Prehistory for Region 2, U.S. Forest Service Paraprofessional Cultural Resource Specialist Training, Delta, Colorado, May 26, 1977.

Simmon, Virginia M.

1979 The San Luis Valley: Land of the Six-Armed Cross. Pruett Publishing Company, Boulder, Colorado.

Spencer, Richard (compiler)

1982 Evaluation and Comparison of Five Sites in Lake and Eagle Counties, Colorado. Manuscript on file, Cultural Resource Consultants, Inc., Denver, Colorado.

Spero, Vincent

1978 A Discriminant Analysis of Stylistically Derived Groups of Isolated Finds of Projectile Points Found on the Rio Grande.

1980 Rio Grande National Forest Cultural Resource Inventory Report 1980, Report Number 5. Manuscript on file, U.S.D.A. Forest Service, Rio Grande National Forest, Monte Vista, Colorado.

Spero, Vincent, and Mary Mruzik-Doering

- 1980 Cultural Resource Inventory of the Rio Grande National Forest, 1979. Report Number 4. Manuscript on file U.S.D.A. Forest Service, Rio Grande National Forest, Monte Vista, Colorado.
- Spitzer, Michael G.
1979 Archaeological Clearance Survey of Four Proposed Amax Drill Sites in Gunnison County, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.
- Steinbach, Robert Conrad
1956 Geology of the Azure Area, Grand County, Colorado. M.S. thesis, Department of Geology, University of Colorado, Boulder.
- Stewart, Bruce
1970 Park Point. Southwestern Lore 36(2):21-23.
- Stewart, Omer C.
1971 Ethnohistorical Bibliography of the Ute Indians of Colorado. University of Colorado Studies/Series in Anthropology Number 18. University of Colorado Press, Boulder, Colorado.
- 1976 Ethnography of the Western Ute. In Handbook of North American Indians. Smithsonian Institution, Washington, D.C.
- Stiger, Mark A.
1977 Archaeological Inventory and Cultural Assessment, Curecanti National Recreation Area, Colorado. Mesa Verde Research Center, University of Colorado, Boulder.
- Stuart, David R. and Marcia J. Tate
1978 A Cultural Resource Survey of the Craig Point #2 Timber Sale. Manuscript prepared under Cooperative Agreement between Colorado Historical Society and U.S.D.A. Forest Service. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.
- Sullivan, Mark E.
1977 Cultural Resource Reconnaissance and Inventory Report--Colorado Front Range Vegetative Management Pilot Project. Prepared under Contract #33-2088 between Archaeological Survey and Research Group and the United States Department of Agriculture, Roosevelt National Forest, Colorado.
- Swancara, Frank
1955 The Archaeology of the Great Sand Dunes National Monument, A Preliminary Survey. Denver, Colorado.

Ungnade, Herbert E.

- 1963 Archaeological Finds in the Sangre de Cristo Mountains of New Mexico. El Palacio 70:15-20.

Upson, J.E.

- 1971 Physiographic Subdivisions of the San Luis Valley, Southern Colorado. In James, ed. Guidebook of the San Luis Basin, Colorado. New Mexico Geological Society, Twenty-second Field Conference.

Ward-Williams, Linda

- n.d. Archaeological Inventory, Routt National Forest, Project #4 Arapahoe Creek, #6 Parkview Park, #5 and #8 Michigan River, #2 English Creek, #1 Big Grizzly, #1 Walton Creek. Manuscript on file, Office of the State Archaeologist, Denver, Colorado.

Wedel, Waldo R.

- 1964 Primitive Man in the Boulder Area. In Natural History of the Boulder Area, edited by Hugo G. Rodeck. University of Colorado Museum Leaflet Number 13. Boulder, Colorado.

Wendorf, Fred and John P. Miller

- 1959 Artifacts from High Mountain Sites in the Sangre de Cristo Range, New Mexico. El Palacio 66:37-52.

Wheat, Joe Ben

- 1958 Report of an Archaeological Survey of the Crawford Reservoir Site, Delta County, Colorado. Department of Anthropology, University of Colorado, Boulder.

Wheeler, Charles W. and Gary L. Martin

- 1982 The Granby Site: Early-Middle Archaic Wattle and Daub Structures. Southwestern Lore 48(3):16-25.

Wheeler, Richard P.

- 1952 A Note on the McKean Lanceolate Point. Plains Archaeological Conference Newsletter 4(4):39-44.

- 1957 Duncan and Hanna Points. Plains Archaeologist 1:7-14.

Willey, Gordon R. and Jeremy A. Sabloff

- 1974 A History of American Archaeology. W. H. Freeman and Company, San Francisco.

Williams, Burton D.

- 1975 The U.S. National Forest Archaeology Program in Colorado. Southwestern Lore 41(4):8-10.

- 1976 Final Report of Cultural Resource Inventories, Grand Mesa-Uncompahgre-Gunnison National Forests, Delta, Colorado, Fiscal Years 1975, 1976. Manuscript on

file, U.S.D.A. Forest Service Office, Delta, Colorado.

Williams, Jack R.

1951 The San Luis Valley Blade. Southwestern Lore 17(1):8-12.

Wilson, Dorothy

1971 They Came to Hunt. San Luis Valley Historian 3(3):12-18.

Windmiller, Ric

1976 Cultural Resource Inventory of the Hathaway Timber Sale, Routt National Forest, Colorado. Preliminary report conducted by Routt National Forest through the Office of the State Archaeologist, Manuscript on file, OSAC, Denver.

Wood, Nancy E., and Steven G. Baker

1978 A Cultural Resource Inventory of Drill Site No. 1A, Alkali Creek Tailings Dam, Mount Emmons Project, Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

1978 A Cultural Resource Inventory of Keystone Mine Drill Site No. 3 & 4, "Clean Up Coal Creek" Project, Amax, Inc., Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado.

1978 A Cultural Resource Inventory of the Keystone Mine Hydrology Drill Sites No. 1 & 2, "Clean Up Coal Creek" Project, Amax, Inc., Crested Butte, Colorado. Manuscript on file, Centuries Research, Montrose, Colorado

1979 Interim Project Report on the Baseline Cultural Resource Inventory of the Mount Emmons Project Areas, Gunnison County, Colorado: 1978 Season. Manuscript on file, Centuries Research, Montrose, Colorado.

Woodbury, A.M.

1962 Ecological Studies of the Flora and Fauna of the Curecanti Reservoir Basins, Western Colorado. University of Utah Anthropological Papers 59.

Woodward-Clyde Consultants

1978 Appendix E-Well Field Development Plan for the Wason Field, Denver Unit CO-2 Project Environmental Impact Report. Manuscript on file, Woodward-Clyde Consultants, San Francisco.

Yampa Supplemental Environmental Analysis

1979 230 KV Wolcott-Malta Transmission Line. Presented

by the Colorado UTS Electrical Association.

Yelm, Mary E.

1935 Archaeological Survey of Rocky Mountain National Park--Eastern Foothills Districts. M.S. thesis, Department of Anthropology, University of Denver.

York, Robert

1979 Cultural Resources Survey/Evaluation Report: Willow Draw Gully Plugs. Manuscript on file, U.S.D.A. Forest Service, Durango, Colorado.

1979 Piedra Pass (LaFont), Ditches, Proposed Modifications. San Juan National Forest, Colorado, Cultural Resources Survey/Evaluation Report. (CRR 13-140). Manuscript on file, U.S.D.A. Forest Service, Durango, Colorado.

Zier, Anne H.

1981 Cultural Resource Inventory of the Burnt Mountain Expansion Area, White River National forest and Snowmass Village, Pitkin County, Colorado. Manuscript on file, Metcalf-Zier Archaeologists, Inc., Eagle, Colorado.

APPENDIX C: ADDENDUM

ADDENDUM TO REFERENCES CITED AND BIBLIOGRAPHY -

- Gleichman, Peter J., Susan Eininger and Douglas D. Scott
1982 The Archaeology of the West End (San Miguel Resource Area) in Archaeological Resources in Southwestern Colorado, Bureau of Land Management. Cultural Resource Series Number 13.
- Jennings, Jesse D.
1978 Prehistory of Utah and the Eastern Great Basin. University of Utah Anthropological Paper, Number 98. Salt Lake City, Utah.
- Service, Elman R.
1971 Primitive Social Organization, 2nd ed. Random House, New York.
- Steward, Julian H.
1938 Basin Plateau Aboriginal Socio-political Groups. Bureau of American Ethnology. Bulletin 120.
1967 The Great Basin Shoshonean Indians. The North American Indians. Roger C. Owen et al.
- Swancara, Frank
1955 The Archaeology of the Great Sand Dunes National Monument, A Preliminary Survey. Denver, Colorado.
- Thomas, David H.
1972 A Computer Simulation Model of Great Basin Shoshonean Subsistence and Settlement Patterns. Models in Archaeology. David L. Clarke, ed. pp. 671-704. Methuen, London.

